Intranet Portals: UX Design Experience from Real-Life Projects

5th Edition

Patty Caya and Jakob Nielsen

3rd and 4th Editions by Patty Caya and Jakob Nielsen

1st and 2nd Editions by Candace Goodwin and Mathew Schwartz

Nielsen Norman Group

WWW.NNGROUP.COM | 48105 WARM SPRINGS BLVD., FREMONT CA 94539–7498 USA

About This Free Report

This report is a gift for our loyal audience of UX enthusiasts. Thank you for your support over the years. We hope this information will aid your efforts to improve user experiences for everyone.

The research for this report was done in 2013, but the majority of the advice may still be applicable today, because people and principles of good design change much more slowly than computer technology does. We sometimes make older report editions available to our audience at no cost, because they still provide interesting insights. Even though these reports discuss older designs, it's still worth remembering the lessons from mistakes made in the past. If you don't remember history, you'll be doomed to repeat it.

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REPORT AUTHORS

Patty Caya, and Jakob Nielsen

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Executive Summary

PORTALS ARE THE HUB OF THE ENTERPRISE UNIVERSE

Today's intranet portals are at the epicenter of the enterprise universe. They provide utility and usability, featuring all or most necessities for employees' success. Popular enterprise portal offerings include use via mobile devices and home computers, consolidation of and access to enterprise applications, and communication vehicles for employees. As organizations inch toward a digital workplace, intranet portals are beginning to serve as the hub of the corporate wheel, providing spokes of information and applications that serve diverse and increasingly dispersed workforces.

Not all organizations have achieved the dream of total integration of all enterprise applications, often due to resource constraints and security concerns. Yet it is clear that most at least share that goal and are on the road and moving in that direction even if some have just barely left the driveway.

In updating the Intranet Portals report, with this being our fifth edition, it is still obvious to us that most organizations want to offer their employees the best possible tools and experience with their enterprise portals. But not all organizations have the time or expertise for this. Smaller design teams that have less support from senior management have to start their work toward a great intranet portal now, knowing it will take months or year before they will yield results. Despite this reality, there are many lessons that can be learned from companies whose efforts are still modest.

This report features wisdom gathered from organizations whose portals are truly next generation alongside companies whose efforts have just taken root and are barely starting to provide a healthy yield.

PORTALS INCLUDED IN THE REPORT

For this latest research we looked at intranet portals in 16 organizations, tracing a line across the globe that connects intranet best practices from the City of Olathe, Kansas in America's heartland, all the way to the Municipal Design and Survey Unitary Enterprise "Minskinzhproekt" in Belarus. The most recent case studies include the following:

- The Carle Foundation
- City of Olathe, Kansas
- Coca-Cola Enterprises Ltd.
- Consumer Financial Protection Bureau (CFPB)
- FDC Solutions, Inc.
- Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.
- Fraunhofer Heinrich Hertz Institute
- Municipal Design and Survey Unitary Enterprise "Minskinzhproekt"
- National Archives and Records Administration (NARA)
- Northern Arizona University (NAU)

- Palm Beach County Board of County Commissioners
- Persistent Systems Limited
- Resource Data, Inc.
- Think Mutual Bank
- Department of Transport (Canada)
- Yara International ASA

Our recommendations for intranet portals are now based on 83 portals case studies (as acknowledged in the *Credits* section of this report.) We include many screenshots and interview quotes from team members from not just this year, but also from the four earlier versions of this report.

Screenshots collected in earlier years obviously do not show the way those portals look today. But the same may hold true for some of the screenshots collected in the current round. Even some of those portals may have changed by the time you read this. One of our key recommendations is to recognize the need to continuously maintain and renew a portal, so we embrace and applaud designs that are not static.

We retained information from prior years for several reasons.

Whether the picture is new or old, the lessons we can draw from the screenshots remain valid. Please just recognize that we use screenshots as illustrative examples of bigger themes. (And you would be wise to steer clear of the problems reported by our respondents, whether they encountered a problem recently, or some time ago.)

It's a matter of simple fairness to continue to acknowledge those portals that contributed the original findings, to the extent that these finding are still valid.

When you see the same trends repeated year after year, in quite different design styles, you realize that the underlying issues are highly persistent. Thus, there is extra value from older examples for the very reason that they allow us to observe long-lasting lessons and separate them out from the latest fashions, which may not last.

GOVERNANCE IS BECOMING MORE DECENTRALIZED

As enterprise portals mature and grow so does the need for more structured, yet disbursed, portal governance. Portal teams are learning that since the intranet portal touches all layers of the organization, so should the governance. This edition of the report reveals a move toward a decentralized or matrix governance model, as opposed to past years where governance was more centralized — being created, communicated, and policed by the enterprise portal owners.

Some organizations find themselves creating governance where once there was none, while others flesh out more specific details of their portal governance structure to accommodate touch points across the organization.

For example, the Carle Foundation has created a governance structure that is both formal and flexible, with defined roles, responsibilities, and workflows. The governance team is drawn from all levels of the organization and has assigned tasks to staff from nearly every operational area across the organization. From the senior sponsor to the individual content contributor everyone has a role to play in ensuring the upkeep and ongoing development of the intranet portal.

Governance, like most aspects of portal development, is marathon not a sprint, and portal teams realize that governance must evolve, as does the portal.

SHAREPOINT CAN BE GREAT, BUT THERE ARE OTHER GOOD TECHNOLOGY OPTIONS

Many organizations are happy to report that a variety of tools, including open-source tools, are catching up to their needs. Everyone cannot necessarily afford to integrate and support large, complex intranet portal solutions such as SharePoint. But as technology matures, the barriers to entry are lowered, and more portal technology options become available.

This is not a new concept for intranet portal design. In 2000 when we first began studying intranets, open-source was used heavily. Not until 2008 did we see SharePoint taking a strong hold. Even that year, our 10 Intranet Design Annual[1] winners used 41 different products for their intranet technology platforms. And in our most recent Intranet Design Annual, five out of 10 winners used SharePoint. In our intranet behavioral-research studies, organizations used about 20 different portal-software tools. (For more information, please refer to our intranet reports available at http://www.nngroup.com/reports/topic/intranets/.)

So there has never been a paucity of intranet portal technology that can produce worthwhile portals. What's different today is that technology has advanced to a point where a fairly nontechnical team can create a highly functional portal without an advanced design team in-house.

The City of Olathe (Kansas), Canada's Department of Transport, and the U.S. National Archives and Records Administration (NARA) are a few examples of organizations of varying size that chose to build their portal on a Drupal framework. These organizations saw an open-source solution and accompanying tools as more flexible and better for enough of their needs.

The thread between these organizations is that all three are related to government in some capacity. While large corporations with deft IT departments have jumped into bed with SharePoint, some government organizations say SharePoint is too much to wrangle, and so choose another path.

These successful examples demonstrate that an intranet portal does not have to be sitting on top of a giant portal-technology platform in order to be either full-featured or effective. Sometimes small is beautiful.

SOPHISTICATED PERSONALIZATION

Personalization and social tools, once optional components of the corporate intranet, are now beginning to become standard offerings, an almost expected component of any full-featured site.

[1] *Intranet Design Annual: The Year's Ten Best Intranets*, Nielsen Norman Group.

As more content and applications are available on enterprise portals, the need to curate what each person sees becomes increasingly important, to prevent employees from becoming truly overwhelmed.

The team at Persistent Systems, for example, designed the company's portal in such a way that nearly every component was role-based and location aware. This wasn't easy to achieve, as the company's business analysts had to create a role-functionality matrix to determine an ideal homepage mix for each and every type of user based on role and location. From there, users were free to further customize their experience.

Not only was role-based personalization a high priority for the re-design, it has been received enthusiastically by users, helping them remain focused on critical action items while still giving them access to all the rest of what the portal has to offer.

Customization has also seen an uptick since the last edition of this report, but it's customization with a targeted focus. We've pointed out again and again that more frivolous customization features such as colors, themes, and layouts often fail. Targeted customization features that are task oriented and streamline workflows are, however, both appreciated and well used by users.

Several organizations in this year's report have found even simple customization features such "My" pages (*My Sites*, *My Links*, *My Tools*, etc.) help boost user engagement. The Carle Foundation, Resource Data, Inc. and Canada's Department of Transport all report good results with these user-controlled features. Few organizations track the specific usage of these features, but anecdotal evidence shows that they are being used and users are asking for feature enhancements to continue to make them better.

The moral of this simple finding regarding customization is that quality tops quantity: user-controlled features are most welcome when they are focused and strategic rather than when they are abundant and overwhelming.

APPLICATIONS CAN DRIVE ENTERPRISE PORTAL ADOPTION

In the previous edition of this report we saw some great examples of applications that were specific, targeted, and highly successful, both in their own right and also as drivers of portal usage overall. Applications attract users and keep them coming back, and companies are starting to truly understand this. Companies that create innovative, or even simple but useful tools will likely experience higher portal-adoption rates. If the portal offers users tools to help employees get the job done, they'll be back again and again.

When done well, even basic tools (such as skill-based employee directories) can be a key driver for user satisfaction and increased portal adoption. When key applications are aimed at managers or executives, they attract high-level eyeballs on the portal project and translate into a win for portal teams. Many enterprise portal teams use applications to draw people in. Useful, well-designed applications keep people coming back. This has been true since this report's first edition and remains true today.

Resources Data, Inc. (RDI)'s project portal is a perfect example of a useful tool that gets users to visit the portal often. The project portal is a one-stop shop for all things project related and a space where RDI staff and client staff can view/set calendar events, check schedules, identify critical milestones, download project documents, review tasks underway and task assignees, view project-cost reports, review timesheet entries, and so on. Links allow RDI staff to jump into the marketing proposal that led to the work, the client/contact database, and other ancillary info. With all this data available in one place, the project portal has become an indispensable part of the staff workflow and so has the company's portal.

While applications drive adoption, mobile can do so even more. Mobile can in fact be the portal's killer app.

MOBILE ENTERPRISE PORTAL OPTIMIZATION IS SLOW IN COMING, BUT VIEWED AS IMPORTANT

Mobile intranets and enterprise applications still don't have nearly the penetration that mobile enjoys out in the real world. (For more information please refer to our "Mobile Intranets and Enterprise Apps" report available at http://www.nngroup.com/reports/enterprise-mobile-showcase/)

The bad news is that this disparity has never been more pronounced. As this edition is published a Pew Report[2] reveals that 90% of all Americans have a cell phone and 58% are smartphones. Yet, only a smattering of the organizations whose case studies appear here are truly optimized for the mobile experience or offer task-specific applications to support daily work.

In the last edition of this report we wrote: "Outside the firewall, the mobile space is teeming with innovation, but inside companies, mobile progress seems to be progressing at a snail's pace." In this edition the snail has picked up speed but it's still not exactly running toward mobile. We can hope that the parable of the tortoise and the hare will have some bearing on mobile intranet features and result in truly great designs in the (long-awaited) end.

The good news, however, is that those organizations that have embraced mobile as a critical piece of their enterprise portal strategy have done so with gusto, truly making mobile a core part of their portal offering, if not its centerpiece.

Persistent Systems leads the charge in this endeavor. With its most recent portal redesign the company took the mobile imperative and turned it on its head with a mobile-first design approach. Instead of designing for the desktop and adapting the portal experience for small screens, the design team's task analysis focused on the needs of mobile users first and let the desktop expand around the core mobile functions.

This approach resulted, obviously, in a targeted mobile experience, but had the residual effect of making the overall portal more streamlined and task focused. Other portal teams would do well to take a page from Persistent Systems' playbook in trying to reduce portal bloat down to the essence of what users need to get things done.

[2] Pew Research Internet Project, "Mobile Technology Fact Sheet," http://www.pewinternet.org/fact-sheets/mobile-technology-fact-sheet/

Anybody wanting to launch a mobile intranet portal is advised to prioritize and optimize content for small screen and mobile use.[3] Employees want and are beginning to expect their portals to be usable not only on desktop, but on phones with small displays and tablets. Making time- and location-dependent tasks easy on mobile devices is a good place to begin.

The key point is to start with a task analysis of users' most important tasks, and prioritize the portal layout[4] to effectively meet users' needs.

Some organizations are marching headlong into enterprise mobile. Most recent Intranet Design Annual winners focused on mobile optimization in some capacity, and three winners took a responsive-design[5] approach to design and develop their intranet.

But in terms of strategy and execution, a key finding from this round of interviews is that the typical design team is not there yet — still. Many efforts toward a mobile-enterprise initiative are still "coming soon," even now three years after our last round of research.

We fully agree with the idea of waiting until you can get it right; poor mobile designs are really miserable for users. And for enterprise use, you pay for every minute that employees waste slugging through a bad UI. Still, we advise companies to plan to make their intranets accessible and usable on mobile sooner rather than later. As employees increasingly see rapid improvements in their mobile user experience on the open Internet, they'll demand it from their organizations as well.

USER RESEARCH: A LITTLE BIT OF EVERYTHING

Many (nearly all those we interviewed for this report edition) design teams conduct user research in a regular and predictable way. Additionally, they plan to iterate and refine their portal designs as they apply the feedback from users.

The shift we are seeing is not just an increase in user research, but rather an increase in iterative cycles that involve users over and over again as the design and architecture evolves. Design teams are now employing many types of research methods, from observational research (such as usability tests,) to data mining (from call logs and site metrics), to attitudinal methods (such as surveys).

The UX research feeds into tweaking the current design, and planning for a redesign. And more portal designers practice recommended iterative design by testing and redesigning wireframes prior to launching a new design.

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3 "Responsive Design and Intranets and Importance of Content Prioritization" http://www.nngroup.com/articles/responsive-design-intranets/

4 "5 Reasons to Redesign Your Intranet Using Responsive Design, and 4 Reasons Not To" http://www.nngroup.com/articles/5-reasons-for-responsive-design-intranet/

5 "Responsive Web Design (RWD) and User Experience" http://www.nngroup.com/articles/responsive-web-design-definition/

While budgets are certainly still tight and resources still strained, teams are finding ways to fit in a little user research not just once, but all along the project continuum. Both NARA and The Carle Foundation, for example conducted numerous research activities throughout the project lifecycle. These activities included:

- Visiting and watching users in their workplace
- Usability testing of the previous design
- Usability testing of design prototypes
- Usability testing of the new site after launch
- Card sorting
- Listening in on support calls or training
- Analyzing server logs and usage stats
- Beta testing of new design
- User interviews
- Surveys

It's still true that some research is better than none. But this is definitely a very low goal. Instead strive for what the portal designers in our report achieved: a little bit of research, in every phase. This is far more effective than at just one or two touch points.

ROI: STANDING BEHIND SOFTER MEASURES

As enterprise portals flourish and become more indispensable, the standard metric of success — return on investment (ROI) — is still not easy to measure. While some UX-related metrics such as faster task completion and higher success on tasks, are possible to measure, it rarely happens. Instead ROI continues to be measured in intangibles such as communication or satisfaction rather than dollars and cents.

But don't be put off by the squishiness of these measures. These improvements are significant for organizations that struggle with engagement or access to information. Portals at their most basic configuration provide a unified location where employees access tools to get their jobs done, and that alone can be a huge improvement over the way things were previously done.

We always ask about ROI when we conduct our interviews and in previous years companies were sometimes sheepish about the fact that they did not measure ROI carefully or even make it one of their goals. ROI is important for gaining traction and understanding about whether what you spent was worth it, or worth more. Still, a quagmire of numbers is sometimes incredibly difficult or impossible to attain.

What's important, regardless, is to have clear goals and some tangible way to measure improvements made toward those goals.

Introduction to the 5th Edition

This report is both updated and revised from our earlier work. It contains information derived from interviews 16 additional named companies (and some anonymous participants).

The scale and diversity of resources involved in an intranet portal, and the diversity of its potential user base, creates a distinct set of usability issues. In this report from the frontlines of portal development, we take a look at these issues: how they have affected portal usability in real life systems, what measures, if any, usability people have found to tackle them and what lessons they have learned along the way.

While there are several new findings in this edition, many of the ideas we presented in previous editions still hold true, as do the challenges. Our findings are anecdotal, in that they are derived from interviews but in many cases they reflect themes as the compilation of the interviews reveal similar challenges across organizations regardless of size, industry or geography.

This report is not intended to be a prescriptive guide, but a reflection of real experiences, both positive and negative. Some of the solutions implemented in the projects described here may be useful within your own projects; in other cases, the problems other teams have encountered may highlight issues that your team may want to consider before making crucial decisions about portal implementation, and pitfalls you may need to avoid.

Credits

NEW CONTRIBUTORS TO THE 5TH EDITION

A number of contributors are named in this report. These include the following:

- The Carle Foundation: Imran Aziz, Software Support Engineer, SharePoint Team (IT); Lee Cowan, Manager, Web Application Support (IT); Lyndsey Groth, Senior Editor (Marketing); Nelson Manalo, Performance Management Consultant (Internal Consulting); Gary Parker, Project Manager (IT); Kelly Skinner, Manager, Internal Communications (Marketing); Kathryn Tanner, Software Support Engineer, SharePoint Team (IT).
- City of Olathe, Kansas: Peter Carerro, Lead Senior Applications Developer; David Eldridge, Web Developer; Eric J. Gruber, Web Developer; Brian Showalter, Lead Senior Web Developer.
- Coca-Cola Enterprises Ltd.: Shahira Elsohly, Associate Director, IT Social Enterprise & User Experience; Jomari Jonck, Senior Manager, Digital Communications (HR Strategy); Jonathan Phillips, Senior Manager, Digital Communications (PA/C — Public Affairs and Communication).
- Consumer Financial Protection Bureau (CFPB): Mollie Bates, Graphics Designer; Michael Brown, Developer (contractor); Scott Cranfill, Developer; Samantha H. Simpson, Product Director, Noah Kunin, Program Manager; Diego Lapiduz, Technical Lead, Developer; Eduardo Ortiz, UX Designer; Stephanie Vineyard, Business Analyst, Scrum Master (contractor).
- FDC Solutions, Inc.: Antonio Ciuccolini, Co-Founder and Senior Developer (AlternaBit); Marlene Dawdy, Marketing Manager; Carolina Taurel, Co-Founder and Art Director (AlternaBit).
- Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.: Bernhard Aßmus, Fraunhofer-Gesellschaft, Corporate Communications; Hanns Heiß, Fraunhofer-Gesellschaft, IT; Johannes Jüngst, Fraunhofer Institute for Industrial Engineering, IAO, Project Management.
- Fraunhofer Heinrich Hertz Institute: Leokadija Sviridova, Project Manager Digital Media (Fraunhofer HHI); Hans-Jörg Raphael, Director of a company (Agency for e-business and communication, raphael GmbH).
- Municipal Design and Survey Unitary Enterprise “Minskinzhproekt”: Sergey Glushakov, Deputy CIO
- National Archives and Records Administration (NARA): Sarah Araghi, Archives.gov Team Leader; Michelle Dozier, Digital Analytics Program Manager; Michael Lingenfelter, NARA@work Team Leader.
- Northern Arizona University (NAU): Jon Anderson, User Experience Design, Interactive Humanics, Inc.; Chris Greenough, NAU Enterprise Web Team Lead
- Palm Beach County Board of County Commissioners: Heather Shirm, Web Design Coordinator.

- Persistent Systems Limited: Mohit Bhishikar, CIO; Shashank Barve, Architect; Madhuri Tambe,Program Manager; Nitin Urdhwareshe, UX Strategist
- Resource Data, Inc.: Julie Collins, Intranet Manager; Brian Walch, HR Director, former Intranet Manager
- Think Mutual Bank: Joan Stiller, Intranet Project Manager – HR Communication Systems; Lynne Ryan, Intranet Project Manager – HR Training and Development
- Department of Transport (Canada): Francine Fournier, Manager, Communications and Marketing Group Transport Canada; Jennifer Green, Manager, New Media Privy Council Office; Irina Krasteleva, Technical Lead, Application Management Services Transport Canada; Anick Rainville, Manager, Communications and Marketing Group Transport Canada; Pamela Stewart, Communications Advisor, Communications and Marketing Group, Transport Canada
- Yara International ASA: Liz McNamara Hundere, Director Digital Communications;

REPORT CONTRIBUTORS TO THE 1ST – 4TH EDITIONS

- ABB: Helene Gunther Merg
- ANZ: Florian Nachreiner and Tamsin Stanford
- Ahold: Randy Tyson
- Air France – KLM: Anthony Moendir
- BEKK Consulting: Arne Folkestad
- Boeing: Ken Becker
- British Red Cross: Andrew Bevan
- Build-A-Bear Workshop: Ken Somogyi
- Burke Consortium: Matthew White
- Chevron Human Resources: Lee Anne Rosenstein
- Cisco Systems: Michael Lenz, Diana Morshead, Sarah Gabriel, Aarti Mittal, Randy Jewell, Kellene Ikegami, JoAnn Wilson and Sharon Meaney
- City of Austin Fire Department: Liz Hargrove and Elizabeth Gray
- City of New York: Marsha Kaunitz
- Cognos: Lisbeth Hansen
- Credit Suisse Financial Services: Bojan Blecic and Urs Buob
- The Defense Finance and Accounting Service (DFAS): Diane "Dee" Crawford
- Dell, Inc.: R. Eric Moorehead, Jay Markunas
- Duke Energy: Martha H. Brown and James H Bowen
- Edens & Avant: Shani Hall
- EMBARQ: Lisa Hammond
- Embry-Riddle Aeronautical University: Tammaye Grissom
- EZ-Filing, Inc.: Art Engelbrecht and Alida Franco
- Erste Group Bank AG: Michael Hafner
- Eversheds: Kevin Doolan
- Goodwin Procter, LLP: Andrew Kawa
- IBM: Peter Ceplenski, Mark Wise
- Idaho National Laboratory: Tina Chapman, Tom Fields
- FIGG Engineering Group: Brad Ruffkess
- Fujitsu Siemens Computers: Andrew Melck
- Government of British Columbia
- Kadant Johnson Inc.: David Leland
- KPMG UK: Iain Simpson
- Kaiser Permanente: Kim Garrett, Ellen Yoffee, Scott McDonald
- LM Glasfiber A/S: Martin Risgaard Rasmussen
- La Roche Ltd: Stefan P. Fischer
- Local PI and Riding and Sons Investigations: Jon Riding, Jeff Ward, Carrie Austin, Martin Hansen-Lennox, Roberto Pietraforte and Chris Binch
- Mars Symbioscience: Lurene Haines
- New Century Financial Corp.: Michelle Cullinan
- Northland Regional Council: Tracey Morris
- North Shore-LIJ Health System: Devon Kelly
- Ohio State University Medical Center (OSUMC): Julie Scott, Michael Burns, Chad Laucher, Chris Finneran, Harry Evans, Linda Ziel, Jenny Sokoloski and Toni Marshall
- Pam Golding Properties: Sophia Karalis
- PeaceHealth: Miguel Ramos
- Pearson Australia Group: Leonie Starnawski
- Piper Jaffray & Co.: Kathy Swanson
- Point Loma Nazarene University: Jeremy Edmiston
- Portland Public Schools: Connie Lysinger
- RICS: Alex Langley
- SAP AG: Dirk Dobiéy
- Saint Elizabeth Health Care: John Stathakos and Ron Currie
- SanDisk Corporation: Ramon Lim, Jude Wertheim, Ann Gormley, Kevin O'Connor
- South African Breweries (SAB): Rosh Sewpersad, and Bluegrass Digital Ltd. (on behalf of South African Breweries): Mark Hawkins
- Sprint: Alicia Backlund, Brent Bowen, and Sally Nellor
- Strategic Logistical Alliance (SLA): Velma Gouws, Danie Meiring, Wals, Linda Wisdom; DC Interactive

• Public Service Initiative: Courtney Campbell, Rueben Bronee, Robin Farr, Kathleen Walsh, Jim Martell and Jonathan Bell • HP Europe: Omar Benaissa • HarperCollins: Joy Zigo • Huntington Bank: Stefan Maisnier, Amy Nichols, Melissa Gibson, LuJean Smith, Linda Brown, and Intuitive Company (on behalf of Huntington Bank) Gerianne Bartocci, Greg Picarelli and Sandy Greene • Immaculata University: Linda Jones	(on behalf of SLA): Hendrik Rust • Towers Perrin: Heidi Siegel • University of California, Irvine: Sonja Elson, Natalie Godfrey, Katya Sadovsky • Vale Soluções em Energia (VSE): Carolina Porto and Anna Riccio • Vattenfall: Anna Arnoldsson • Verizon: Ivy Eisenberg • Vertex, Inc.: Steve Karsch • Wachovia: Dale Bass • Weber Associates: Ed Lanigan • Windana: Drug and Alcohol Recovery: Amanda Kelly

Defining the Portal

WHAT IS A PORTAL?

A Portal By Any Other Name

The words portal and intranet are somewhat interchangeable. One person's intranet is another person's portal and yet another person might refer to the same entity as an intranet portal or enterprise portal. To be clear, we are not talking about portal software or portal platforms (such as SharePoint), as this report is not about portal products. Instead our focus is on the use, usability, and adoption of portal concepts — intranets that look, feel and act like portals.

An enterprise portal is the ultimate integration of enterprise information, resources and tools. The aim (if not the reality) is that all enterprise information and applications that employees need to do their job will be accessed via the portal — some day. That's a tall order, for sure, but aiming for that level of sophistication is the direction things are going. The corporate intranet has grown up and out of its adolescence has emerged a complex, comprehensive, task-oriented organism. That organism is the portal.

In many organizations, the reason the words intranet and portal are used interchangeably is because one often begat the other. However, there is an argument to be made that the word portal should be reserved for those intranets that offer a more technically robust application environment in which to get things done. While sites that simply give employees a place to find information should be called what they are, intranets (in the old school context). Yet, in practice, there is little distinction between the two words.

"In my experience 'intranet' and 'portal' are often used interchangeably," says Leonie Starnawski, online content manager, Shared Services, Pearson Australia Group, "but there seems to be a growing tendency to move away from using 'intranet', as it is often associated with old systems, offering limited functionality."

The corporate intranet was (and oftentimes still is) simply a repository of company information: a place where employees go to find out how to do something. The success of most early intranet efforts resulted in a proliferation of information to the point where the average intranet evolved to become a dumping ground for everything but the kitchen sink (though to be fair, on many intranets you may be actually be able to locate the kitchen sink, or copier or printer on just about any floor of the company's headquarters building).

That doesn't mean that intranets can't have portal-like features or even portal-like functionality. The distinction comes when these features and functionality are fully realized.

"Even at their most remedial infancy, intranets have always acted as portals," says Huntington Bank Intranet Manager, Stefan Maisnier. "Now that portal is just capable of being much more comprehensive. With the advent of APIs and other software engineering innovations the ability to combine data libraries and varying applications within an enterprise information technology solution is greater than ever before and can provide a user experience that is growing ever closer and closer to being seamless."

This distinction regarding technology is important because the technological underpinnings are the reasons portals can exist in their current form. “The technology is catching up to the needs,” says Chris Greenough, NAU enterprise web team lead. “Because of the disparate systems that encompass all industries the portal was envisioned to be the ‘one stop shop’.” Yet rarely has this been successful in the past due to integration limitations.

“Tools have advanced to the point where a fairly non-technical team can create a portal intranet model without advanced design skills in house, and so we took on the project of building a new intranet and migrating all content from the old one in under 18 months,” says Joan Stiller, intranet project manager – HR Communication Systems, Think Mutual Bank.

Intranets Still Matter

As the corporate intranet ages and more companies set themselves on the path from intranet to portal, the lines blur between what is an intranet and what is a portal. Despite a growing trend toward portals and portal-like intranets, certainly not every company can or will make the leap from intranet to portal.

“From what we have seen and heard, we feel the leap from ‘intranet’ to ‘intranet portal’ is not that common yet,” says David Leland, systems support manager. Kadant Johnson, Inc. “Many smaller companies are still struggling with implementing a simple intranet. The most common reason we’ve heard of is because it can be quite technically challenging to develop something that really meets expectations.”

So, while many companies still have intranets and many companies have robust portals, the undeniable trend is toward full portal integration — even if it comes one baby step at a time.

“I would say that the most effective intranets should by now be portals as they are increasingly seen as the most valuable source of information in an organization,” says Andrew Bevan, intranet manager, British Red Cross.

PORTAL CHARACTERISTICS

Our research has consistently reveals that there are certain characteristics that make a portal look, feel and act like something more than an intranet; something more robust, something more functional and something more useful than a simple intranet. So, regardless of what you call it, if it’s an enterprise portal, it will likely have some or all of the following characteristics:

- Scale. Intranet portals are generally larger than basic intranets.
- Sub-site integration. Most portals integrate resources from a range of pre-existing departmental and/or regional intranets, plus in some cases also back-office application systems.
- Wide accessibility. Portals are the ultimate models of inclusion. While information may be filtered through role-based permissions or limited by some other factor, the portal is the place where all points in an organization converge.

- Personalization. Most portals incorporate some personalization techniques, intended to make the vast quantities of information stored in them more easily accessible to individual users. Often, this personalization enables the system to present specific information or access to applications to a person based on an attribute or set of attributes related to their role or responsibilities. Many portals also offer user customization options.
- An expanded definition of what's considered relevant. Many portals provide users with information that is not necessarily work-related, such as RSS feeds of local news and weather.
- Applications. The portal will generally provide a gateway to a range of web-enabled applications as well as information, all delivered through a common front end to cut down on training costs and aid mobility through the organization.
- A gateway to everything. A robust portal should be a gateway to all (or as many as possible) online systems within the organization. If this is accomplished, an employee who has an administrative task to complete or question about any aspect of the organization can find the solution on the portal.
- Common look and feel. The portal should provide a unified view of diverse information and applications, using common navigation and a common look and feel.
- Broad scope. A portal delivers more than just content. It represents a broad — usually an enterprise-wide scope — whereas departments or subsidiaries within an organization may have their own smaller intranets.
- Integration rather than access. While a longstanding definition of portal may once have been gateway, times have changed and the idea of a portal being merely a doorway to other places is no longer an adequate way to describe today's more sophisticated enterprise portals. That idea of portal harkens back to the origins of the term with late 1990s websites that were trying to link varied content in one place with a single sign on. Today's portals are not just about access, but more likely about integration — portal as dashboard from which an employee can run his entire professional work life — from HR to job productivity and beyond.
- More than just software (or a platform). The portal industry has shied away from the term portal in recent years, in favor of more vogue monikers such as "collaboration platform." Regardless of what you call the platform that supports it, technology does not define what an enterprise portal is or isn't.

- Task-oriented. Where once the intranet was a place to store documents, it is increasingly seen as a place to get things done. This shift also encourages employees to use the portal more often. "It [our intranet portal] is very task-oriented and currently houses nearly 50 applications," says Leland of Kadant Johnson, "some of them small and stand-alone, but a growing number are core applications and fully integrated with our ERP system. And as the number of applications in our intranet portal grows, so does its usage."

  One stop shopping. If an intranet is a mall, then perhaps a portal is a department store. One of the consistent themes that emerged when we asked the question: "What is a portal?" is the idea that a portal is both an entry way, or front door, and also as the entity that houses just about everything or at least provides access to everything employees might need to do their jobs.

  "I define a portal as a one-stop-shop experience for users," says Andrew Kawa of law firm Goodwin Procter. "This means that users have a single place to go to for access to all of the firm's enterprise systems and data. The portal ties together this data from the disparate systems into a single, consistent, consolidated view," he says. "The user does not need to know where the data comes from or how it integrates but simply that it's all available in a single location and presented in a consistent fashion with company branding. A portal eliminates the need for 25 different icons and hundreds of bookmarked links on users desktop. It provides quick access to all the necessary information and applications for a user to perform his job."

Also, perhaps in a perfect world, a portal would also have:

- Opportunities for collaboration and interaction. Portals may also offer social collaboration platforms for employees and offer special interest communities for employees to connect with likeminded folks in the organization. Opportunities for collaboration and social communication might also include platforms that provide an opportunity for work-related interactions alongside non-work related interaction.
- Enterprise search: Evolved intranet portals should also offer enterprise search — a search that would deliver relevant search results for various enterprise systems, applications and data sources all in one place. Enterprise search would include knowledge management crawl, people search, videos and digital media search as well as ERP & CRM search.
- A seamless UI: In a perfect world, portals would offer seamless user experience when navigating across multiple systems and applications by providing standardize UI look & feel across the systems.

Whether or not we use the word portal doesn't matter so much as the idea that the corporate intranet has matured and is ready to take its rightful place at the grown-up table. When well executed it becomes a critical tool aggregating all the critical tools and information into one place.

WHAT IS A PORTAL GOOD FOR?

Portals provide a solution to many common enterprise challenges. Many portal projects emerge out of a need to update IT infrastructure and achieving that via a portal seems to make sense. Just as many portal projects are born as companies grow from one stage of enterprise maturation to another. Small companies that grow to a larger, more dispersed organization, medium-sized companies that go through a round of acquisitions or large companies that keep getting bigger and increasingly more global, all find themselves in similar predicaments. They need to aggregate applications and information to serve an information-hungry workforce.

Pam Golding Properties, the largest independent real estate group in southern Africa, started as a small business back in 1976. Over time, it found itself in a situation familiar to many companies. "We have grown from a small business to almost a corporate entity," says Sophia Karalis, the company's web media manager. "We had lots of applications that the business wanted and needed and we wanted to have a portal to house those applications." Florian Nachreiner, user experience architect, ANZ.

Kaiser Permanente, the largest integrated healthcare organization in the US, developed its vision for a portal as an enterprise-wide initiative to achieve "business and cultural transformation" says Kim Garrett, the portal team's user experience lead.
"We are building the portal infrastructure as a framework," she says, "then bring tenants into the framework so they can deliver the business value to the organization, from consistent infrastructure."

At Dell, members of the HR and IT teams who have been slowly pushing for a portal strategy for several years now find that now there is organizational support.

IBM's portal, the "On Demand Workplace" is an established portal that averages 1.7 million hits per business day and was named one of the Ten Best Intranets in our 2006 Design Annual[6]. "The two most compelling reasons for adopting a portal within our enterprise stem from the size of IBM as a workplace," says Peter Ceplenski, manager, W3/ODW user experience. "With 400,000 plus employees and a dizzying amount of information, applications, resources, etc., we needed to provide a clean window for employees to look through to find, understand, and use to help them be effective. However, an aggregation point wasn't enough."

The reasons may vary, but the solution is increasingly the same, an intranet portal, because a good portal can solve a world of ills.

Portals Can Drive Governance

When it comes to aging or overburdened intranets there is a tenancy within organizations to follow the old adage: "If it ain't broke don't fix it." But when the solution for a broken intranet is a new portal, the portal might transform not only the intranet, but the organization as well. One reason is that portals need a strong

[6] *Intranet Design Annual 2006: The Year's Ten Best Intranets*, Nielsen Norman Group, 2006

governance structure to support them, so instituting a portal solution can drive the need for a governance structure that once might have seemed a luxury.

This is what happened at ANZ. "[We had] a lack of governance or a central body to oversee the entirety of the intranet," says Nachreiner. "And instead we had a completely decentralized structure with about 2,000 publishers."

This led to a point where inconsistencies in information and look and feel, a plethora of broken links and dead ends and mistrust in the veracity of information had become the state of the company's intranet. It was then that the "Fix Max" project (Max is the name of the company's intranet) was started, as a pilot, testing the benefits of a centralized publishing model. It made use of the Lean Six Sigma methodology and placed a strong focus on user-centered design.

"Bit by bit, several parts of Max were brought under central governance to be cleaned up, re-written and supplied with a new information architecture," says Nachreiner. "The Fix Max project was a success, proving opportunities for huge savings through the centralized publishing and massive increases in productivity, enabling staff to complete tasks an average of 50% faster and decreasing the number of unsuccessful attempts to find information by almost 70% (results from a benchmark test performed with Australia Retail Frontline staff)."

The success of the pilot project resulted in a permanent central intranet team being set up.

"This team has significantly increased the usability and quality of the intranet," adds Tamsin Stanford, who was managing the pilot project and is now heading the permanent team as ANZ's senior manager for intranet communications strategy. "All in all the cost benefits proven in a pilot project, a super-regional company strategy that includes many non-English speaking regions which cannot be properly supported as well as a plethora of projects that were trying to fix individual shortcomings that could be fixed altogether by looking at the complete intranet environment, were probably the three biggest reasons for setting up an intranet upgrade program."

Portals Can Effectively Consolidate Applications

Goodwin Procter

Goodwin Procter, a 900-attorney, ten-office, international law firm needed a portal to integrate all the client materials (stored in any system across the firm) into a single consolidated view.

What they started with was a host of disparate systems — both custom built and third party vendor systems — used to capture data around clients and cases. "Each system specializes in the collection and maintenance of certain data as it relates to clients and matters," says Kawa.

A separate document management system was used to keep track of the firm's 10,000,000+ documents. A contact management system that integrates to each user's contact folder in Outlook housed all contact data. And the firm's time and billing system was used to track new cases and billable time data.

The list of disparate systems managed by the firm goes on and on: a case profile system, financial systems used to generate invoices and track receipts and write-offs, a custom calendaring system, and so on. And these are only a few of the firm's systems that focus on client and case data.

"You can see how it quickly becomes a burden to determine which system to look into and how to access that system," he says. "This has lead to many questions like: 'Where is the data?' 'What application do I use?' 'How do I run it?' 'What is my username/password to access the application?'"

The portal gave the firm's users a one-stop-shop view across these many applications and data repositories. And it allowed the user to step back from any real knowledge of where the data is coming from or how they are accessing it. The portal has given users an ability to focus in on the task at hand without worrying about how it is being accomplished from the technology side.

"In a single page view they can see data gathered from our document management, finance, CRM and contact management systems as well as all of our custom in-house applications," says Kawa. "In some cases data, as it relates to clients/matters (cases), is retrieved via web services from our cloud hosted applications. The user does not need to know where the data is coming from or how to access it. They know to launch the single icon, which is the corporate intranet."

Dell

Like several other companies interviewed for this report, Dell is a large company with multiple back-end systems and disparate information sources. "We have literally hundreds of content systems, databases, transaction systems, and document management systems," says R. Eric Moorehead, Dell's senior manager, Global HR Web Operations. "We probably built most of the infrastructure that most other companies use to serve their intranet portals. Still, we have the same organizational challenges that everyone else does."

"The new Inside Dell is, by necessity, the ENTRY system to everything else," he says. But it is not the intranet and that is an important distinction. "It is the map to where everything on the Dell intranet is … the stuff that employees and managers need," says Moorehead.

"The new Inside Dell is not the end state, but really the beginning framework of what we need to drive next generation capability for Dell people," he says. "We've had employee and manager self-service for years. Now we need more out of the intranet."

Among the things he says the company needs now are: real-time information that provides real connection of employee communities, just-in-time metrics and data for managers and key business intelligence for leaders.

"'Portal' is most certainly an overused and misunderstood term," says Moorehead, "but if we can agree on anything it is that for the intranet portal to thrive it must evolve with the changing business environment. It's got to enable common channels and features delivering usable and intuitive access to ever-changing information resources."

"We learned the hard way that if the portal goes stale, users lose interest and that's bad for them and bad for Dell," he says. "We can't have that, and the new Inside Dell is our portal answer."

Vattenfall

At Vattenfall the portal project was used as an opportunity to tie together a host of applications shared across the company's workforce. "Among other things, the portal project is mainly about tying together applications that are shared by all employees," says Anna Arnoldsson, project manager at the Vattenfall Group. "The applications were all previously reached in SAP/R3 or through a web interface."

Those SAP and web interfaces brought design consistencies and yet also came with their own set of problems. "The ESS (employee self-service) especially has had a history of difficulties and a poor interface," she says. "Various usability projects took place before the portal project, and one of the most important findings regarding the ESS was that there was a mismatch between the system itself, and the process it was supposed to support." As a result, in addition to the primary application, there were a number of coding add-ons meant to fix "hidden" workflows that ESS designers hadn't initially identified.

All told, "the whole thing was a bit of a mess at one point, with lots of frustration, time spent trying to complete tasks — lots of money wasted for the company and stress for the employees — and troublesome internal billing, and so on, and so on," says Arnoldsson.

Such problems led the CIO's office to look for another approach. "So we did, and we are now 'on the road to recovery,'" she says. Being there entails looking at the problems and potential solutions from a higher level, from both the IT and business-process side, as well as from a strategic perspective, in terms of forthcoming software and revisions from SAP.

Now, the portal is the interface for multiple applications, including an employee self-service (ESS) application, which allows for time and travel reporting, and manager self-service applications. On the front end, users use single sign-on, and once logged on; they have access to a personalized page.

In short, "we are now moving an old problem into a new solution," says Arnoldsson, yet the project is just getting started. For example, a new version of ESS "helps provide the support employees need for managing certain tasks." In other business units, however, the portal "just provides users with a better look — in relation to the old interface — and underlying problems will remain," at least for now.

Still, such projects invariably need to go in stages, and the new look is already a big step forward. "The interface is truly cleaned up and properly based on personas and usability studies. Still, this is within the boundaries of standard SAP and the underlying technical platform," says Arnoldsson. "But hey, you can never really get all that you ask for."

Now, Vattenfall is trying to draw SAP more into its portal-design process. This challenge involves establishing a partnership relationship with SAP — stepping outside of the traditional roles of customer and supplier. "This shift in roles would benefit both SAP and Vattenfall, but things like this take time, and must, I guess." says Arnoldsson. At the same time, however, Vattenfall doesn't want to be too beholden to one vendor for its portal needs. "It is an ongoing challenge."

Portals Connect Information

CISCO

CISCO's Integrated Workforce Experience (IWE) (powered by CISCO Quad, a social software) fulfills many of the functions that portals are so good at. "It allows users to connect, communicate and collaborate with relevant people, communities and information more effectively," says Michael Lenz, director Collaboration Business

Technologies, "accelerating growth, encouraging innovation and creating sustainable productivity.

The IWE program encompasses business process, culture and technology. The goal behind it is to present transactions, conversations and content to users in an integrated and useful manner.

However, replacing all of the applications and content repositories across the enterprise is not its goal.

"A benefit of Quad is that it will allow us to retire the various independent Web 2.0 tools, and smaller content systems. With over 25 million URLs and hundreds of applications our focus is providing a way for teams to integrate services and information from core systems into Quad in the most compelling and productive way as possible is key," he says.

Providing relevance is increasingly important as organizations embrace Web 2.0 technologies within the enterprise. Like many similar organizations, in recent years, a variety of social media applications have been made available to the workforce at Cisco. Included in these offerings are blogs, wikis, forums, Cisco Show and Share (the company's internal YouTube), and Ciscopedia (an internal Wikipedia-like tool).

"Employees loved these tools and were more engaged and agile but we started seeing some interesting trends in our user research," says Lenz. "After successfully unifying efforts on our intranet seven years ago, the design of the Web 2.0 tools themselves were making it a highly fragmented place."

"Formal content was on the main web server, casual content was on the wikis, conversations were taking place across numerous socially enabled systems and transactional applications were not integrated. Employees didn't have a definitive, trustworthy source anymore, and information lived in those tools silos. The use of the typical Web 2.0 tools has run its course; they limited our flexibility as they created information silos."

Given this, it was necessary for the team to take a look at the information landscape and address how they might begin to integrate conversations, transactions and content in a holistic way.

"Quad has changed the game for us. Its 'post model' for creating and sharing content across the collaborative lifecycles is connecting the information to the people who need it. The best part is that we didn't have to replace our core information management systems," says Lenz. "Quad's library and communities are fully integrated with Documentum, our document management system. And Quad works seamlessly with Show and Share for our video capabilities."

Portals Help Communication Channels Evolve

Edens & Avant

Edens & Avant, a US-based commercial real estate developer, owner, and operator, used a portal to change the way information was both organized and communicated throughout the organization.

"We are inundated with data and there is no organization as to how it comes in," says Shani Hall, the company's information platform manager. "We need to get news to the people who need it when they need it," she says. "We organized the site around the information."

The company had an intranet for three years before the planning team implemented a portal. Instead of doing an upgrade, they started from scratch so they could really focus on how to do it right. "We needed an intranet that works for us, not that we have to work for," says Hall. "We decided to scrap it and step back and see where we were."

The problem was that users across the organization had created manual workarounds for nearly every work process or information flow. "As an example, if you wanted to find out who was the property manager for a specific property," says Hall, "it might take you three phone calls to find out one piece of information."

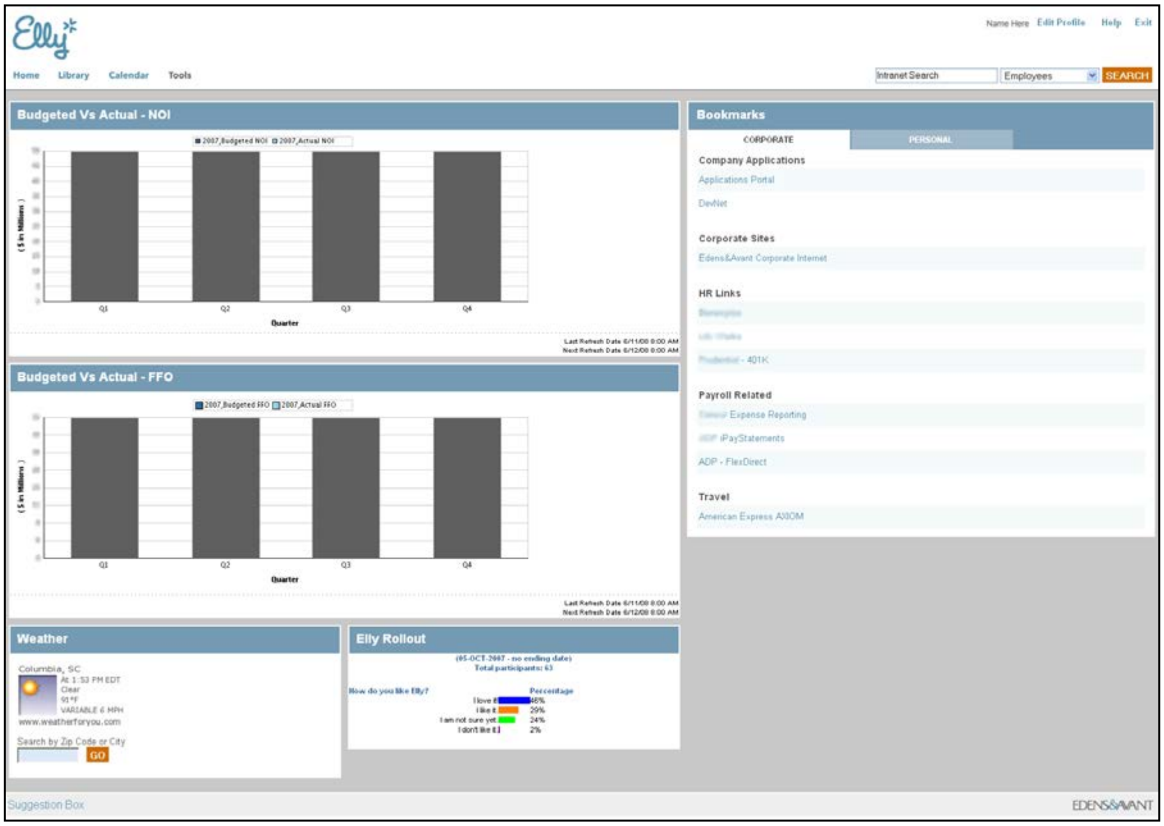
Unlike other companies, whose portal is intended to first aggregate information, then disseminate it based on user role or job function, Edens & Avant needed to aggregate information and tools to make sure users were receiving the same messages and using the same tools.

"We didn't want to segment info," says Hall. "We wanted to present it so that everyone could see the exact same information at the same time. We were trying to move from silos to a corporate view of everything. We were moving from a culture of 'mine' to a culture of 'ours'."

The portal has also enabled employees to use the portal to accomplish tasks that once required outside tools. Everything, including accessing the company's shared drives, is now accessed via the portal. The portal team has put the portal at the center of each employee's workflow so users can now take better advantage of the information that the company has available through various channels.

"Before the searchable industry news on the intranet," says Hall, "They [analysts] had to do a web search. Now we can search what we as company have in the industry news section of the intranet."

"Suppliers and tenants need information on this all the time," she says. So the [developers] created an interface that queried the JDE system. Now they can search the back office ERP system via the portal. "We wanted to create work efficiencies," she says.



The *tools* page on the Edens & Avant portal, Elly. Here users can find company financial data and corporate web links. Users can also set up their own personal links to web pages or directories on the company's network drives.

The Carle Foundation

The momentum driving The Carle Foundation from intranet to portal was the goal of delivering, consistent standardized communication.

"We are a complex, growing organization and our staff function in very different but connected roles and they are disbursed in many different locations." says Kelly Skinner, manager, Internal Communications (Marketing). "So we wanted to first provide a mechanism to better deliver more consistent and effective healthcare to our patients and to better connect our employees through a centralized communication and work channel."

The organization also wanted to enforce its brand and reflect its culture as a large integrated organization. "We merged our hospitals and clinics four years ago and added a new hospital one year ago," she says. "We wanted to improve employee engagement and two-way communication. We wanted to be more transparent and communicate in real-time. We wanted the portal to deliver simple and effective tools that provided an immediate benefit for staff."

With the adoption of a portal came the promise of delivering on the organization's vision for the future where employees would see these portal attributes as a reflection of the organization. Skinner explains how Carle users should feel when using the portal:

- Relevant. "The intranet helps me in my daily work. It provides what I need, when I need it, matched to my specific requirements. The intranet feels very personalized to me. I can access the intranet whenever I want, even from home."
- Comprehensive. "Using the intranet gives me a one-stop-shop experience combining features and tools across the enterprise into one convenient centralized location. The intranet provides a robust content management system that can help consolidate and more efficiently produce, distribute and store content."
- Useful. "It helps me get my job done, saving time and frustration. It is a business tool and interactive — not just a storage space for documents and news."
- Easy-to-use. "I understand how to use it and can quickly find what I need by browsing or searching. I don't need much instruction, whether by using the site or contributing to it."
- Engaging. "I like using the intranet and it's attractive and fresh. I have positive experiences every time I use the site, and I recommend it to other staff. Staff and leadership at all levels and roles use the site, and it provides more opportunities internally for two-way communication and social networking."
- Sustainable. "The intranet project has been set up at the outset with a clearly defined scope, an ongoing measurement plan, and sufficient resources to make it a long-term success. Guidelines, processes and education are put in place to effectively govern the intranet once it is in use."
- Empowering. "The intranet allows me to work better with my team, contributing ideas and interacting with others. It helps me achieve my goals and add value to the organization as a whole."
- Connected. "It keeps me in touch with my colleagues through the organization, leadership, as well as with my other team members. I know what is happening, and can keep on top of key activities and changes."

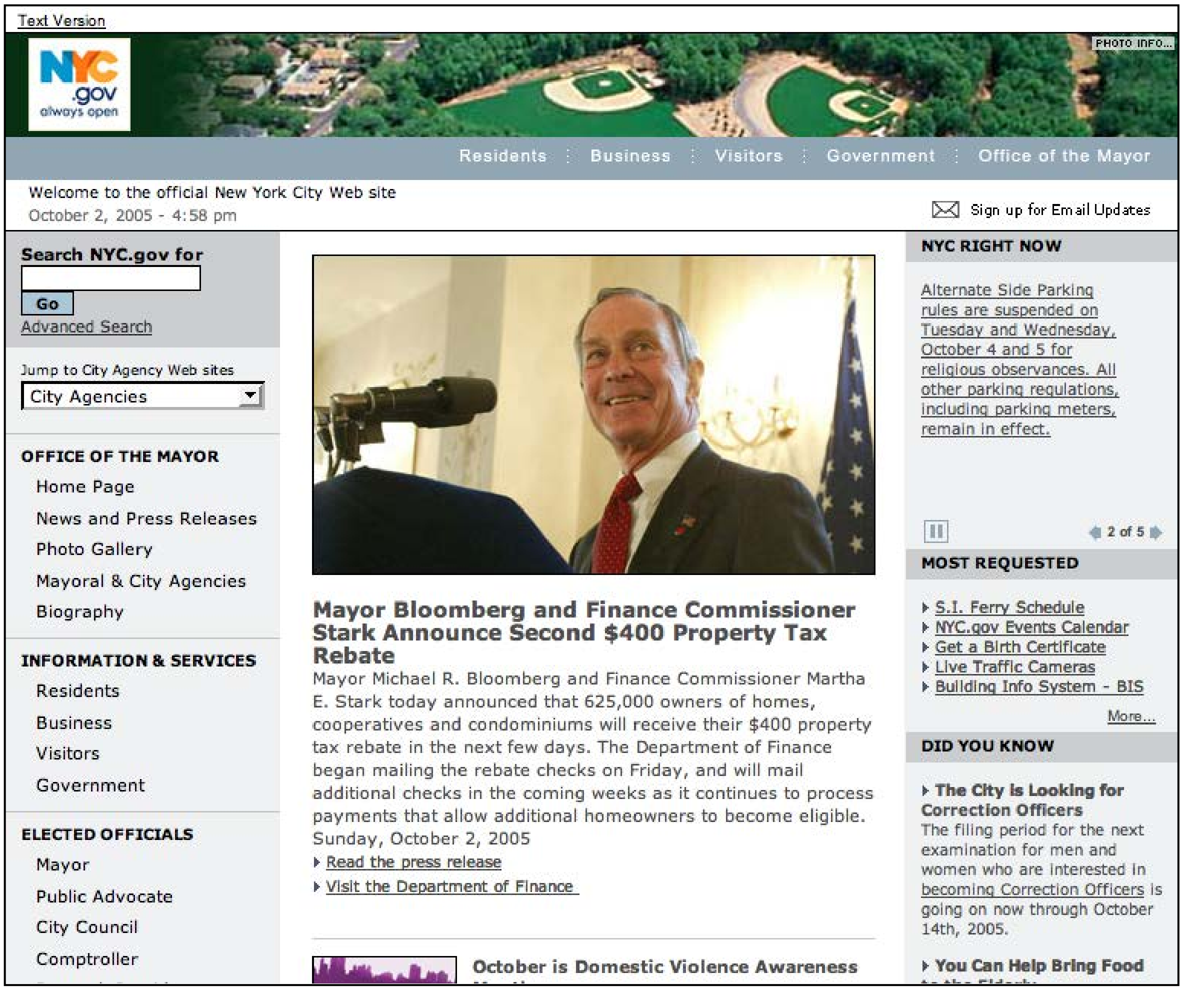
Portals Can Reduce Fragmentation

The City of New York

Another barrier to successfully locating corporate information is fragmentation — of a company's information resources. Often, information gets stuck in different silos, perhaps by department, to the detriment of easy retrieval. In such cases, portals can be a useful way to liberate such information, both politically as well as in a strict information retrieval sense. That's because any portal site should, at least ideally, allow users to find the information they need, perhaps running roughshod over issues of departmental boundaries or ownership, without ever needing to know who is responsible for generating it. (Some notable caveats to this statement involve organizations in the defense sector, but as a whole the ideal holds.)

Having information stuck in departmental boundaries, to the detriment of usability, drove the City of New York to move to a portal. (Note this is a public portal, not an intranet, though given the site's user base, the example is relevant for corporate intranets as well.)

"Previously, the New York City site presented information by department, using a stovepipe approach," says Marsha Kaunitz, the director of enterprise application development for the City of New York. "Before they started, the public needed to know what department was responsible for the service they were seeking — whether it was the Department of Sanitation, the Department of Transportation, the Environmental Protection Agency, or whatever. Some agencies are responsible for areas that might surprise you. But the public doesn't know this, and they shouldn't have to know. We couldn't easily reorganize the city, in reality, but we could do it in cyberspace."



Links on the front page of the City of New York public portal enable users to carry out actions such as requesting a form, paying a parking ticket or making a complaint without having to know which department they're dealing with.

Boeing

Having multiple intranets or portals generally also means extensive duplication of information. That equals duplication of effort, and wasted resources. Different departments may be maintaining their own news, company events, and directories, yet populating them with virtually identical content.

Such was the case at The Boeing Company, which had multiple portals — the result of having multiple websites, stove-piped by different departments, each of which contained large amounts of similar content, such as daily company updates.

So Boeing decided to create one portal for its 150,000 employees, to create a single source of authoritative information in the organization, and to serve relevant information to users based on what the portal knows about them. Examples of such information include an employee's balance of vacation days, and their paycheck. At the same time, access controls — users must log in to the portal — restrict access to Boeing's communities and portlets, which may contain sensitive information. Portal tools make for easier content input, meaning content managers "don't have to know HTML," says Ken Becker, a usability engineer in the shared services group at Boeing. Finally, Boeing can designate a single content source for portlets. This clarity makes content responsibility clear, which leads to quick content updates. Each portlet, however, may serve multiple communities. Thus Boeing reduces the incidence of duplicate content creation.

Likewise, Fujitsu Siemens Computers also moved to a portal because of the amount of duplicate information being generated by content providers, and the technical problems that produced. "The enormous amount of effort and time wasted maintaining several parallel systems, together with the risks associated with running poorly maintained servers convinced us that it was time to consolidate internal web systems," says Andrew Melck.

The portal team also wanted the ability to separate design from content. "The portal technology we chose also allowed us complete control over design considerations while leaving users free to create content on a very devolved basis," he says. Today, "almost everything is in the portal and produced using the portal's content management, governed by a common style sheet."

Another example of the problem of duplicate content comes from the intranet manager of a large financial services organization: "At the moment, different groups within the organization have their own pages, with a lot of duplication. They have their own news, stock quotes and so on. They're spinning their wheels to the point where only a small percentage of their pages have any unique information," he says. This, of course, doesn't help deliver on the portal promise: easier access to information, with fewer duplicated efforts. "The aim of the portal is to cut costs by providing a single point of entry — access to everything through a couple of clicks."

Such an approach can also boost productivity through knowledge transfer, which is what the City of New York was hoping to gain from its portal. "We'd like some exchange of technical information," says Kaunitz. For example, "one agency might select some software for a certain task, and it would be good if that experience could be used by other agencies."

Beyond tying fragmented information sources into a single view, a portal can also replace other forms of communication, such as email, and make mass communications easier. For example, take telecommunications operator Verizon's Ventana intranet portal, which first went live in 2001. Ventana supports Verizon's internal wholesale operations centers, which sell capacity to other carriers. Users include the internal call center, the service representatives that deal with wholesale customer orders, and senior management — a total of 6,000 users. Thanks to the new portal, information for these very different groups — including details on methods and procedures, message boards, tariff and regulatory information, and code lists for provisioning or maintenance — is all available through a single portal. As a result, the corporate communications process has been streamlined, with resulting cost savings. "What used to happen is that we would send reports out to 900 users three times a day by email. That amounted to about 15 million emails a year," says Ivy Eisenberg, manager for e-business wholesale at Verizon. "Now we just post them to the portal."

Note however, that in many organizations, the evolution from intranet to portal is often not a clean break, but a process of discovery. For example at Fujitsu Siemens Computers, "initially the idea was to build a top-level 'portal' that would bring together links to various resources across the company's internal webs," says Melck.

"The longer we worked with the portal technology, though, the clearer it became that this was not just a way to hold top-level content and links, it could also be used to replace all the other intranets we had hanging around. And that's what happened, although it did take a while for the techies to understand that we were being serious."

THE FUTURE OF PORTALS AND THE DIGITAL WORKPLACE

Many enterprise portals are on their second or third generation and beyond and with that maturation comes the reality that portals are not merely IT tools but rather initiatives that have many touch points across the enterprise. What was once an IT toolset to support an information-based intranet has become a company-wide initiative. Portals are expected to deliver all (or as much as possible) of a company's mission-critical tools and information to a user base hungry for streamlined access and information that is both aggregated and segmented according to their individual needs.

As portals take their rightful place within the enterprise its inevitable that the very idea of a portal will be challenged. With each step of maturation portals inch closer and closer to becoming the center of the larger technology ecosystem in which they live. With the rise of the digital workplace, it's possible to imagine an enterprise ecosystem where the intranet portal is at the center, the launching point for all business systems with the ability to integrate those systems into the portal environment. If you see this future, then you see where the humble intranet portal is headed.

While this is clearly not the case across the board, many organizations are beginning to see value in creating a robust portal environment rather than continuing to support disparate systems across a fragmented landscape.

This vision of an integrated technology hub may seem like a distant and unlikely future. But at other companies, it's not such a distant dream. But don't take our word for it:

- British Red Cross: "The intranet is sometimes seen as just another system within a whole suite of systems," says Bevan, "whilst in our recently published five year plan we are trying instead to position it as the center of the IT offerings, the center of the 'digital workplace'."
- BC Public Service: "Our intranet has been referred to as the 'corporate water cooler', says Courtney Campbell, Web manager intranet strategy BC Public Service Initiative. "We're increasingly working to incorporate other technology into our intranet as part of our Gov 2.0 strategy."

- Goodwin Procter: "Before the re-design the intranet was not considered one of our mission critical enterprise applications," says Kawa. "It has now become the driver and basis for any system built or purchased. A key consideration when driving new technology is how it will integrate into our portal. What capabilities does the product or service have and what will have to be custom built. We have formed a consulting services group within Information Technology to assist users in maintaining data and representing their practice on our portal. This group is tasked with understanding the business needs and mapping portal solutions to address these needs and leverage information so that users may 'Work Smart'. The basis of our Knowledge Management department is our portal and leveraging information through it."
- Kadant Johnson: "Our intranet portal is the 'sponge' into which our other technologies are being absorbed," says Leland. "All new development is geared toward it. We are currently working on document management and all elements of it are being designed to work with and fit into our intranet portal, from document scanning to storage and retrieval. We're even starting to work on moving some of our core ERP applications into our intranet portal (for example, customer order entry and customer quoting). As both users and management see the benefits of a single launching point for access to our company information ecosystem, we anticipate nothing but continued growth of our intranet portal."

BACK TO BASICS: PORTAL DEVELOPMENT BEST PRACTICES

Regardless of what you call it or how you define it, implementing a portal project can be a daunting task. Even with off-the-shelf software, existing information (from a company's current intranets or disconnected portal projects), web applications, content authors, buy-in from senior management, and perhaps even years of internal intranet development experience, portals still live or die based on the same fundamentals as intranets. Indeed, best practices become even more relevant for portals, since making all enterprise information and applications accessible via one interface means securing more buy-in, conducting usability testing with more varied types of users, and maintaining greater content and design cohesion.

- Get senior management approval and support. Have executives communicate the importance of the project, explain the strategy and send the message the compliance is critical.
- Apply the same design and usability rigor to the portal as to the internet site. You still have to apply the same design rigor even though your may have a smaller target audience.
- Perform qualitative and quantitative usability studies. Ensure the site meets the needs of users.
- Create style standards and enforce them. Maintaining a consistent look and feel requires well-known, easily accessible standards for anyone contributing design or content, or enforcing its consistent use.

- Develop an approach for web applications. Web applications can be an odd fit, especially if you get involved too late in their development life cycle. By that time, there may be very little that can be done to change any design or usability issues. Early involvement with the development team can help create a more cohesive and usable application.
- Focus resources for the greatest good. Focus on things that large groups of employees, possibly everyone in the company, may use on a regular basis. Not to say that the usability of sites or applications used by a small group of users aren't important. Rather, it's a matter of directing resources to areas where the most benefit can be realized.
- Involve key line-of-business stakeholders. This helps ensure success.
- Build cross-functional teams with distinct expertise. Build a team with a cross section of distinct expertise and clearly defined roles and responsibilities.
- Pay close attention to the author's user experience. Make life easy for content contributors; don't put technological barriers in their way.
- Solicit feedback. Create forums which content authors are invited to attend — either in person or via dial-in. Use regular surveys to gather feedback from end users of the site, and distribute the results to all members of the intranet team.
- Create task-based information architecture. When moving from an intranet to a portal, use the process as an opportunity to rethink an old-school IA based on company structure. Typically, an information architecture focused on what employees need to do their jobs works more effectively.
- Commit to continual improvement. Once a portal is created, its design and information architecture must be tended. Employ usability testing to continually improve the portal's usefulness to employees.
- It's a marathon not a sprint. In many organizations, the evolution from intranet to portal is not a clean break, but rather an ongoing process of consolidating information stores and standardizing designs.
- Even best practices can be company dependent. Exercise good judgment when taking advice. Individual results may vary so adopt all "best practices" (even ours), as a guideline not a rule.

Before embarking on a portal project, also don't forget there are no portal-building silver bullets. In fact by and large, interviewees for this report have said over and over again that portal teams will likely encounter the same types of political, technological, and cultural issues as intranet-development teams always have — only more so. Whatever your definition of a portal, agree on this: the goal of a portal is to get employees the information and tools they need to do their jobs more effectively, period.

Governance

COMPANY POLITICS

A portal project, whether for a large corporation or small nonprofit agency touches so many areas of the organization that it is inevitable that there will be some politics involved. Politics and change management issues can sometimes present far greater challenges to the intranet development team than design or technical issues. Information is power and individual departments may be determined to retain that power for as long as possible.

Today portals seem to be more closely aligned with the business objectives of the organizations they serve, objectives that include enhancing communication and employee workflows, reducing redundancies and improving productivity. Despite this alignment, portal projects still encounter significant hurdles and associated costs, the least of which involve technology or implementation challenges. The higher the cost (in both real dollars and in the cost of resources) the higher the stakes for those involved.

"The cost required to deliver something like this is a big issue," notes Brent Bowen, senior manager of online strategy at Sprint, "but most organizations misunderstand where the costs are coming from. They think technology will solve all our problems." Yet in discussions with Hewlett Packard, Sprint heard estimates that hardware and software may only account for 30% of the costs of an intranet project. "The rest came from changing internal processes, and the costs of supporting the portal. It takes time, and effort, and money, and people."

Political problems have not disappeared since we published earlier editions of this report but these days our interviews reveal a wide range of strategies that companies employ to avert political problems before they cause significant harm, and others have at least learned valuable lessons that will inform future steps. In other words, politics are inevitable; it's how you handle them that determine your success. Engendering a feeling of "we're all in this together" goes a long way toward reducing friction.

"There will be lots of politics that come to the surface during an intranet project," says Lynne Ryan, intranet project manager — HR Training and Development, Think Mutual Bank. "Many hidden issues come to light, not only because of the change that everyone is experiencing, but the content owners are challenged to improve what they have published, and may even need to revise their procedures since the visibility of flaws and strengths has increased."

"There is a never ending critique of the site, and so an approach open to feedback and improvement is key," says Ryan. "Every page of the site includes a feedback path to the owner, and a means to share the page with a friend to answer a question. This has been the best means to introduce the concept that we are all making it better together, and we are all on the team responsible for the success of each page to deliver accurate and timely information."

Develop Goals and Objectives

The Huntington Bank portal team freely admits that politics are part of the package when working on a portal project that touches all aspects of the organization, however there are things any team can do to mitigate the impact.

"It's nearly impossible to avoid company politics altogether with any intranet portal," says LuJean Smith, business segment communications director at Huntington Bank. "There are as many opinions about what the portal should be as there are people who use it."

Her simple advice includes the following:

- Plan. Develop a solid plan that clearly demonstrates the goals and objectives of the site (and how they support overall corporate goals and objectives).
- Get buy-in. Present that plan to the company's leadership team and get buy-in and approval from those leaders.
- Communicate. Articulate and execute the plan to the internal users of the site in a clear and consistent manner.

"If you deliver what you have promised, you have collective support and can deflect the detractors and keep everyone focused on the ultimate goals and objectives for the site," she says. "We're not there yet, but this approach will ensure our future success."

Have Project Backers Do the Evangelizing

While portals offer the potential for great success and organizational change, the presence of a portal alone doesn't guarantee anything. Instead, it helps to have backers, and users, in high places, who believe in the project and are willing to put themselves out in front. With this support the project is more likely to succeed and it might be easier to affect change across the organization.

That was evident at DFAS as the organization began trying to wean employees from email, especially for mass mailings, and onto using the intranet. "Everyone talks about the challenge of how do we reduce emails, and large emails, and email boxes overflowing. Well we went on an aggressive campaign to reduce the number of emails sent," says Diane "Dee" Crawford, director of Emerging Technology Solutions and program manager of the DFAS portal project.

The portal also began targeting another nuisance and bandwidth hog: emails sent with large file attachments. "It was easy, perhaps because we had some executives who were really behind us," says Crawford. Executives didn't just talk up the potential for using the portal instead of email; they policed how others used emails.

"With those executives behind us," she says, "the first time one executive sends a big attachment to all the other executives, it's not long before all the other executives complain and say: 'hey, why didn't you just put this on the portal?'"

Beyond getting different business units to agree that a portal is the right solution, getting executives to back up the proposed portal plan often requires first getting them to view the portal as a strategic system that benefits the organization overall. In other words, portal teams that take the time to explain the portal's business benefits to the executive board and, if possible, get the weight of the board behind the project, stand a better chance of creating a successful portal.

At the same time, senior management will expect to see that the portal team has already done its homework. "The portal doesn't have to be introduced completely by consensus, but the leadership would rather see agreement before we start twisting arms," notes Brent Bowen, senior manager for online strategy at Sprint. "In fact at

Sprint, we have some good people behind us, and that backing has led to the portal being included on the strategic scorecard — the radar screen for executives. Our level of executive support is still nowhere near that of some other organizations, where the vice president team is really driving the project, but it's a lot better than it has been."

Of course involving senior management and keeping them involved requires scarce resources. "We want buy-in from all top-level management," says Connie Lysinger at Portland Public Schools. "At the moment we have a general level of support, but they don't really understand what the portal is about. So when challenges come along they won't necessarily see the need to support the project. I fully recognize my responsibility to market the concept, but fitting that in with everything else is a real challenge."

If portal participation is not mandated by the organization, then buy-in from key stakeholders is not merely a "nice to have," it's a critical component for project success. "Our department (Administrative Computing Services) does not have the political power to advance portal usage," says UC Irvine's Elson.

"The portal team has to do a lot of bottom-up work to push ideas through, since portal participation is not mandated," says Katya Sadovsky. "This also leads to a certain amount of resentment from departments when it comes to spending time on content development."

Her advice for others in similar situations: "Find champions at a higher level to support your cause. Those champions can take the lead to evangelize portal usage and content administration in a way that the department that owns the site cannot do alone."

At Sprint, "After our portal launch, our CIO and our vice president of corporate communications put out a joint letter mandating that intranet site development go through the process we, along with IT, had defined. That support went a long way toward reducing the one-off creation of sites outside our portal," says Backlund.

GOVERNANCE CHALLENGES

The idea of governing a large, complex portal within an equally large and complex organization is probably just as challenging as the actual execution of it. "It's really hard to get all the players to understand their roles, understand the big picture and the part they play, and to get them to carry out their responsibilities in a sustained way," says Skinner of the Carle Foundation's attempts at governance.

Governance presents its own set of challenges and though we can't solve them all, here are at least a few to lookout for when designing your own governance structure:

- The concept of governance is hard to explain. "The concept of governance is nice, but the reality of it on a day-to-day basis is difficult," says Skinner. "It is hard to explain governance in simple terms and hard to not get bogged down by it. Most employees are not reading the governance documents, and I doubt that most of our leaders have read it either. One way that we have tried to make this more accessible is a policy of 'governance in the moment' where we include the standards in practice as much as possible — on the page, in the promotional materials, in our templates, our training, and our interactions with content managers and users. But we constantly have to refer back to the governance and policies when decisions are made."
- You'll have to broker disagreements among stakeholders: Stakeholders from across the organization are brought in specifically for their unique perspectives so it stands to reason that those different perspectives might lead stakeholders to differ in how they view the way things should work. At Cisco, for example, some of the team's stakeholders wanted all employees to be able to create community spaces with no limits, while other stakeholders wanted to approve every community request even if those requests numbered in the thousands.

  "Some of this is driven from not having a real precedent to inform an operational direction," says Lenz. "They are just wanting to do the right thing. It is paramount to have confidence about the integrity of the approach, particularly if you are sharing it with customers."
- It's hard to govern what you don't know: If you don't have a clear definition of what you're trying to accomplish on the portal overall, it's hard to govern that structure. This happened at Huntington Bank. "We don't have a clear definition for what we're trying to accomplish with the site overall so it's hard to govern when you haven't determined what you're trying to accomplish with the site," says Smith. "The other challenge is that the colleagues who are engaged with the site, the execs who rely on the site, don't know what they don't know. I don't think they know what a best-in-class intranet site would deliver. I think that they would be very resistant to us implementing a more strict governance of the site."
- There will be many conflicting priorities: When building a new platform there are always a large number of competing priorities that come from the different stakeholders and sponsors. Each party wants certain features and capabilities to make their day-to-day jobs better, ensure adoption and business value, incorporate past lessons learned, etc. While all these opinions might be valid they can't all be priorities. "While trying to satisfy the stakeholders there is still the need to find the right balance of governance-related features to drive success and ensure those make it into the list of priorities," says Sarah Gabriel, program manager, CBT.

- Managing day-to-day priorities is a juggling act: Resource Data, Inc. deals with issues of prioritization on a near daily basis. "One challenge arises because the intranet is our website, our accounting system, our marketing system, our contracting system, our personnel system, and so on, so it can be difficult to choose which owners' priorities will be dealt with first," says Collins. "A second challenge is the way we actually handle the work. RDI is a software consulting firm, so we have many programmers, analysts, etc. When staff members are between projects, they ordinarily become available for intranet assignments. The small permanent intranet team tries to match worker skill, experience, time availability, and desire to learn new skills, etc., with the work needed, all the while keeping task prioritization in mind. It can be fascinating."
- An Agile approach can help un-stick decision-making cycles: NAU has struggled with the challenge of wanting to meet everyone's needs and ending up meeting none. "In the past, everyone wanted what they wanted and we did not have the resources to get everything done so the bare minimum for each group was accomplished," says Greenough. "In the next iteration, we are going to take a much more Agile approach. We are going to roll out features over time. We are also going to roll out a beta version of the portal even if it does not have all features needed to go live. This way we can get feedback from end users before we completely commit. Hopefully with this approach we can roll more features out and not get stuck in the decision phase."
- There will be trade-offs: "We sometimes struggle with the delicate balance between maintenance and features," says Eric J. Gruber, web developer for the City of Olathe, Kansas. Sometimes there is a desire to build a certain feature, but we also need to balance our time with maintenance and other projects. The web development team is growing in numbers and knowledge, which we anticipate will help address wanted intranet features in the near future and while simultaneously help us to address maintenance needs at a faster pace."
- Getting users to participate is not easy: "The vision of our intranet was to bring it to the point of being a 'self runner,' where everyone in the company is submitting information to the site and collaborating with each other," says Leokadija Sviridova, Project Manager, Digital Media, Fraunhofer Heinrich Hertz Institute. "The reality of our intranet is that after two years of usage not every co-worker is acquainted with the scope of functions and there are maximum 20 frequent content contributors out of 500. Personal profiles have been completed by only approximately 25% of users." Part of the problem is that even after two years users are not uniformly aware of the site's collaboration opportunities, though the portal team has tried to encourage participation through information events, example projects and direct guidance.

THE ROLE OF STAKEHOLDERS

Governance, of course, starts at the top and cascades its way down the org chart. Identifying a champion or business stakeholder who can shepherd the portal project through the corporate gauntlet is important, but so is getting the involvement, buy-in and feedback from people across the organization whose work and day-to-day business practices will be affected by the portal.

"We make them intranet owners!" says Julie Collins, intranet manager, of Resource Data's strategy in dealing with stakeholders. "Because our intranet is so all-encompassing, every senior manager has a section of the intranet that they care intensely about and that affects their ability to succeed. Those are our owners."

"Our president is a sponsor and supporter of the intranet," she says, "so changes are easier to implement. The site is as big as it can be, really. As new automation opportunities are recognized, the intranet grows to handle them. One caveat is if we had a president who was not a big supporter, the situation would obviously be different."

The portal program manager at Duke Energy drives the portal strategy, based on input from the business and in alignment with the company's overall enterprise strategy.

At Huntington Bank "The strategy is subject to approval from the portal executive council," says Linda Brown, colleague communications director. "The portal program management role reports to the Director of Corporate Communications and she reports to the CEO."

Having executive sponsorship can drive the trajectory and momentum of a portal project throughout its life cycle. For example, the BC Public Service portal was initially launched to support the organization's corporate human resources plan. So top executives requested the project and have supported it since the beginning. "It has become increasingly linked to major goals of the organization, including employee engagement," says Robin Farr, director, Corporate Internal Communications, "and is now clearly identified with our goals for the 'employee experience'. It's reflected in our major strategies, including our HR plan and our Gov 2.0 strategy."

Also at Huntington Bank, the ultimate goal of the portal project is to achieve a "world-class" portal. Swinging for the fences like this is possible, at least partly due to the project's high-level sponsorship.

"Our Director of Corporate Communications is driving the world-class intranet strategy and has shared that information with the CEO," says Brown. "We have also had our CIO delegate an SVP level champion to support us on developing this initiative, so it's at the top of the house."

Coca-Cola Enterprises' portal operates with very close ties to the organization's senior leaders, but their participation is tightly and strategically defined so as to derive maximum value from their involvement.

"Since 2007, we have had a digital board in place — called the Communication Council — to govern our portal," says Shahira Elsohly, associate director, IT Social Enterprise. "The Communication Council is a cross-functional, cross-geography body that defines the strategy for our digital workplace tool with the work executed by the digital workplace team."

“We meet four times a year for two hours so the commitment from our senior team to the governance process is eight hours a year,” says Elsohly. “When seeking buy-in and alignment, use this selling point. Few senior executives would deny the chance to invest eight hours a year to improve employee and business efficiencies.”

“The Council is very well attended,” she says, “chaired by two Senior Vice-Presidents; permanently attended by three of the CEO’s direct reports with attendance and support by our CEO or European President. It meets four times a year and our agenda is split between strategy build and project report back.”

It All Starts with a Champion

Without a high-level project champion to provide strategic direction, portal projects can languish or be blown in whichever direction the prevailing wind is blowing.

“Before the re-design we did not have much of a strategy,” says Kawa of law firm Goodwin Procter. “Information Technology implemented SharePoint and integrated several applications into it. Although sites were created for each department, they consisted of simply a brief description and some useful links.”

So that was the extent of the portal.

Before its most recent re-design the City of Olathe, Kansas had a much smaller intranet and there was not much momentum for it to grow. “The organization was smaller when the first version of the intranet was built in 2000,” says Gruber.

It took a project champion to propel it forward once it was built.

“It was a case of ‘build it and they will come’,” he says, “and after it was done the Information Technology Services director liked it. It grew from there.”

At CISCO, ownership is a partnership between three entities (Business, IT, and a product group) “The Collaboration Business Technologies (CBT) team (within Corporate Communications) and the Communications and Collaboration IT (CCIT) team partner on the delivery of IWE powered by Cisco Quad,” says Michael Lenz, director Collaboration Business Technologies. “In addition, there is a third layer of partnership with the Enterprise Collaboration Platform Business Unit that is responsible for the external Cisco Quad product that we utilize for IWE.”

Yet even with a complicated relationship between three departments it’s the partnership with senior members of those organizations that has made a world of difference in the portal’s success.

“There were definitely challenges as we initially learned how to best work together,” says Lenz. “However, cross-functional partnership at the senior levels in the teams has been instrumental in driving the priorities in a way to target specific business needs and increase adoption. In addition, our Communications and Collaboration Steering Committee, the overseer of this program, consists of executives from each of the main business functions across Cisco.”

This involvement means the program receives critical participation and guidance across these functional areas.

“The C&C Steering Committee meets monthly, discusses a range of topics related to our use of Quad,” he says. “This includes: governance, communications (internal), adoption, upcoming releases and challenges. Due to the enterprise-wide reach of the program, the steering committee is critical to our ability to set joint priorities, drive the strategic direction and ensure functional alignment with the business objectives. One of those strategic priorities for the platform is to help drive the transformation of Cisco into a Dynamic Networked Organization (DNO)."

Quad is at the center of this transformation.

Finding the Right Champion

Perspective is everything and sometimes members of an organization have to be new to have that perspective. At Huntington, Smith has found that the executives who have the most valuable vision are those who are new to the organization.

"I think those executives who have worked somewhere other than Huntington, with a different intranet site, are much easier to get in buy-in from to improve our intranet," she says. "They know what our site isn't and what it should be."

"Those executives who have been at Huntington for 15+ years and haven't experienced (outside of Huntington) what an intranet site could be see improvements we've made over the past year and they're happy with them," says Smith. "Aside from our inability to give them their personal site and get their item front and center, they've been relatively happy with what they've got. Our big challenge is explaining to these stakeholders how much better it could be."

Communicate Early and Often

Stakeholders can make all the difference in a portal's success but their involvement hinges on how well the communication channels function. Communicate early and often is a good mantra to adopt for just about any portal project. Some portal teams learn this the hard way and the second time's a charm for Idaho National Laboratory's portal team.

"The initial deployment of the portal was performed with no involvement from key stakeholders," says Tina Chapman, INL's portal services manager, "which caused some friction. If we had an opportunity to do it over again, I wouldn't recommend going that route."

"Getting the governance committee involved in our latest redesign effort was very effective as it helped to mitigate some of the conflicts between IT and Communications," she says. "We've learned a lot through the journey."

Project champions can help ensure a project's success, but they can also serve as great ambassadors. UC Irvine's portal team effectively leveraged a well liked, persuasive vice chancellor and other key stakeholders to present the new portal and encourage participation.

Also, when there is an (inevitable) political squabble, it's important to consider it might not be political as much as a misunderstanding or lapse in communication.

"On average, stakeholders are as interested in the good of the organization as you are," says David Eldridge, web developer, City of Olathe, Kansas. "When they see the value that you are interested in bringing, they will want it. Sometimes I think that when they fail to see things your way, it is often not a divergent view, but a failure of understanding. So, if you can take the time to make what you are saying understandable and accessible to non-domain-experts, they will likely grasp it and support you."

WORKING TOWARD A GOVERNANCE MODEL

Portals are complex and their tentacles reach across and into so many parts of the organization that it seems like a strong governance model would be a baseline requirement for any viable project. Yet, governance is the number one thing portal managers still struggle to get started, get "right" and maintain over time.

Our survey this year revealed that governance is the number one topic about which companies are looking for guidance.

Certainly governance is a very difficult thing to do and an even more difficult thing to do well. So, despite the eagerness of our survey respondents to learn what an ideal governance model looks like, few of them had suggestions on how to achieve one.

Bake Governance into the Plan Right from the Start

It seems the first hurdle to establishing an effective governance model is getting people within the organization to understand why they need one in the first place. So the first mistake many organizations make is to build the portal first and worry about how to run it later. This doesn't work.

"Governance should not be an afterthought but should be integrated into all features of your platform automatically," says Sarah Gabriel, program manager, CBT. Technical features tagged as providing the needs of 'governance' are often the first to be de-scoped, yet also the first to be requested when things are not going quite right. For example, realizing there are community spaces existing that are getting very little usage due to their natural life cycle and no automatic way to delete them or auto-archive them."

"Governance takes time to build and plan," she cautions. "While key drivers need to be considered in order to balance the desire to govern everything, it should start with the platform's core architecture and spread into all aspects of the platform. It is important to think strategically and consider long term implications of not providing seemingly mundane, governance-related features that don't appear to have a big impact on ROI."

"For instance," she says, "within a community layout template, offering the feature to lock a navigation portlet in the same place seems like a low priority compared to other functionality that is wanted. However, not providing this can result in each community owner placing the navigation in a different place on every community, thus degrading the consistent experience across the platform."

Even more challenging, she says, is governance in a collaborative environment or social workspace. This is a challenge many companies are facing and one in which we cover in more detail later in this report.

Trying to Achieve Balance at Cisco

A balanced governance model is one that is flexible enough to accommodate different situations. If there's one thing that is painfully clear on a portal platform, it's that one size will not fit all. Achieving balance was one of the key challenges on the implementation of Cisco Quad.

"The goal for governance of this platform has always been about balance," says Gabriel. "We knew early on that a single model would not meet the wide variety of needs across an enterprise as large as Cisco and we continually find ourselves looking for the right balance between these four areas:"

- Flexibility: Where is the sweet spot between flexible governance and command and control, and how can we offer a few different options based on need?
- Transition: How can we help guide our end users to relinquish control of the highly managed intranet they are used to and move toward valid integrity based social collaboration?
- Empowerment: Where are the opportunities to empower our end users and stakeholders to take ownership and accountability in creating a governed environment?
- Automation: How can we automate and embed governance so it just becomes a reality versus an afterthought or extra step?

Bringing the Right People to the Table

Deciding whom to bring to the table is sometimes the most pivotal governance decision. Teams that do this well usually err on the side of inclusion.

Governance at Canada's Department of Transport includes a high-level committee called the Web Board. The Web Board is a high-level committee that sets direction and makes recommendations to Transport Canada's executive committees and its working groups around the intranet and other web properties. Members, from each area within TC, ensure that changes and key information are shared both up and down within the organization.

Beneath that board is a working group that consists of a client contact from each of the major business units.

Site management is centralized, so technically speaking the site "belongs" to the communications group, however that sort of approach is not how the organization views governance. The Department of Transport treats governance as an inclusive structure, rather than exclusive.

"It's easy to set direction unilaterally," says Transport Canada's Jennifer Green, manager, New Media, "however, that's never good for business. This means that collaborating and motivating the governance groups is key. Having the right people at the table, those who can decide and those who can influence, is also key, and we're definitely working on this."

Though the communications group acts as site owners, Internal Communications and Web Services serve in a co-owner capacity. Decisions about the site direction are made in consultation with the governance groups, but they often involve a lot of preliminary discussion between the two key teams (Internal and Web) before they make their way to the governance groups and onto the site.

"The benefit in essentially centralizing the ownership is that the groups that manage myTC have very little vested interest in pushing their own content," says Green. "Both provide services to the rest of the department, so they have little of their own to publish on the site and can take an impartial stance when it comes to deciding if something is a right fit for the intranet or not. It really helps that both teams put an emphasis on employees first."

While business units do jockey for position and profile, the creation of client liaisons as part of the working group means that there is someone who sits in those business units who can be trusted to help understand needs and to communicate decisions.

"The relationships are give and take," she says. "Sometimes a business unit is happy with decisions made; other times, they aren't as happy, but they are always given options."

Transparency is critical because the agency's governance is still a work in progress.

"We need to be clear about what needs to be done, meet regularly, and provide materials to brief up and across," says Green. "That's what's needed to make sure that governance is working, and we're still figuring out how to do that."

Figuring out the ongoing day-to-day of running the portal can be challenging but at least the team has had buy-in from high levels of the organization right from the beginning.

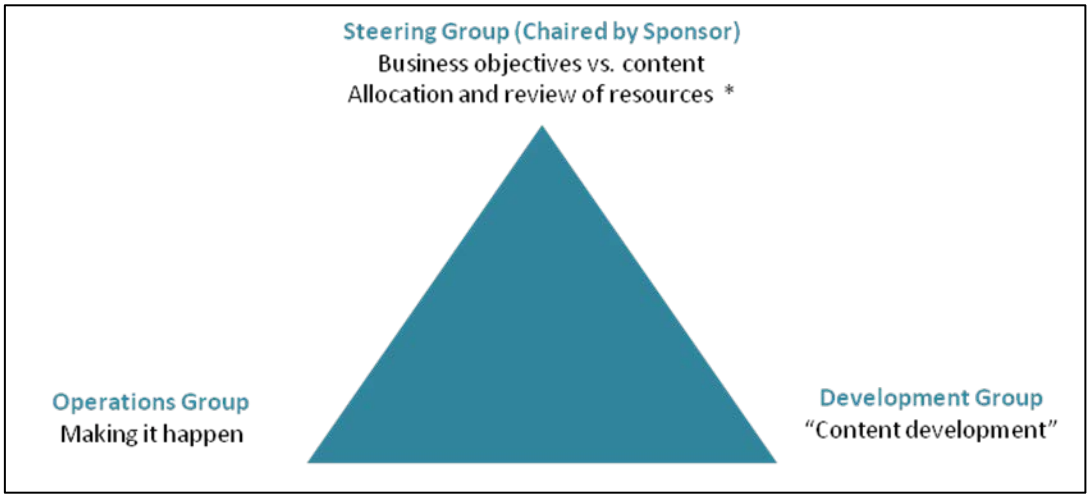
"Given that there was an interest in reducing spending and efficiency, it became a win-win to redesign the intranet into a single portal," says Green. "Dismantling regional sites and reducing the content footprint by 90+%. It didn't hurt that a conservative estimate of time wasted on the site and in managing duplicate or old content equated to $6 million dollars per year either."

Defining a Governance Structure at the Carle Foundation

The portal team at the Carle Foundation adopted a formal governance structure for its portal. They have defined roles, responsibilities and workflows. The governance team is a multi-division, cross-functional team with representation from several groups and individuals involved in oversight of business goals and allocation of resources, operations and functionality, and content development and curation.

Core roles and responsibilities of the team include:

- Oversee content migration
- Develop standards for the look and feel of the intranet and update as needed
- Develop (and update) training materials for content owners and authors
- Conduct periodic evaluations to test the intranet's performance in meeting its business goals. These evaluations will be conducted by asking department owners to do a self-audit of their own sites once a year and a peer audit of another department's site once a year. The company will also be conducting a yearly employee survey of the site, measuring against how they have accomplished business goals. All of this feedback will be funneled into yearly development plan for the site.
- Promote awareness and use of the intranet
- Request and prioritize additional intranet functionality, as needed



This illustration shows the three business areas involved in the Carle Foundation's governance structure and each corresponding area of responsibility.

Skinner outlines the governance job descriptions at Carle (the hierarchy of these positions is illustrated in the chart below):

- Executive sponsor and executive champion: The executive sponsor and executive champion understand and advocate for the value of the intranet. They support initiatives, funding, business decisions, corporate strategy and communication to the Steering Committee. They also ensure the intranet is meeting corporate business goals and objectives and possess the ultimate decision-making authority on governance, policies, and resources.
- Steering Committee: This group is comprised of senior leaders across the enterprise and they are responsible for the direction, vision, policies and standardization and prioritization of projects, and the site's future evolution. They set expectations, define and review overall scope and milestones, and allocate resources. They give voice to business needs, concerns and issues and approve intranet governing policies, standards and templates and adjudicate as needed. This group serves as a vehicle for troubleshooting and conflict resolution which in turn provides a forum for minimizing the politics of ownership.
- Intranet owner: The intranet owner is responsible for overall program management of the intranet, including branding, support and training, scope and direction. This role coordinates the strategic and operational duties involved in oversight and works in conjunction with the IT Support Group and Steering Committee. The intranet owner develops and recommends intranet governance policies, standards and templates, and manages periodic assessment of the site. This person also drives adoption and platform evolution and prioritizes new initiatives and requests and assures the overall integrity of site, quality of the content and metadata associated with the content.

In addition to these three core roles, the following teams also have duties and responsibilities associated with governance:

Management team responsibilities:

- Strategy: The management team is charged with keeping up with best practices and prevailing developments in web technologies, standards and requirements, and applies these to promote continuous improvement.
- Design:
  - Analyze site information, including usage trends and statistics, undertake usability reviews and recommend aligned improvements
  - Perform analysis tasks including: stakeholder analysis, user profile analysis, information structure analysis and contextual inquiry
  - Perform user interface design tasks
  - Assist in the development of procedures, policies and other strategic documents
  - Evaluate the usability of the intranet, identify problems experienced by users and suggest possible improvements to build the site into a more effective knowledge management tool
- Content:
  - Administer the ongoing operation and development of the content management system
  - Coordinate, write and maintain information and knowledge resources to ensure the CMS is kept up to date and supports users of the system
  - Develop and deliver training, both group and one-on-one, and provide advice and operational support to content authors
  - Coordinate, write and maintain site content, ensuring compliance with policies and standards and make sure content supports the intranet objectives
  - Work with departments to assist and encourage adding information to intranet and to ensure content on the intranet is current, pertinent and meets enterprise information needs
  - Approve content from content authors prior to publishing on enterprise sections of the site. Review other posted content on non-enterprise sites to ensure it meets standards for “writing for web” and the company’s intranet style
  - Build sites for areas without content authors
- Change and communications:
  - Coordinate the development and delivery of information projects within the intranet environment

    - Coordinate the network of web content authors and owners
- Technology:
    - Work with IT staff and vendors regarding intranet matters

IT Support Team responsibilities:

- Play a role in the upkeep and upgrade of the intranet by building and maintaining infrastructure and application development for SharePoint
- Assign access and ensure that the site stays live and accessible
- Implement many of the upgrade projects that are defined and approved by the Intranet Governance Team
- Serve as SharePoint administrator and liaison with other systems (Active Directory, Lawson, etc.)
- Provide recommendations for metadata and search to meet intranet goals
- Provide system experts for affiliated internal and external applications and systems
- Provide technical and help desk support to users

Intranet Advisory Group responsibilities:

- This group is a cross-functional and cross-organizational pool of intranet end-users representing all roles and locations. They are used as a sounding board for the intranet and help drive adoption and platform evolution.

Content owner responsibilities:

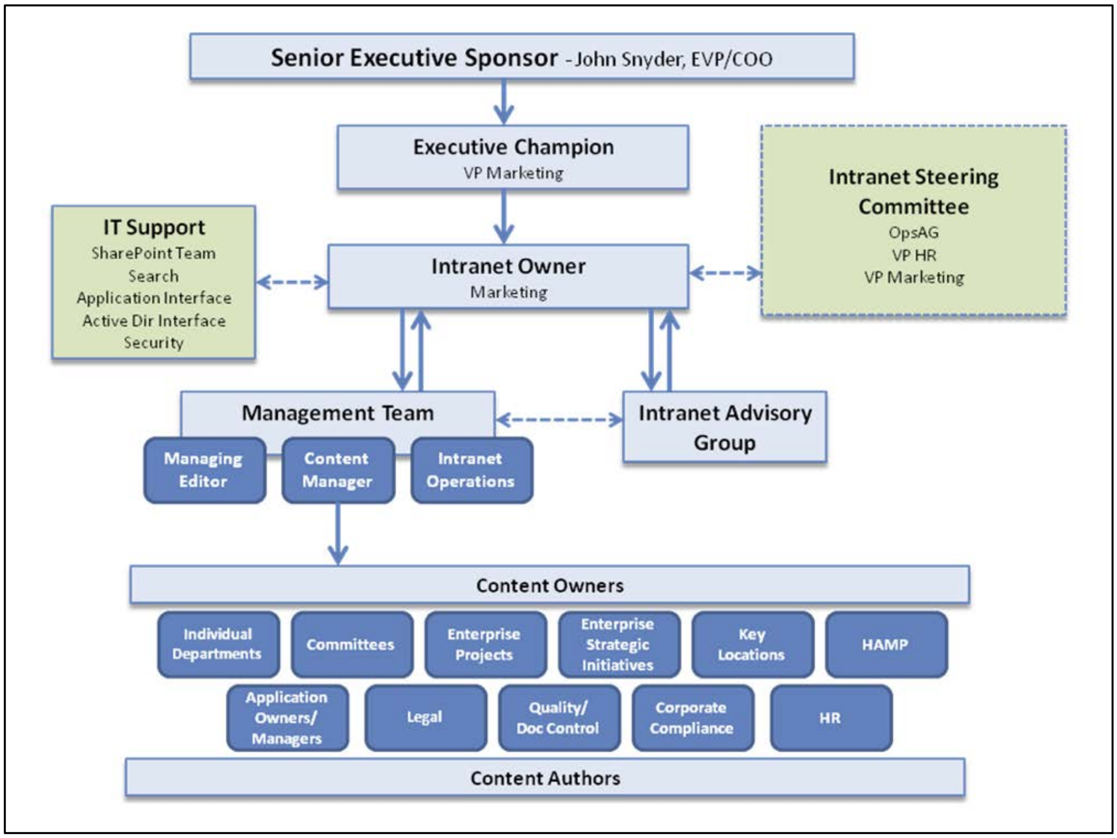
- Department or functional stakeholders will be appointment and approved into this role. They are initially responsible for advocating adoption of the intranet within the organization. Additionally, they will maintain the integrity of information on their department or team sites, essentially taking on the role of "site manager."

Content area owners' responsibilities:

- Take their instruction on direction and policies from members of the management team
- Meet regularly to discuss such topics as the effectiveness of particular features, the adoption of the intranet by members of their departments or teams as well as compiling suggestions of future enhancements or projects. These suggestions will be passed on to the Governance Team for consideration.

Content Authors

- Report to the content owners and are responsible for typing (or copying) the content to the intranet.
- Post content to the site after an approval process has been completed or as needed



This is an organization chart showing the breakdown of the Carle Foundation's governance structure.

Layers of Governance at Duke Energy

The Duke Energy portal has many layers of governance. Portal program manager, Martha H. Brown explains what that means. "As program manager, I manage the strategy and I am the business owner for the portal," she says. "I also manage the portal standards and facilitate the governance model."

This includes participation from the following areas of the organization:

- New Media team: Oversees and governs the user experience. They also train new content owners and review sites to ensure compliance with standards and consult on how sites can add more value, keep their content up to date, and implement new technologies or social features.

- Site managers (throughout the business): Responsible for the content on their sites
- Internal Communication Department: Manages the content on the homepage
- Portal steering team (made up of VPs and directors from Communications, HR, IT and Marketing): Helps prioritize enhancements based on business value and helps manage organizational and technical impacts of enhancements. This group meets monthly.
- Portal executive council (made of Sr. VPs from Communications, HR and IT): Approves the long-term strategy, allocates funding, and advocates for portal initiatives with the senior leadership team. This group meets quarterly or on demand.

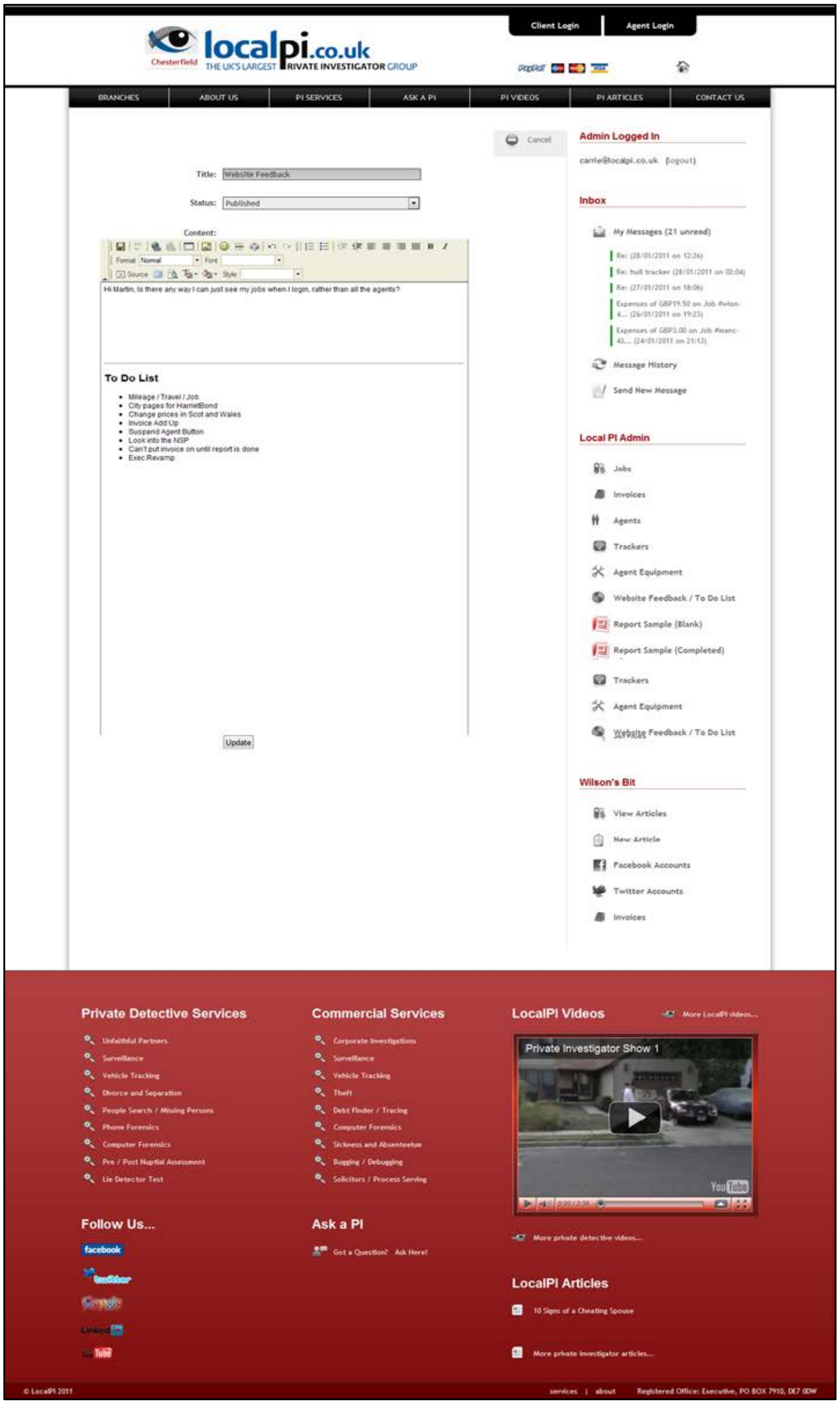
Operating with Little or No Governance

At OSUMC the organization is still figuring out how the portal will be governed. Until just before this report was published, the intranet had not had a formal governance structure in place, but soon after a Governance Committee was formed. The committee is a collaborative steering group of leaders from Strategic Communications and Marketing, IT, Human Resources, Legal, Operations, Nursing, Physicians, College of Medicine, Research and Strategic Planning/Ambulatory Sites. The feedback thus far from the leaders has been positive. "They enjoy learning more about the intranet and the issues that the work team faces," says Julie Scott, Public Relations Director, OSUMC.

The portal continues to operate with a representative group that assists in making day-to-day decisions. "A working group of individuals from Communications and IT meets weekly to continually review and provide updates to the site," she says. "We have developed guidelines to assist in making day-to-day decisions on things such as photos, video, news, workflow and additions to the Workplace section of the homepages. Page templates have also been created to ensure consistent visuals," says Scott.

An informal governance structure for a small company or a small portal may work in ways that in a larger organization would not. Within a large company, structure and planning are necessary, while in a small company the governance can be loose and very personal.

"We are a LLP and have a senior management team of five," says Jon Riding, senior partner of Local PI/Riding and Sons Investigations, the UK's largest private investigation group whose portal serves as an intranet and extranet/public portal, supporting the workflow of the entire organization from initial case inquiry to final client billing. "We jointly decide what is needed from the portal and how it is to be implemented. It's all quite informal. We take feedback from case agents and staff who use the portal on a daily basis. I personally meet with the web developers three times a week to discuss our wish list and oversee the development of the portal."



Agents and managers use this page to provide feedback about the Riding and Sons Investigations portal and offer suggestions for improvement. It is checked daily.

When a Lack of Governance Creates a Window of Opportunity

It might be not typical and for sure it's not a best practice scenario, but Minskinzhproekt's Glushakov reports that for the second time in his career he was able to make a real breakthrough and create something that quickly became a core IT asset in his organization simply because there was no formal governance in place.

"Sometimes weak governance or lack thereof is a blessing," he says. "In our particular case, the executives were not aware of the intranet portal benefits or its implications. In fact, we were avoiding usage of the word 'portal' to eliminate premature questions."

Changes in the company's management gave him and his team a free hand to do what they deemed optimal for the business, however they chose. Without organizational oversight they were able to bypass numerous time-consuming steps associated with formal project or business plan development.

"Instead," he says, "our working plan was as simple as: a) install a portal; b) create a few business process-oriented applications; c) make this data available via an internet browser across the entire organization. In other words, introduce new technology and demonstrate all the incumbent benefits, rather than start building 'an organizational intranet portal'."

It was also relatively easy for him to substitute formal project reporting with the live demo sessions. "In fact," says Glushakov, "we had only a couple of introductory training sessions, which we used to explain the concept behind the portal to the leading specialists from all departments and to make them comfortable with the new ways of processing data and sharing information."

This situation is certainly an anomaly, but perhaps it serves as a good example of how a skilled team with a vision can see a void and fill it.

Glushakov says, "There were people within the IT unit pretty well familiar with the business processes and they understood the needs of the business units while the business units did not understand how their needs could be solved. Thus, with each project deliverable we released, they were discovering better ways of doing familiar tasks."

The team was able to make efficient inroads as they addressed important daily tasks and made new tools immediately available for everyone to see on the intranet site.

"Once again," he says, "instant availability of new tools and data across the organization replaced formal reporting mechanisms, which are an essential part of any governance model."

"We were striving to build a compelling business case (even though it covers only one operation), which is better and quicker than trying to develop a formal business or project plan," says Glushakov.

"For example," he says, "let's say the management needs to monitor a certain activity, which involves data input during the planning and execution stages. This is performed by one unit (planning, scheduling, monitoring execution) and used to be done in Excel spreadsheets and multiple specialists from various departments depending on specific projects (visiting construction sites on planned dates to inspect required project deliverables) requires extra effort to track all these people to find out about pending and completed tasks. We take current data, create a working prototype, collect feedback and arrange the demo. At this stage we are usually capable of showing more features and benefits than was originally expected. After that people have no choice other than to accept the change, which quite often is met with approval if we take into account their needs."

Building a business case in this manner — one specific operation at a time — results in specific, immediate wins that build a foundation for success over time. Yet this kind of freedom, however, is not without challenges. When you operate in stealth mode you are also sometimes operating as a one-man band.

"The biggest challenge," he says, "in absence of collective decision making by a committee of stakeholders was the personal responsibility of the person in charge (Glushakov), who single-handedly acted as project manager, system analyst, information architect, etc."

FINDING AN OWNERSHIP MODEL THAT FITS

A well-designed intranet presents a unified view of information resources to an employee, regardless of departmental boundaries. Yet behind the scenes, at least initially, the picture is not so pretty. In fact most companies considering an intranet portal project have a legacy of existing intranet projects — some successful, some failed — spread amongst various departments and regional entities. The problem is especially pronounced in larger organizations. For example, in an organization such as the U.S. Navy, there may be thousands of existing systems of varying size and sophistication. So, one key question that almost always emerges when building a portal system encompassing so many different organizational functions is: Who should have overall responsibility for the portal? Should it be Internal Communications or IT, or HR? Or, how about designating the business area or department that already contributes the most information to an existing intranet?

There is no one answer that can be applied across organizations. First of all, granting just one department "ownership" can be fraught with potential problems, regardless of which department that is.

Whichever business group takes overall control of the portal will inevitably impose its own priorities. Inevitably, those portal priorities may not be shared by a majority of users. For example, if IT is given overall responsibility, it may be tempted to emphasize technically interesting solutions, at the expense of features that users actually want. If the portal initiative is borne of a Corporate Communications initiative then the portal may be perceived as merely a communications channel for the organization. The British Red Cross encountered this situation.

"It hasn't helped the perception that the intranet is just a communications channel where documents are stored," says Bevan. "But through involving MIS and more online tasks this perception is changing."

Just as important, if the portal ownership lies within the Marketing or IT functions alone, those groups may lack the perspective of the business lines; perspective that is necessary to identify and address the business change required to effectively implement a portal for the whole organization.

IT or Not IT?

In some organizations it's just as important who doesn't own the portal as who does. "It has been a great benefit that the Enterprise Portal Program is owned by the business and is not an IT function or program," says Kaiser Permanente's Garrett. While business ownership has some benefits, it's also fraught with challenges.

"The key downside to not being an IT program is that we have to invest in maintaining a highly collaborative and cooperative relationship with IT regarding technical aspects and resources, and compete with other projects for a common pool of IT resources," she says.

Most companies find that the portal should not reside solely in IT, for varying reasons: some political and some practical. And for some companies, IT ownership signals an unwanted tilt toward the technology side of portal development. However, it's a balancing act because clearly every successful portal is built upon a solid foundation of technology, so even if the portal is not *owned* by IT there must be a good relationship established between IT and the owning department. Otherwise, a vital component of portal operations will surfer.

Communications Takes Charge

There was a time when some combination of IT, marketing and HR was the governing partnership running the portal. That combination of ownership shifted in the previous edition of this report and has remained over time as a split (or at least a partnership) between Corporate Communications and IT, with IT playing a logical (and necessary) custodian role: providing consulting on technology decisions and supporting the portal.

At Duke Energy, Corporate Communications is the current business owner for the portal. "In the communications area, we are more strategically aligned with like-minded advocates for new communication channels, such as social technologies," says Martha H. Brown of Duke Energy. "And this alignment has helped the portal refine its strategy and structure its governance model."

Ownership by the Communications Department has been pivotal for the portal serving the Government of British Columbia's Public Service Initiative. "This ownership has been a really positive thing for our intranet," says Farr. "It's linked the intranet to communications and employee engagement, as well as collaboration, innovation and productivity. As a result of this ownership, the site is connected to our strategic goals rather than being driven by a technology solution."

Northland Regional Council also houses its portal staff within the Communications Department. "Having ownership within the communications team means that the focus stays on the user rather than on the technology," says Tracey Morris, online communications officer. "IT people are not content focused."

Others agree with this sentiment. LM Glasfiber's Martin Rasmussen says locating the portal outside of IT helps facilitate some of the softer values of communication and collaboration. "In IT I could imagine it would become tilted toward application development; more of a portal, but not as much as a communication tool," he says.

So, moving the portal out of IT and into a department such as communications is a well-worn path to improve the image and reputation of a portal. It is also generally acknowledged that portals succeed better when they are not perceived as a technology solution. Portal ownership reinforces that message.

"Over the past year, the Corporate Communications Department has become more engaged and has increased the site's relevance significantly within the company," says Smith. "The Corporate Communications Department also has helped to drive a planned transition to a new CMS that will enable improved control and functionality. To be successful long-term, IT support will need to be dedicated to the site, preferably within the Corporate Communications Department to ensure consistent access to the support."

Governance Through a Joint Partnership

While some organizations place ownership within a single department joint ownership has its advantages. Keeping an equal partnership between different departments means two sets of stakeholders have input on decision-making.

"Our portal, though a cross-functional effort, is owned jointly by ITS and Communications," says a representative from a Canadian nonprofit organization who requested their participation in this report remain anonymous. "This ownership model has worked well for us as it ensures that both major aspects (internal communications and underlying technology) are taken into consideration when big decisions need to be made."

"The cross-departmental web presence team is led by both departments, so when issues arise, they are aware of adding these issues to the monthly meeting agendas to be dealt with in a timely manner," she says.

The portal team at Ohio State University Medical Center (OSUMC) has also benefitted from cross-department portal ownership. "Because it is an internal communication vehicle, OneSource is owned by Communications and Marketing," says Scott. "However, there is a strong collaboration between Communications and IT with decisions being discussed and agreement reached between the two groups."

The OSUMC intranet works because it is a joint collaboration between the Communications and Marketing Department and IT.

"We've been fortunate to have had this collaboration for many years but the respect for each team has grown greatly in the last year as we developed the new site," says Scott. "The collaboration has allowed the site to improve for the better because each department has been able to bring their expertise equally to the table."

Representing Interests from Across the Organization

While many portals continue to work well under the auspices of a single or joint department ownership model, the most successful portal projects involve representative stakeholders, from across the organization. Cross-functional business owners or steering committee members are often present at the table alongside portal team members during key planning and development milestones. Ideally these or similar teams stay together over the long term, to chart the ongoing growth of the portal. For many companies this group approach works best because it ensures cross-organization buy-in for portal initiatives and guarantees that each area of the business is represented on the portal.

While this type of arrangement is ideal in theory, it can be difficult to administer, even in a small organization. While in larger organizations, just creating such a group will already necessitate tough political decisions about who's represented, and who isn't.

For example, in the city of New York, there existed, in total, 43 main agencies, covering areas such as transportation, sanitation, administrative services, and consumer affairs, plus another 30 ancillary agencies, including the mayor's office. From these, the portal team picked five key agencies to participate in the advisory board.

At Sprint, Backlund says, “The portal team went out and pulled people from four or five of the main corporate sites, plus some organizations that had good information about what was on the intranet: all the large stakeholders. We have a cross-functional governance team of about 25 people now. Meeting quarterly, they’ll provide a lot of input on future direction.”

SAP designated one team as the central business owner for the portal: IT’s Enterprise Business Services Corporate Portal Team, but they don’t work alone. Distributed teams in all lines of business and regions, some smaller some bigger, participate in the portal. Each of these distributed teams are led by a portal lead who is responsible for content, target audience, defining requirements and gathering feedback for business-specific projects. “All portal leads and SAP IT (my team) form a so-called Portal Business Group (PBG) that meets regularly to define and decide on standards, guidelines, changes, priorities, etc.,” says Dirk Dobiéy, head of Enterprise Business Services at SAP. “The PBG is moderated/facilitated by the Corporate Portal Team.”

This approach has yielded many benefits for the portal. It has: provided strong motivation across the organization, helped facilitate global acceptance, facilitated a smoother rollout and eased the decision-making process.

Despite the success of this distributed approach at SAP, there are still challenges. “It is sometimes difficult to get larger projects of cross-functional value through the budgeting cycle,” says Dobiéy. “And the quality of specific areas [of the portal] vary depending how committed a line of business is.”

Sometimes the distributed oversight model can create new challenges even as it eases others. Dobiéy’s advice: “Make it a collaborative process but also make sure it is a top management priority.” This buy-in from above can greatly affect how participation across the organization plays out.

Make it Like a Mall

More than one company we interviewed referenced a shopping mall analogy when describing their portal. This comparison has particular resonance when thinking about governance.

“Make it a tool for all,” says Dobiéy. “Engage with the business. Don’t allow everyone to build his or her own intranet. Make it the mall in which everyone finds a shop. I love the mall metaphor,” he says, “Because it shows our philosophy. Centrally we provide service, standards and guidelines (as with a mall that provides global services to each retail space, including: information counters, restaurants, parking facilities, etc.). However, our lines of business own the ‘revenue of their shops’ as they make sure their products (content, user experience, etc.) sell in the marketplace.

He says the best way to do this is to manage it jointly by defining strategy, projects, standards and guidelines in conjunction with the business. “Make governance a service not a power battle over control,” says Dobiéy.

Those companies that reported trying to develop a portal in isolation also reported the most problems in getting it implemented and accepted across their organizations.

Tend it Like a Garden

Influencing stakeholders and gaining widespread buy-in are important, but those are only the first steps in a long process. In addition to getting people on board you have to have to simultaneously be developing strategies for sustaining that engagement over time. Portal projects are often long-term or even perpetual. They must be tended over a long period of time. Long after the initial excitement dissipates and perhaps after the initial team disbands the portal needs continue to grow. Sometimes portal projects have to compete for funding, not just once, but over and over again in order to sustain development and ongoing improvements.

Kaiser Permanente's portal team is small, but its reach is wide across the organization by way of the Helen Zane, the executive director to whom the portal team reports. She has created a cross-functional governing body with a senior leadership representative from each of the major business units. That governing body functions in an advisory capacity with regard to portal strategy, direction, and priorities. Yet, "it is still challenging," says Kim Garrett, Kaiser Permanente user experience lead. "Typically, we have widespread buy-in but that doesn't guarantee sustained funding. People are theoretically in favor of it but we didn't have the right senior leadership attention (to get the funding)."

"We are finally on the CEO's radar and able to speak directly to issues that are salient to him, she says. "This has been critical. It's very much about influencing other people. It's sales is what it is."

Bringing Businesses into the "Mall"

A few companies we spoke with have portals that started as HR-only sites. These companies are creating a framework that other business functions can fold into, but use the single department approach as a way to ease the organization into the portal concept and facilitate buy-in. This approach is what Kaiser Permanente's portal team refers to as a landlord/tenant analogy or shopping mall approach.

"We rolled it [portal] out with a single line of business," says Kaiser Permanente's Garrett. "We are building the portal infrastructure as a framework, then we bring tenants into the framework so they can deliver the business value to the organization from a consistent infrastructure."

"We build the mall and they bring their businesses into the mall," she says.

Dell's intranet portal project started as an effort to update the corporate directory and has grown to include both the main intranet portal and the new corporate directory. After several unsuccessful attempts in recent years to get approval for a project to replace the intranet portal, the team built a proof-of-concept to demonstrate its potential value. "We had funding for the directory, and simply leveraged those resources to show how we could do both," says Moorehead, "We said to the governance committee: 'this is what we are about to do. This is what we need. They said: 'get your pilot up and running and come back with a globalization and sustaining plan'. That's just what we did."

When we interviewed him, Moorehead and his team were rolling out the pilot to 5,000 users and making plans to return to the funders to try to get the organization-wide rollout on the company's roadmap. Dell has since launched the portal in the Americas region and is concluding the corporate directory production pilot in preparation for its global launch.

Even for companies whose portal strategy is both aggressive and far-reaching, they often take a phased approach. SAP did this when moving from version 1.0 of its Corporate Portal to its recent release of "Enterprise 2.0."

In Dobiéy's words, version 1.0 was: "One single corporate portal as a global and individual access point to information, collaboration and application services." And with release 2.0 the company's goal was to "make 1.0 more appealing and brand consistent and enhance well-balanced community and 'Enterprise 2.0' features."

STAFFING

Portal is a Job

In conversations with portal teams, the issue of staffing comes up as a priority, nearly as often as the issue of governance does. Specifically, many staffing challenges revolve around the difficulty of securing adequate resources to dedicate to the portal and have their actual job function be (at least in part) the portal.

The biggest challenge by far is that many portal teams are comprised of staff whose jobs include portal tasks, but they are not officially outlined in their job descriptions. They are just expected to "fit them in" along with their other work.

When someone is included as portal staff, from steering committee members to content authors, make sure their portal work is part of their job function. Otherwise, when their "real" work ramps up, portal work will fall by the wayside. For example, this happened at Vertex, Inc.

"Because it was a grassroots thing [the portal] people were enthusiastic at the beginning and volunteered to work on it but when real work ramps up no one has time," says Steve Karsch, senior web systems analyst. "The problem was that the group that contributed to [the portal project], it was not really their job. It was an extra thing so that when their real work ramped up they fell away from the portal project and the content got stale."

The Big Challenge of Small Teams

Intranet teams are notoriously small, so having enough dedicated resources and having the right mix of resources is a perennial challenge. It's hard to imagine writing this or any report related to intranets and being able to say: "staffs are large," "teams are fully dedicated to the intranet" and "money is copious." So teams learn to do what they can with what they have. Some do that amazingly well.

"We did this with a tiny team and in a short amount of time," says BC Public Service's Farr. "Because we saw the vision for this — an interactive intranet to support employee communication and collaboration — and figured out a way to make it a reality."

Here are some examples of portal teams making do with the limited teams they have:

- North Shore Health System (NSHS): "Resources are always an issue, and we have worked with a very small team since the very beginning," says Devon Kelly, intranet manager, North Shore-LIJ Health System. "We have only recently expanded slightly, to include a portal manager, a project manager and a web content editor, all reporting to the AVP of the Web Department. We are also supported by a vendor for all infrastructure and in-depth functionality projects, and so on. We continuously need more resources seeing as the portal grows, so does the demand, so does the project requests etc."
- OSUMC: "The group is just large enough to cover the work necessary to keep the site current, troubleshoot and help provide strategic direction," says Jenny Sokoloski, project manager, OneSource. "Like most workgroups we have to carve out time to evaluate the site, brainstorm about next phase etc. and that can be challenging."
- BC Public Service: "Currently our web team consists of one web manager, one developer and two web analysts," says Campbell.
- Ministry of Citizens' Services. "Our content creation and communication is supported by our director of internal communications, a community manager a creative strategies group which includes: one manager, one editorial advisor, one writer, one videographer, one graphic designer and two communications strategists. It is a good mix of roles. It has been very useful to have in-house web development team for custom on the fly development, maintenance and support."
- Duke Energy: "In addition to my role, we have two full-time resources in New Media," says Brown. "We have supplemental resources in our User Experience Team that get involved on a project basis. We have one full-time person who responds to tickets and triages requests for both the portal and our external site (duke-energy.com). Within IT, we have a team that supports the overall SharePoint environment. However, no members of this team are allocated to the portal on a full-time basis."

Chevron's Human Resources team is also tiny, consisting of only a web strategist and two web developers. "Yes we need more help!" says Lee Anne Rosenstein, web strategist, HR Communications. "I would like a web producer, someone who can become intimately acquainted with specific sites and be their champion. We have so many sites and 1000+ pages; they all have subject matter experts but don't get the attention they should have as far as new features, etc."

Making the Case for More Staff at Huntington Bank

Given the size and allocation of most intranet teams it's not surprising that nearly everyone who responds to our surveys says they need more staff. Whether it's to maintain the portal better, properly plan and execute timely enhancements or to fulfill the seemingly nice-to-have functions such as measurement and analysis, one thing is clear: there is never enough staff to go around.

The sad reality is that portal projects compete like every other enterprise priority for limited money. So, when a company makes decisions about where to increase staff, the portal has to demonstrate its value alongside other enterprise initiatives.

It's not for nothing that Huntington Bank would like to significantly beef up the portal staff. They know a portal is only as good as the effort put into supporting it and there is only so much a limited staff can do. So, while the staff is limited so will be the level of service the portal offers. It's simple math.

"You can't say you want to be world class and not put any dollars toward it," says Brown. "In that case you just have to be in the class you've always been in."

The quest for excellence requires manpower as they learned at Huntington Bank. "Ultimately if we're going to have a best-in-class intranet site we're going to need a bigger team," says Smith. "There's just no getting around it. But we have to determine if that's something Huntington wants and we have to prove the value of it."

"I don't think we're going to be able to make the case for the expansion of staff until we have a site that has functionality that shows significant ROI for the business," she says. "If we stayed with the status quo with our site as it is today, I think the staffing is actually adequate. But shame on us if we keep status quo, because the site needs dramatic overhaul to be what I hope it will be some day, and if it becomes something else it's going to need more support."

So, what's the dream team?

"I would say we would probably need an additional two to four full-time equivalents (FTE) to really make a significant improvement in colleague engagement and in colleague satisfaction with the communication they receive via the intranet," says Brown. "I think ideally, one thing we need is a content editor focused solely on the daily content. Another thing we need is a web developer. Another person I think we need is someone who would be in charge of our internal social media to monitor and drive two-way content and if we had a CEO blog they would follow up with the CEO and post that content. They would also handle interactive polls and surveys."

It Takes a Village — At Least at First

While many portal teams are small (in operation), it is often the case that the team building the portal can swell into dozens of people across many roles.

"We had 25 people at the project's peak, says Irina Krasteleva, technical lead, Application Management Services, Transport Canada, "a combination of temporary help, contractors, and salaried staff."

Their skills varied, as did their seniority and level of experience, but there was a blend of business analysts, database support, web developers, web writers, and project support. Key players included:

- The project manager: made the project stayed on track and on budget
- Four business analysts: worked with the TC client groups directly to look at their technical requirements, business needs, and their content offerings
- Five content writers and editors: ensured that the content on the new site was written in web-friendly format and helped break down the silos between organizations and regions

- Technical project manager (or lead): oversaw the technical milestones and activities as well as made sure that the business and technical teams were communicating regularly
- WCMS architect: made sure that the static content generated by the WCMS and the personalization layers were integrated seamlessly
- Three web developers: built all of the pieces that made up the myTC site, working within the WCMS, WET templates, and the various programming languages to make everything come together in an integrated package
- Database developer: ensured that the Oracle components were operational and plugged into the WCMS and myTC where they needed to be
- Google Search Appliance developer: tightly integrated the Google Search Appliance with all parts of myTC, both static and dynamic

Utilizing Outside Resources

Portal teams look to outside resources to fill the gaps between what they can provide in house and what's necessary to get things done. Outside agencies, consultants and vendor teams are used to augment the skills available to work on portal projects. The goal for many companies would be to drop the vendors all together, but at many companies that will never be the case. Outside help is used to fill a variety of roles. Here are just a few examples:

- OSUMC: "We used outside help to assist in the design of the new site," says "Sokoloski. "And to help us initially sort content for the eight portals, which was then tweaked based on user focus groups. We used outside resources from the university for usability testing."
- Vale Soluções em Energia (VSE): "We outsource the conceptualization of institutional campaigns and the development of electronic banners, hot sites, flash illustrations," says Denise Santos, VSE IT Department. "We also use these agencies to map necessities for the intranet and develop software and functionalities that our IT Department cannot supply internally."
- British Red Cross: "We have a support contract with third-party vendor who are expert on Oracle ECM and who also do new development work for us," says Bevan.

Service contracts are common, giving internal teams a reliable set of resources to pick up the slack in accomplishing the regular maintenance work required to keep the portal humming along. "We work very closely with a local web development company, who are on a regular contract to service and maintain the portal, and make changes as required," says Riding. "I meet with my web designer three times a week and he is contracted to do 30 hours every week for us."

Portal teams are glad for the assistance provided by vendor resources, but most express a desire to reach the point when roles would be handled in-house.

"Our vendors and technical partners have continued to support our business since the launch of our portal, for the purpose of implementing new processes, measuring the success of the project, evaluating future opportunities for enhancements and developments and improving our in-house skills to enable us to operate in the future in a vendor-neutral state," says Pearson's Starnawski.

Adding outside resources to get a site up and running has a ripple effect as internal resources are usually needed to support the supplemental staff. This can strain the internal team these contractors were meant to support. This happened when Think Mutual Bank added consultants to its team.

"Using added hours with consultants increased the number of hours required by IT," says Stiller, "and this was difficult to predict and also fell inside and outside of the project plan. As we went live for users, we were in migration between two intranets for over 10 months, and we wanted to move as quickly as possible to reduce the confusion over where to look for information. Adding the consultant hours to improve the implementation improved adoption and migration, but caused unplanned workload for the Intranet Managers/Project Managers and the IT team who supported the project and production sites."

"The project became 50% to 80% of the Project Managers' workload for about 18 months,' she says. "Additional Content Editors were enlisted and trained, and during migration and this took up 50% of their time."

WINNING OVER USERS

If you build it, users won't necessarily use it. All portals face a common problem: user acceptance. No matter how good the new portal interface or how intuitive the information architecture; if people are unhappy with how a new portal is introduced, they'll likely resist using it. Low usage, meanwhile, equals a poor return on investment. And if this happens, the portal team may run for cover.

Most users prefer that which they know how to use. So while a new, slick-looking intranet with high usability scores and buy-in from department heads may, to an objective observer, beat a legacy intranet, hands-down, make no such assumption when it comes to employees' preferences. Users who have become very attached to the structure, navigation and look and feel of their own (sometimes inferior,) localized intranets can resent both surrendering these environments to the over-arching portal and now having to conform to company-wide standards. So, tread carefully when transitioning users from one system to another. If the transition from local intranets to a corporate portal is handled poorly, a company may have a serious problem on its hands.

Take a Gradual Approach

Techies love change, but most business users hate it. For them, the long-term benefit from changes seem remote, and in the short term, change means expending effort to get used to new methods. That's why many companies recommend gradual change, since users will be more likely to embrace it. Such an approach is also realistic. Unless a company has the resources to build a whole new portal system in parallel with preexisting systems, a gradual migration over to the new portal is often the only option. As Verizon found out, however, this approach can also create problems.

Initially, individual departments were given a lot of autonomy to run their own content areas. Then, however, the portal team began establishing more firm standards for such things as naming, and document style. As Eisenberg says, "it could be tricky, if it means telling individual departments to change the way they do things." Then again, after Verizon made those changes, it was recognized as one of the world's top 10 intranets in our 2005 Design Annual[7].

Offer Training and More

When rolling out a portal, always think of the users. "Your employees really don't understand all of what you do and why we've done what we've done. So put yourself in their shoes," says Boeing's Becker. "For example, are they confused by the portal and how to use it? Give them a chance to go through some training if they want to."

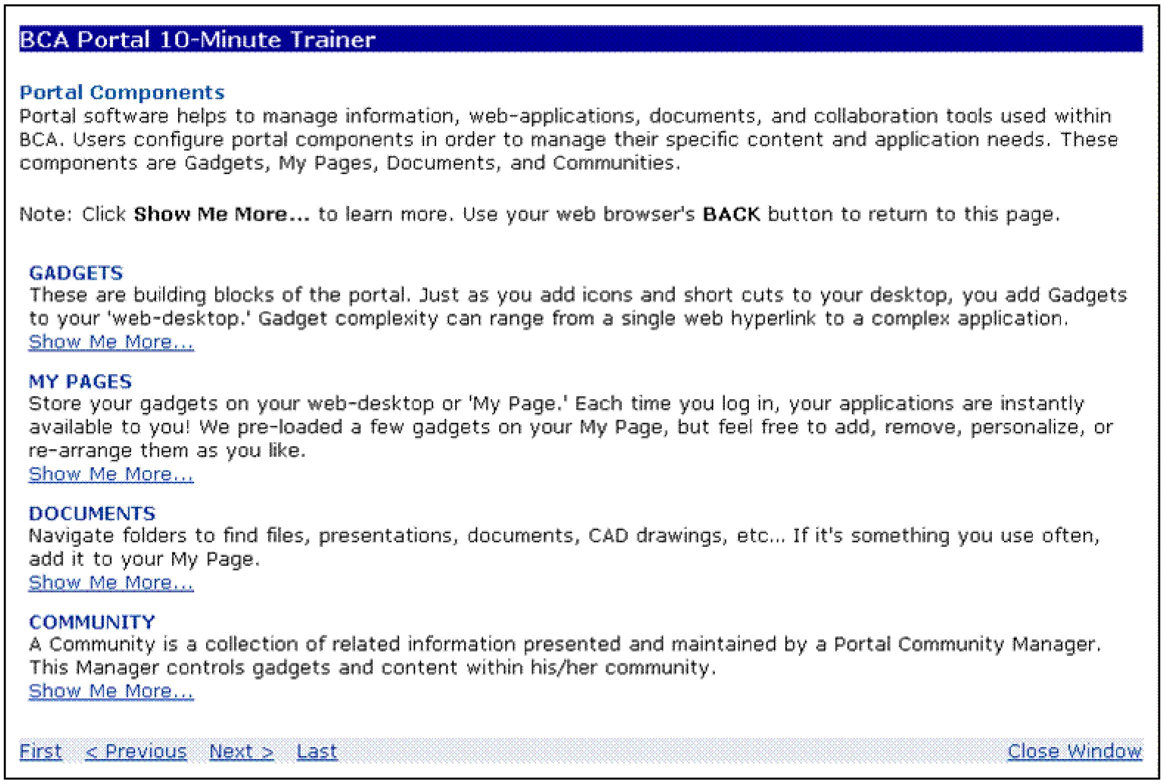
While Boeing offers online portal training, the portal team makes sure such resources are quick and easy to use. During a usability test of the portal, half of the participants in the study chose to use the online trainer to learn more about the portal. Even so, many of those users only took a quick glance at the main training page.

"The best lesson learned, for me, was that so many of the employees who used this trainer went no further than this page; they just looked over the high-level content and moved on," notes Becker. "So, don't assume that employees read every word of online training. Employees are busy. Make the quick, easily accessible, training information helpful. Don't require that employees dive too deep."

In addition to online portal training, Boeing also offers classroom training. "Portal technology is complex," he says. "So you need to provide effective training options and help employees develop an accurate mental model of the portal."

UC Irvine's portal team held town hall-style forums in an effort to introduce users to the new portal and explain, "What is a portal?"

[7] *Intranet Design Annual 2005: The Year's Ten Best Intranets,* Nielsen Norman Group, 2005



Boeing offers employees multiple types of portal training, including this online tutorial, designed to be easy to get to and quick to use.

In our 2002 Intranet Design Annual[8], Credit Suisse Financial Services (CSFS) shared stories about some of culture shock and problems that resulted when business conditions required the company to suddenly migrate 20,000 employees from its familiar intranet over to a new portal system, with a new look and feel based on a different intranet in use within the company.

True, the new portal had a clean and attractive start-page design, and it was one of the winning intranets in our report. Yet users accustomed to the former intranet still struggled to acclimate to the unfamiliar system. The intranet team had to work overtime to improve usability for these users, via features such as personalization.

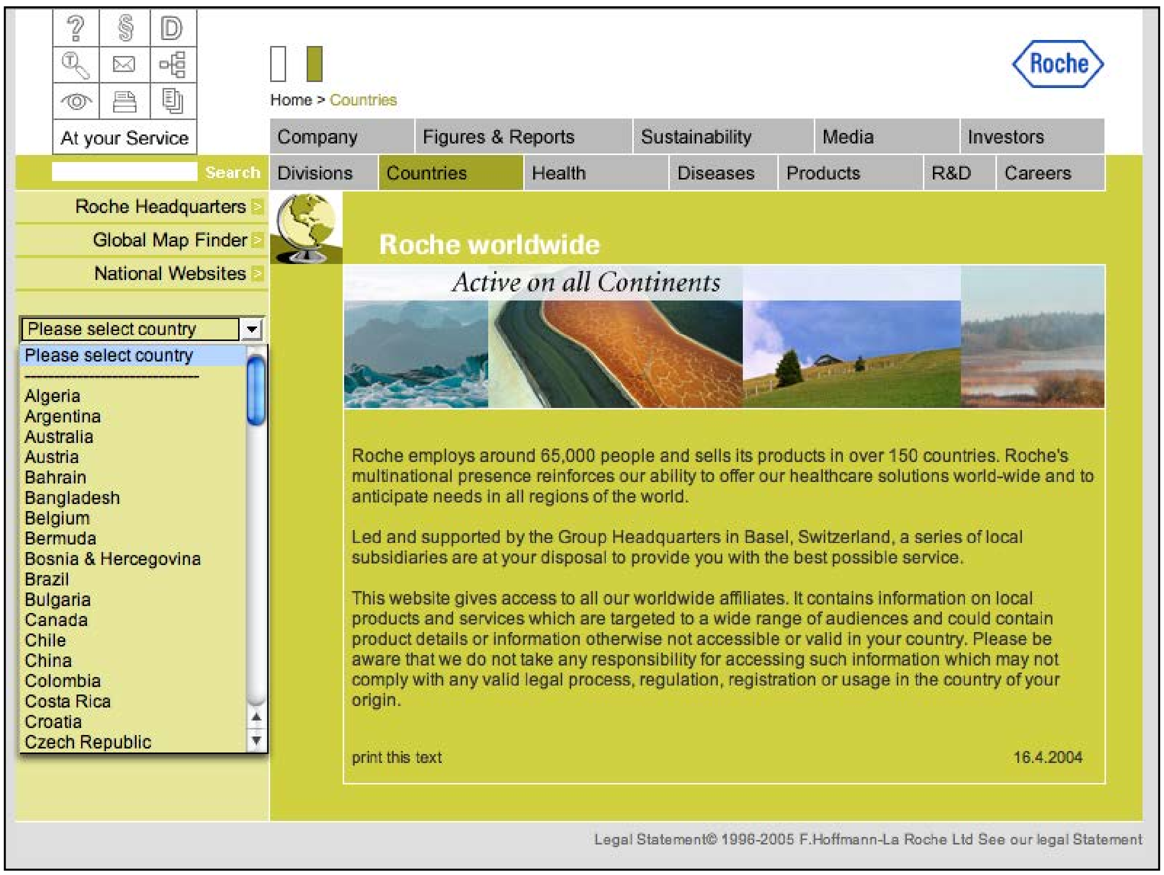
At Roche, keeping the portal running smoothly means handling potential problems proactively, “mostly by involving people” in the process, says Stefan P. Fischer, head of new media communications in the Corporate Communications Department at F. Hoffmann-La Roche Ltd. The company started doing this from the very beginning of the portal project. “Part of the initiative, shaping its scope, was to engage business owners on international and local levels in the process,” notes Fischer. Keeping them

[8] *Intranet Design Annual 2002: The Year’s Ten Best Intranets,* Nielsen Norman Group, 2002

involved from project idea conception to portal delivery was important, he says, since they would be “ambassadors and facilitators once the initiative had to be implemented by the businesses.”

While the Roche portal is public-facing, it’s an interesting example since the company has approximately 500 differently managed sub-sites, owing to the regulatory need to present relevant information (especially concerning pharmaceuticals) on a country-by-country basis.

The corporate portal team took time to visit different business groups and countries. “We developed a consulting and monitoring concept: visiting the major countries in the process helped directly, talking to people face-to-face oftentimes brought a solution to questions, and developing a ‘community of interest’ and a ‘community of practice’ enabled people to find solutions outside their direct area. And it helped them to connect with peers in other countries,” he says. Since the completion of the first big phase of implementation, the Corporate Communications group has continued to be the mastermind behind portal communities to ensure employees continue to be able to find information they need on the portal.



In this public-facing portal page, Roche provides access to some of the more than 500 sub-sites accessible via the portal. Users can use one of the 12 tabs on top, as well as other locator features in the left-hand navigation bar. Keeping so many different business units’ and countries’ sites involved in the portal effort requires a large degree of proactive problem diagnosing, plus ongoing liaising.

Roche's corporate communications department instituted a design template and portal content standards, and today between 400 and 450 of its sites "are directly influenced — at least in some degree — by the design and the content structure," says Fischer.

Still, voluntary adherence to the standards did begin to taper off after the initial launch. "At the beginning of the initiative, there was great willingness to adopt the new standards, and consulting with sites and monitoring them on a regular basis helped in the change process," says Fischer. Since then, however, keeping business units involved in portal redesigns is a challenge.

Communicate Early and Often

We will say this again in other contexts in this report, but it rings particularly true when talking about winning over users to a new portal: communicate early and often. If portal teams do a good job of engaging users as preparation for a portal release, it is just as important to let them know when there are delays or changes. When Pam Golding Property's portal project fell behind schedule Karalis learned a valuable lesson in the backlash that can come from lack of communication.

"Everyone [throughout the organization] was expecting these systems," she says. "And it was taking longer than expected."

Because the delays had not been communicated throughout the organization, it put her in reactive mode where she had to respond to users asking, "When is it coming?"

"I'm trying to change that," she says. "I'm trying to give them more information."

Involve Users Early

To help ensure the portal project is a success, tell employees what you're going to do with the portal. Tell them while you're doing it, and when it's done tell them what you've done.

While such advice might sound obvious, effective communication is crucial for any successful portal project many companies still don't do it, and that leads to problems. Give users information about why the portal project is happening in the first place. Also involve some of them in the portal specification, design, and testing efforts, right from the beginning.

When Fujitsu Siemens Computers began moving toward a portal, "it was sometimes a challenge to win hearts and minds in terms of persuading people from across the business that change was necessary," says Melck. So the Corporate Communications Team approached the issue in two ways. First, they got buy-in from the Executive Council.

"Those who proved to be less than willing to migrate their systems could then be reminded that their boss had already agreed to the measures. We could then usually work out a migration roadmap with them," he says.

The second technique was to sit down and help users decide which content to migrate, and which to discard. "Usually they saw that most of their old content was just that — old. And who needs old content on the web," says Melck.

In other words, the company took the time to help users. "It's no good just sending people emails saying 'you must move your site.' You need to get a hands-on understanding of what they're doing and offer guidance in terms of how to assemble a new site," he says. "Most content owners in our company might have been technically literate, but weren't necessarily web literate." Hence when it comes to facilitating a portal redesign, don't be afraid to offer advice and basic rules. "Most users accept these things gratefully," he says.

In addition, the company went out of its way to ensure as many employees as possible had a stake in what's on the portal. "Ideally everyone in the company should be contributing to the portal in one way or another," says Melck. In a company with 7,000 employees and 5,000 intranet users this might not be possible, but it's a useful goal to keep in mind when continuing to refine the site, and where the information on it is drawn from.

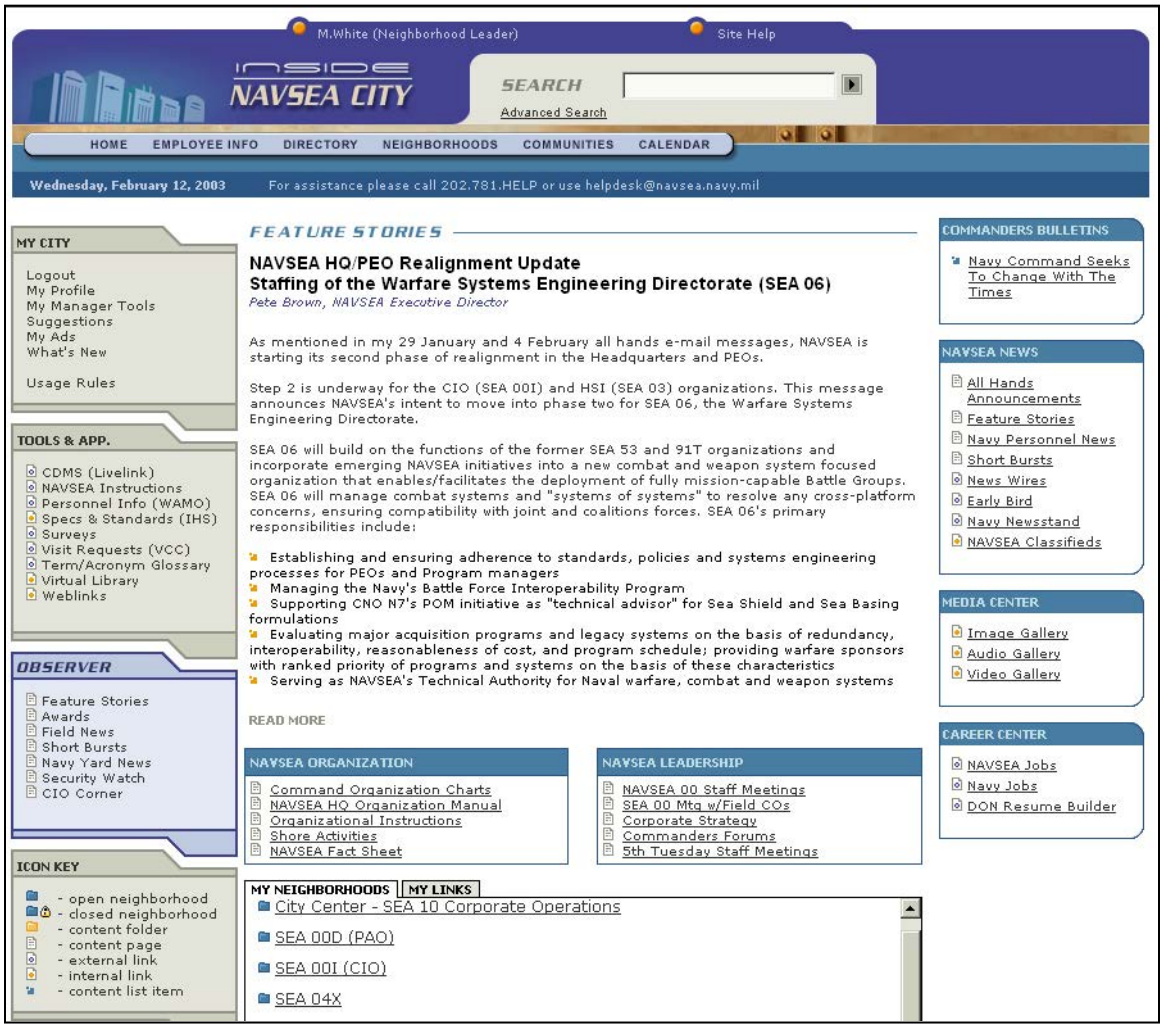
Verizon employed a similar approach. "My personal view is that a big, participatory design approach to portals is a good idea. We have done that to a certain extent and it has helped," says Ivy Eisenberg at Verizon. "People tend to rise to the occasion if they're actually working on a design. They realize that you're asking them for things that will help them in their work."

Such an approach also makes good economic sense, since research has shown that the cost of fixing software design problems increases the later in the project they are detected. Too often, however, recognized problems are conveniently ignored. "I don't want to hear 'the users will get used to it!' or 'that's a training issue' even one more time," complained one interaction designer involved in a large US government project.

Consider this: Providing intensive training to several thousand users will probably cost more than taking the time to ensure the system is easy to use in the first place. Also if users dislike a system, no amount of costly training is going to compensate for poor usability, which could have been fixed relatively inexpensively before the project went live.

Best intentions aside, many organizations must deal with much more nuanced realities. At CSFS, for example, the organization had to implement a portal extremely quickly. Then, it faced the arduous task of retrofitting good usability. Then they were faced with the challenge of having to change the behavior of information providers who are were already accustomed to using the portal in a particular way. These users had to be persuaded to consider the portal as a company-wide tool. Engendering this kind of new understanding is often an uphill task. Immediately after introducing the retrofitted usability enhancements CSFS's portal team had to try to explain to people what the tool was all about and where its value lies. "Slowly, slowly, we're getting there," says Blecic.

As another example, take web development firm Burke Consortium. As it began work on Inside NAVSEA City, a massive intranet portal project — of about a million pages — for the U.S. Navy's Sea Systems Command (NAVSEA), the development inevitably met with some local resistance.



Inside NAVSEA City, the portal site for the U.S. Navy Sea Systems Command, encompasses several hundred pre-existing intranets.

Still, Burke found that inviting the most recalcitrant users to become testers for the new system has helped enormously in overcoming their resistance to the new system and gaining their support. “Before the new content management system arrived, we started to alert people that it was about to happen, and a number of them participated in testing,” recounts Matthew White of Burke Consortium. “We targeted some of the biggest holdouts as test users, and that most definitely helped.”

Indeed, target at least some of the most-recalcitrant users, say other portal practitioners. Furthermore, “encourage every stakeholder in the project to be part of the purchasing decision. There’s less resistance to the project if they have been involved,” says Heidi Siegel at web consultancy Towers Perrin.

Change management has also been a major issue for the World Bank, which has been integrating hundreds of established regional and functional sub-sites from around the world into a single portal site with common user interface standards.

In our 2002 Intranet Design Annual[9], we saw how World Bank succeeded in increasing user buy-in for a portal site by taking the time to explain the thinking behind the project and also bringing in outside speakers to explain how intranet portals had worked for them. To help convince people of the benefits of the new portal, the Bank also invited outside speakers from organizations such as IBM to give a presentation about how implementing a portal had helped those companies increased their sales.

Use Both Carrot and Stick

People hate being told what to do. So rather than ordering departments to abandon their local intranets and suddenly fall in line with the portal, some of the companies interviewed for the report have pursued a different, yet nonetheless successful course. They told departments that they were free to continue to maintain their own, local intranets, but that no further corporate funding would be available for developments that didn't fit into the intranet portal.

So if withdrawal of funding is the stick, the carrot is that departments can save themselves time and money and free up resources to concentrate on other tasks just by taking advantage of the great services offered by the portal team. "An initial problem was that many people already had their own local systems, and those who were happy with them wanted to keep them," says Burke's Matthew White about the NAVSEA portal project. "But they weren't paying for support and maintenance of those systems, and the Chief Information Office said it was no longer capable of fully supporting them. So people had the choice of using the central system, or paying for a local system out of their own budget. As a result, most of them gave up the local systems they were trying to maintain."

In this respect, at least, the freeze on — or at least sober state of — most IT and usability budgets can be a good thing for portal projects, and make it easier to gain departmental cooperation. In other words, when money is short and savings have to be found somewhere, it makes little sense for individual departments to spend their scarce resources on reinventing the wheel.

At another organization, budget cuts meant people were "more amenable now to the idea of an intranet portal than they were a couple of years ago," says an intranet manager. "They're almost forced to see the logic. They don't have money to spend on intranet development and we've already done it for them, so why would they sit there and gnash their teeth about how to do it for themselves?"

In large organizations where not all departments or groups necessarily have to be a part of the portal or the most recent design templates, the portal design team needs to offer incentives. At Wachovia, for instance, when the company sought to develop a new corporate intranet after the merger of Wachovia and First Union, the goal was to move information that was "siloed" on hundreds of individual standalone intranet sites to one true enterprise intranet site. "The approach we took was to try and build a framework that was a logical choice for content creators and application owners to

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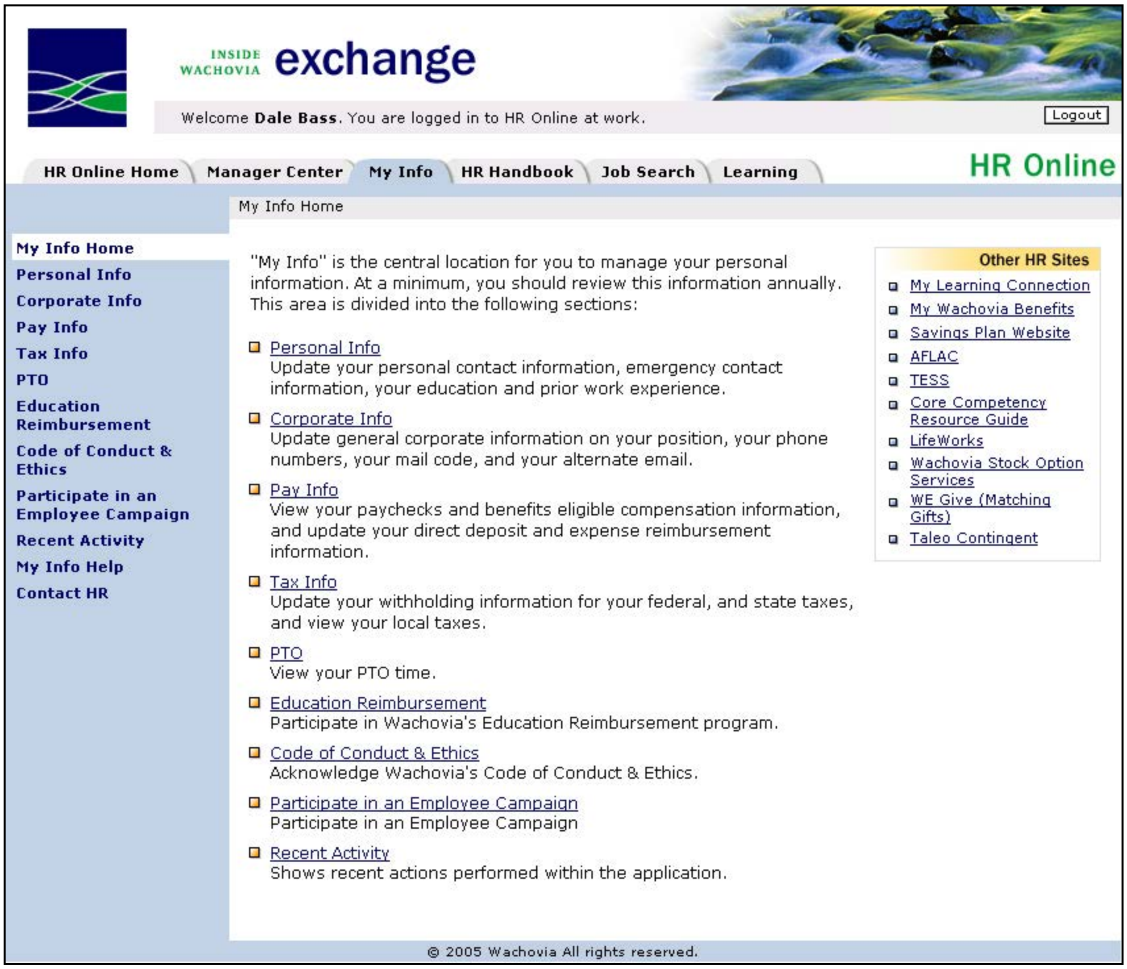
[9] *Intranet Design Annual 2002: The Year's Ten Best Intranets,* Nielsen Norman Group, 2002

move to, and one of the benefits was the inclusive search feature," says Bass. "If you're out there on your own, we're not going to be able to search your content."

Another key factor was strong support from corporate executives who saw the benefit of building a secure, efficient, and user-friendly intranet environment. "Both the chief technology officer and the chief e-commerce officer in the corporation put forth a mandate that all sites and applications were required to comply with the established standards and guidelines. This was an enormous help with the migration effort."

The approach has paid off. As of this writing, more than 300 internal sites and applications have integrated with the Exchange enterprise intranet, resulting in more than 30 million unique page views for the site each month. For example, take the company's "HR Online" section, which is very popular with employees. "This is a central point for all employees and managers for all HR-related activities," says Bass. "The HR managers and developers responsible for this application worked with the intranet Experience Team to design the site in such a way that it incorporated many of the style standards we had developed. The result is a cohesive, seamless experience as employees move between this application and content on Exchange."



At Wachovia, the Human Resources Department worked with the in-house intranet style guide to ensure the HR Online — where all employees and managers go for HR-related issues — fit seamlessly into the existing user experience.

Gather Feedback

While moving toward common navigation and presentation standards for the portal, it also helps if lines of business feel that their wishes are being taken into account. Any feedback process is better than none.

For example, just by having a feedback mechanism, Sprint has gauged a “spectrum of reactions” toward the portal project from different parts of the business, says Bowen. “Some people are waiting for the day when they don’t have to maintain their own sites; they have this other work they’d rather be doing. Others are really concerned about flexibility and what kind of control they’ll have. We’ve tried to take that feedback into account, and maintain the ability for people to put images in, but at same time maintain the integrity of the content management process.”

While developing the portal for EMBARQ, Lisa Hammond says she realized they needed HR support because a significant amount of content on the site is HR-related.

“So I invited an HR person to attend all usability/prototype testing and design sessions,” she says. “As we changed the design, we had immediate buy-in and support from this major player, allowing us to move more quickly.”

Involving the users early can be good for user acceptance and it can also help inform a portal team better understand nuances among users and possibly avert trouble down the road.

Piper Jaffray’s portal team conducted usability testing after the site launched in a beta version and learned some important differences in the way in which employees look for content. “By doing these early tests, we were able to make changes to how and where content was published,” said Kathy Swanson, vice president, Internet Marketing for Piper Jaffray & Co. “For example, we learned that important content, like our Ethics Hotline, was not in the sections where people most frequently expected to find it. So, we added links in those sections to ensure people could find the information there.”

Discoveries like this one helped Swanson’s team make decisions about some modifications before the site went live. These changes didn’t make a huge impact on the site overall, but little changes can add up to creating a lasting first impression when a site is rolled out across an organization.

Talk to Content Providers

As with other portal users, content providers may need some cajoling to be won over to the portal concept, but a little face time can make a big difference.

At UC Irvine, the portal team met with stakeholder groups and described their intentions for the portal and asked them for their most important content so it could be integrated into the redesign. “They were great sources of information,” says Elson. From that information, they developed the IA and content and determined what things users would need to see on the portal.

Erste Bank, an Austrian regional bank took a similar tack in determining content requirements for the new site, they went to the source — the content providers. Michael Hafner led the team spearheading the portal development project. He and members of his team met with staff at bank branches across the organization in order to better understand the content and IT requirements. “We looked at the content management and editorial process, workflows, approval process and rights,” he says. He wanted to know: What needs to be done to make changes? Can content administrators do it or do they need developers involved to make changes? How much do they spend on maintenance, on average?

This kind of research is exhaustive, especially when it plays out as it did for Erste Bank, across the bank’s numerous branches in several countries, however Hafner and his team wanted to make sure they fully understood the content needs and requirements before forging ahead with the site design. He says he believes that kind of personal attention paid off when the portal team re-engaged those content providers later in the process.

Know When to Compromise

For Ahold, one portal challenge is “supporting multicultural, multi-organizational needs within a global, harmonized company,” notes Randy Tyson, director of the enterprise portal at the company. In short, the number of countries, languages, and cultures that comprise Ahold make building and maintaining one portal to serve them all difficult. “We have several business units in the United States, the Netherlands, Central Europe, and Northern Europe, and each have different business models and separate business requirements. At least eight local languages need to be supported. While English is our primary corporate language, we have decided to ensure ‘local’ content is in the local language, yet some portal elements will always be in English. Since our business partners ‘own’ their portal, they are responsible for localization — which brings its own set of pros and cons,” says Tyson.

Getting business partners to own their parts of the portal within the enterprise deployment requires a healthy dose of compromise. “We have a single ‘instance’ of our portal supporting different businesses with different needs, capabilities, and visions,” says Tyson. “This means we must compromise on certain issues, including the overall information architecture.”

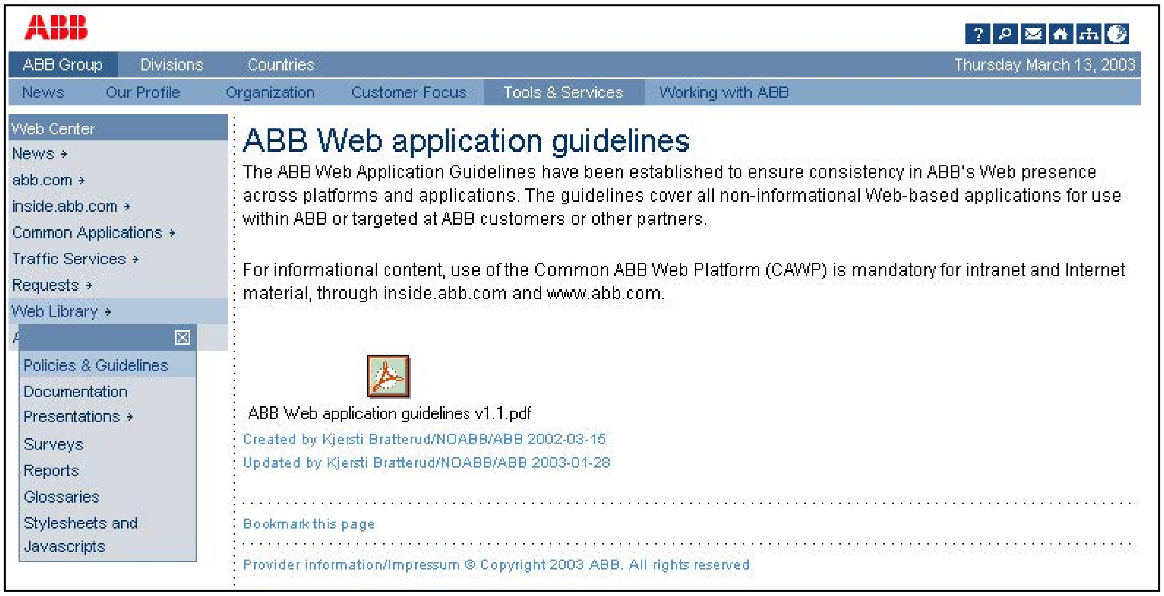
Furthermore, keeping all of those businesses aligned to a common company portal strategy can be difficult. “Implementation is driven by business units, and their priorities continue to evolve,” he says. As a result, “depending on needs, resources can be severely constrained.” That’s an issue, since the portal design team is planning a portal transition, to roll it out to over a dozen business units in total, with more than 200,000 employees.

Seeing is Believing

Resistance to a portal often dissolves when potential users see initial designs and realize there really is a better way of doing things. For example, when shopping a demo of a portal redesign with users, “a lot of people are really happy with what they see,” says Ivy Eisenberg of Verizon.

Such foundational efforts make the new portal familiar, smoothing later rollout efforts. Even at Verizon, which is a big, fragmented company, users gradually came around to the realization that the portal could make their lives easier. “Some content groups start out by hating us, because we were taking over their jobs, and end up by loving us because we gave them control over how their content was placed on the site for their end users to find,” says Eisenberg. Also, when migrating content to the portal, “We advertise that we’ll do the heavy lifting. We’ve helped some departments who didn’t even have a template for publishing information before.”

Success sells. In fact some companies have overcome users’ resistance to the portal by populating it with pages from one or two “friendly” departments, and doing such a good job of designing the user experience that other areas are gradually won over. At ABB, for example, compliance with portal standards is largely mandated, yet BEKK Consulting’s Arne Folkestad, who works with ABB, believes the benefits of adhering to a common approach are now well established, and documented, in the company. “All projects over a certain value currently have to adhere to ABB guidelines. Now that ABB is adopting a more decentralized approach, we fear it might be a bit more difficult to enforce central guidelines in future, but I believe the benefits of having a common infrastructure are now obvious to people. So the prospects are still quite good even though we won’t be able to enforce compliance to same extent in future.”



In this extract from the ABB corporate guidelines, users are given the business reasons why they should adhere to corporate standards. The logic behind the standards is now widely accepted.

Similarly, at KPMG, which already had a mature corporate knowledge management environment (KPMG dislikes the term “portal”), the user base is now more accepting of the need for presentation and information standards. “Having spent four painful years doing things their own way, during which the role of the information professional fell into the background and technology took over, they realized that they needed standards,” says Simpson. “We’re optimistic that we’re close to the end of this part of the journey. These days people just want to come to work and have access to information when they need it.”

When Governance Fails

If an initial approach to governance fails, it can make governance an even thornier issue than it already is. This happened at ANZ.

“The demise of previous governance bodies means we have to demonstrate why this [new] approach will succeed,” says Tamsin Stanford, senior manager, intranet communications strategy. “We’re a global organization and will need to ensure we capture the right people in the right locations who can make decisions in the best interests of users and the business.”

As with other decisions regarding the portal, it’s important to seek the counsel of different perspectives, which will help ensure success.

“The plan is for our portal to be governed through partnership of Corporate Communications, Technology and the broader business, with each taking on the following responsibilities” says Stanford:

- Corporate Communications: Lead the overall strategy, look and feel, information architecture and content governance

- Technology: Lead the technical strategy and governance through development, support and innovation.
- The business (including different teams and communities of practice): Responsible for the accuracy and validity of the content it owns and maintains.

Also, for broader direction decisions, a cross-business steering group will be formed. That's the plan, anyway. "We will be seeking input from our key stakeholders on our proposed approach as we need to ensure it is palatable and achievable," she says.

BEST PRACTICES

Strategy and Planning:

- Define the strategy. Articulate a strategic vision and ensure that all of the teams working on the project (business, IT, product, etc.) understand it and are aligned around it.
- Selectively forget the past and dream BIG. "Do not constrain yourself with the legacy and prepare to challenge yourself with unimaginable things," says Bhishikar.
- Agree on scope up front and stick to it. It's critical for everyone on the team to agree on project scope up front and that scope is communicated to all involved stakeholders. "Multiple mechanisms of prioritization mean you're not really prioritizing at all," says CFFB's Kunin. "Having a single, transparent list of potential features allow us to have accountable conversations around the various trade-offs." Also, it's just as important that the team stick to the agreed upon scope throughout the project. Changes should be deliberate.
- A small team can accomplish a lot. Many organizations find they can accomplish a lot more with a core group of people tackling each issue together than with a large team trying to do too much at once.
- Plan for success. "Know what you want to be when you grow up," says one company spokesperson. Have a destination in mind of what you are trying to accomplish.
- Plan for the unexpected. No matter how well you plan and how much time you allocate to the project, it is likely you will still be scrambling to get the site ready for launch. There will be overtime required from your team so plan for it and make sure your team knows that they will have to roll up their sleeves, especially at the end.
- Don't let your project be an island. Keeping an ear to the ground can pay off when building a portal for a large organization. Check to see what other teams are doing in various departments across the organization that might have an impact on the portal.
- Take an incremental approach. An incremental approach can help score bigger wins with both users and stakeholders if the site is developed with user input and rolled out with effective communication measures.

- The portal can be a catalyst for broader change. Realize the portal project can be a catalyst for change in other areas of the organization. This can influence decision-making on other initiatives across the organization.
- Don't let the perfect be the enemy of the good. As one company spokesman said: "ditch perfectionism." It's better to do a 50-day project well rather than try to master a 950-day project perfectly. Technology and organizational culture change fast. Just get going and show progress.
- Start small. Figure out exactly what needs to be done, implement it well and then build on the success. It's tempting to make sweeping changes to the entire site, but user research can help you scale the project back to a targeted scope that is possible to do and do well.
- Be inclusive and consult widely. The intranet is for the whole organization and the higher profile you can give it the better the response will be. Meet with all key stakeholders and conduct a needs analysis to identify their requirements for how an intranet can be relevant to their daily needs (for example, what are the key drivers/motivators for your staff?) Educate staff on what portal/intranet best practices are, and above all, make it easy to use.
- Invest in strong project management. A strong project manager is essential to keeping a project with many people and many moving parts all working smoothly. Also, as important as it is to have a strong project manager, it is just as important to have a dedicated project manager.
- Don't underestimate the complexity of a portal project. At the end of the day an intranet is a website and the planning and building of an intranet is as complicated as any website project. In fact, a public website project may be easier because that type of project is usually wholly owned by the web function within an organization and not a bunch of subject matter experts, each representing their own interests.
- Launch is not the end, but rather just the beginning. Put together a plan that includes long, medium and short-term goals. Invest in reporting and analysis and adjust your planning to reflect the reality of what you accomplish at each step in the process. "Have ongoing improvements planned so the concept of 'the intranet is never done' is created is in everyone's mind, and momentum can continue in support of continuous improvement and adjustment as needed based on business needs and learning about users," says Stiller.
- Be prepared for post-launch fixes. Even the best-laid plans do not result in a perfect launch. Know that post-launch there will be fixes. Allocate time, resources and tools (bug tracking, etc.) to handle those inevitable changes.
- Allocate resources for testing and pilot or beta releases. Don't be left short-handed during these critical rollout activities. Make sure you plan up front for the resources you will need to test, refine and rollout the site in phases.

- Pad project estimates. One company offers the following advice on project estimates: "Take your initial estimates of time and effort and triple the time required for the project managers, multiply by five the time required of the consultants and multiply by 10 the time required of the IT support in your business." If this type of creative accounting won't fly in your organization be prepared for scope changes, because if you don't put these larger estimates in up front, the project team will not be ready to support the effort.
- Set realistic timelines. Project timelines need to be realistic, not optimistic. Don't expect to deliver something large-scale in just a few months. It probably *can* be done if money and resources were no object but a rushed project rarely results in success.
- Timing is important. Timing might be an important acceptance factor. When you have to migrate to a new application the new calendar year or new fiscal year might be the best moment. Users feel more comfortable when there is an intuitive divide between "before" and "after."

Stakeholders:

- Find a high-level project champion. Find a project champion or influential business stakeholder to sponsor the portal project right from the beginning. A portal champion or influential person can help drive adoption and content participation.
- Draw from a cross-functional group of stakeholders: This ensures that a voice from all interested parties is involved every step of the way and that the stakeholders can evangelize within their own particular departments on behalf of the portal.
- Focus on what the portal delivers; not what it is. "This allows portal teams to speak in a business-orientated language that will resonate with senior leaders better," says Phillips. "This will also tie in portal deliverables to overall business strategy and thus impress its business criticality."
- Involve key stakeholders early on. Get stakeholders involved in the planning phases and keep them involved at key points throughout the project life cycle.
- Start with agreement. Get buy-in from all the required stakeholders as early as possible and agree on budgets. Then survey different departments and staff members to understand how the intranet may be used differently and what their specific requirements could be. You may find there's a lot of overlap. During the development process, you should constantly challenge the intranet build from a usability point of view, to ensure that it is being built in the right way from the end users viewpoint.

- Make governance a commitment. "We meet four times a year for two hours so the commitment from our senior team to the governance process is eight hours a year," says Phillips. "When seeking buy-in and alignment, use this selling point. Few senior executives would deny the chance to invest 8 hours a year to improve employee and business efficiencies."
- Keep leaders involved. Anticipate that you will need to keep an upper management sponsor engaged in intranet management even after the project creating it is complete.
- It doesn't matter who owns the portal. It doesn't matter who owns the portal nearly as much as it matters who is involved along the way in decision-making.
- Prepare for politics. If political struggles are inevitable in your organization then take that into account in advance. Prepare mentally for more politics than you expect to actually encounter so that when it happens, instead of frustrating your efforts you have either a partner to discuss with or a mentor who will support some venting.

Governance:

- Make governance a priority not an afterthought. Try to outline key roles and principles, gain agreement from all parties and implement new process frameworks prior to the launch of a new system/environment/tools. Also, don't forget to include a plan for what to do when the system breaks down.
- Take time to plan. Invest time to create a good governance plan and plan for the intranet to be scalable, so it can support growth of demands and new functionalities.
- Define the portal mandate. Have a clearly defined mandate, purpose, and vision for the intranet, and promote/educate all staff. Make it very clear who the custodians are, what the governance model/process is, and educate them about what an intranet should do in contrast to what a learning management system should do, in contrast to what a corporate website should do, etc. Too many mixed metaphors lead to poor understanding as to where content ultimately should live.
- Document the governance model. It's one thing to have a governance model and it's a whole other thing to write it down. Develop detailed documentation, especially as you go down through the levels of the organization.
- Make governance visible. Have a very visible governance model/protocol so staff knows the proper way to channel requests. Educate staff regarding the purpose and value of a portal so they can better appreciate decisions made regarding what gets placed in the portal, and what should ideally be placed in another website.
- Have a distributed governance model. Power cannot lie with one group or person. Create a governance model that distributes the work and responsibility across the organization.

- Ask the governance team to own the strategy. The governance team should own the strategy, review the execution and own the budget.
- Don't forget the content. "Realize that long-term content governance planning is required to keep the portal alive and relevant," says Anderson. Also that the user experience is not just one aspect of development, but rather an ongoing process that informs change and evolution."

People:

- You can't please all of the people all of the time. A website will never please all of its users. Try to please as many as possible and listen to every complaint, no matter how it is expressed. By taking each complain seriously you will be able to identify the major irritants to see if you can fix them in the future. But in the end, know you will never reach a point where everyone is happy.
- Make "people issues" a priority. People issues are the biggest cost in portal implementation. Unhappy users equal low ROI. So, take the time to ensure happy users.
- Have a communication plan. Focus on what a portal is, why it is being implemented and how it will benefit the users. Deliver that communication plan to constituent groups across the organization.
- Involve users along the way. During the planning, design and building phases of a project, involve employees at all levels and in all areas possible to participate in the process. Involve them early and keep them involved.
- Communicate your way through change. An intranet is a work tool, and any time a work tool changes, it can cause concern for staff. Put together a solid change communication plan around the launch of the new site. The communication about the new site should start well before the launch. Arm groups of early adopters and evangelists with information they can share so people hear that the intranet is changing — from their peers. There is no limit to the types of outreach a portal team can conduct: town hall meetings tip sheets, online tutorials — even physical giveaways. For example OSUMC gave users a mouse pad with tips on using and getting the most out of the new site. Strong communication up front will ease the transition and will pave the way for greater acceptance of the new site. This in turn, will result in result in far fewer issues once the site is launched. Strong executive endorsement also goes a long way toward facilitating change.
- Appoint owners for the different areas of interest on the intranet. They will care about their areas and work to improve the intranet for everyone.
- Back up decisions with research. Decisions about branding, navigation and user experience should not be made by consensus. Though portal teams and stakeholders may have a say in the decisions, they should be made based on data derived through

research, studies and professional expertise. This approach will keep the portal from being drive by HIPPO (highest-paid person's opinion).

- Use data to your advantage. Results from usability testing can help convince portal skeptics.
- Give users rules. For migrating existing content to the new portal, most users want to know the basic rules, and to hear constructive advice about what will and won't work.
- Choose the right evangelists. An independent speaker can help sell the benefits of a portal.
- Use a stick if you have to. Withdrawing funding for non-portal-compliant intranet projects helps speed standardization.
- Offer online training tools. Offer them, but also make sure they are quick and easy to use.
- Be patient. If the portal works well, people often eventually adopt it.
- A slow launch is better than big bang. It's better to ease employees into the transition from the old site to the new. A slow approach gives the team breathing room to be able to discover content that didn't transition well and items that may be missing. An incremental approach makes the hard launch a lot smoother, with fewer complaints because people have had time to ease into the idea of the new site. Transitioning an entire organization over to a new portal takes time. A slow approach means each group of users will have more personal help than if the entire workforce is adapting to the new site all at once.

Staffing:

- Portal is a job. Portal projects are complex undertakings. Make sure staff have dedicated time to work on the portal. From stakeholders down to content authors, portal participation should be part of each person's job function, not an ancillary project. If not, portal participation will wane as their "real" work ramps up.
- Know when to ask for help. Nearly every portal team we've interviewed has utilized outside resources to augment their own team's capabilities. It's important to be proactive about this outreach. Don't just use them as hired guns, but also utilize their outside perspective to bring clarity to a project. Bringing in an outside consultant at the beginning of the process can help team members step outside their comfort zones and help them to suggest more dramatic changes than might be considered if the team is exclusively comprised of internal viewpoints. Having someone without the history or perceptions of the old site will push the team to look beyond just improving an existing site, to create a truly new site that will function and provide content in new ways.

Managing Content

THE IMPORTANCE OF THE CONTENT MANAGEMENT SYSTEM

The ultimate reason for a portal to exist is content. High-quality content that is relevant, reliable, timely and easy to read is the foundation of good overall usability. How that content gets on the site and how it is maintained once it's there is a challenge for every organization.

It's safe to say that today most portals have some sort of content management system (CMS) in play behind the scenes to help organize and standardize content and yet it is not a universal reality. Some portal sites are still being maintained using a workflow that includes more basic tools, such as Microsoft Word or Adobe Dreamweaver. Manual workflows can be cumbersome and time-consuming and have a high cost for the staff that must traffic each small change through the production pipeline.

There's nothing magical about a content management system. It's just a way of imposing a structured process on content publication. Sites that don't have a formal CMS need to be extremely disciplined about page layout standards, version control, authorization and information currency. So it's no surprise that the majority of portal teams whose sites don't yet have a full featured CMS are looking to acquire one. And many teams that have a CMS in place are looking to improve on its shortcomings.

Companies interviewed for this report use a range of standalone content management systems and portal products that contain a CMS. Many of these products are useful for automating site creation and content management processes, however, the technical limitations of any particular product or platform sometimes exacerbate usability issues. The out-of-the-box publishing capabilities of content management systems vary significantly from tool to tool. And the default CMS tools that come standard with many portal products are sub-par, forcing portal teams to look to third party vendors for relief.

Portals tend to have a lot of stakeholders and a lot of content. That creates usability issues that may not manifest in smaller, more discrete intranet systems. More precisely, larger organizations face two kinds of content management challenges: technology and people.

When looking to improve an existing tool or find a replacement, one thing should remain top of mind when comparing products: don't ignore the user experience.

THE CHALLENGES OF OFF-THE-SHELF PRODUCTS

Off-the-shelf content management systems can be both a savior and a burden. They provide functionality right out of the box that takes the work out of creating a CMS from scratch, but sometimes in using these products teams choose functionality at the expense of user experience.

"Flexibility can be a drawback," says Towers Perrin's Heidi Siegel. She found that site design can end up being driven by what features a product supports rather than what best suits user needs. Indeed, in some cases, she says, "the implementation is perceived to be too technical, so usability and experience get left aside."

Edward Lanigan of Weber Associates sounds a similar alarm. "A word of caution is to not believe that technology will bring the 'total solution,'" he says. "Overconfidence in the technology runs the risk of overlooking the importance of effective information design and also effective rollout of the new tools. And the most effective roll-out includes specific, on-the-job coaching."

The technology solution can sometimes be the thing that holds a team back from its content management goals.

"Our major challenge is our content management system," says Amy Nichols, intranet content editor at Huntington Bank. "Because it does not allow us to do anything outside its very structured templates. We are very limited in how our homepage looks and in how much content we can post. The site is not flexible or user friendly. Basically, we have addressed these challenges by forcing ourselves and our internal customers to work within the limits."

For organizations committed to using comprehensive portal products, it's important to evaluate the strengths and weaknesses of the CMS alongside the other factors being considered. Carefully considering a system's ease of use will pay off down the line when users of differing skill levels are able to contribute and manage content easily within the system.

For example, Sprint considered Vignette as the CMS for its intranet portal, but eventually opted for Interwoven because it was "more of an off-the-shelf solution; less development was required," says Bowen.

The portal team particularly liked Interwoven's data-capture template feature. "We wanted to allow the business line people to use the CMS and not have to rely on a technical resource to be able to publish content. The data-capture templates make it really easy for end users to add content," he says. "There's a Microsoft Word plugin and workflow features that let them publish without help from a developer. We sit in corporate communications and we're relatively technical, but some of our counterparts aren't."

Don't Assume the User Experience is Top Notch

Many CMS products provide the required functionality and perhaps even the technical integration necessary for content administration, but many of these products do so at the expense of the user experience. Idaho National Laboratory purchased a CMS that integrates with its portal framework and manages content through templates that provide standard look and feel, content management capabilities and consistent behaviors, however according to INL's Chapman, "the CMS is not very intuitive, so we developed a training program to teach users." This happens more often than one might expect, and in those cases, training can prove pivotal to the success of the CMS.

Huntington uses a CMS called Rhythmyx and has experienced some struggles with the product that they can't train their way out of.

"We have Rhythmyx and it is horrible," says Nichols. "It is incredibly out of date. It doesn't work properly with updated Internet Explorer (over version 6). It is extremely slow and inefficient. To post one article to the homepage can take 30 minutes. And, that's just waiting for the page to assemble. To move articles on the assembly page, you cannot click and drag. You click on an arrow to move the article up or down one spot. After clicking, you have to wait at least four minutes to be able to click again to move up or down another spot. Also, if you want an article in a different community, you have to fill out another template in that community. There is no sharing between communities."

“I spend a huge portion of my day just waiting on Rhythmyx,” she says.

Huntington’s Rhythmyx environment is a good example of a CMS gone wrong, where the system, intended to automate processes, actually causes more inefficiencies than it eliminates.

“Currently our standard operating procedure involves editing documents in MS Word and cropping/resizing photos in Adobe Photoshop to the stringent standards required by Rhythmyx,” says Maisnier. “Often during the cut and paste process the rich text can result in fiddling with the Rhythmyx code and you have to go into the Rhythmyx form builder and scour for the mis-formatted apostrophe or hyphen before the content will be displayed correctly.”

Content is managed in two ways: either directly by Corporate Communications or independently by specific departments. Corporate Communications handles intranet content mainly on four landing pages: Essentials Corporate Homepage, Retail Banking, Commercial Banking & Wealth Management.

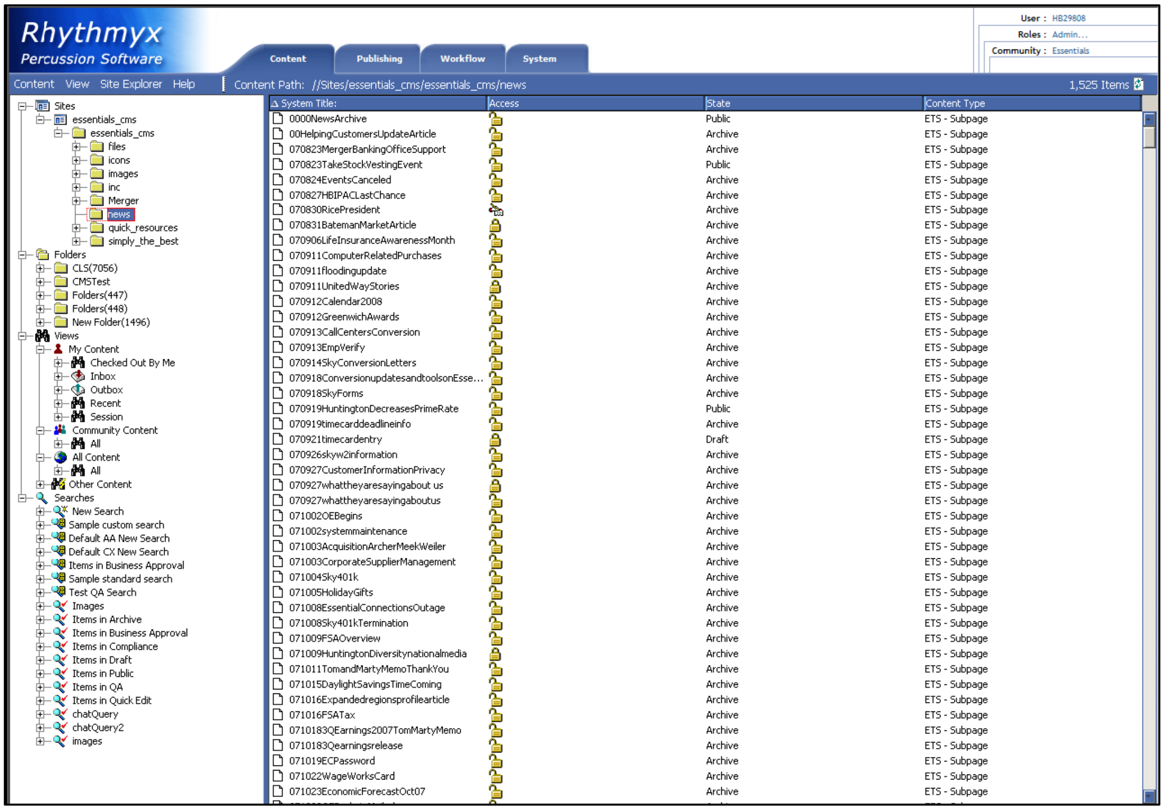
Beyond those sites and their sub pages, nearly all of the content on the approximately 50 other landing pages is managed by departmental colleagues with varying levels of communication experience with very little oversight. “This has led to outdated content and varying levels of success,” says Maisnier. “Sites managed by people who can dedicate time and expertise have much more active and up to date content than those that are managed by users without much interest and experience in content creation.”

Don’t Assume Standard Features will be Included

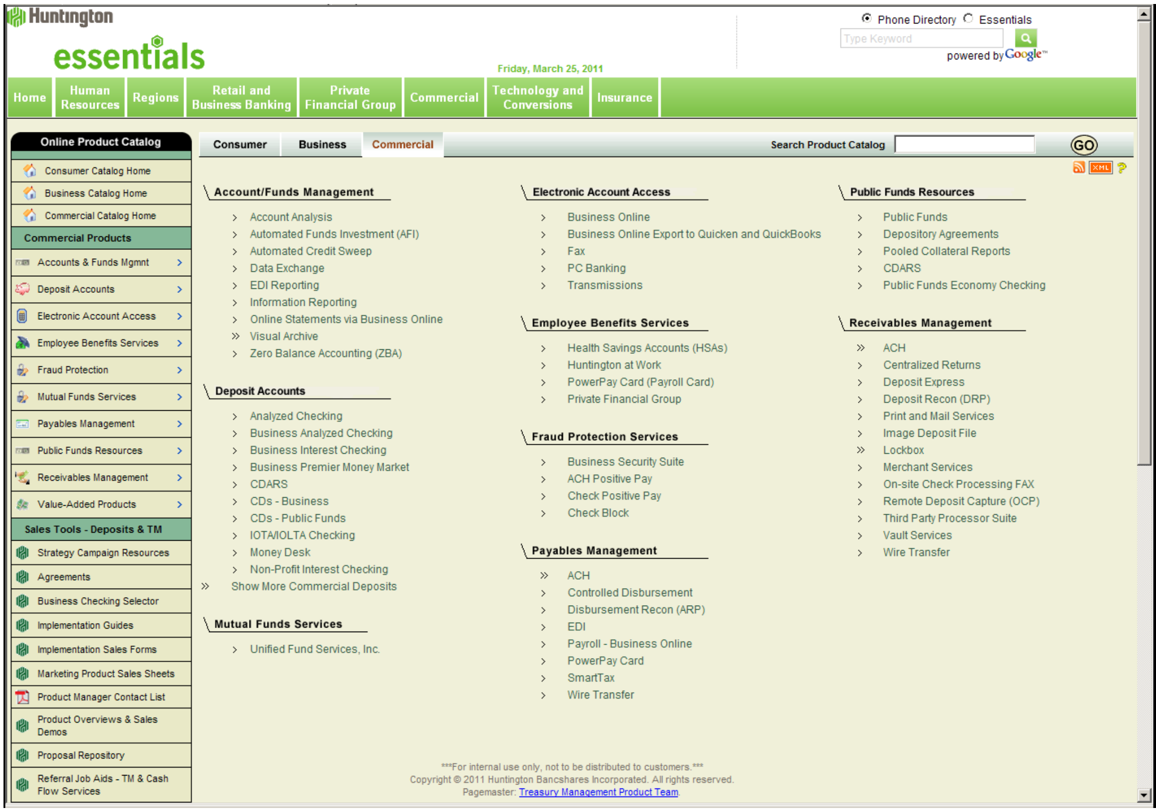
Sometimes portal teams choose CMS systems with the greatest care, evaluating systems against a host of criteria only to find out that basic functionality is not there or not working as one might expect.

When EMBARQ implemented its CMS the tech team could not get either in-line editing or spell check to work as advertised in the product. “Our previous system came with a spell checker,” says Hammond. “So we assumed that this new system would automatically come with one. In this day and age of technology, who would have guessed that a spell checker was not standard in a CMS.”

Her team worked long hours to make up for this critical shortcoming and added a spell check to the CMS.



This screenshot shows the back end of Huntington's CMS. It is a file structure without any in-context editing capability.



Huntington Bank's main internal product catalog is housed outside of the portal's CMS and requires HTML coding to update.

TECHNOLOGY CHALLENGES

New Technology May Exacerbate Existing Problems

Intranet systems are rarely set up as greenfield sites, and that's even more true for intranet portals. Indeed, most portals have evolved out of some — or often, quite a few — local intranets, which were set up independently, at various times in the past. Providing a consistent user experience across different technical platforms can be difficult.

The typical portal environment involves multiple legacy intranets, each offering different content creation and content management technologies, ranging from simple HTML files to full-blown content management and portal systems. As Omar Benaissa of Hewlett Packard Europe puts it: "Do we have a content management system? I'm sure there are several." That's no doubt due to the more than a decade in which the HP Europe partner portal has been in existence. Thus in addition to having "at least" two formal CMSs, it also draws information from a range of other systems — legacy or not — that include other internal document management systems, and databases containing order, shipment and other transactional information.

One lesson many teams learn the hard way is: don't put your faith in technology. In fact, don't assume technology will solve usability problems. In some cases, new technology may exacerbate existing problems. As Edward Lanigan of Weber

Associates notes, "technology is the underlying infrastructure, but good design is what makes a portal work."

Integration Isn't Easy

When teams aim for tight integration between the CMS and the portal they often try to find products that will complementary or at least compatible. That planning has to take place in advance of choosing a product. UC Irvine's CMS, eContent, required some code modifications to both the portal and the CMS, but because the CMS was licensed as end user source and the portal is open source, the integration was smooth.

Kaiser Permanente choose "two tightly integrated products from the same vendor," says Garrett. "We didn't have integration issues in the first release but found significant shortcomings of the product in meeting our business requirements for content management and the content authors' user experience, and we made conscious concessions on those fronts in the interest of budget and timeline."

When we spoke with them, the portal team there was beginning a project to integrate the company's enterprise CMS into the portal instead. "We are struggling with the best design/integration approach that nets us the best of both worlds," says Garrett. "A quality, robust content management system and a highly dynamic, personalized, secure portal experience."

A CMS is not a silver bullet to ensure accurate and up-to-date content, but how close one gets to that goal is also limited by what the CMS can handle and how well the tool can integrate with the portal. We hear from many companies we've interviewed that no one has figured out quite the right cocktail, but some are closer than others.

Sprint content providers access the content management system via the portal. "Ideally, more such applications would have portal interfaces," says Backlund. "Overall, we've made strides on application integration, but still have a ways to go."

For content, at least, the portal provides a centralized location for content managers to access needed tools. "Pre-portal, groups were publishing content independently with no centralized system for storing and repurposing," says Backlund. "Now we have over 500 people actively providing content through our CMS, Interwoven's TeamSite — and thus a much better idea of who's creating what."

GOVERNING CONTENT

Good Governance Requires Planning

Developing a governance structure for managing content can be just as challenging as overall portal governance. If decisions aren't made about who's in charge of what and how things should work, it will come back to haunt the project: guaranteed.

"Our biggest challenge to governance prior to our portal re-design project was ensuring that content was consistent, accurate and up-to-date," says Andrew Kawa of Goodwin Procter. "This was because there was no clear designation of who owned the content, which individual or group was responsible for maintaining it and what the publishing guidelines and procedures are."

Goodwin Procter addressed these challenges as part of its re-design process. Each page is assigned an owner, which is clearly displayed in a consistent location across all pages on the site.

"A site or page will not be created without an owner," says Kawa. "This process ensures that someone is assigned responsibility and provides a resource for users with questions or issues."

This is critical. This page owner is the primary contact for the page on which they are listed. The creation and required use of standard templates has ensured consistency throughout the portal.

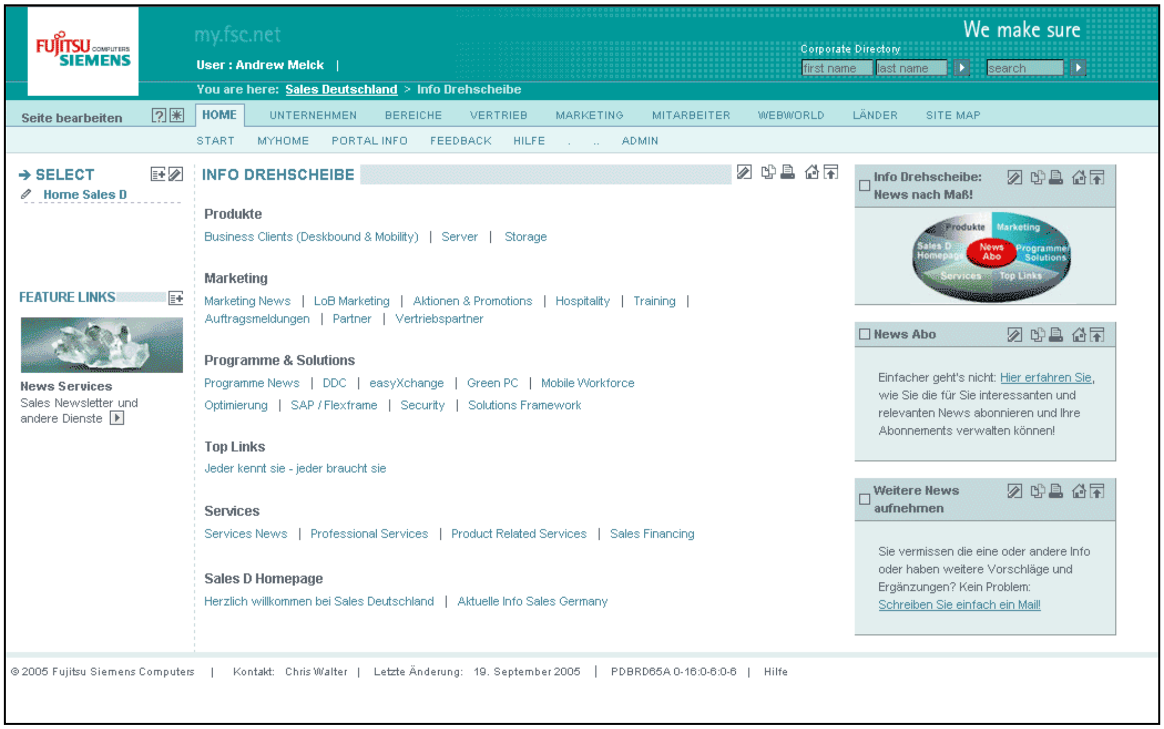
As the Goodwin Procter example points out, physically generating content is only part of the story. For content to be usable — by all portal users, not just a supervisor's group — it has to be managed and owned. Deciding who's in charge and how much responsibility they are given is challenging and sometimes, politically charged. The ownership structure will always be a reflection of the multitude of competing forces that drive the organization overall. And like the organizations they serve, no two content management models are exactly the same.

A Decentralized Approach at Fujitsu Siemens Computers

Given the size and complexity of most portals content management is often decentralized, giving users across the organization content responsibilities based on subject matter expertise or role. A decentralized approach can be especially useful in environments where there's a lot of specialized knowledge in different divisions.

Fujitsu Siemens Computers has "a highly decentralized system where power users in the various divisions and departments create their own content and manage their own user groups," says Melck. "Front-line support is provided by a central help desk that is reachable via *email* and *call-me-back* buttons on the intranet." Corporate communications — which administers the intranet — provides a second line of help, especially for issues relating to potential navigation changes, or controversial or problematic content and corporate design.

This approach works for the company because employees in the departments have domain expertise. "For an outsider, it's difficult to tell whether the content on the legal website or the internal audit site is right, or not," says Melck. Even so, Corporate Communications still polices content and takes down inappropriate or restricted content. Still, this happens only rarely, he says. What's more common is for the department to get involved when people say "I don't know how to best present this content," or "how do I make sure people take more notice of these features?"



At Fujitsu Siemens Computers, content on many portal pages relates directly to the department responsible for maintaining the content. Thus, employees may not get all of the information they need to do their jobs in a central location. A pilot portal — in this case, for the German sales organization — aims to address that problem.

While decentralized content management structures generally work very well, especially in large organizations, this type of governance approach means content providers don't necessarily have a bird's eye view of corporate happenings.

"While this system works well in general, it does lead to content sometimes being duplicated, and also results in users failing to get a good overview of what's happening across several areas, as opposed to their own department or location," notes Melck. "As a result, we have recently started a pilot in the German sales organization where we offer a central and consolidated source of information for all the various areas."

A Decentralized Approach at OSUMC

OSUMC experienced similar success with distributed content management, assigning specific groups to manage the news sections of the portal and training website administrators to manage the content on the various departmental and other sites on the intranet.

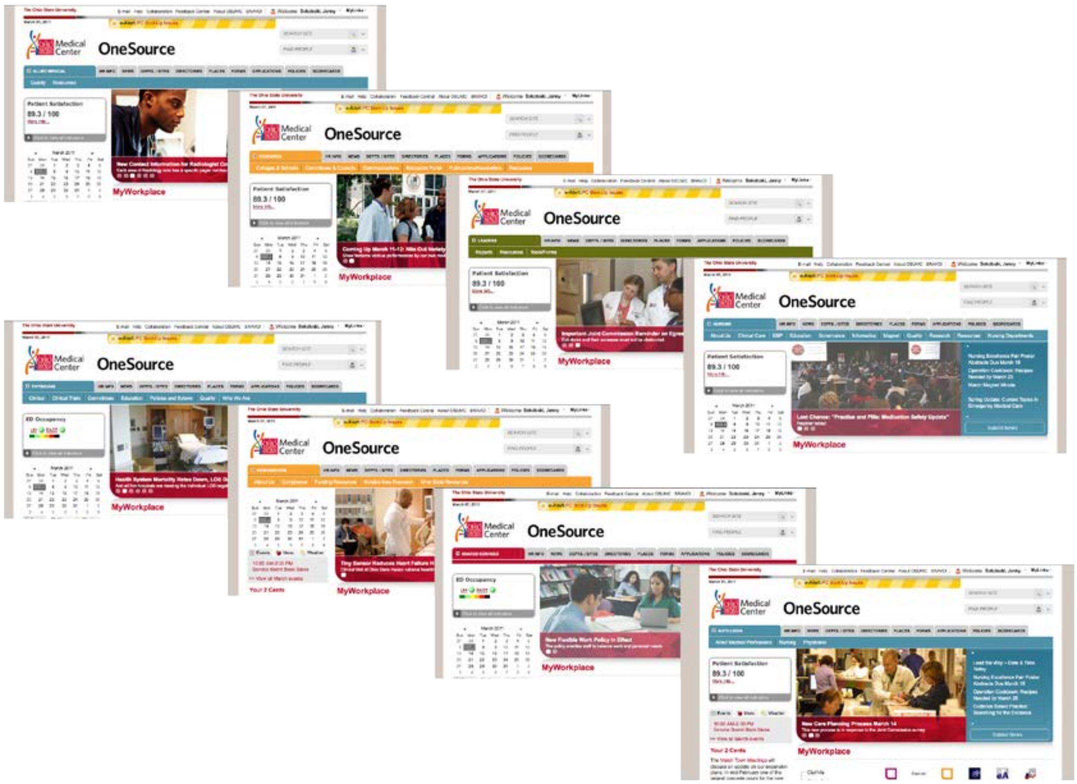
There are editors in place who handle the eight different audience pages: Education, Leaders, Shared Services, Physicians, Nursing, Allied Medical Professionals, Researchers and Auto-Login. Each editor is able to post audience-appropriate news to any portal page.

“This news team communicates frequently by email to avoid duplication of news and make the news posting process as efficient as possible for everyone,” says Scott. His group also meets regularly to discuss the workflow of the news content tool and any technical issues that arise.

Outside of the news sections, content on the rest of the site is handled by website administrators throughout the medical center who have been designated (and trained) as website administrators for the various department and other sites contained within the intranet. These administrators have editing access to their specific site; site permissions have been set to permit editing of site content by specific individual(s). The website administrator is responsible for adding, modifying and maintaining site content, and also ensures that all content on the site contains no sensitive or confidential information. The department directors and managers review and approve content on the site, and the site’s web administrator is responsible for posting and maintaining the content.

Designated members of the Information Technology Department’s Web Services team may also add, edit and manage content of the various sites and sub-sites of the medical center’s intranet.

For the most part, this approach works well for the organization. “Overall, the content management system has been favorable,” says Scott. “In an organization of this size, having a team of editors in place who work collaboratively has been crucial to the success of this part of our intranet.”



This screenshot shows the news areas on OSUMC's various homepages. According to the portal team, the advantage of offering eight homepages is that the OneSource team can help faculty and staff save time by offering customized news based on the audience. There are editors in place who manage the different news areas: Education, Leaders, Shared Services, Physicians, Nursing, Allied Medical Professionals, Researchers and Auto-Login (shared workstations.) Stories with an organizational focus appear on all pages in an effort to build a sense of community among the larger organization.

A New Portal and a New Workflow

Sometimes a new portal is the perfect opportunity to change the way things are done — for the better. This was the case at Persistent Systems. They took advantage of the launch of the new portal to shake things up in the content management workflow. "Before the delivery of the new portal, IT team was responsible for content publishing on behalf of the authors," says Bhishikar. "This process was very cumbersome and IT had become bottleneck for content publishing. For authors it was only delegating to IT and was easy and quick."

"With the implementation of the new CMS enabled portal, all the authors need to publish their own content using forms designed for the same," he says. "As compared to earlier, it seems like additional work and there is some hesitance. At the same time it has removed the dependency on IT and empowered them to publish content on their own."

Content management is completely handed over to various functions and departments in the organization, who are primary owners for the content creation. They are now free to develop content based on their roles and authorizations and are provided various widgets to help with the work. "All authorized content creators are provided with appropriate forms for content creation," says Bhishikar. "We also have designated content publishers who have help authors in case any handholding is required."

Since the portal is still new, the Program management team is still involved in reviewing the inflow of the content and there are workflows designed for review and approval.

Bhishikar says this shift to decentralized content management is critical as the previous system of IT reviews was far too cumbersome.

Managing Permissions

As effective as decentralized content management can be there are still challenges.

Goodwin Procter uses SharePoint as its content management system and portal platform. "We have some highly customized components that leverage data from all of our enterprise systems and pull it into SharePoint," says Kawa.

The company uses the publishing features and workflows within SharePoint to draft pages and approve content. The individual departments at the firm manage specific content, while some departments simply have content managers that are responsible for editing and approving. Other departments have a more formal workflow that goes from editors to approvers.

"We leave it up to the various departments as to how they want to manage their content," he says.

But what happens during the natural ebb and flow of employees in and out of content management roles?

"Our biggest challenge today is managing the permissions around content management," says Kawa. "As people come and go and content owners change it is necessary to often re-provision sites and pages."

They have managed this through the use of security groups and roles and this has simplified the process but not completely removed some of the challenges such as help desk calls regarding access to a site or training needs in managing content.

The other challenge with permissions is how they are assigned and how those assignments are managed over time. At NARA, supervisors fill out a form to assign content contributor roles and designate staff as editors or publishers. Once someone is designated as an editor or publisher content contributors are able to log in to the CMS to edit their pages and select *Ready for Review* which triggers an email that goes to the publisher to notify them that a page is ready to be reviewed or published. The publisher can either publish the page or return it to the editor for additional edits. The Web Services Branch can monitor page updates and roll back content if needed.

"However, this process doesn't address when roles change or if someone leaves the agency, says Sarah Araghi, Archives.gov team leader. "We're implementing the Drupal User Roles module to monitor and flag when there are changes in assigned roles and clarify who is responsible for managing the content."

The staff at the City of Olante, Kansas use Drupal roles across the intranet and this is especially helpful with regard to content management. When a user logs in, they are automatically assigned Drupal roles based on what's set in their Drupal account or what groups they are members of in Active Directory. "Many of the nodes in our site have four possible states: public, department_public, department_private or department_draft," says Brian Showalter, lead senior web developer. "For a user to be able to access department_private or department_draft content, their profile must be set to the appropriate role." Non-content web applications also grant access based on role. For example, only Customer Service personnel have access to the account initiation application that lets them begin the process of setting up a customer's utility billing account.

Centralized Ownership/Authorship

The need to create one true view of corporate data leads some organizations to create a centralized corporate portal management group. This group wields centralized authority over a group of departmental content providers. In larger organizations, these departmental content providers may even have other content providers reporting to them. Yet the central group is often ultimately responsible for setting overall portal guidelines (especially for navigation, look, and feel) and for administering the centralized CMS (when one exists). Sometimes, the centralized group is also responsible for turning raw copy into web-readable pages.

Here's how it works at KPMG: anyone in the firm is free to submit a document to the site, but the central group approves all submissions. To facilitate that, the centralized team includes subject matter specialists, discipline specialists and content administrators. Though there are roughly 150—200 people, in total, that have the authority to approve content, not everyone can approve every type of item. "We devolve ownership of content to the people who know about it," says Iain Simpson. "It's important to recognize that something I think would be a good read for people around the world may need to be reviewed for risk management and client confidentiality."

Every submitted item has a content owner, a presence producer, and a presence manager. For example, in the case of content relating to the internal communications area, the content owner could be anyone from within that group, the content producer would be the person responsible for submitting the item, and the head of communications would be the content manager with authority to approve it for publication.

Concerns about confidentiality and the need to enforce global standards have led to tighter content standards. "Originally we had very few and loose standards around the structure and quality of content, but people now appreciate the need for consistent standards, style guides, and templates where appropriate. Problems with inconsistent presentation and navigation in the past has meant they're now comfortable with having fewer presentation options," says Simpson.

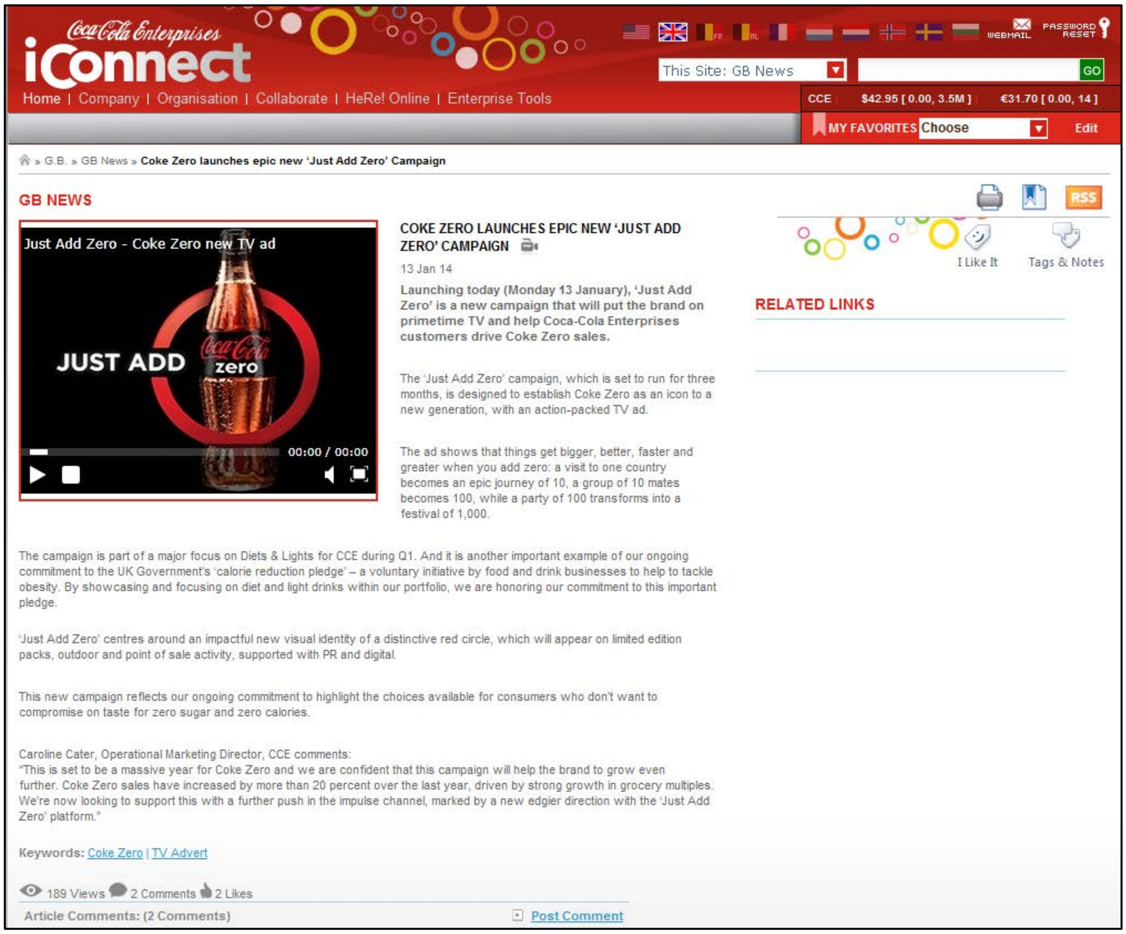
One central approval board has responsibility for ensuring that correct metadata is applied to submissions so users can easily retrieve content. KPMG is hoping to partially automate this process, and global metadata standards (see information architecture, below) will help. "We're moving toward a standard metadata model and well defined taxonomy, so that someone can submit a bit of content and it can be published in many different contexts." Still, Simpson expects that human information professionals will have a continuing role. “You just can’t trust technology to do everything for you.”

A centralized content management organization is also at work at HP Europe. This group provides content services for the rest of the organization: creation, editing, translation, provisioning and publishing.

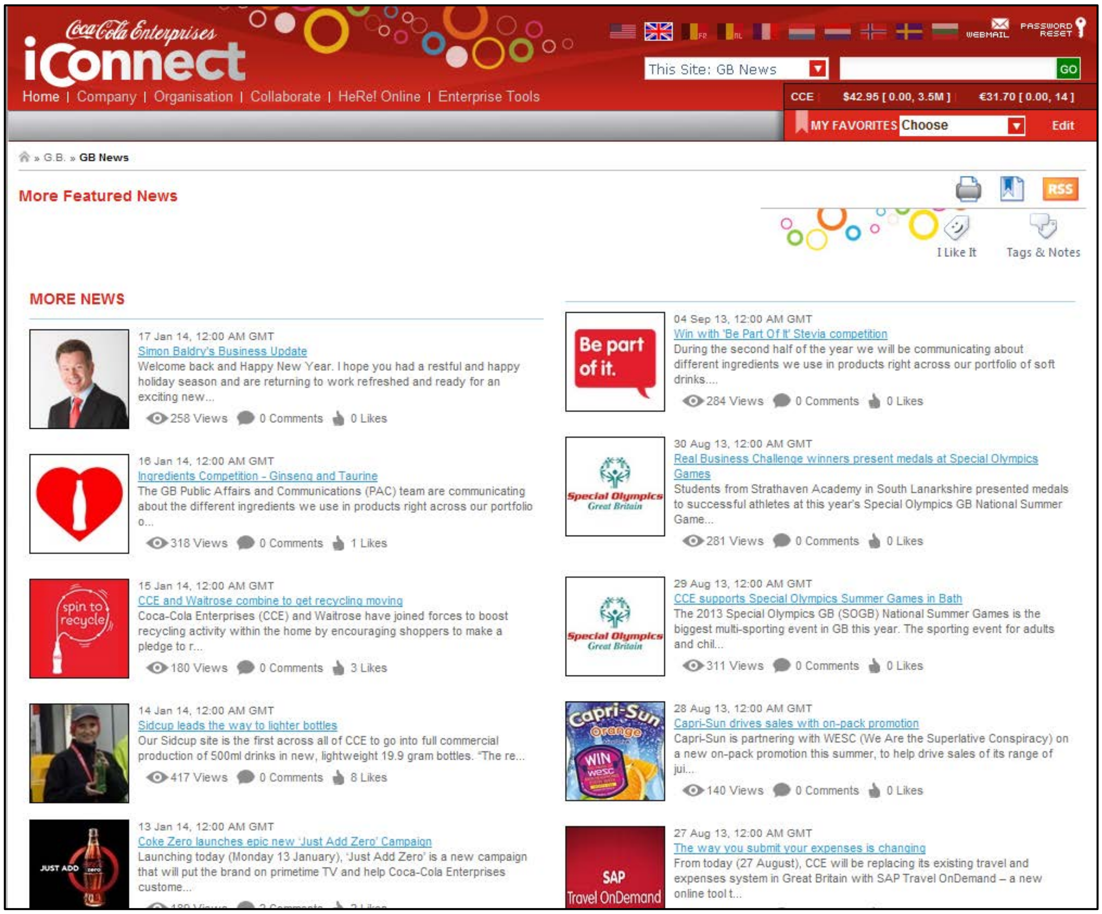
The actual content, however, comes from various contributors in different parts of the company. Each contributor may have a fairly specialized role, and thus a relatively narrow view of the organization. Hence “the challenge is to make the value chain communicate well,” says Benaissa. “You have content created somewhere for a specific purpose, for a specific audience, and it may end up being used for other purposes. Closing the loop is a real challenge.”

For example, factories building a physical product often require different kinds of information than what the sales and marketing departments require. Defining global information standards as a way to help parse relevant product information to different audiences is also problematic. HP manufactures a range of products, and rules for high-end UNIX workstations wouldn’t necessarily mesh with rules for commodity printers.

Coca-Cola Enterprises also has a centralized model, centralized across three departments: IT, HR, and PA/C (Public Affairs and Communications). Content on its portal (primarily company news and HR-related materials) is maintained across nine locales so some semblance of centralized control was deemed necessary because the site is also supported in five languages. Translation reviews are the responsibility of content owners. If they are unable to have the content reviewed it cannot be published on the intranet due to the company’s language policy and country-specific regulations — all in a dedicated effort to ensure only approved, high quality materials are made available to employees.



A standard news article page template on the Coca-Cola Enterprises portal iConnect



A historical list page showing all stories that have been published on the Coca-Cola Enterprises portal, iConnect

A Mixed Model of Control

Even within organizations that have adopted a fundamentally decentralized content ownership and authorship model, a need still exists for tighter control over certain types of content. It's inevitable that in these situations, someone has to own and be accountable for the content that can potentially pose some sort of liability risk to the organization or content that requires formal approvals.

At Kaiser Permanente that accountability lies with the business unit. "On the portal, we hold the business function/owner accountable for the quality and accuracy of the content they produce," says Garrett, Kaiser Permanente's user experience lead, "But in my experience, in a highly decentralized environment such as this organization, there is no ultimate authority with regard to content. Authority, and the rigorous process that often accompanies it, is only found in circumstances where there is the potential for significant impact or liability risk, such as in the clinical care delivery context, human resources domain, or on the external, public- and member-facing web properties."

At Chevron Human Resources, content owners or SMEs work with HR Communications editors. Once content is final, they submit it to a web email box where web developers pick it up and make the changes. Development links are sent for review and once approved, changes are pushed to production. If the changes are minor, such as a simple document replacement, the SME sends it directly to the web email box and bypasses the editors.

"If the changes are significant, for example, navigation changes or new pages, then the web strategist is called in to review," says Rosenstein. "Web developers always have the option of bouncing an edit over to web strategist or editor if they think it needs review."

At Yara International the portal administrator and management are responsible for the high level corporate content, including:

- Global elements
    - Header
    - Footer
    - All content (A-Z and categories)
- The front page
    - Global news
    - Featured news
    - Global messages
    - WebTV
    - Strategy promotions
    - Mandatory links and tools
    - Shortcuts
- About Yara (in conjunction with The Yara Explorer team)
    - List of location pages and segment/business pages
    - Interactive maps
    - Yara facts
    - Corporate information and sub-pages
- Search results page and news archive
- Metadata and content structure
- Web parts and functionality

All other content is managed by respective editors in different locations and parts of the business. For example the French editor will edit the France pages, the talent development editor will edit the Talent Development pages etc. All editors are identified on their respective pages.

Goodwin Proctor's model is also a blend. They designate site owners and assign content managers within each practice to maintain and ensure data on their respective sites is accurate and up-to-date. To assist with this, they created the Business Services Group (within the IT department) whose purpose is to partner with the departments and other key firm areas to understand the business challenges and firm-wide goals.

"Business Services acts in a consulting capacity to create and design applications and processes around the firm portal to address these needs," says Kawa.

Though the company has moved to a more decentralized model, site creation and template management is still a centralized process owned by the Knowledge Management and Information Technology departments. The reasons behind that decision are many. "We maintain a centralized and formalized process for requesting and creating sites to keep our portal consistent, reduce redundancy and ensure that creation of site is actually necessary," he says. "When a site is requested, a member of the Business Services Group will work with the requestor to understand the need for the site and determine whether it should be created and where it should live in the portal hierarchy."

Blogs and wikis also have a formal request and approval procedure. This is a governed process to ensure that appropriate content is being posted. Members of Information Technology, Knowledge Management, Human Resources and Marketing teams review this information.

The company works to ensure consistency by offering a limited set of standardized site templates (created by IT). The company also offers guidelines for writing for the web. Content managers and trained one-on-one and have quarterly group meetings. During these sessions the content managers are briefed on new developments and features on the horizon.

These meetings, however, also serve as an important feedback mechanism for the portal team. "In these meetings we hear about how individuals are using the portal and what challenges they face," says Kawa.

Applying Cross-Functional Ownership to Content Governance

While cross-functional participation is a good idea in portal governance, applying some of those same principles to content ownership is also good practice.

One of the companies that chose to participate in our report, but have its comments remain anonymous is a Canadian nonprofit organization. Its approach to content is cross-departmental.

"Our portal takes more of a cross-departmental governance model," says the company's spokesperson. "Recommendations for changes and additions to the portal are discussed by a cross-departmental web presence team lead by ITS and Communications and are approved by a steering committee comprised of the director of communications, the director of ITS, together with the managing director of Corporate Services."

On the content level, the directors of each department are responsible for ensuring information owned by their respective department is current and accurate. The directors work together with content coordinators within their departments to submit new content. Because of the cross-departmental nature of our governance model, she says it has made it easy to gain buy-in from senior management.

"During the redevelopment process, the interviews and surveys done with the directors from each department also helped immensely with buy-in," she says.

Of course with a dispersed team of content coordinators and publishers, challenges can arise with consistency of information and styles. To help deal with these challenges the company offers training sessions for the content coordinators to ensure they are aware of their accountabilities, responsibilities and writing guidelines. Even this level of services is of course, a work in progress, as new employees cycle into these roles over time.

Proceed With Caution When Transferring Control

The move from centralized to decentralized governance can be a rocky road that requires care with each and every step. In order for this transition to work, ownership must be clearly defined within the business units; otherwise the ownership may slip through the cracks and end up in that place between the central authority and the business content owner.

"SanDisk moved to an organizational structure based on business units (BUs)," says Ramon Lim, senior IT manager, Enterprise Process Management. "The HR team has been attempting to create informational areas where employees can learn about the missions, goals, teams and market focus associated with each of the BUs."

"We've had mixed success with actively maintaining these sub-sites, primarily because we haven't successfully identified content owners within SanDisk's new BU structure. Our goal is ultimately for BU-driven content to be owned by someone in the BU, not a corporate resource," he says.

Huntington's portal team has moved toward a more centralized model, specifically, around the homepage and major business segment landing pages.

"That governance comes from the Corporate Communications department," says Smith. "However, we're governing without real guidelines. So we don't have guidelines for editorial content even at the corporate level that would help us maybe deflect story placements that aren't as newsworthy as they should be for placement on the front page and that sort of thing. We have centralized control but it's not done in a super consistent fashion. We tend to react in some cases to which executive makes the ask and how loud they ask for it."

Unfortunately, once you go beyond the corporate level content, Huntington's governance tends to fall apart.

"When you go beyond the corporate level content, controlled by this department, there is very little to no governance at all," she says. "Some pages are owned by this department but in other cases we don't even control what gets posted so there have been no guidelines for archiving, the types of documents that should be there, editorial style guides, etc. None of those things have been developed or disseminated. Governance would be important but it doesn't currently exist in the fashion that it should."

As one might expect, the team recognizes that this is not ideal. "We have huge process improvements to make," says Smith.

The Size of the Organization Determines the Approach

When it comes to the degree of control an organization exerts over its content, the size of an organization ultimately determines the right approach. For example, small-scale portals often work well with a federated content management structure in which individual departments have ultimate responsibility for their own content, and there's no central control.

For large portals, however, strong central control over content is usually important. That's because in large organizations, the amount of content to manage can be mind-boggling. Left to departmental control, such an intranet might balloon and challenge even the most proficient user to quickly retrieve information when needed.

At CSFS, the sheer volume of content on the portal is one of its major portal management challenges. Yet giving local content providers free rein to publish information through a content management system has also resulted in a flow of information that is, ironically, difficult to manage. There are 120 or so "communities" within the company, representing interest groups for different business roles, languages, cities and so on, and each community manager has the power to publish news they consider relevant to particular sub-groups, such as German-speaking retail banking employees based in the Zurich office.

Technically, the ability to publish content to a well-defined user group is a powerful tool, however, as CSFS has discovered, technology is not the whole answer — or even the main answer — when it comes to content management. "People here started out with the idea that tools were going to solve all our problems," says Blecic. "Then we noticed at the end of the chain, you have people. If you have a taxi driver who can't drive a Ferrari, it makes no sense to give one to him. Give him a taxi."

CSFS is adopting a two-pronged approach to address this challenge. One approach is to use technology to manage technology. Here, CSFS hopes users will use personalization to filter the information they receive.

The other, and perhaps more important approach, though, is to work with content providers. Doing this, companies can explain the role of the portal, what kinds of content work well or don't work well, and to effectively communicate that when it comes to information, more isn't necessarily better.

CSFS has also learned that while the bank's subject matter experts may know their stuff, such knowledge doesn't necessarily translate to having the skills necessary to communicate said knowledge via a portal. Interestingly, Blecic notes "community managers don't necessarily know their communities all that well."

To help, a strategy that has worked well for CSFS and other large portal sites is to employ dedicated information managers who work with different divisions. While these information managers understand the banking sector, their job is actually to turn contributions into concise, accurately targeted material for the portal. Still, these managers have to be funded by the divisions concerned, and in some cases this arrangement has been a barrier to success. "Having information managers has worked very well, but not every divisional chief is happy to pay for that," notes Blecic.

Changing Processes to Accommodate New Content Paradigms

User-generated content presents a whole new set of challenges for content creators and content contributors alike. Also, it's a challenge that is not yet mastered by many organizations. While we cover this topic in more detail later in this report, one example is worth mentioning here regarding how the introduction of socially-generated content has affected the content governance approach.

At Cisco content management depends entirely on the type of content that needs to be managed. "At Cisco, we have a combination of solutions for managing three distinct types of content: web, documents, and video," says Diana Morshead, UX manager, CBT.

"As social media took root at Cisco," she says, "A number of issues started to bubble up in our research. This was used as a basis for the content aspects of the user experience evaluation criteria we applied to the various intranet and enterprise social software products on the market prior to our use of Quad. Our user's experiences and needs informed the direction of the Quad product team in their design approach. These issues included the following:

- Content types were easily confused: Users were confused about all of the new content objects available to them. For example they weren't sure when to use a wiki or a blog or a forum.
- Silos got in the way: The strict hierarchical structures present across most intranet tools were making it necessary for users to post questions and/or content to multiple places and made cross-functional conversations extremely difficult.
- Flexibility was limited: There was little flexibility to change one's mind about a particular posting vehicle after the fact.
- Redundant systems created more work for users: As content matured/changed, users had to republish it across different tools.

The "Post" is the foundational content object in the company's platform. Morshead says it provides users with a simple yet flexible way to share what they know or start a conversation, separating the creation of the message from the medium of delivery. And the Post solves many of the problems mentioned above.

"Every user understands that when they want to share something they start by creating a Post," she says. "There is no longer the need to decide up front if you need a blog or wiki or just a plain piece of content. The option to create a Post is available from within the platform framework and easily accessed from every location on the system. The Post editor (rich text/WYSIWYG HTML) allows users to quickly add content, links, files and even embed video."

After creating their Post, the user decides if they want others to be able to edit the Post and/or comment on it. If they change their minds or their need changes they always have the ability to change these settings. After creating a Post a user can keep it private (draft state) or share their Post with other individuals, communities or any combination of those two. They can also determine who has the ability to view, edit or comment on the Post when they opt to 'share' the Post. The flexibility of the Post allows users to expand their communications reach and change the nature of the Post itself as needed.

"It also allows user to follow the natural communications life cycle more closely," says Morshead. "Users may start by mutually editing a document with just a few other colleagues. As the idea takes shape, they can extend their work out to other individuals and groups for comment. The Post has quickly become the heavily used feature in Quad."

TEMPLATES AND STANDARDS

The Benefits of Automation

On a small intranet, it's feasible for a central intranet management team to turn raw copy into web pages. For a large portal, however, that's generally not possible, and in most cases it's just counterproductive. Indeed, to reap the self-service benefits offered by portals, most companies we interviewed already use templates and some kind of content management system to automate the process of taking content and generating portal pages. In other words, automated tools allowed users to create and update portal pages themselves.

Automation eliminates the potential bottlenecks caused by centralized management. For example, at Verizon "there's no Webmaster. Users with no technical knowledge can upload information. We train various sets of users to update different parts of the site," says Ivy Eisenberg. "We haven't encountered problems with sharing information because they put the information up themselves." An effective approach to automation, besides enabling users to manage their own content, also restricts their ability to edit parts of the site they shouldn't have access to. That's why at Verizon, local supervisors only have the power to upload documents to their part of the site, or add links to their pages, or organize their relevant message boards.

Establish Standards

Organizations that open up content generation to a wider audience face the challenge of content becoming inconsistent or unwieldy. By establishing standards and protocols, portal teams can help keep content under control regardless of whether that content is managed by a centralized team or by content owners across the organization. Those who do not establish such standards do so at their own peril. They risk the negative impression left on users when they encounter content that looks, feels and reads as if it were created by disparate authors. Establishing standards that are accessible and easy to follow can give portal content a unified presentation, tone and style that represent the organization through a single voice.

"Prior to portal launch we had learned not to allow content providers complete autonomy with regard to design because it resulted in an inconsistent network of sites with varying degrees of quality," says IBM's Ceplenski.

"Having our governance process in place, and utilizing standard templates, we are more confident that we can open up copy and image choices to individual content providers. We intend to conduct periodic reviews to address important content issues."

Because content on portals most likely cannot be created by just one group in just one location, portal teams must ensure that content is created in controlled environments and sent live to the site based on an established workflow. "Some [users] post directly," says Jeremy Edmiston, client-server programmer/analyst at Point Loma Nazarene University. "For some there is workflow (approvals)."

The university provides pre-configured portlets that can be used across many departments. These portlets allow content administrators to pick from a list and put what makes sense on their pages. "We (IT) handle security and configuration," he says. "They [the content contributors] handle placement and text. We've adopted the style guide from the CMS. The content is governed by CSS rules and the template so we have eliminated some things that they can't do."

Apply Structure While Still Accommodating Individuality

Some organizations impose strict design control across the portal. Others tolerate some level of individual expression. At the City of Austin Fire Department, IT owns and maintains the intranet homepage and high-level related pages, using a CSS that gives a consistent look and feel to those pages. Each division manager has control over content of his/her division pages.

“Some ask that we administer them using the common CSS,” says Business Systems Analyst Supervisor (IT Manager), Elizabeth Gray, “Others have great confidence in their web programming and/or design skills, and their pages look quite different.”

This results in a tiered approach where there is some global consistency while some freedom is given.

“We think of it as window shopping at the mall,” she says. “The entrances and main hallways have a coherent design, but individual storefronts and internal layouts can vary tremendously.

This can obviously lead to disagreements over what’s good design and what’s not.

“The individual site owners are not always receptive to our suggestions for changes or enhancements,” says Gray. “We pick our battles, based on our assessment of just how well (or badly) usability is affected by their content, designs, and navigation.”

“We never say, ‘No, you can’t do it that way.’ Never, never,” says Liz Hargrove, business systems analyst (intranet web manager). “Business owners enjoy their freedom of expression.” The organization’s executive team also backs them up in this approach. “Our executives pretty much support us and leave us alone,” she says.

The portal team simply doesn’t feel it’s their job to say no. “As the IT section, we see ourselves as the custodians for the intranet, not the owners,” says Gray. “We try to provide good tools for section managers to take ownership of their own content, and we try to meet their needs as much as possible. It is not our job to say ‘no’.”

While this sort of softer approach may work for an organization the size of Austin’s Fire Department, there are strong usability reasons to take a firmer hand and apply global standards across a portal. Even the Austin users seem to agree. Recent surveys indicate that users are expressing more of a preference for a consistent look and feel.

As we see with the examples below, larger, more complex portals must apply a firmer hand to consistent standards. Their site’s usability depends on it.

Introducing Guidelines at CSFS

Despite the CSFS site’s award-winning design, the portal team struggles to get content providers to conform to standards for the portal. Standardizing the main navigation and visual design of the site, which is largely dictated by the content management system, does not pose a major problem. “The depth of the site is predefined by the CMS; you can’t go deeper than three levels,” notes Blecic. “It also stops people [from] putting in blinking graphics and changing link colors.”

The issues the team encounters have more to do with information standards and how content should be presented for the web. “The CMS doesn’t stop people writing in an unsuitable way, or putting up a huge quantity of unusable content,” notes Blecic.

Explaining how to properly craft suitable content is much more difficult than the articulation of navigation rules. “We’re trying to put together a set of guidelines, but it’s really difficult because there are so many issues,” says Blecic. “The problem with guidelines is that there are two kinds of users: those who see them as rules and implement as they are — which can be quite dangerous — and those who see them as being there for guidance only." Thus, anyone producing guidelines needs to be aware of these two very different types of users, and defuse any potential issues in advance.

"In particular," recommends Blecic, "the guidelines should be written so they explain why something should be done, as well as how it should be done." Beyond that, CSFS is also circumventing the problem by looking beyond guidelines, to specialist editors "who understand what the web is."

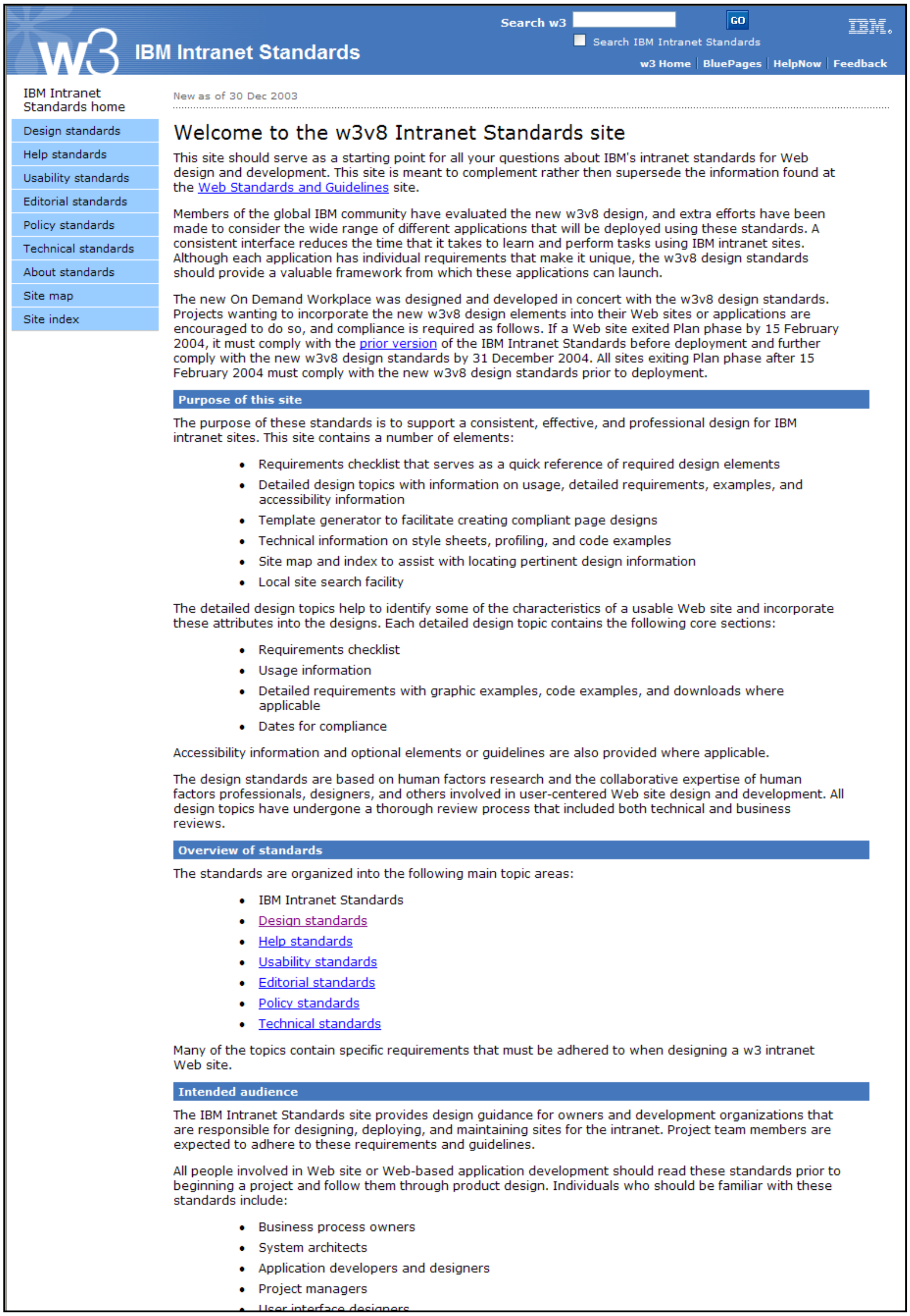
Wachovia's Intranet Standards Manager

Content managers who deviate from the design templates are a frequent problem. While some organizations restrict what content managers can do, especially in large organizations, the portal team may be wary of overly restricting users' options. For example, while Wachovia uses design templates, "we don't want to lock things down so completely that authors can't do their jobs," says Bass. Yet with 1,400 content authors and 96,000 end users, balancing the needs of both is tricky.

In general, ensuring content is fresh "is a tough situation," notes Bass. Still, "at the bottom of all our pages we require that the author have their contact information, and it has the date stamp, who created it, how to get in touch with them — either email or phone — and the date it was published." The goal is that peer pressure helps keep such information up-to-date.

To help, Wachovia also created an intranet standards manager position: someone who watches internal pages and works with the content creators when there's a problem. "Her role is, when a new site is about to be released, she will go through and pretty much validate all the pages for that new site and make sure all the best practices from the style guide have been followed for each new site," says Bass.

When the position was created, however, the company worried about how content authors and designers might react. "That's the type of position you could think might have a lot of conflict, because you might be seen as the style police and that kind of stuff," he says. "But what we've seen is just the opposite, because when she contacts people they're very open to doing the right thing."



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IBM Intranet Standards home

- Design standards
- Help standards
- Usability standards
- Editorial standards
- Policy standards
- Technical standards
- About standards
- Site map
- Site index

New as of 30 Dec 2003

Welcome to the w3v8 Intranet Standards site

This site should serve as a starting point for all your questions about IBM's intranet standards for Web design and development. This site is meant to complement rather then supersede the information found at the Web Standards and Guidelines site.

Members of the global IBM community have evaluated the new w3v8 design, and extra efforts have been made to consider the wide range of different applications that will be deployed using these standards. A consistent interface reduces the time that it takes to learn and perform tasks using IBM intranet sites. Although each application has individual requirements that make it unique, the w3v8 design standards should provide a valuable framework from which these applications can launch.

The new On Demand Workplace was designed and developed in concert with the w3v8 design standards. Projects wanting to incorporate the new w3v8 design elements into their Web sites or applications are encouraged to do so, and compliance is required as follows. If a Web site exited Plan phase by 15 February 2004, it must comply with the prior version of the IBM Intranet Standards before deployment and further comply with the new w3v8 design standards by 31 December 2004. All sites exiting Plan phase after 15 February 2004 must comply with the new w3v8 design standards prior to deployment.

Purpose of this site

The purpose of these standards is to support a consistent, effective, and professional design for IBM intranet sites. This site contains a number of elements:

- Requirements checklist that serves as a quick reference of required design elements
- Detailed design topics with information on usage, detailed requirements, examples, and accessibility information
- Template generator to facilitate creating compliant page designs
- Technical information on style sheets, profiling, and code examples
- Site map and index to assist with locating pertinent design information
- Local site search facility

The detailed design topics help to identify some of the characteristics of a usable Web site and incorporate these attributes into the designs. Each detailed design topic contains the following core sections:

- Requirements checklist
- Usage information
- Detailed requirements with graphic examples, code examples, and downloads where applicable
- Dates for compliance

Accessibility information and optional elements or guidelines are also provided where applicable.

The design standards are based on human factors research and the collaborative expertise of human factors professionals, designers, and others involved in user-centered Web site design and development. All design topics have undergone a thorough review process that included both technical and business reviews.

Overview of standards

The standards are organized into the following main topic areas:

- IBM Intranet Standards
- Design standards
- Help standards
- Usability standards
- Editorial standards
- Policy standards
- Technical standards

Many of the topics contain specific requirements that must be adhered to when designing a w3 intranet Web site.

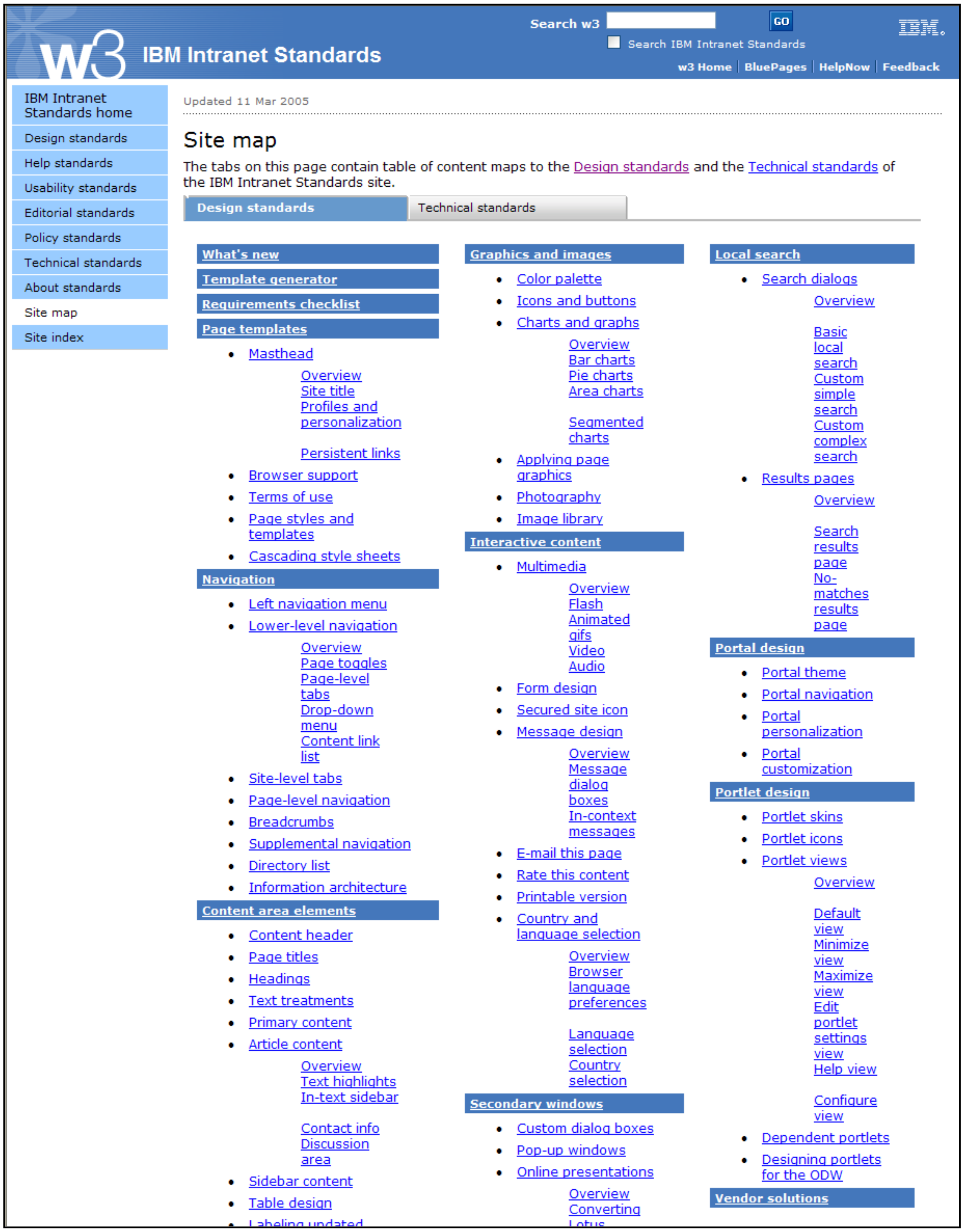
Intended audience

The IBM Intranet Standards site provides design guidance for owners and development organizations that are responsible for designing, deploying, and maintaining sites for the intranet. Project team members are expected to adhere to these requirements and guidelines.

All people involved in Web site or Web-based application development should read these standards prior to beginning a project and follow them through product design. Individuals who should be familiar with these standards include:

- Business process owners
- System architects
- Application developers and designers
- Project managers
- User interface designers

This screen shows the homepage of the intranet design standards section of the IBM portal.

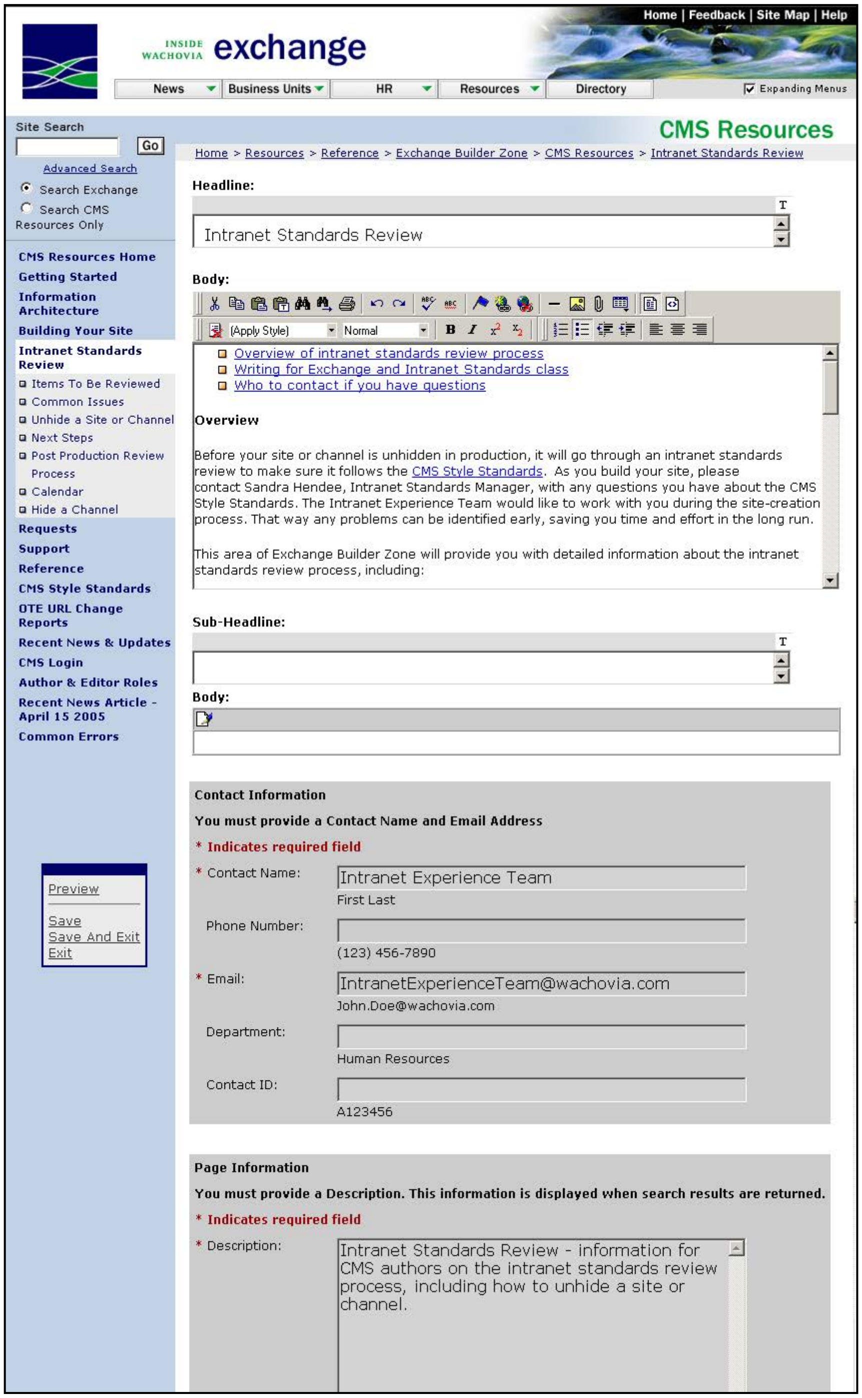


This is the index page, showing all of the topics covered in the intranet design standards at IBM.

Wachovia Helps Enforce Style Standards

Large portals inevitably face a challenge: consistency. Inconsistent design, content standards, or navigation can imperil a portal’s usability.

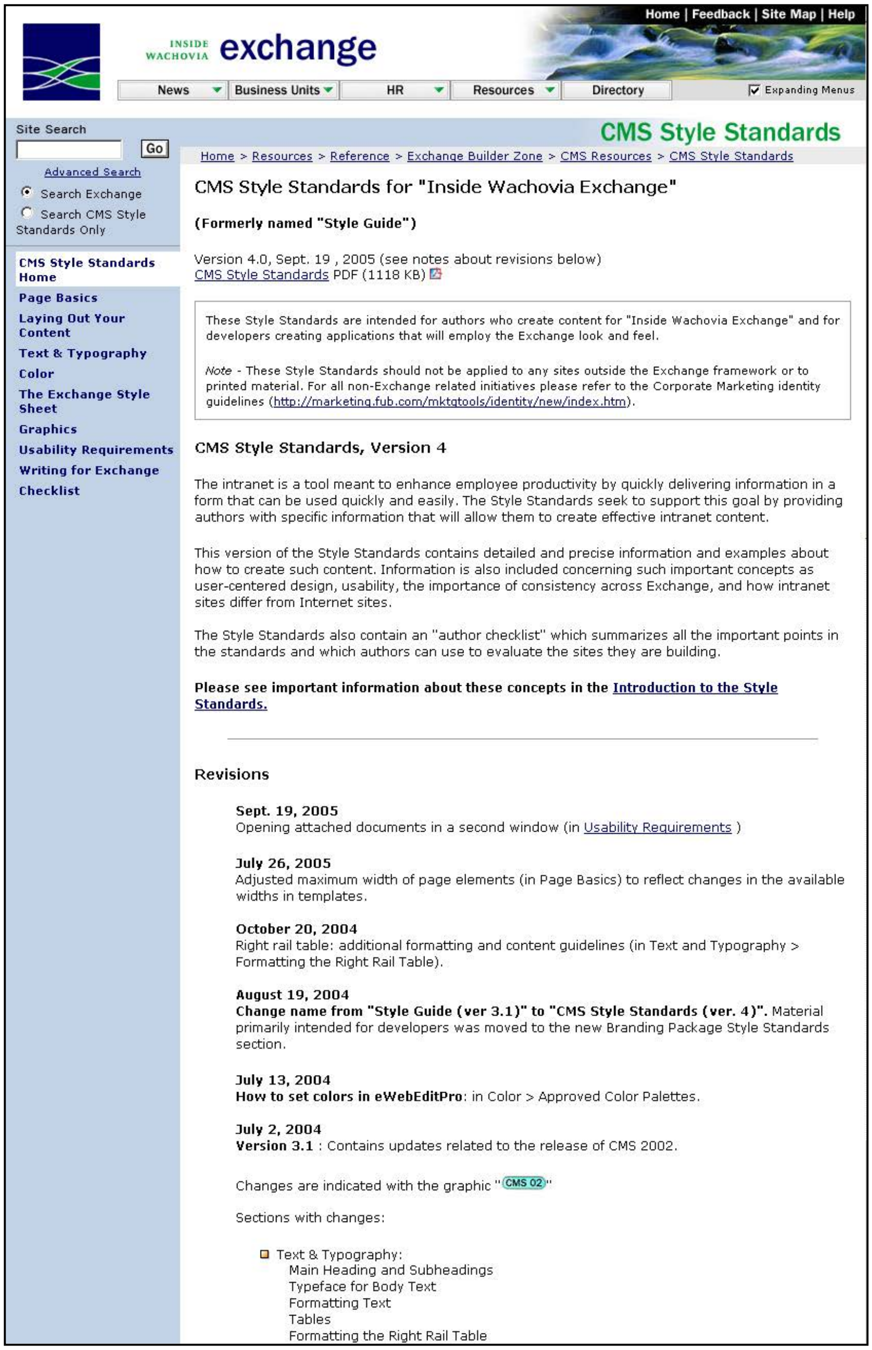
Wachovia, like many other organizations, needs to ensure its numerous content contributors can submit content, yet not wreck a consistent look and feel. “We have about 1,300 trained authors who create and edit content on the site,” notes Bass.



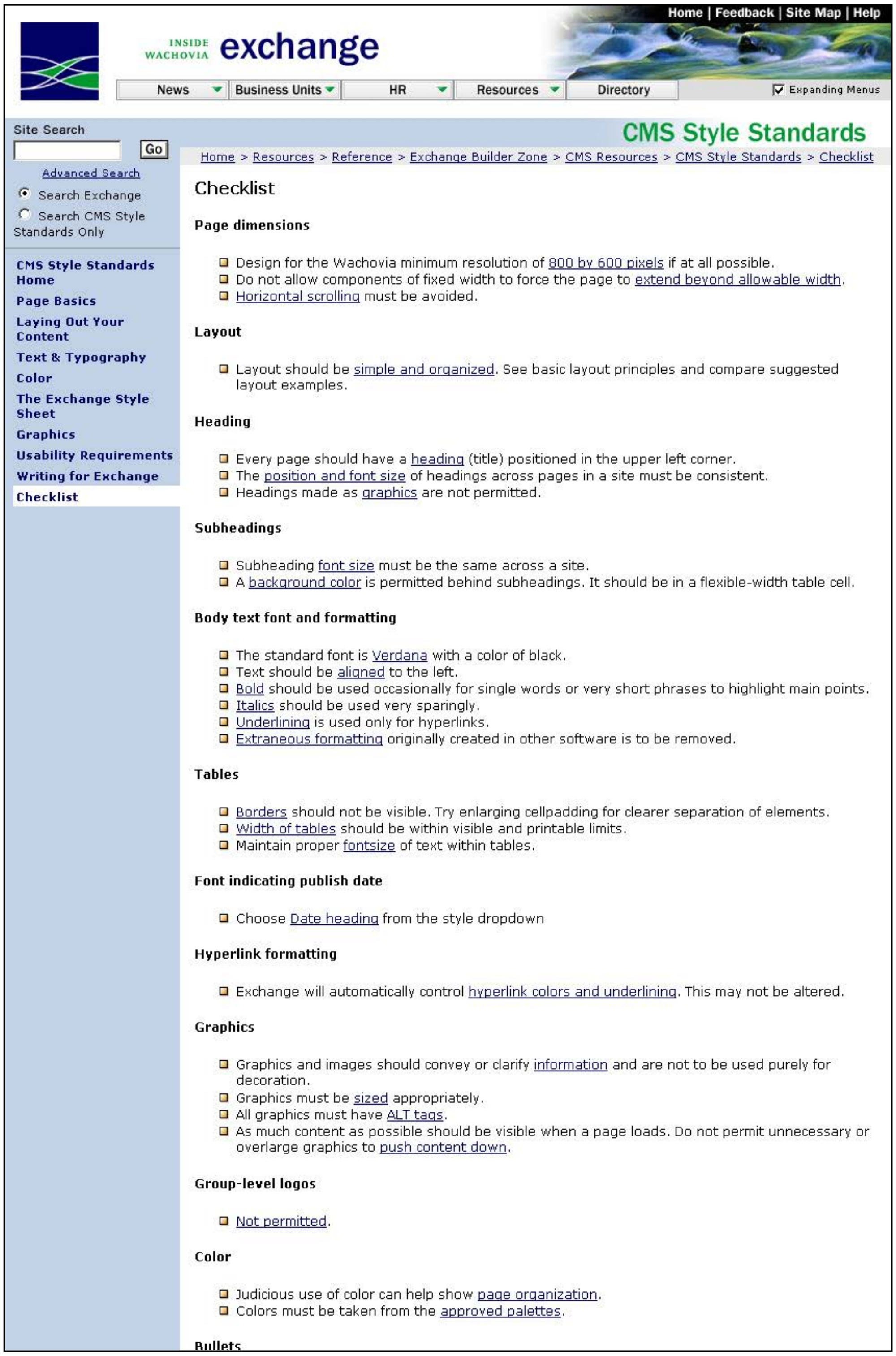
This content contribution page for Wachovia shows that style guidelines and checklists available in multiple formats to help ensure the look and feel of the site remains consistent (see below for more information).

To help authors maintain not only consistent content tone, but also follow design and layout standards, Wachovia provides guidelines and checklists in multiple formats, which they are careful to call "standards" rather than guidelines. "We decided as a team not to use the word 'guidelines' and instead opted to use 'standards,' since the former implies voluntary compliance," says Bass.

One version of the style standards lives online, to ensure the numerous content contributors maintain a consistent look and feel.



CMS style standards for Inside Wachovia Exchange.


Home | Feedback | Site Map | Help

INSIDE WACHOVIA exchange

News | Business Units | HR | Resources | Directory | Expanding Menus

Site Search

Go

Advanced Search

Search Exchange

Search CMS Style Standards Only

CMS Style Standards Home

Page Basics

Laying Out Your Content

Text & Typography

Color

The Exchange Style Sheet

Graphics

Usability Requirements

Writing for Exchange

Checklist

CMS Style Standards

Home > Resources > Reference > Exchange Builder Zone > CMS Resources > CMS Style Standards > Checklist

Checklist

Page dimensions

- Design for the Wachovia minimum resolution of 800 by 600 pixels if at all possible.
- Do not allow components of fixed width to force the page to extend beyond allowable width.
- Horizontal scrolling must be avoided.

Layout

- Layout should be simple and organized. See basic layout principles and compare suggested layout examples.

Heading

- Every page should have a heading (title) positioned in the upper left corner.
- The position and font size of headings across pages in a site must be consistent.
- Headings made as graphics are not permitted.

Subheadings

- Subheading font size must be the same across a site.
- A background color is permitted behind subheadings. It should be in a flexible-width table cell.

Body text font and formatting

- The standard font is Verdana with a color of black.
- Text should be aligned to the left.
- Bold should be used occasionally for single words or very short phrases to highlight main points.
- Italics should be used very sparingly.
- Underlining is used only for hyperlinks.
- Extraneous formatting originally created in other software is to be removed.

Tables

- Borders should not be visible. Try enlarging cellpadding for clearer separation of elements.
- Width of tables should be within visible and printable limits.
- Maintain proper fontsize of text within tables.

Font indicating publish date

- Choose Date heading from the style dropdown

Hyperlink formatting

- Exchange will automatically control hyperlink colors and underlining. This may not be altered.

Graphics

- Graphics and images should convey or clarify information and are not to be used purely for decoration.
- Graphics must be sized appropriately.
- All graphics must have ALT tags.
- As much content as possible should be visible when a page loads. Do not permit unnecessary or overlarge graphics to push content down.

Group-level logos

- Not permitted.

Color

- Judicious use of color can help show page organization.
- Colors must be taken from the approved palettes.

Bullets

This checklist helps ensure Inside Wachovia Exchange content providers stick to design standards.

CMS STYLE STANDARDS FOR "INSIDE WACHOVIA EXCHANGE"
Introduction to the Style Standards Page Basics Page components Screen dimensions Page height Page width Formatting pages for printing Laying Out Your Content Best practice pages Scannable pages Simplicity in layout Fonts Graphics Clean alignment Text and Typography Main heading and subheadings Typeface for body text Font Font size Font color Removing external formatting Formatting text: bold, italics, underlining, alignment Appearance of hyperlinks Tables Bullets Formatting the right rail table Text contained in graphics Color Appropriate use of color Approved color palettes Palettes for applications The Exchange style sheet Appropriate use of graphics Graphic file formats Size of graphics Usability Requirements Writing for Exchange Accessibility Guidelines Checklist for Authors: A Summary of All Main Points

Wachovia also offers the style guidelines in PDF format, so users can download it for further reference. Shown here is the table of contents for Wachovia's CMS Style Standards guide. Contributors are much more likely to stick to the design, layout, and content standards when they are clearly defined and distributed effectively.

Kaiser Permanente Keeps it Flexible and Learns a Lesson

At some companies there is a tendency to want to allow the CMS templates to be somewhat flexible. On the surface this may seem like a sound approach, but flexibility inherently means giving up some level of control over the content. At large organizations this rarely proves effective. Kaiser Permanente tried that strategy in the early phases of its portal project with limited success and is now committed to a new approach as the portal rolls out beyond the initial business units.

"Because we were launching an intranet portal our content authoring templates were designed with a bias toward flexibility," says Scott McDonald, Kaiser Permanente web content business lead. "With that flexibility comes a lack of control over content structure and consistency. Going forward I think we will design more highly structured content authoring templates that help us enforce content standards and guidelines."

With more structured content standards in place, the Kaiser portal team hopes to provide a more consistent user experience.

"We'll not only design content templates," says Kaiser's content strategist, Ellen Yoffee, "But we will also implement a scalable content strategy with tenants (how the portal team refers to the business units who will take up residence on the portal) moving forward in order to adhere to a consistent IA, enable reuse of content, and ensure that content is maintained to suit a more dynamic user experience."

Sprint Breaks Down the Problem

Sprint employs a variety of approaches for ensuring the quality of written material that makes it to the portal and those approaches have evolved. "We've learned lessons, and the merger was a good wake-up call to learn what works and what doesn't," says Backlund.

For purposes of quality control, all of Sprint's portal content gets broken down into either news or reference content. "The news content is very tightly controlled by an editorial process, an editorial board, and a physical review process through the content management system," says Backlund. "So we have a person on the team who acts as the managing editor of our homepage, and vets it, formats it down to AP style, all those sorts of things."

Reference content, by contrast, tends to be more static, and to have fewer controls. In fact, "we put a lot of ownership back into the organization," says Backlund, "for groups to take the responsibility to maintain many more static pages themselves. However the direction we've started to go is, the more visible the page, the more control we exert. Say there's a tier-one page. We control that to a degree, 'we' being the intranet team. We developed a standard format. But as pages cascade down in the site hierarchy, we back off and give more control to the content owners."

Sprint adopted greater control over more-visible pages simply because "you need to strike a balance," she says. "You need to allow groups to do their own thing, but at the same time you need some governance to make sure it's relevant, looks good and is consistent."

Theoretically, having the intranet group maintain high-visibility pages also communicates style and other advice to content providers. Indeed, "it helps with consistency," says Nellor. What also helps are internal corporate communication account managers, who work with each of the major business units to define and implement their online strategy. Furthermore, "we have an intranet community of practice that meets regularly to keep everyone up-to-date on what's next for the intranet, gives everyone a chance to talk with their peers, and to share best practices."

A Relaxed Approach at Verizon

At Verizon, basic standards for how the site pages should look are set at a corporate level. Every page features the company banner across the top, and frames are prohibited. The portal team has also created a standard layout with formal documents on the left of the page, a message system and calendar in the middle, and quick references and system links on the right.

Aside from these constraints, however, contributors are given very few guidelines. "The pages take on the flavor of the people who are doing the work," says Eisenberg. "The content and architecture and categories can change, and people can put their own titles on, though we do try to standardize names of categories."

Though this is contrary to standard portal practice, Eisenberg feels it works within the context of Verizon itself, providing a good compromise between individuality and some consistency in navigation: "I think it's good that different areas have an individual flavor because 99.9% of the time people are working in their own center, with content optimized for the way they work. If they go somewhere else, it might be organized differently, but the notice boards and so on are all on the same part of page, so at least they know where things are."

The Verizon portal team takes a very hands-off approach, even though the result is sometimes documents that aren't ideally usable. "We don't rewrite things for the web. We're just giving them a tool to share the information," notes Eisenberg.

Finding the Sweet Spot at Kaiser Permanente

When it comes to content, finding the right balance between control and freedom is sometimes more trial and error than a set formula. The relationship of the portal team to the business units that it serves can also affect the authoring governance.

When we interviewed the Kaiser Permanente team they were in the early stages of rolling out its portal to the organization with only one resident organization, HR. The portal team gives each business partner control over the content workflow.

"Our business partners own the relationship with their content providers, says Garrett. "In the case of our current partner, HR, they have too many content providers — they struggle to keep track of a myriad of ever-changing subject domain experts who author content offline in a variety of sources for web publication."

"I think we have yet to determine the distributed authoring 'sweet spot,'" she says. "Right now we're supporting relatively few content producers, who are really responsible for inputting and editing publication-ready content submitted by subject domain experts (but definitely NOT experts in writing for the web). We could push the authoring templates out to the subject domain experts but at what cost in template proliferation, training, and support?"

The landlord/tenant relationship of the Kaiser Permanente portal team to the business owners creates a particularly challenging situation as the portal team has the knowledge, but not necessarily the authority to police the content. "We'll definitely establish guidelines and develop training that helps guide clients in terms of how many authors per site is ideal, what a workflow should look like, etc., and how to optimize content for the web," says Yoffee, "But we can't necessarily enforce them."

"It is rare to find people in the organization who are trained/experienced and tasked with writing content for the web and online publication," she says.

AUTHORS AND EDITORS

The Content Funnel

While many organizations allow and encourage content contributions from authors across the organization, that level of self-service brings ushers in the need for an authoring hierarchy. There is no general rule on how to do this, though many organizations use the traditional funnel model: many authors, several editors and one oversight authority. How the author/editor relationship plays out and what kinds of content needs to be policed are very much dependent on the company itself.

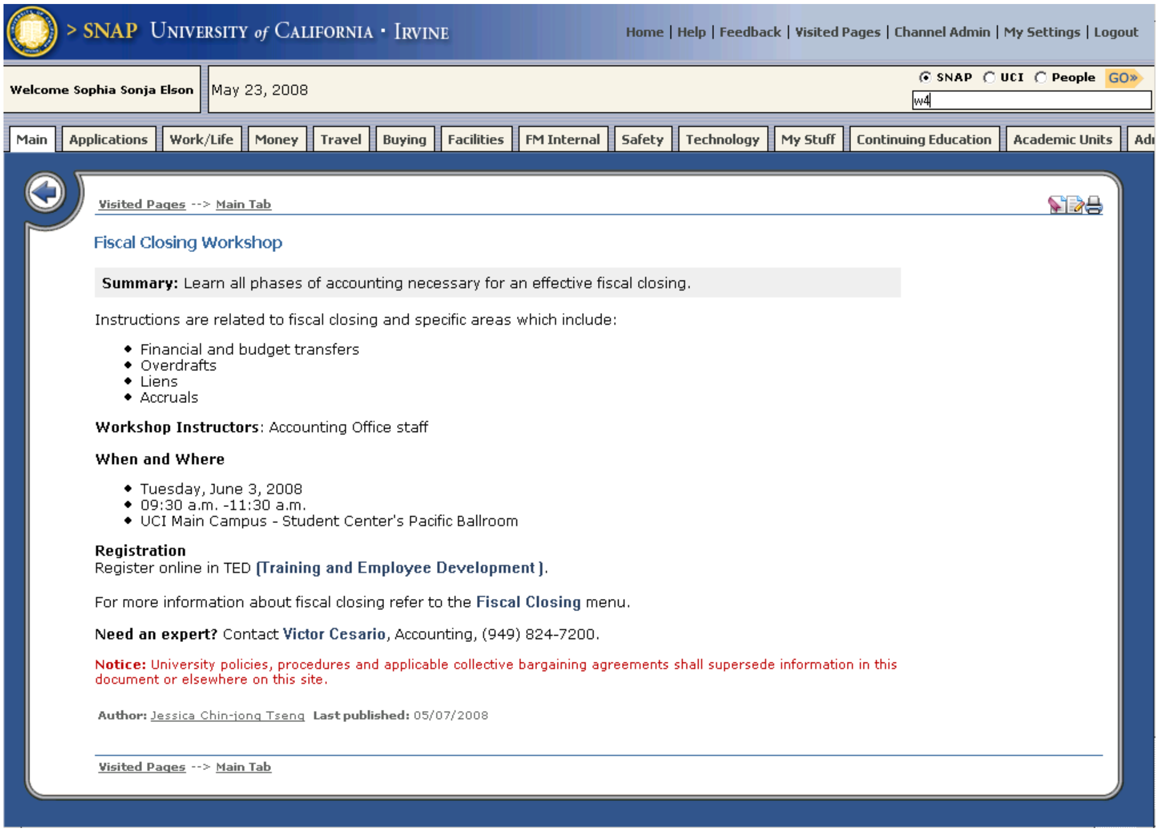
"Our previous CMS required an approver for each update," says EMBARQ's Hammond. "We eliminated this practice and now allow our page owners/editors to update directly. This has greatly improved their enthusiasm to update the page more frequently, as fresh content is the key to successful readership."

"We also reduced the number of editors per business unit and implemented a new role, community manager, which has a higher degree of visibility and responsibility," she says.

At EMBARQ this person acts as the point of contact for everything portal related in a given business unit. Hammond says she believes they are therefore more apt to attend the meetings and stay engaged.

At one financial services firm we interviewed there is a traditional two-step process to get news items live. The sales support group (subject experts) draft the news items and Sales Communications edits them for style and pushes them live via a CMS tool.

Editors at UC Irvine can "surf-n-edit." Users with editorial permission see an *edit* button on their content pages that takes them to a CMS for editing.



UC Irvine's portal has several templates that content providers use to display information that is vital to employees. The author (listed at bottom in this screen) gets an automatic message when the content is due for annual renewal. Icons on the top right of the page allow users who are logged in to bookmark the page in the *bookmark channel*. Editors who are logged in use the *edit* button at top right to access the content management system.

Point Loma Nazarene University cross-trains users who contribute content to the public site to have them help maintain the content on its portal as well.

Some organizations use a release queue to manage the content flow. Authors contribute, editors approve and an IT team pushes the content to production according to a time-based workflow that allows new content to go live on the site each day. That was that case for at least one financial services organization we interviewed.

Content on the UC Irvine portal is created by the appropriate subject expert on that particular topic, so each department has its own content providers who are led by a portal team coordinating editor. Authors are encouraged to submit the content for a style, grammar and web review, but it is not mandated. The challenge comes when content authors are too busy to update the content or lack department editors to assist them.

At LM Glasfiber nearly all users publish content to the site, but the company relies on "super users" to define and build the structure of their individual sites. Content generation is demand-driven and is evaluated on a case-by-case basis. A Super User identifies a need and decides where the content should logically live.

The company found that getting users to contribute content to the new portal was a gradual process. "We tried to keep it as open as possible, to get a lot of people, eventually everybody, to contribute," says LM Glasfiber's Rasmussen. "People were scared in the beginning and didn't change much [content]. People were afraid that others would change their information. We tell them we'll get it back."

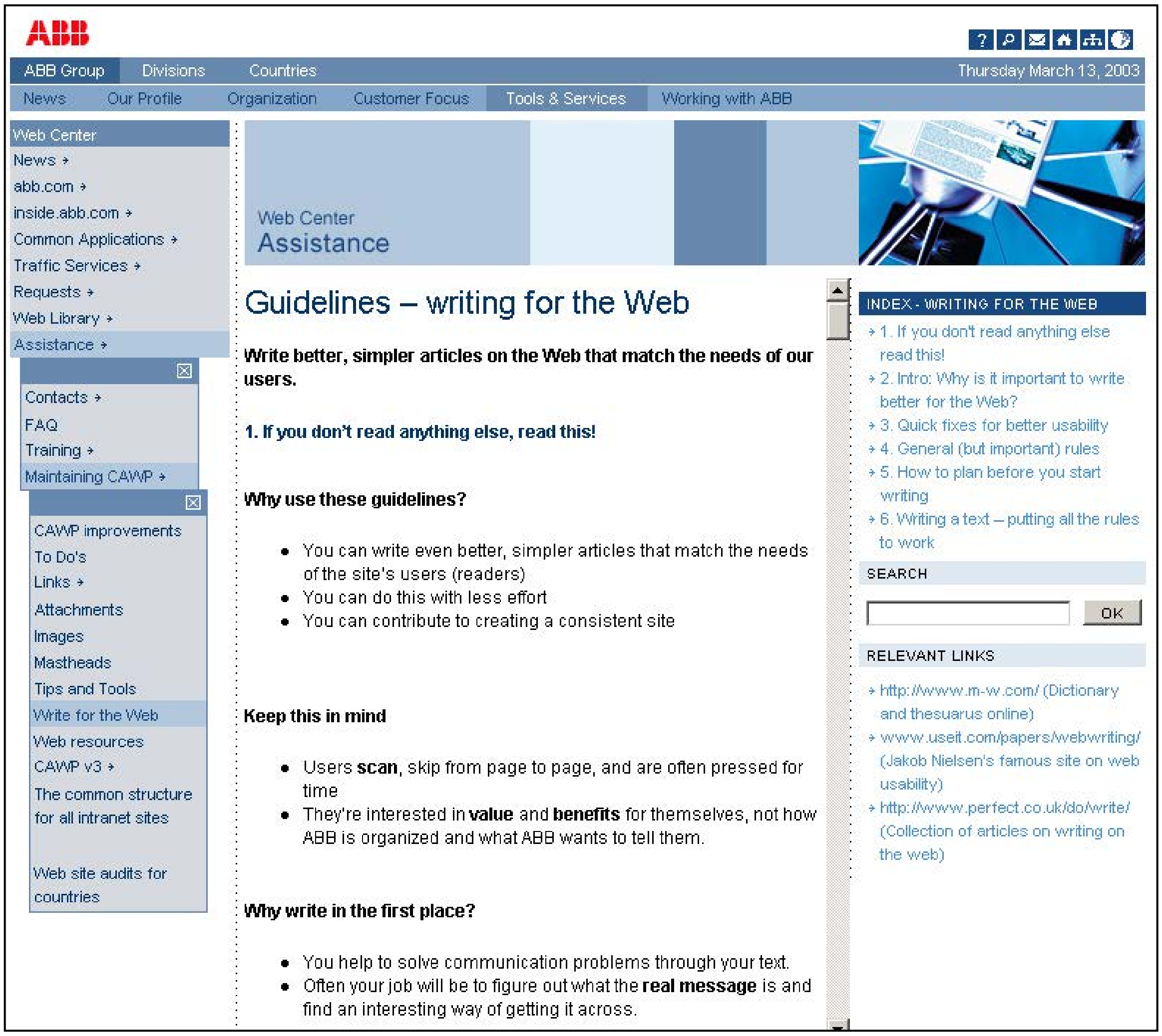
Training Authors at UC Irvine

UC Irvine's portal team has taken great pains to make content presentation both easy to maintain and consistent across the site. They have separated content from the presentation layer by converting all portal content to XML, and have created several templates for authors to use to write content. While the portal takes care of content rendering, the team recognized that this isn't enough to make sure that content is written well, and consistently, across the site so they provide training for content authors.

"Content providers are required to take a 'How to Write for SNAP' class where they learn the importance of consistency," says UC Irvine's Godfrey.

Policies around establishing and enforcing IA standards on portal sites range from total control to none at all. The companies at the "none at all" end of the spectrum are usually portal teams that have not yet instituted standards, whether for lack of time or budget or resources. These teams often focus first on getting the portal up and running and integrating as much content and as many applications as possible. They say they plan to address IA standards and content compliance later on.

This approach can be a dicey proposition for users. An amalgamation of intranet pages can seem like just that and can provide a disjointed user experience.



Contributors to the ABB portal can view specific guidelines for writing content for the web, and how to present applications on the site.

Project CleanSweep at DFAS

Maintaining high quality content also means ensuring it's fresh, or else users grow wary of the portal's ability to help them get their job done quickly, and look for alternate sources of information. That's why DFAS instituted a program to ensure the portal stays up to date, called "Project CleanSweep."

The work starts by automatically assessing current portal pages. "We go through and capture what's not being used, when was the last time it was used, and you can see what's old and stale," says Crawford. Then the results are analyzed. "There's an accountant in charge of CleanSweep, and I don't know if you know any accountants, but he's going to be ruthless," says Crawford.

Ultimately, the CleanSweep team puts content owners on notice. "We say, it's gone by this date unless you take some positive action, and they have to justify why it should stick around."

Too Many Bottlenecks

At Huntington Bank when content is added to the intranet, it is submitted for approval. Most people are able to approve their own content, however, some community posters need the approval of their manager for the content to go live. Once the content is approved, it must be assembled to the correct page. Once that is done, the page must be published for it to go live. Only five people have access to post content to the homepage.

"The workflow process has in many ways devolved since it was implemented when the Rhythmyx tool was launched over six years ago," says Maisnier. "Originally there were two types of users: editors and approvers and very rarely were people granted access as both. Editors created content and then had to get an approver to post it live to production on the intranet. Approvers were alerted through an email that let them know new content was ready for their approval."

Currently almost all content producers act as both editor and approver in Rhythmyx and usually perform all posting functions by themselves without additional supervision, as was originally intended. People found in the old system that content would get held up in the approval process and that approvers were annoyed by the onslaught of emails that came along with the role, since oftentimes the particular content would be sent to multiple approvers. In order to avoid the nuisance, people over time circumvented the entire process.

"One of our major challenges in implementing the new CMS," he says, "will be developing a more targeted workflow and making sure that we follow it."

Developing a Multi-Language Workflow at Erste Bank

Erste Bank's portal must deliver content to a large, distributed workforce that spans many countries and consequently many languages. Getting content consistently authored and translated in a timely manner to accommodate this broad user base is a challenge that the organization recognized early on in its portal planning process. Planning the translation workflow is a critical and often overlooked detail. If a portal must support multiple languages it's best to consider how that will affect all parts of the content management process — up front.

"Language is especially important in our company," says Michael Hafner, intranet manager at Erste Group Bank AG. "People working on a local level often don't have (and don't need) an international background. Therefore, we have to deliver all the content in nine languages so everyone has a chance to know what's going on in the entire Group."

When we interviewed Hafner the organization was planning how the company-wide workflow would allow all communication departments in the Group to have CMS access to be able to create content. To make this happen, the project team established guidelines. If the content is deemed to affect everyone across the Group, it will be forwarded to translation agencies that will be committed to translate the content in two days or less.

This manual translation may seem like a big expense, but the price is small compared to the implications if the content is translated incorrectly.

"We have a lot of different languages to translate into," says Hafner. "And with central translation (using a tool) people always complain about quality of translation. We have operations in both Serbia and Croatia and while the languages are very close to one another, there are several important differences. And there are cultural implications if you make mistakes," he says.

Transferring Content: Embry Riddle Aeronautical University

While teams with existing portals grapple with the nuances of developing and maintaining content, organizations with new portals have to contend with the challenge of porting content from the existing intranet into the new portal.

"When you are moving content from the previous intranet site to the new portal you need to have time to examine how that content will function in the new environment," says Tammaye Grissom, manager, web content development for Embry-Riddle Aeronautical University. "A lot has to be restructured."

She uses the moving analogy to explain the approach. "If you move often," she says, "There is that box that has never been opened. You keep moving this box from one place to another and you find out it was mislabeled three moves ago."

Her advice is to take all the content and examine it thoroughly and re-categorize it (when necessary). She recommends not only talking to the appropriate content owners to decide what content is and isn't necessary to bring over to the portal, but also to turn to tools such as usage data to determine what content isn't being used on the existing site. Consider eliminating it and engage users with card sorts to find out where they would expect to find things in the portal.

Think Bank's biggest challenge in populating the new portal was to determine what was valuable enough in the old site to bring over, what needed to be rewritten and what should be discarded. "The worst of that is behind us," says Ryan, "and now we are rewriting where new content is blending with old, or where user feedback has shown that a better format is required."

The challenge is that this process requires extra resources. "The content can't just be written," she says, "but must be tested and verified for accuracy. Sometimes, that means rewriting, then rewriting once more. It is iterative, and never final."

Applying a Metadata Standard at KPMG

When facing internal information architecture challenges, users can be valuable allies. At KPMG, for example, users had had several years to see the problems caused by a lack of common information architecture standards. In other words, they were particularly well disposed to the idea of information standards.

"The more global you become, the more distanced an end user becomes from what they do day-to-day, and what's available globally to support that," says Simpson. "So you get granular taxonomies that relate to local practices. In the UK, for example, business property and construction would be seen as part of an infrastructure and government category. In the global taxonomy, it ends up in real estate. To someone in the UK, real estate means property, or just domestic property. So if you have a document about property in the UK and you want to submit it for reuse, you need to know where it fits in the global taxonomy."

Yet this approach can also have its own complications, and portal teams must take this into account when designing a global information architecture, notes Simpson.

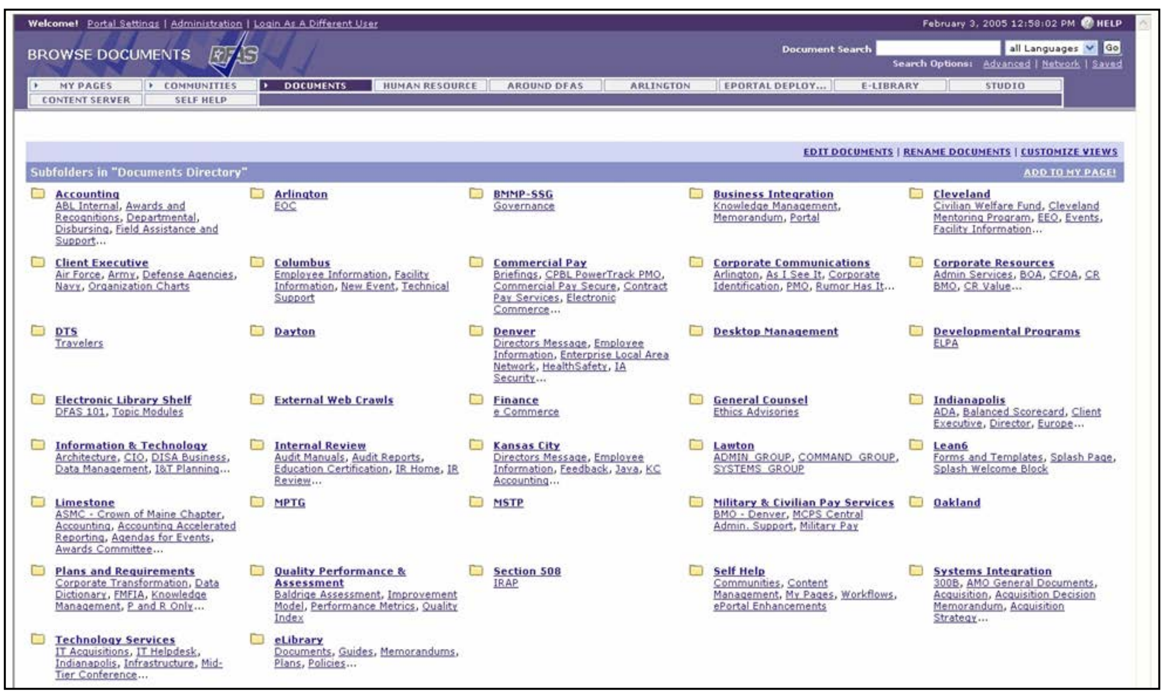
"We have a global taxonomy which is fairly general. When you get down to tax in particular, it's heavily controlled by local jurisdictions. For example, you can have some very detailed UK tax services, which may not exist anywhere else in the world. So not all the content you have will necessarily sit in a joined-up approach."

At KPMG, the need to support information reuse across all of the organization, as well as between different functional areas, drove the company to develop a global taxonomy and global metadata standards. To do that, it used the Dublin Core Metadata Initiative (DCMI). The DCMI forum develops and promotes adoption of interoperable metadata standards.

Such standards were intended to be incorporated into the content management system, to enforce use of correct metadata tags. "At the moment, the technology doesn't force people to apply metadata standards," says Simpson. "We're trying to automate the process using workflow techniques, so that people can't move on to the next stage of submitting a document without applying the right metadata. But that would also mean that users have to take far more ownership and care of content they create, because as well as the context in which the content is created, they have to think about the many contexts in which it may be used."

Reducing Taxonomy Complexity at DFAS

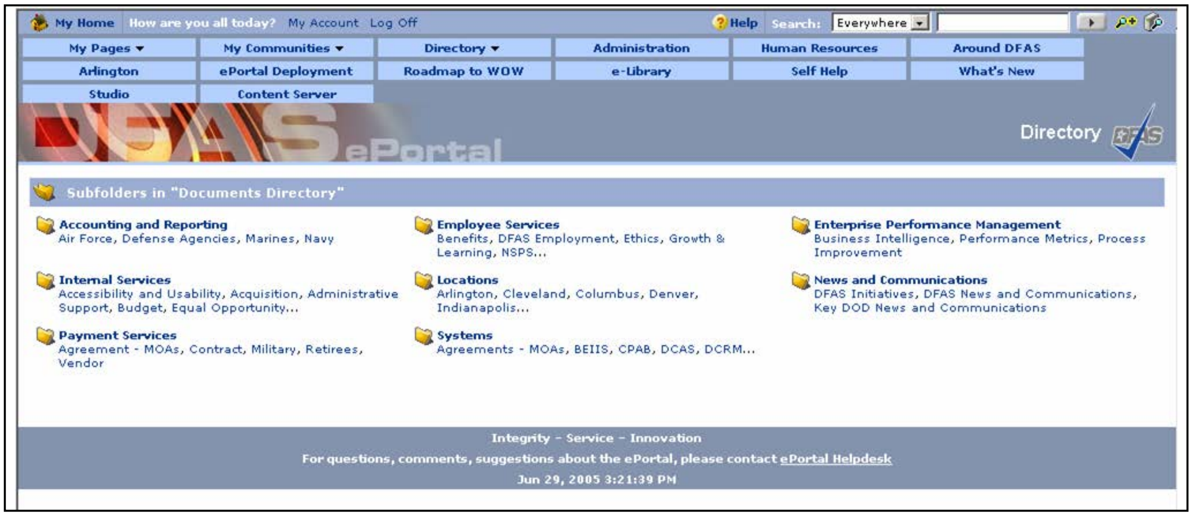
If content creators are expected to enter metadata to classify their content, always beware of the amount of time and energy it takes. "When we first set this up we had too many meta tags," says Crawford of DFAS, "and the impact of this was it was too much work, so people would avoid it."



The old DFAS information architecture had 37 top-level buckets. The organization assembled a taxonomy working group, educated them on the goals and benefits of taxonomies, and then empowered them to create a new one.

So DFAS assembled a Taxonomy Working Group to improve the situation. "The taxonomy working group — subject matter experts and content owners — were empowered to make key decisions on the new taxonomy," she says. "They were educated in goals and benefits of different types of taxonomies, and then defined the top-level topics, digging down for greater detail."

Working iteratively, the working group held weekly teleconference meetings and monthly offsite meetings to keep their efforts coordinated. Then, "focus groups were formed for the major top-level folders, and these groups assisted the taxonomy working group in further defining the structure." Ultimately, the new group produced a taxonomy structure with only eight high-level areas.



The new DFAS taxonomy has eight main subject areas. Content managers use these to select content location.

On SAP's corporate portal, a *Find a Topic* feature automates taxonomy creation and helps users find content regardless of which tool or repository in which the content is stored.

COMMUNICATION AND SUPPORT

Good Communication is the Key to Good Content

What is the key to good content? "Good communication," says Benaissa. "Indeed, try "putting people together who are involved in content creation and infrastructure and various content publishers around the same table." Of course in an organization with over 40,000 people, this can be a considerable challenge. To help, the various company departments set up "formal processes on how we work together, using service level agreements to formalize activities and propagate information requirements into the appropriate links in the value chain."

EMBARQ'S portal team takes an active, personal approach. "We host meetings every two weeks to share status, issues, tips and tricks related to the portal, content management and usability guidelines," says Hammond. "We keep the meeting light-hearted in tone and educational in nature which keeps them engaged."

UC Irvine sends out emails and newsletters containing content tips and commentary on good web writing in an effort to reach out personally to content contributors. They say they use this method to also gently nudge sluggish contributors. "It's been helpful to have regular automated content review cycles," says Katya Sadovsky, UC

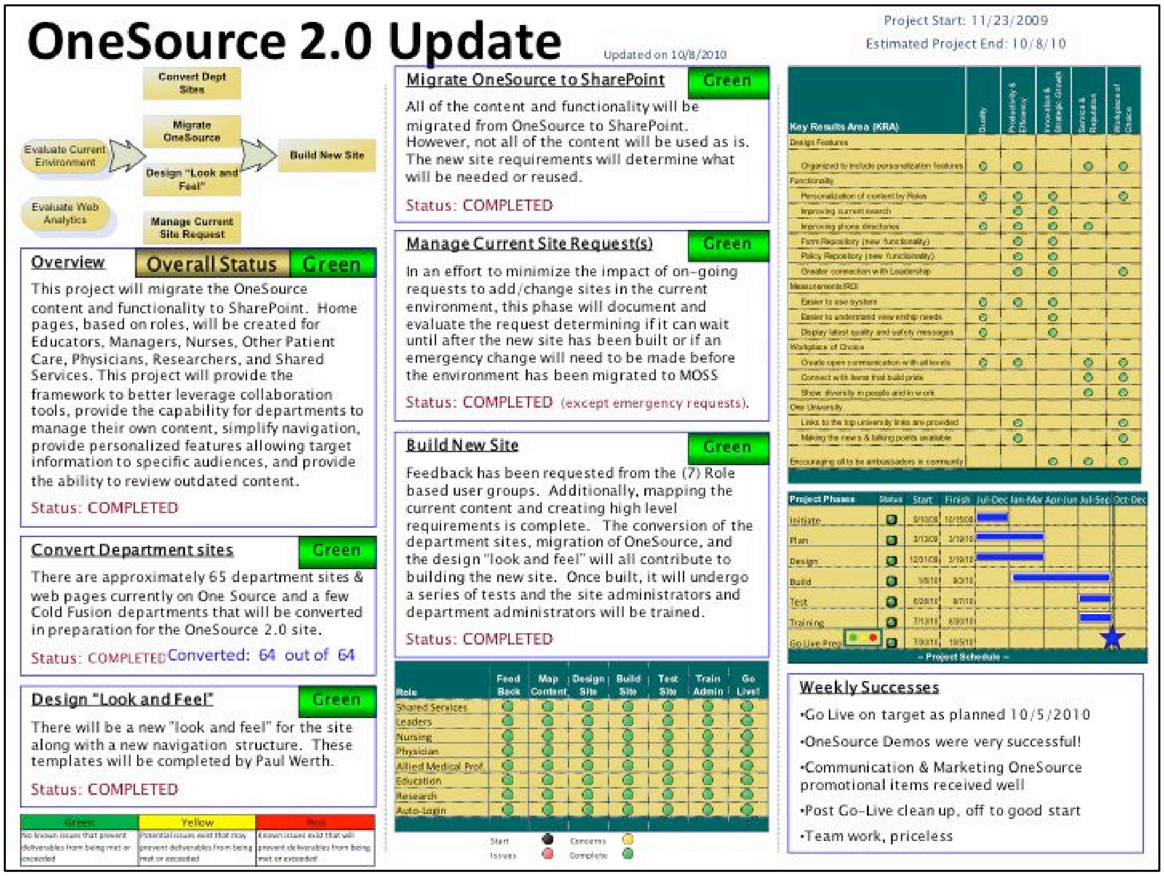
Irvine's project manager and technical lead, "where authors receive an email for content that has not been updated for a while."

Her team provides a three-part training for content providers, which includes an introduction to the portal, writing for the web, and a hands-on introduction to the CMS and XML editing program. The portal team also tracks usage statistics that they use to help guide content decisions.

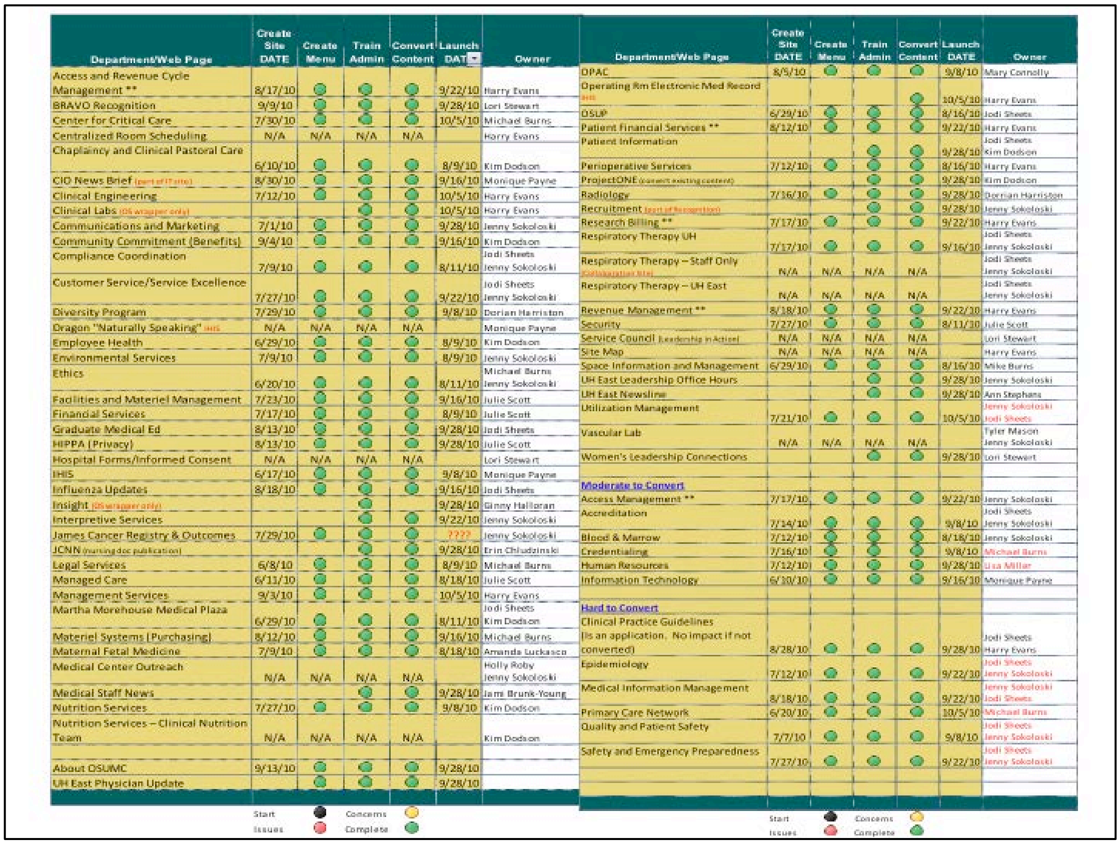
Strategic Logistical Alliance also takes a personal approach. "We have tried to make the portal more personal by bringing in personal profiles that show the name (with a link to the person's profile) of the content provider," says Hendrik Rust, director of DC Interactive, the company that designed and built SLA's portal. "The number of contributions by providers is tracked and content can also be rated and reviewed by others."

More than just encouraging content contributions, the organization actually rewards contributors. "The human capital department reviews and rewards the contributors on a monthly basis and their achievements are published on the homepages," says Rust.

Pam Golding Properties encourages content contributions by providing copywriting and technical support at no cost, in addition to each department having a content owner who will be trained on the CMS system when it is complete. A centralized portal team will meet with departments regularly to encourage them to share information and news and chase content updates.



This team at OSUMC reviewed this update document weekly to ensure tasks were progressing on time. It also gave them an opportunity to celebrate successes at each meeting.



Department/Web Page	Create Site DATE	Create Menu	Train Admin	Convert Content	Launch DATE	Owner
Access and Revenue Cycle Management **	8/17/10	●	●	●	9/22/10	Harry Evans
BRAVO Recognition	9/9/10	●	●	●	9/28/10	Lori Stewart
Center for Critical Care	7/30/10	●	●	●	10/5/10	Michael Burns
Centralized Room Scheduling	N/A	N/A	N/A	N/A		Harry Evans
Chaplaincy and Clinical Pastoral Care	6/10/10	●	●	●	8/9/10	Kim Dodson
CIO News Brief (part of IT site)	8/30/10	●	●	●	9/16/10	Monique Payne
Clinical Engineering	7/12/10	●	●	●	10/5/10	Harry Evans
Clinical Labs (OS wrapper only)			●	●	10/5/10	Harry Evans
Communications and Marketing	7/1/10	●	●	●	9/28/10	Jenny Sokoloski
Community Commitment (Benefits)	9/4/10	●	●	●	9/16/10	Kim Dodson
Compliance Coordination	7/9/10	●	●	●	8/11/10	Jodi Sheets Jenny Sokoloski
Customer Service/Service Excellence	7/27/10	●	●	●	9/22/10	Jodi Sheets Jenny Sokoloski
Diversity Program	7/29/10	●	●	●	9/8/10	Dorian Harriston
Dragon "Naturally Speaking" IHIS	N/A	N/A	N/A	N/A		Monique Payne
Employee Health	6/29/10	●	●	●	8/9/10	Kim Dodson
Environmental Services	7/9/10	●	●	●	8/9/10	Jenny Sokoloski
Ethics	6/20/10	●	●	●	8/11/10	Michael Burns Jenny Sokoloski
Facilities and Materiel Management	7/23/10	●	●	●	9/16/10	Julie Scott
Financial Services	7/17/10	●	●	●	8/9/10	Julie Scott
Graduate Medical Ed	8/13/10	●	●	●	9/28/10	Jodi Sheets
HIPPA (Privacy)	8/13/10	●	●	●	9/28/10	Julie Scott
Hospital Forms/Informed Consent	N/A	N/A	N/A	N/A		Lori Stewart
IHIS	6/17/10	●	●	●	9/8/10	Monique Payne
Influenza Updates	8/18/10	●	●	●	9/16/10	Jodi Sheets
Insight (OS wrapper only)			●		9/28/10	Ginny Halloran
Interpretive Services			●	●	9/22/10	Jenny Sokoloski
James Cancer Registry & Outcomes	7/29/10	●	●	●	????	Jenny Sokoloski
JCNN (nursing doc publication)			●	●	9/28/10	Erin Chludzinski
Legal Services	6/8/10	●	●	●	8/9/10	Michael Burns
Managed Care	6/11/10	●	●	●	8/18/10	Julie Scott
Management Services	9/3/10	●	●	●	10/5/10	Harry Evans
Martha Morehouse Medical Plaza	6/29/10	●	●	●	8/11/10	Jodi Sheets Kim Dodson
Materiel Systems (Purchasing)	8/12/10	●	●	●	9/16/10	Michael Burns
Maternal Fetal Medicine	7/9/10	●	●	●	8/18/10	Amanda Luckasco
Medical Center Outreach	N/A	N/A	N/A	N/A		Holly Roby Jenny Sokoloski
Medical Staff News			●	●	9/28/10	Jami Brunk-Young
Nutrition Services	7/27/10	●	●	●	9/8/10	Kim Dodson
Nutrition Services – Clinical Nutrition Team	N/A	N/A	N/A	N/A		Kim Dodson
About OSUMC	9/13/10	●	●	●	9/28/10	
UH East Physician Update		●	●	●	9/28/10	

Start ● Concerns ● Issues ● Complete ●

Department/Web Page	Create Site DATE	Create Menu	Train Admin	Convert Content	Launch DATE	Owner
OPAC	8/5/10	●	●	●	9/8/10	Mary Connolly
Operating Rm Electronic Med Record IHIS				●	10/5/10	Harry Evans
OSLP	6/29/10	●	●	●	8/16/10	Jodi Sheets
Patient Financial Services **	8/12/10	●	●	●	9/22/10	Harry Evans
Patient Information			●	●	9/28/10	Jodi Sheets Kim Dodson
Perioperative Services	7/12/10	●	●	●	8/16/10	Harry Evans
ProjectONE (convert existing content)			●	●	9/28/10	Kim Dodson
Radiology	7/16/10	●	●	●	9/28/10	Dorrian Harriston
Recruitment (part of Recognition)			●	●	9/28/10	Jenny Sokoloski
Research Billing **	7/17/10	●	●	●	9/22/10	Harry Evans
Respiratory Therapy UH	7/17/10	●	●	●	9/16/10	Jodi Sheets Jenny Sokoloski
Respiratory Therapy – Staff Only (Collaboration Site)	N/A	N/A	N/A	N/A		Jodi Sheets Jenny Sokoloski
Respiratory Therapy – UH East	N/A	N/A	N/A	N/A		Jodi Sheets Jenny Sokoloski
Revenue Management **	8/18/10	●	●	●	9/22/10	Harry Evans
Security	7/27/10	●	●	●	8/11/10	Julie Scott
Service Council (Leadership in Action)	N/A	N/A	N/A	N/A		Lori Stewart
Site Map	N/A	N/A	N/A	N/A		Harry Evans
Space Information and Management	6/29/10	●	●	●	8/16/10	Mike Burns
UH East Leadership Office Hours			●	●	9/28/10	Jenny Sokoloski
UH East Newsline			●	●	9/28/10	Ann Stephans
Utilization Management	7/21/10	●	●	●	10/5/10	Jenny Sokoloski Jodi Sheets
Vascular Lab	N/A	N/A	N/A	N/A		Tyler Mason Jenny Sokoloski
Women's Leadership Connections			●	●	9/28/10	Lori Stewart
Moderate to Convert						
Access Management **	7/17/10	●	●	●	9/22/10	Jenny Sokoloski
Accreditation	7/14/10	●	●	●	9/8/10	Jodi Sheets Jenny Sokoloski
Blood & Marrow	7/12/10	●	●	●	8/18/10	Jenny Sokoloski
Credentialing	7/16/10	●	●	●	9/8/10	Michael Burns
Human Resources	7/12/10	●	●	●	9/28/10	Lisa Millar
Information Technology	6/10/10	●	●	●	9/16/10	Monique Payne
Hard to Convert						
Clinical Practice Guidelines (Is an application. No impact if not converted)	8/28/10	●	●	●	9/28/10	Jodi Sheets Harry Evans
Epidemiology	7/12/10	●	●	●	9/22/10	Jodi Sheets Jenny Sokoloski
Medical Information Management	8/18/10	●	●	●	9/22/10	Jenny Sokoloski Jodi Sheets
Primary Care Network	6/20/10	●	●	●	10/5/10	Michael Burns
Quality and Patient Safety	7/7/10	●	●	●	9/8/10	Jodi Sheets Jenny Sokoloski
Safety and Emergency Preparedness	7/27/10	●	●	●	9/22/10	Jodi Sheets Jenny Sokoloski

Start ● Concerns ● Issues ● Complete ●

The site inventory chart was another project management tool used for the OSUMC portal project. This chart helped the team track the conversion of content on the department sites to the new environment and training of department site administrators. Sites were categorized by difficulty.

Train Users on the CMS

We are told over and over again that companies should provide training to their content providers and administrators. That training may take many forms — personal, online or group — but it is *the* distinguishing factor in successfully getting content providers involved and comfortable with the CMS. Many CMS systems are challenging to use, or at the very least, require new users to learn the basic functions, and training not only helps encourage consistent process flows, but training also serves as a mechanism for getting users comfortable with the system.

Sometimes that training is necessary to introduce the system and sometimes it is necessary to overcome its shortcomings.

"One of our primary challenges is the training of our website administrators," says Harry Evans, OSUMC's senior systems consultant. "Most of these individuals have no prior experience with posting, editing and managing web content."

Previously, the majority of the site administrators submitted requests to post, edit, delete, etc. site content to a developer on the Web Services Team and that developer actually managed the content on the site. As a result, the site administrators were, for the most part, unfamiliar with the techniques and methods required to effectively and efficiently maintain and manage content."

"Since the majority of our site administrators have little or no experience in the management of web content, they are not familiar with the processes and methods that web developers utilize to maintain site content," says Evans. "This includes tasks such as creating site menus that are both concise and intuitive to site users and the organization of the content so that it can be effectively navigated by those users."

"Uploading and creating content is only part of the process," he says, "the more critical, and difficult, task is to organize and link the content so that users can effectively utilize the site. The training of these processes and techniques has proven to be a significant challenge, particularly when considering the large number of site administrators that need to be trained within our organization. While I believe we have made some progress, there is still much improvement we need to make in this aspect of our training program."

Organizations often choose a CMS solution based on a range of factors but ease of use is not always considered in the evaluation criteria. Formal training can help ease the transition to the new system

"The CMS we purchased integrates with our portal framework," says Tom Fields, web content editor at Idaho National Laboratory. "We manage content through templates that provide standard look and feel, content management capabilities, and consistent behavior. However, the CMS is not very intuitive, so we developed a training program to teach users."

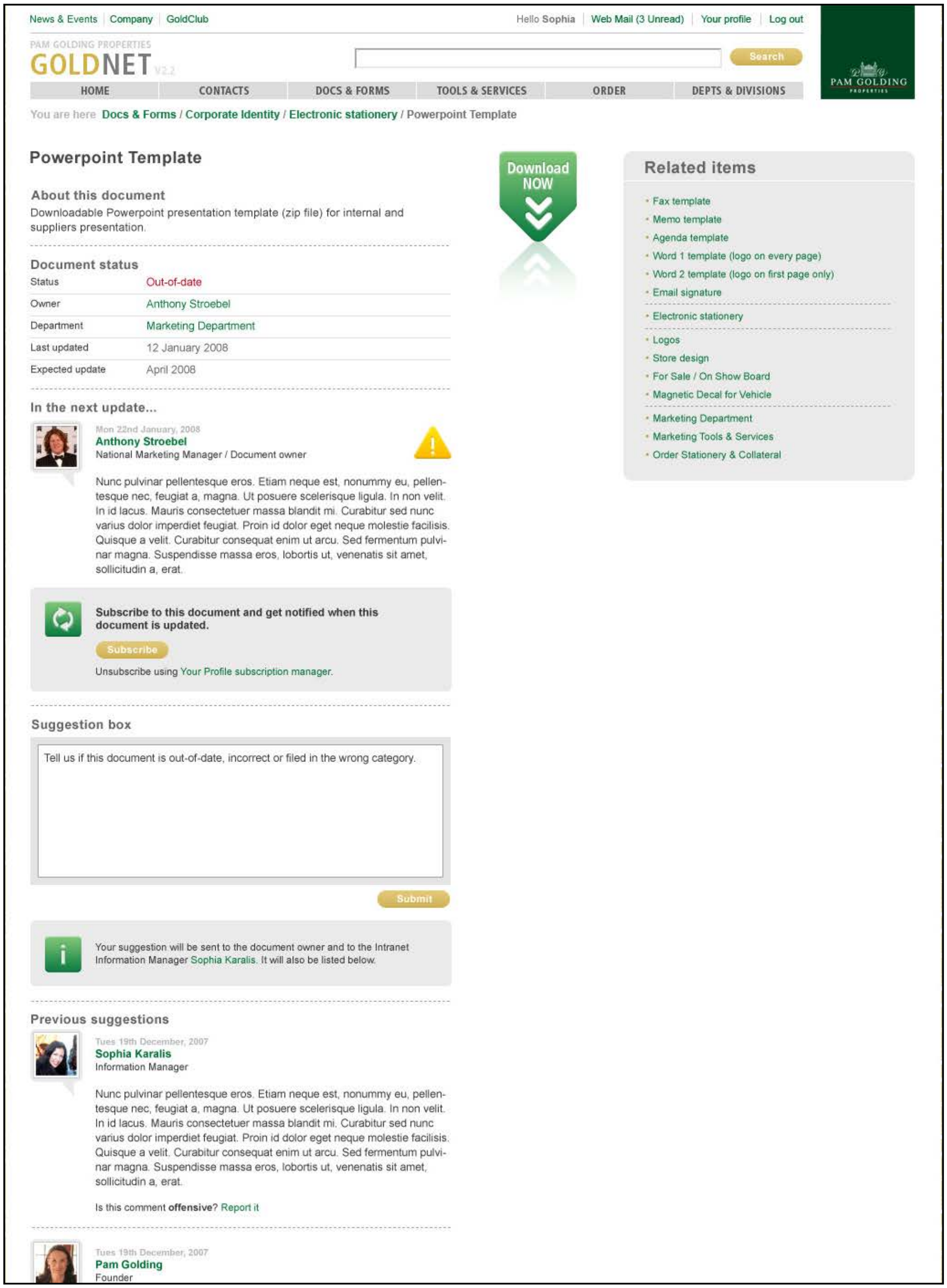
Training can also provide encouragement for content authors to contribute.

Overcoming Obstacles

Pam Golding Properties' web media manager, Sophia Karalis identified content owners by department and division and sat them down at the table and told them: "You need to update your content," and gave them training on how to use the CMS. When we interviewed her, she reported that to date no content had been updated. Why? "The CMS is too difficult to use," she says, "And they [the content authors] don't have the time."

Because the organization is relatively small, she can take a centralized approach for now. "We have a content department that will manage content for portal. They will meet with departments regularly to encourage them to share information and news and chase content updates. She has also hired a new trainer, a change management consultant, who will help with the portal launch and facilitate the training with all content owners.

And it never hurts to put a policing mechanism in place as well. "We will be introducing a content policing system for all documents," she says, "So staff can see the status of documents, and provide feedback if any document is out-of-date." She says she believes this will make content owners accountable for providing timely updates.



A document container page tells users at Pam Golding Properties about the document they are about to open and lets them comment if the document is out-of-date. Related documents are linked at the right side of the page.

WINNING OVER CONTENT PROVIDERS

A portal is only as good as its content. So what happens when local information providers aren't willing to cooperate and contribute information toward the new intranet? Unfortunately, this is not an uncommon problem.

Some content providers are unwilling, unable or just don't have time to contribute content to the portal. In some cases, information providers may resist sharing simply because they've had complete control over their local intranet. No doubt they resent being demoted from webmaster to a mere source of information. Or the reverse may be true, and information providers may become accustomed to a webmaster who handles issues of formatting and information presentation. In such cases, information providers dislike being required to suddenly use a content management system, which increases their responsibilities to include how the information is presented.

These two extremes play out at numerous organizations, including Verizon. "We see the portal as a tool that might help, but some managers have control issues," says Verizon's Ivy Eisenberg. "We encountered resistance from the content writers because we wanted to have site users send them updates directly via a special mailbox. The content writers refused. They said they were too busy and understaffed to be able to sift through all the emails they might receive. We've had ongoing problems in terms of the consistency of documentation, how it should be categorized, and who should be responsible for it. We've had two opposing situations: one where the content-writing organization wants to control everything about the site, and one where they don't feel it should be their responsibility.

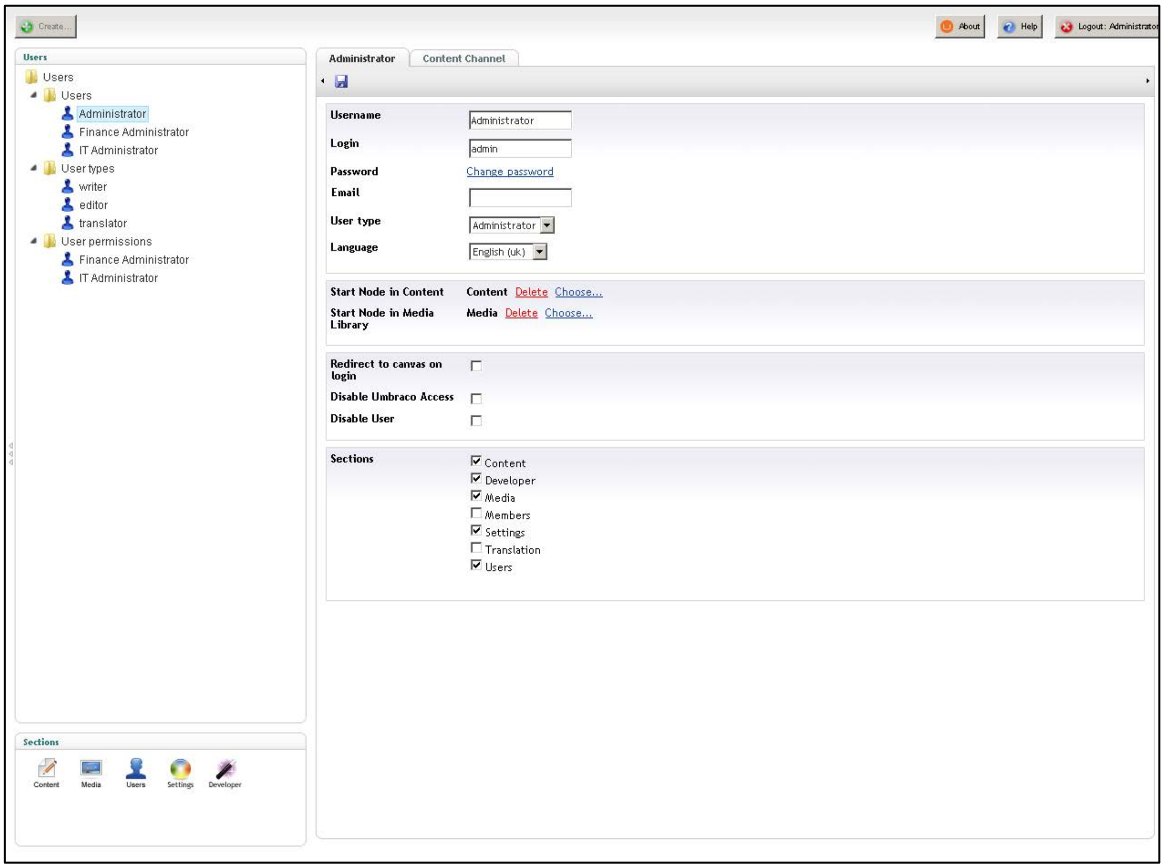
"If content providers aren't happy, they may withhold information or distribute it on the sly. If users clue into these alternate sources of information, and if the new portal doesn't meet these users' standards for the old, the new portal may fall into disuse.

Then again, the portal team at CSFS encountered the opposite problem, and one of its main challenges is dealing with large amounts of content. Far from jealously withholding information, content providers compete to have their information displayed prominently on the portal. "Everyone who has news to contribute thinks theirs is the most important," notes Blecic. "It can get so that really useful content is hard to find. But it's a difficult political job to explain it to them. Sometimes people are really like children — someone else has something, and they want it too."

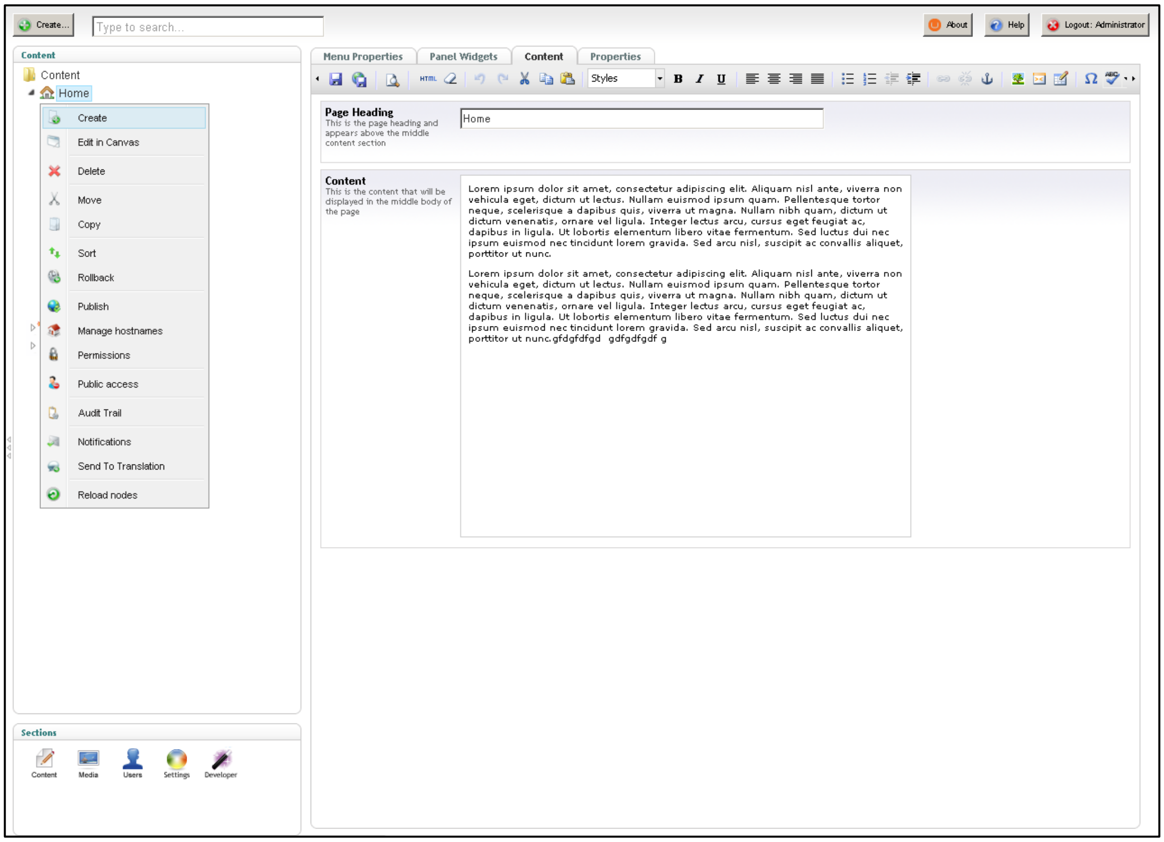
How can portal teams politely decline over-zealous content contributors? As documented later in this report, usability testing helps. Such testing can make it clear to content providers that users are most interested in the relevance of content they find on the intranet — not its position relative to other content on the site.

The good news is that as portal systems mature and become part of the corporate landscape, the early problems linked to "portal positioning" tend to decrease. In general, the more established a portal, the more users are willing abide by the rules. For example, take the HP Europe partner portal, which has been in existence for over 12 years. "The portal is established now, and it's very clear that if you want to publish information to channel partners, that has to go through our partner portal," notes Omar Benaissa of HP Europe.

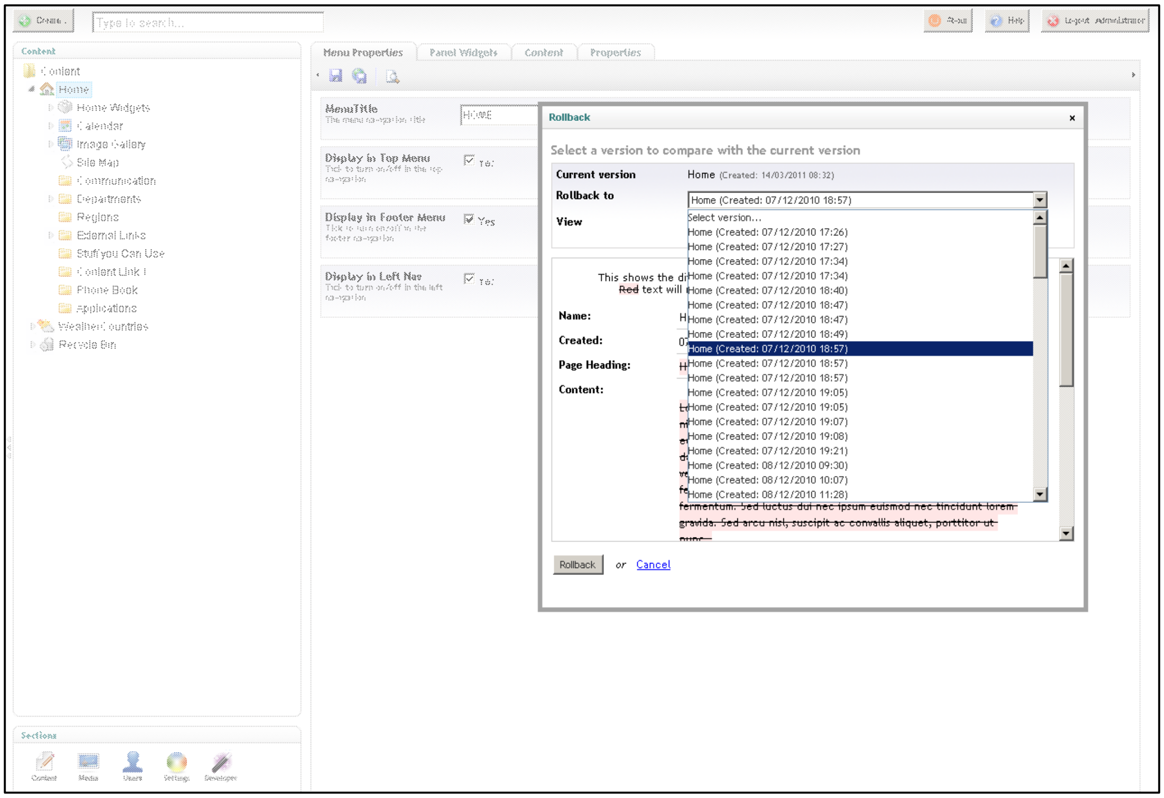
Or take HarperCollins Publishers in New York, which has had an intranet portal called "Intraweb" since 1996, serving users in New York, Pennsylvania, and California. Intraweb is very well accepted and used enthusiastically by staff, who recognize the time savings involved in having corporate information in a central location. “People who have been with the company for several years can remember when only people who had a specific client-server application installed on their computers could look up sales or inventory data for books they were working with,” says Joy Zigo, interface architect in the IT department at HarperCollins. “If you were not in the publicity department and you wanted to find out when an author would be reading at a bookstore in Chicago, you had to call up someone in publicity. You had to take an elevator to the HR Department to pick up four kinds of paper forms for health insurance claims. People are very happy that they can now find all those things easily through the web portal.” That happiness can translate into cooperation and eagerness to participate in the content authoring and maintenance.



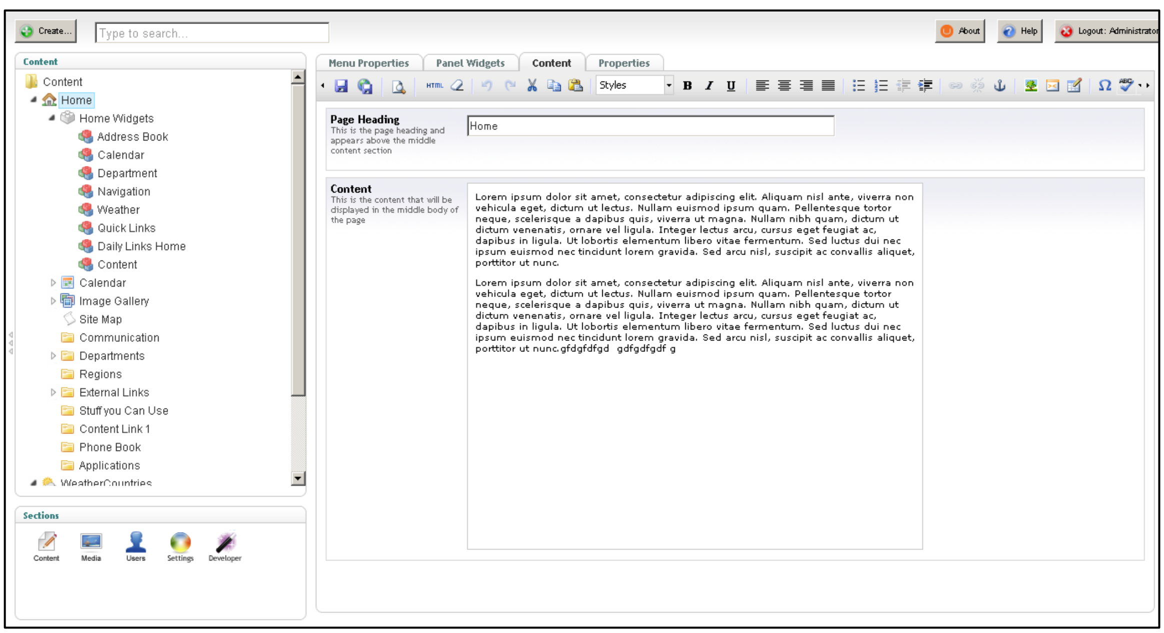
This screenshot from the South African Breweries’ portal shows where the CMS administrator controls who can administer sections within the CMS. The main CMS admin would create each department administrator account that would in turn allow the department admin to administer his department’s intranet content. There can be as many admins as required, defined in the CMS.



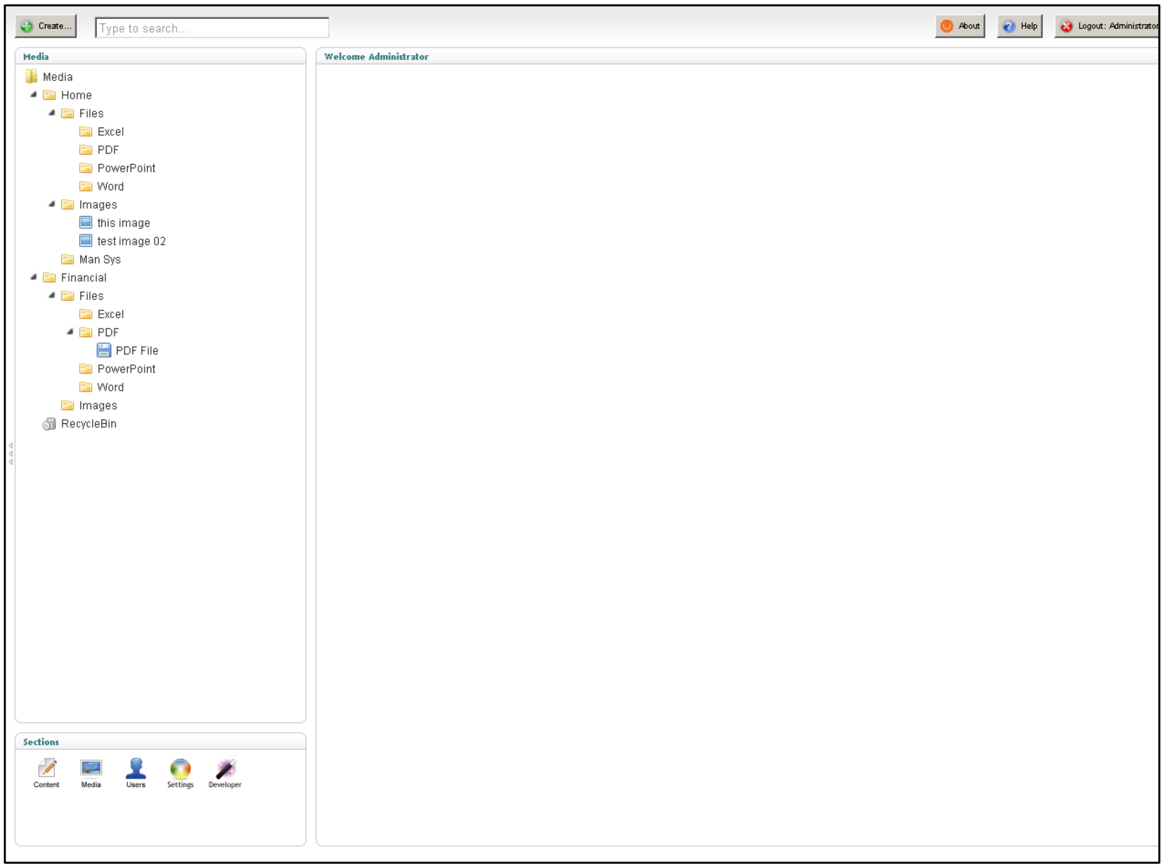
This is the window that appears when a user right-clicks on a node within the SAB CMS. Here the user can create, save, publish, delete, copy and move pages within the CMS to different sections. The user can also rollback, and provide public access to a section of the CMS.



This screenshot shows the SAB CMS rollback function. A CMS admin can right-click on any page or node in the left hand column and select the rollback function. Doing so allows the CMS admin to roll back the content to a selected previous date.

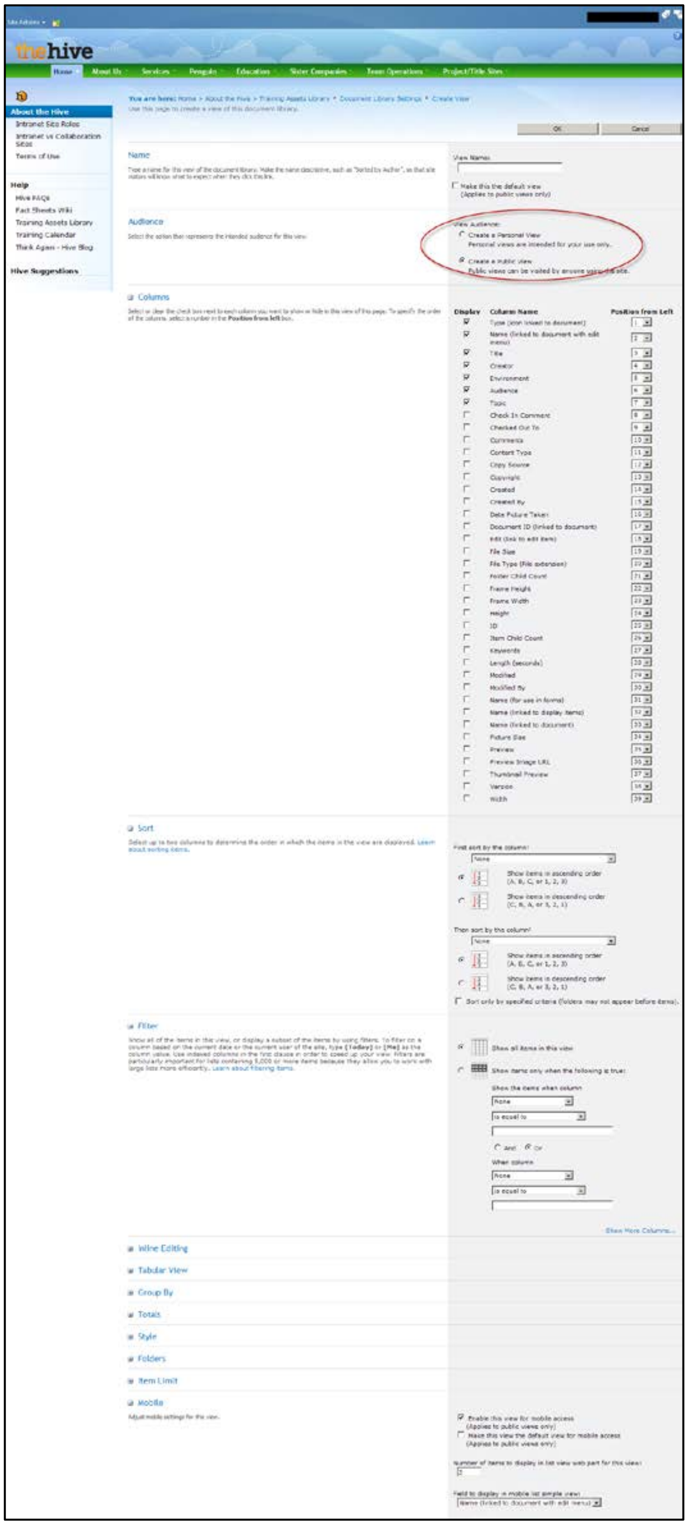


This screenshot shows the rich text editor in the SAB CMS. Here a user can edit as if they were using a WYSIWYG editor such as Microsoft Word.

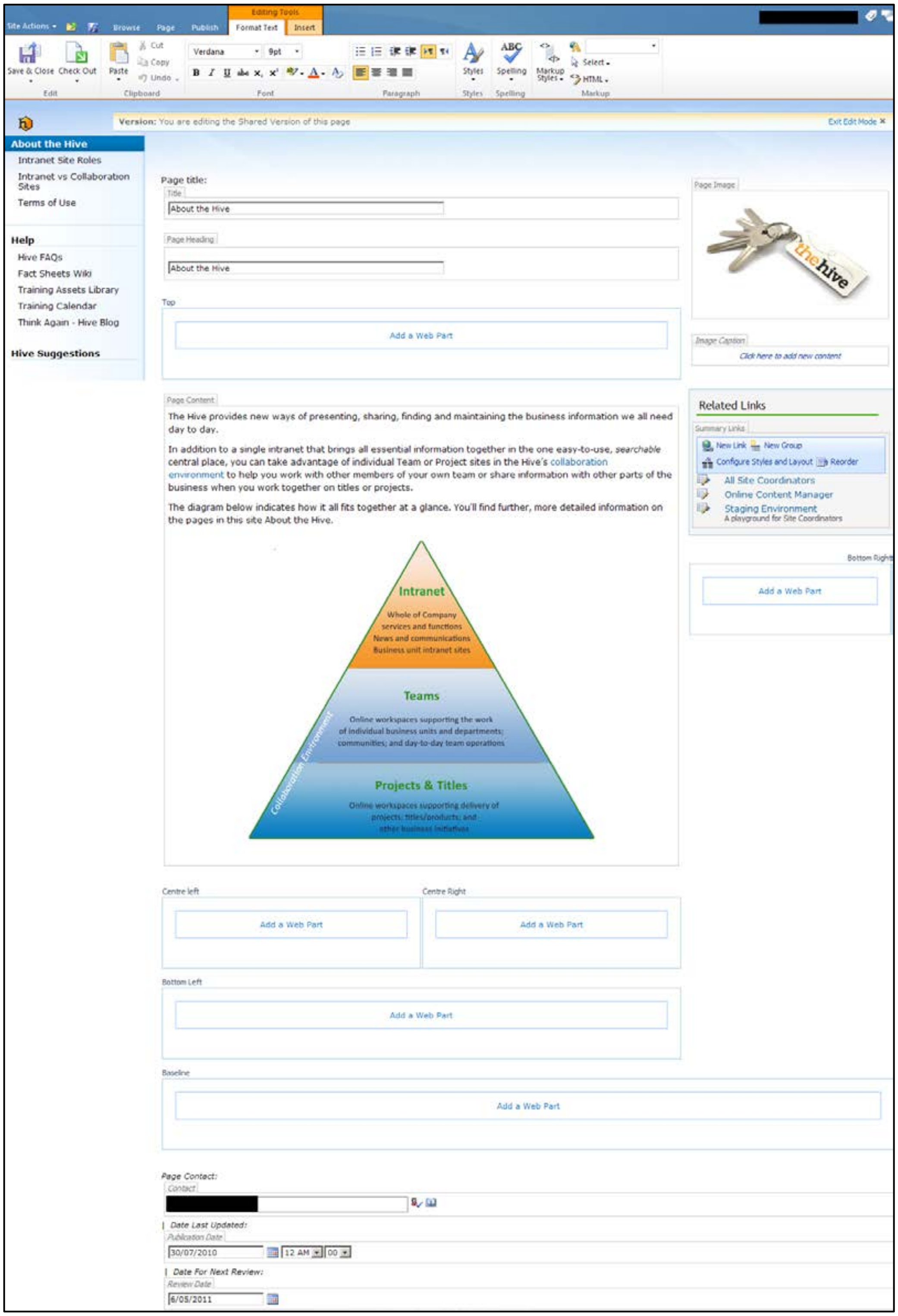


This screenshot shows where the department CMS admin can upload and categorize files (such as images, PDF, Excel and Word docs) within the media section of the SAB CMS. For each of navigation, files are categorized by department and file type. Also, any files uploaded into the media section can be accessed and displayed via the intranet using the search functionality. The media section can also act as an online file storage system, allowing staff members to browse company documents in an online network environment.

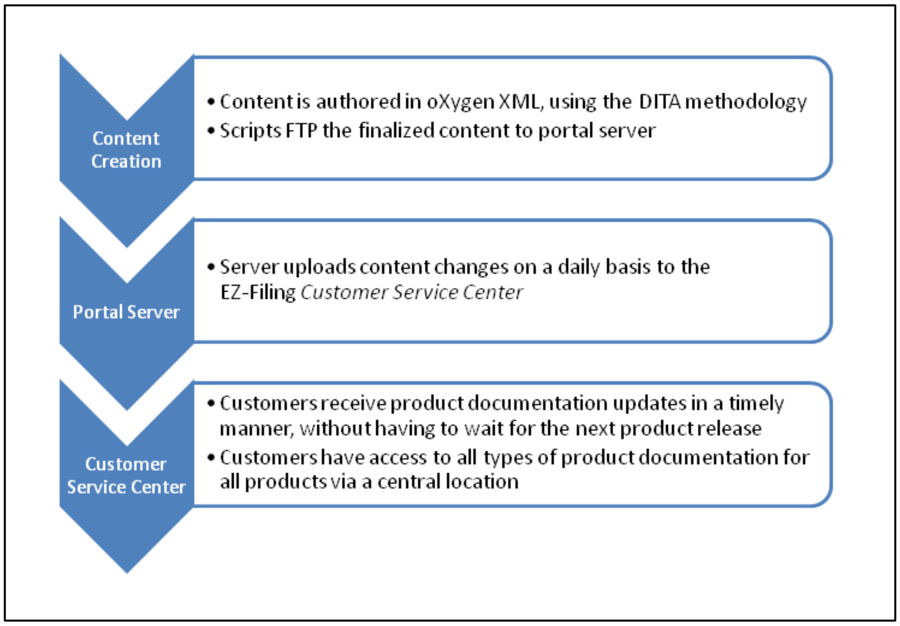
This screenshot shows the first setup page a user sees when launching or editing a website on the localpi.co.uk portal.



Portal staff with permission to maintain content on the Pearson intranet and staff with permission to contribute to sites in the collaboration environment, are able to create both public and personal views for all lists and libraries.



On the Pearson portal, intranet site coordinators or contributors to collaboration sites can edit all items on a page. Web parts can be added to display lists or libraries, and images and text, graphs and tables can be adding using the WYSIWYG editor.



This screenshot shows the high-level workflow of the content management process (back-end), from documentation team to portal server to customer, on the EZ File portal.

BEST PRACTICES

Content

- Solicit feedback from across the organization. Rather than have the portal team or other governing body police the content, open up the system for general user feedback. Make content owners accountable for providing updates by giving users a mechanism for reporting stale content via the portal itself.
- Retire old content. Automate document archiving so that reminders are sent every six months asking if people wish to retain the document. Find ways to help users flag out of date content.
- Write for the web. Focus on readability and ease-of-use. Content providers tend to make content complicated to show their intellectual capacity. Train them to write for the web.
- Distinguish between content types. Managed content such as corporate policies, HR related information is different than collaborative/community and user-generated content. These two types of content are should be managed differently and have different workflows in the governance model.
- Plan for content translation. If site content requires translations, work that process into the overall workflow for authors and editors, right at the beginning of the project.

- Use analytics. Encourage use of analytics reports to show content owners how content pages are/not being used.
- Organize by job function. Investigate options for serving centralized content to employees by job function, regardless of where information originates in the system.
- Have writers write the content. You can't rewrite a website without writers and you need people who work well together, have similar styles, and who can respect an editorial process.

Contributors and Owners

- Establish a governance structure. Regardless of the company's approach to content management: centralized, decentralized, or somewhere in between, the best way to ensure compliance with content rules is to have a clearly defined governance structure that is published and understood by content contributors and admins at all levels of the organization.
- Provide training. Content management systems are not all easy to use. Train users as a way to introduce the system and train users in an effort to overcome the system's shortcomings. Training can also encourage users to contribute.
- Provide guidelines. Make style, design, and layout guides available to contributors.
- Provide outreach. Just because you build it doesn't mean users will contribute. Provide training, communication and outreach efforts to entice users to contribute portal content.
- Make responsibilities clear. Consider creating service-level agreements between internal information providers.

Technology

- Technology solutions don't solve usability problems. Don't expect portal technology to solve usability problems. Sometimes, it can create them. Make sure the CMS technology is easy to use. If it is easy to use then people will more readily publish content.
- Make trade-offs wisely. Using portal products may mean a trade-off between speed and flexibility. Decide which is most important. Having flexibility and lots of design options doesn't always improve the user experience.
- Prioritize needs. Different CMS and portal products have different strengths and weaknesses. Decide what your priorities are before you choose your technology.
- Evaluate the user experience. When choosing a CMS, evaluate its user experience in addition to any technical considerations.

Consulting the Users

Any portal project will bring diverse groups within the company together, along with their often-conflicting views and business priorities. The rise of portal steering committees and cross-functional planning teams has led to an unhealthy reliance on these groups as the de facto voice of the users.

To save time or money, portal teams often rely on some combination of input from the portal advisory board and informal user consultation and/or testing.

At Verizon, for example, a steering group including representatives from different parts of the business has guided the design of Ventana, the Verizon portal, from the beginning. Before starting the development, the portal team also went out, met departmental managers, and asked them what they wanted to see on the portal. "We said, 'what information do you currently need'? And we built on that," says Ivy Eisenberg.

Despite the importance of these cross-organization collectives to drive portal development and adoption, it's best not to rely on this small group to intuit the needs of all users. In fact, getting a truly representative sample of users typically requires testing a far wider range of users, who may be spread over a large geographic area.

Early Involvement Pays Off Down the Road

Even though it can be difficult, from a budget standpoint, to spend time with users, even the smallest efforts can pay off. Spending time with users means a team might discover valuable information that will inform design decisions upfront. Without such information, teams often find out after the fact that they have to make changes downstream.

"It's better to test early than have to fix later," says DC Interactive's Rust who spearheaded SLA's portal project. "Users' perception regarding a system is very important and influences their interaction with the system."

Getting user early buy-in can have positive outcomes throughout a project. "If users buy into a system early on then design changes to the system at a later stage might be seen as enhancements," he says. "Whereas if they didn't buy in, it may be seen as another hurdle making it even more difficult to master or use the system. We believe that setting the right tone and mood upfront is an important part of the usability and perception of the portal."

Those who hold the purse strings are sometimes tempted to adopt a short-term, hit-and-run approach despite the long-term benefits of user engagement. "Many people out there would rather spend a limited budget on a small project that has immediate results but will quickly be out-of-date, than invest in usability for longer-term gains," says Alex Langley, project manager for the content and new media team at RICS.

Haste Makes Waste

Budgets, however, aren't the only impediment to user testing. At CSFS, carrying out extensive usability testing has been a challenge because of pressure from senior managers to get new portal functionality up and running as quickly as possible. "We're still trying to convince people that usability is the way to do things, and we haven't gotten as far as we'd like," says Blecic. "Getting a budget for it is difficult, but so is getting time, because everything has to be built quickly. The developers who did Private Link [one of the pre-existing intranets on which the new portal was based] feel they've done enough testing. But we now have a huge palette of users with very different needs and different philosophies, and picking up on what they all need isn't so easy."

Implementing a comprehensive usability program and testing with a wide range of users may be a challenge, but our interviews confirm that such investments, especially upfront, help portal teams discover what users really need. Then as new designs emerge during a portal-building process, user feedback is critical for ensuring a portal's eventual popularity.

Show Don't Tell

What some groups fail to recognize is that involving the users can supply them with powerful ammunition to resolve conflicts or lend support to new ideas or proposed features. Substituting user's opinions and feedback for those of the development team or steering committee can deflect possible objections.

User testing helped one financial services company we interviewed banish corporate acronyms from its portal homepage and helped give credibility to the idea that this move would benefit the site. Instead of the portal team saying: "No one will know what this [language is]," they were able to show that in fact users didn't know what the acronyms stood for. That shift in focus takes the heat off the portal team and shifts the authority to the research and the users. This often provides a more compelling case than individual opinions or expertise.

At Dell, the culture of corporate acronyms was so entrenched that the portal team had to intercept new hires, just out of orientation, in order to test users who weren't already indoctrinated in corporate-speak to test the new homepage link groupings and category labels. This strategy gave Dell's portal team data to support their IA decisions and helped make the case for them.

Listening to Feedback

User training sessions can also be a valuable source of information about the portal's effectiveness, and which features and functionality it might lack. Verizon uses just this approach, supplemented by more ongoing, yet informal, user interviews.

At New Zealand's Northland Regional Council, the portal team relies heavily on user feedback to drive improvements on the portal. "A lot [of improvement ideas] are from staff feedback telling us what they need or what is hard to use or find," says Morris. Portal training is part of the new employee orientation program at the organization and during those sessions, the portal team is able to solicit advice for improvements.

The Universal Truth: Some User Research is Better Than None

Perhaps our sample of participating companies is a somewhat self-selecting group that collectively believe in the value of user research, but without exception, portal managers interviewed for this report expressed a desire to adapt more ways to involve users. The organizations that do some user research would like to do more, and more frequently. Those teams that have yet to begin are anxious to get started.

The persistent advice gleaned from nearly all the companies we've interviewed is: some research is better than none and there is benefit to be gained from even the smallest efforts.

"I would work in even the smallest, unscientific, guerilla research and evaluation into a project," says Kaiser Permanente's Garrett. "Some data is better than none."

Several years ago CSFS carried out a quick-and-dirty email survey of its users that yielded interesting results. It found that about half of all users navigated mainly by using their bookmarks. Only 10% used the main site navigation, and only 20% used a personalized *MyMenu* function.

These results helped focus discussions with content providers who were determined to have their content featured prominently on upper levels of the portal. The portal team, however, was able to show that position wasn't relevant unless content was engaging. "Now we can say to people, it doesn't help your site to be on upper level if your site doesn't have interesting, fresh content. Take a look at that data," says Blecic.

Regardless of budgets, the good news about usability testing is that even when dollars are scarce, users aren't. "People like doing usability testing. They're flattered to be asked," one intranet manager commented. "They realize we really are listening because they see changes as a result of our feedback."

Our research has shown that even portals with limited budgets can incorporate some amount of user participation and that user participation can pay off far beyond the upfront investment. Reaching out to users can also take advantage of one thing that the organization is likely rich with — opinions.

"Our limitation is on time and money," says Amanda Kelly, business manager for Australia's Windana: Drug and Alcohol Recovery, "But what we are rich in is opinions and people."

A photograph of a wall of sticky notes that shows information groupings derived from research collected through contextual visits at Pam Golding Properties.

Consult, Consult, Consult

At Windana, they took a page from their organization's own business approach and applied it to user research for the portal.

"In counseling we have a term called 'active listening'," says Kelly. "Listen and participate in the conversation. Have a dialogue with the users." This approach may be intrinsically tied to the work Windana does in counseling its drug and alcohol recovery clients, but the approach worked well for Kelly as she was trying to get the portal project off the ground. Portal groups can learn a lot from her techniques.

"Consult, consult, consult [with users]," she says. "Make the time to speak to the people using the system. Listen to them."

The main focus of her portal project was to bring the organization's paperwork under control and online, not an easy task for an organization that relies heavily on client case files that are physically moved from location to location across the organization's four service locations. In order to figure out how to transfer the workflows to an online environment, she needed to first understand how they worked, so she went out and talked to users and did an analysis of the paperwork.

Because the majority of her users were not necessarily tech-savvy or even comfortable with technology, she also conducted a compulsory skills survey of everyone in the organization and found that the users fell into three categories:

1. Extremely comfortable with technology
2. People who are interested and willing to learn
3. A group whose members don't know or don't care, or are completely unskilled.

Based on these findings, Kelly devised a three-pronged plan for the users. First, she targeted the "completely comfortable" group as project champions. She realized that targeting this group would be an easy, early win. With the "interested and willing" group she will looked at the things they want to learn and gave them training to bring them up to speed. For the "don't know/don't care" group, she provided one-on-one training and folded them in through other methods.

While Kelly has the advantage of applying this approach with a small organization, which on the surface may not seem applicable to organizations many dozen times its size — her reasoning is sound. You can't please all of the people all of the time or perhaps more aptly put: one size does not fit all.

So, instead, try to group users into reasonable groups and tailor efforts according to what is known about them through research. And the real lesson behind her approach is that by gaining an understanding of the users, their challenges, goals and motivations, it is easier to attract champions to the project and address the needs of those other groups in a productive manner.

This approach is not merely intended to harness the outliers and shepherd them into the portal. Many teams address the challenges of non-adopters, but it is just as important to manage the expectations of those who champion the portal project, whose expectations may be out of line with the reality of what the portal can deliver and when.

"Even the people who want to embrace it, the ones who are excited, if they are disappointed now, it is less likely they will be happy when it's released," says Kelly. "Manage their expectations early on. Let them know what the limitations are. Let them know what it will do and also what it won't."

And ultimately, as she says, "consult, consult, consult," because the efforts put in early, will pay off far down the road.

"The intranet for me is like we are growing a backbone (both literally and figuratively)," says Kelly. "A lot of things are going to hang off this. For some it will be restrictive, but for others they will just be so relived to not spend 20 minutes looking for the right form. It will shift a lot of people's work practices. We have to bring people along with us. This portal is the real support structure for organization."

Better Late Than Never

Despite the body of knowledge that shows how important it is to understand user needs when building a portal, sometimes portal teams still can't or don't consult users before forging ahead. This approach can have repercussions. Point Loma Nazarene University's portal team learned this the hard way.

"We really didn't communicate," says Point Loma's Jeremy Edmiston. "That was our major problem. We didn't communicate early or often and we kind of surprised people."

"We did some testing with a small group of students and faculty — not staff," he says. He and his IT staff used that testing and some limited persona development to get the site redesign up and running. "We kind of shot ourselves in the foot. Early adoption wasn't there."

Without consulting with the users, the portal team had re-organized the information flows on the portal. "The faculty liked doing things the old way," says Edmiston. "We had reorganized without checking to see what makes sense to the users. It really blew up."

To recover from this initial stumble, the team had to backtrack and woo users back into the fold. But first, they had to isolate the most influential users. As with most organizations, a few, vocal and influential constituents can have a big impact on how a new site is received and adopted.

"We targeted the squeaky wheels," he says. "We had to identify the loudest and the evangelists and we had to target users within each constituency."

How did they do it? They did it the old-fashioned way: face-to-face. "We had lunches," he says. "We asked: What are the issues? What will make it better?" he says.

This personal approach seemed to work. "We were able to sit down and explain the thinking of the portal system and what more can be done with it, rather than with the old system, with its limitations. We got buy-in that way. Feedback was positive and allowed us to change IA and adjust our navigation," says Edmiston.

Sometimes these types of battle scars can yield the best learning. "Pre-launch, start to ask questions," he advises. "Ask questions. Engage the users from representative groups. Asking questions is the biggest thing because as you are asking questions you are not only getting information, you are instilling confidence and letting them know that they have a say in something."

This kind of buy-in is critical to adoption. Winning over users, even if it is on a small scale and personal level can pay off as the project moves forward.

"Those people, they are going to be our cheerleaders and will really evangelize the product to others," he says.

Bringing in an Outside Perspective

Knowing what to do *and* having the resources and expertise to do it in-house are sometimes not possible. In those cases, it is important to know when to bring in outside expertise. Outside consultants can bring perspective to a project, but they can also provide a buffer between an in-house portal team and opinions of users who may not want to express them to colleagues.

Build-A-Bear Workshop built its portal using outside consultants to manage the user experience activities. For some organizations, this is the best approach as it creates an environment where users are free to speak candidly about their likes and dislikes without fear of retribution.

When Build-A-Bear's consultants kicked off the project they started with what Ken Somogyi, Build-A-Bear's director of IT development, calls "a heavy dose of user interviews." "The consultants are really coming in not knowing anything," he says. "It is a good approach. An inside user will feel more comfortable talking about problems they have with the site with them rather than with IT guys."

Huntington Bank also called in reinforcements to kick off their portal design process. They contracted with Intuitive Company to lead the user experience design process and help provide a meaningful and useful experience for the company's employees.

"We started the process by leading stakeholder and user group discussions," says Bartocci. "The goal for these sessions was to better understand the constraints and opportunities for the intranet re-design and that information led to a list of requirements. This is less a laundry list of requests and more so a set of qualities about supporting the employees via the intranet that serves as the basis for the design moving forward."

The goal was to help the team think outside the box. So during these sessions they sketched and collaborated on some "blue sky" concept designs without giving any thought toward technological constraints that might box them in. They wanted to think about what possible solutions could support the users in their day-to-day tasks. These concepts serve as a basis for discussion around the site re-design and from this discussion, they are now starting to develop the experience.

"Through an iterative process, we'll design, test and refine with Huntington colleagues to ensure the success from concepts to the detailed delivered design," says Bartocci.

A COMPREHENSIVE APPROACH

When we interviewed design teams for earlier editions of this report we were more likely to hear that most teams had employed a bit of user research, picking and choosing when and what to do, based on constraints in both time and money. Most everyone we interviewed applied some user research to their projects but most did not have the means or the time to conduct research across the lifecycle of the project from conception to launch. This has changed. While budgets are certainly still tight and resources still strained, teams are finding ways to slip in a little user research all along the project continuum.

The reason behind this change is a realization that even small efforts yield results and the results act as a bit of a domino effect. Involving users early and often results in a better understanding of user needs and pain points, which in turn results in a better, more useful design. A better design yields higher rates of use and increased user satisfaction. Satisfied users help drive portal adoption, and so it goes.

When more people are using the portal, for all its worth, that means employees are getting their jobs done more efficiently. Companies in turn benefit from these increases in productivity — often in the bottom line. In other words, when design teams make an effort to involve users — even a little — at every stage of the process it returns far more than the time and resources that were needed to make it happen. Some might call this a virtuous cycle. Today, many companies are creating user research touch points all along the project continuum and the results are telling.

Involving Users Early and Often at the Carle Foundation

The team at Carle thought it was important to include users at many stages of the project. "It has been nice during launch to convey the message that marketing didn't just make up the site," says Skinner, "but it came right from employees wants and their feedback."

"We used a lot of user-centered practices in order to get feedback from our employees," she says. "It was very important to do this because we have employees in many diverse roles and also many times in our organization technology is implemented without user involvement until later stages of the implementation. We wanted to involve users early and often."

Here are some ways the Carle team involved users:

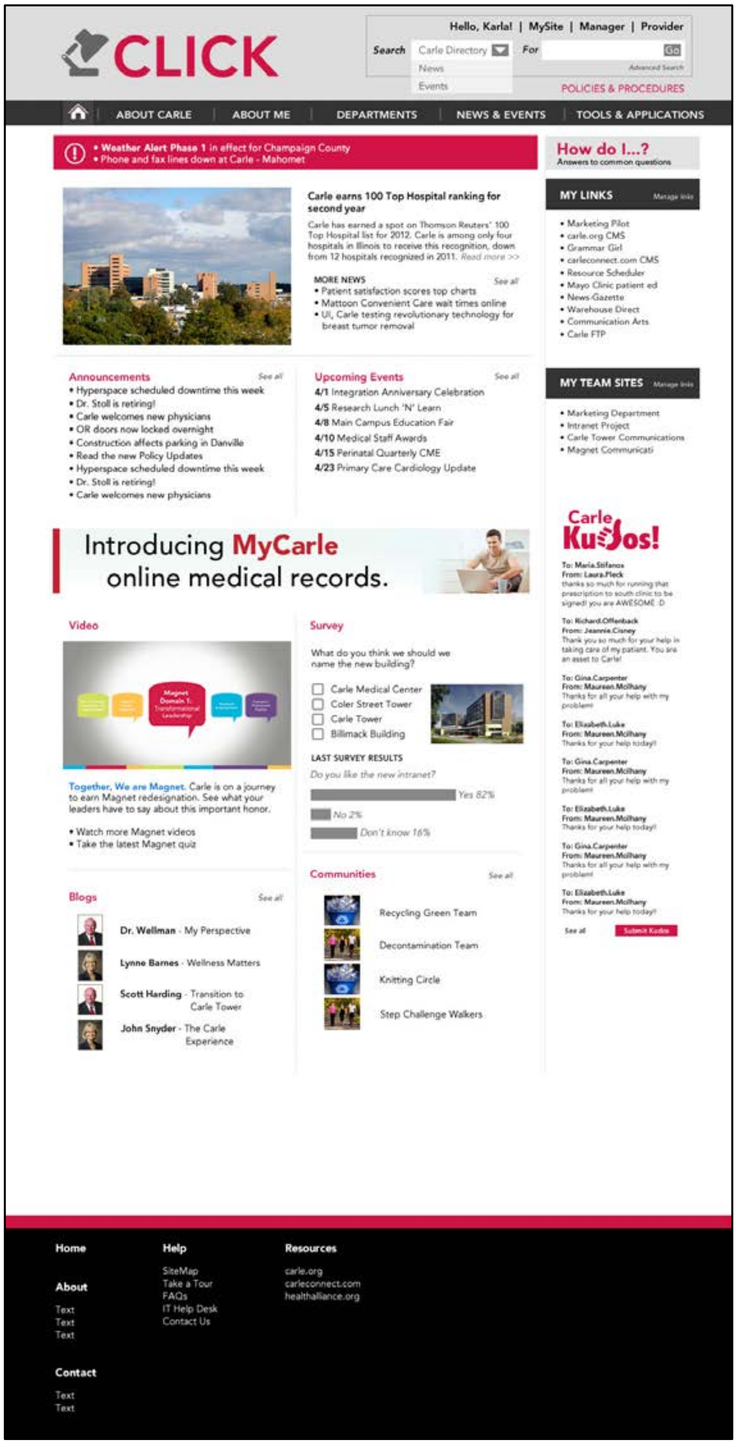
- User interviews: In August 2012, the team conducted 108 in-person one-on-one interviews with employees in each of 10 different roles so they could develop user profiles and learn about the core challenges and work tasks associated with each role. They also solicited feedback on employee issues associated with the legacy sites (search, policies, directory, access, news, forms, etc.) and gathered input about how the sites could be improved and what new features the users wanted to see. Insights gleaned from the interviews indicated that users wanted:
    - A more standardized design and presentation of content and use of keywords
    - The ability to customize the site so what they had better access to what was relevant to them
    - More real-time presentation of news and information
    - More information and stories on people and departments
    - A better combination of push and pull information
    - Ability to access from home
    - Easier and faster access to key tools and resources
    - Updated and easier to use employee directory
    - Events information
    - Better and more consistent department information.
- Employee survey: A survey conducted with all employees in June 2013 was used to get information that would help the team design the megamenus. The survey asked users about their most-visited departments and applications and the tasks they performed most frequently. The team also used the survey as a recruiting tool to find willing participants they could use in beta tests later on. The survey was also used to gather a list of frequently asked questions from employees that were used to initially populate the *How Do I?* page. Several employees expressed interest and appreciation that these questions were being compiled and would be answered on the portal.
- Focus groups: Between March and September 2013 small group meetings were held with employees across a variety of roles to have them give feedback on wireframes, information architecture, menus and design.

- Card sorting: Marketing and IT staff and representatives from various employee roles participated in card sorting exercises to help the design team verify top menu labels and categories, megamenu items, and also confirm the information architecture.
- Beta Testing: In October and November 2013, a group of 300+ employees beta tested the site over a six-week period. These tests helped the team identify issues with Internet Explorer 7 that needed to be resolved. Fixing these issues resulted in a launch delay and forced the design team to lower their expectations about the phase 1 basic search capability. The beta testing also resulted in changes to the megamenu interface and other interface changes. While the beta testing revealed defects that the team could address before the site was released to the population at large, it was also an opportunity for the team to build a pool of champions for the site launch.

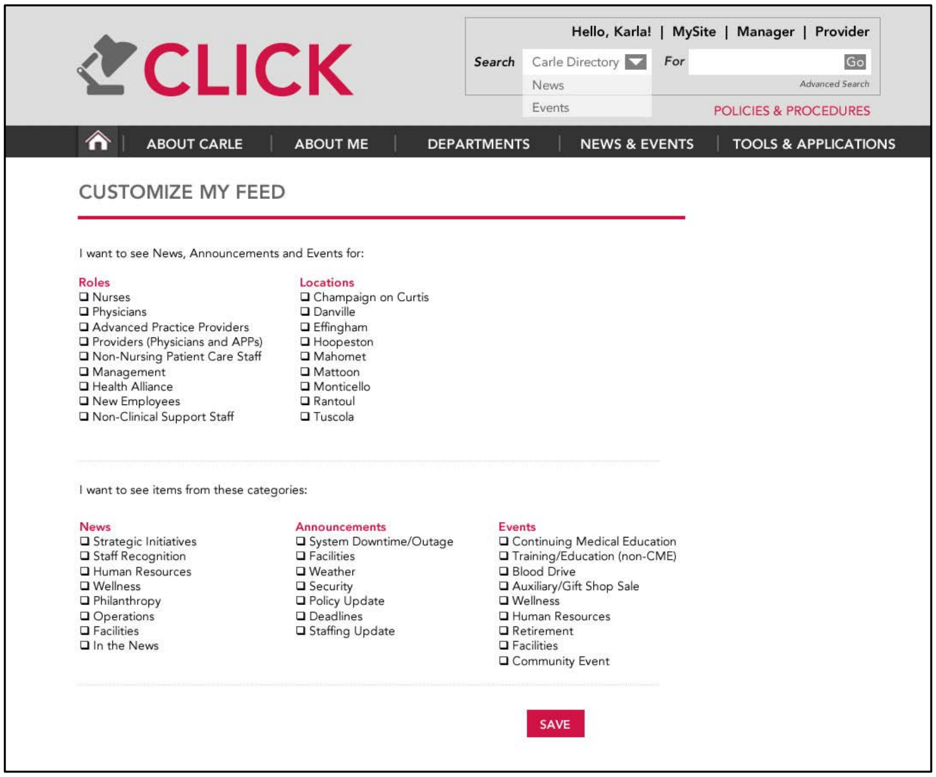
  "The beta testers were called the CLICK Clique," says Skinner. "Testers who completed all assignments were eligible to win a pizza party for their department. They and their co-workers were given pins to wear and signs and banners for their department, to promote CLICK. The beta testers were also invited to download a short presentation they could present at a staff meeting close to the launch date."

  Through beta testing, the team learned that users needed very specific instruction on what the features of the site are and what they do, and also needed assurance that what they need is there and easy to find. The information gathered through these test sessions helped shape the internal messages and copy used in launch communications, leading to the creation of the "CLICK Start Guide" and a user manual.
- Wireframing: The team created a wireframe for each of the major areas of the portal. "This was quite arduous for the design team, and there were multiple iterations to incorporate and balance branding, usability, flat design, information flow and content prioritization," says Skinner. "The use of wireframes was instrumental in facilitating communication between the vendor, the IT department and marketing. Having the wireframe in front of the team during discussion opened up opportunities to talk about what was envisioned and whether it was possible and realistic to program the desired functionality."

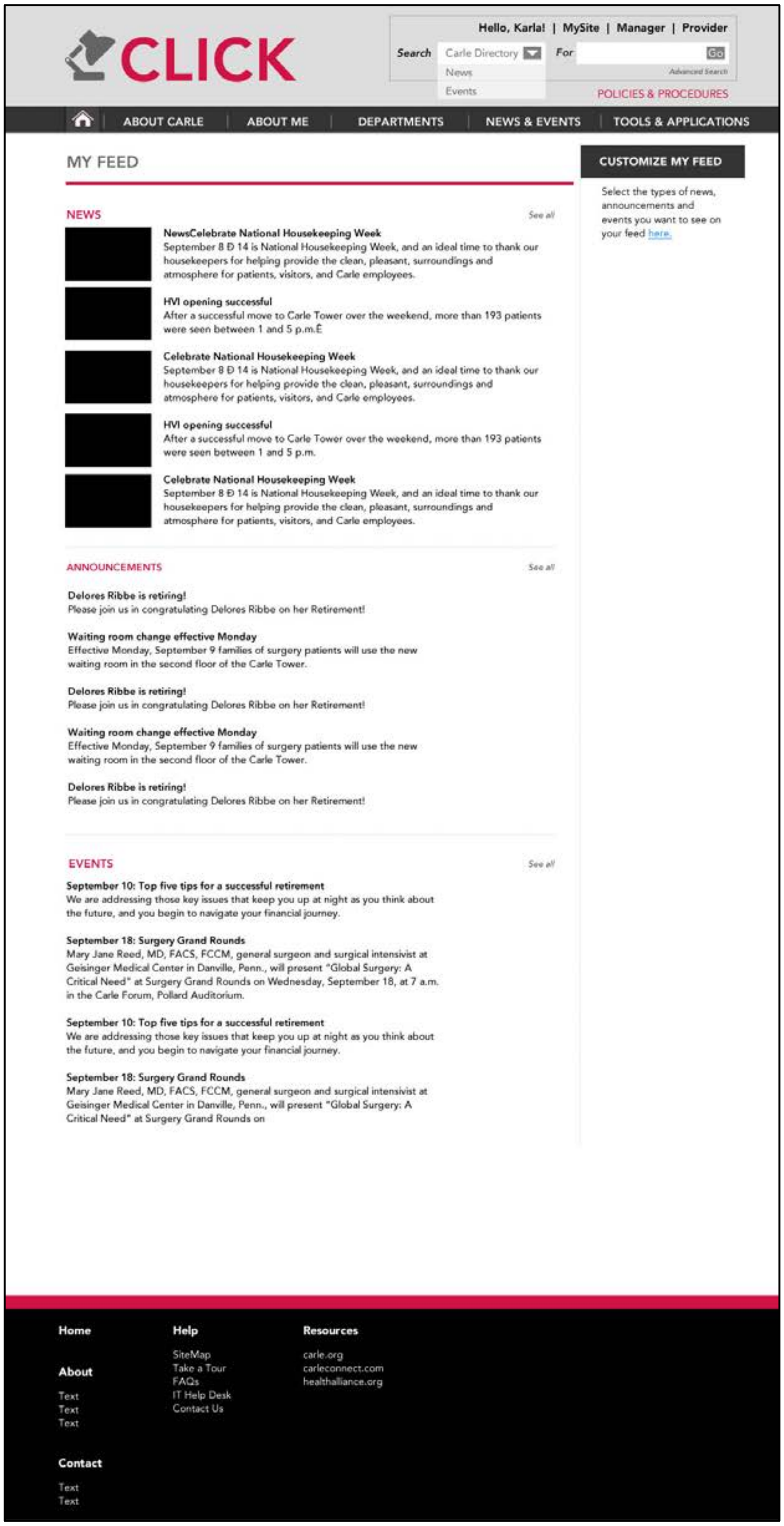
  Wireframes were used extensively with physicians and managers as a jumping off point for discussions about content, the prioritization of content and page flow. The designs were created based on the team's assumptions of the needs of each of these groups, but more information was provided from each participating group because they were given an opportunity to react to what was on the wireframe instead of just brainstorming about what they might want to see.



This is the wireframe for the CLICK homepage at Carle. The team used wireframes extensively throughout the design process to improve communication between developers, IT staff and marketing. At this stage of the design process the survey webpart format needed to be changed and the designers had not yet implemented blogs and communities, but most of what was envisioned in the wireframe was implemented.



This shows the wireframe for the form used by Carle Foundation employees to customize a personal news feed. The form is accessible from the global navigation menu for *news & events*. Users can choose from among the tags for *news*, *announcements* and *events* and may change these at any time.



This wireframe shows the news feed that is built when a Carle Foundation user uses the *Customize My Feed* form shown in the previous screen. The *My Feed* page is accessible from the global navigation menu for *News & Events*.

Giving Users a Voice at NARA

One of the goals of the *NARA@work* re-design was to get as much staff input as possible, and have staff validate ideas as the design process unfolded. To prepare and learn about staff roles and their tasks, the Web Services Branch continually gathered:

- Web statistics and search data from WebTrends reports and Google Analytics
- User feedback and common questions via emails, phone calls, in-person meetings, questionnaires, and surveys

Also, NARA's design team involved users in a variety of research methods, including:

- Online card sorts were used to confirm preferred terminology and site organization. Staff participation in the card sorts helped narrow down 75 topics into six main categories.
- Wireframe and navigation tests helped confirm layout and what type of navigation menus should be used
- Homepage design votes helped the team confirm the preferred design out of four different graphic design concepts for each website
- Usability Tests were performed throughout the design process, from the early wireframe stage all the way through prototyping. These tests helped the team determine what terminology the staff identified with.

This multi-layered approach kept a steady stream of valuable data flowing into the project. "Involving staff in the redesign participation activities also increased buy-in, gave staff a voice and helped managers understand what the staff needs were," says Michael Lingenfelter, NARA@work team leader. "We also had staff vote on their preferred homepage design and layout and type of navigation menus to use." The website now includes a customizable homepage and access to top tasks and most visited links.

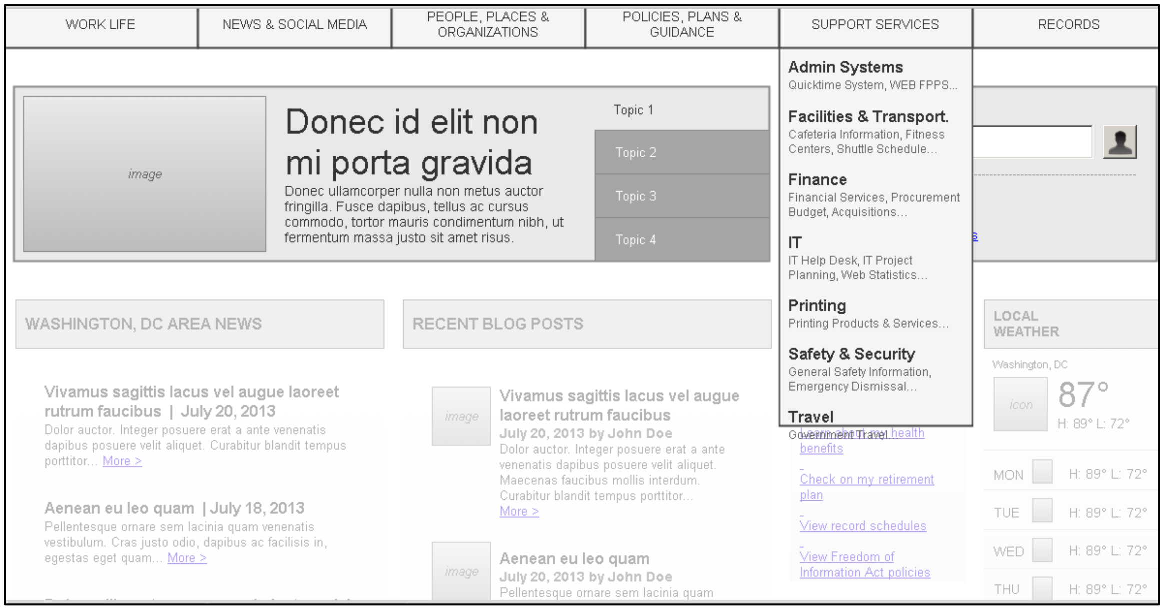
The resulting website focuses on improved search functionality, staff-selected navigation menus, a customizable homepage, and the ability for content contributors to edit pages online. Ultimately it is an informational resource designed for staff, by staff and this approach has resulted in a big win for the project team. Users like the new site and find it easier to locate what they are looking for.

Here are some sample user comments:

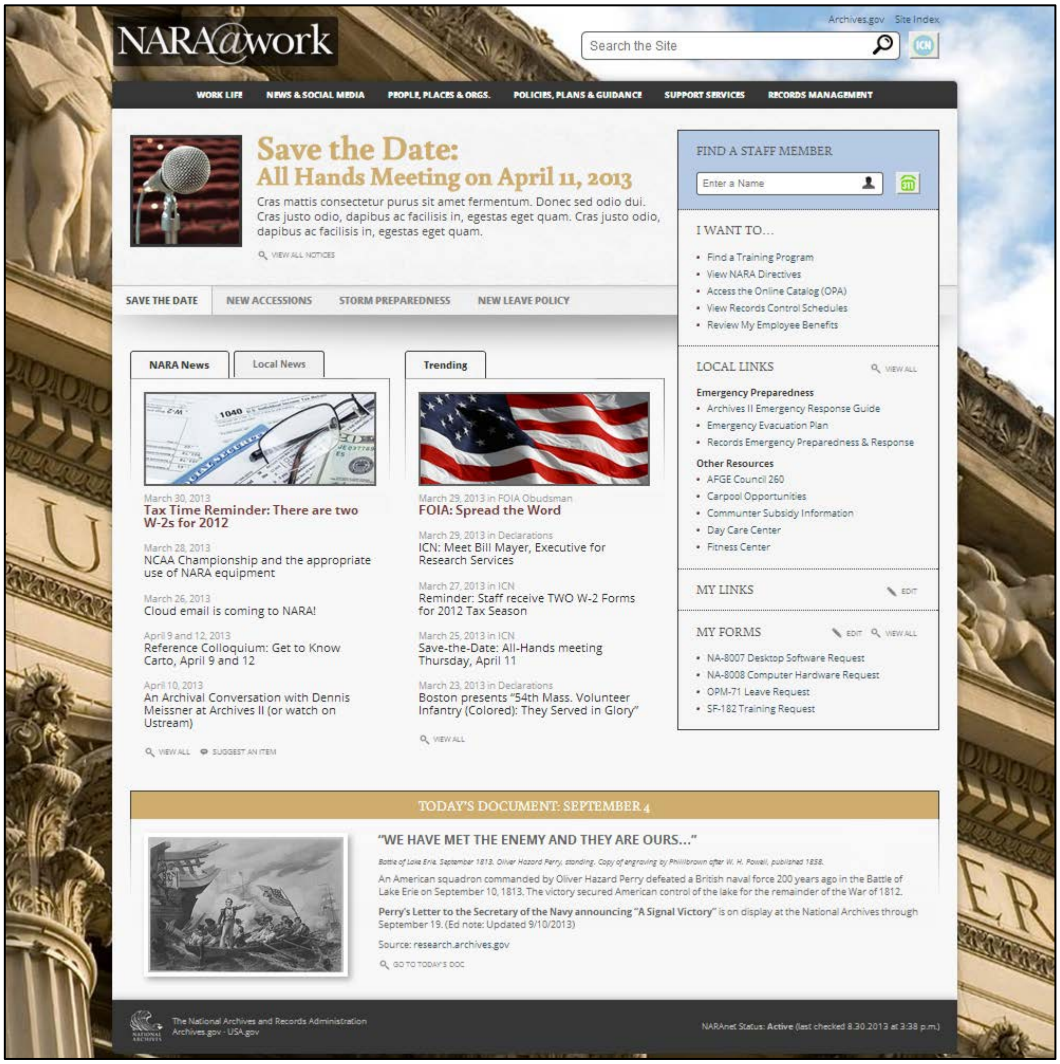
"I like the personalization features for the my links and my forms sections."

"I like it! It's much cleaner and easier to navigate. Great job!"

"I can't wait for this to go live!"



One of the navigation options used in the wireframe usability testing at NARA



NARA homepage with the *Trending* label that was changed to *What NARA is Talking About* based on user feedback from card sorts.

Goodwin Procter Ensures Success

At Goodwin Procter one of the primary goals of the re-design effort was to make information more available and help the attorneys operate more efficiently. "We adopted the tag line 'Work Smart' as part of this initiative," says Kawa. "We realized that a more task-based approach to the intranet design would accomplish this goal. We know that when a user is looking for something it is usually to accomplish some task or objective. Based on this data the portal was re-organized into a more task-based approach."

At first the team considered bringing in outside help, but eventually deemed themselves experts concerning their own users and content. So who better to conduct the research?

A cross-functional team was convened, with members from HR, IT, Marketing and Knowledge Management. "By involving the users up front and keeping them involved in the process we let them drive our overall design and approach," says Kawa.

What they found out was not surprising. The portal had grown to a point where people knew there were great resources available, but they couldn't find what they were looking for.

"For this reason usability was of high importance," says Kawa. "The previous feedback, on our old portal, was that things were unorganized, content could not be found or was missing, and navigation was a mess since it was not context sensitive."

From the very beginning the users were involved in the design and development of the portal. Step one in the process included determining and creating roles, categorizing these roles into high level personas and conducting subsequent face-to-face meetings with representatives from each persona.

The personas were broken down into four main categories across five demographic locations and a random sampling of users from each persona within each office was selected. Then on site, face-to-face meetings were held to discuss the following concerning each persona:

- Primary job function
- Tools and information used on a daily basis
- What works for you today?
- What does not work?
- What is missing?
- How can we improve?
- What social aspects are important to you?

In addition to the face-to-face meetings, the team conducted a number of other user research activities, including:

- Content inventory: The team developed a content inventory to log all the information housed on the existing intranet. This included both native content and integrated content from outside systems. The team also included items that they heard about during the interview process that users felt were missing from the portal.
- Usage analysis: The team performed an analysis of the usage statistics on some of the inventoried content. This helped determine the relative importance of certain content pieces and ultimately helped the team decide if something should be dropped.
- Card sort: Representatives from each persona were asked to do a card sorting exercise. This exercise was intended to get some perspective on content organization, from outside the core cross-functional group. "There was a lot of discussion and debate among the cross-functional committee on how the content should be organized," says Kawa. "The card sorting exercises solved our problem. From this we were easily able to determine how the users went after content and ultimately develop our top and sub-navigational approach to the entire portal."
- Usability testing: Once the team developed the navigation outline they brought in users to determine if they could find content easily in the new scheme. The results from these sessions validated the new IA.

Not every team takes such a thorough approach when involving the users, but for Goodwin Procter failure was not an option. "The re-design effort had to make the portal more usable to be a success," says Kawa.

The portal team continued with this level of care right through the launch. The portal re-launch activities included having portal team members available on every floor, walking around and assisting users with questions or issues.

"Team members were dressed in t-shirts that represented our portal so that users knew whom to approach," he says. "In addition, a conference room was setup where users could drop by to view the portal and have any questions answered."

All this care and research paid off. The users are both happier and more productive. "The feedback after launch was that the portal was much easier to use, more personalized and customized and that information can be easily found," says Kawa.

Putting Users at the Center of the Bullseye

The Coca-Cola Enterprises team puts users at the center of their design process. "CCE's approach to usability starts with our employees," says Phillips. "Since we first launched this employee intranet, we relied on what our users needed and expected."

This commitment to usability is part of a the company's commitment to continual improvement, so user involvement doesn't end with launch. "HR has since carried out a regular testing cycle with our employees so that we always provide a cutting edge intranet for our employees."

"Usability in the IT organization overall is extremely important," he says. "Any systems deployed to our employees to do their day-to-day jobs go through a visualization process first. This is especially important with our sales teams and employees that rely on their mobile device to do their jobs."

To redesign the portal IA the team used the following research methods:

- Card sorting
- Surveys
- Field studies — watching and interviewing employees on site
- Tree testing and follow-up analysis

These efforts resulted in actionable findings. Phillips explains:

- Restructure and regroup. "The feedback showed that we needed to restructure and regroup the information available to employees. The navigation and find-ability of content were not logical and intuitive. It also showed us that the content was too HR-centric and that we needed to simplify the wording, processes and move away from acronym usage."

- **Improving content quality and reducing quantity.** "We have deleted over 1,000 FAQs and over 24% unnecessary content files. We are in the process of up-skilling all HR content owners how to write effectively for the portal and thereby making content available to employees more digestible. To improve the findability we redesigned our information architecture and retested the new design with follow up tree testing. We are in the process of rebuilding the structure and are looking forward to implementing the changes in Q3 of 2014."

Applying User-Centered Design Across a Project

One nonprofit organization interviewed for this report conducted a very successful portal design based entirely on a user-centered design approach. "Our entire redesign project was based on a user-centered design approach which proved to be a huge success," said a company spokesperson. "It allowed us to really focus on the user needs and how they were going to interact with the site while keeping in mind the goals of the organization and departments."

Going into the project they knew they would have to rework the IA. Users had a difficult time finding information on the old portal. Lists of information were very long and the headings did not make much sense. They also knew users were having a hard time performing some general tasks such as posting to the bulletin board. So, they conducted some card sorting and usability test sessions early in the project to try to figure out exactly where people were getting stuck. Areas for improvement were very easy to identify after usability testing and an early card sort.

Another research method the team found very useful was stakeholder interviews and job shadow sessions where researchers followed employees through their daily tasks.

"It gave me a better idea of what type of applications each role needed to have access to quickly in order to do their job efficiently," said the company spokesperson.

The team's project methodology is outlined below, including the steps where they included user research in their work:

- **Phase 1: Review existing intranet and determine intranet goals**
  - Assess strengths and weaknesses of current intranet
  - Analyze current site traffic, search logs, and support calls
  - Conduct surveys, interviews and ethnographic research
  - Take content inventory and review content management strategy
  - Review underlying technology
  - Develop business and user requirements and determine goals (user modeling spreadsheets). This also proved very beneficial so that the team had a reference sheet when making decisions of what to include. They only included features that were mapped to a specific goal.
  - Determine content and features to keep that match goals
- **Phase 2: Develop proof of concept design**

    - Perform card sorting exercise to determine information architecture
    - Develop wireframe mockups to be used in walkthroughs in initial usability testing
- Phase 3: Validate designs
    - Perform design walkthroughs and usability testing on wireframe mockups
    - Analyze feedback and revise mockups
    - Retest
- Phase 4: Plan
    - Product evaluation: choose underlying technology
    - Develop upgrade plan
    - Schedule and conduct training sessions
- Phase 5: Design
    - Audit content and finalize information architecture
    - Add visual design elements
    - Develop visual and editorial guidelines
- Phase 6: Develop
    - Front and back-end development
    - Integration with other applications
    - QA and UAT testing as well as more usability testing
    - Communications plan
    - Implementation
- Phase 7: Optimize
    - Analyze stats
    - Launch another survey for feedback
    - Ongoing enhancements based on feedback

Persistent Systems Designs for Mobile First

Persistent Systems has a very mature UX practice at its organization. “We have a large team of UX designers,” says Nitin Urdhwareshe, Head of Persistent’s UX Practice. “Our methodology and processes have evolved over the years. The way we work has a strong foundation of design thinking.”

The rigor of the team’s expertise and the company’s commitment to that practice is borne out of the realization that usability plays a critical part in the success of its products. “Usability is a very important function in our organization and the team scale-up numbers clearly reflect that mandate,” he says.

When beginning work on its intranet the team identified critical needs through interviews with key stakeholders. These interviews informed the direction of the project. Spending time with the stakeholders and understanding their problem areas and the future needs of the intranet was one of the most critical steps in the design process. This helped them provide clarity about stakeholders expectations which otherwise was very difficult to understand.

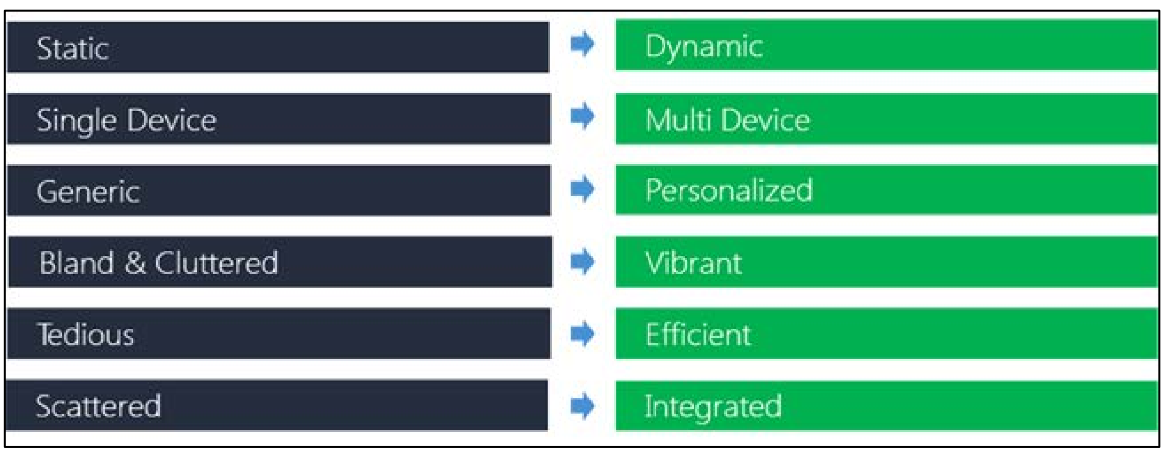
“Observing the users by sitting next to them and understanding their context is where great solutions come to designers,” says Nitin. These observation sessions helped inform their work and led the team to create a set of personas that guided the entire design process.

The team also reached out to the general user population for input. “User surveys helped us clearly understand what the employees needed from the intranet, as well as understand the current issues and usage patterns at various levels,” he says.

Employees at all levels and across all age groups were included in the survey, so the team could gain perspective from the entire range of company employees.

Serving the mobile information needs of the organization was the primary mandate for the intranet design project. With that in mind, the design team adopted a “mobile first” design strategy, wherein design for the mobile platform and its associated user needs would be given priority. This type of approach is becoming more common as enterprise use of mobile devices increases, but for most companies it is still a departure from the traditional way of thinking about design.

“In ordinary cases, design for mobile platforms is usually a compromised version of desktop,” says Bhishikar, “but with mobile devices gradually becoming the primary work devices, this perspective is changing and the design for the Persistent intranet adhered to the philosophy.”



This illustrates the overall change expected when moving from the old intranet concepts (left) to the proposed new intranet at Persistent Systems.

Convinced of the benefits of offering intranet functions on mobile devices, the priorities of the mobile environment served as the driving force for the project and were considered first when designing the new portal. Use case scenarios for both mobile and desktop were analyzed and the content was drafted into information sets to help the team arrive at a suitable architecture for each of the platforms but the scenarios in which the users would access PI on mobile (and their associated needs) drove the product concept and design process. Some examples include:

- While chatting with his or her team over coffee break, an employee might try to find what's in the menu for lunch
- In a project meeting, a manager might want to check the leave schedule for an employee under discussion
- An employee might need to check the shuttle schedule while at home or waiting in another campus.

"These types of scenarios were further categorized into "Urgent Now," "Repetitive Now" and "Bored Now" chunks and the mobile design was conceptualized to ensure these needs were met as per the context and urgency," says Bhishikar.

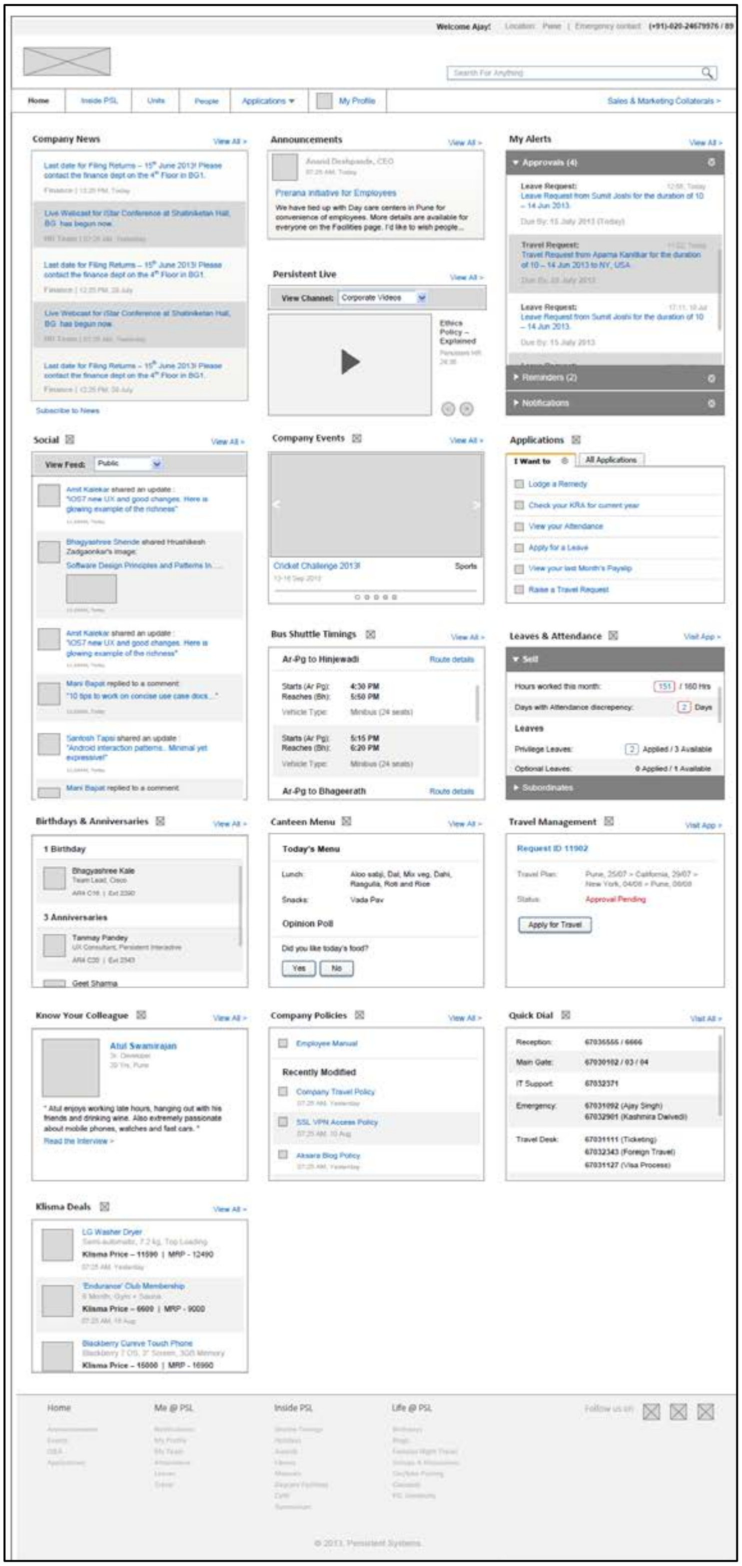
The desktop version was conceptualized as a secondary step, making appropriate changes to the content, design and structure based on relevant changes in the user needs and capabilities of the medium (non-touch, larger real estate etc.).

"The design for mobile comprised of a flatter architecture, with focused and shorter task flows and an efficient navigation," he says. "The design for desktop on the other hand had to include a much deeper architecture and complex task flows, and allowed for richer customization options."

"The site architecture was designed keeping the big picture in mind, beyond the work at hand," says Bhishikar.

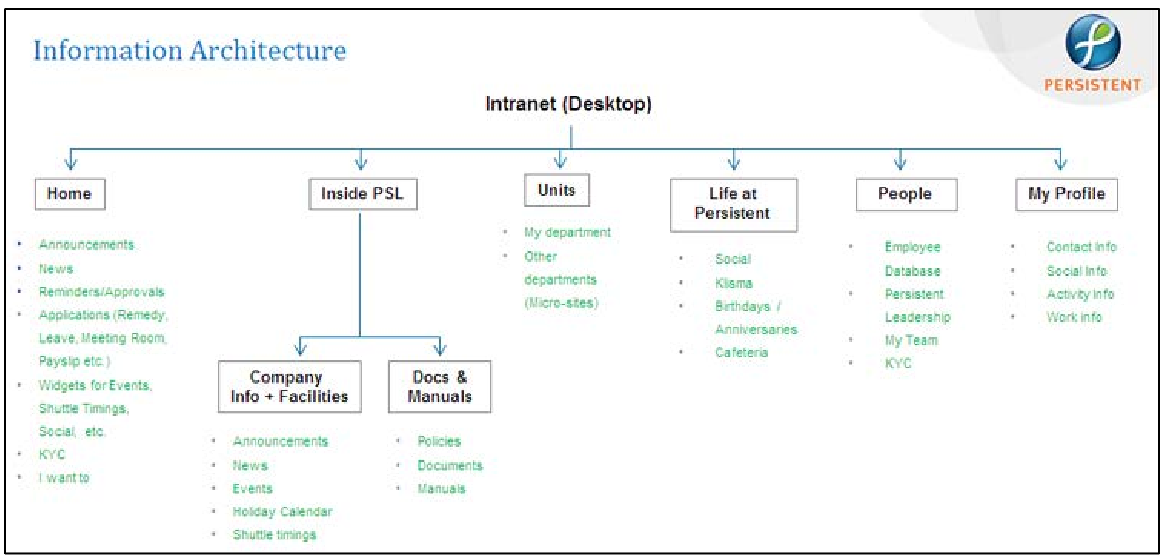
The project was designed to allow the seamless addition of features/content to the product well past the current phase. The new architecture made good use of logical and intuitive information groupings, unambiguous and unique entry points, and upfront and unified display of key information, concise and shallow architecture, allowing quick access and the ability to customize and scale the application.

Not to rest on its laurels, once the design was launched the team conducted a heuristic evaluation to identify improvements that could further amplify the user experience of the intranet in the next iteration of the site.

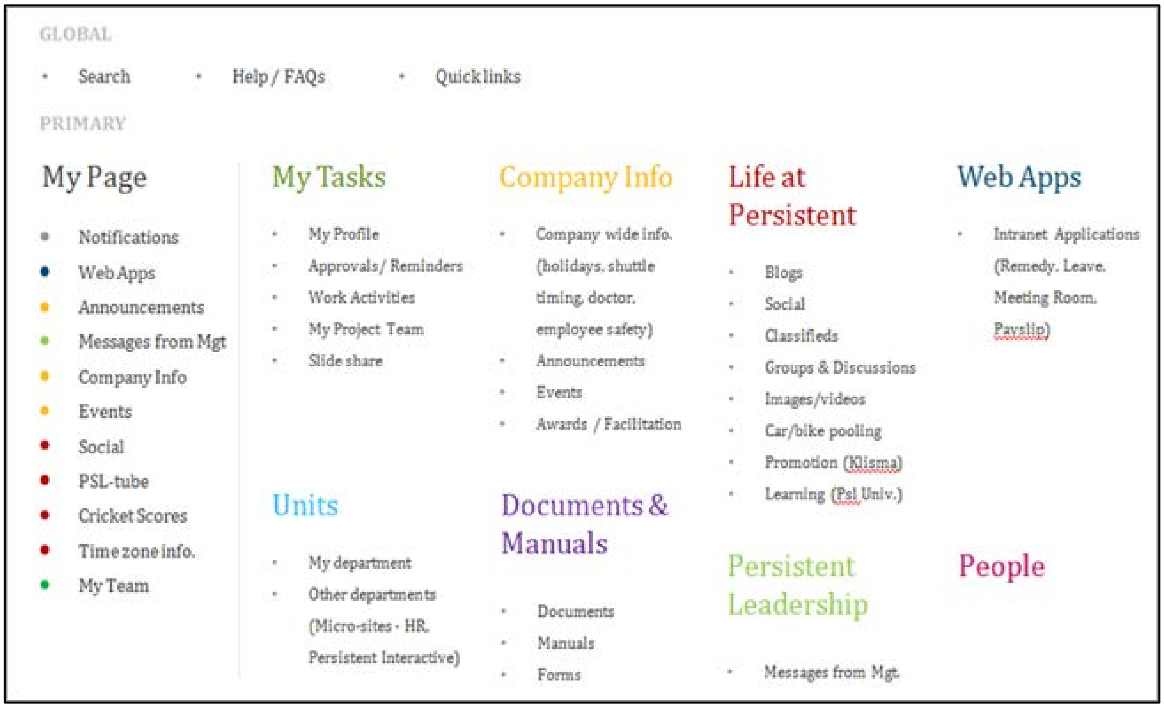


A wireframe of the new design for the Persistent Systems intranet homepage (desktop version)

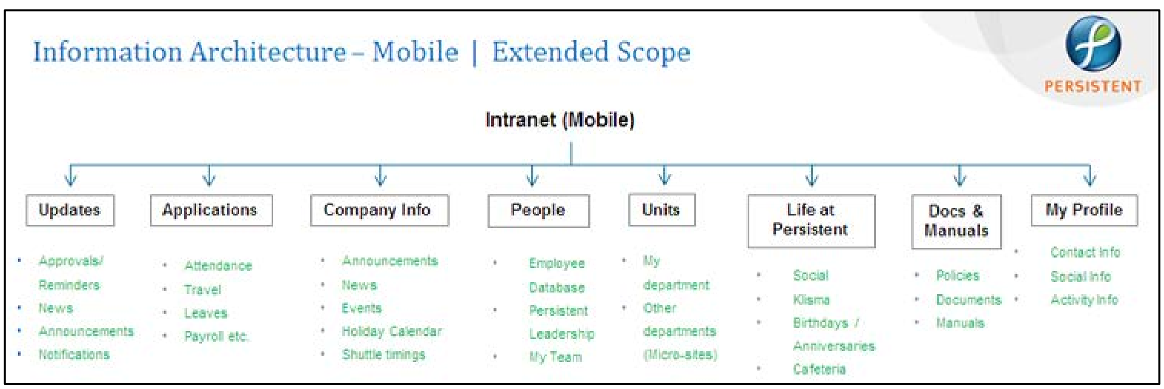
At Persistent Systems they evaluated and categorized different user needs (identified during the research stage) into scenario-based groups to determine their priority level, especially for the mobile platform.



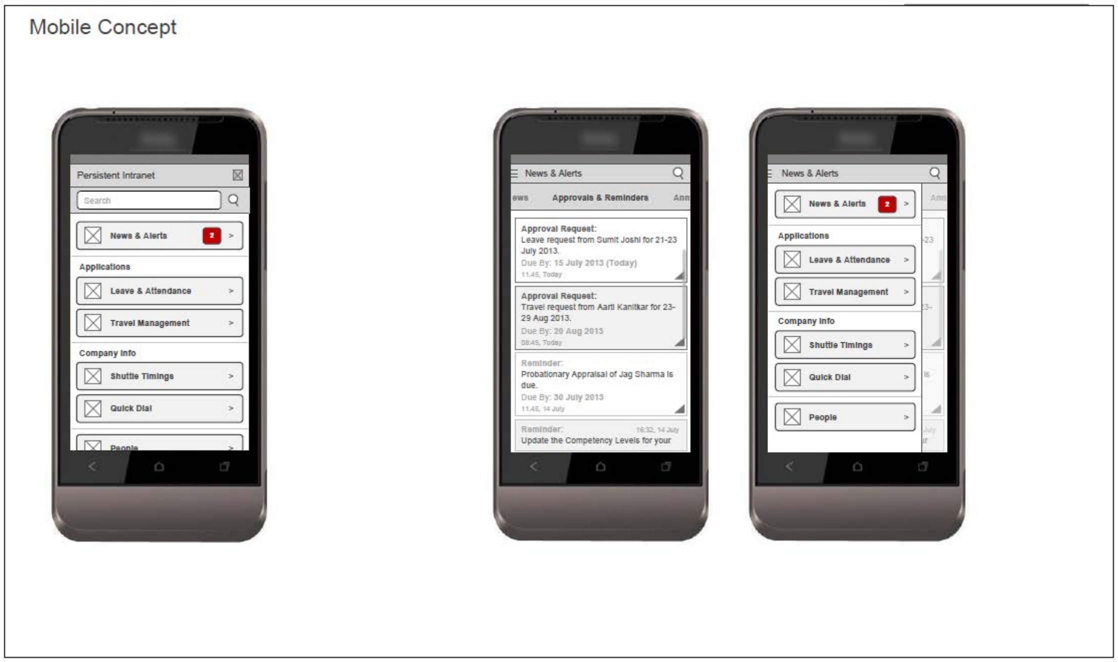
This shows the information architecture of the desktop version of the Persistent Systems intranet. The team analyzed the various user needs and use case scenarios for the desktop and drafted the content into information sets to arrive at suitable architecture for the desktop platform. This image shows the IA that resulted from that analysis.



This shows how the desktop IA evolved during the Persistent Systems portal re-design. As the scope evolved and changed, the IA evolved over a number of iterations. This image shows one of them.



Information architecture of the mobile version of the Persistent Systems intranet



A wireframe of the new intranet design for mobile version of the Persistent Systems intranet

This is a wireframe of the *People* section of the mobile version of the Persistent Systems intranet. The *People* section on the mobile version includes: *People* homepage, *People* search, employee profile and a detailed view of the employee profile. Users can search for people in the organization using this section of the site and get detailed information about co-workers.

Applying User-Centered Design at Cisco

Cisco is an organization that has always had user-centered design as a guiding principle for technology development efforts. Yet, execution on a user-centered design strategy for its most recent portal project was different from past projects. Lenz outlines these differences:

- Working in Agile. "First, we needed to work in a modified Agile development process, which was a change from the waterfall projects we were accustomed to in the past."
- Collaboration among teams. "Second, with this being a large-scale project, several user experience and user research teams needed to work together throughout the design, development and release cycles. Close communication and to some extent, coordination, was necessary to avoid duplication of effort and to maximize the consolidation, comparison, and leveraging of findings."
- Moving beyond tools and technology. "Third, this development effort was not confined to just rolling out a new or revamped piece of technology. Quad represents a fundamental shift in the way employees approach their work, so our user research efforts also brought in employee insights around change management, culture shifts and work processes, completely outside of the technology platform being built."

In the section that follows, Sharon Meaney, UX designer, CBT outlines how each of these differences affected the team's work.

- Working in Agile. "Working in an Agile development process necessitated changes and evolutions in how research was conducted. Since Quad was being built in different 'tracks' of work, in a component fashion, research, too, followed that model. Often, there was not time for holistic full system testing pre-release, and there were a lot more releases during the overall effort than there have been in the past. The new development process required a new research process to match the pace and needs of the designs being generated. The solution was to implement a form of discount usability testing in which the UX research team would collect qualitative feedback from a small set of participants using paper prototypes, the results of which were funneled directly and immediately to the UX designers working on the various design tracks. The subjects of these sessions were very component-level, very specific to what was happening in the development process at that point. Designs were generally wireframes or very early functional prototypes, and often were being worked on right up to the last minute before the study."

  "Some examples included testing the flow and understanding of topic pages, testing the *Post* model for user publishing of content, and designing the interaction of the document management system. All of these things came together in the final product."

- Working with the product research team. "The overall effort was a situation of joint development between an internal business and internal IT team and the new Enterprise Collaboration Platform Business Unit. Cisco, in effect, was its own first customer for the Quad product. As such, research was taking place on two fronts — internally, with employees, under our team's purview, and externally with early adopter customers outside Cisco, with the Quad research team overseeing that work. The two teams were also able to dedicate one team member to both efforts, and this person conducted studies for both teams and acted as the liaison between the two teams, which met on a weekly basis during the design phase to discuss the latest testing results and/or findings from either audience group. Frequent meetings also enabled us to collaborate on the design of the usability studies so that they were better aligned with each other, and the results more relatable to one another. The findings themselves generally matched up between internal employees and external customers, though there were a few areas where certain features were more highly valued by one group or the other. We also established a common 'Ease of Use' framework to consistently track, measure and relate ease of use to the business."
- Moving beyond tools and technology. "The transition to a social software platform is fundamentally about shifting the way people work, leveraging social technologies, the wisdom of the crowd, and connecting with people, communities and information in ways that were never possible before. In order to help affect this shift from intranets, MS Office documents and email, we as a research team embarked (and continue to study) some of the more behavioral aspects of Cisco's culture. By collecting data about employees' motivations, successes and challenges around collaborative work, we were better able to understand the solution space, which involved technology, but also the process, environment and change management aspects. The biggest of these research efforts was a Collaboration Work Practice study. This 16-week, global ethnographic study gave us valuable insight into the average workday of various types of employees in various locations. We were able to watch collaborative work in action, and were able to get firsthand observation of the pain points in the process. This work continues to inform our decisions."

Research Approach

Meaney explains the team's research approach. "Our employee user research efforts are structured along three levels," she says. "Each of which brings a different perspective to the given project." These include:

- Strategy: "Research that informs and helps drive the over-arching vision for the integrated workforce experience in the dynamic networked organization. This work includes persona development, company-wide opinion surveys, and ethnographic research that helped the team understand where the key critical business issues existed among our user base."

- Design: "This is the 'bread-and-butter' work of most research teams, where designs and prototypes in-process are tested throughout the development sprint cycles. The methodology most frequently used in this category was one-to-one interviews/tests, moderated in-person or via a conference call with screen sharing."
- Assessment: "This is the research that enables us to collect and track UX metrics over time, and show improvement or decline in our product life cycle. Traditional task-based testing measures, in both moderated and un-moderated sessions were utilized to drive the baseline, the pilot evaluations and the final deliverable evaluation. It is unique that there were several "launches" that happened throughout the larger project (and are in fact, ongoing) in the Agile project management methodology."

Research Methodologies

Given the brand-new nature of the platform, and the paradigm shift they were asking of their user base in terms of changing how they worked, they employed a variety of research methodologies at various points along the way to accommodate their goals in this environment. Meaney explains how these played out:

- Discovery: "The earliest research was discovery-oriented, and involved focus groups that vetted the idea of the social software platform itself and discovered our users' critical business needs for this kind of platform," says Meaney. "These sessions were able to build on an annual collaboration survey conducted by our team, and provided a qualitative drill-down for what was learned quantitatively in the survey. The goals of this research were to learn about collaboration motivations, behaviors, successes, challenges and barriers. The focus was how people work and the tasks that people were trying to accomplish, more so than the technology being developed to drive it."
- Testing designs: "Phase two of the research was the testing of designs being built for Quad in the People, Communities, Information, and Framework tracks of work. This was where much of the weekly rapid research sessions were held, to test prototypes and help drive the design during the sprint cycles. One interesting point to make here about working in Agile is that our beta testing was actually done within smaller releases. Quad went out to one organization first, followed by testing and further development, and then a second release to about 5–6 more organizations, followed by more testing and more development, followed by the final company-wide release, that for all intents and purposes was the main release, but this phased approach to bringing people on board allowed beta testing to occur with live production level implementations. The one aspect that presented challenges was the fact that the aggressive schedule for the releases made it challenging to test a holistic system prior to the first two soft launches. We generally tested the system after release, and put in user stories and defects discovered into the next round of release."

- Validating IA: "Phase two of the research also encompassed card sorts that validated our information architecture, and an ethnographic field study that helped define patterns of work that could be improved, among other things, by using effective collaborative technology, although the fieldwork had a much broader application as well."
- Baseline usability tests: "Lastly, we wanted to ensure we could track changes in the design as they progressed, and the fact that Quad exists in parallel with the intranet (for now). Therefore, we embarked on a baseline task-based study of our intranet, along with major release task-based studies of Quad, and are now putting the last 'bookend' on that work by re-testing the baseline tasks again on Quad to compare to our soon to be legacy intranet."

This thorough and thoughtful approach was a necessity, not a nice-to-have process. Given the dictates of the system they were building, the choice was: build it right or suffer the consequences.

"Given our program has a strict policy of not customizing the Quad product. All our feedback and input is on the exact same product that our customers are using," says Meaney, Ensuring what we learn and use is the same experience and inputs that our customers will have."

As Quad continues to grow internally, this task-based testing will continue at regular intervals to ensure that key common tasks are performing well and any feedback is funneled to the development teams. This work will continue to happen in Agile fashion.

The team has established nine user goal areas and associated each with a set of tasks that they feel are representative of what the user needs to accomplish as well as what the company would like for them to be able to accomplish.

"As we continue to monitor and test these tasks over time," she says, "We will be able to track user experience (UX) metrics for each of the nine user goal areas, and give feedback to the development teams about which ones are scoring well and which ones may be in need of attention or improvement. This was the foundation for our overall Ease of Use program and framework."

There's No Such Thing as a Bad Idea

At Think Mutual Bank the team took a very inclusive approach to their research. "We found that talking with our users was the most fruitful," says Ryan. "Have a notebook along and write down every idea. Do not try to solve it on the spot, but take it back and look for solutions. Run these past the requestor, and thank them for contributing to the success of the site, even if you don't use the idea in the long run."

"For example," she says, "standing with the tellers in a branch, watching as they used the system to look up a phone number, form, or reference page, and seeing what they struggled with not only revealed gaps in our navigation or search engine, but helped us understand the real needs of the user. A simple thesaurus entry in the search administration could solve for finding the 'discount ticket' form when someone searched for 'discount coupon'. Rather than needing to know which was a ticket and which was a coupon, the thesaurus can take care of the issue. How would we know unless we entered into the world of work that needs to be supported?"

By treating every idea as worthy of note, the team was able to gather a payload of great ideas. While not everyone panned out in the end, by taking each one seriously they were able to sift out the gold.

"Experience from previous SharePoint and Notes projects taught us that being very available to the users was a goldmine of information about what is working and what is not,' says Ryan. "Stay open to all feedback, good and bad, and be responsive."

In addition to just listening, the team embarked on a journey that included a thorough cross-section of research activities. Ryan explains:

- Beta testing of new design: "Users were chosen from among those who would challenge us to make it better, those who recognized the need for an improved system, and would call us out on what was not working well enough," says Ryan.
- Card sorting: This was done via white boarding the old intranet and resorting the structure to a task orientation (it had been organized by department).
- Checking server logs or usage stats: Analytics are studied monthly.
- Field studies: Retail and customer support areas were observed, and support teams were consulted. The team continues to do field studies to test and retest. "New eyes always add value and help point out gaps and areas for improvement," says Ryan.
- Expert reviews: Those authoring and those using references were both consulted to assure the meaning was conveyed as intended. Feedback looks built in to each page allowed for efficiency of tracking the requests for changes, as those would be copied to our webmaster inbox for our tracking. "We consulted and encouraged owners of the information to work directly with the users giving feedback, building up relationship and overcoming some communication issues," she says.
- Meeting with other companies' intranet teams: The Think Bank team compared notes with banks and health care institutions with similar compliance and regulatory demands.
- Researching usability design through books, reports or other resources: "Specifically," she says, "Step Two Designs in Australia publishes some excellent resources for a team to read together before starting the project."
- Sitting in on support calls or training: The team sat with numerous users to gather information, and reviewed employee training materials to determine if documents could be converted to page content and shared across the organization. Nearly all manuals are offered on the site.
- Surveys: The team conducted a survey to choose the site name and used polls on the site to gather feedback during rollout.

- Usability testing of previous design: One of the initial activities was an improvement project meant to improve the old design prior to starting the new one just to organize and serve as a bridge to serve the organization while the team worked on the new design. "This helped immensely as we started migrating content, as the prioritized items were clearly noted for each area," says Ryan.
- Viewing other companies' intranets: The team held webinars and online meetings with users of the same product set, shared screenshots and talked about issue around editing and governance.

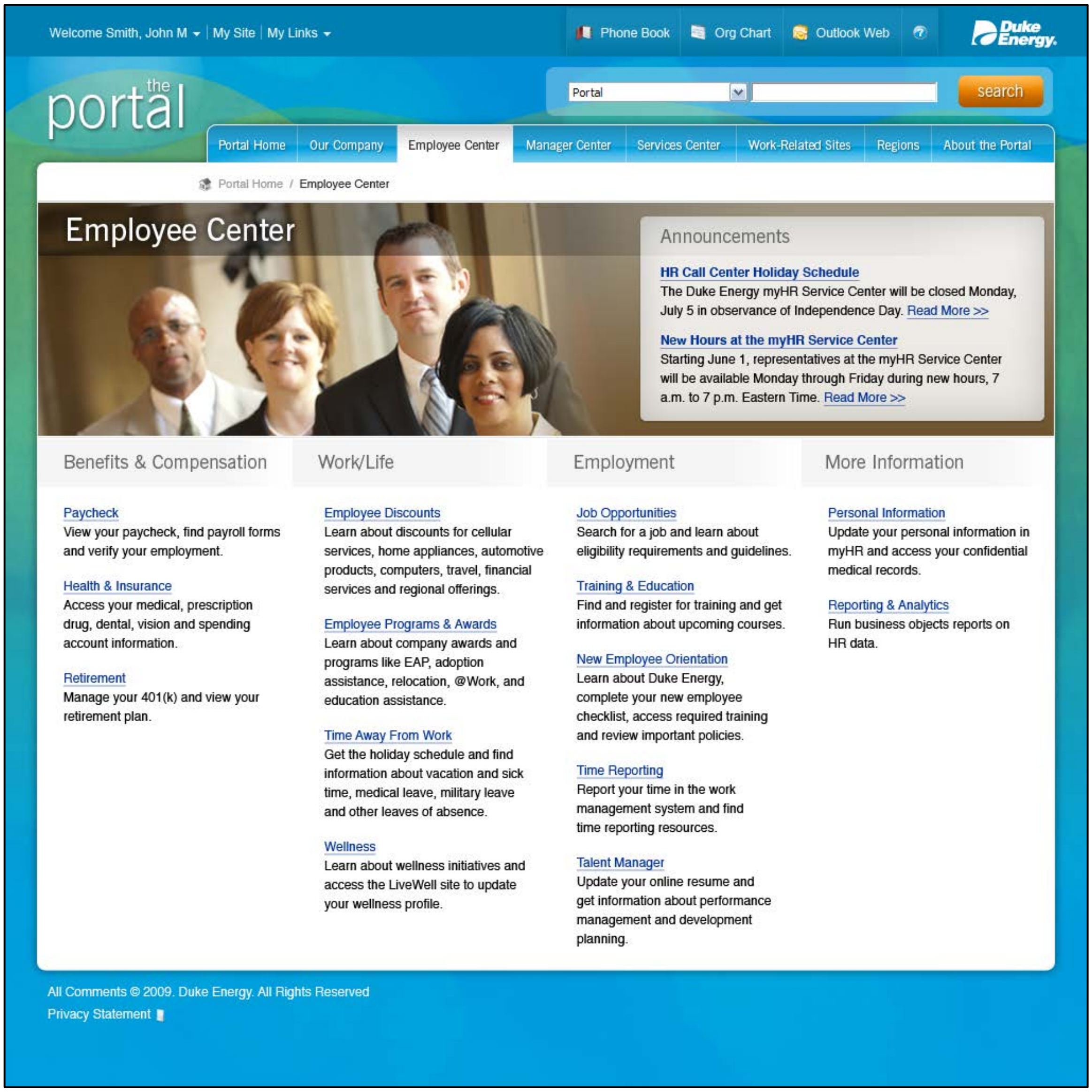
Gathering Data to Inform Design

Duke Energy was a winner of the 2010 Intranet Design Annual[10] and in that report they shared information about how they employed a number of research methods in order to gather data that would inform their design decisions. Some of what follows is excerpted from that report:

- Card sorting: Card-sorting exercises were used during the two major content redesigns: Services Center and Employee Center. The studies were conducted with a few dozen employees, using small groups of three to four employees in each session. Each participant was given a subset of the cards to work with on their own. After participants completed an initial sort, the team pulled the group together to create a complete card sort.

  "Starting participants on their own forced them to formulate their own opinions outside the group influence," says Bowen. "And then justify their decision-making in presenting their ideas to the group. The resulting discussion gave us rich subjective feedback in addition to the quantitative results of the card sort."

[10] *Intranet Design Annual 2011: The Year's Ten Best Intranets*, Nielsen Norman Group.



The Duke Energy table of contents-like landing page for the company's *Employee Center*, which is viewable only to employees — not contractors — provides links to each site within the *Employee Center* and a description of what each site provides. This page appears when users click the *Employee Center* tab rather than going directly to a site within the *Employee Center* via the megamenu navigation.

- Usability studies: For the site's larger redesigns, the team conducted comparative usability studies in order to get a measurement of the improvement in usability of the new design. For these studies, they asked participants to complete the same task on both the new and old systems and capture quantitative measures such as time on task, errors and "lostness," as well as the subjective metrics of confidence and ease of completion. The "lostness" measure takes into account the number of pages visited, the number of unique pages visited, and the number of pages necessary to complete the task. It is drawn from the book, *Measuring the User Experience*, by Tom Tullis and Bill Albert.

  In these sessions tasks were randomized both in order and by system so any learning that happens during the course of the session is balanced out across sessions.

  Because the company's employees are so widely distributed geographically, the team also conducts a lot of user testing remotely using Live Meeting, a conference bridge line and Morae software.

- Benchmarking: The team looked to third party research to inform some of their design decisions. This research included the Nielsen Norman Group Intranet Design Annual.

  "Because it's very difficult to see best practice examples of intranets, says Bowen, "It's extremely helpful to have a publication that documents some of the best that are out there. The NN/g award annuals have been a valuable source of inspiration for intranet design projects,"

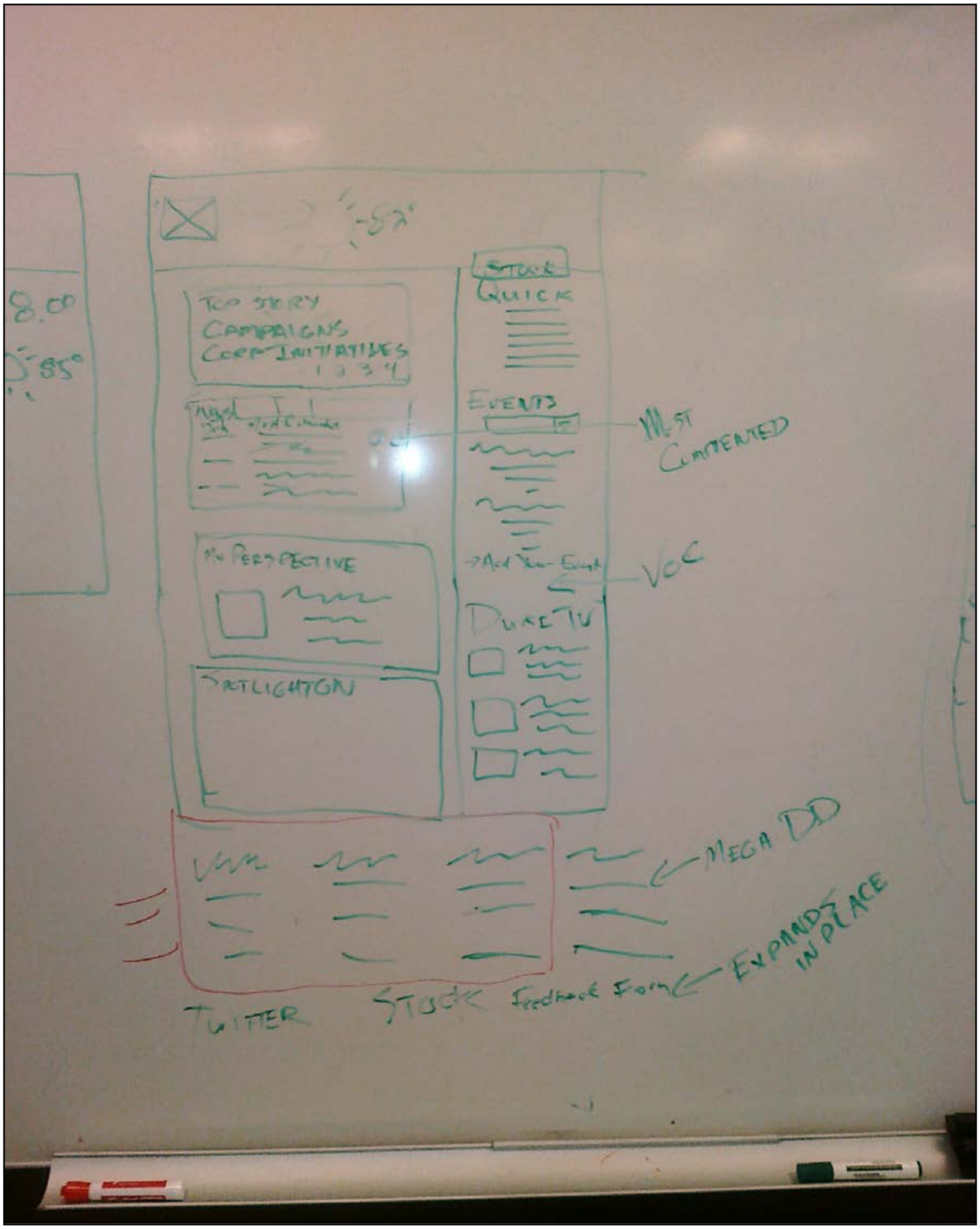
  In addition to research reports, the team reached out directly to other intranet teams, to learn from their best practices.

  "We've also met with the intranet design teams from our peers AEP and SCANA, both past winners of the NN/g Intranet Design Award, to get insight and inspiration from the work they've done," says Brown.

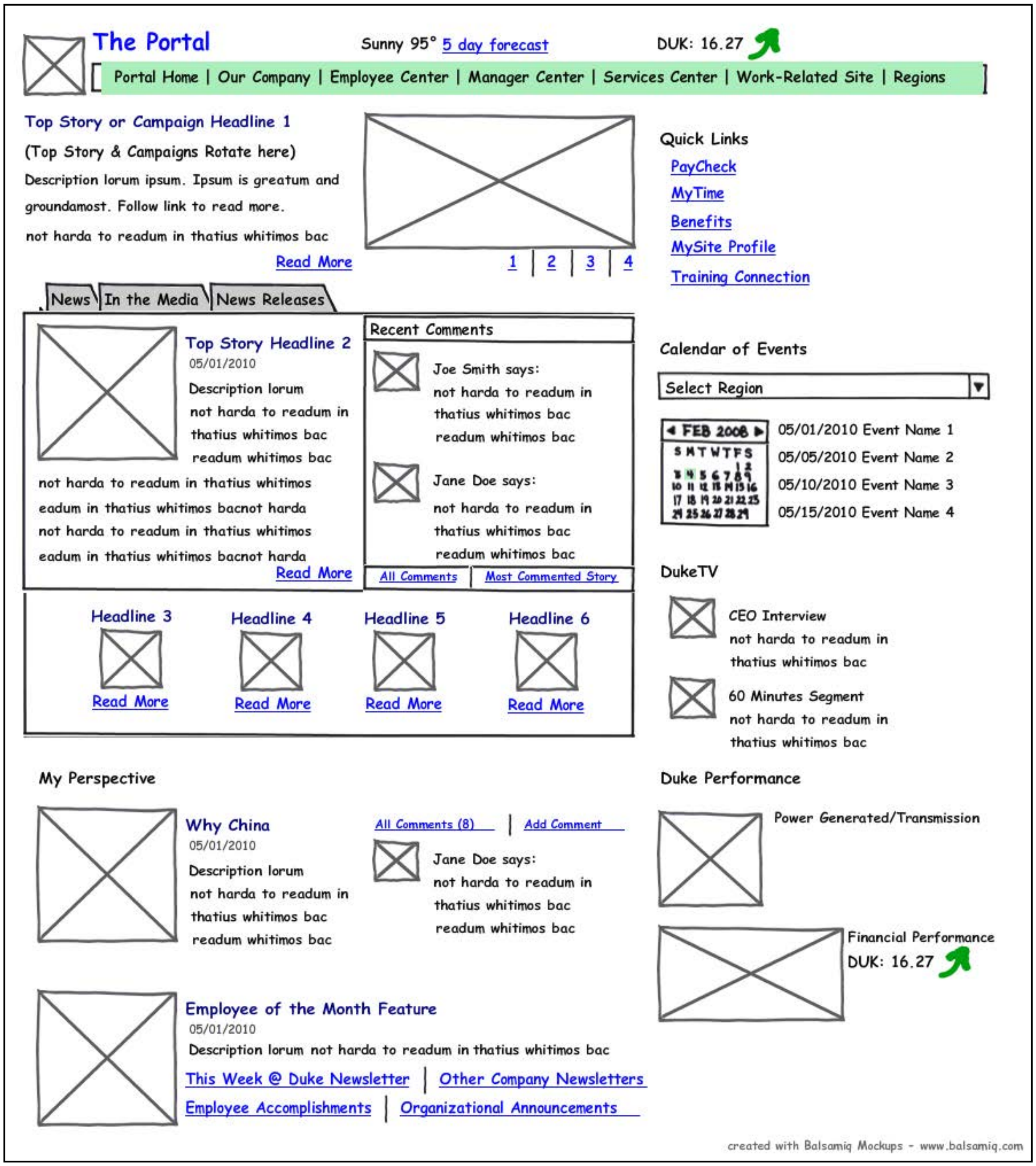
- Web analytics: For web analytics, the team implemented Cardiolog with MOSS in 2009.

  "Cardiolog has the advantage of being tightly integrated with MOSS," says Bowen, "but we've struggled with the usability of the reporting interface since it is very different from other web analytics tools that we have used in the past, such as WebTrends, NetInsight and Google Analytics."

  "Cardiolog has provided data that helped us determine which links should be quick links and assists in maintaining *Best Bets* for search results," he says.



This photo shows a whiteboard sketch that evolved into the final design for the Duke Energy portal. After sketching through a few other possibilities, the team chose this layout and ran with it. The fat footer with the Twitter feed, site map and expand-in-place feedback form didn't make it into scope, but everything else is surprisingly close to the end result arrived at through stakeholder feedback and user testing.



The Duke Energy team used Balsamiq to create a more legible sketch of the whiteboard wireframe.

Covering All the Bases at Canada's Department of Transport

Canada's Department of Transport decided a comprehensive approach would be the best way to ensure success for its project.

“When deciding on what methods to use, we tried to cover as many bases as we could,” says Green, “and we relied on the expertise of information architecture and usability experts to guide us further”

“There are typical tools and approaches in the field,” she says, “and we didn’t want to stray too much from what we used. This meant internal skills had to be honed even as we hired consultants to help us in the short term.”

The team employed just about every one of the standard research methods at some point during the three-year project. Green explains some of the techniques they used: “We started with a survey of users, and supplemented this with quick survey-style questions to help refine site development throughout the project life cycle. “

“We also reviewed literature on usability and heuristic design, visited other example intranets, and read up on good intranet design from experts in the private and public sector. We brought in consultants to review what we were developing from to provide an outside lens helped to refine our work, and metrics and help calls were mined for information on what we should focus on as we identified content for inclusion in the new environment.”

The drive behind all these research is a fundamental commitment to usability. “Usability is very important to TC,” says Green. “It was the driving factor behind our site redesign. The project was approved because our senior management cadre recognized the current site as being difficult to navigate and cluttered.”

“At one point,” she explains, “it was compared to a closet that someone had been throwing clothes into for years. Trying to find that one pair of socks is a daunting task, when you look at the pile of clothes you have to go through, and the amount of effort when you get there was probably not worth the end result. Better to go buy a new pair of socks. Now you can tell the ‘closet’ what ‘socks’ you want and they are brought to you, clean and ready to put on.”

Helping users find those proverbial socks kept the team going, driving their research efforts.

The Transport Canada team also did something that many teams find helpful but few take the time to do: they talked to other teams in their industry space.

“We contacted a number of Government of Canada departments to view and discuss their intranet sites,” says Green. “Specifically we worked closely with TBS who just recently went through their intranet redesign and they were willing to share all the details, business and technical with us.”

These intranet visits, whether they be physical or virtual are very helpful. When teams share best practices across company borders everyone can gain valuable insights.

As the design team worked hard on the design team worked hard to keep the company involved in their efforts. “As we were developing the site, the communications teams were working hard to get employees’ input,” says Green.

Some techniques used to success were:

- Online surveys to keep TC employees educated and engaged
- A new section of the old intranet to keep employees engaged and informed using:
    - Online questionnaires

- Registration forms to volunteer for the various research activities
- Information about kiosk events
- Feedback mechanisms

- A 3-day kiosk event asked visitors to vote for a site name, take the usability test, sign up as a volunteer. "And we gave away chocolate," adds Green. "Chocolate always helps."
- Card sorting exercises were used to identify new site IA, defining the top 10 most popular names. The top 10 then became an online voting poll to pick the favorite.
- The team used Optimal Workshop application to mock-up myTC site architecture, and run number of usability tests with volunteers who were solicited through the existing intranet.
- A post-launch Click & Tell query resulted in "positive" or "overwhelmingly positive" feedback on awareness of the communications products available to assist employees to learn about the new myTC site.

Most of the work was done by the project team, and Communication and Marketing group, as well champions across TC and with some help from a consulting company, Systemscope that helped the team get started with IA and site metadata.

A Thorough Approach at IBM

With a portal serving several hundred thousand users, IBM's portal team took a multi-method approach to make informed choices about how to segment content, what to call things and what changes to make as they set out to improve their portal. They also employed comprehensive testing activities to improve the site's accessibility for blind and low-vision users.

Early in the project, the team undertook a number of usability activities so they would begin the planning and design phases armed with data, research and adequate perspective.

"We had usability reports from the previous release that were used to highlight known usability problems and design deficiencies that needed to be addressed," says IBM's Ceplenski.

In addition to starting with test results, the team called upon five outside usability professionals to conduct a heuristic review of the new portal.

"This provided a fresh perspective on the site and generated a kick start for the usability requirements," he says. "While the core usability team was aware of many usability and design issues, having an 'outside', impartial evaluation of the design was an excellent exercise and provided invaluable design suggestions as we started the redesign process."

The team looked to card sorting exercises to help them determine the best placement of content across the site's main tabbed sections. These activities helped determine how users would expect their portlets to be distributed across multiple pages (tabs). Once the clustering of the portlets was decided, the team conducted a follow-up activity to determine what the default layout of the portlets should be on each tab. And multiple rounds of usability testing provided user feedback as the project moved from design through a working production site.

"Early on, we were testing variations on the new design treatments (templates) to establish an overall design platform," says Ceplenski. "The results of each activity helped evolve the designs until we arrived at a final treatment. As individual portlets were being designed, they were tested with end users as low fidelity designs, then later as functional prototypes within the larger portal environment. Finally, all designs were tested through a formal usability test with the production code."

The IBM portal redesign was heavily focused on improving accessibility of the intranet for blind and low-vision users. Several enhancements were made to the page templates to provide support for these users, and improve the usability of the pages. Early on, several assumptions were tested with users to help guide the final designs. "Most important, the organization and temporal presentation of content (via a screen reader such as JAWS) was modified to better match user expectations and information hierarchy of the page," he says. To test these advanced page treatments, early usability evaluations of the page templates were conducted with screen reader users. A follow-up test with blind users was conducted in parallel with the final, formal usability test.

This kind of exhaustive research that IBM and other organizations are able to employ, while not the norm, is perhaps the envy of many organizations. But that should not deter smaller or more resource constrained organizations from doing what is both reasonable and appropriate for them.

What portal teams have learned is that there is no perfect mix. The right mix is some combination of research efforts that both involves the users and is feasible given the company's business objectives and the resources at hand.

EMBARQ Takes the Research on the Road

EMBARQ consulted with its approximately 18,000 employees about the portal, since before there was a portal. "We did an extensive field study and surveyed our employees to learn how we could improve the old intranet before we even purchased the new portal product," says EMBARQ's Hammond. And the research didn't stop there.

"We hit the road and interviewed employees across the country to see what they liked and disliked about the previous intranet," she says.

Throughout the design and development process the team employed a wide range of research efforts that included card sorting, field studies, surveys, user testing of the old intranet site and the prototypes of the new site and persona development.

They tested the old site because they believed that information would inform the new site. "We watched employees from all areas of the company as they performed tasks using the previous intranet to gauge effectiveness and intuitiveness of certain features so that we could keep the good stuff and focus our efforts on improving the usability of the site where needed."

One of the things they learned first-hand was the importance of flexibility so the research team can make changes easily and so users don't get too attached to the stimuli as "finished products." "Keep the prototype and design drafts looking very rough," says Hammond, "So that you have room to wiggle if things don't work out as planned. Ours were beautiful with some flash elements and thus hard to live up to!"

The More You Give, the More Users Will Come

The UC Irvine portal team was equally engaged in user research activities when developing their portal. Their research included activities that ranged from usability tests to questionnaires. They interviewed users, content providers and stakeholders. They also conducted usability tests on the old site, on prototypes of the new site and studied the server logs and listened in on support calls. At the tab level, they conducted usability tests to test the taxonomy and get the words and content right. The team even held a competition to name the portal to get users more involved with the project.

"We met with stakeholder groups, described our intention and asked them for their most important content," says Sonja Elson, UC Irvine's senior editor and information architect. From those sessions, the team developed the content and IA and determined things like what new employees would need to see on the portal. Then they held forums to introduce users to the portal, town hall-style forums and even explained "what is a portal."

Then, when the portal was built they held training classes on how to write for the web and how to navigate through the portal, SNAP.

The team has made every effort to continue to have ongoing engagement with users across the university and their efforts have paid off. They have achieved significant buy-in among groups across the university, which has made portal adoption easier. In the beginning, when the portal was still new, the SNAP team had to engage groups across the university to get them to put their department information up on the portal. Now, the groups come to them and request it.

That kind of turnaround is significant for groups with limited budgets and even more limited resources. By finding a way to engage users, they have shown that it is possible to get those users to become evangelists for the portal and its benefits.

By specifically engaging users at nearly every step in the process and finding innovative ways to have them participate, the SNAP team was able to turn a constraint (no budget) into an opportunity for outreach, yet they would still like to do more.

The team says if they could do one thing differently it would be to involve more groups. "If we had more resources we could deliver more to people," says Sadovsky. "The more you give, the more they come. There might have been more widespread adoption if we could have included more groups from the start."

DO USER RESEARCH WHEN YOU CAN

While in a perfect world it might be best to apply user research methodology at every step along the project continuum, the reality is that most organizations do what they can with what they have to work with. Portal teams try to gather as much data as they can given the constraints of time, money and resources and put those limited resources to good use.

Card Sorts and Focus Groups at OSUMC

Usability matters at OSUMC. "By the sheer nature of what we do, usability is very important," says "Toni Marshall, project manager, OneSource Launch. "We service a large number of people who depend on the availability and the intuitiveness of the information we provide."

And getting buy-in for the portal project was particularly important since the re-design was putting such an emphasis on changing the user experience. While focus groups are not a good alternative to usability testing, they can complement task-based test sessions, providing teams with directional information. The OSUMC team employed both types of research and conducted some card sort sessions to test the proposed IA.

"Buy-in from the staff on this project was very important," says Sokoloski. "Since we were changing the user experience, we relied heavily on focus groups for input and usability testing. Although we did talk to a couple of other companies in our area about their intranets, we found it was like comparing apples to oranges," she says. "We discovered that they were different in the fact that staff had to use our intranet to do their work and that we wanted to offer several homepages."

The OSUMC team conducted a number of research tasks involving users, including the following:

- Card sorting: "The card sorting helped us make sure all information on our current intranet was accounted for and applied to the appropriate audience," says Sokoloski. "This also gave us our first opportunity early in the process to meet with focus groups in each audience area. We tested their reaction to the new design and our initial sorting and labeling of information. We met with each of the audience focus groups at least three times."
- Focus groups: "Focus groups were very instrumental to us in all facets of our testing," says Marshall. They conducted two sets of focus groups, including their two main user groups: functional groups and day-to-day users. Marshall explains:

  "The functional groups were the 'audience owners'," she says. "They were not the day-to-day users (doctors, nurses, clinicians, etc.), but they were very knowledgeable and interacted/communicated with the subject matter experts on a daily or weekly basis. They helped us to do some preliminary testing, high-level structure or organization and to put some 'straw man' models together to be reviewed by the day-to-day users. They also helped us by using their existing relationships to facilitate consensus and approvals."

  "The focus groups were our day-to-day users. While their feedback was critical, their time was very limited. We maximized the time we had with them by always giving them a mock-up to review, very specific questions to answer, or specific details to discuss. This group included doctors, nurses, clinicians, researchers, educators, etc."
- Usability testing: The team conducted usability tests approximately a month after launch. These sessions helped them make a few post-launch adjustments and gave them a third-party endorsement that the site was "user-friendly."

Card Sorts and Prototype Testing at Chevron

The web team at Chevron Human Resources also conducted user-centered activities at pivotal points during the re-design process, specifically, card sorts and user testing on the design prototypes.

"Both methods had the benefit of letting us make decisions based on data and not politics," says Rosenstein. "Everyone claims to want to follow the employee point of view until it comes time to mix up the silos. But there's no arguing with the data. So having the usability studies allowed us to stay true to the vision of having information organized from the employee point of view."

Rosenstein explains how these activities helped the team:

- Card sort: "We did this because of the amount of information on our homepage," says Rosenstein. "And the desire to organize information from the employee point of view and not by HR's organization structure."
- Design prototypes: Global user testing on the design prototypes helped broker between a "safe" design and pushing the envelope a bit.

  "We had four different designs and only one was officially sanctioned by Corporate Brand at the beginning of the project," says Rosenstein. "It was the 'safe' design, but we wanted to see if we could move to something a little more cutting edge. When employees around the world overwhelmingly preferred a different design, it gave us the opportunity to go back and ask Corporate Brand to allow us to push the envelope (and they did)."

Surveys at KPMG

For usability testing, KPMG uses a combination of one-on-one interviews, focus groups, and surveys to elicit requirements and get feedback for developing its site.

For a while, the team had also been conducting annual web-based surveys (covering its knowledge management system and core values). Roughly two out of every five employees respond, even though there are no incentives for participating. So far the surveys have yielded useful results. "We try and elicit from the population what they need, what they're frustrated with, what they find valuable, and what they want to know more about," says Iain Simpson. "We use the surveys to drive our action plans for the next year, and find them invaluable."

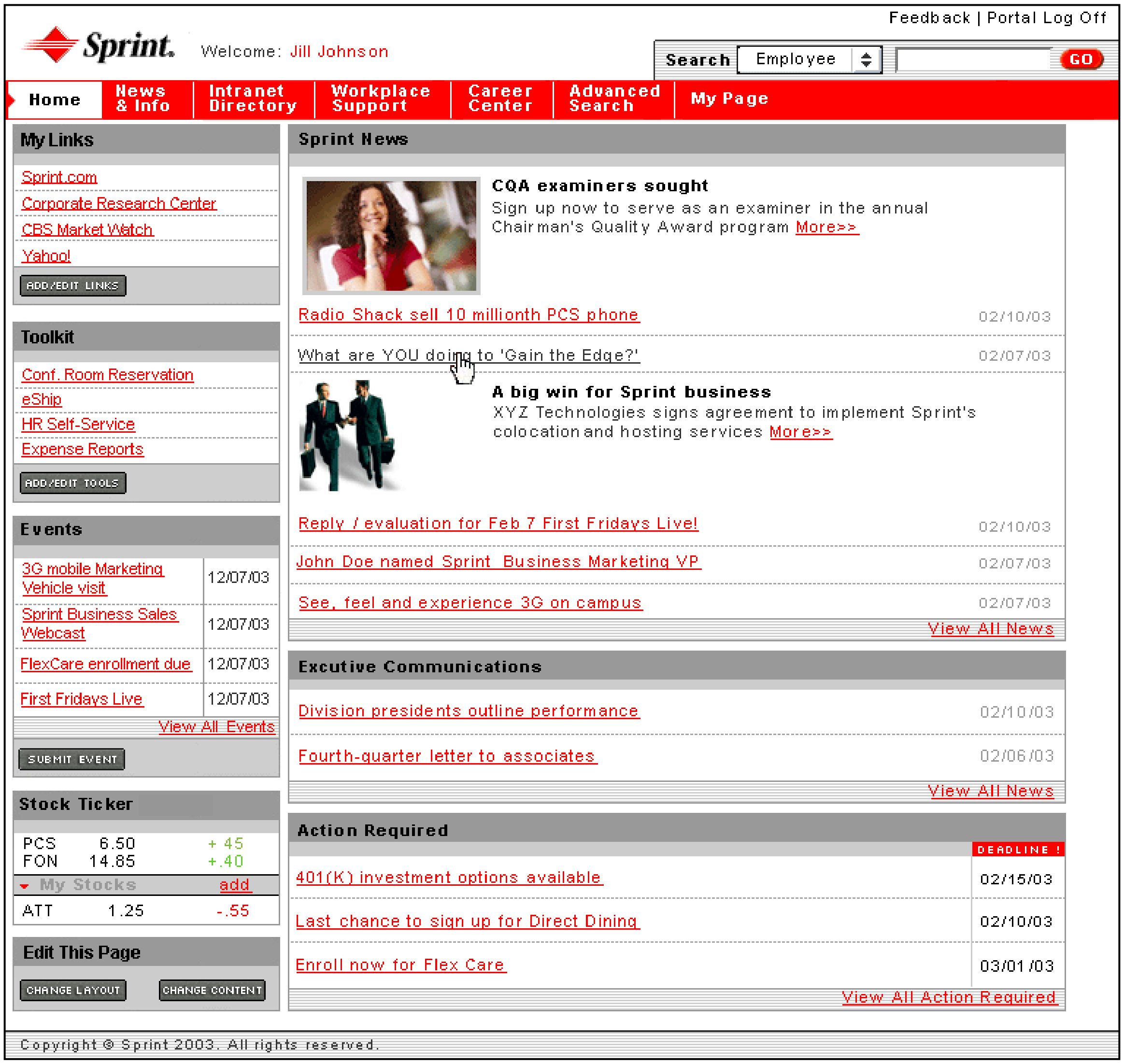
Focus groups are also used, as required, to help the knowledge management team understand what services people need, and what their activities are. Information from them is combined with automated information about usage of the site to build a more complete picture of user requirements.

As a general rule of thumb, for each specific project, the design team tries to conduct three or four one-on-one interviews per industry and infrastructure group. By doing so, it aims for a representative cross-section of experience in the organization. "We've increased the amount of user testing we do, but we don't have a formalized approach," says Simpson. "It's probably fair to say we do more than we used to but not as much as we should. However, our focus is on being prepared to prototype and make changes quickly rather than try to get a 100% perfect solution."

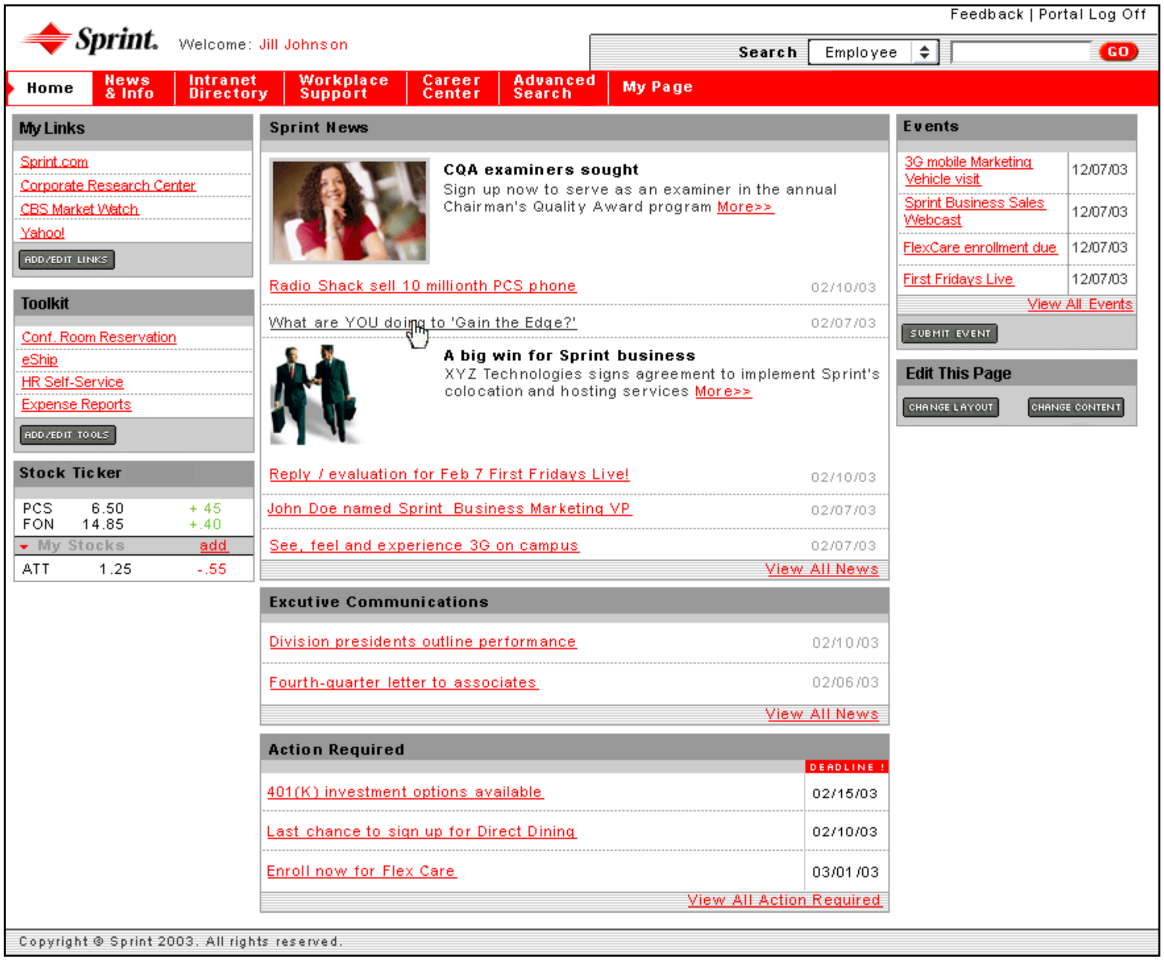
Prototyping at Sprint

Despite having "some strong and opinionated stakeholders who are less concerned with usability," says Backlund, plus a limited usability budget, the portal team is using a variety of methods to ensure the portal meets user requirements. In 2001, it used focus groups of eight to 20 people to discuss plans for the portal and specific features such as personalization.

In early 2002, the team showed paper prototypes to small groups of users. “We prefer to use groups rather than individuals at this stage because prototypes are a bit abstract, and it can help to get them feeding off each other,” says Backlund. That was followed by one-on-one testing on working prototypes.



This is an early wireframe of the homepage for a management-level employee based in Kansas City, in Sprint’s local telephone division. In this screenshot *News* and *Communications* are two separate categories (the *Communications* category was intended to be for more operational and action-oriented items) and are also separated by intended audience — business unit and all-company.



This shows the same page as above as it looks following feedback from Sprint's focus groups. Initially, users said there was no need to separate information by intended audience, so both all-company and personalized news was contained in the same portlet. Later research revealed that the personalization was too seamless, and Sprint added a separate portlet for organizational news. Users also had trouble understanding the difference between *News* and *Communications*, so *Communications* morphed into *Action Required*, and *Executive Communications* was broken out separately. Then two years after the portal launch, additional research led to those two portlets being retired as well.

The 15,000 people based at Sprint's operational headquarters in Kansas City provide a large pool of test users. A feedback mechanism is provided on the portal's navigation bar, and "people aren't shy about telling us; we get some unsolicited feedback," says Backlund.

A lengthy survey including 30–50 questions also provided useful feedback, and offering an incentive — the chance for respondents to win DVD players — yielded a 10% response rate. The results from that survey provided information about what users perceived as the key functionality on the intranet, as well as information on how often they used it and how valuable they perceived it to be. It also highlighted a problem with users having to enter multiple passwords on the intranet.

CHALLENGING ASSUMPTIONS

For law firm Eversheds, the realization that user testing was important came at a conference, when a member of the firm heard another lawyer talking about a project that his firm had "launched on an unsuspecting public." He realized, says partner Kevin Doolan, that Eversheds was at risk of doing the same thing — designing the services it thought clients wanted, and only finding out after launch whether it had gotten it right or not.

So when the Firm started work on an extranet portal for clients, Eversheds invited 10 of its largest clients to join an advisory board for the project, warning them that this would mean committing quite a lot of time to the project for the next 15 months. Eight of them accepted.

All the members of the advisory board tested out the various components of the developing portal and in several cases, also got others involved. For example, one member was a general counsel but wanted several of her human resources people to trial the knowledge bank, so a testing team of around ten people was set up.

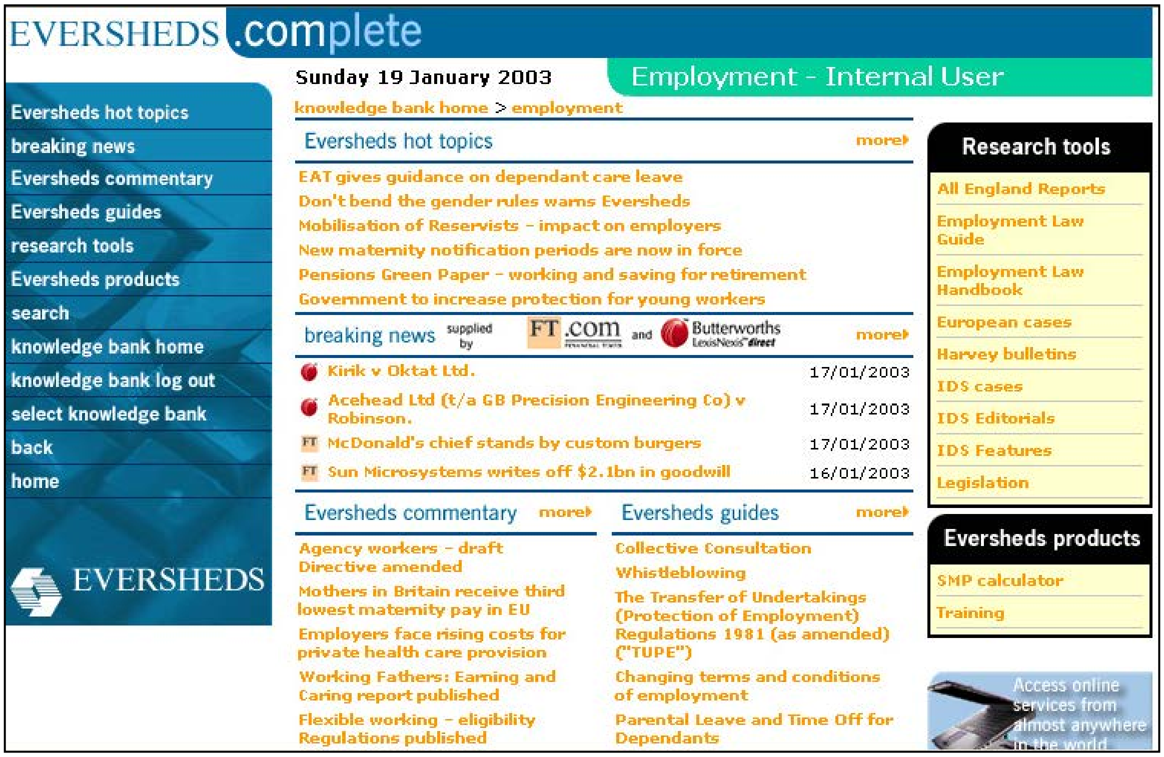
Rather than just present these clients with a blank sheet of paper, however, Eversheds opted to take the time to build working models that participants could take away, try out and comment on. "We found it was better to give people something to criticize," Doolan says. The approach paid off, and generated a comprehensive list of requirements, which revealed that the complex and expensive workflow-enabled deal room design the firm had had in mind wasn't actually necessary.

Also, at most advisory board meetings, members would be given a new feature to try before the next meeting — a task they took very seriously. "One of the board members even came up with a long scoring sheet so rather than just have a general discussion they rated each new service and then we discussed that," says Doolan.

Ultimately these meetings revealed that a number of the law firms' assumptions were incorrect. "What we thought they wanted was completely different from what they actually wanted," notes Doolan. "We were trying to be too clever. We had the idea that we'd use the online service to radically alter the way we delivered legal services, for example by automating document production on transactional work. But clients told us they didn't want that. All they wanted was very simple things done well. For example, on a major deal, they needed a safe place to store the documents, [and] a clear way of amending drafts and keeping track of versions and a simple interface. We did this and then brought together all the various ideas into a single place for the clients — their own client portal. Here, tailored just for that single client, we delivered access to all of their services from us — for example they could see online what was happening on litigation we were handling for them — and added the new services like online know-how and deal rooms. These were all accessible from a simple tabbed homepage."

That design didn't happen overnight. The extranet portal went through three or four testing iterations. Some of the user feedback concerned the type of information people wanted to see on the portal. For example, some clients mentioned specific information providers they wanted. Feedback was also invaluable in shaping the naming conventions used for the sections of the site.

An early version of an Eversheds *Knowledge Bank* page shows how the portal team originally envisaged this as a series of different silos of information where users would dip into each to get needed information. User testing revealed clients disliked this approach. Instead, they wanted to see all the information presented on a single page with such things as top news and stories already in view.

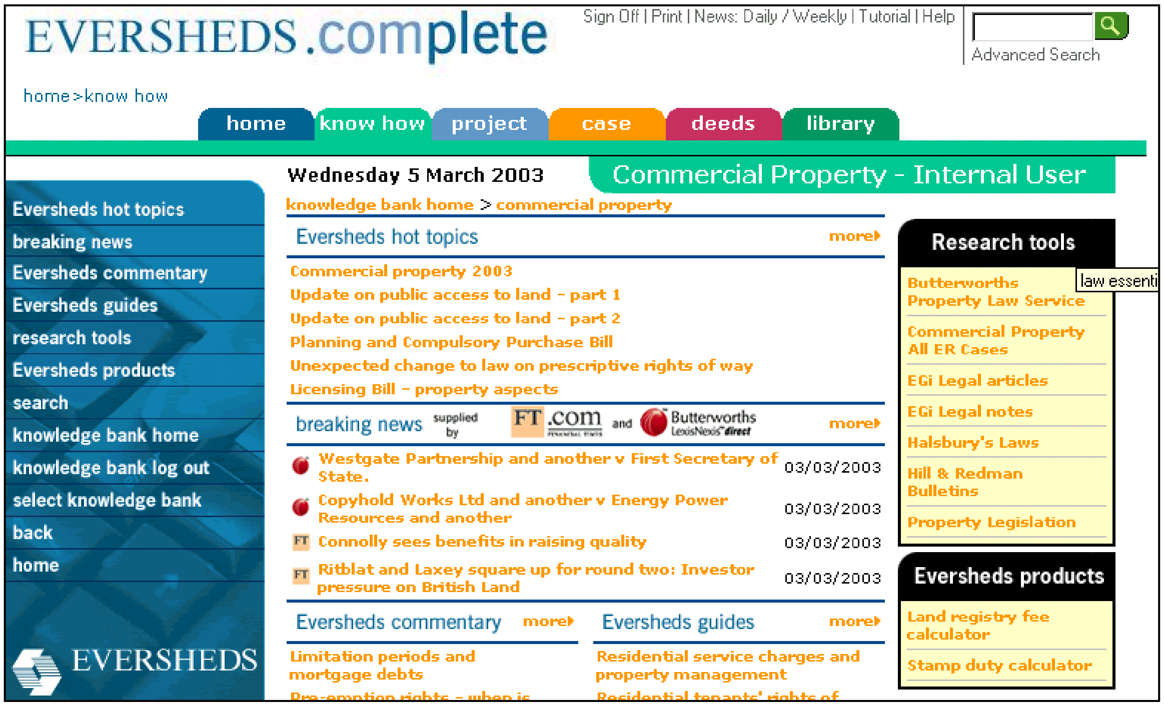


The re-designed version of the *Knowledge Bank* took testers' feedback into account, including running news headlines without the need for further clicks.

Findings from usability testing often seem to be obvious, but what's obvious with hindsight isn't necessarily clear ahead of time. For example, one of the features of the Eversheds client portal is an electronic deal room — a secure area where clients can carry out transactions online. Other firms had already attempted to offer deal room systems and the Eversheds team had originally developed a range of alternative deal rooms, some of them quite ambitious.

Yet most of them were so complex that they would have required training courses for clients. User consultation quickly made it apparent that clients didn't like that approach. They were busy people, couldn't spare time for training, and in any case they were located all over the world, making attending training courses in London impractical.

In fact in the end, the only one of the prototype deal rooms produced was "an absolutely basic one, as built by Emily, aged six," says Doolan. Based around an email model, it could be learned in five minutes. Clients loved it.



The deal room interface Eversheds ended up with is extremely simple — and users loved it.

Eversheds also called in consultancy Gigaweb, which used a usability scorecard to compare the planned site with best practice sites worldwide. The initial ranking was fairly low, but Eversheds absorbed the comments, and as a result the Eversheds homepage later became one of Gigaweb's best practice sites. "For me the most valuable comments were about keeping a consistent left hand navigation. We had designed it so that when you went into different areas you had different navigation and that was confusing," says Doolan. "Another issue they raised was about making every word that was a link an 'action word.' For example 'find a lawyer,' 'join the team,' etc."

There's an unexpected benefit from ending up with a more basic design: it costs less. Indeed, in an unusual occurrence for an IT project, the Eversheds deal room actually came in under budget. Even so, it has been extremely well-received by both clients and other law firms. The Eversheds complete portal also went on to quickly win three awards for the firm, including an "In Brief Magazine," Legal Office Technology and Innovation (LOTIE) award. That's the one Doolan is most proud of. "The LOTIE awards require you to be nominated by clients and then the top nominations go through to voting, again by clients only. In our case we were especially pleased that they commented that we had been nominated most by FTSE 100 companies, which was our target market." The FTSE is an index of Britain's 100 most-capitalized blue chip companies. Beyond the nomination, however, "of course it was even better to then win," he says.

WHEN TO TEST

Early Usability Testing at Vertex

When to test can sometimes matter as much as *if* you test.

Vertex conducted usability testing very early in the portal project and that testing informed the rest of the project, positively.

"This was one of the biggest projects we did in a long time and it impacted the whole company," says Steve Karsch, Vertex senior Web systems analyst, who headed up the project. "We wanted to make sure we got it right. We wanted to confirm [our choices] early in the process."

Karsch's team began by testing with low fidelity prototypes that had little functionality at all, just enough to test the concepts they were considering. "We wanted to make sure we weren't going down a totally wacky path," he says. "Some things [like RSS] are second nature to us because we are web geeks but not to other people."

At first, the team wasn't testing actual tasks, for example, "Can you add weather to the page?" They were testing concepts and how those concepts might play out in use. Karsch explains: "We verbally had them walk through how they thought it would work, go through the scenario, 'how would you customize [the page]?'" he says. "Then let them do the actual tasks."

Testing concepts helped the team gain confidence that the features they were proposing would be well-received. "We learned that what we were doing wasn't going to make people's heads explode. People could understand what was going on."

He says people were able to come up to speed very quickly. "In 20 minutes even a user who had never even heard of RSS was customizing the page," he says. "We are bringing folks along for the ride."

The team tested three groups of 7–10 users. These first three test sessions were the first time the organization had done any usability testing. And the sessions proved eye opening for Karsch and his colleagues.

"We used Morae so we could watch them go through the tasks," he says, "And we were in the other room screaming in frustration."

"Our culture is very loose. We can actually take the company news off the homepage if the users aren't reading it," he says. But what the team wanted to know was *why* the users weren't reading it. "If users are actually taking the news off the homepage — if the corporate news isn't important enough to have on homepage page — then we have to be publishing better corporate news."

The lesson learned for Karsch and his team: usability testing works.

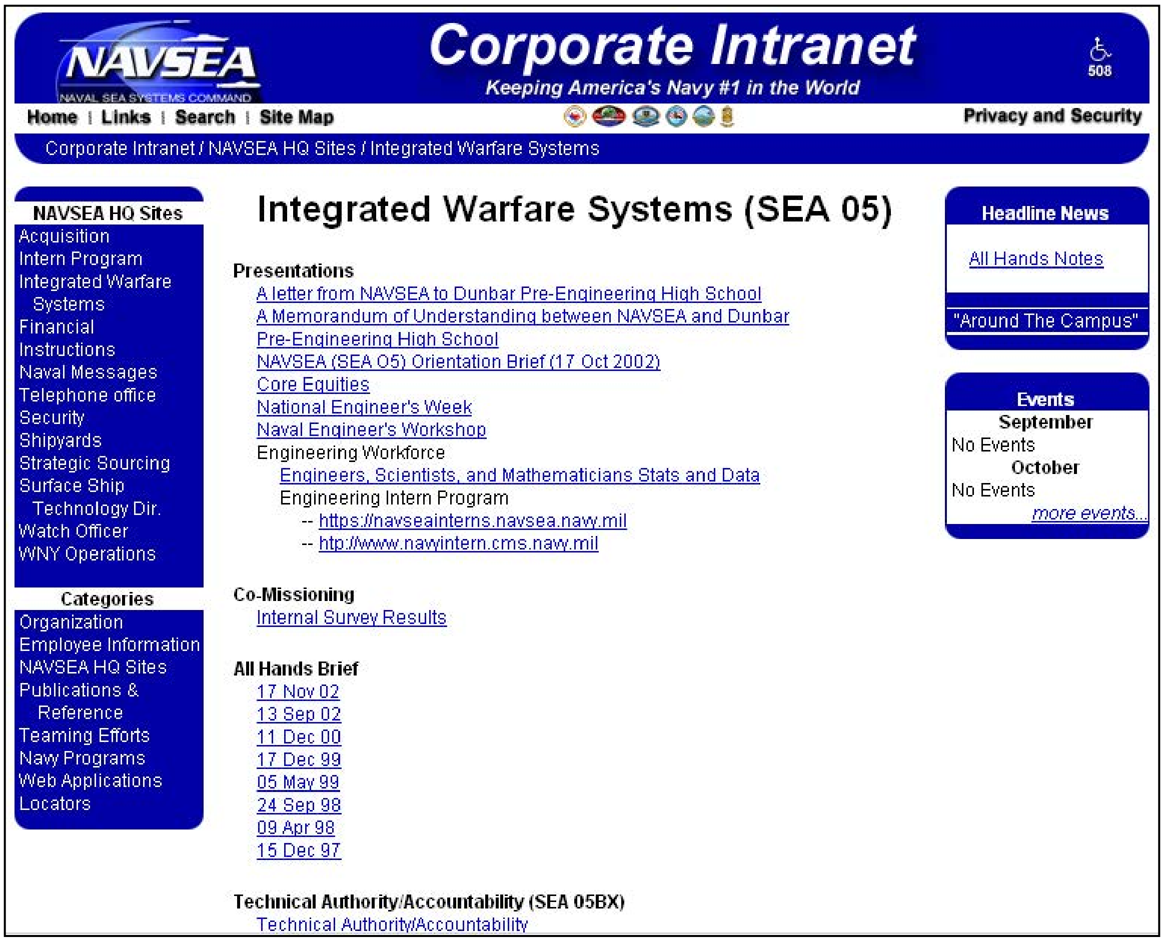
"One of the best things we did was to do the usability testing and test the concepts early to make sure the users can pick up on it and just use the site," he says.

Iterative Testing at NAVSEA

User testing in large organizations, with employees in different countries, or drawn from different cultures, can be complicated. Just take the NAVSEA project, whose users are based all over the world, and have a wide variety of job roles.

Though this should, in theory, make usability testing quite difficult, the Navy does have a couple of advantages over commercial companies. First, though staff shifts on a regular basis, at any given moment the staff working at NAVSEA headquarters in Washington are pretty representative of the organization as a whole. "We just use people from HQ for testing," notes White. "Jobs are mostly rotational, so most people here now have served out in the field somewhere, and we can get what we consider to be a random sampling of people from command down to secretary level."

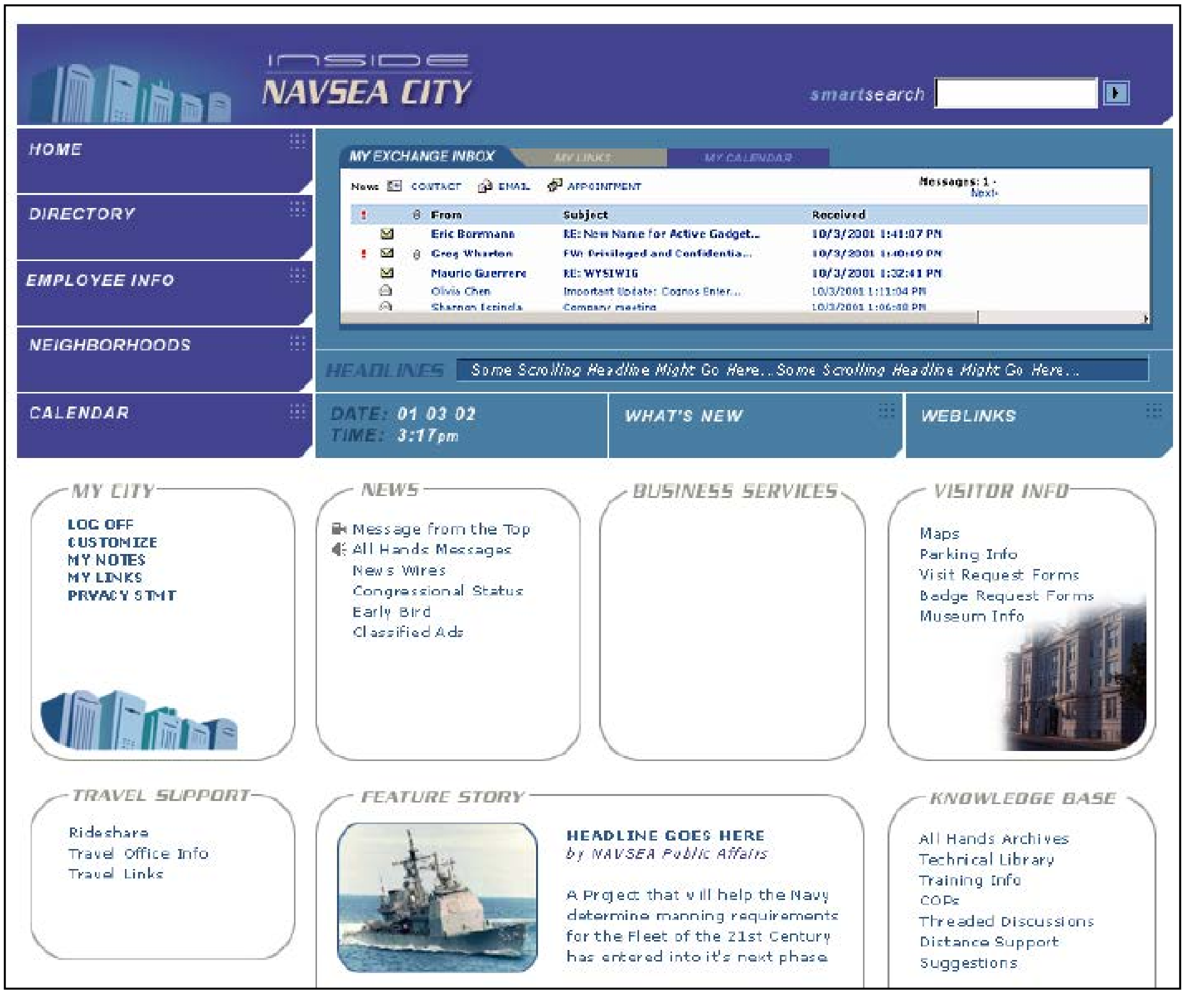
Second, a command-and-control infrastructure has notable usability benefits. Coaxing users to participate in testing isn't an issue. "We don't have to incentivize people to take part. This is the Navy — they're just asked to go and participate," he says.



This is how Inside NAVSEA City looked before the redesign. User testing led to many improvements, including a search box, events calendar, a cleaner layout, and more compelling content.

At the start of the NAVSEA project, Burke Consortium held a series of focus groups, with six to eight participants, where the basic concepts of the portal were discussed with potential users, and they were shown paper prototypes.

An early design concept for Inside NAVSEA CITY



Another early design concept for Inside NAVSEA CITY. Both of the above initial concepts included a higher degree of personalization than was used in the live site. The round *PEO (S)* logo in the first mockup would have reflected the specific organization of the user logged into the site. Comments from Concept 2 were that the navigation was confusing and the header took up too much space. The second mockup shows plans for integration of Outlook email and calendar, which were later abandoned. The more angular look of the final design compared with these early mockups is intended to help distinguish between the intranet portal and the public website.

As development proceeded, there were a couple of rounds of user testing, taking in approximately 20 users each time, and those resulted in a number of changes to the site structure and navigation. Several changes were made to the login page, for example, as a result of user testing. The login procedure in particular was clarified by enlarging the *logon* button, which users previously tended to miss.

Users of the NAVSEA portal can be based anywhere around the world. This remote login page enables staff in remote locations to access the portal securely via the web. Users within the trusted network are immediately presented with the homepage. A larger *logon* button was introduced as a result of user feedback.

WORKING WITH CONSTRAINTS

Idaho National Laboratory: Using the 80/20 Rule

Idaho National Labs' portal team has good advice for teams struggling to try to achieve a balance between the desire to reach more users, and the constraints they have to work with: set attainable goals.

"Perform appropriate design research, utilizing industry expertise, and set the standards based on best practices," says INL's Tina Chapman. "Go with an 80/20 rule for success. No matter how much research you do, you can't please everyone."

And she says, try to gauge when it's appropriate to reach out to users. Timing can be everything. "Communication with the user base is still a challenge," she says. If you communicate too soon and aren't ready to deliver, expectations rise and users get frustrated that you haven't delivered. Setting priorities for what work should take precedence over other work is also very difficult."

Reaching Remote Users at HP Europe

HP Europe's partner portal, aimed at external partners, shares many of the usability challenges facing other large internal portals with a highly distributed user base. It's hard for the portal team to reach many of the system's users directly.

So for its usability testing, the team relies heavily on those internal staff members who work closely with the external partners. "We use all the internal touch points who know the partners: the sales people, account managers, and call center staff. Whenever we can, we go and get a brain dump from them," says Omar Benaissa. As well as talking to the partners' internal contact points, the portal team also gleans information from site traffic, visits customers to conduct surveys, and has blind surveys carried out by third-party market researchers.

Testing IA at Dell

Dell's portal team employed self-described "guerilla usability" on its portal project. "Like everyone else, we are strapped for resources," says Dell's Eric Moorehead. "We don't have full-time dedicated usability resources for the intranet, so everyone on the project participates." His project managers, designers and web consultants conduct usability testing with users for the portal project, testing that has helped the team score consistent wins at improving the site's IA.

"We created more logical clusters," he says. "We really wanted to get away from having too many links and from having links that were labeled using Dell insider-type jargon or acronyms."

This wasn't an easy task since Dell-speak is so deeply entrenched in Dell's corporate culture. It was difficult to find users who had a fresh non-Dell perspective. After testing newer employees, Moorehead soon realized that his team was going to have to find *really* new employees and test them on day one. So his team started grabbing new employees to participate in a quick usability test, sometime between orientation and when they met with their managers on the first day.

The new hires participated in usability tests to refine the links on the site's homepage. "Because the Dell culture is so pervasive," he says. "That was the only way to get people with a fresh perspective."

Through these user tests they were able to change all the links that contained Dell-specific names or acronyms and make the IA more accessible to different audiences within the company and help new employees use the portal effectively from day one.

Using Proxy Users at Kaiser Permanente

Rather than rely on the opinions of the key stakeholders involved in the project, Kaiser Permanente's portal team used them as "proxy" users and put them through the paces of various IA methods. "We identified a set of key stakeholders representing major audiences and/or content domains in the enterprise," says Kaiser Permanente's Garrett.

"These stakeholders were selected based on their ability to represent their audience(s) as 'proxy' users and/or their passion, influence, and evangelism of a coherent user experience for employees online," she says.

The working group members did card sorts and walk-throughs of wireframe iterations and ultimately selected the design direction from among the creative approaches developed by the graphic designer.

This proxy user approach is not without its shortcomings. "It's not ideal," she says. But the team is quick to point out that any data is better than none. The company's portal team members say that they believe research is vital.

"Up front user research and audience analysis is, in my experience, one of the first things that gets cut when time and budget constrict," says Garrett. "But it is difficult to justify design decisions in the absence of a volume of quantitative or qualitative data."

Offsite CMS Meetings at New Century Financial

To help guarantee it is meeting user's needs, and the needs of the business, New Century Financial hosts a two-day content discussion workshop every year.

"Ensuring we're doing what the business wants us to do is really important, because you can easily get distracted by intranet features that your company doesn't need and end up wasting lots of money," notes Cullinan. Through the offsite meeting, "we're constantly learning more about the business and trying to better align ourselves with what is important to the organization."

The two days include varied activities. "I try to bring in our vendors to counsel all of our authors and business owners on intranet benchmarking ideas and best practices they have observed from other customers. This is something they enjoy doing because it gives them additional exposure within our company," notes Cullinan. Sometimes employees will also make presentations about what they learned at intranet and communications conferences.

Business authors also present what they want to do, content-wise, for the next year. "We have a moderator — a really good facilitator — come in to make sure we get this all right, so we know what to concentrate on for the following year, and we can't do it all, but we are very clear what our focus should be at the end of the two days," says Cullinan.

Beyond giving offsite participants a forum for planning how the intranet will evolve, the meetings can entice people who have been skeptical of the intranet to embrace it. "We end up with them wanting to do things on the site, because they realize it is already in place, effectively communicated out to the organization, and best of all, it doesn't hit their budget," she says.

Working Against Time and Budget at the Portland Schools

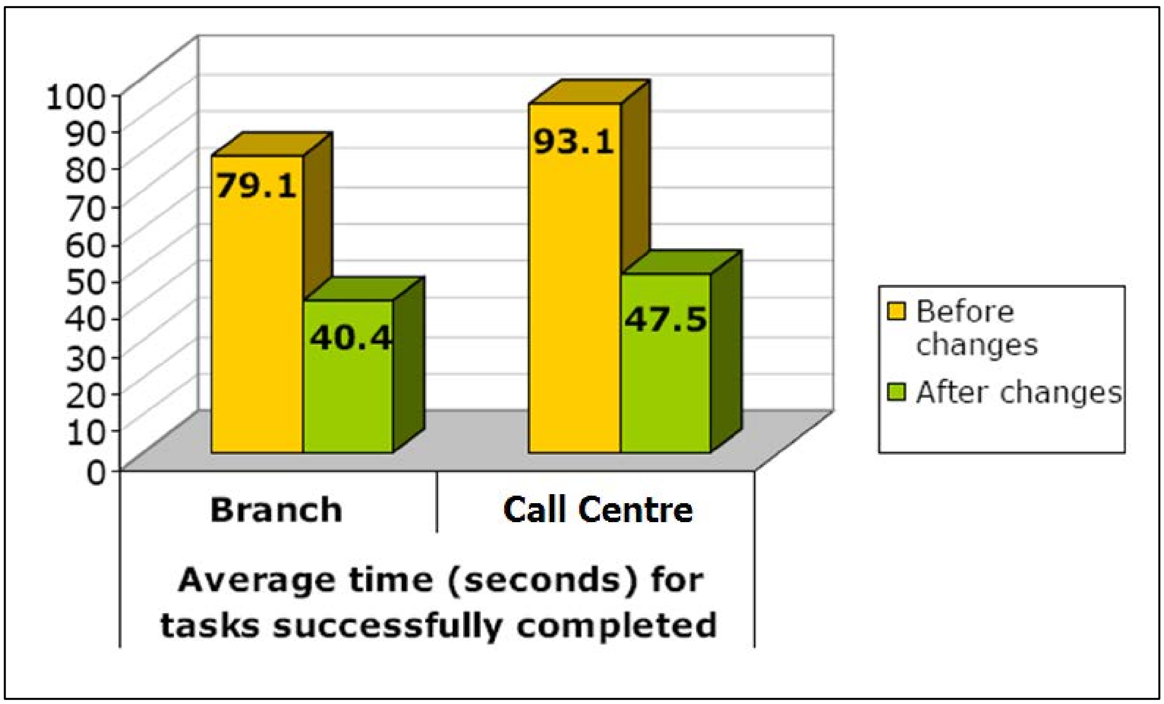
In principle, the Portland school district portal team is all in favor of user testing. It's members say they believe it's important to spend time with users in the field, and to find out what information they really use to get their jobs done, as opposed to the information they say they want. The team also aims to use groups of five or six people to test every iteration of a particular task.

In reality, however, both budget and time restrictions make this problematic. "We can't schedule tests as often as we would like. It takes a lot of time to recruit people, and we can't afford to incentivize them. They have to do it because they want to help," says Connie Lysinger. "School staff are typically very busy people, and teachers in particular can't just leave their class to participate in user testing. Their labor contract doesn't provide for additional work-related activity after school. Teachers and school secretaries are primary audiences for several resources, and we haven't been able to schedule them into tests thus far. School principals are slightly more accessible during the day, but because they have so many demands on their time that recruitment has to be planned long in advance."

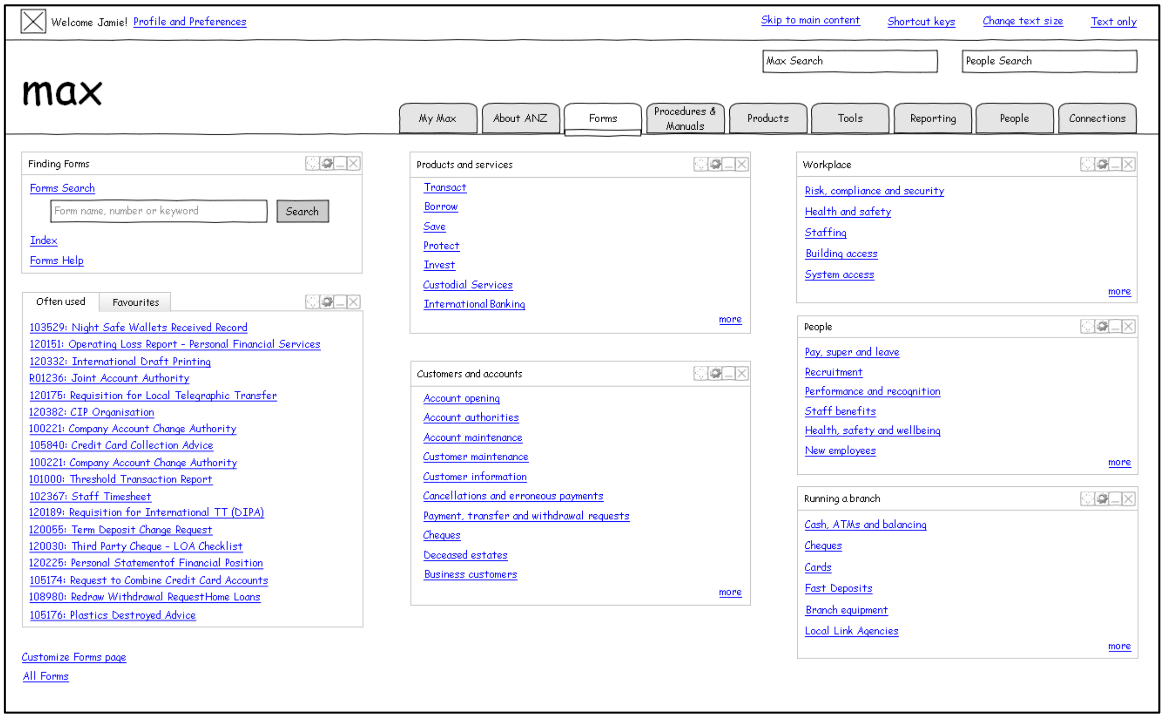
The team has also evaluated remote monitoring of how people use websites, but found it unsatisfactory. "It only shows you what they did. It doesn't show you what they didn't do, or their motivation for doing it. Once you've done some usability tests with the user in front of you, you realize you can't learn what you need to from monitoring," she says.

Thorough Planning at ANZ

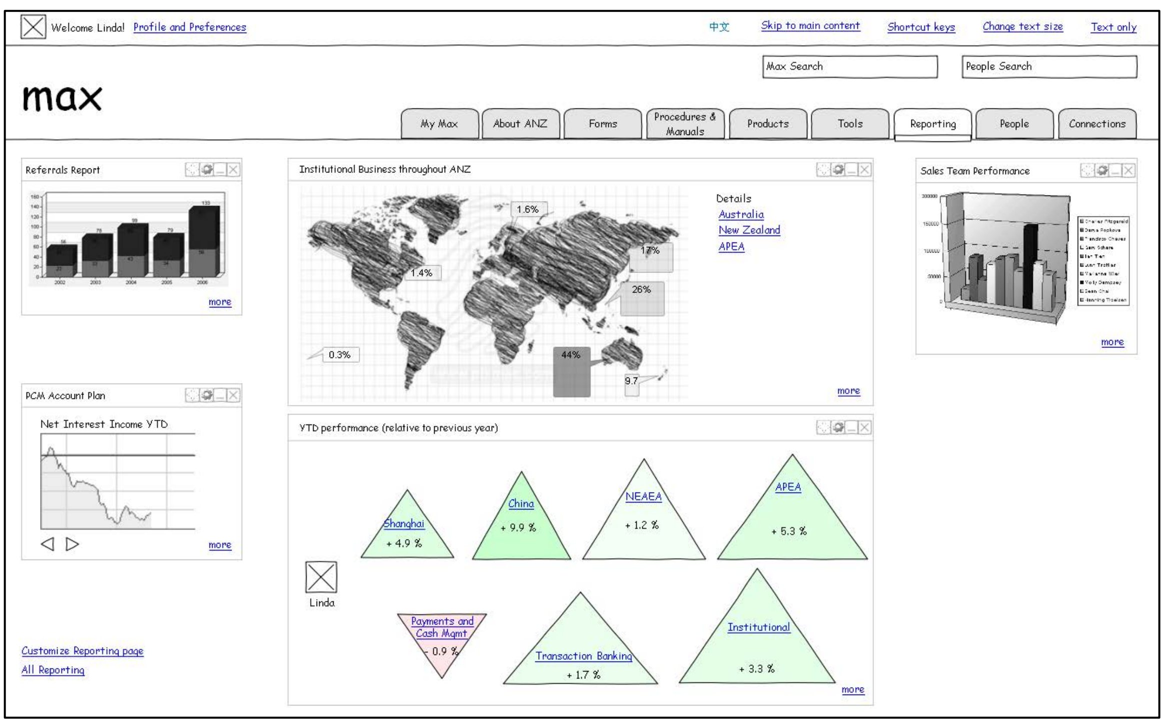
The ANZ portal team conducted detailed planning activities during its design process. These included benchmark tests, wireframes, persona development and other user-centered research activities. The screenshots that follow illustrate some of those activities:



As part of the Frontline Australia pilot project, ANZ conducted benchmark tests before and after implementing a task-based information architecture. Through these tests the team managed to cut the completion time roughly half for typical tasks, and also improve the rate of successful task completion by about 50%. This means that they reduced the amount of unsuccessful tasks that can result in calls to the helpline, interruptions to managers or colleagues or unsatisfactory customer service for the areas covered by the project, by about 70%.



This screenshot shows a wireframe of the *Forms* tab for the "Jamie" persona on the ANZ portal project.



This screenshot shows a wireframe of a *Reporting* tab for the "Linda" persona on the ANZ portal project.

Jamie Fernandes, Personal Banker

Work:
Jamie joined ANZ when he was 20. He began in the call centre but wanted more real life customer contact so he moved into 'branchland'. Jamie works as a part-time Personal Banker (24 hours) to fit in with being part-time at uni.

Jamie loves his job because he can really get to know his customer. He can listen to them, and either solve their problem or help make a difference in their lives. A lot of people come in and ask for him because they hear about him from their family or friends.

Jamie takes the time to keep his product knowledge current as he wants to maintain a professional image in front of his customers. Whilst he is proficient in Hogan (self taught), he uses the Customer Profile and Products and Services page a lot in iKnow because it gives him one view of the customer very quickly, and he can use it in the sales interaction. The more informed he is, the better he is able to service the customer.

Jamie laments that the targets they all have are difficult, and says it would be easier if they had more time to spend with the customer. His target is generally 4 Transact, 2 borrow, 3 Save, 1 Invest and 1 Protect product per week. Other targets he has to work for are closed CSI and closed referral targets. Jamie roughly achieves his target 75% of the time, but he has to work really hard for it. By using his "My weekly plan for success" booklet, he can write down and track his personal goals, referrals and customer needs met. It also gives him an opportunity to record what has worked for him, or what he could do differently.

Computer literacy:
Using computers at work is not an issue for Jamie. He likes finding out new things and being the one others come to for help.
Jamie uses iKnow where possible to open accounts and perform maintenance because he says it makes the process so much easier. Jamie believes branch staff are becoming more and more busy with all the things they have to consider and do, so the simpler the systems and processes are, the more it helps staff to do their jobs.

Age: 24

Education: Studying a Bachelor of Commerce

"Jamie Fernandes" is a persona used to represent personal bankers in ANZ's Australian branches. He works part-time in a Melbourne branch and is also studying part-time at university. He is 24 years old and joined ANZ four years ago.

BEST PRACTICES

- Don't assume. Don't ever assume you know what users want. The only way to know for sure is to employ user research methods.
- Some testing/research/user engagement is better than none. Even limited user research is better than none at all. You can learn a lot from a little face-to-face user testing.
- Use data to your advantage. Involve the users because their feedback may give you ammunition that you can take to project stakeholders who might be resistant to some changes. Results of usability testing can be used to win over dissenters, as well as improve portal usability. Having clear and credible user research data can act as an invaluable arbitrating voice when design teams and technical teams reach an impasse or the teams need consensus around a difficult issue. Having this data is particularly critical to success when the project is large and the timelines are tight.

- Outside perspective can be useful. Use outside consultants to conduct user research activities if their perspective will help your project. Some organizations employ outside consultants because their detached viewpoint can lend an air of authority to test results and that authority carries weight with certain stakeholders. Decide if this approach would work best for your organization or if you would benefit more from having internal teams hear directly from the users.
- Focus on what users do rather than on what they say. What people do and what they say they do is often vastly different. While it's better to survey users rather than do nothing at all, nothing is as valuable as observing them doing tasks. Watch people using the intranet and give them specific tasks to complete. The information gained from this process is priceless and helps teams design and improve all aspects of the intranet. General user surveys work well for setting direction and highlighting portal problem areas.
- Take the time to understand where and how users work. When you are building any piece of software it is critical to keep your users in mind; that includes users who are on the go and have to access the platform through a VPN or mobile device. These factors can affect the design and technology considerations. Don't assume everyone is working from his or her desktop computers.
- The payoff is worth the investment. Usability costs extra upfront but pays dividends in the long run. It's better to test early rather than fix later.
- Don't just ask questions. Listen to the answers and turn user feedback into actionable steps. Involving users throughout the development process can help with portal adoption.
- Users want to be involved. Don't assume people will find usability testing a chore. They're often pleased to be consulted and share their time.
- Don't be afraid to stop the presses. It is preferable to make the decision to hold back a release if a feature has major usability issues rather than release it into the wild and have it be met with widespread disdain.
- It's more than just testing. Don't forget that UX resources will need to be devoted to support, documentation and training efforts in addition to design. UX resources will become SMEs and consequently in high demand outside their core job functions.
- Sample wide. Involve all types of users, across all offices in both business and administrative roles, if possible. By choosing users from disparate groups across the entire enterprise you will get a better feel for how to proceed.
- Test early and often. Keep the users involved. Don't just test and walk away. There are many stages of the project life cycle where user feedback can be valuable. Try to include users as much as you can along the way. Perform regular usability studies, even after the project goes live.

- Requirements trump technology. Don't let the technology constrain the design. Design what should be and find ways around the technology to support the design whenever possible.
- Sell the vision by involving the users. Help your employees realize the aspirations for the portal by involving them in user-centered design activities. User test sessions can create an early buzz for future rollouts.
- User opinions will be more homogenous than you think. While many organizations fear user involvement because they think it will lead to a cacophony of opinions and ideas that will need to be sorted out, most portal teams are surprised to find that there is a similarity of opinions and concerns across all users. By involving the users you will likely find their feedback will help you focus the priorities and practical uses of the portal.
- Train users. Host training classes as close to the go-live date as possible. Train early and overestimate the commitment required by department site administrators to convert existing content.
- Shape and set expectations. Tell users what to expect — good and bad. Not every search engine is Google but it's important to highlight what each tool or function does well and perhaps more important, what users should not expect it to be able to do.
- Keep the user at the forefront of the process. Just because the design team likes it doesn't mean the users will too. If it doesn't work for the users it doesn't matter what a great idea it is. You must do research to try to understand the audience and you must be open to change. You can't do a redesign and walk away. As soon as you launch you should be planning for the next phase.
- Budget for user feedback. Consider how user feedback requests will affect the project and allocate adequate time and budget to adapt to these requests. This type of feedback helps tremendously with engagement and adoption, but can really throw off initial project estimates and require a scope change they aren't included in the planning phase up front.
- Give the users what they want. Try to give staff what you know they want, instead of trying to change what they want to match what the organization or senior managers say *they* want.
- Enlist feedback from the squeaky wheels. Test your pages, layouts, architecture, widgets, etc., with the people you'd least like to hear from — those who will poke and complain about change — those who will really tell you why this isn't working as they want and those who are generally unhappy about change. These people will tell you the good, bad and the ugly, and empower you to make hard decisions about design, rewrites, layout, etc. These people may be hard to hear from but they really know their jobs and are committed to serving the customers so their feedback is important. Better to hear from them during design than after launch.

- Enlist feedback from champions. Include those people who are excited to support the effort in some preview sessions, as they can be champions for the project too. Go to where they are, in their buildings and offices, rather than making them come to you for sessions and previews. Be available to answer questions and follow up with them later when their suggestions were implemented.
- Have a strategy for handling bad ideas. If you encourage people to submit enhancement requests, and they submit requests that turn out to be unsuitable there must be a plan for how these suggestions will be handled tactfully so people still feel valued regardless of the quality of their contribution. Submitters can become quite annoyed at the failure to implement their suggestions. That annoyance will pop up in the oddest situations. Tact and communication are required.
- Enlist feedback from across all levels of the organization. Commit to an attitude of openness to feedback from all levels. Take all feedback as an opportunity to improve and get buy-in. Communicate with those who provide input, closing the loop on any issues that are revealed and reinforcing appreciation for stepping up to share their concern. Through this the culture will change to more open communication and stronger support relationships putting the customer first.
- Listen to feedback. Make it easy for people to give feedback and encourage people to give their opinions and ideas. Provide opportunities for users to give feedback, monitor it and act upon it. Keep everything simple, so that it can accommodate all levels of computer literacy.
- Funnel the feedback. While it's great to provide opportunities for users to provide feedback, make sure you are able to funnel all those responses into a central place where the feedback can be acted upon in a timeline manner.
- Provide quick responses. It's just as bad to have users feel like their feedback is not heard as it is to not welcome it in the first place. Make sure feedback is acknowledged in a timely manner.

CULTURE DICTATES DESIGN

Functional is Faster

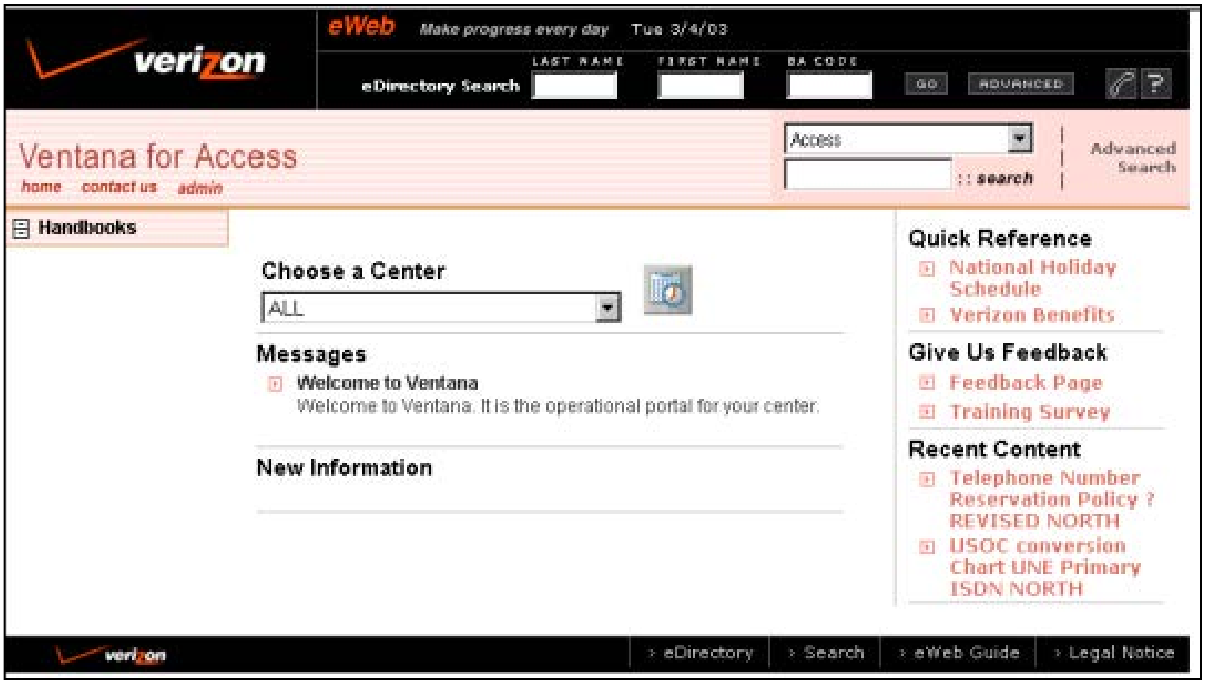
It goes without saying that the principles of good intranet design also apply to portals. But portal characteristics, such as their added complexity and the need to integrate existing sub-sites, create a number of specific design issues that portal teams also have to address.

The homepage is where most users will start their journey into the portal, and where most of the design effort will be concentrated. Yet remember that good design doesn't have to mean glossy visuals. In fact, very slick graphic design on the homepage can irritate users if the portal does not also provide the functionality they seek.

Most projects analyzed for this report have adopted simple, functional designs that despite their simplicity serve their purpose and are liked by users. The design of a portal usually reflects the company culture, with some organizations working hard to create a sense of fun and others just getting straight down to business. A portal design that favors function over form if often the best choice as there is less need to establish a brand identity with an intranet site.

Slick design doesn't serve as much of a purpose on an internal site as it does on a public website. "You need to have good UI and navigation, but heavy graphics are not as important," says Piper Jaffray's Swanson. "Our people know the brand, so it's more important to focus on design elements that support navigation readability."

Intranet sites even more than public websites have an implied need for speed. According to Verizon's Ivy Eisenberg, what users look for is "something that will help them do their jobs — and fast. Our operators are used to using screens that you and I might think are very ugly," she says. "They'd maybe be using 14 screens and six different systems, but they move between screens extremely quickly. It's much slower on the web, and people don't have patience for it. If nothing happens immediately they think something's wrong and start clicking again."



The streamlined, functional start page to Verizon's Ventana portal provides users with the no-nonsense information access they want.

Speed is top of mind when it comes to content also. Internal users at Verizon wanted content they could access and read quickly. "Our users don't care about the beauty of the documentation. They don't want to take the time to read stuff online or on paper," says Eisenberg. Indeed, "if it's not terse enough for them, they call a supervisor."

The Verizon portal team created a message board for non work-related content such as birthdays. However, she says, "people don't necessarily want that stuff, they want something that's useful: emergency changes that affect the orders they're working on, notification of changes to systems they use, changes in their lists of codes."

Fun as a Core Value and a Design Direction

As we said, design is usually dictated by company culture. So by contrast, the small, travel-oriented publishing company Lonely Planet takes a different approach. One of the goals of its intranet, The Loop, is to foster a sense of community across a geographically dispersed organization that has offices in four countries. Lonely Planet is an organization that values creativity and the design of its intranet reflects this. Colors and photography are used extensively, and even "light" content such as quizzes, photo galleries, and social event information feature prominently on the homepage.

While culture may dictate design, sometimes the features that portal users might consider fun or light go away as a result of a company's growth and changing priorities.

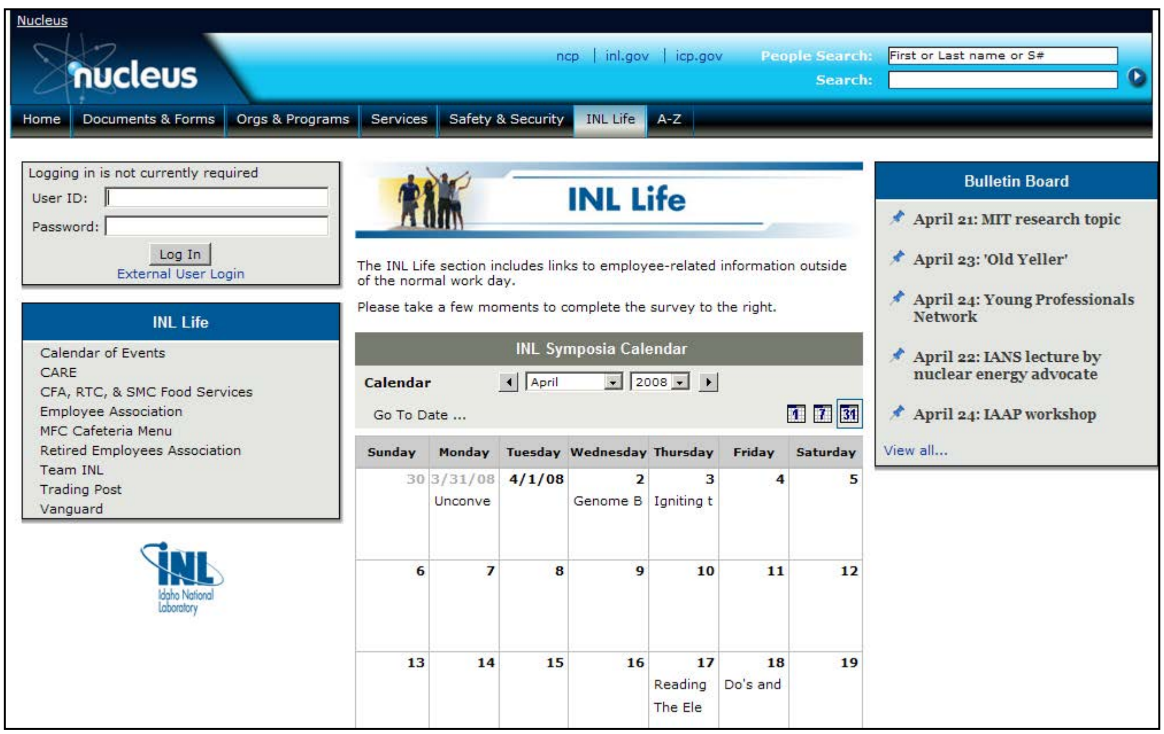
For example, the Vertex intranet has shifted focus as the company has grown. What started as a fun, people-centric site has evolved over time into a more task or work-oriented site. For many companies, this is a natural progression.

“Nine years ago when I started, the emphasis was on fun,” says Karsch. “Fun is one of our core values.”

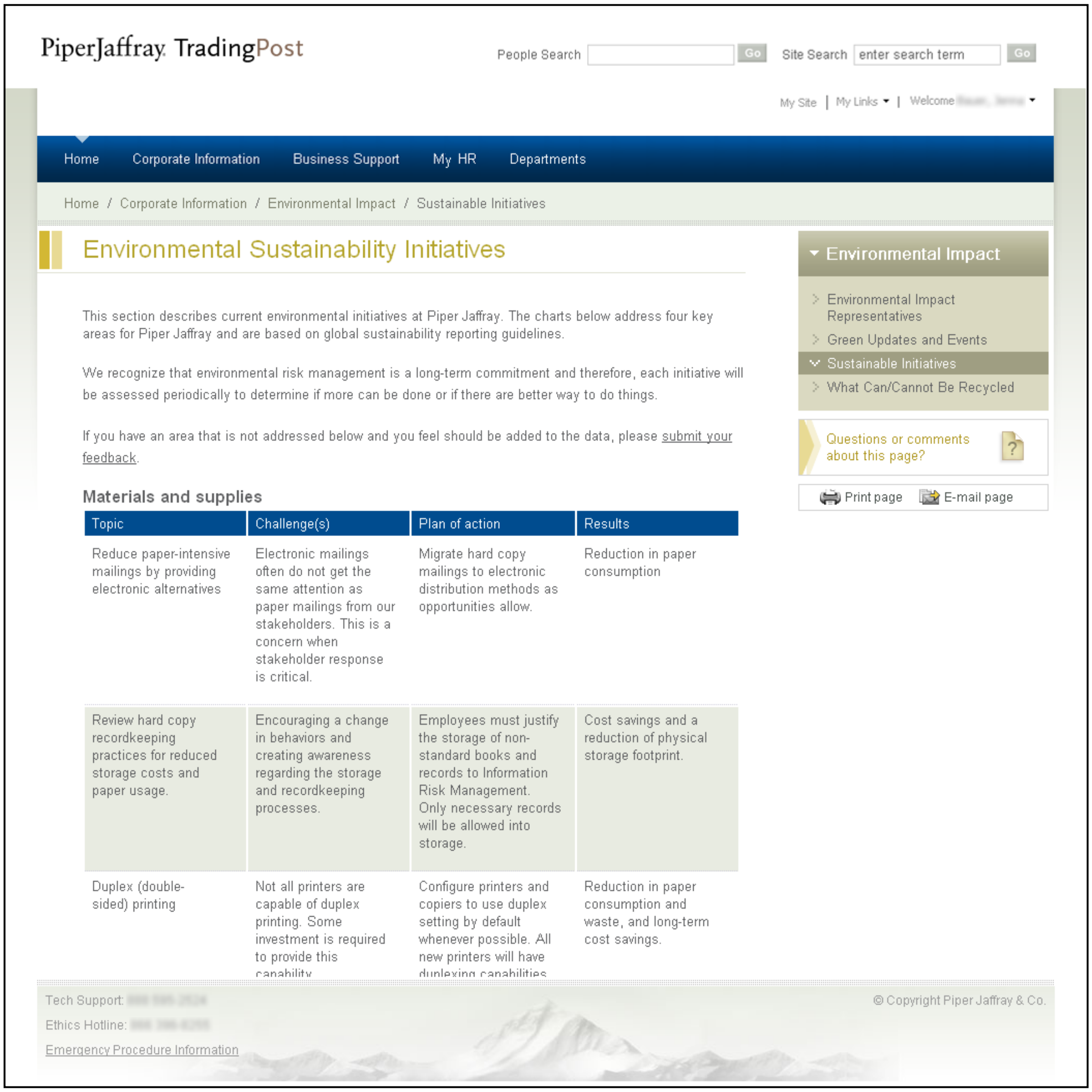
Vertex is what Karsch refers to as a “maturing company,” growing from 300 to 700 employees in recent years. And in that time, the tenor of the portal has matured to match the changes in the company overall. “People did start to miss that fun aspect of the intranet — miss that human connection,” he says. “But some people don’t care for that at all.”

As the company expands out to multiple locations, Karsch says he believes the portal can contribute to bridging the gaps left as the company grows. “We are spreading out more and the intranet is one way you can bring back the connection between people and the organization,” he says.

He says he is hopeful that over time some of the lighter aspects of the site will return.



The Idaho National Laboratories’ *Life* page is designed for activities that take place outside the normal workday. Cafeteria menus, community activities, and employee association information are all available on this INL portal page.


PiperJaffray TradingPost

People Search Go Site Search enter search term Go

My Site | My Links | Welcome

Home Corporate Information Business Support My HR Departments

Home / Corporate Information / Environmental Impact / Sustainable Initiatives

Environmental Sustainability Initiatives

This section describes current environmental initiatives at Piper Jaffray. The charts below address four key areas for Piper Jaffray and are based on global sustainability reporting guidelines.

We recognize that environmental risk management is a long-term commitment and therefore, each initiative will be assessed periodically to determine if more can be done or if there are better way to do things.

If you have an area that is not addressed below and you feel should be added to the data, please submit your feedback.

Materials and supplies

Topic	Challenge(s)	Plan of action	Results
Reduce paper-intensive mailings by providing electronic alternatives	Electronic mailings often do not get the same attention as paper mailings from our stakeholders. This is a concern when stakeholder response is critical.	Migrate hard copy mailings to electronic distribution methods as opportunities allow.	Reduction in paper consumption
Review hard copy recordkeeping practices for reduced storage costs and paper usage.	Encouraging a change in behaviors and creating awareness regarding the storage and recordkeeping processes.	Employees must justify the storage of non-standard books and records to Information Risk Management. Only necessary records will be allowed into storage.	Cost savings and a reduction of physical storage footprint.
Duplex (double-sided) printing	Not all printers are capable of duplex printing. Some investment is required to provide this capability	Configure printers and copiers to use duplex setting by default whenever possible. All new printers will have duplexing capabilities	Reduction in paper consumption and waste, and long-term cost savings.

Environmental Impact
- Environmental Impact Representatives
- Green Updates and Events
- Sustainable Initiatives
- What Can/Cannot Be Recycled

Questions or comments about this page?

Print page E-mail page

Tech Support:
Ethics Hotline:
Emergency Procedure Information

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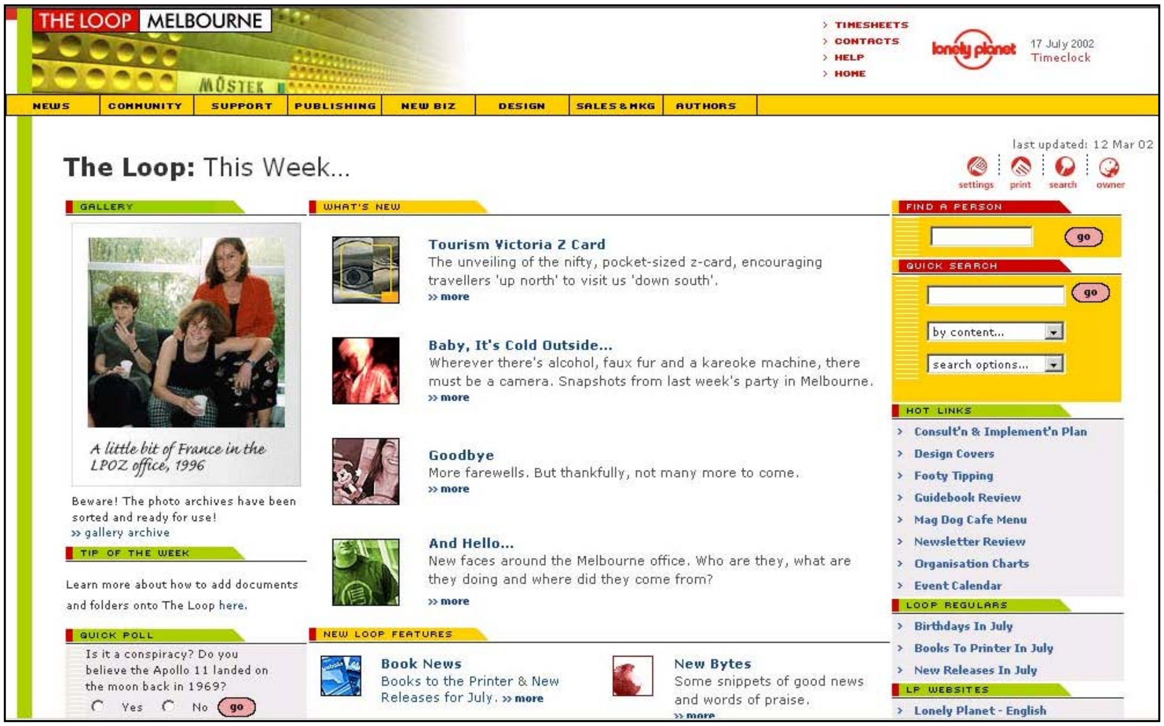
Piper Jaffray's *Environmental Sustainability Initiatives* page is an example of how the company is using the intranet site for global collaboration and volunteerism.



This homepage for the Melbourne Lonely Planet office uses photography and lighter content to create a sense of community.

These are the various themes that have been used on the Persistent Systems intranet site to date: Christmas, New Year, Uttarayan and Republic Day. These themes are changed based on location and showcase various festivals of that specific region.

THE COMMON PORTAL HOMEPAGE

Portal Homepage Designs Stay Similar Over Time

Having reviewed the design of several hundred intranets and portals over the years, a clear trend emerges: homepage layouts become more and more similar over time. In fact, one specific intranet homepage layout is now so prevalent that it makes sense to anoint it as the common design.

Here are the common layout features across intranet portal homepages:

- Top horizontal bar: colored background typically used for logo, global navigation (often tabbed or a megamenu), and a search box and utility nav (quick links, language choice, login info, stock price, etc.)
- Left rail: colored background, typically used for a navigation bar with detailed navigation and/or a contextual list of options for the current intranet sub-site.
- Middle area: white background, typically features one wide column (or sometimes two skinnier columns) containing a few photos or illustrations, a list of news headlines, and boxes with "portlets" to the most important intranet features and applications.
- Right rail: white background, typically used for a stacked set of boxes, some with colored content or pictures.
- Bottom: a footer area (often a "big" footer in today's designs) repeating important links or placing quick access to secondary links and other navigation.

Is Portal Uniformity Good or Bad?

Does it matter that most intranet portal homepages look similar? The answer is, not really, since users only see their own company's portal design. Hence there's no risk of confusing two portals.

Such uniformity is also understandable since at some level intranet portals all solve the same problem — making a company's internal information and applications easily available to employees. It stands to reason that designers solving the same design challenges over and over again come up with similar solutions.

Another reason for portal conformity is that many intranets are built on portal software platforms that encourage homepage design as a composite of boxed "portlets." While the default appearance of these templates is not usually particularly attractive — they work — so this means many designers are starting from the same basic building blocks for their designs.

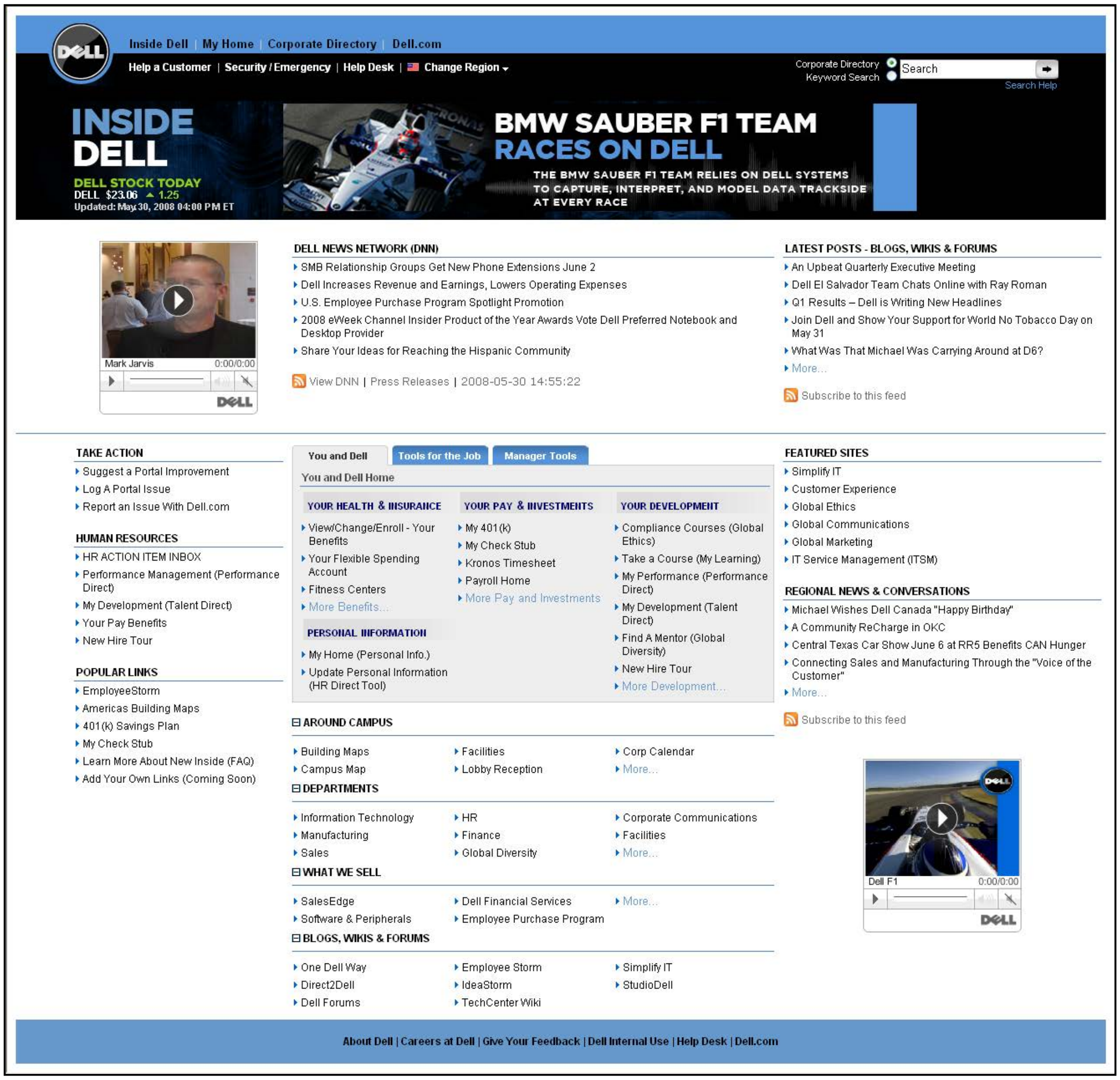
Here's where intranet and portal designers may be wondering about their future job prospects as portal platforms and pre-designed templates become more ubiquitous. Not to worry. As surface design becomes more standardized and more features are supplied by middleware rather than hand-coded it means design teams can focus on design projects that contribute more directly to usability improvements and relegate less-important issues to be dealt with by the software's standard template. Let the software do the drudgery of handling trivial features. There's more important work to be done.

Differences Where It Counts: Colors, Features, IA, Content

Though intranet and portal layouts tend to be similar, color schemes vary widely. Though specific colors are irrelevant to people's ability to use the intranet, they do matter for two reasons: to emphasize company culture and strengthen consistency across the portal. Most portal designs today share the goal of more closely aligning the intranet design with the company's branding. Portal teams can use this to their advantage, using the brand standards as a hammer to pound away inconsistent department sub-sites.

Dell's portal homepage has a design that not only aligns with the corporate branding, but also makes a design concession to corporate communications, one of the site's co-sponsors. The homepage features a large banner across the top that ties back to the company's website. "We did usability studies and users say it's too big," says Dell's Moorehead. "But the banner is a key part the new Dell brand identity and that is a really important part of the evolution of the company right now." The portal banner reflects back to whatever products or promotions are being featured on Dell.com.

"The intranet portal has two business owners," he says, his group, HR, and Global Corporate Communications. "They [Corporate Communications] need the message to be consistent. And we work together to make that happen."



Dell's portal homepage is the main page that all US-based employees see when they navigate to the corporate intranet. The banner at the top coincides with the current marketing message being conveyed on the company's Dell.com homepage.

Beyond color schemes, however, portals display more substantial differences in the features they support, their information space (IA) structure, and their actual content. In fact because these things are company-specific, they differ dramatically from one portal to another.

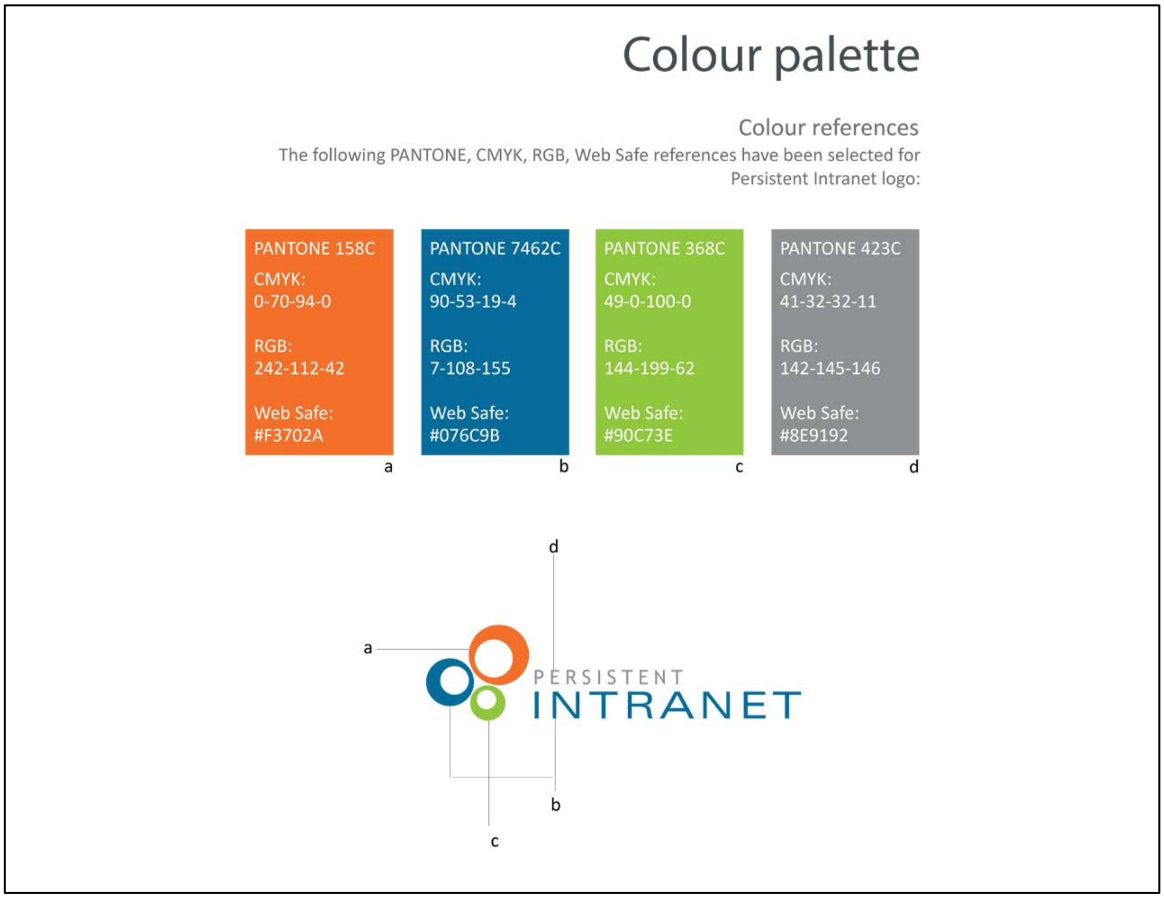
Different industries also rely on different mission-critical portal features. For example, the Mayo Clinic, which was one of the Ten Best Intranets for 2003[11], has an indicator of bed availability by hospitals — not a feature one is likely to find on train maintenance company NedTrain's intranet (a 2005 winner). For NedTrain, the killer app is a real-time list of available train parts. Although the two indicators might seem similar, in fact the applications created to convey such information culminated in very different designs.

Build-A-Bear Workshop and LM Glasfiber's portals both offer tools to help managers make business decisions. Build-A-Bear's portal features executive and store dashboards and LM Glasfiber's site has tools to help managers around the globe share information and forecast production demand. These are not tools one would find on Kaiser Permanente or Dell's more HR-focused portals.

By the same token, small, knowledge-intensive companies have different content and information architecture than huge manufacturing companies. These, in turn, differ from large government agencies — even if they have the same number of employees. Furthermore, multinational and multilingual intranets and portals are very different than intranets and portals serving a single country, no matter the layout similarity.

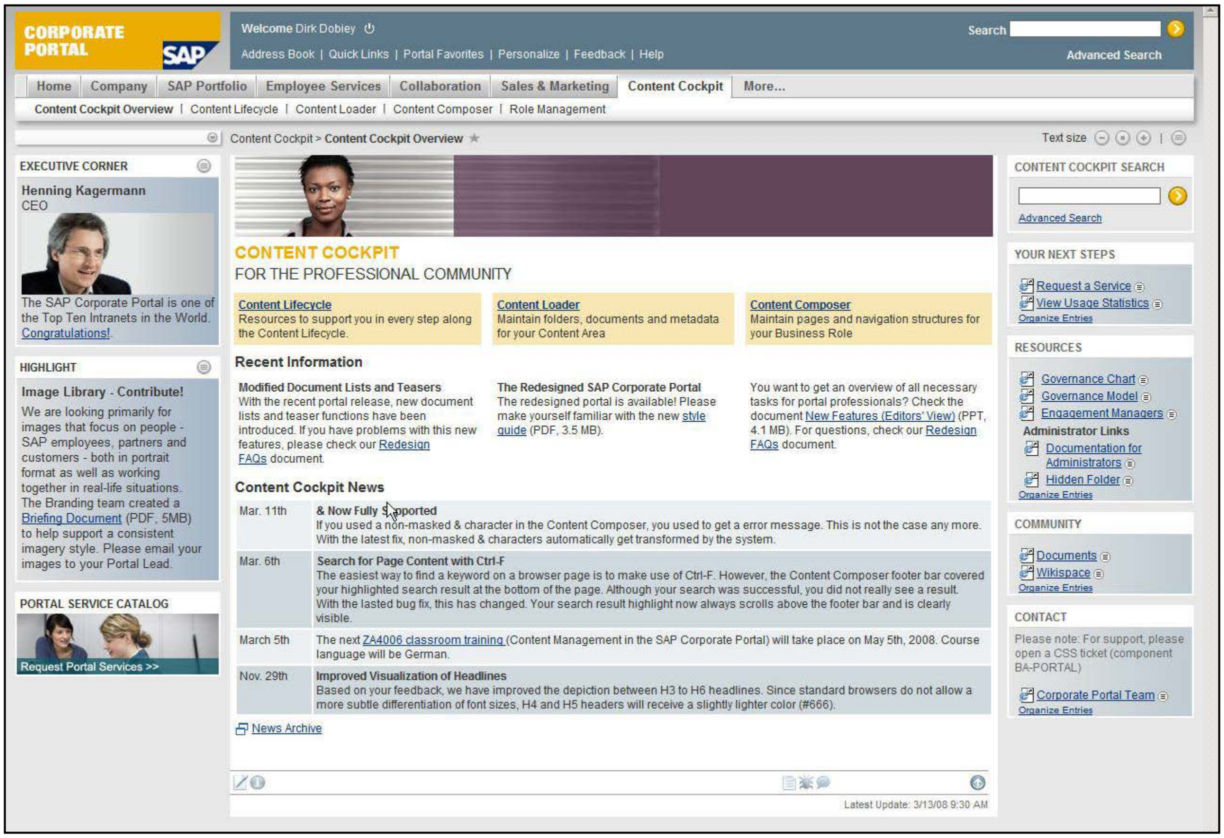
In short, even though most intranets and portals may look the same when you squint, the usability of said designs differs dramatically from portal to portal. Hence even when company branding determines an intranet's visual appearance, and portal software decides its page layout, companies still need intranet or portal teams to focus on factors of deeper importance: features, content, information architecture, and other aspects of interaction design.

[11] *Intranet Design Annual 2003: The Year's Ten Best Intranets*, Nielsen Norman Group.



This image shows the color palette used in the Persistent intranet logo with the specific color codes in CMYK/RGB and Pantone color libraries.

This example SLA page is a summary of the category that contains all of SLA’s rules and policies. It has functionality that allows the user to print the summary and categories (without images), export to PDF, subscribe to be notified of updates, bookmark the page, send it to a colleague and rate the category / summary as helpful or not. Sub-categories are at the bottom. Users can subscribe to updates by clicking the orange RSS icon. The number of articles in a category is shown. The three most important articles in each category are shown (and clickable).



This screenshot shows the entry point for all SAP employees who interact with the portal. Various templates provide users options yet offer a streamlined look and feel.

HOMEPAGE DESIGN

Dividing Homepage Real Estate

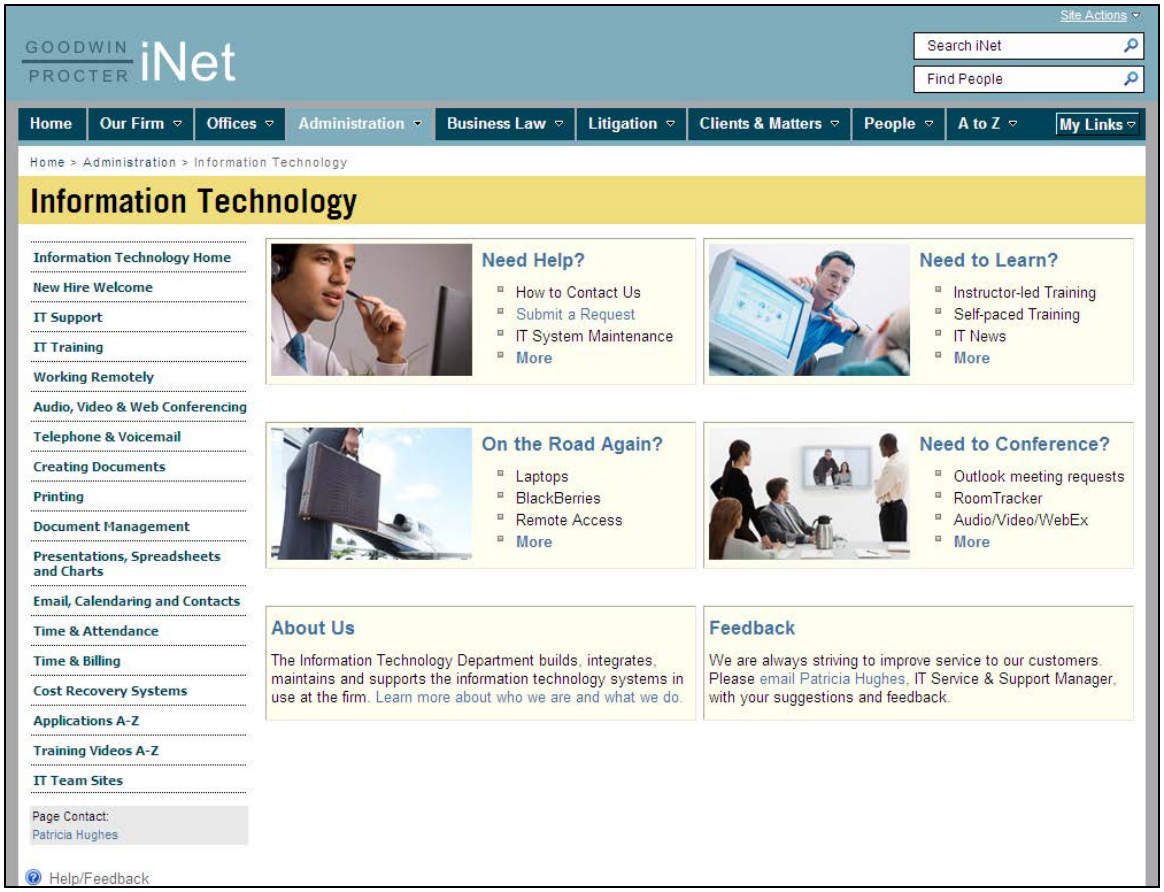
Space on the homepage is like the Holy Grail — precious and in great demand. We discuss the important of cross-functional participation in the portal at several points in this report. Diving real estate on the homepage is one of those times when cross-functional participation works well. If there is representation from around the organization in decision-making then, in theory, everyone will be working toward similar goals.

The Goodwin Procter homepage was a point of great discussion as the company embarked on a redesign. "We knew that there needed to be a customizable and personalizable aspect to it," says Kawa. "But HR, marketing and knowledge management all had components that we felt must be seen by all users when accessing the site."

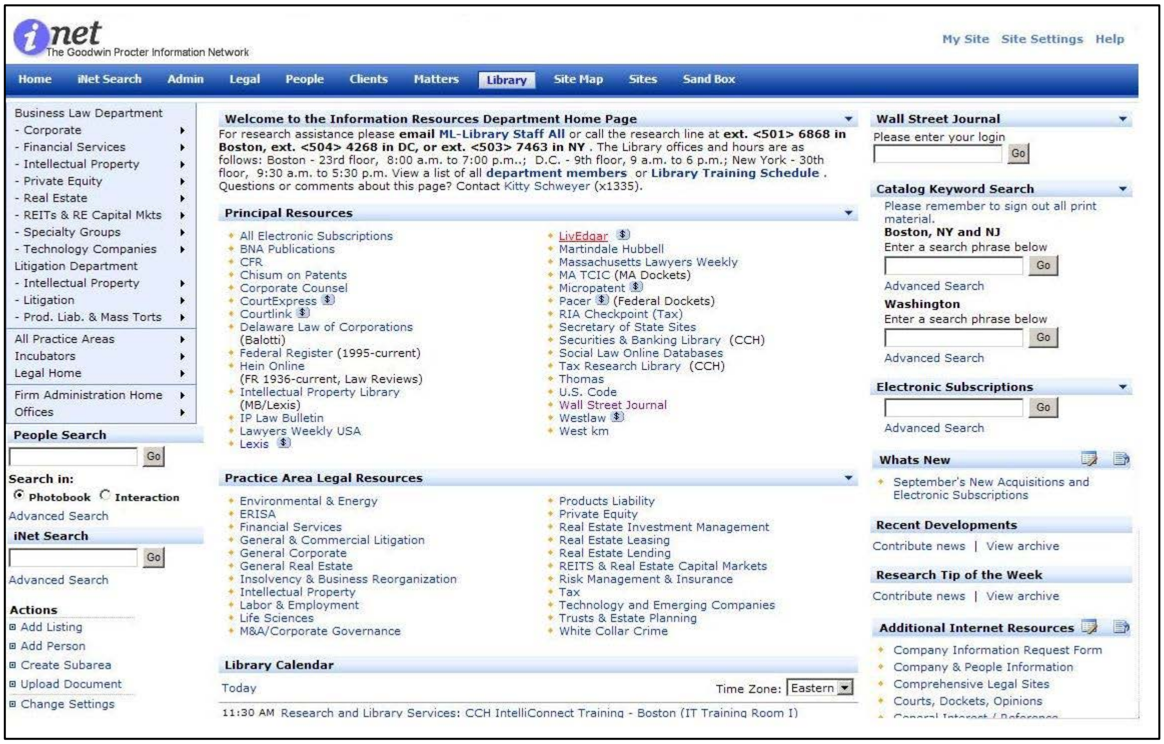
The solution was to divide the homepage into six areas, as follows:

- Personalized group/department functions and tasks that related to the individuals role at the firm.

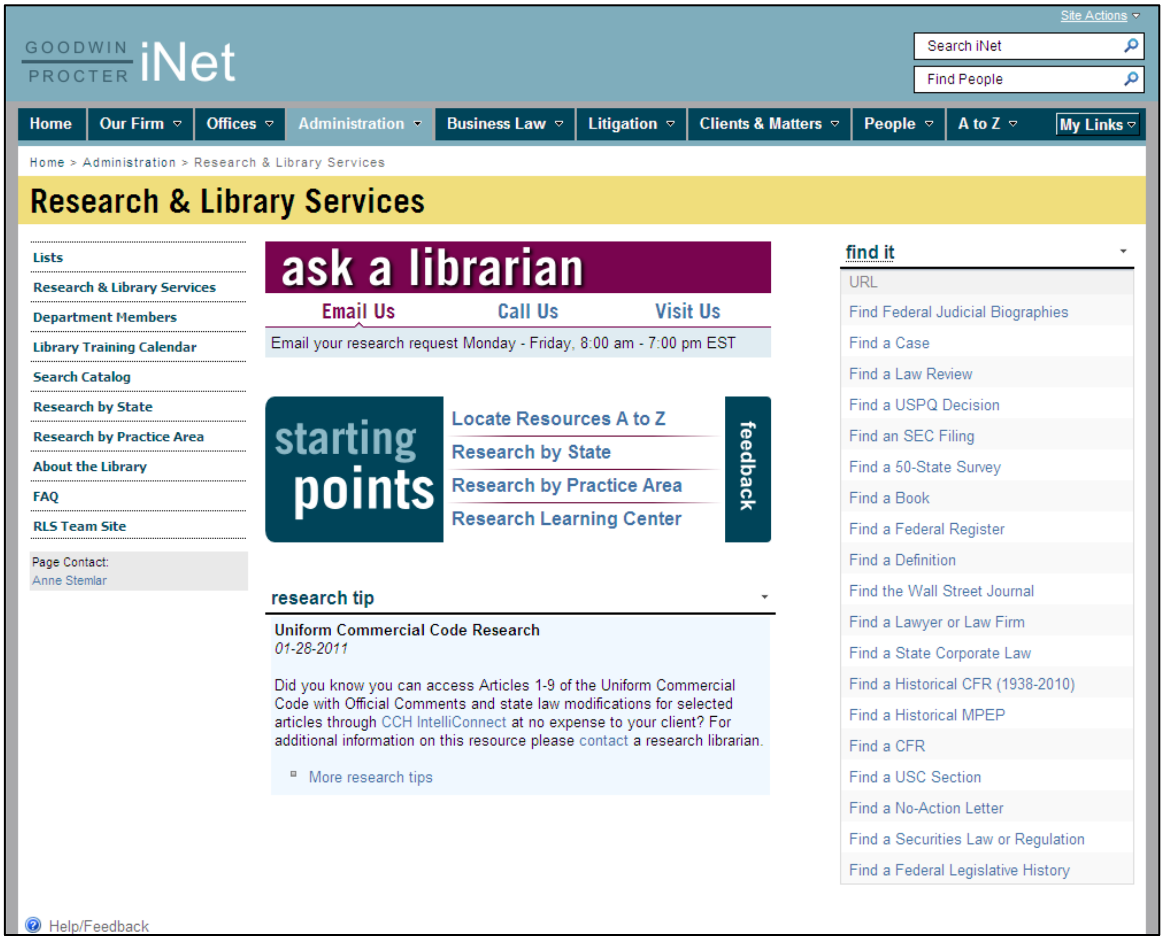
- Customizable region for users to manage quick access to information and applications used on a daily basis.
- Knowledge area regarding features/functions and new developments around the intranet
- News area managed by our marketing communications team.
- Spotlight area highlighting social aspects about the firms employees, culture and history
- Firm-wide calendar that rolls up events from all departments and practices at the firm. The calendaring system allows for events to be entered on sub-calendars and have these events roll up to their respective groups, departments and ultimately the firm-wide calendar. This allows granular use of calendaring at the practice level but still provides an overall view of what’s going on at the firm.



Prior to the re-design, pages and sites on the Goodwin Procter intranet were built around the firm's organization structure. This meant the users had to know the group or department that performed a particular function before trying to find information about a specific task. This screenshot shows the IT homepage using a new task-focused approach. With the re-design the organization shifted to organizing content by task/function. In this example looking for information related to business travel involving three different departments within IT as well as the travel agency. Since the re-design there is now a section called *On the Road* that encompasses everything a user needs to know about traveling across multiple departments. Users no longer need to gather information about traveling from three or four sites on the intranet. This site was the first example of this approach in action and has quickly been adopted by various other departments.



This screenshot shows the Research and Library Services site on Goodwin Procter's intranet prior to the current re-redesign. The firm recognized that pages such as this had a cluttered look and feel, lack of tools to help users find information, non-contextual navigation that displayed on every page regardless of where the user is on the portal, and a lack of organization of materials.



This screenshot is a good example of Goodwin Procter's re-design efforts. The pages have been cleaned up by adding several improvements, including: contextual navigation, a bread crumb trail, a standard template for layout, consistent branding, page owner identification and content organized by task and function.

When the Home Page Isn't the Homepage

While a portal is often regarded as a single point of entry to corporate information, a single start page for an entire portal may not be appropriate for all portals. "The idea of a portal is evolving and the notion of a homepage is getting less important," says Weber's Lanigan. "If you've got a large, diverse organization, the start point can be many different pages, so the emphasis needs to focus on having a common navigation scheme."

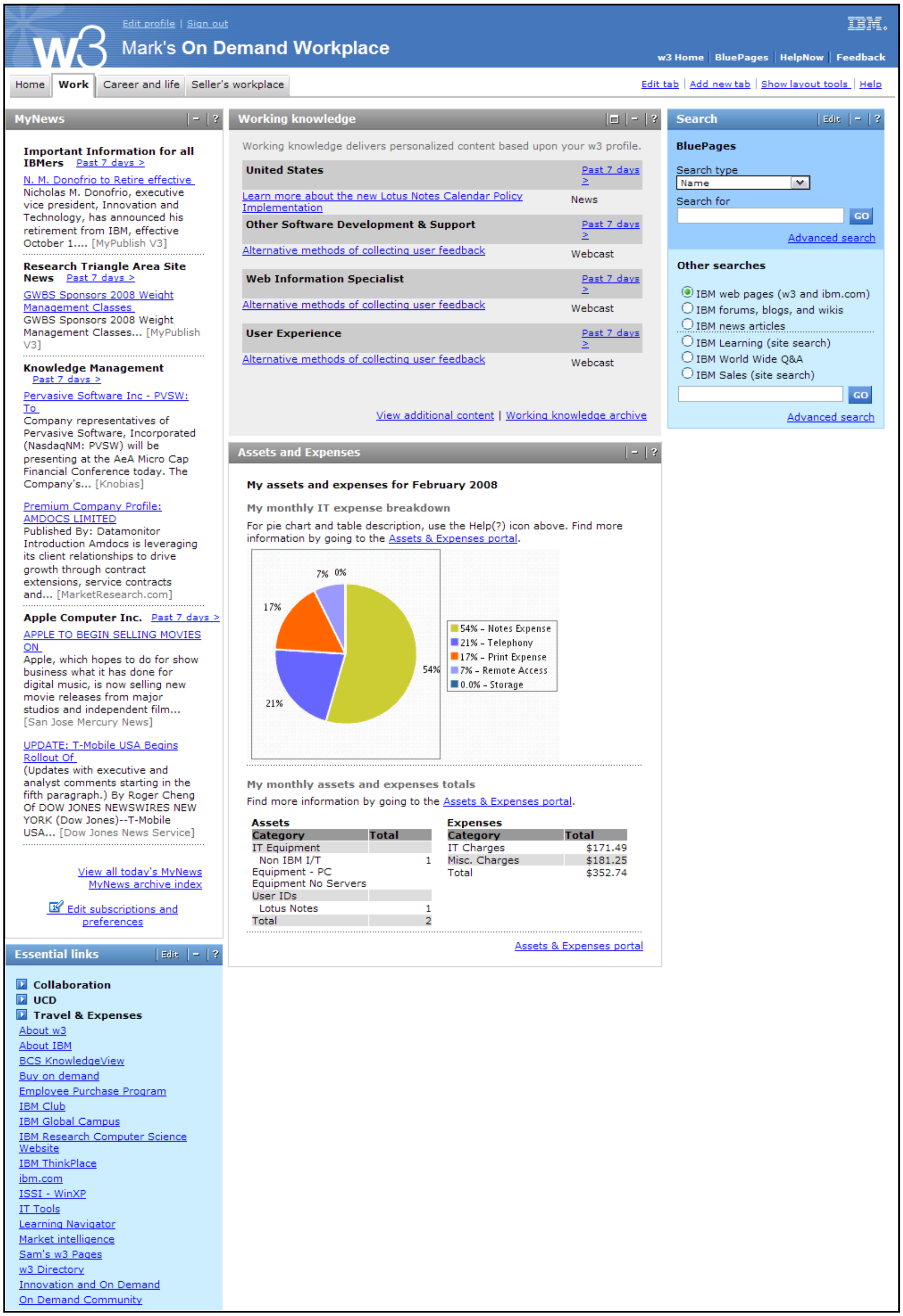
Both Wal-Mart and ABB have very large intranet portals catering to geographically-dispersed users who work across many different functional areas. In both cases users enter the portal not through a single common start page but through the start page for their particular area. In the case of Wal-Mart, this could mean the toy department or the logistics division — wherever in the company the user happens to work.

Despite the different start pages, common navigation and look and feel standards make various site sections seem part of an integrated whole, and allow users to intuitively reach all available resources throughout the portal, if needed.

Beyond the divisional start pages, both organizations also sport a bona fide corporate homepage, which users can navigate to if they choose. For a Wal-Mart store employee, however, accessing this homepage — where information such as the company's latest financial results and acquisitions are displayed — is probably not so relevant on a daily basis as accessing information they need to get their job done.

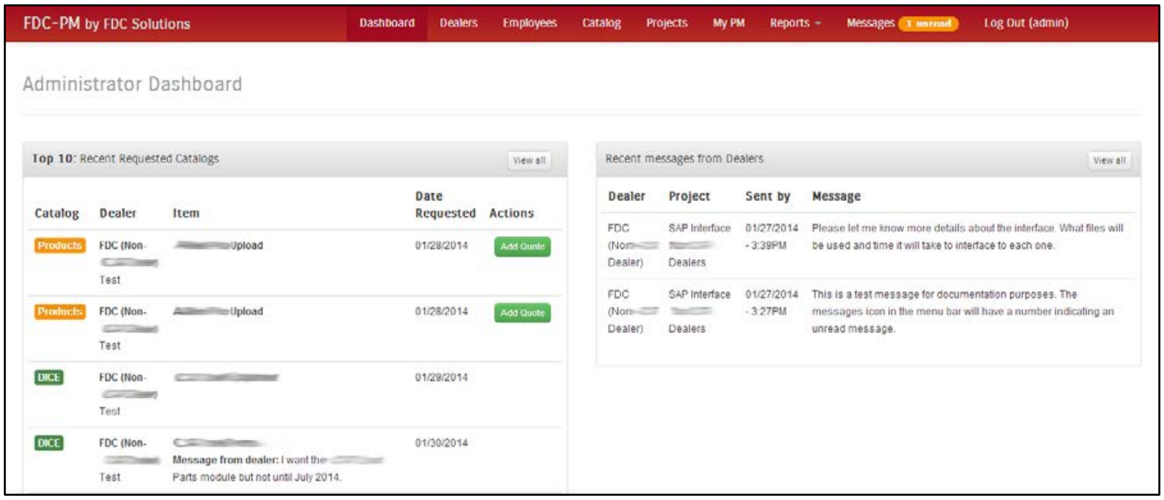
IBM's portal is built based on portlets that comprise three default tabs: Home, Work and Career & Life, which are available to everyone across the organization. The site then makes other tabs available based on the user's job function, for example, Sellers, Finance, etc.

This tab and portlet design serves the company and its approximately 350,000 users well says IBM's Ceplenski. "The tab and portlet design provides an extensible framework that can be easily added on to, and customized by the end user," he says. "Users can add/remove/move portlets and create new tabs."

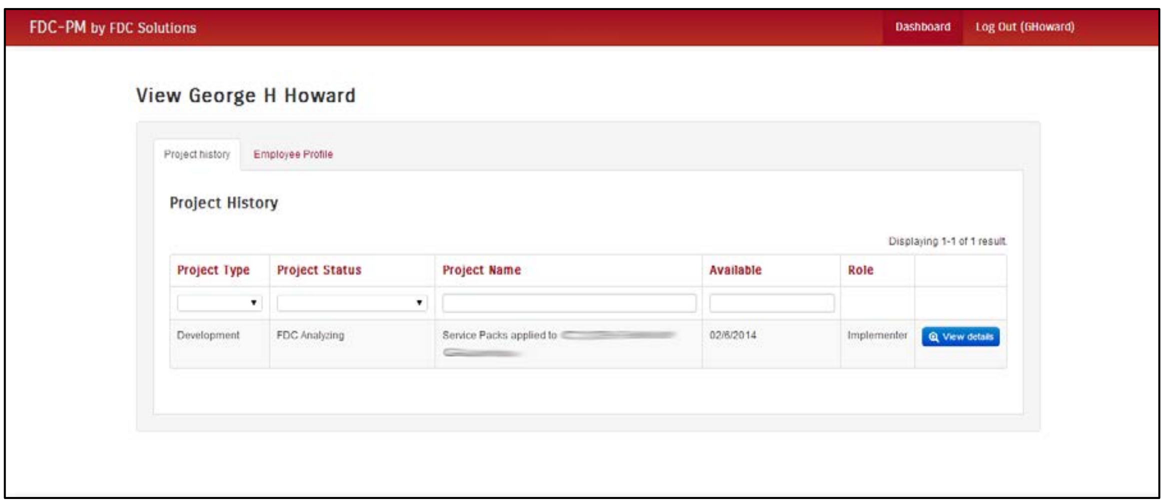


IBM's *Work* tab is dedicated to job-related content.

IBM's *Career Life* tab contains a summary of HR content, actions that need to be taken and learning recommendations.



At FDC Solutions administrators see this dashboard as their homepage rather than a standard portal homepage. The goal in this screen, after login, is to provide a quick view between FDC users and dealers. The administrator can monitor, modify and assist in the selling process.



Users in the analyst role at FDC Solutions see this dashboard view of their work as the default homepage. This screen is a quick view of what projects are assigned to the analyst. The user accesses this from the main website link, fdcsolutions.com and then gets a user login screen before arriving at this role-based dashboard.

SUB-SITES

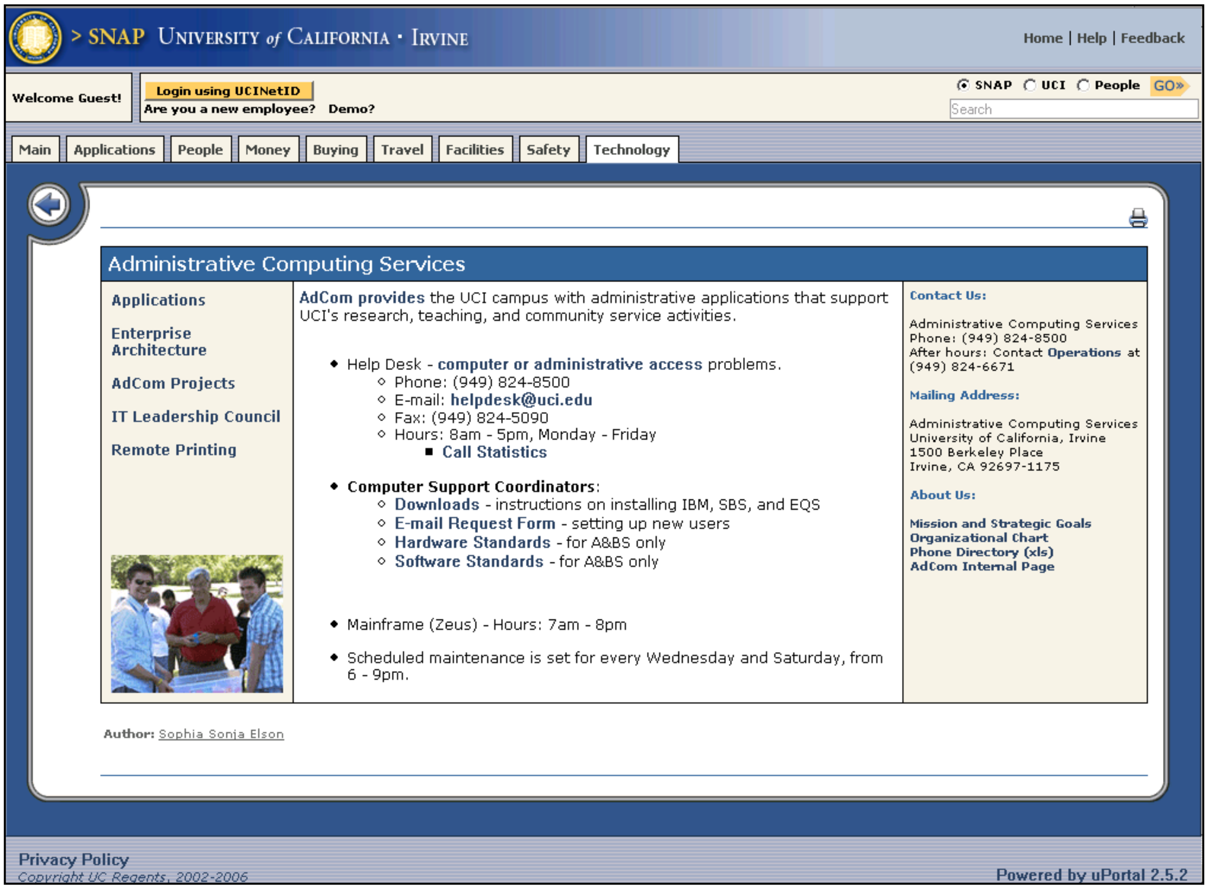
The Challenge of Integration

One of the toughest hurdles to clear when creating a comprehensive corporate portal is persuading departmental intranet owners to ascribe to centralized navigation, a common look and feel and information architecture and perhaps to cede some or all of their authority to a centralized intranet or portal design team. The process of unifying the design and navigation across numerous sub-sites, which have evolved organically over time, can be a very lengthy and politically charged process. Even after a new portal is launched, in large organizations especially, some departments often lag. This creates a dynamic where a portal can appear tidy and unified — on the surface — but drilling down beneath the top few layers of the site reveals a non-standard substrata.

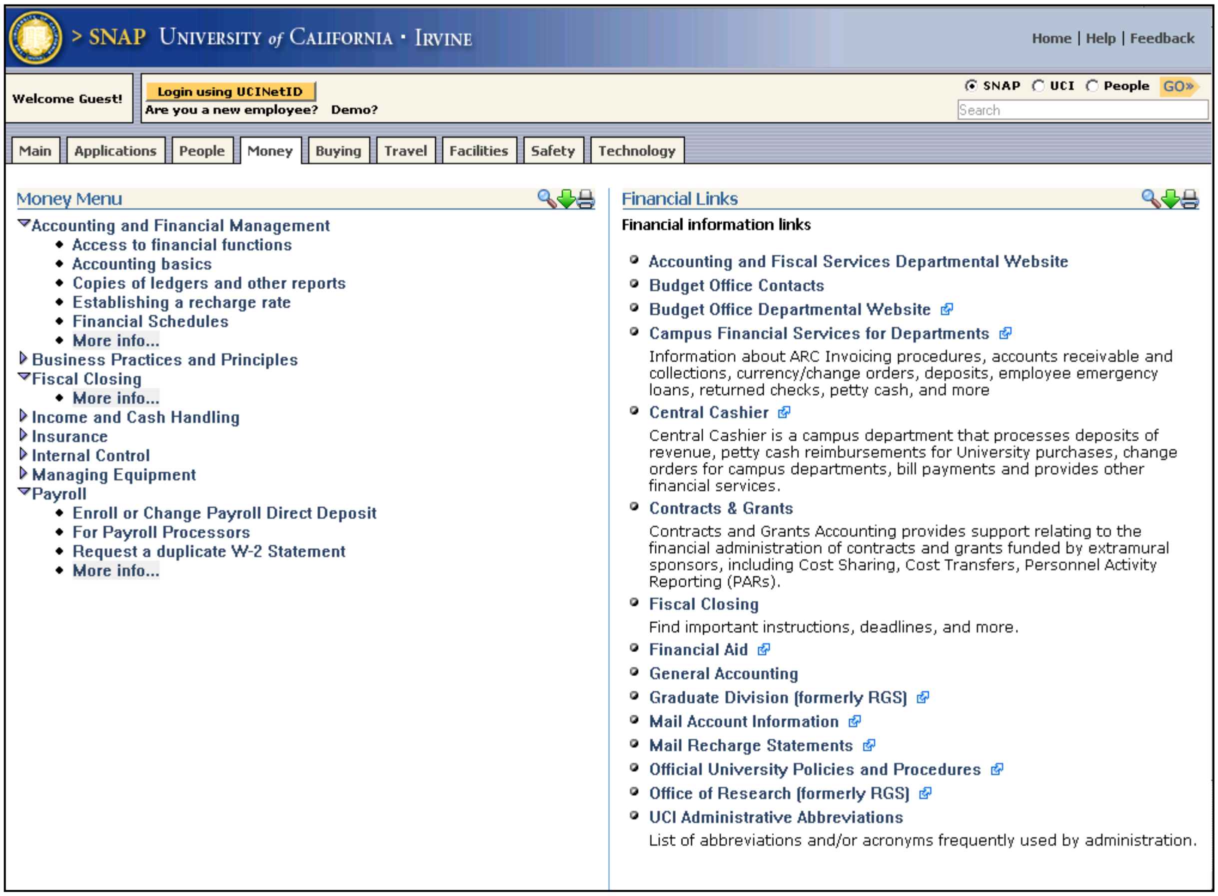
When sub-sites don't fall in line the portal experience can be disjointed as users click back and forth between portal pages and pages that contain similar or related information that lie outside of the current portal boundaries.

That was the case at UC Irvine as its portal is primarily an administrative portal for use by university staff. "We had issues with what to do with departmental pages," says UC Irvine's Godfrey. "We also wanted our users to find content by subject matter, so department pages were hard to find."

"We offered several solutions," she says. "departmental page within the portal; university templated homepage with links to our portal or university templated homepage in our content management system with links to our portal."



On the UC Irvine portal Departmental pages on the UC Irvine portal provide all information about a department in one place including units' names, addresses, phone numbers, org chart and topical interest picture as well as important announcements from the department of interest to users.



UC Irvine's *Money* tab shows two channels: *Money Menu*, and *Financial Links* before the user logs in. The *Money Menu* channel lists the most important aspects of each section as well as the main menu, which is reached from the *More Info* link. The *Financial Links* channel lists all websites concerned with finance.

From the *Money* tab (or top level) on UC Irvine's portal, users may navigate to the next level. All information about a single topic is assembled in a main menu. The template is divided into five areas: *Process*, *Forms/Tools*, *Resources*, *Policies/Guidelines* and *Contacts*.

One click from the top page of the New York City portal takes a user to a sub-site with a rather different look and feel.

Achieving a Balance Between Standards and Freedom

When dealing with reluctant departments, interviewees advocate taking a flexible approach to design. For example, many companies will impose minimum standards, such as requiring all sub-sites to use a standard, basic template. Beyond that, however, many also give some freedoms, perhaps letting them select their own colors or customize graphics or images in the departmental portals, to allow them to exert their own personality.

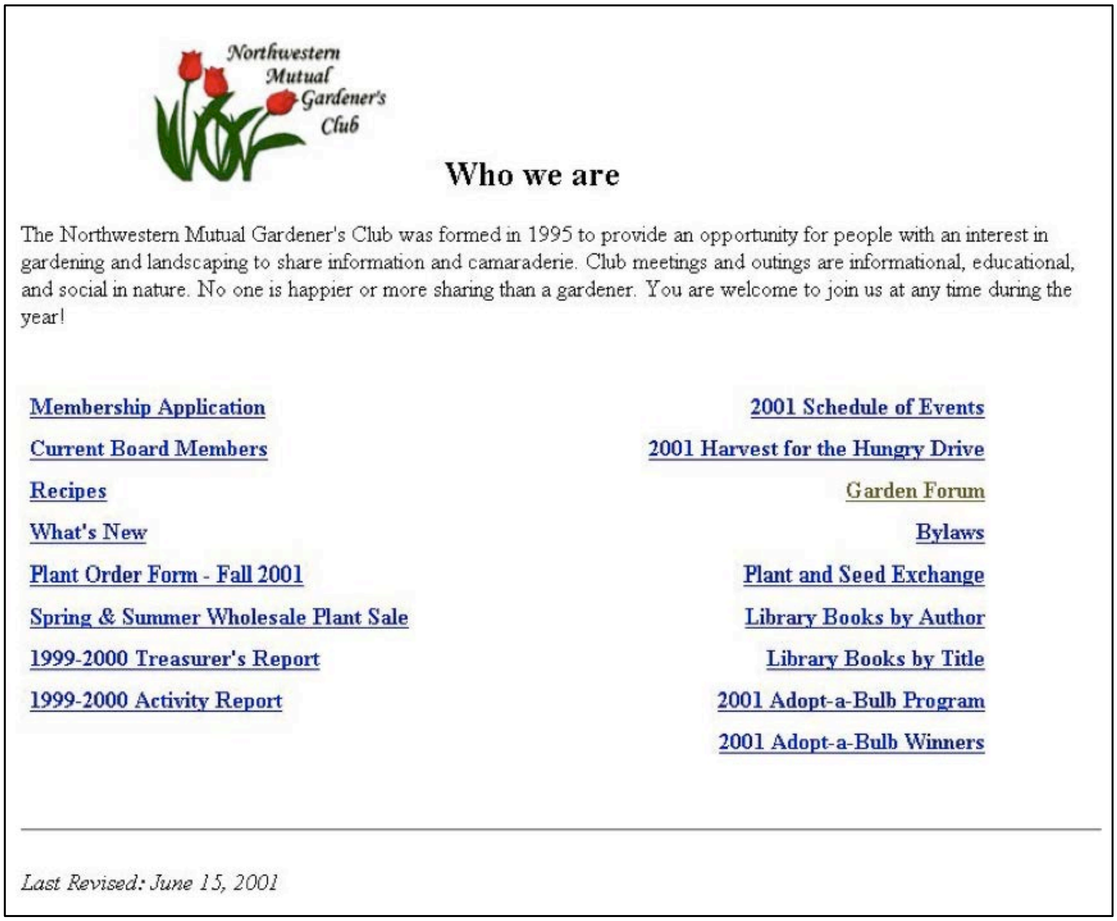
Insurance and investment company Northwestern Mutual had to integrate many sub-sites into its portal, including sites for employee clubs and affiliated services such as the Credit Union, which serves employees yet is independent of the company. Several different levels of branding are used within the portal site to give a common look and feel, while still allowing the needed flexibility.

Affiliated services are allowed to:

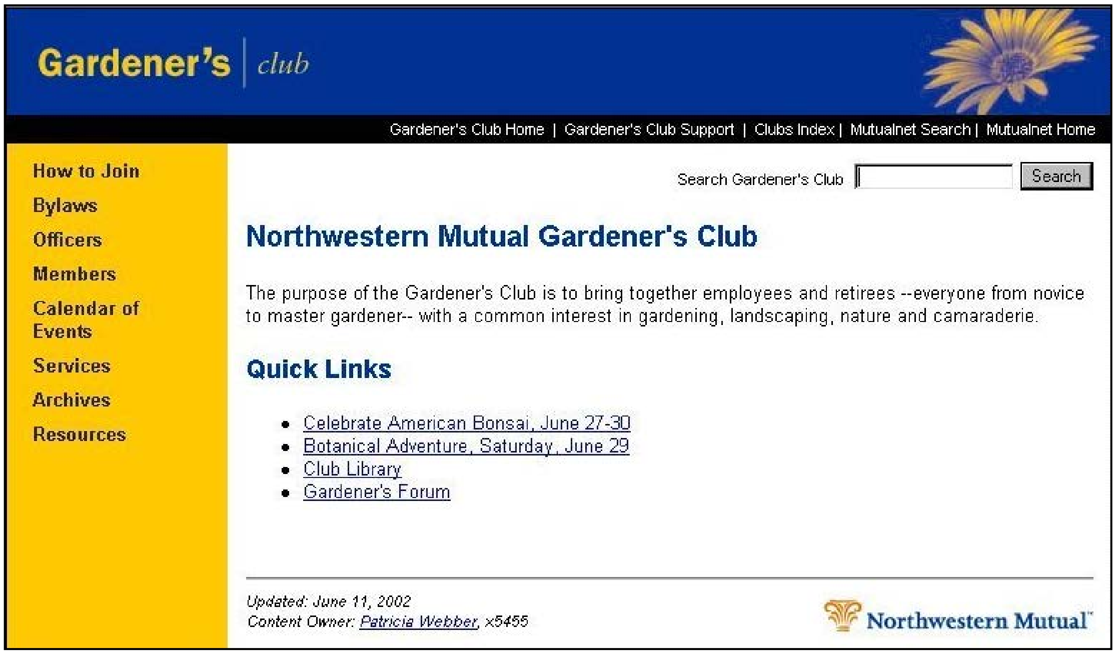
- Select their own logo colors, albeit within the Northwestern Mutual template
- Create their own logo, with a maximum specified size, and existing in a standard location — the upper-right-hand side of the page
- Integrate photos and graphics that support their service
- Add their own forms and external links
- Employ brief global navigation and their contacts
- Create a word mark that takes users back to the index.htm page

On the other hand, affiliated services are prohibited from incorporating their own, internal search tools. Any internal navigation must also be limited to their own site.

"Standardizing 'oddball sites' has paid off," says Deborah Hall. "The users like the fact that when they come into a new site, the format is similar and comfortable."



This is what one the special interest sub-sites (Northwestern Mutual Gardener's Club) looked like on Northwestern Mutual portal before a common set of standards were applied. In the re-designed version (below), a standard layout has been introduced but the site owners have been allowed to choose colors and a photographic logo to give the site some individuality.

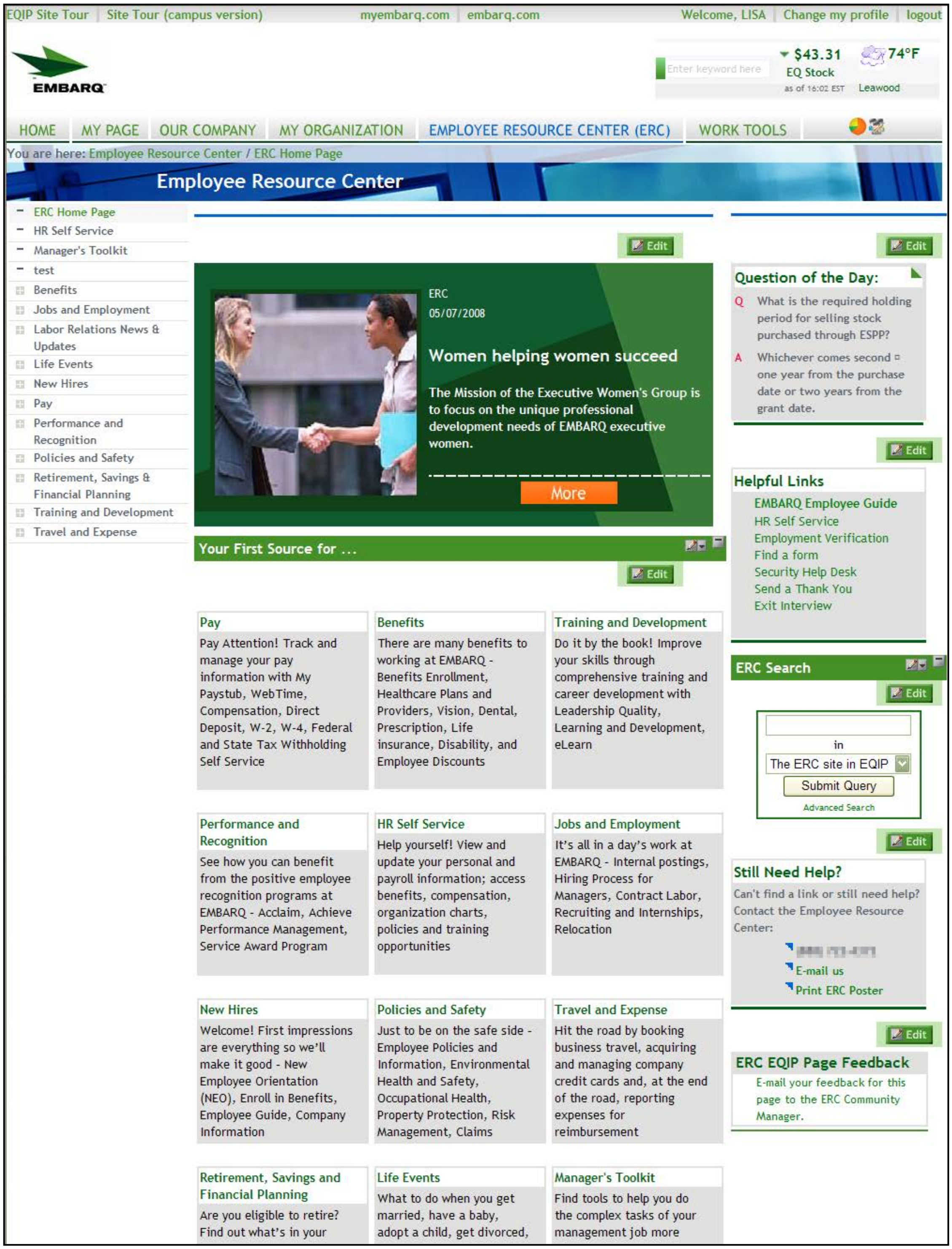


This screenshot and the one before are before and after views of the Northwestern Mutual Gardener's Club, one of the special interest sub-sites on the company's portal. In the version shown here a standard layout has been introduced but the site owners have been allowed to choose colors and a photographic logo to give the site some individuality.

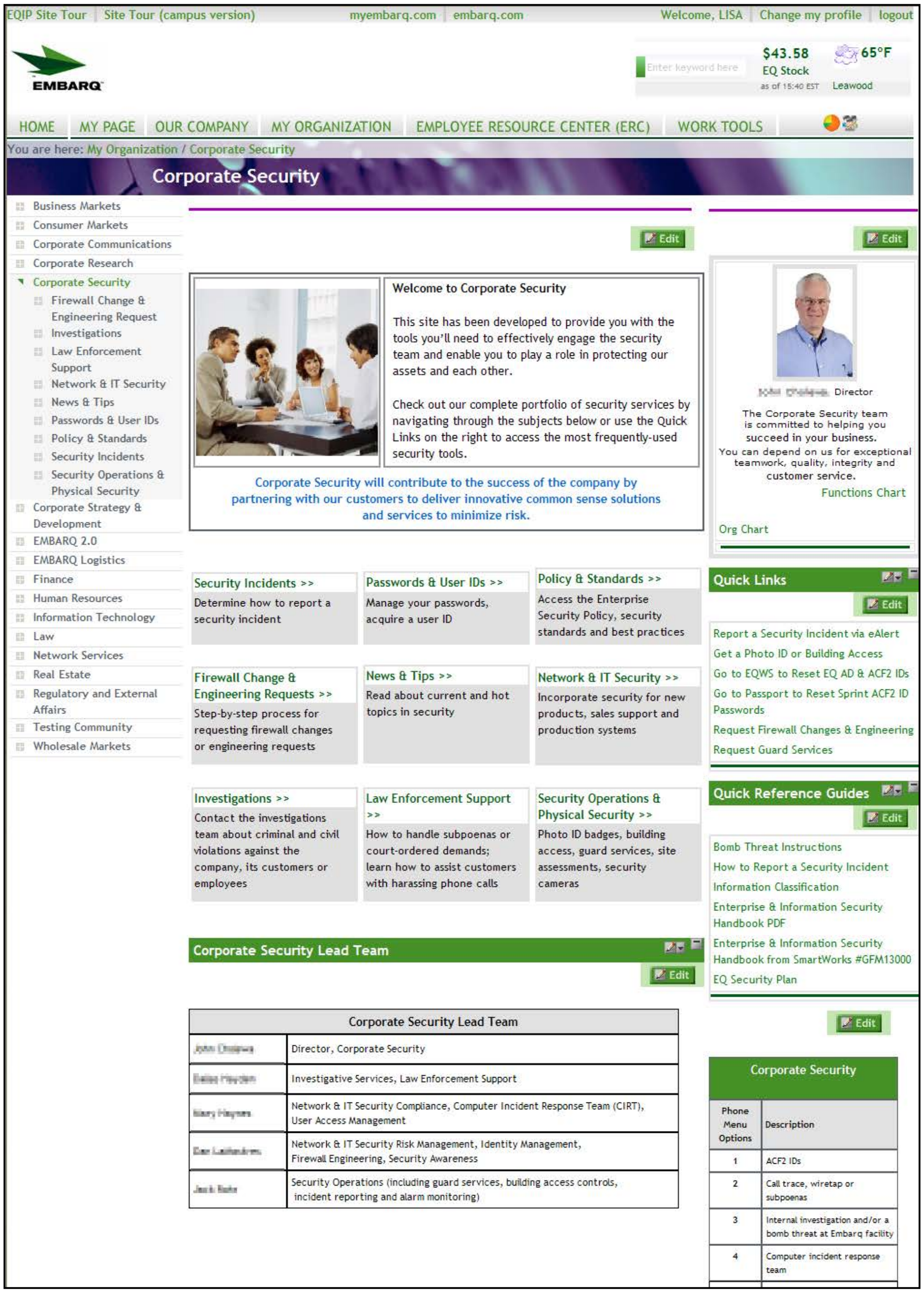
EMBARQ's portal accommodates a large number of sub-sites that fall into four categories and include:

- Our Company: 15 sub-sites - leadership, locations, values, etc.,
- Employee Resource Center: 13 sub-sites for benefits, payroll, travel, etc.
- Organizations: 16 business units/sub-sites
- Work Tools: 14 sub-sites

Accommodating this many sub-sites within the portal and still maintaining a consistent look and feel for users requires a good library of standards and templates. To assist in maintaining this architecture, the portal team built style sheets to control the header, footer, menus and navigation. They also built two page templates and 15 portlet templates for the business unit community users to select from when building the sub-sites. "The portal can also surface external applications within a portlet on a page," say EMBARQ's Hammond, "So the application appears to be part of the portal having the same header and footer, which helps to maintain a consistent look."



The EMBARQ Employee Resource Center page with a new layout, categories and navigation scheme. The company designed a more helpful landing page with descriptions for the various sub-sites to help guide employees to the desired content.



The EMBARQ team redesigned the business unit homepage to include business unit news, which previously was at the bottom of another page, in an effort to drive more traffic to the page and share news across all business units Previously one could only see the news in one's own department when shown on the homepage.

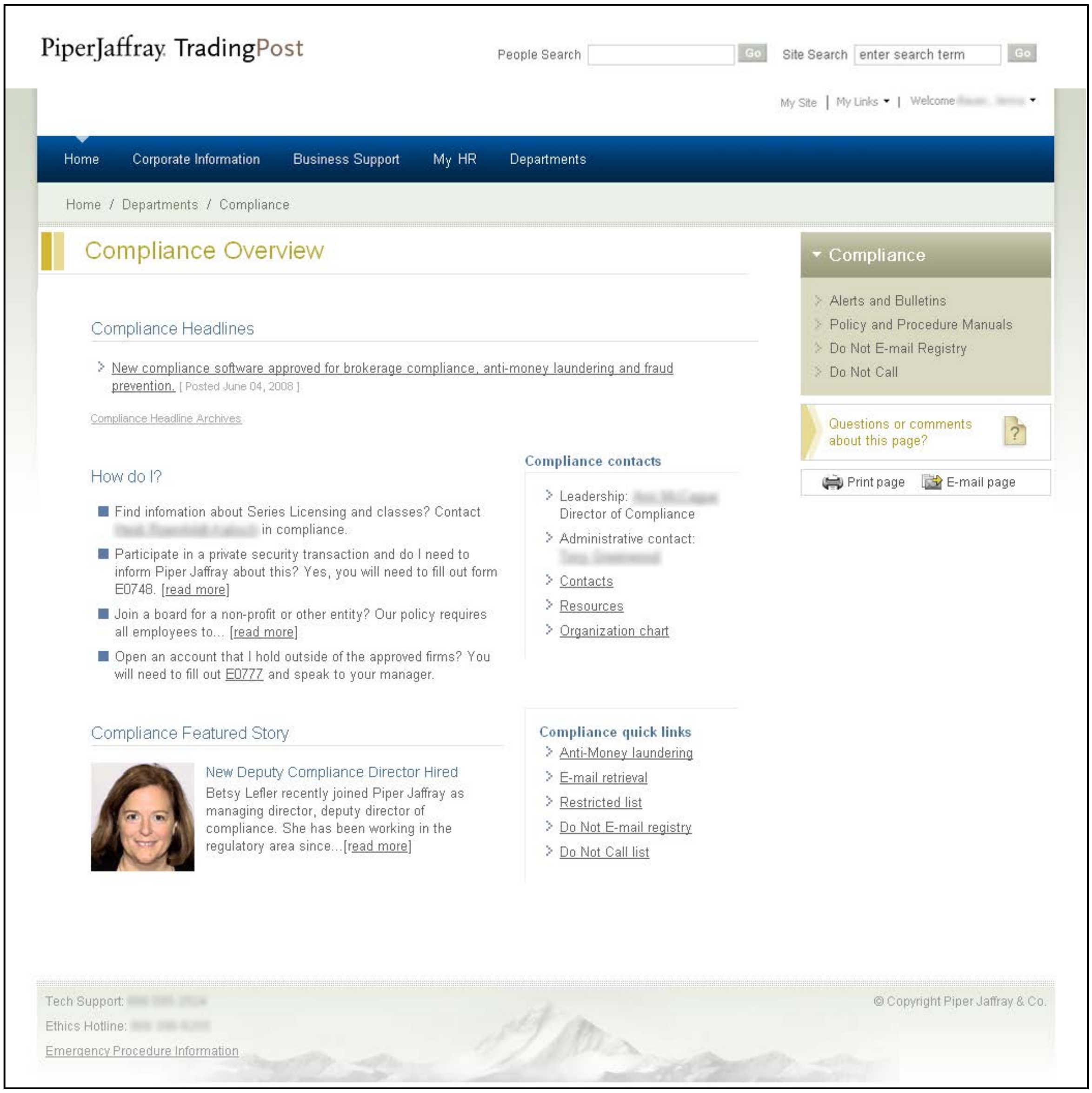
At HarperCollins, the team encouraged sub-site owners to include their own, distinctive logos on the portal homepage. In some cases the portal team created icons on their behalf, but other departments took the idea of adding personality to their sub-site and ran with it.

One example involved ISIS, the company's inventory and sales information system. "ISIS had a more mundane logo when it was a client/server application," says Zigo. "At the time it went onto the web, the lead developer got interested in the pun on the system's name, and made this logo as well as adding other ancient Egyptian touches."

Some of these design flourishes persist. For example, if the user just clicks in the ISIS search box without entering any search criteria, a large graphic of a golden statue of ISIS appears under the error message asking them to enter some criteria. Others, however, proved to be too much of a good thing. "When ISIS was first moved to the web, the enthusiastic developer included a sound file," says Zigo. "As the system opened, the user heard an echoing voice say "Almighty ISIS!" This lasted for about a week, until the novelty wore off."

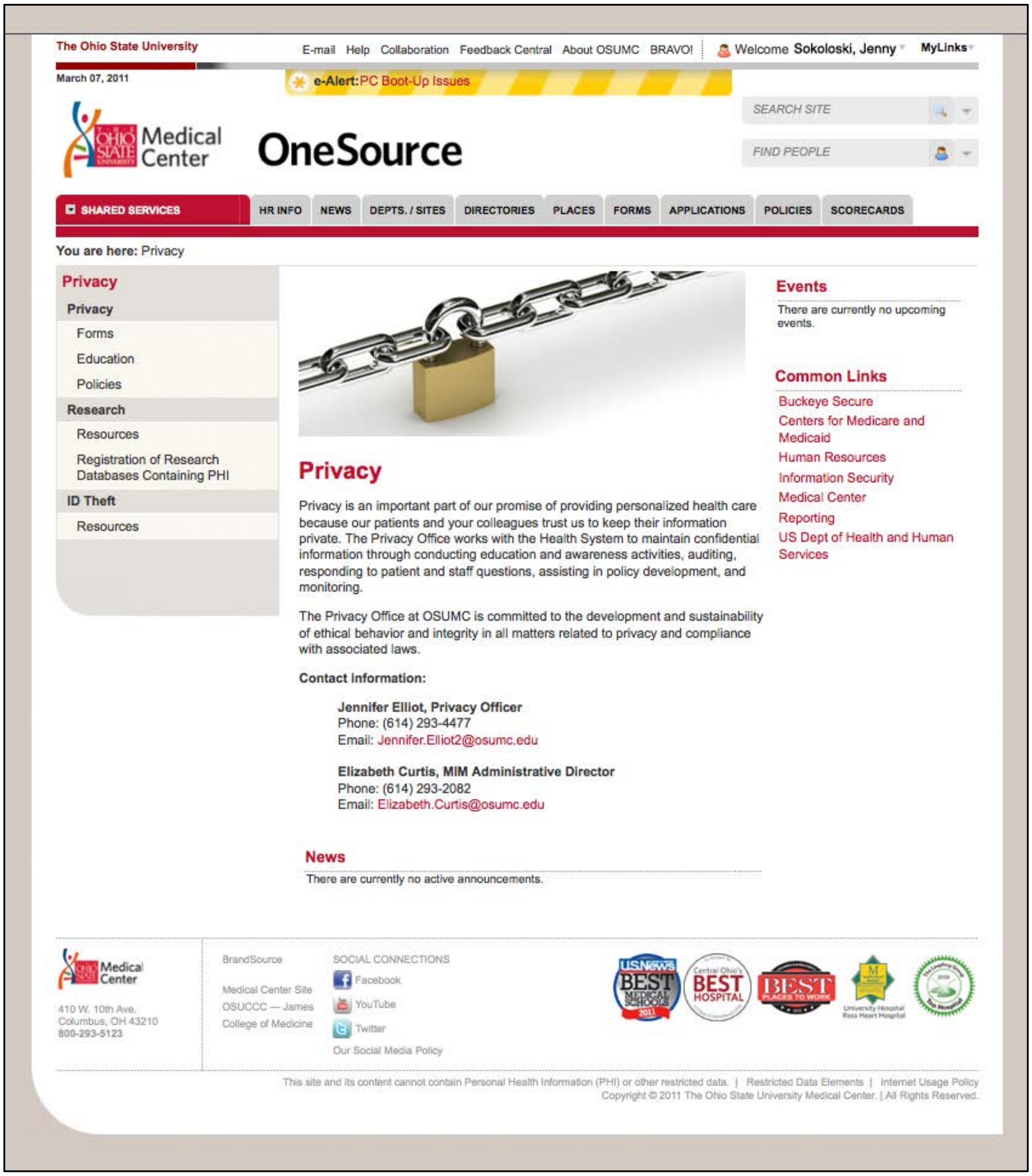
DEPARTMENT PAGES

While the best-architected portals, eschew a department-based organizational structure in favor of information or task-based IA, the department homepage still has its place in the corporate portal. We've included a few examples there to show how different types of companies approach the department page information architecture.

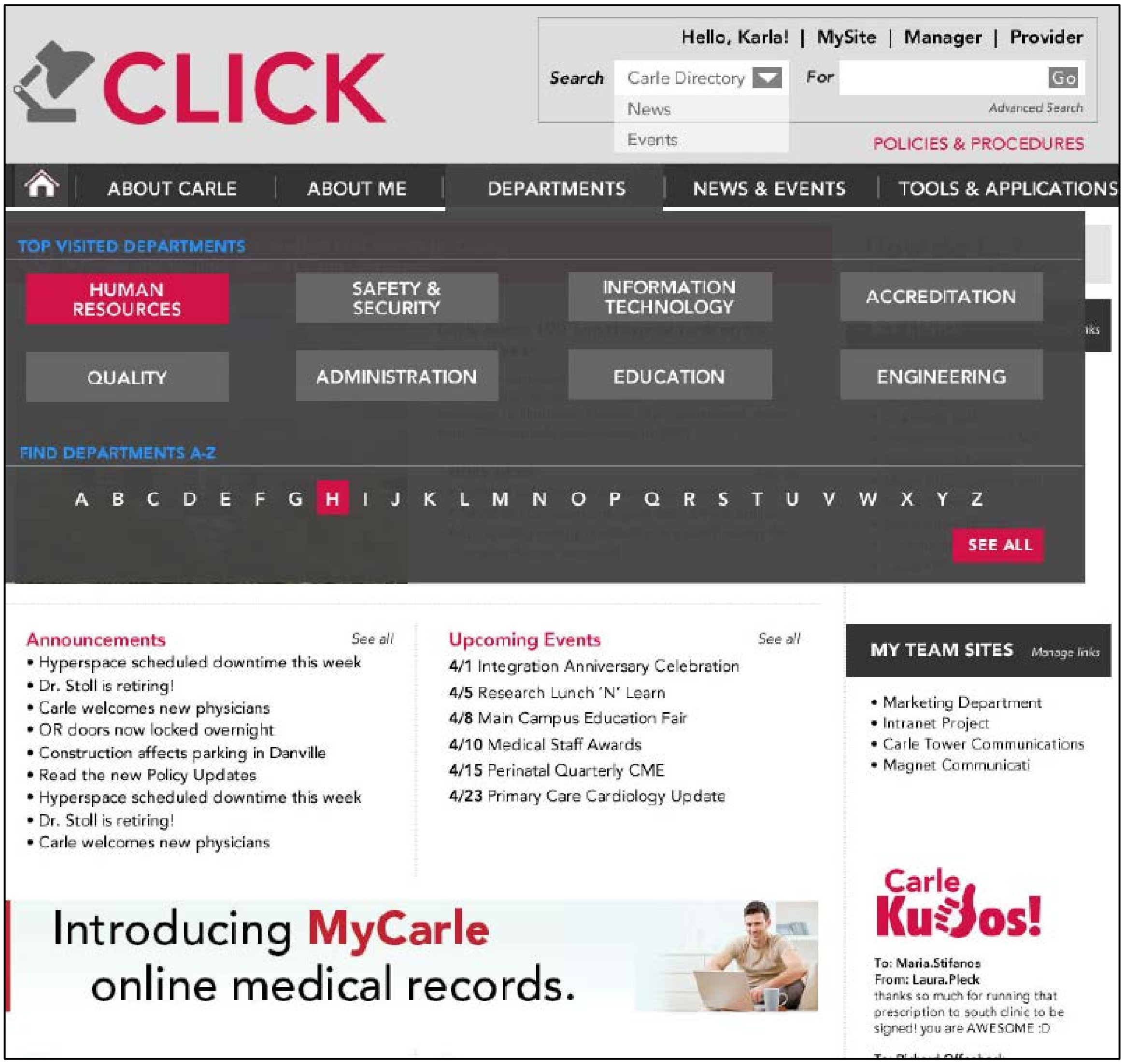


This shows a department overview page at Piper Jaffray. Department overview pages are created for each area in the company to offer assistance to people outside that department, as well as specific information targeted directly to that department. This example reflects:

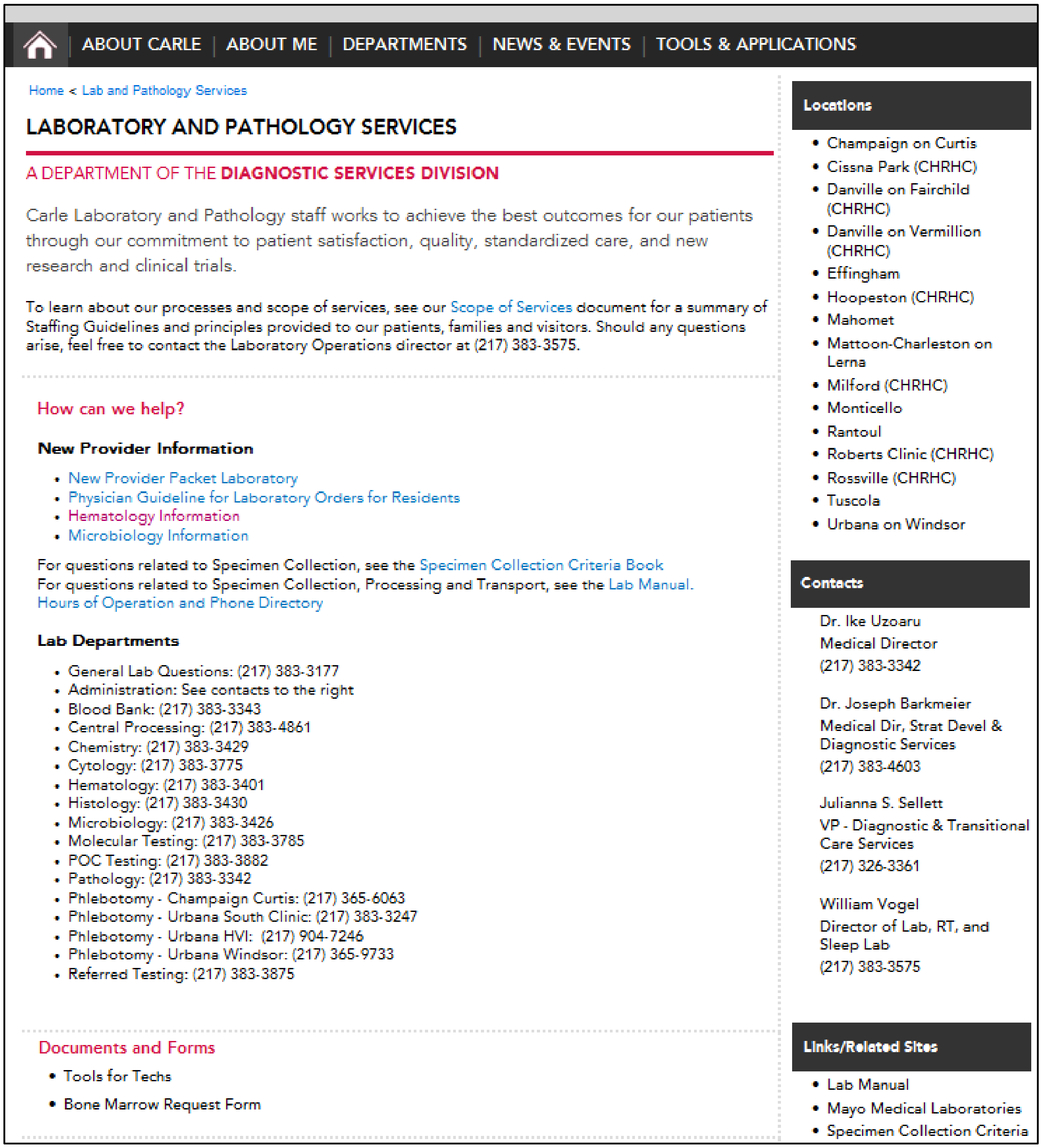
- Targeted headlines specific for compliance people but available to everyone in the company. (Department-targeted headlines also appear on the intranet homepage so they are visible to people in that department alongside corporate news).
- Contact and resource information for people needing assistance.
- Q&A area for the most frequently asked questions to help reduce the number of phone and email questions.
- Featured story with an image.
- Quick links to compliance content that people may be seeking.



At OSUMC, the OneSource portal offers department-specific pages to accommodate departments that might have staff located throughout the Medical Center functional. The sites host information that is either needed by the staff in that area or that others need to know to work with that department. Department sites are not mandatory.



Each of Carle's 250+ departments has a page that can be accessed through the *department* menu. Department pages/sites are grouped into clinical and non-clinical categories and then organized by division. The menu shows the top eight departments (based on user research and feedback), allows users to see a list of divisions and departments that start with a specific letter, or the user can click *see all* to link to a complete list of departments.



ABOUT CARLE | ABOUT ME | DEPARTMENTS | NEWS & EVENTS | TOOLS & APPLICATIONS

Home < Lab and Pathology Services

LABORATORY AND PATHOLOGY SERVICES

A DEPARTMENT OF THE **DIAGNOSTIC SERVICES DIVISION**

Carle Laboratory and Pathology staff works to achieve the best outcomes for our patients through our commitment to patient satisfaction, quality, standardized care, and new research and clinical trials.

To learn about our processes and scope of services, see our Scope of Services document for a summary of Staffing Guidelines and principles provided to our patients, families and visitors. Should any questions arise, feel free to contact the Laboratory Operations director at (217) 383-3575.

How can we help?

New Provider Information

- New Provider Packet Laboratory
- Physician Guideline for Laboratory Orders for Residents
- Hematology Information
- Microbiology Information

For questions related to Specimen Collection, see the Specimen Collection Criteria Book
For questions related to Specimen Collection, Processing and Transport, see the Lab Manual.
Hours of Operation and Phone Directory

Lab Departments

- General Lab Questions: (217) 383-3177
- Administration: See contacts to the right
- Blood Bank: (217) 383-3343
- Central Processing: (217) 383-4861
- Chemistry: (217) 383-3429
- Cytology: (217) 383-3775
- Hematology: (217) 383-3401
- Histology: (217) 383-3430
- Microbiology: (217) 383-3426
- Molecular Testing: (217) 383-3785
- POC Testing: (217) 383-3882
- Pathology: (217) 383-3342
- Phlebotomy - Champaign Curtis: (217) 365-6063
- Phlebotomy - Urbana South Clinic: (217) 383-3247
- Phlebotomy - Urbana HVI: (217) 904-7246
- Phlebotomy - Urbana Windsor: (217) 365-9733
- Referred Testing: (217) 383-3875

Documents and Forms

- Tools for Techs
- Bone Marrow Request Form

Locations

- Champaign on Curtis
- Cissna Park (CHRHC)
- Danville on Fairchild (CHRHC)
- Danville on Vermillion (CHRHC)
- Effingham
- Hoopeston (CHRHC)
- Mahomet
- Mattoon-Charleston on Lerna
- Milford (CHRHC)
- Monticello
- Rantoul
- Roberts Clinic (CHRHC)
- Rossville (CHRHC)
- Tuscola
- Urbana on Windsor

Contacts

Dr. Ike Uzoaru
Medical Director
(217) 383-3342

Dr. Joseph Barkmeier
Medical Dir, Strat Devel & Diagnostic Services
(217) 383-4603

Julianna S. Sellett
VP - Diagnostic & Transitional Care Services
(217) 326-3361

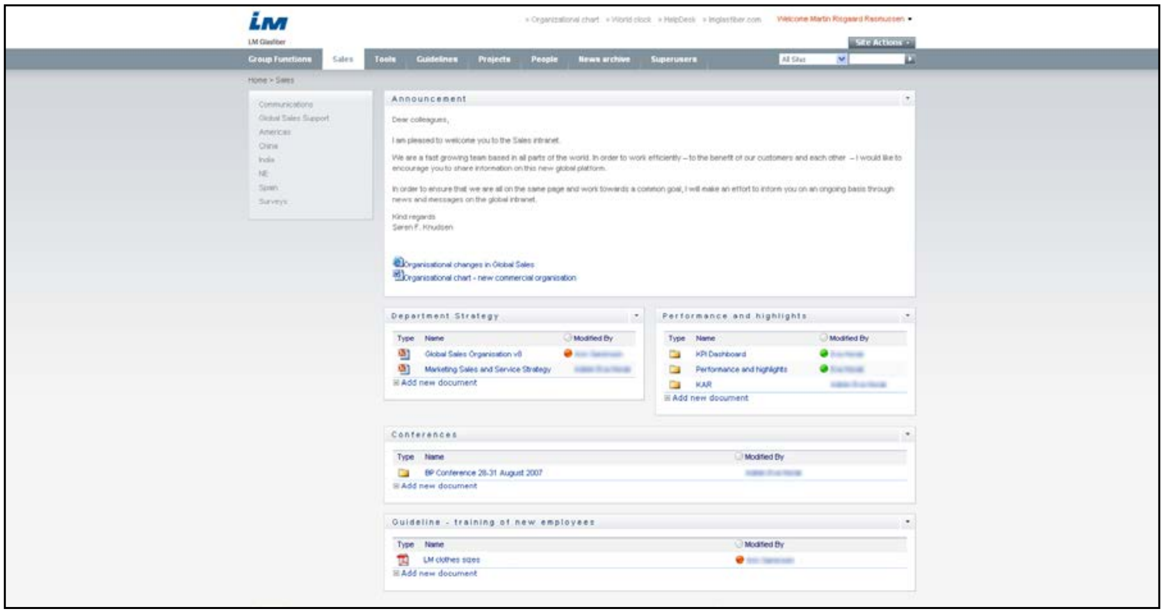
William Vogel
Director of Lab, RT, and Sleep Lab
(217) 383-3575

Links/Related Sites

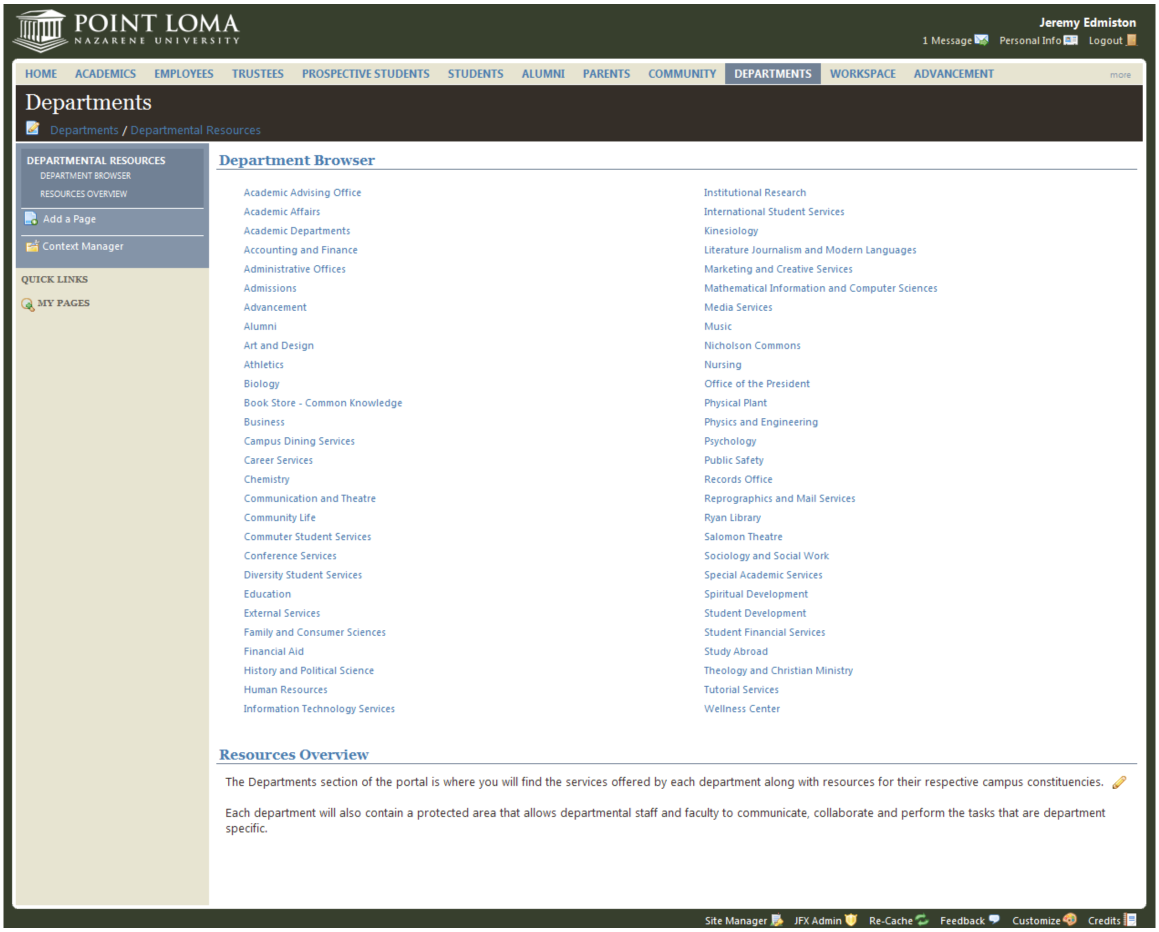
- Lab Manual
- Mayo Medical Laboratories
- Specimen Collection Criteria

The lab department at the Carle Foundation was one of the first departments to have a department page on the company's portal, Click, using the new template and structure. The new site has a flatter hierarchy, is more task-oriented and has been positively received by users. The old site had content that was for general employees mixed in with content that was just for department employees. The content for department employees has been moved to a team site.

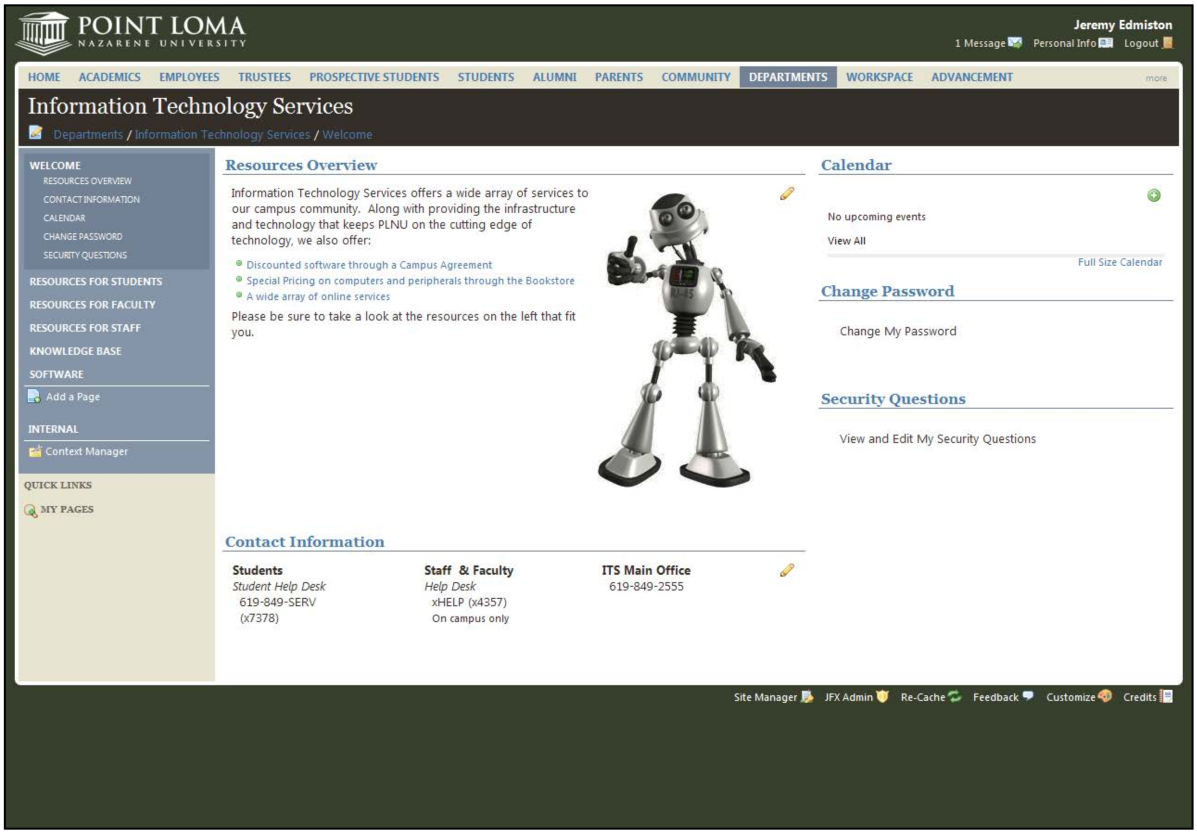
This wireframe was designed for department pages at the Carle Foundation. Department pages are internally public and are used to provide information from or about a department to general employees. Every department uses the same template and they may have several sub-pages that more loosely follow the template. The template includes space for documents, files and links. Each department site has a defined content owner and content authors who are trained and responsible for posting and managing the information.



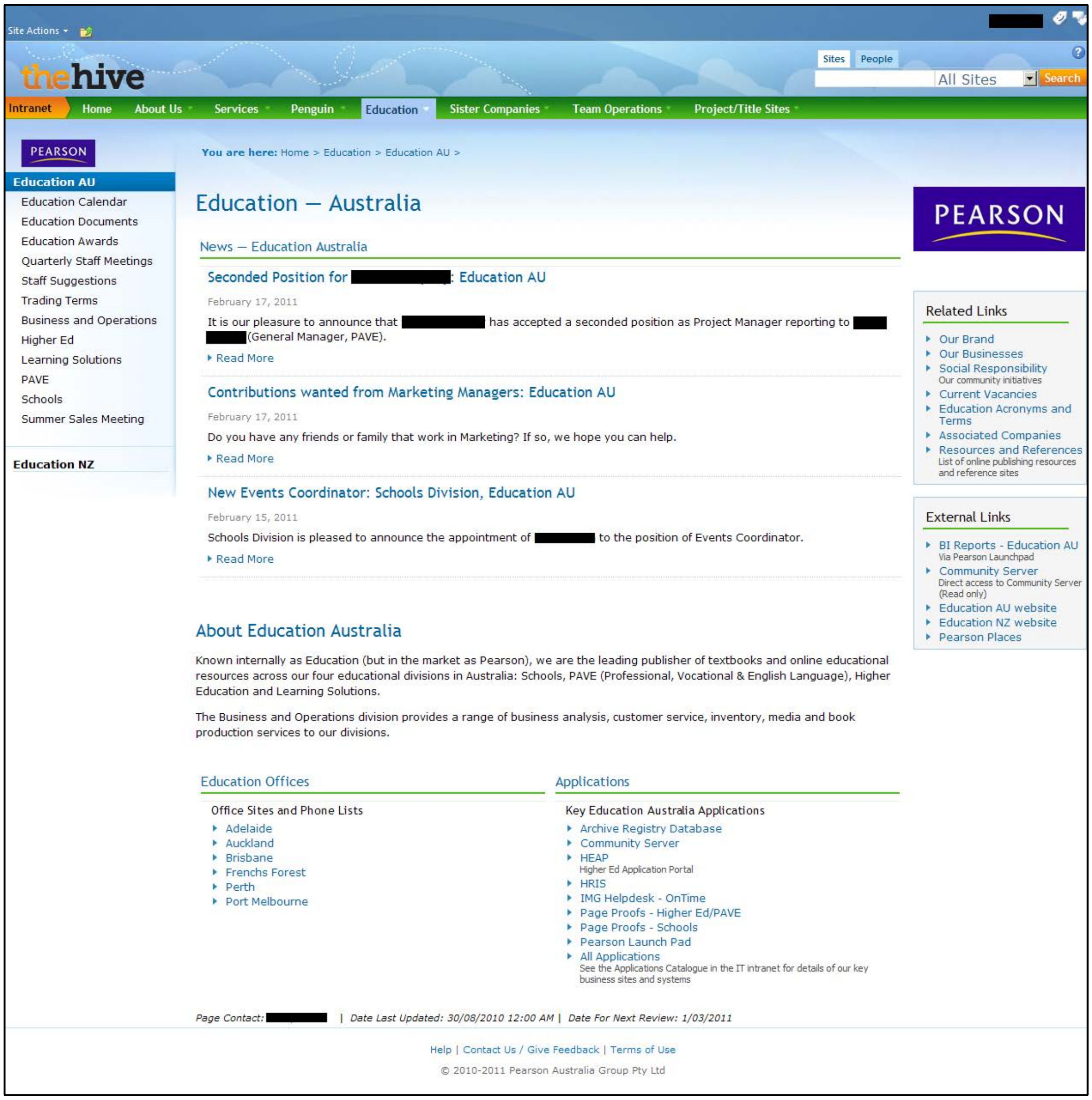
This is an example of a typical department front page on LM Glasfiber's portal. This is the front page of the sales department where general information relevant for everyone is shown. This page is only available to employees who are members of the sales organization.



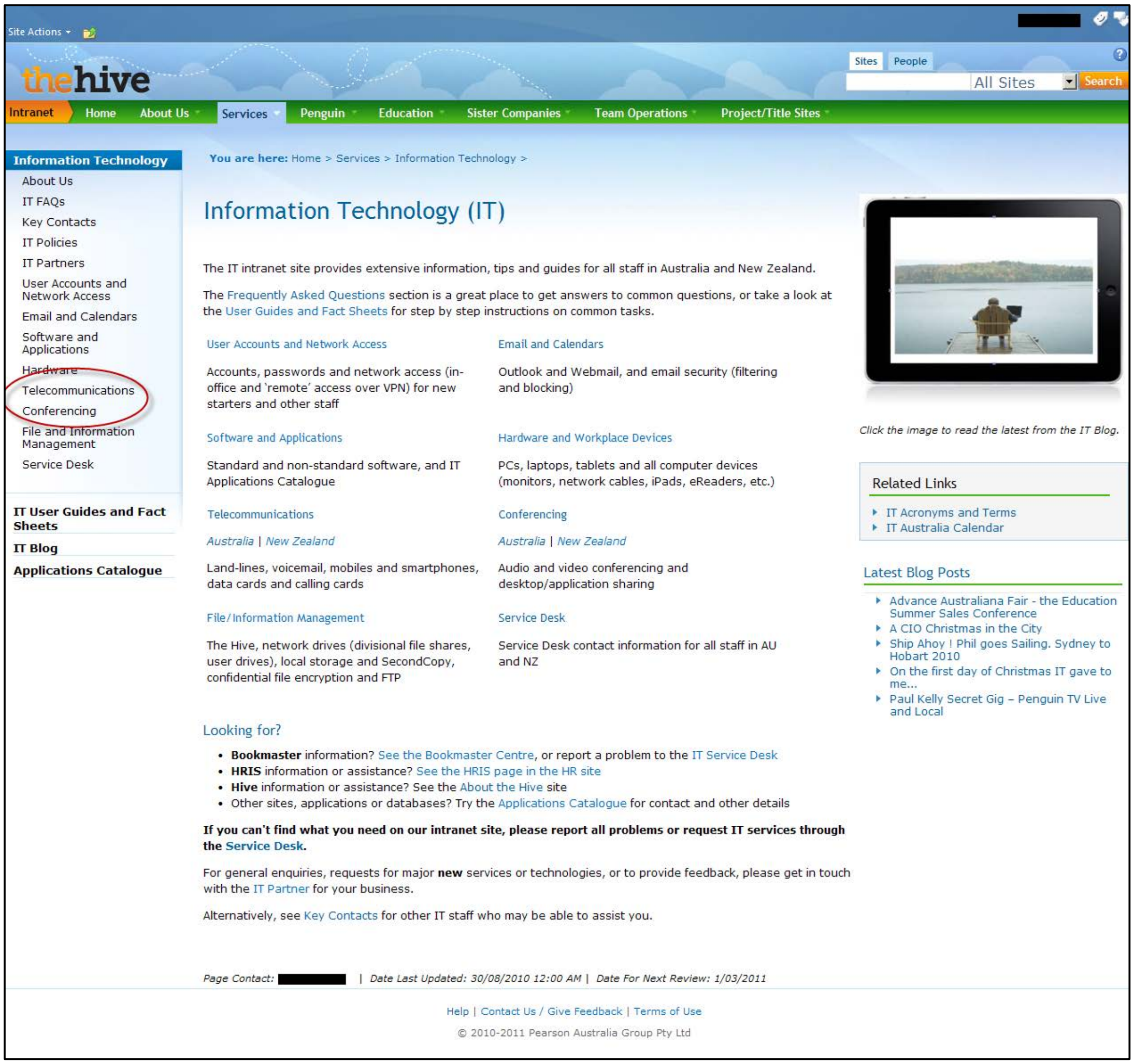
The department browser at Point Loma Nazarene University lists all departments and allows users to jump to services offered by each department following the route users might take in the physical world to complete a task. For example students who need to pay a bill would physically walk to Student Financial Services.



This is an example of a department page at Point Loma Nazarene University (IT department). All departments have similar landing pages for consistency, along with the *Services for …* links on the left that only display if the user is part of that department's user group.

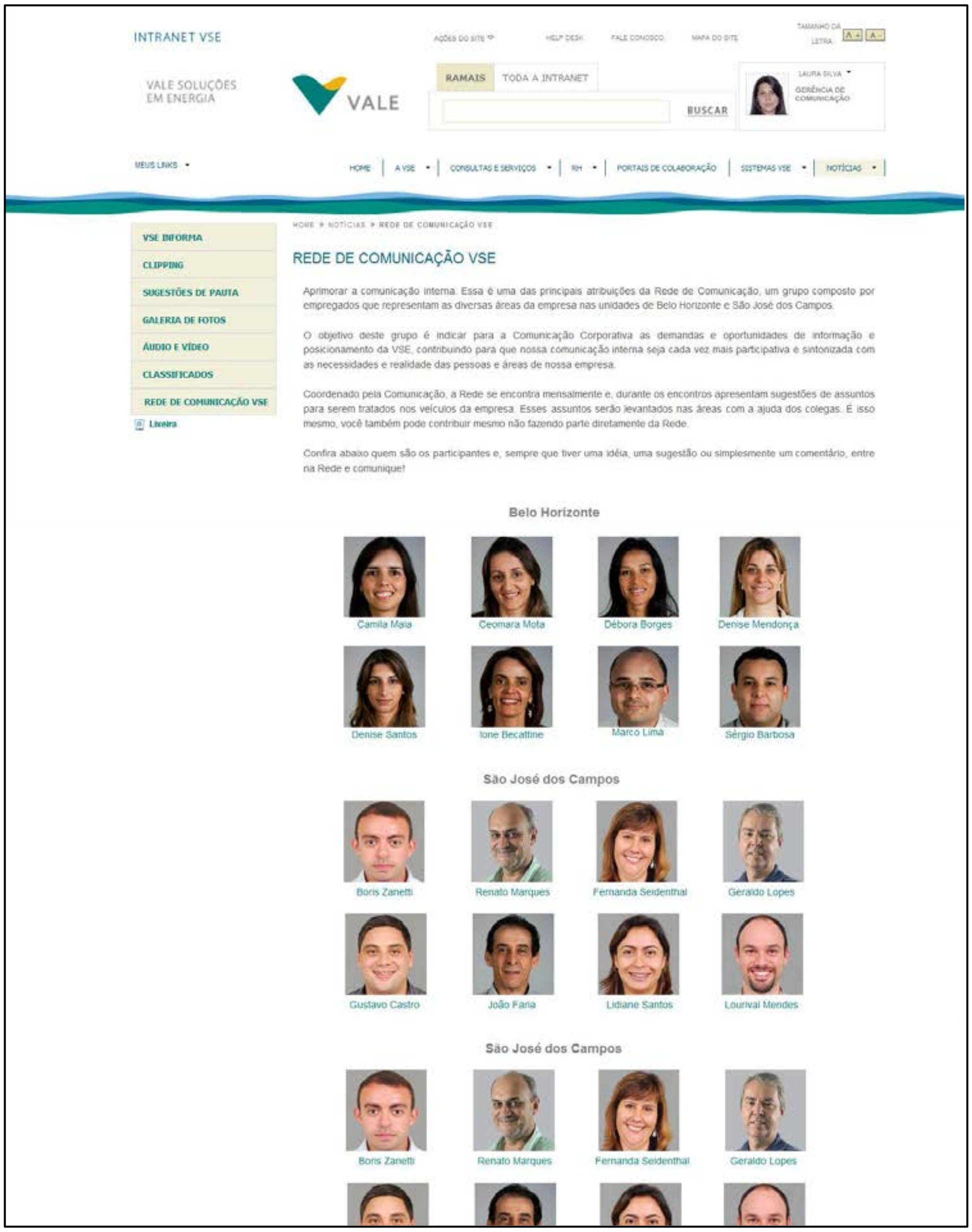


Business landing pages at Pearson are the entry points into each of the organization's discrete businesses. There are currently five business landing pages, which provide a business-specific news feed.

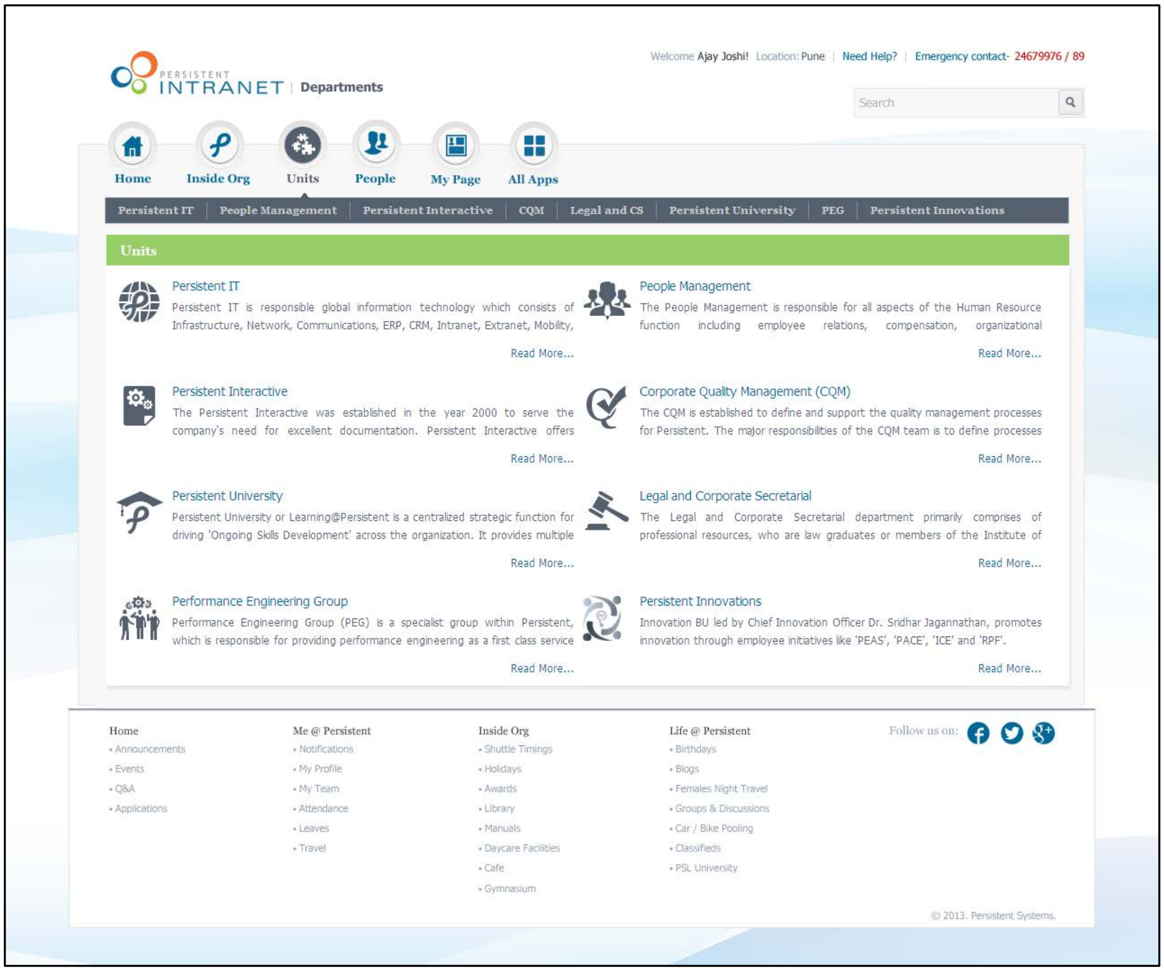


This screenshot shows audience-targeted navigation (on the IT site) within the Pearson portal. This type of navigation is used to display only the links relevant to each region.

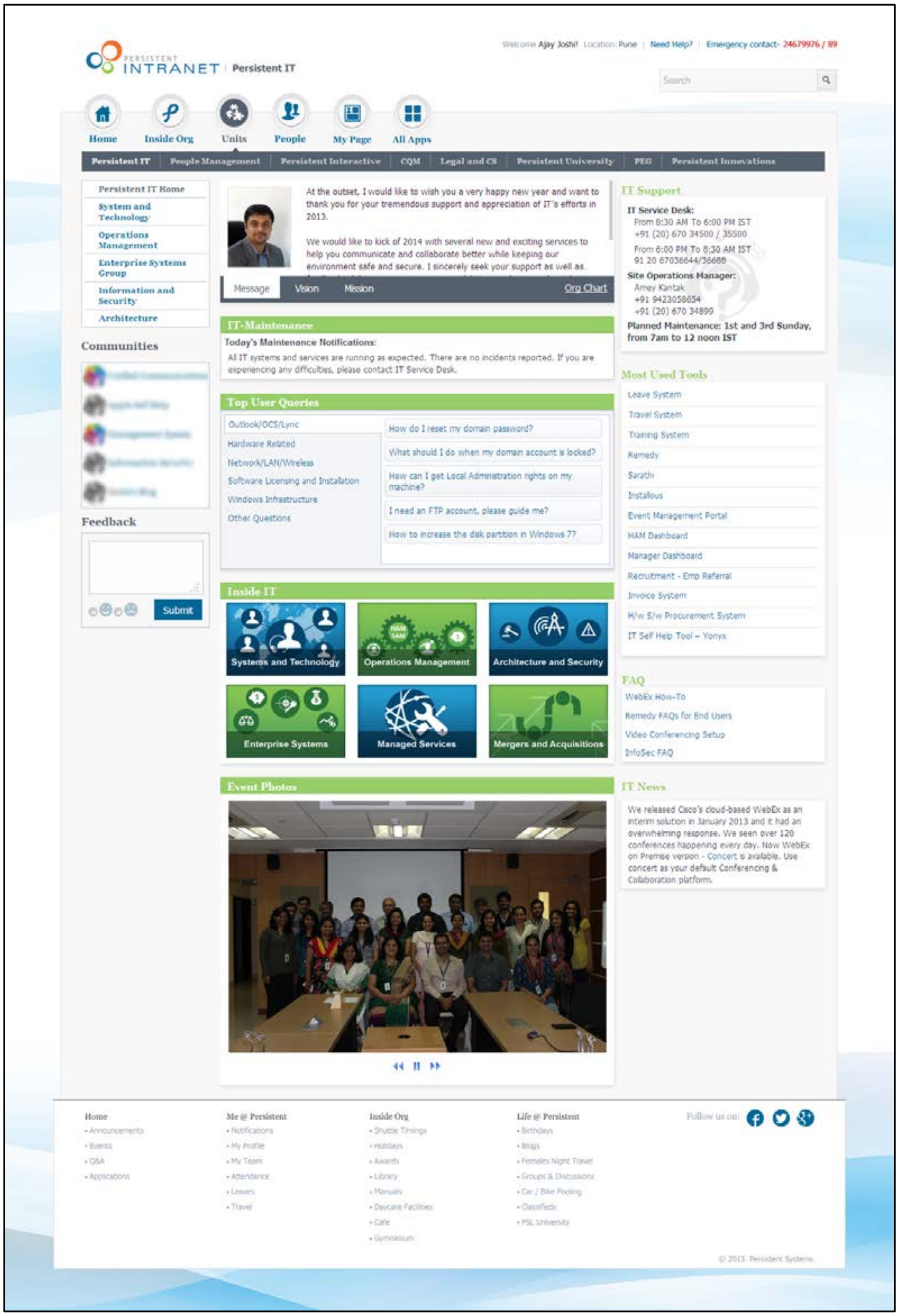
An example of a department (facilities) page that's accessible from the *departments* menu in the global navigation bar on SanDisk's portal, Sprocket. The company is working to standardize content presented on department pages (while providing some design flexibility). Typical content includes department charter, key services, key contacts and downloadable resources (including PowerPoint decks and Word documents).



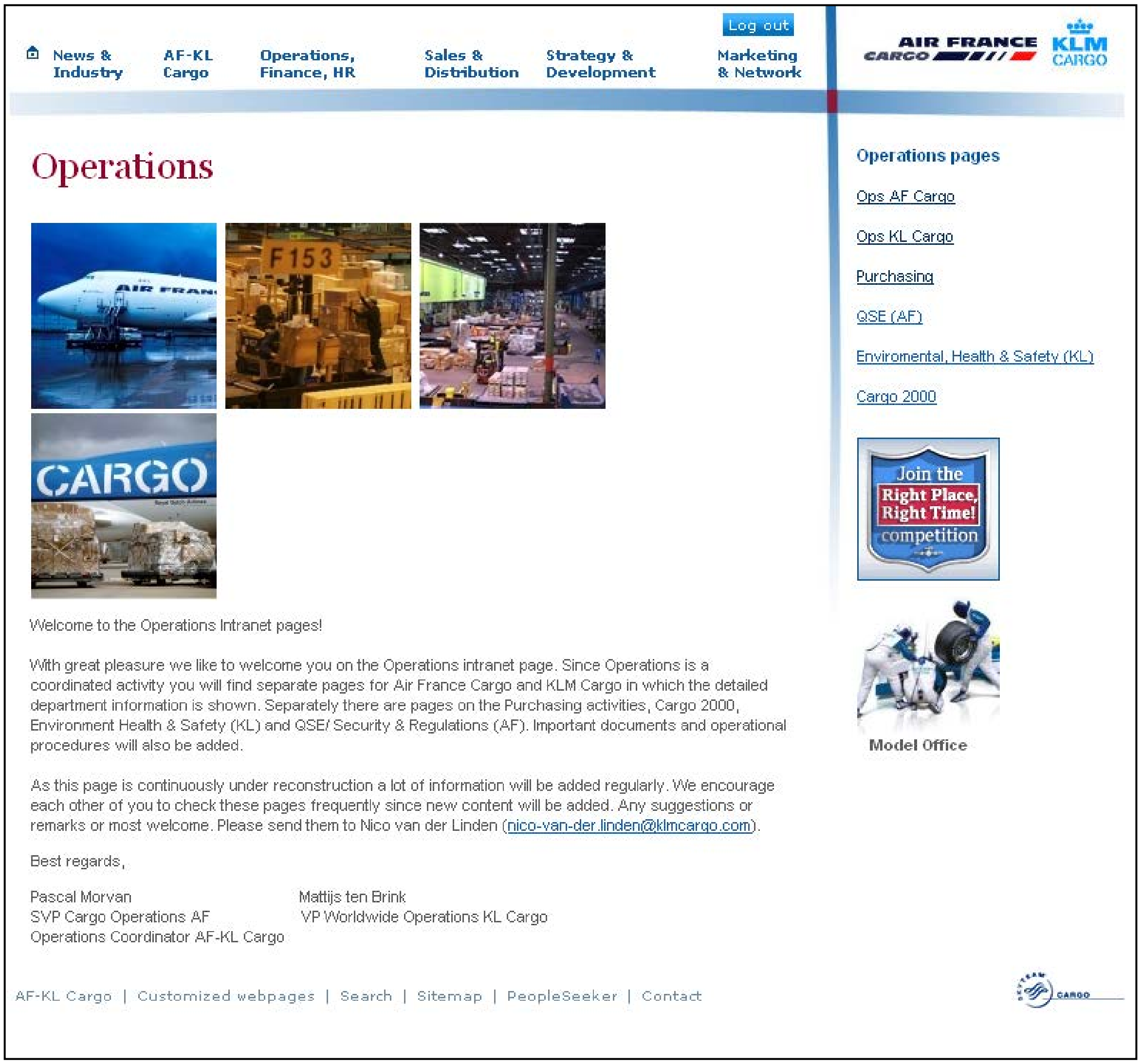
Rede de Communição VSE (VSE's Communication Network) is a team formed by employees from each the company's main departments. The mission of the team is to bring information to the attention of the communications department so that the communications team can address issues and publish solutions according to the company's communication rules and regulations.



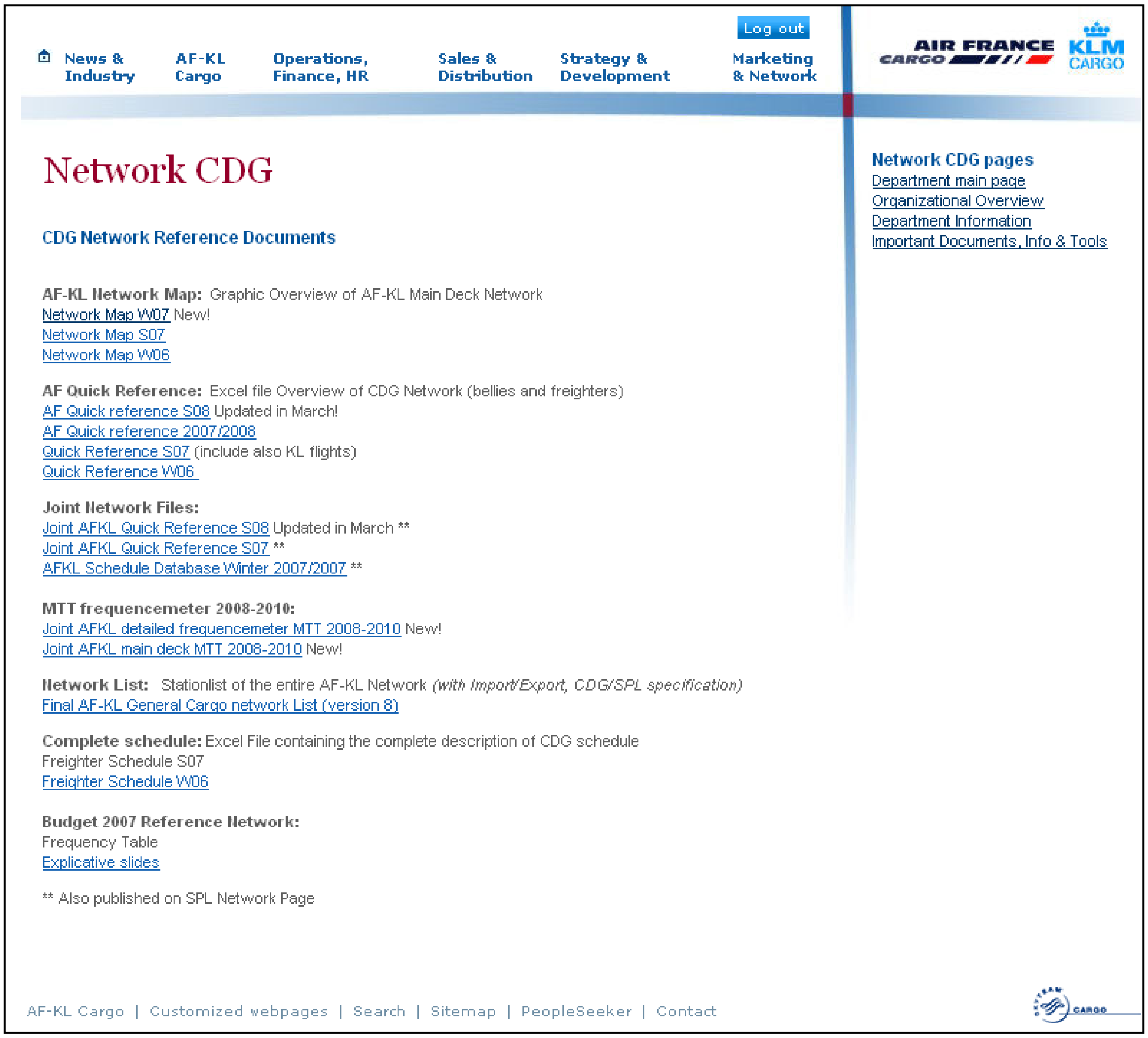
This is the landing page for all the department sub-sites on the Persistent Systems portal. From this page user can go to any of the department site to access the specific information. This page gives a brief description of all the departments.



This page gives information about the Persistent's IT department. It showcases the various services that the department offers as well as the various subsections of the department. It also gives the message from the head as well as tells about the org chart of the department.



The operations department page on KLM's portal has an introduction to the company and a navigation box that leads to departmental pages on the right. Note: Every department has made its own department page (and layout).



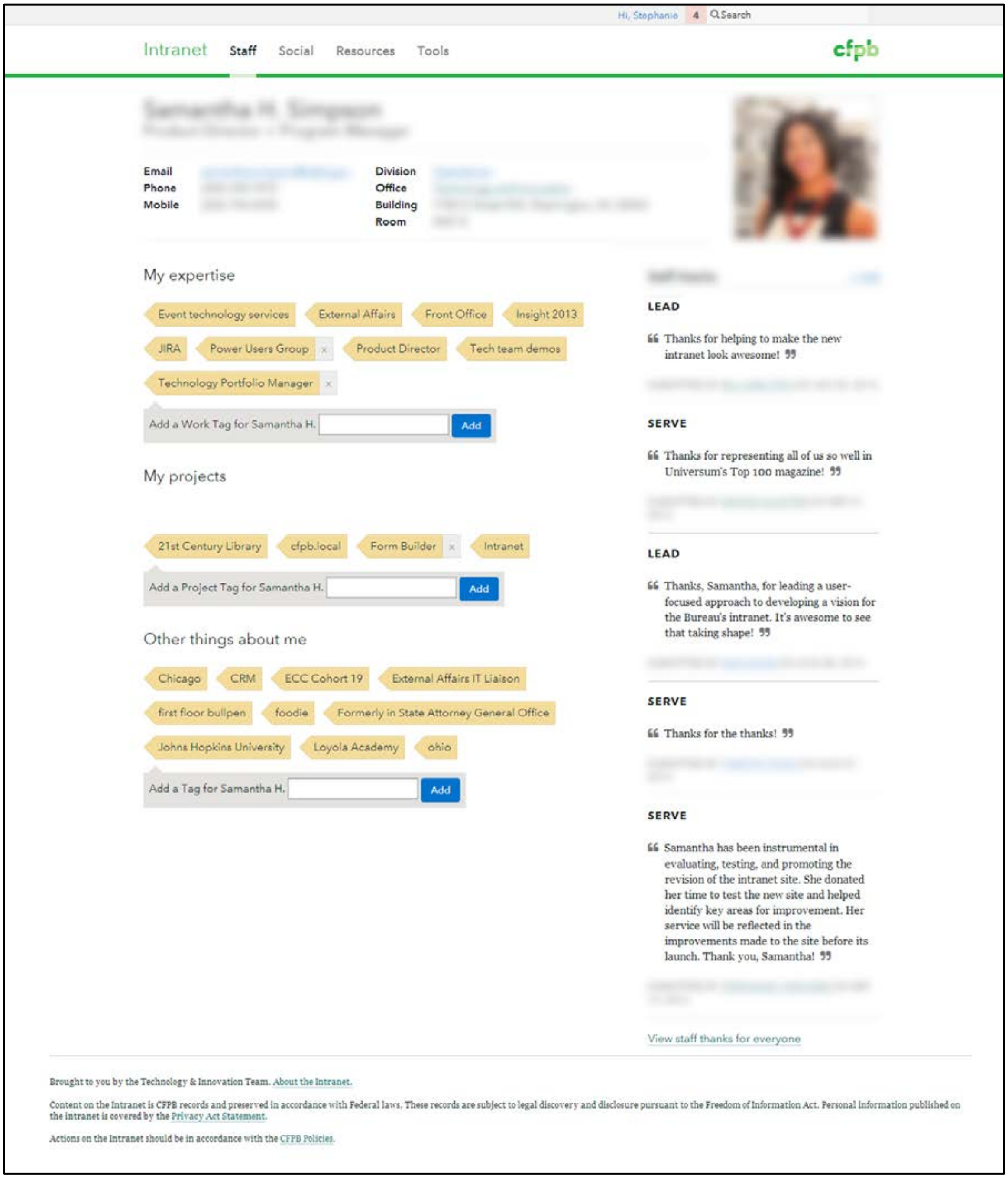
A content page for the network department at KLM

PEOPLE PAGES

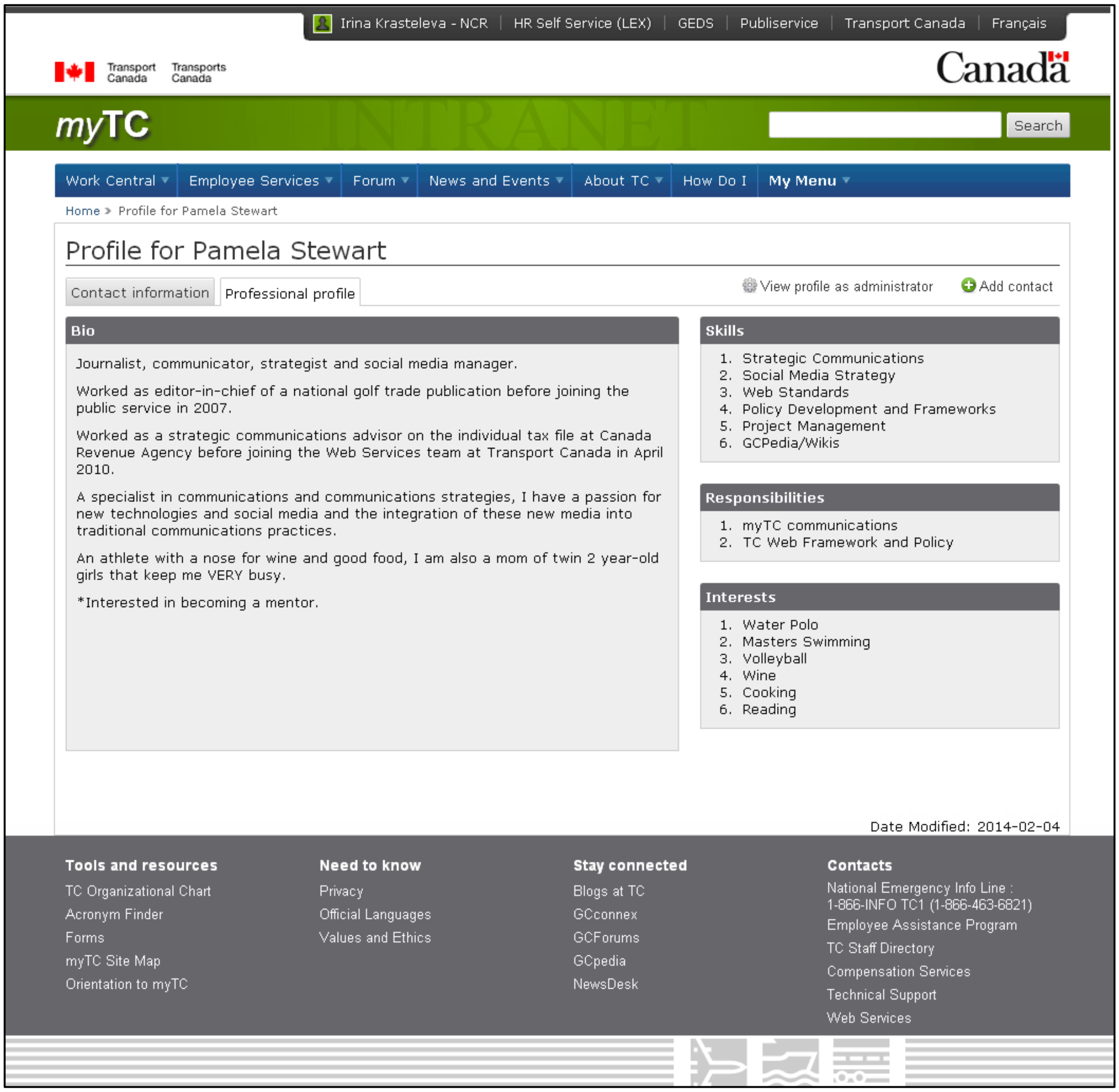
Employee profile pages are a standard feature of nearly every intranet and portal. Some companies, like Dell, make people-finding a killer app, with rich functionality while others present simple informational profiles. Others include Facebook-like social components and allow users to provide non-work related content alongside work or skill-based information.

Regardless of which approach a company takes, the people pages are often the most popular and most-appreciated aspect of an intranet portal.

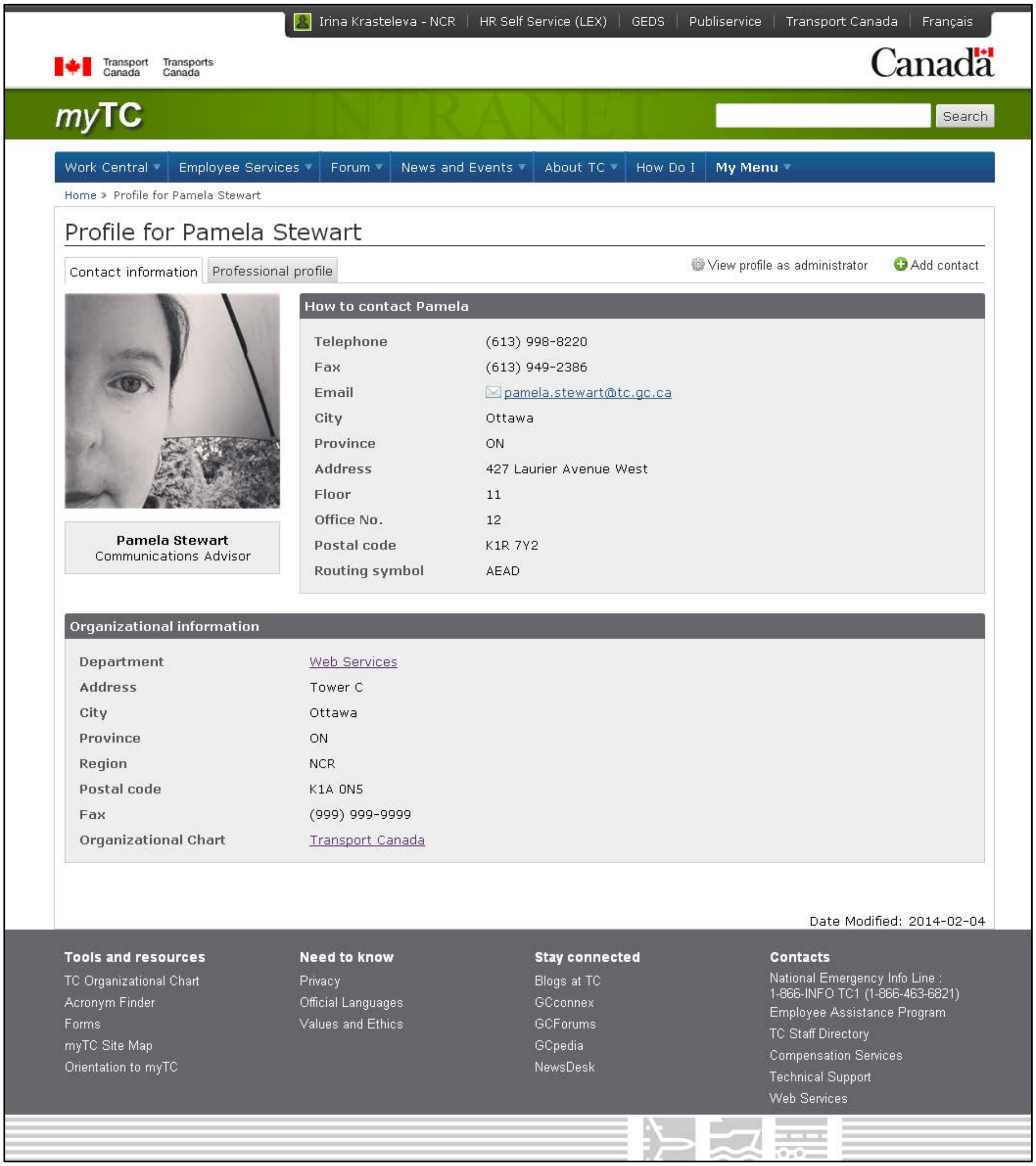
The following section features a gallery of people pages from portals included in this report:



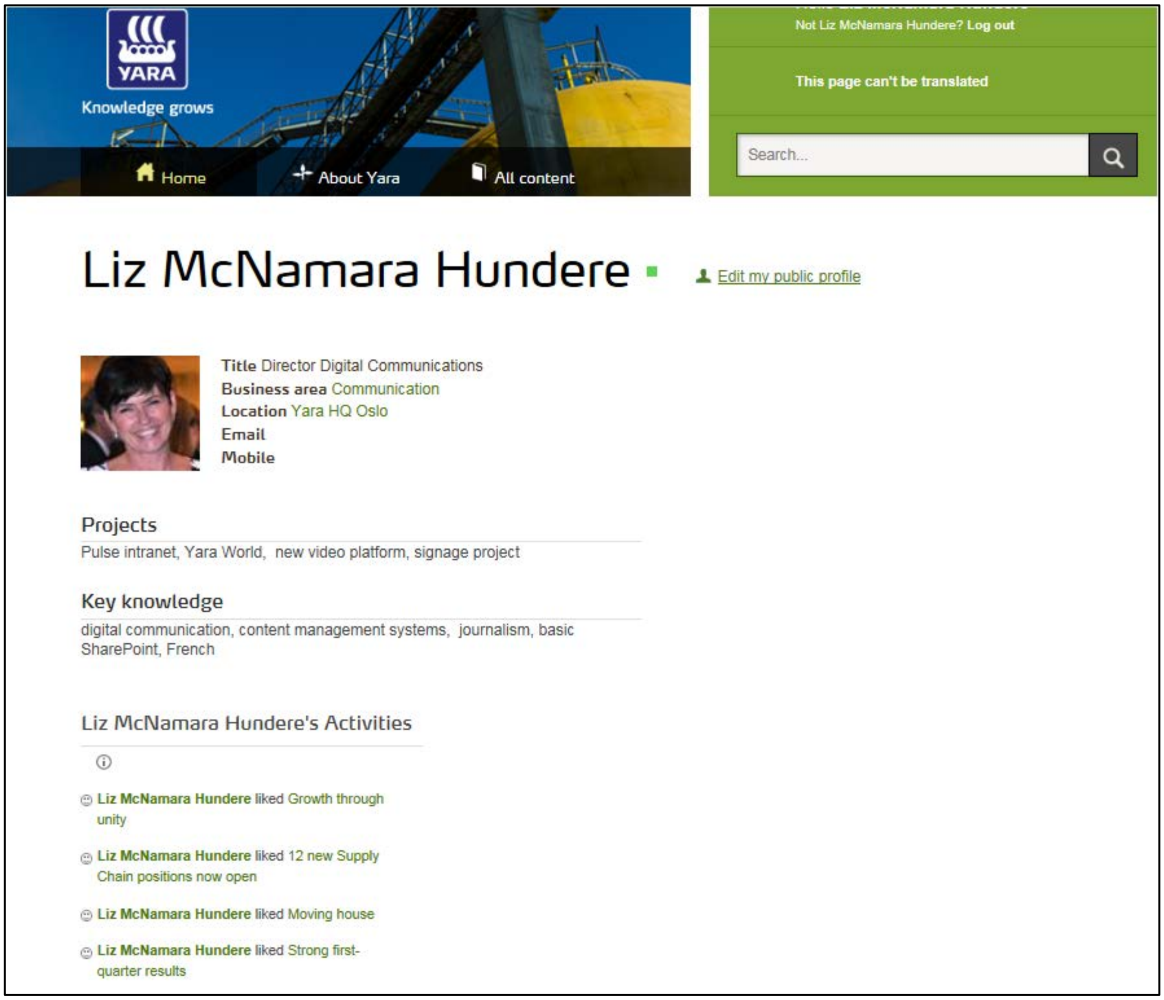
At CFPB users maintain their own profile pages. Here the user uploaded profile picture and used tags to identify work-related and personal interest items.



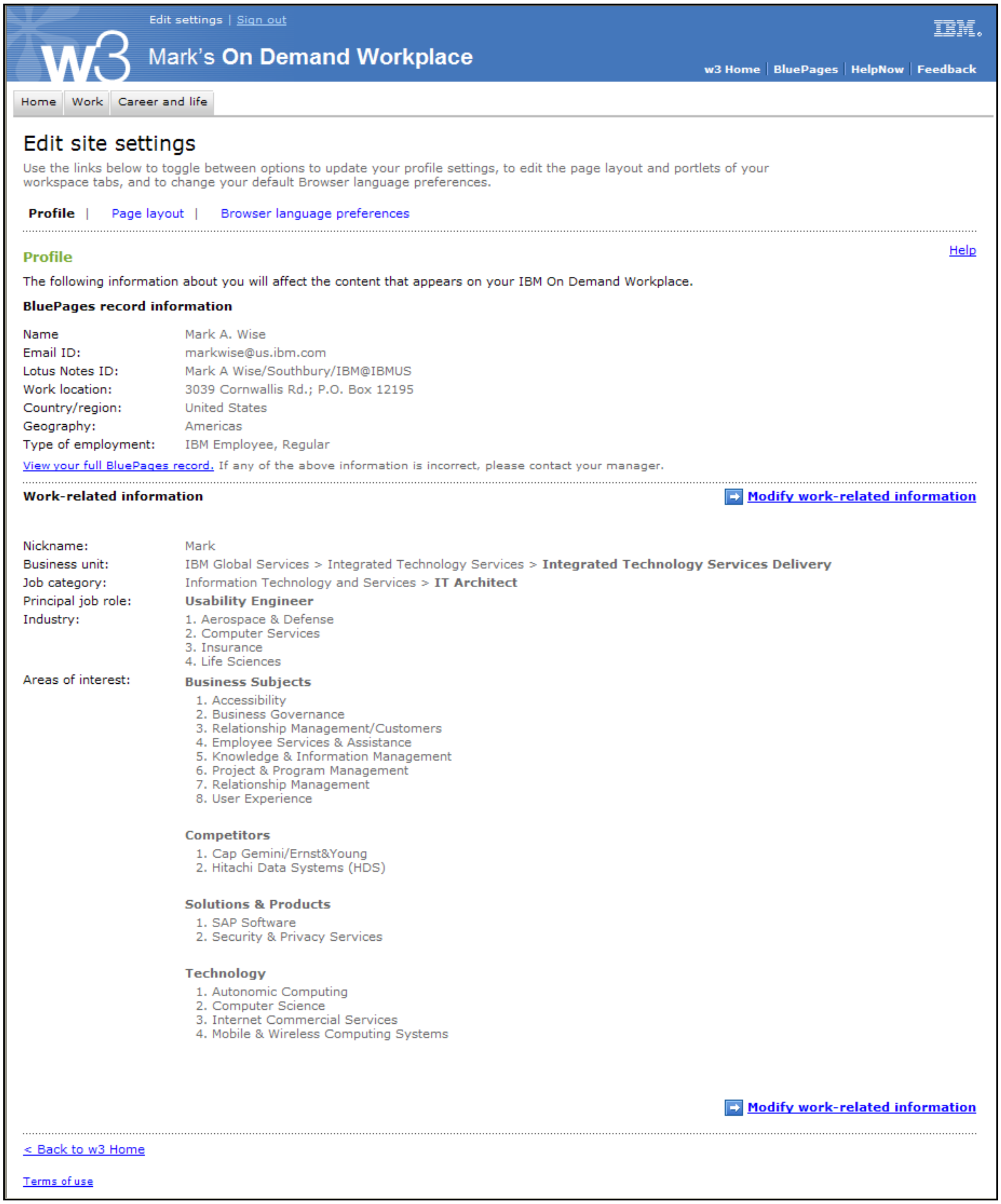
Transport Canada employees each have a profile page they can customize/update with a bio, skills and responsibilities (*Professional Profile* tab). They can set their location to the region in which they work and they change the location setting, news feeds and other site content update accordingly. Profile information is searchable by other TC employees. This makes it easy to connect with others who have similar skills and interests, and take advantage of a collaborative and social space.



On Transport Canada's profile page information in the *contact information* tab links to the HR system, to keep information up to date.



All employees at Yara International are encouraged to add a photo to their public profile along with information about their knowledge areas and any projects on which they have worked, so employees can easily tap into the company's collective expertise and experience.



Edit settings | Sign out

w3 Mark's On Demand Workplace

IBM.

w3 Home | BluePages | HelpNow | Feedback

Home | Work | Career and life

Edit site settings

Use the links below to toggle between options to update your profile settings, to edit the page layout and portlets of your workspace tabs, and to change your default Browser language preferences.

Profile | Page layout | Browser language preferences

Profile

Help

The following information about you will affect the content that appears on your IBM On Demand Workplace.

BluePages record information

Name	Mark A. Wise
Email ID:	markwise@us.ibm.com
Lotus Notes ID:	Mark A Wise/Southbury/IBM@IBMUS
Work location:	3039 Cornwallis Rd.; P.O. Box 12195
Country/region:	United States
Geography:	Americas
Type of employment:	IBM Employee, Regular

View your full BluePages record. If any of the above information is incorrect, please contact your manager.

Work-related information

Modify work-related information

Nickname: Mark

Business unit: IBM Global Services > Integrated Technology Services > **Integrated Technology Services Delivery**

Job category: Information Technology and Services > **IT Architect**

Principal job role: **Usability Engineer**

Industry:
1. Aerospace & Defense
2. Computer Services
3. Insurance
4. Life Sciences

Areas of interest:

Business Subjects
1. Accessibility
2. Business Governance
3. Relationship Management/Customers
4. Employee Services & Assistance
5. Knowledge & Information Management
6. Project & Program Management
7. Relationship Management
8. User Experience

Competitors
1. Cap Gemini/Ernst&Young
2. Hitachi Data Systems (HDS)

Solutions & Products
1. SAP Software
2. Security & Privacy Services

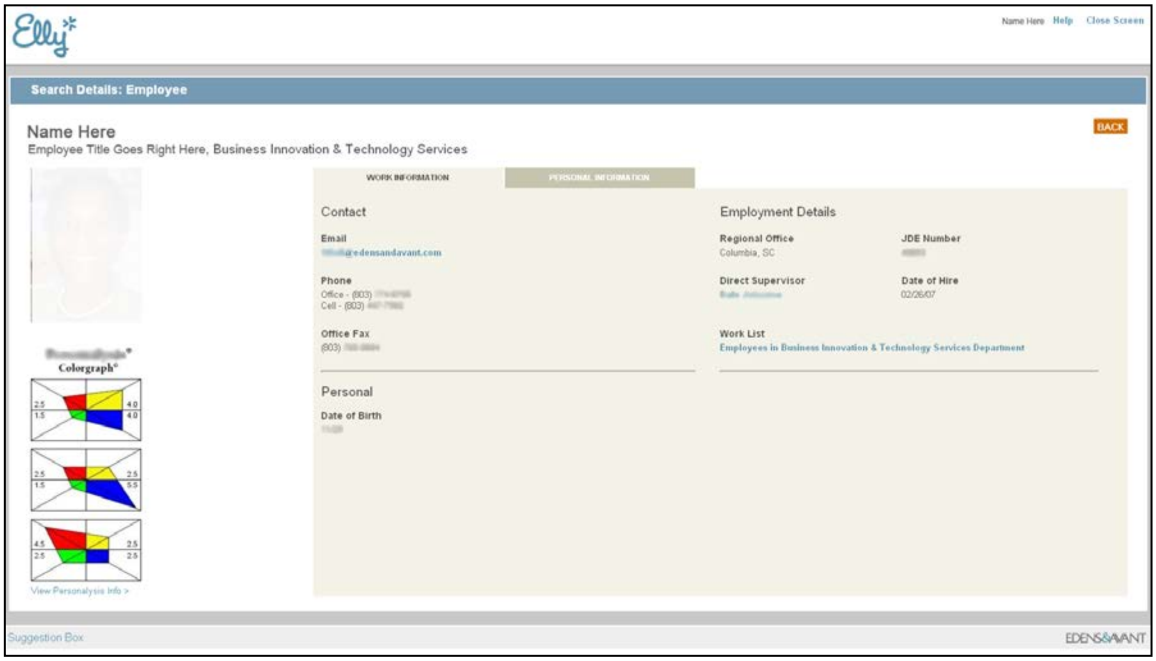
Technology
1. Autonomic Computing
2. Computer Science
3. Internet Commercial Services
4. Mobile & Wireless Computing Systems

Modify work-related information

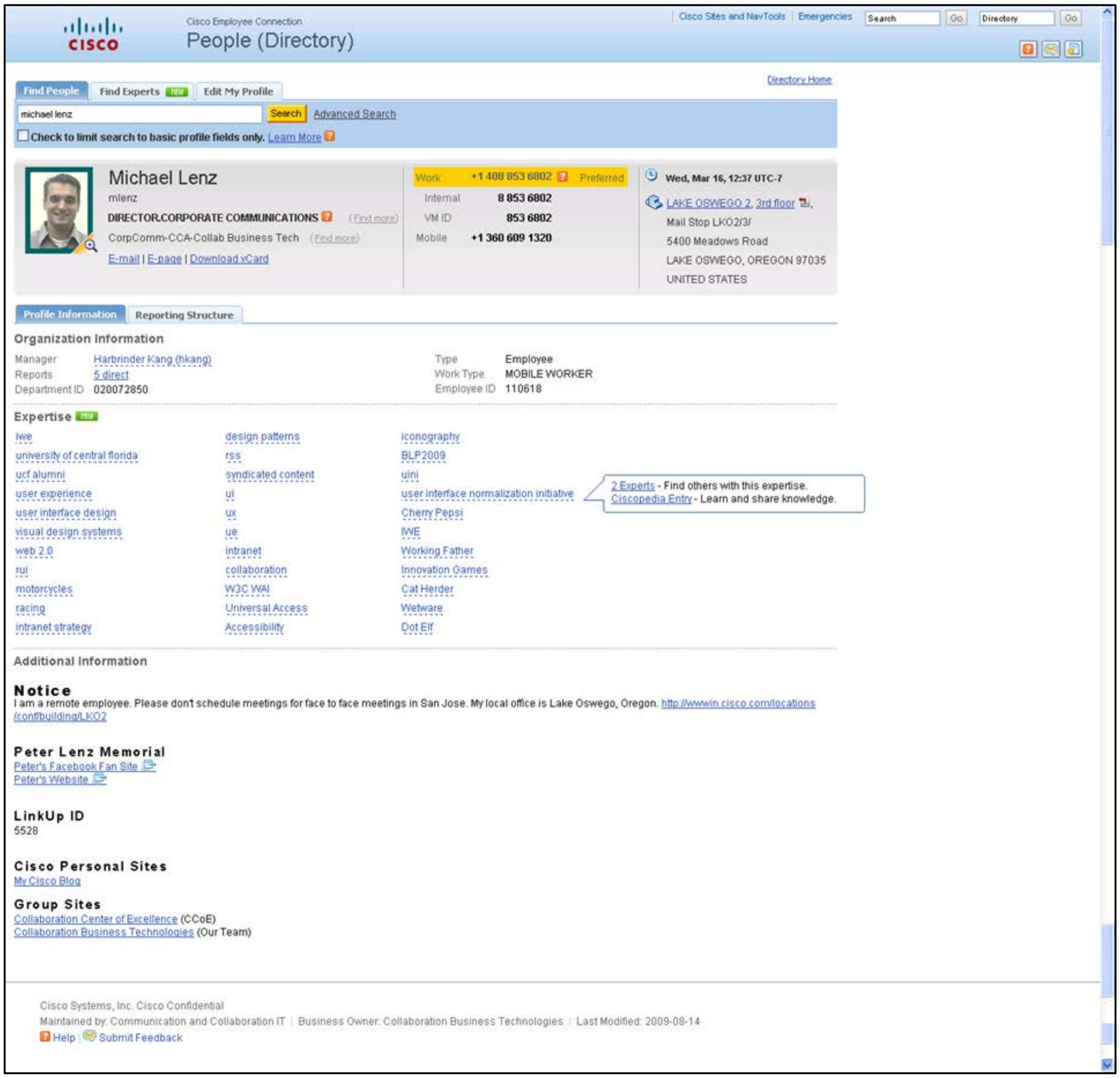
< Back to w3 Home

Terms of use

An example of the summary profile information page at IBM where users can modify most of the items that make up their profile.

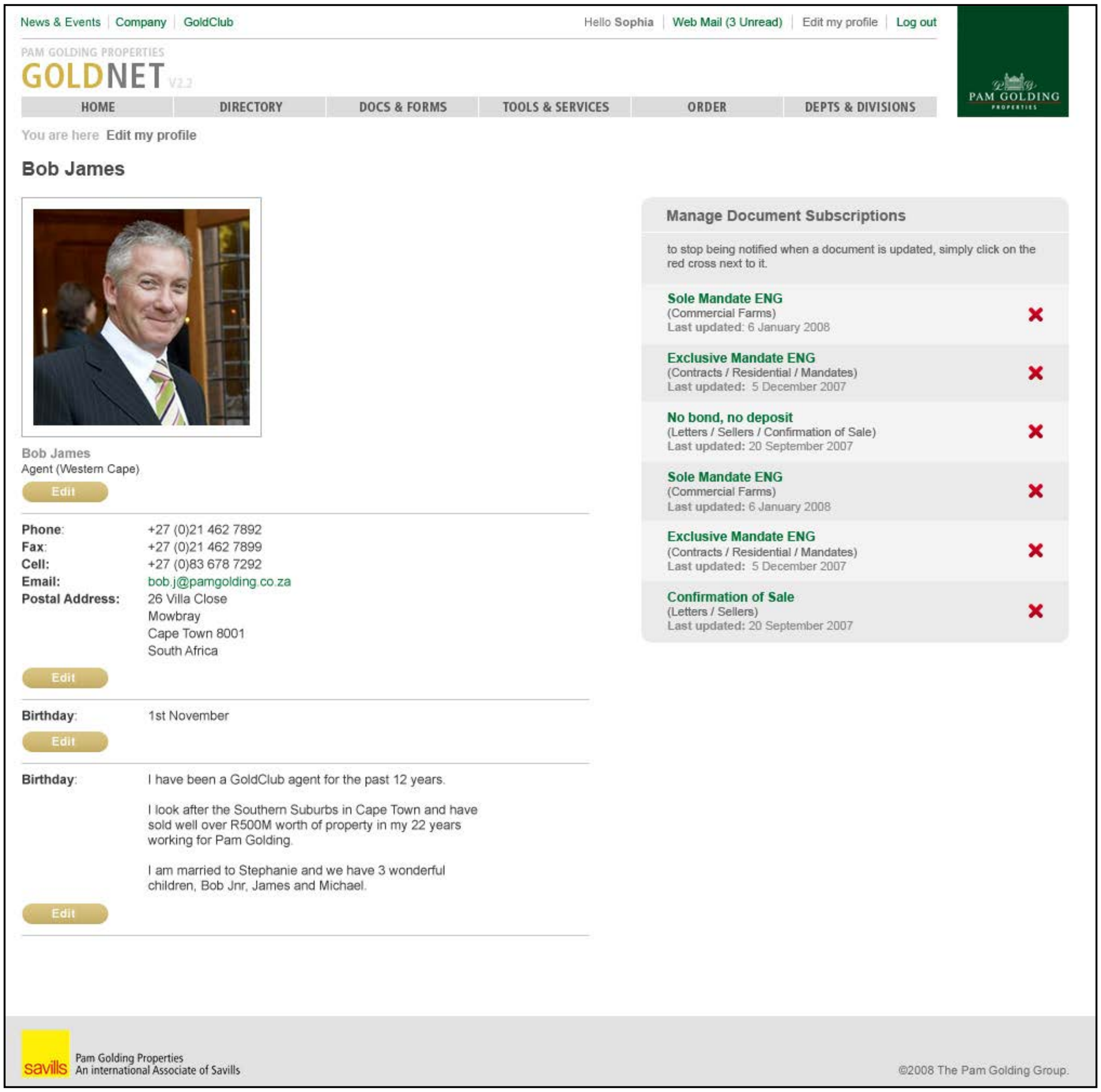


The employee information page at Edens & Avant is the page that comes up after clicking on a person’s name in an employee search. The page includes several ways to contact the person, as well as links to their supervisor and a graphic of their Personalysis profile. Selected individuals will also have links to their corporate biographies.

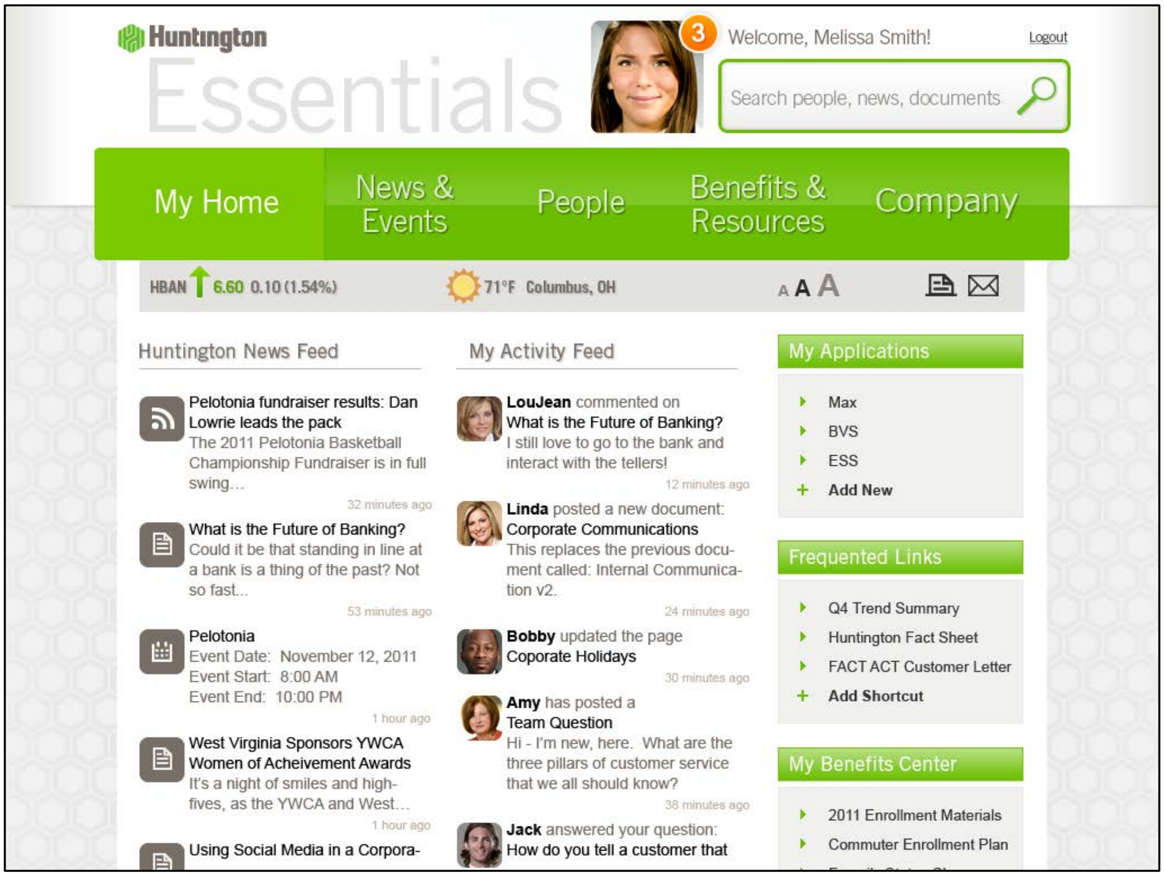


This screenshot shows an individual employee’s legacy directory profile on the Cisco portal. It highlights all relevant contact info, reporting hierarch and their expertise tags.

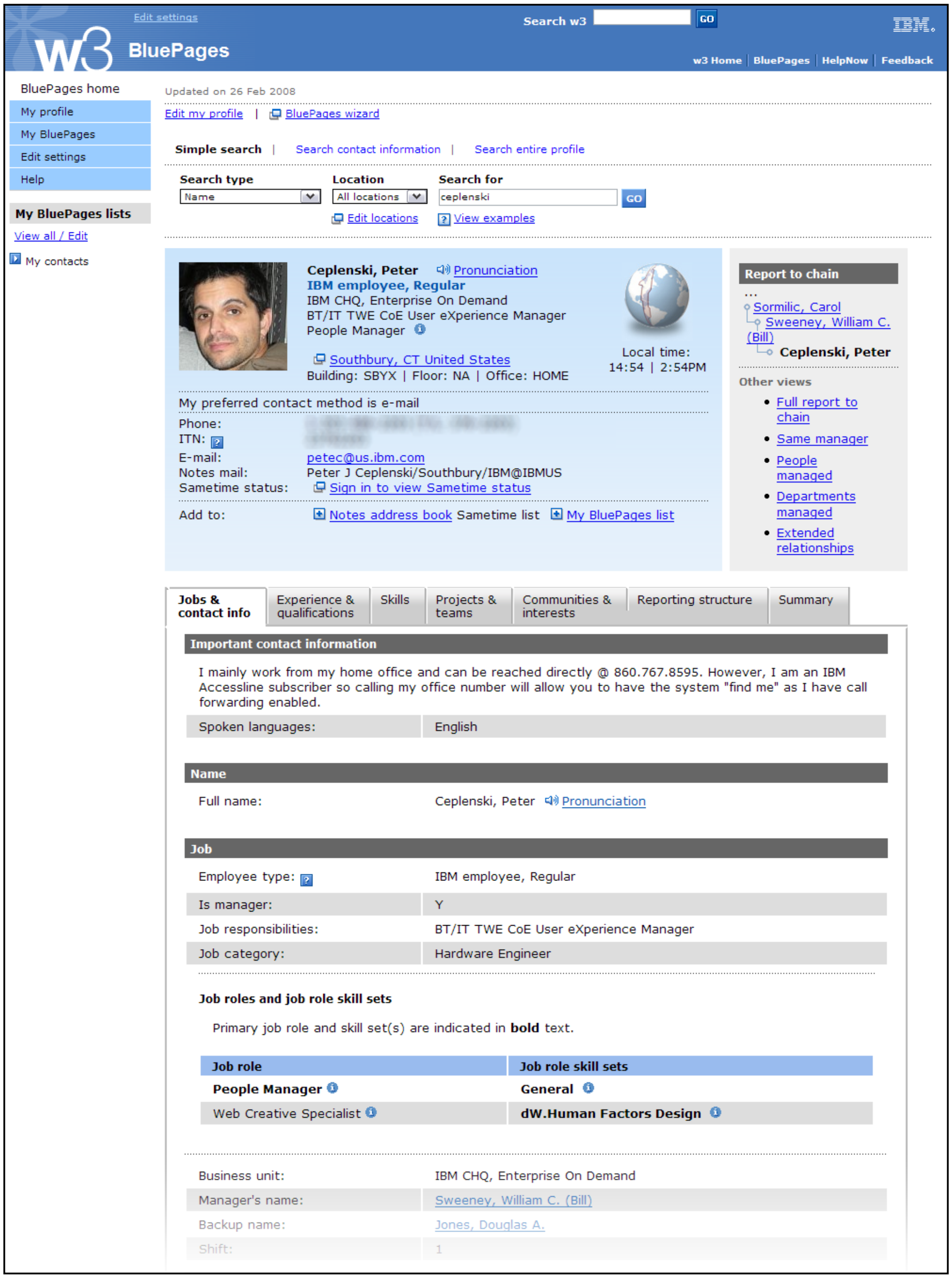
This screenshot shows an employee profile page on Cisco's new social media platform, Quad, highlighting all relevant contact info, reporting hierarchy, expertise, interests, tags, communities they belong to, their activities feed, wall, and a choice of other portlets that allows them to personalize this page.



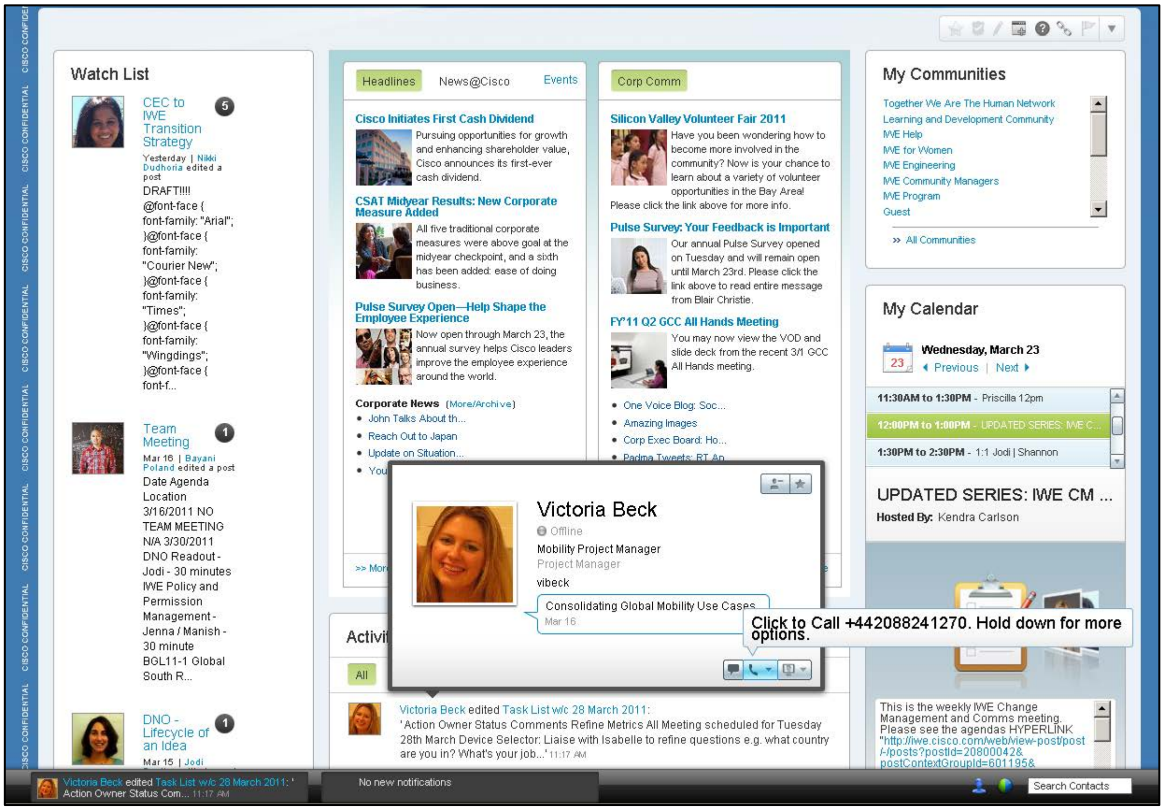
A profile page on the Pam Golding Properties portal site shows that users can upload a photo and change details about themselves and manage their notification subscriptions.



An early design iteration of a prototype for Huntington Bank's personal profile page showing personalized news and activity feeds. These feeds will be populated with documents and application updates from as many sources as possible with an iterative approach to incorporate different bank sources and apps such as SharePoint, Lotus Notes, Microsoft Exchange, Salesforce.com. These various data links will be implemented over a long period of time but are intended to gradually integrate as many systems as possible.



This is an example of a directory listing from IBM's employee directory, Blue Pages. It provides relevant contact information about the person, as well as their experience, expertise, qualifications, and interests. There is also the option for a user to upload a WAV file so that other will know how to correctly pronounce their name.



Partial *My View* page on the Cisco Quad platform, with a focus on the hover card and click to call functionality.

INFORMATION ARCHITECTURE[12]

Introducing Consistent Navigation

Without a paradigm for organizing an intranet, applications or pieces of business information that people need to do their jobs effectively can end up buried at the bottom of the growing information mountain. A major challenge facing portal designers is how to provide users with a fast and easy way to navigate through what is often a vast quantity of information.

Even as portals are charged with evolving beyond a structure rooted in departmental boundaries — unless, in those rare cases, such an information architecture approach best serves the user population — most portals nevertheless have evolved from

[12] For more information about intranet information architecture, please see our separate report on this topic, "*Intranet Information Architecture Design Methods and Case Studies*."

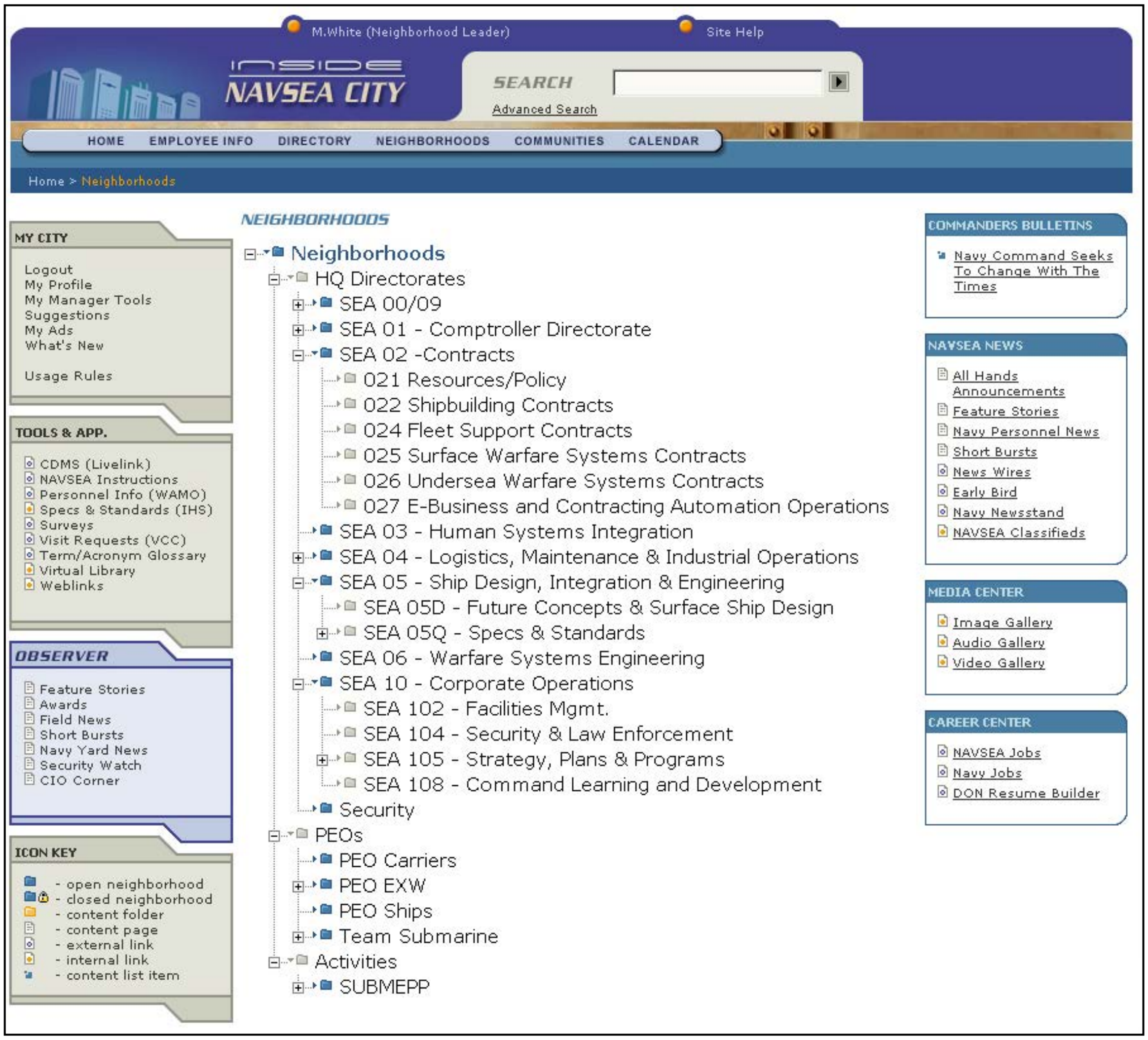
discrete, departmental intranets or from obsolete intranets that were organized that way. One portal manager's experience describes the legacy landscape of many portal projects in the early stages: "We started off with an intranet created on an ad hoc basis by different people around the company. Anyone could put information up on the intranet if they had the tools to do it. There were some loose guidelines for people to adhere to, templates for them to use, but in terms of formatting pages, using style sheets and so on, it's reasonably varied across the company."

Of course portals must evolve, and one of the first candidates for reform is the site navigation. A loose or varied approach often spells disaster for users. Without common standards for how intranet systems should look and behave portal-wide users face abrupt shifts in navigational metaphors as they cross departmental boundaries. Menus may be structured differently, controls may behave in new and surprising ways, JavaScript may suddenly appear — and be required to navigate — where it never did before, search may be different or absent, and information may turn up in unexpected places.

Mixed navigational metaphors, besides being disconcerting and off-putting, also slow users' access to information. Portal re-design projects are an opportunity to develop common interface standards across the diverse, underlying information sources. And the only way to do that is to develop standards that can be maintained over time.

IBM is a good example in that regard. Its portal is enormous so the size and complexity of the portal requires its portal team to be vigilant regarding its upkeep. "IBM has an extensive set of design standards for websites that are deployed on the intranet," says Ceplenski. "These standards cover everything from the look and feel of the page, to navigation designs and common interactions."

Whether you choose a wide and shallow or narrow and deep IA design, a critical aspect of information architecture is to be deliberate. Choose a paradigm and stick with it from end to end. Then establish standards so it can be maintained as the site grows and changes.



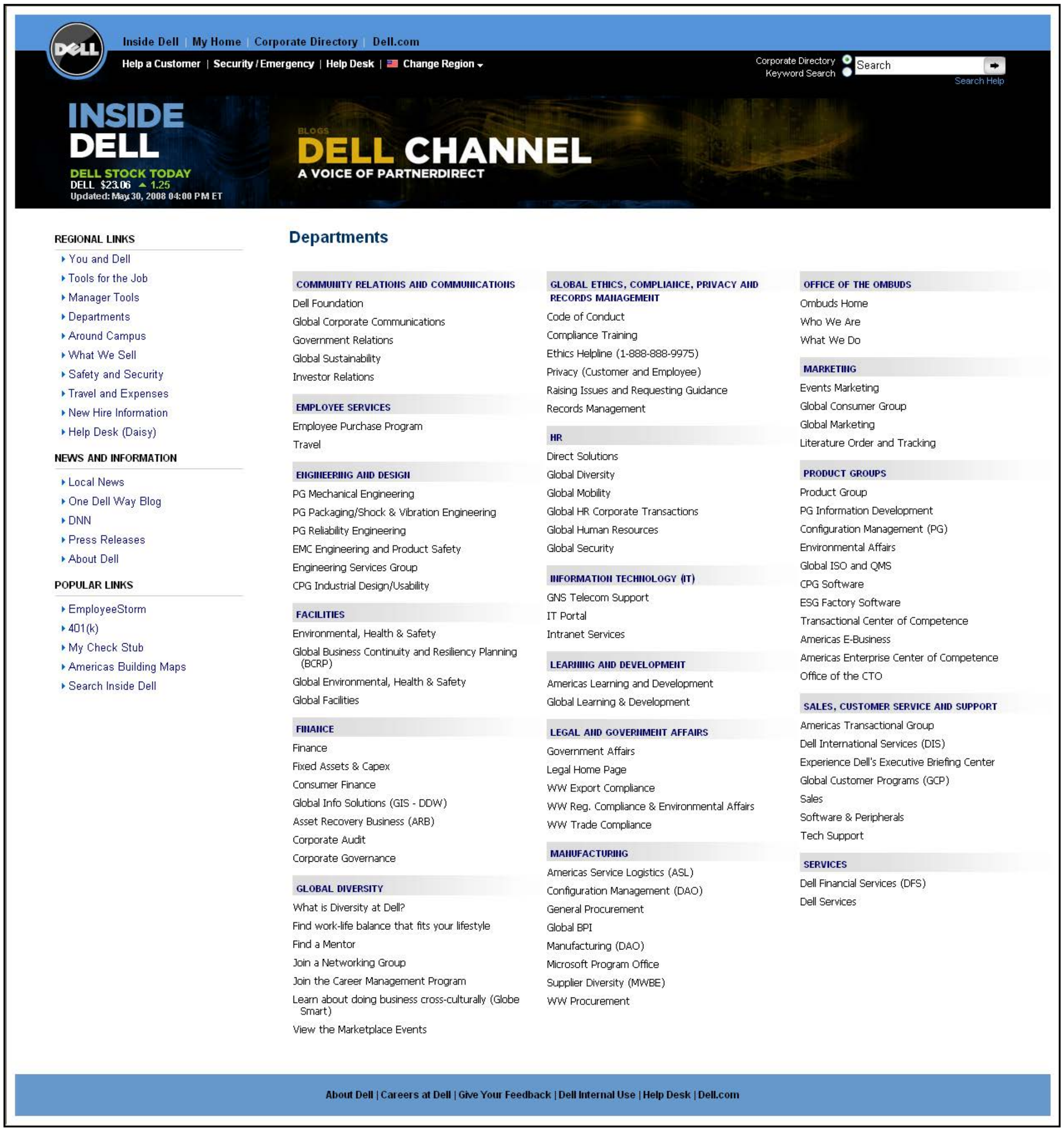
One common IA approach is to provide wide and relatively shallow navigation so users can see as many links as possible on a single page, and get to content in as few clicks as possible. This approach was used in the neighborhood area of the NAVSEA portal. The neighborhoods page is accessed via the *neighborhoods* button in the global navigation. It provides a tree-structure view of all content sub-pages, organized by business unit.

A Mixed Approach

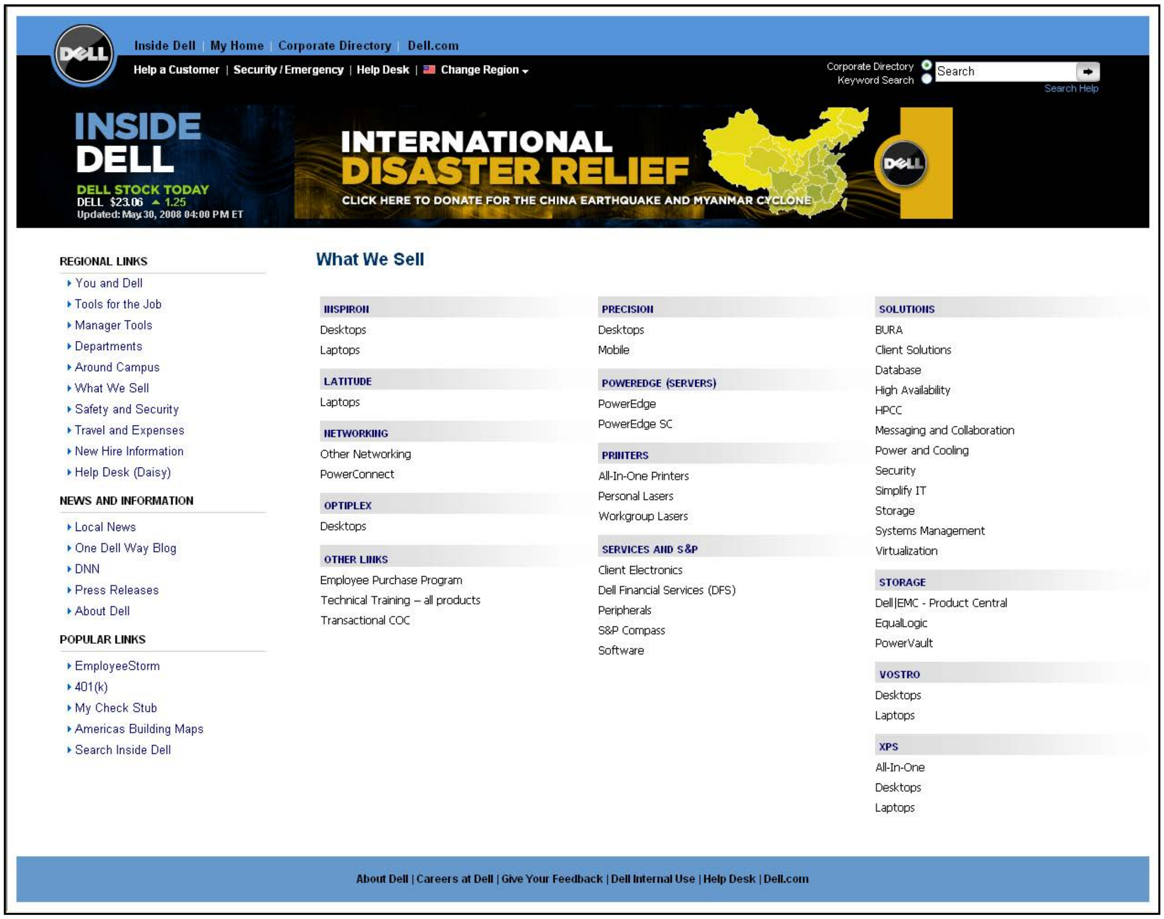
Somewhere on the spectrum between narrow and deep and shallow and wide is Dell's homepage. It features a large number of the most frequently accessed links (pared down through user testing) in a tabbed section in the middle and offers users a *more …* option to access the links that were eliminated from the homepage. This design was a compromise to try to balance the user's desire to see a large number of popular links and the portal team's desire to reduce the clutter on the page.

"Users wanted to keep the tabbed section in the middle," says Dell's Moorehead. "In every test. It was a holdover from the old site but people really want it."

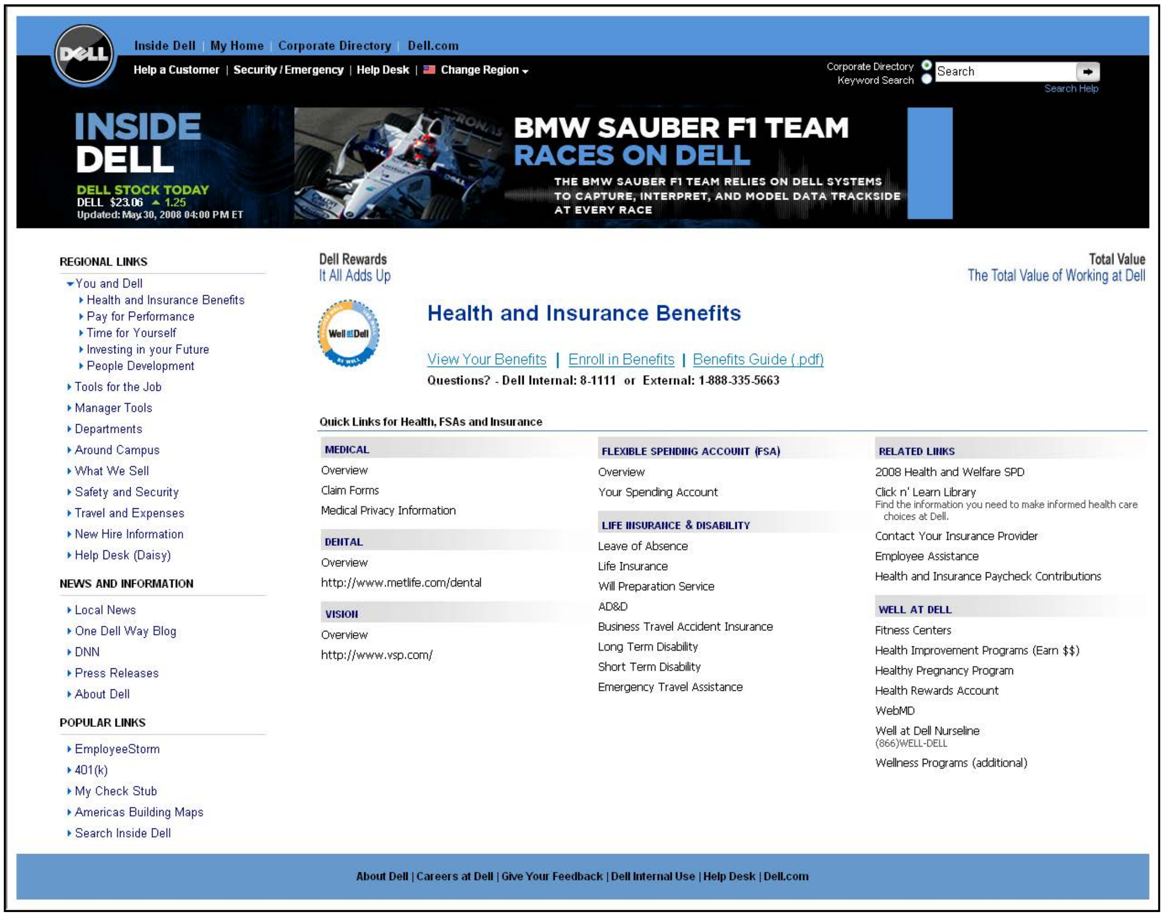
His team worked on cleaning up the links contained in each tab to improve the organization and labeling and went on an all-out campaign to eliminate insider-centric acronyms. Dell's team continues to test the changes they made to the homepage design and IA but feel that the approach they have in place has improved both the information-finding and the design of the page.



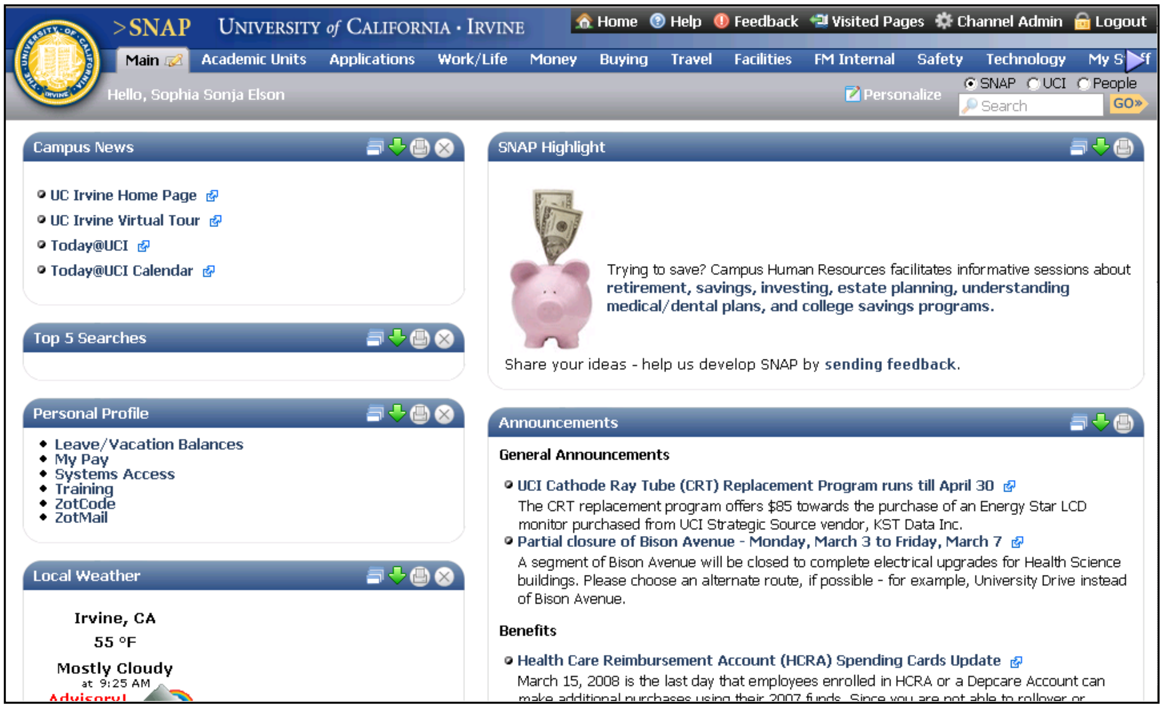
Dell's *Departments* portal page allows quick and easy access to individual departments within the Dell organization.



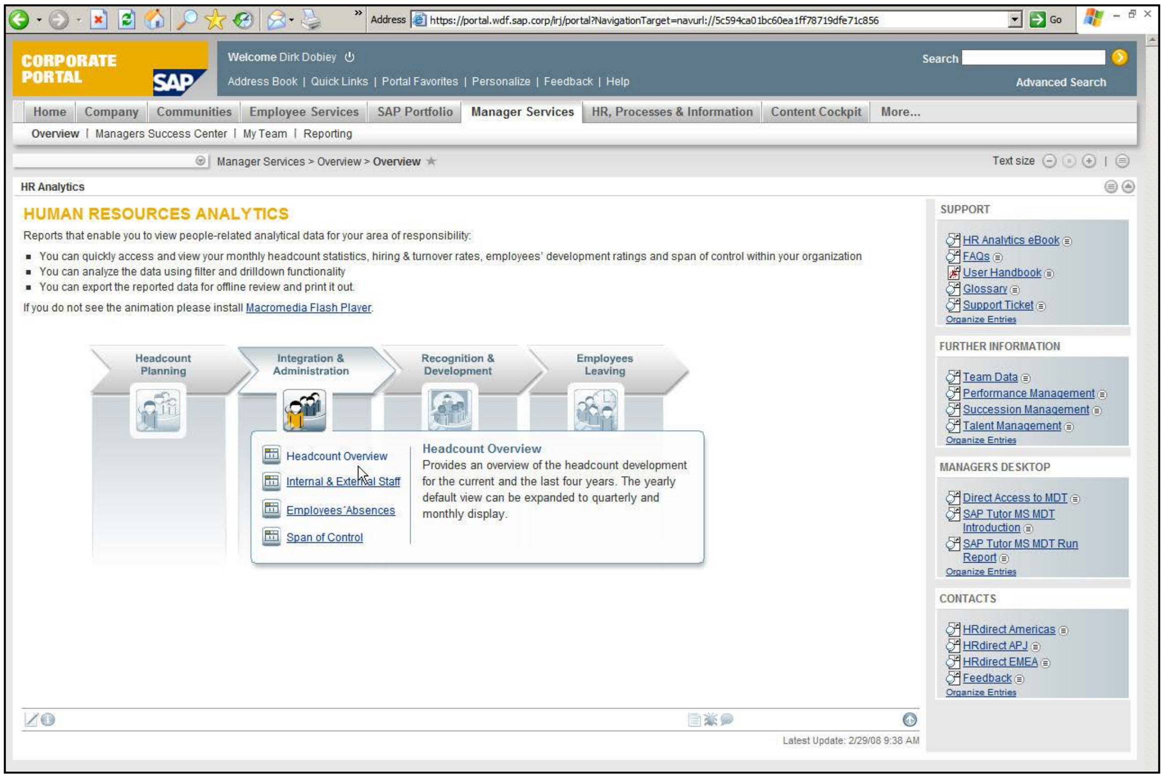
Dell's *What We Sell* page is the portal page featuring all the products which Dell sells and allows users to take a deeper dive into the company's product offerings.



Dell's Health & Insurance benefits page, a portal page that gives access to all the tools an employee needs for medical, dental, and vision information.



This shows a re-designed version of UC Irvine’s portal homepage. UC Irvine’s approach to navigation is a hybrid approach, deep in some areas and wide in others. The team took advantage of the IA benefits of personalization when designing the site’s main tabbed navigation. Certain content is pushed to user’s tabs automatically based on their roles and university affiliations so they don’t have to search for it. Other pieces of content on the site are also available for subscription, so users can choose to place them on their tabs to aid in finding information.



When an SAP user mouses over an area of the Flash navigation map, sub-areas pop-up and users can access back-end reports directly.

Accommodating Different User Styles at Procter Goodwin

Navigation was an important consideration in the Goodwin Procter redesign. "In our design analysis we found that there are two kinds of users when it came to navigation," says Kawa. "The ones who like to search and the ones who like to browse for content. It was important to design a site map that was easily browsed but was not too deep for search purposes. In addition, we needed to design context sensitive navigation."

The old Goodwin Procter intranet had standard navigation on all pages regardless of what level the user was on. Users felt that once they entered an area all information surrounding that area should be relevant to the site. This led to customized navigation at each level that allowed content managers to wrap more context around their sites.

"We made significant use of bread crumbs to bring the users back up the site," says Kawa. The team also made other decisions about the site structure that proved pivotal to meeting user needs: applying a standard site template and choosing a task/function-based approach to the content:

- Applying a standard site template. A standard template was created as part of the re-design. This addressed the inconsistency concerns that users raised during the team's interview process. Included in the standard template is a section designating the site owner. When a site is created one mandate that is covered in the organization's governance procedures is that someone has to be designated as the site owner. This owner is the primary contact for questions or issues relating to the page.

- Task/function-based approach. We've mentioned several times in this report that task/function-based approach to content organization is best for most companies. A good example of where this worked very well was in a newly-created section called "Policies and Procedures" on the Goodwin Procter site.

  "There was an overall firm wide goal of collecting and organizing all firm policies across the organization," says Kawa. "On the old intranet, polices, if they existed, were usually provided deep down within the department or practice site. These were not easily found and were not kept up to date."

  A central location for all polices was created to address this. Policies were cross-referenced so that they may be accessed by task and function or by department and practice. Policy owners are assigned and an overall policy administrator role was created to insure this process was maintained. Full text search capabilities were provided as well to make the policies easily findable.

  "Now," he says, "searching for billable hours will yield polices across multiple departments regarding this topic."

Sprint Excises Many Portlets

Beyond tabs, many sites today also use portlets to serve up pre-categorized pieces of information. Indeed, many people equate portals with portlets — one naturally goes with the other. Yet portlets originated as a feature included in portal software. Many organizations have been trying to determine what they're good at doing, and in which context.

For example at Sprint, after testing portlets with users, but before releasing its new portal, the design team opted to include portlets for many different types of information on the homepage. A couple of years later, however, "based on user feedback, intranet best practices, traffic log files and other information, we've removed some of the portlets from our homepage," notes Backlund.

Why remove portlets? "It's just from learning lessons over the life of the first two years of the portal," she says. "We had gotten ambitious about the amount of content we'd be generating — this portlet for this kind of news, that portlet for that industry news, another for executive communications, and basically we weren't seeing the traffic or frequency of updates that we expected."

The lesson learned from this is: "when you're creating a portal and you're trying to figure out how it's going to work with all these people contributing news to one page, research can tell you a lot," says Backlund. Experience, however, helps fine-tune what's actually best.

For example, Sprint eliminated a portlet that had tested well with users during the design phase of the portal redesign, called "Action Required." "We nuked it," says Backlund. "It sounded like a good idea, even to users during our research: highlight deadline-driven news, such as benefits enrollment, in a portlet. But once we went live, we discovered that this kind of content doesn't come along every day, so the content wasn't always fresh. And we had so many general news headlines that it was pushing the 'action' items below the fold — not a good idea."

So today, Sprint uses just three content portlets: general news, news for a user's organization, and an events calendar. Also there's "a news flash capability that's reserved for dramatic announcements or emergency type communications," says Sally Nellor, a communications manager at Sprint.

Drop-Down Menus, Megamenus and Global Navigation

In previous editions of this report most interviewees' portal homepages featured one, or often two, layers of tabs across the top of the page in addition to the vertical — and typically, left-hand — navigation. Horizontal tabs are frequently used to take users into a secondary homepage that presented a view of information personalized for a specific region or functional area.

Drop-down menus are also commonly used as a way of getting around the problem of making large quantities of content visible. Despite their usability drawbacks, some companies continue to adopt drop-down menus and fly-out navigation to allow users to scan contents in a large portal. The alternative, they say, would be either cluttering the homepage with links, or having users click to quite a number of sub-pages to then find needed links.

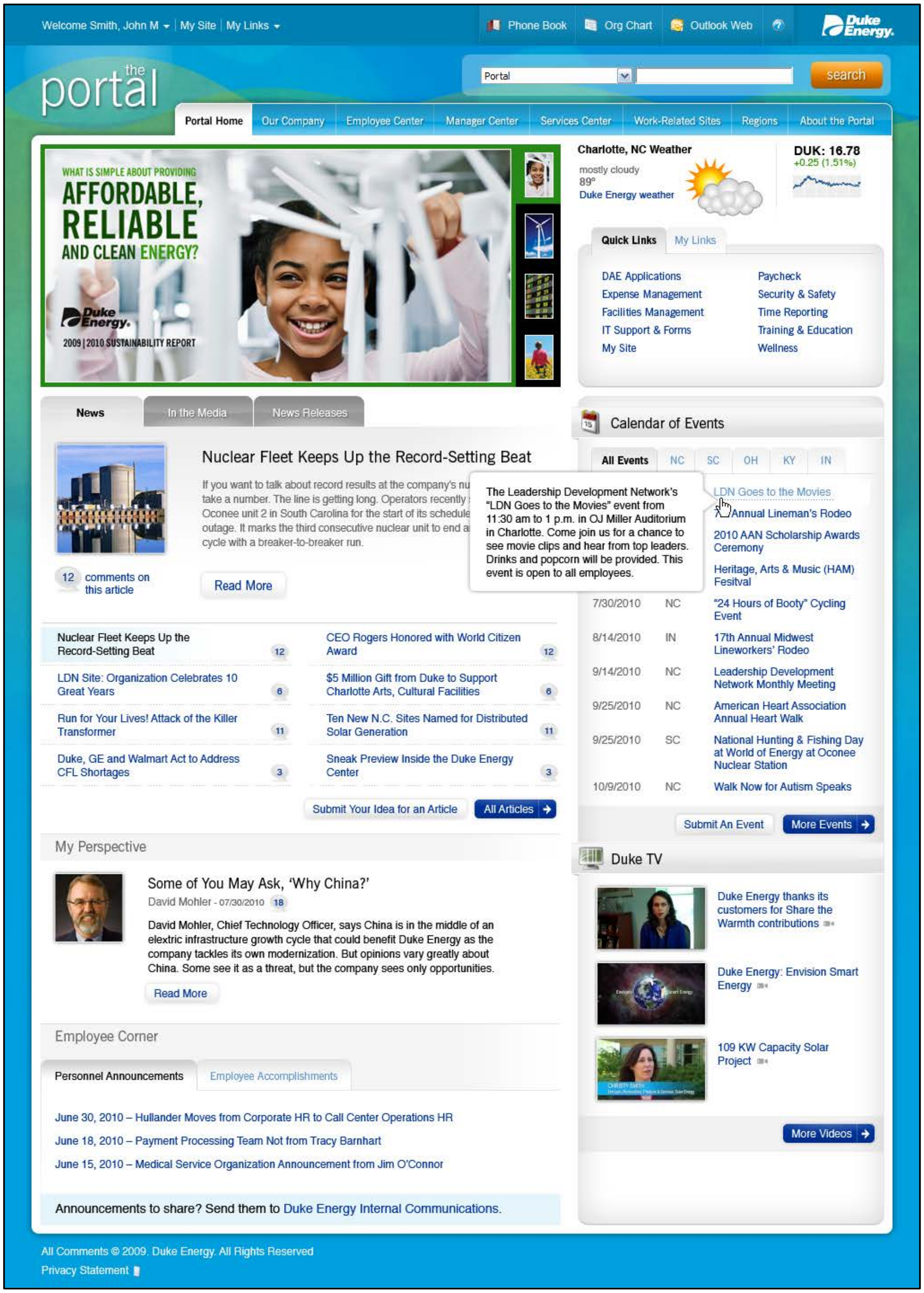
The success of this type of navigation can vary greatly from one company to the next. It depends on the users. What works well with one user population can fail miserably with another. User populations that work primarily on laptops can have different reactions to these kinds of controls than desktop users. One portal team we interviewed learned this the hard way.

After implementing fly-outs in the site's main navigation the users struggled to use the main site navigation bar. And without any data or research to know why, the portal team was left scratching their heads trying to figure out whether the users just didn't like it or whether they didn't know how to use it.

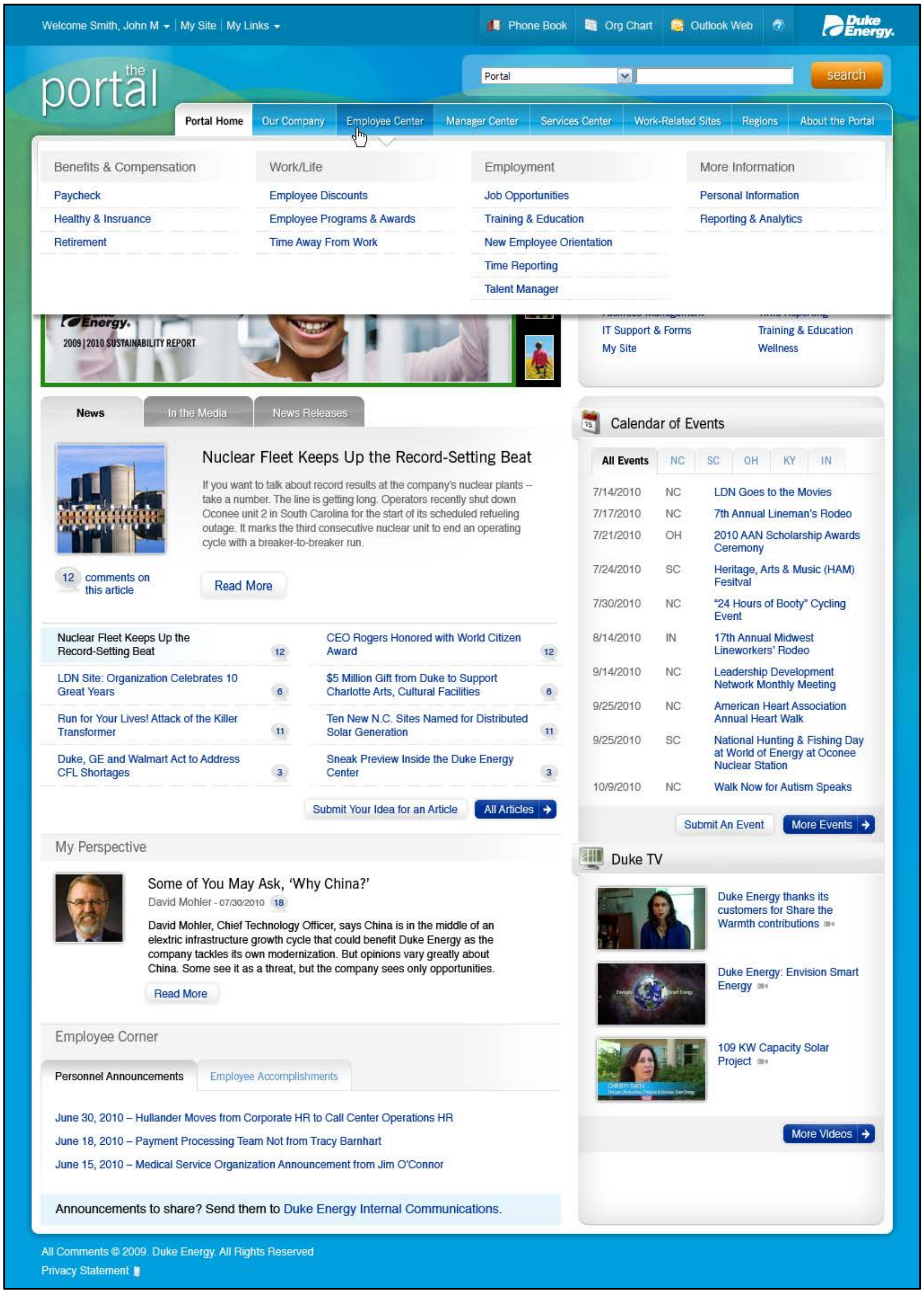
Megamenus have emerged as a common standard among the winners of our Intranet Design Annual contest in recent years.[13] With the depth of content most intranets provide, megamenu navigation seems to be a solid fit. Companies have started using megamenus to present a compressive view of information that once required a drill down on the part of the users. Some interesting examples from the 2014 Design Annual contest are shown below.

While some companies have experienced success with any or all of these techniques, the only way to be sure if a particular type of navigational approach will work on a given site is to test with users and understand their work environments in advance.

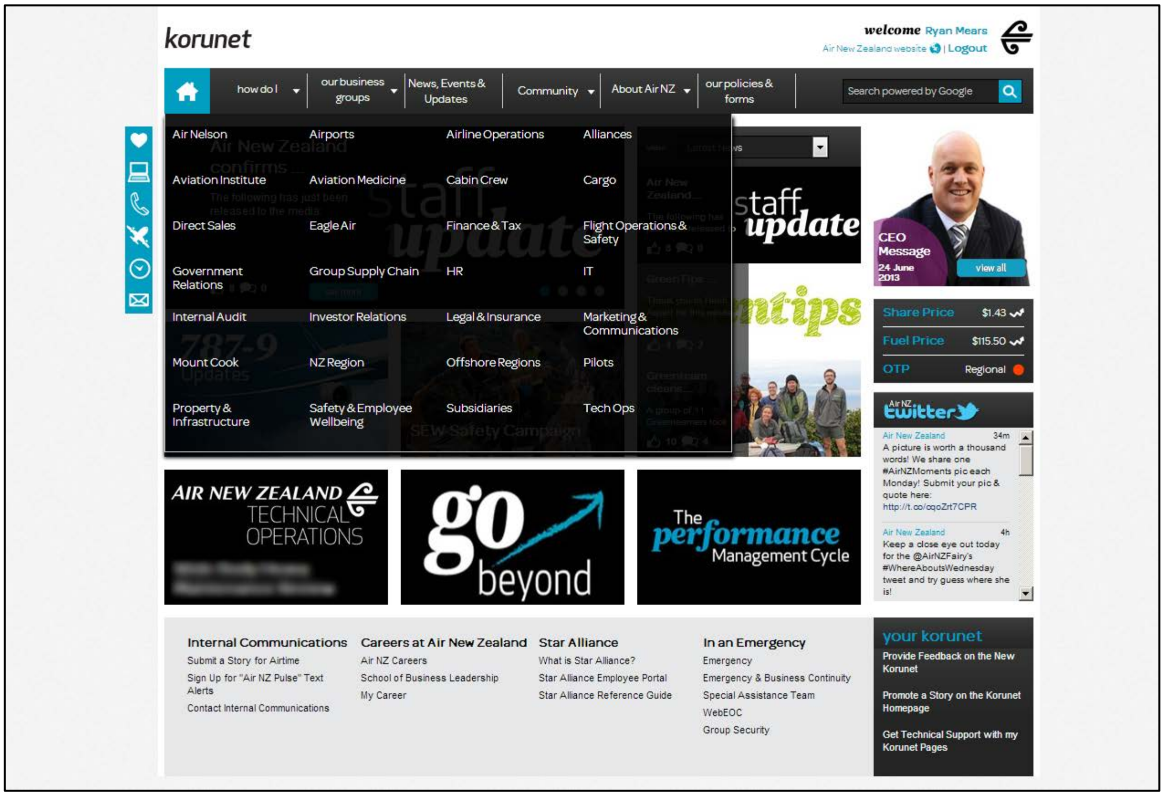
[13] *Intranet Design Annual 2014: Ten Best Intranets*, Nielsen Norman Group.



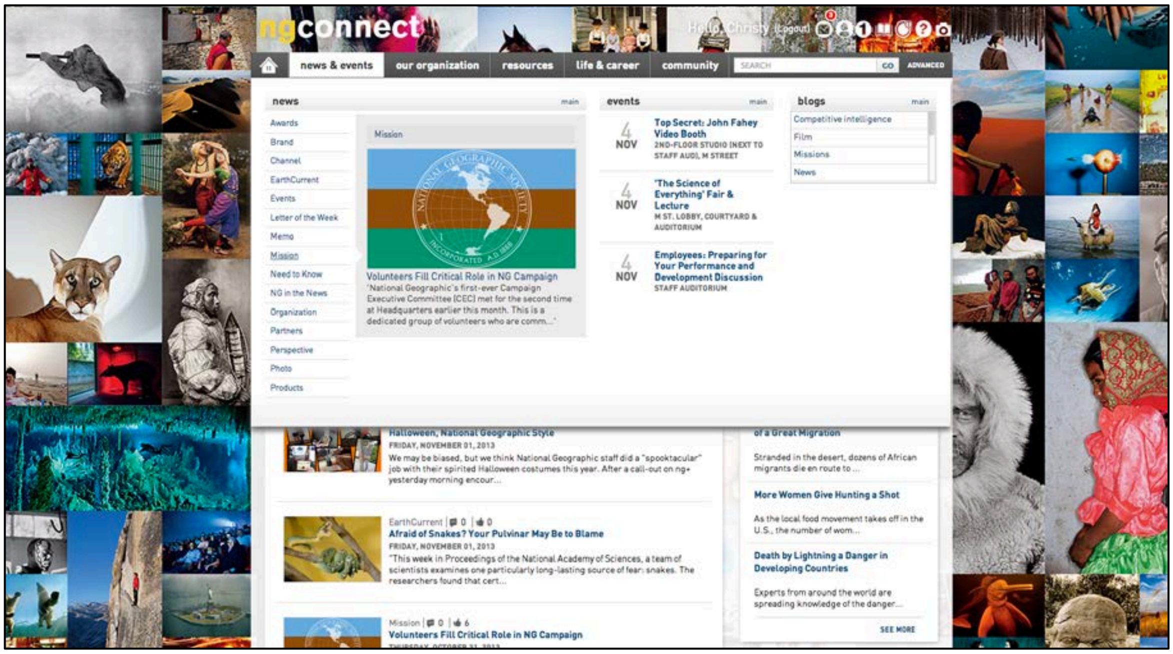
The Duke Energy homepage features tooltips designed to display more information without requiring the user to click away from the homepage.



This view of the Duke Energy Employee Center megamenu shows categories of sites (for example, *Benefits & Compensation*) and the sites within them. This categorization was derived through card-sorting exercises to determine how employees think of this information and would most like to access it.

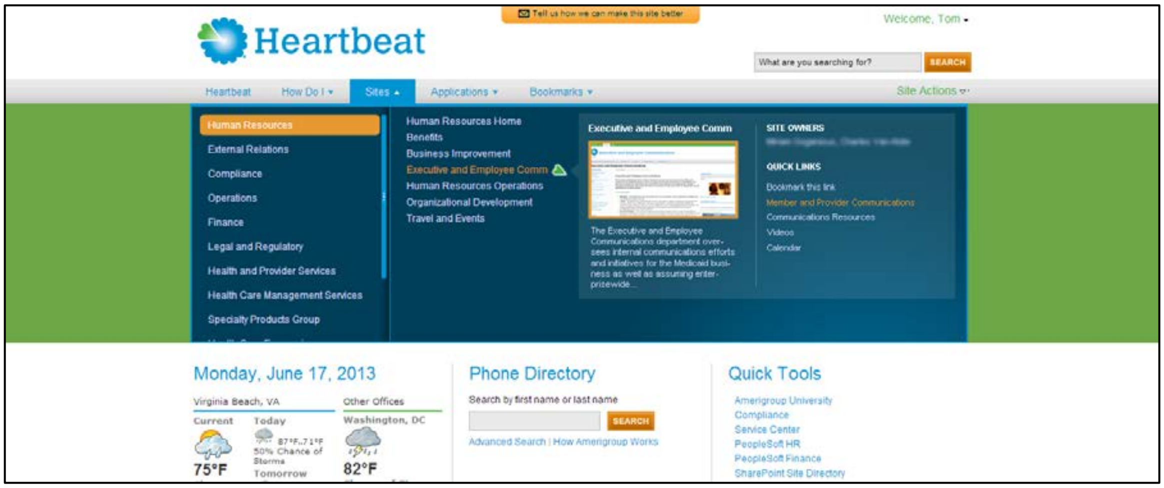


The Air New Zealand team (Intranet Design Annual winner in 2014) used card-sorting and reverse card-sorting exercises to ensure that the new site structure would be clear to users. This screenshot shows the subcategories for the *Our Business Groups* category.



National Geographic, a winner of the 2014 NN/g Intranet Design Annual[14] uses megamenus to list subcategories of content, but also surface important information in each site section. Events and a list of blogs round out the content in the menu. The main image changes depending on the news category selected.

14 *Intranet Design Annual 2014: The Year's Ten Best Intranets*, Nielsen Norman Group, 2014



At WellPoint (another 2014 NN/g Design Annual winner) a megamenu navigation design helps employees navigate to the many team and project SharePoint sites across the intranet. The site's navigational structure makes these items front and center. Users can chose from *How Do I?*, *Sites*, and *Applications*. They can also create and access a customizable list of personal *Bookmarks*. The team decided to limit the number of choices in the megamenu navigation so that users could more easily access important information. For instance, the *Sites* section (shown here) lists broader categories of sites, which are then further broken down. Users can select a category on the left, see related subcategories, and mouse over the subcategories to see a brief summary and the site's owners.

Unifying the Structure at HarperCollins

When interviewed for this report, HarperCollins was in the process of introducing basic navigation standards for all its content sites, and for web applications accessed via the portal. "Up to now, we've been applying standards on a site-by-site basis," says Joy Zigo. As a result, "in the past, the developers have made different areas in different ways at different times." This approach means older sites look, well, older — as well as lack newer navigation and improved standards. "A recent content site such as HR information is rather different in terms of navigation from, say, older sites for the Information Center and Travel department."

Hence the portal team proposed a more unified structure for all content sites, with primary navigation across the top, secondary navigation on the left, and the third layer expanding — where appropriate — down from the left-hand navigation. Data-intensive web applications will have only one navigation bar on the left.

Addressing User Findings

While most organizations struggle to create consistency across sites and applications at Embry Riddle one of its challenges was to create differences.

The portal team had done such a good job of creating a consistent design and navigation scheme across the site that it was difficult for users to tell where they were. Usability testing showed that users couldn't discern when they had moved from one campus to another on the portal. The team had to create new templates so that each campus had a distinct look that would signal to users the differences between the campus pages.

While the user testing revealed how the design similarities confused the users, it also revealed that the inconsistencies in the information categorization were causing problems. When given a simple task such as "find a training class" users were tripped up because training class information was located on the site based on whichever office was offering the training. "This is not useful to our users who don't know whether something is offered by one office or another," says Grissom.

This example shows that a simple fix such as adding a training category to the site's navigation can help move the site's IA from an internally-focused approach to a more task-based one that user's can more easily understand.

Pam Golding Properties: Making Navigation Changes

In redesigning the site's navigation, Pam Golding Properties' portal team made several changes to try to address usage and traffic patterns. "The old nav bar surfaced quite a lot of departments, but also some other things like partially complete collections of forms," says Karalis. "An arbitrary collection of things." The redesigned navigation bar represents the major activities people are likely to want to do on the site, including:

- Get contacts
- Get documents or forms
- Use a system or service to make something happen, for example posting a new property on the website or requesting a quote from the design team
- Order and pay for products, including: promotional products, business cards, print runs, etc.
- Find out who to contact or how to work with a particular department

"We reduced the prominence of some of the nav bar items," says Karalis, "and moved them higher up." News and events, company, Gold Club, Webmail, "Your Profile" and logout are considered low priority items and are now located in a utility navigation bar in the top right and top left corners. "These were items that we felt would receive less frequent traffic, or would receive most of their traffic via the homepage content, rather than being specifically navigated to," she says.

They also added a large *Quicklinks* panel on the homepage, to deep link users directly to the most popular tasks/sub-categories. "This gave us a scalable navigation bar, but rapid navigation to key features," says Karalis.

The homepage for Pam Golding Properties' portal, GoldNet, prior to the site's redesign

This is how the Pam Golding Properties portal homepage looked after the redesign. The team was able to reduce the top navigation items from ten to six, add a *Quicklink* section which takes the user directly to the most commonly used documents or tasks and a news section that offers the users functionality to submit news items or give feedback. It also shows site updates, birthdays, etc.

The Sprint IA Evolves

In subsequent revisions of its portal, Sprint continued to winnow the number of top-level tabs used on portal pages. There were several reasons driving this change.

"There were probably three reasons for doing that," says Backlund. "First, we were trying to more crisply define what a user would expect to find on those pages, because we had muddied the waters a little bit."

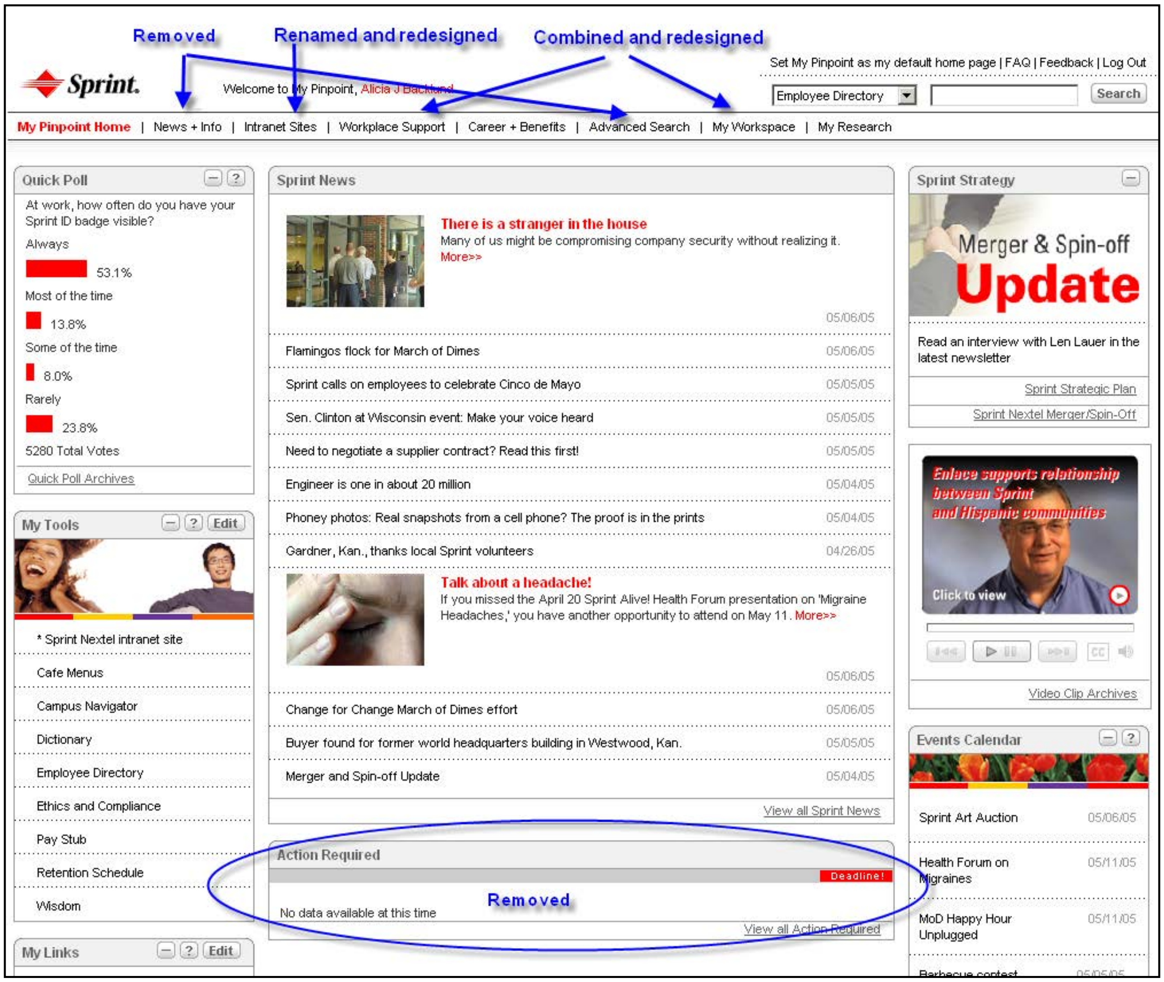
The second reason for the change was a greater awareness of intranet best practices. "As intranets get more mature, there are finally some commonalities that you can start to see." In particular, many sites now end up with similar information architecture themes. "What we started to see based on the Nielsen Norman Group reports and other sites, was that sites have a news, job, career, and 'about the company structure.' That's what we were seeing over and over again, so that's what we decided to lean toward."

The final reason for the change was a more close-to-home example. "Our Nextel brethren had followed that same best practice," she says. "And we wanted employees of both pre-merger companies to have as similar an experience as possible, even though we're still on two separate portals."

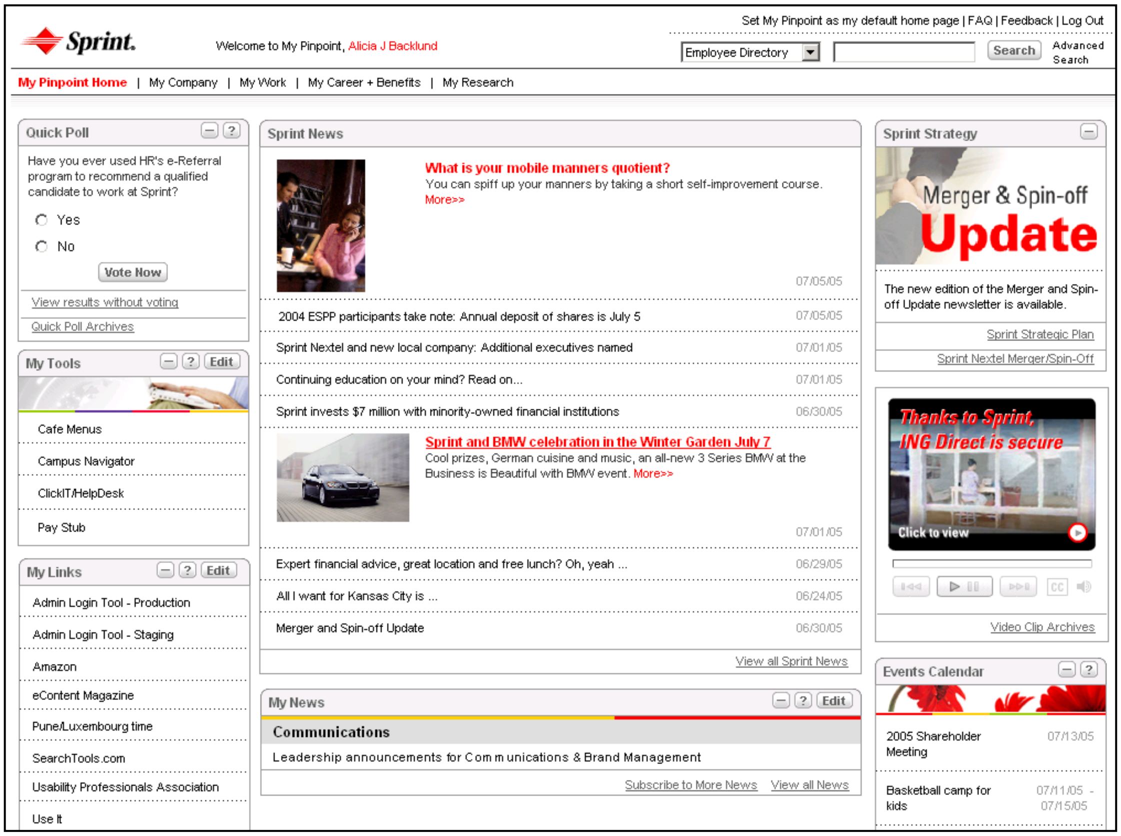
Indeed, following the completion of the Sprint–Nextel merger, the site was renamed i-Connect — the same name of pre-merger Nextel's intranet.

4. SPRINT REDUCES THE NUMBER OF TOP-LEVEL TABS

Previous Site Tabs	New Site Tabs
1. My PinPoint Home	1. My Pinpoint Home
2. News & Info	2. My Company
3. Intranet Sites	3. My Work
4. Workplace Support	4. My Career + Benefits
5. Career & Benefits	5. My Research
6. Advanced Search	
7. My Workspace	
8. My Research	



Changes made to Sprint's My Pinpoint portal included reducing the number of tabs on the top from eight to five, and removing the *Action Required* portlet from the portal homepage — indeed, from the entire portal.



This shows the ultimate version of Sprint's My Pinpoint portal homepage, which includes the tab changes. The branding of the portal was subsequently changed when the Sprint-Nextel merger was completed.

MOVING FROM INTRANET IA TO PORTAL IA TAKES TIME

Before an organization adopts a portal, typically it has created one or more departmental or regional intranets. The legacy architecture can be tricky. Portal teams in organizations with rigidly defined departmental lines, however, may encounter particular resistance. In general, the goal of having portals share information seamlessly across functional areas conflicts with a system divided along rigid departmental lines. When implementing portals, then, many organizations have faced the challenge of first having to reevaluate their entire information architecture.

Then after moving to a new information architecture, organizations must guard its sanctity. Wachovia does this by requiring that all site nomenclature changes get vetted by one of the two information architects on staff. "That helps us restrict certain terminology that might be confusing as you move through the sites," says Bass.

Using Research to Combine Multiple Intranets

While being interviewed for this report, Erste Bank's portal team was in the midst of an IA discovery phase in preparation for a new portal design. Erste Bank operates in eight countries: Each local bank has its own intranet that has to be integrated into the new portal. Other legal entities in the Group also run their own intranets. "We have many different intranet solutions that are not really connected," says Erste Bank's Hafner. "Ten to 15 are big and we are focusing on these for now."

As a first step, it is planned to create a Group-wide [company-wide] intranet that will feature all the Group-wide content that is important for everyone.

The second and even bigger focus is to merge all the existing local intranets into a new Group-wide intranet that will be the central source of information for all employees. The challenge to this is trying to understand all the content and applications that are being used across the sites and need to be organized, merged, architected and accessed by users.

The portal team took a research-intensive approach to defining the information flows and structure for its new site. They went out into the field and met with users across the organization to better understand their tasks.

In addition to the thorough inventory, the project team has to account for the site users, many of whom possess varying skill levels and comfort with technology. An added challenge is designing a site that will effectively serve bank branches in locations with limited internet access.

Other challenges that the project team is working through include:

- Workflows (especially for international content): "Do you give access to a lot of authors or create a centralized editorial board to submit content from outside the CMS?"
- Translations: "How do you accommodate translations in the content workflow?"
- IA: "How do you group company-wide info (for example, news) and local info on the menu level? Do you show the Group view first, then local view or the other way around? Is there a Group starting page or local starting page or both?"
- Features: "What about blogs, wikis and the like? We will use them, but we will have to guide users in the beginning with detailed policies about what to work on and how to maintain a wiki. It is not really a technical issue, but more a policy matter, how to handle it properly."

"The challenge," says Hafner, "is the balance between Group-wide and local content. The danger is that you have more local [content] but group-wide is more important. Generally there is more local content which people need for daily work, but we also have to find a way to attract people to Group-wide content as well."

"If you split it up in the menu," he says. "You lose the comfort and have to access different pages. Users then always have to wonder if they should access the local section or the Group section for this purpose."

Fujitsu Siemens Takes Inventory

When designing its portal's information architecture, Fujitsu Siemens Computers first began with its intranet. "We arrived at the design by examining what we had previously — a main news story, links to further news and resources — and reworking this in the light of best practices," says Melck. "This meant adding integrated search and a corporate directory, as well as a second news stream for smaller, general announcements. The page also has a special security corner for IT security announcements, and a *call-me-back* button which users can click if they need helpdesk support."

Getting to the new navigational structure didn't happen overnight. The company undertook extensive usability testing, including card sorts, heuristic evaluation of the old site and design prototypes, surveys of users, user testing of new design prototypes, studying the server logs, and sitting in on support calls and training sessions.

The portal design team ended up with a total of nine top-level categories, and "most content resides under four of these: corporate, departments, marketing and countries," says Melck.

CSFS Struggles with a Moving Target

Information architecture continues to be an ongoing issue for CSFS, where two intranets with very different architectures, both with large amounts of content, were hastily combined into a single portal. "Something we're still working on is the complexity of the information architecture question—issues like how to structure menus in such a way that staff from different areas still find it easy to navigate through the content," says Urs Buob.

Companies in volatile and high-growth sectors such as finance will share another of CSFS's challenges: mergers and acquisitions can mean that the information architecture of the organization is a constantly moving target. When CSFS acquired Winterthur Insurance, for example, it had to continue existing work to refine its portal, yet then also begin to explore how to incorporate Winterthur's intranet into a new portal information architecture.

ANATOMY OF A MERGER

While interviewing for a prior edition of this report, Sprint and Nextel completed their merger. We still include this information, as it is an interesting window into how a portal team can accommodate IA change during a merger, but also how a properly prepared portal team can make the portal a tool for guiding employees through a merger.

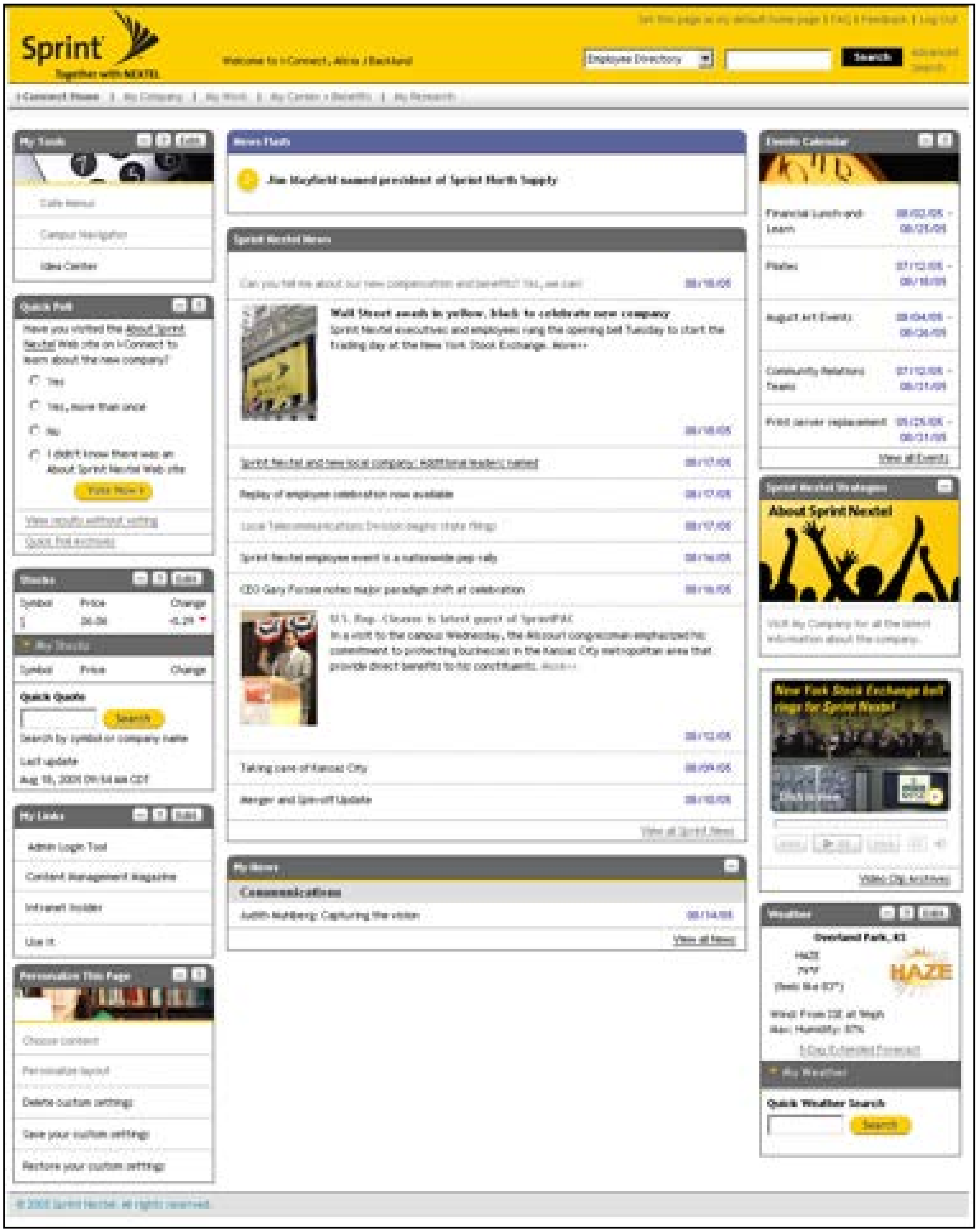
Preparing for the Merger

Just prior to the merger's approval and completion, Sprint was furiously branding the new entity, and such work extended to the intranet as well, with the team plotting non-functional changes that would nevertheless make the portal reflect the new, merged reality.

"We made some basic color and logo changes to both the legacy Nextel and legacy Sprint intranet to bring them in-line with our new branding approach for the new, merged companies," says Backlund. "Both of our intranets look much as they did before, but they have new colors, new logos, that sort of thing."

Launching the Night of the Merger

"We went live with the new portal look on the night the merger was approved," says Backlund. Nextel's intranet also adopted a look and feel that reflected the new brand.

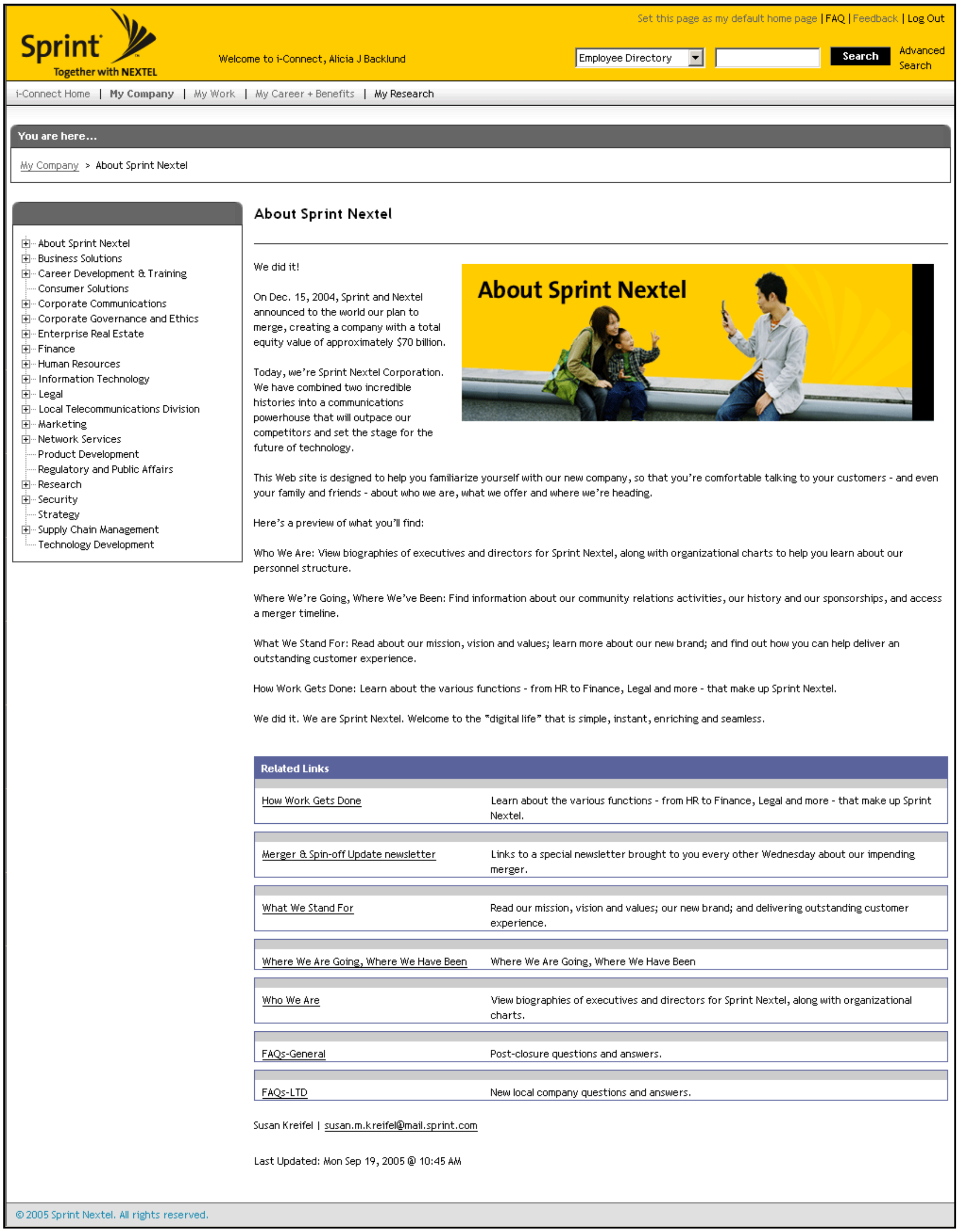


Sprint's version of the portal start page, i-Connect. While the page resembles Sprint's previous intranet, tab names and the color scheme, in particular, were updated.

The timing of the redesigned intranet's launch was no accident. If the portal is an essential tool that allows employees to more easily do their jobs, then of course the portal also has to be on the cutting edge of major organizational changes. "When employees came into work the first day after the merger, we had some bells and whistles. We had a cool Flash file welcome message. We re-branded the log-in page, updated the headers and text to the new brand but otherwise the intranet pretty much remains the same … for now," says Nellor.

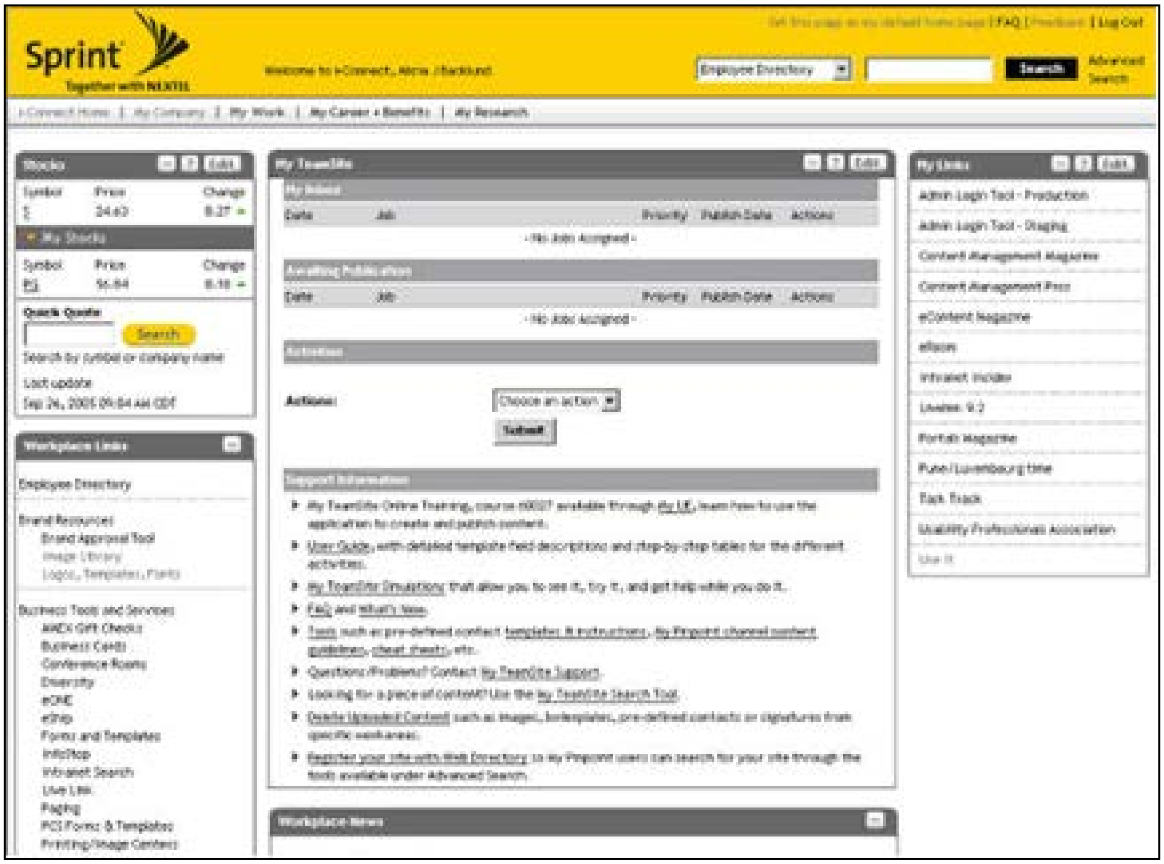
The intranet team did design one bit of synergy: it redesigned the "My Company" page with the merger in mind, detailing the heritage, people, organizational chart, analysis of how things get done, values, and branding of both organizations. "We coordinated that content with Nextel's portal," says Nellor.

"The messages were the same, almost word for word," notes Backlund. What better way to inaugurate the existence of a new organization?



The night the Sprint Nextel merger was completed, both Sprint and Nextel launched new *About* pages to reflect the new, merged organization. Over the following year, the portal design teams studied how to combine the two intranets beyond just the similar color scheme, fonts, and logos. As of this writing, intranets were to be maintained, even when there's duplicate content.

The new look for the intranet wasn't a full-fledged redesign at all, but rather just a way to quickly make the intranet reflect the new Sprint Nextel entity. While only Sprint was interviewed for this report, the Nextel intranet also features similar navigation — just one step toward merging the two organizations.



One of the five top-level pages in the new Sprint Nextel intranet.

Planning a Full-Fledged Redesign

Of course what exactly Sprint Nextel will look like in a year's time is unknown, and that goes for the intranet as well. "Right now, pre-merger Nextel is still using their legacy intranet, pre-merger Sprint is still using their legacy intranet, and we are in the middle of making the people, technology, and process decisions that will ultimately lead us to a single intranet," says Backlund.

Then, she says, "We are still far from realizing the long-term vision of getting on a single platform with a single identity management system and a single content management system."

Of course significant resources are needed for such a project. "No one is under the illusion that this is going to be cheap, or easy or fast," says Backlund. "We're going to spend a lot of 2006 doing analysis."

BEST PRACTICES

Design

- Out-of-the-box doesn't mean ready to use. Remember most intranets and portals have poor usability. So even if a portal homepage design is based on an out-of-the-box template included with portal software, that's no guarantee the design meets the needs of users, or is usable.
- Simple is best. Good portal design doesn't have to mean fancy design. Busy users may prefer to get their jobs done quickly and go home, not play games and personalize their pages.
- Content trumps style. For most corporate users, content trumps style.
- Design for the corporate identity. Portal design should reflect the corporate identity but it doesn't need to be heavy handed. Employees are familiar with the brand and don't need much design reinforcement.
- Don't be afraid to follow the crowd. Most portal homepages look alike for a reason: a simple, functional design works. Also, since users only see their own company's portal design there's no risk of confusing two portals.

Information Architecture

- IA is challenging. Introducing information standards is more challenging than imposing design and layout standards, but far more important.
- One size does not fit all. Not all portals have a single homepage. In some cases, there may be many homepages unified by common navigation, not a single entry door.
- IA should be task-based. Don't assume the portal's information architecture should reflect the organization's departmental structure. Typically, it's better to organize information according to function, not department.
- Standardization doesn't just happen. Accommodating sub-sites and still maintaining a consistent look and feel requires a good library of standards and templates.
- Keep navigation simple. As one portal team member put it, "the intranet is not an expression of your ego." Don't add unneeded bells and whistles just because you can.
- Minimize the use of opening new windows or tabs. Try to restrict this practice mainly to stand-alone applications or outside links. When opening a new window or tab, inform the user that this will happen by placing an icon or indicator next to all links that open a new window.
- Take a modular approach. Code the portal in a modular fashion to make it as flexible as possible. A modular approach makes it easier to add new features/sections and integrate them with old ones.

- Limit the number of tabs. Find a way to minimize the number of tabs. Unfortunately, departments often like to have their own content tab, as opposed to integrating their content into existing tabs. Conduct user testing to gather evidence to reinforce the importance of task-based content organization vs. department-based content structures.
- Program the back button logically. Have the browser back button always return the user to the previously viewed page. Some portal products cause problems with this functionality. Try to program a workaround to enable this feature. It will make it less frustrating for users.

Content and Features

- Think global, not local. International organizations need to build a portal information taxonomy that works globally — not just locally.
- Maintain freshness. Don't be afraid to enforce content freshness standards, and to make content managers of especially out-of-date pages prove their information is still relevant.
- Appoint a style manager. Consider creating the position of Portal Style Manager to help police the portal and maintain acceptable content freshness and design adherence. Designating said individual also gives contributors an obvious outlet for portal questions and concerns.
- Use fun features judiciously. Though portals are, by design, meant for accomplishing work, adding fun or lighter community-building elements can give a site more balance or help reflect company culture, however, don't go overboard with these types of features. Don't let them get in the way of users getting what they want and need from the site.
- Use ***Related Content*** links. Add a section (some companies favor the left side of the page) to allow users to easily find content related to the content they are currently viewing.
- Use the portal to help the organization through times of change. While mergers can be times of great upheaval, the portal can be an effective way to guide employees through the process, even starting with such simple things as the updated corporate look and revised *about* pages.

Process

- Prioritize. Intranet and portal design teams tend to be understaffed so focus those resources primarily on issues of greatest importance: portal features, content, information architecture, and other aspects of interaction design. Leave the simple stuff to the default setting in the platform.
- Guide with a strong hand. Workflow techniques can be used to persuade content providers to conform to metadata standards.

- Document everything — including changes. Take the time to document all requirements, wireframe sign-offs, approvals and change management requests. Don't cut corners on this critical step, even if there is only limited time or resources. This type of attention to detailed documentation pays off throughout the project life cycle. And it's just as important to keep track of changes as the project progresses. Keeping a decision log is an indispensible tool. It will save time and effort along the way. Being able to refer back to a decision document can keep the team from having to re-hash issues that have already been thoroughly discussed and resolved.
- Put the right people in charge. Employing specialist editors in each department, to handle information submissions to the portal, may help increase portal content quality and relevance.
- Choose initial users carefully. In phased portal rollouts, consider targeting initial parts of the portal at the employees who will gain the most benefit from using it.
- Take a phased approach. A phased approach is often the best implementation strategy and the best way to engage users along the way.
- Lead by example. Consider exerting greater control over high-visibility portal pages, both to ensure their quality, and also to set the standard for, and guide, content mangers.
- Look around. See what other departments and companies are doing. You can get ideas from them that can be applied to your portal.
- Use many different training methods. Teach users how to use the site, using a variety of different tools. Some companies have champions and then offer written instructions, user guides, short articles, videos, in-person department presentations. Others use other techniques and channels to get the message out about how to use the site. Even with a variety of methods there will still be people who don't know what they are doing but at least you've covered your bases and helped many types of workers accomplish what they need to do their jobs.
- Explain the WIIFM (what's in it for me) factor. Initial perceptions can kill new features if users don't fully understand what they can get out of the functionality. Once users have a clear grasp of how a tool can help them get things done they are more accepting of change.

Personalization and Customization

HELPING USERS FIND A NEEDLE IN A HAYSTACK

In a large organization, any given employee will need only a tiny fraction of the information available from the portal. The challenge, then, is to ensure they can easily find the needle of relevant information in the corporate haystack. Personalization is an important method of doing this.

"Someone from HR asked me for a metaphor for the portal," says Brent Bowen, senior manager of online strategy at Sprint. "I said the intranet today includes some 4,000 websites, so it's rather like *War and Peace*. But for me as a user, I only need maybe a sentence out of every page. The portal will be like a personalized set of CliffsNotes that bring those to the surface to me, so I don't have to sift through 4,000 sites to get the information I need."

When making the distinction between personalization (what the company decides a user sees) and customization (user-controlled viewing preferences), it is important to consider how important these attributes are and if the investment is worthwhile. Most portals have some level of personalization and nearly everyone we've interviewed says personalization features are highly regarded by both the organization and the users.

Paradoxically, many organizations have limited customization features and have achieved mixed success with them. The adoption and use of customizable features, it seems, is much more dependent on the organization and its culture. Some companies' users love these features while other companies have found they don't get used and aren't worth the investment.

PERSONALIZATION

Defining Personalization

What exactly is personalization? It turns out that personalization means different things to different people and is sometimes used interchangeably with the word customization. Technically, these concepts are different, especially as applied to portal attributes. Whether something is considered customized or personalized depends on who owns the burden.

Personalization can involve serving up information to users depending upon such things as their job title or role in the organization, or personalization can just imply a difference of emphasis or presentation. Personalization usually means all employees can access all content, but information and services less relevant to the individual in question may be buried at the bottom of the navigation hierarchy. Personalization in this context is essentially based on who the user is and where he works: the portal does the work (via programming) to present the content accordingly.

"We define personalization as what the *company* knows you need to be successful at your job," says a member of the corporate communications group at a large North American energy company. "For us, personalization is what *you* know you need to be successful at your job. Thus, personalization can be pre-determined, but customization requires the employee to become involved." Also don't expect everyone to get involved. For the energy company's portal (since closed down), "some chose to customize, but most did not."

ANZ adopted the following criteria to frame the parameters of personalization:

- Usually takes effect for more than one person
- System uses knowledge it has of the user to tailor the information delivered
- Focuses on user role or type
- Personalization could be based on:
    - User group
    - Business unit or function (for example, frontline/customer-facing vs. office-based)
    - Geography
    - Language

Pros and Cons of Personalization

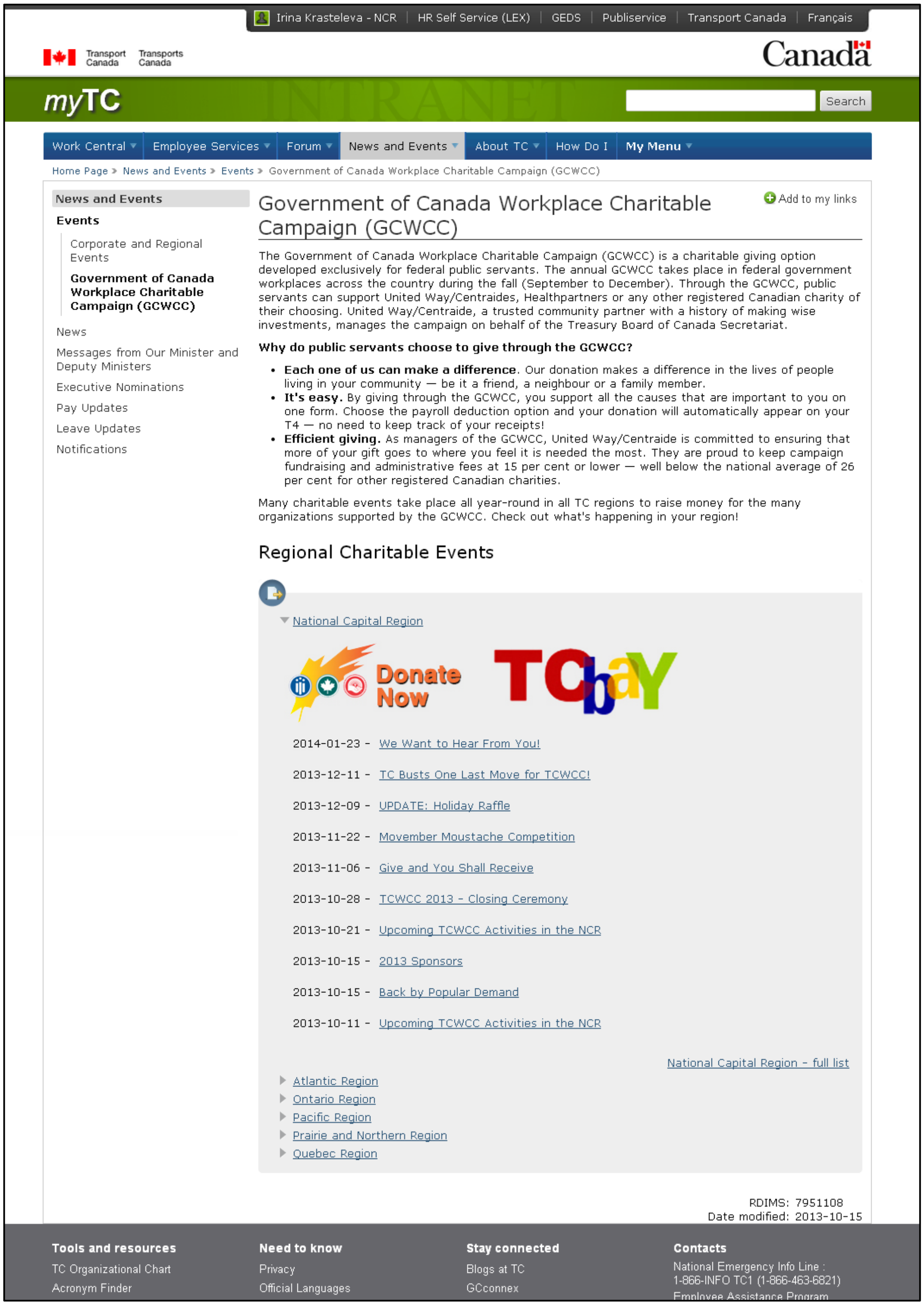
Florian Nachreiner, the company's user experience architect suggests the following pros and cons of a personalized system, at least as it is implemented at ANZ:

Pros

- Increases productivity: "By default, I am being shown what I need most"
- Cuts through the clutter
- Decreases risk of using incorrect or out-of-date information (for example, no New Zealand results shown if you search as an employee in Australia)
- More timely delivery of news (for example, news relevant to me does not disappear after a day because newer items have been added)

Cons

- Fairly high level, so not a really individual experience that could optimize productivity
- You might not get the content you need if you cannot change the default settings



On Canada's Department of Transport's portal, myTC, content is localized — displayed and/or laid out differently depending on the regional setting of the current user. As users navigate myTC certain pages are divided into sections, which will display a combination of both global/corporate and local content.

Inclusive vs. Exclusive Personalization

One school of thought regarding personalization holds that the portal interface should just make unavailable any content not deemed relevant to a particular user. Most organizations, however, take the view that personalization should be used to bring the most relevant information to the foreground, with other information still available at lower levels in the site structure.

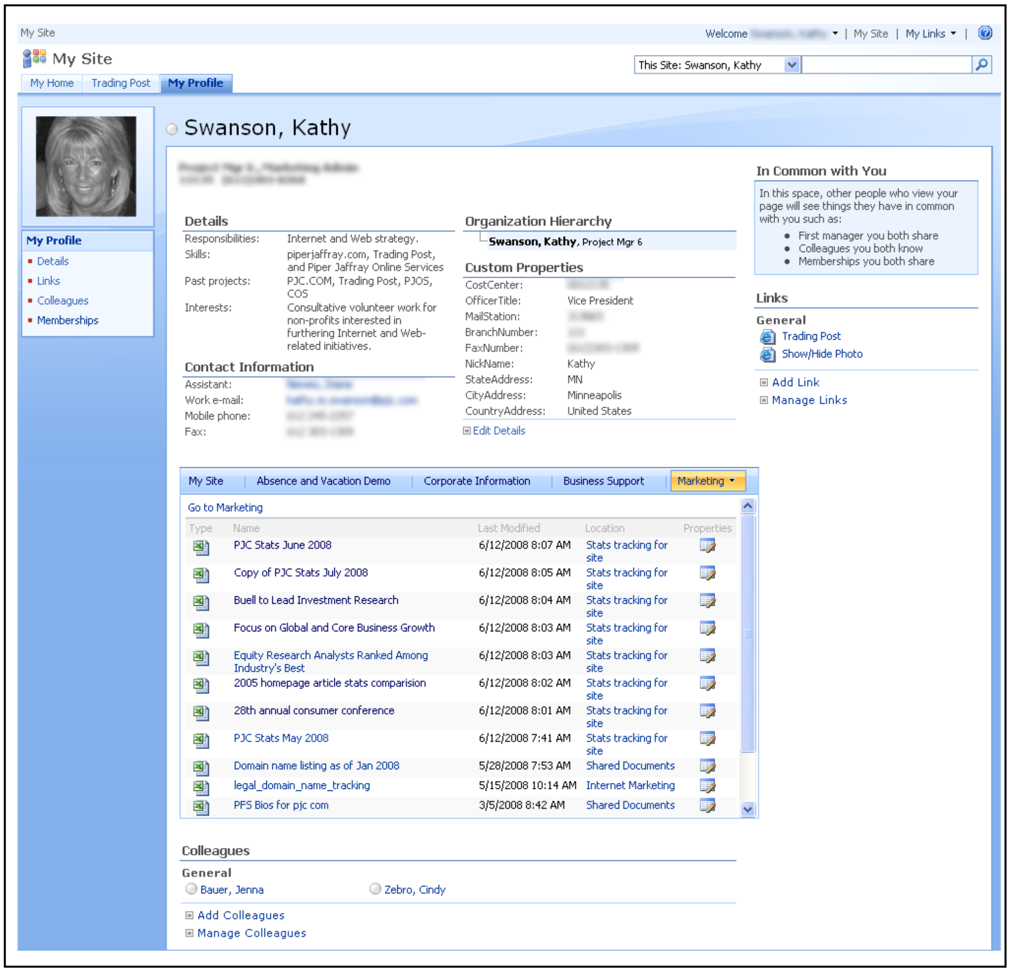
In a large organization, one practical reason for taking the lattermost approach is because it sidesteps the difficulty of deciding which content is and isn't relevant to any given individual. That view is espoused by Alex Langley of RICS. "We want to make sure people start out in their own member area, with the links that are probably most relevant to them. But we have to be careful we don't exclude or hide other content that people might be interested in."

One Size Does Not Fit All

Portals can be implemented in a variety of different ways depending on users' needs, which may vary on an individual, group, or country basis. Piper Jaffray for example, offers both personalization and customization on its portal. "We feel like certain items need to be department-focused and geographically-based," says Swanson. "We do business across the US, Europe and Asia and have learned that if headlines can't be targeted, you post only broad, firm-wide news, which means people are less likely to read the headlines because the stories are less specifically relevant to them."

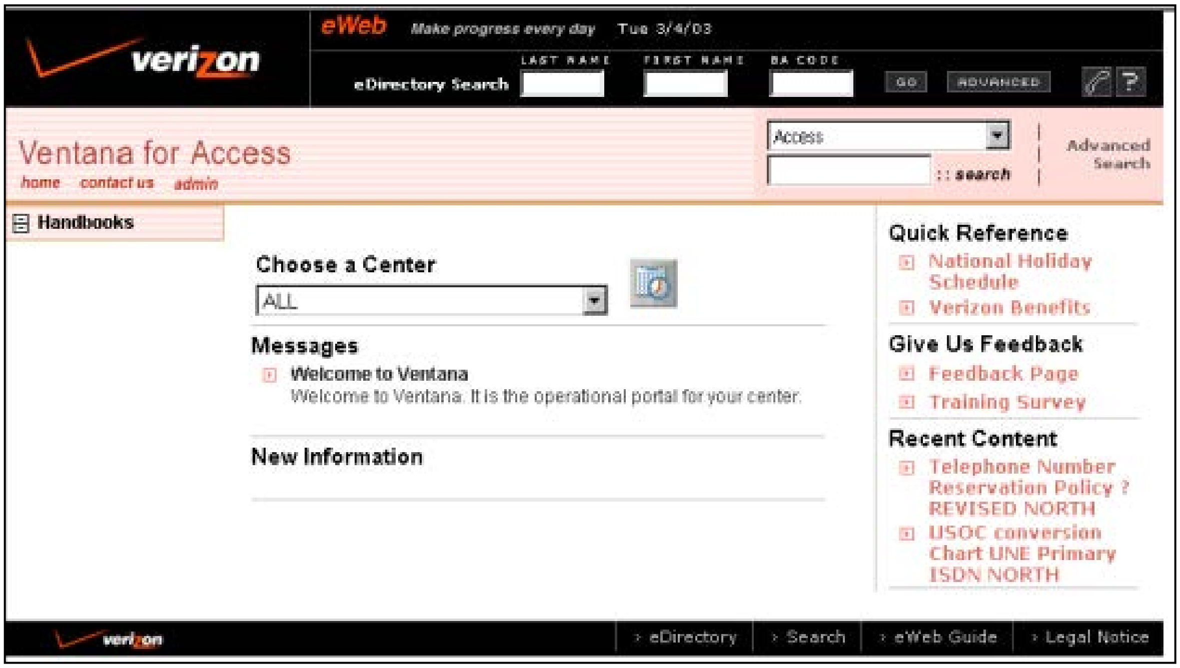
"With the new site," she says, "we provide company-wide information as well as employee-specific information, based on department and geographical location."

This information is directed to users based on their network credentials. This tells the intranet who they are and where they work.



Piper Jaffray's *My Site*, a native SharePoint tool that the portal team implemented as is. The company uses this feature as a way to connect people. Users can find others with specific attributes such as volunteerism or a skill, hobby or special interest. This was an early attempt at social networking for the company.

At Verizon, portal users start at the section of the site designated specifically for the center in which they work. There they see a mix of centralized content and center-specific content, which is locally maintained by a few people in each center who are designated and trained to maintain the center-specific content.



This is a customized page for Verizon's New Jersey center. The links in the left-hand menu bar refer to company-wide content originating from the centralized team that creates and maintains content for all locations. In the middle pane are center-specific messages and center-specific documents such as job aids, *cheat sheets and contact lists*. The right-hand menu bar holds center-specific quick links to other sites.

CUSTOMIZATION

Defining Customization

Customization usually refers to those elements of the site that the user is able to control, things such as favorites, shortcuts, themes, colors, and customizable news headlines. Customization depends on the user's ability to control the display or specify content him or herself.

ANZ's parameters for a customizable feature include the following:

- Relevant to the individual
- User takes the personalized information and further tailors it to meet their individual requirements
- If a user chooses not to alter his settings, he can still customize the content delivered to him through customization
- Ability to change default language to one of the other core languages
- Likely to be used only by more advanced users
- Has a direct effect on the UI/content (for example, opting to not view a "contacts" widget on the personal start page will have exactly that result immediately) as opposed to a more indirect effect that a change of "personal settings" may have on the UI)

- Has very fine granularity: The user could change his settings, and for example join some additional user/interest groups. He could then customize some effects this change of setting has.

  For example, joining an operations group (= change of settings) could result in additional Operations-related news items and an additional *Operations* tab being displayed (= personalization). The user could then unsubscribe from the Operations-related news items (= customization), but keep the *Operations* tab in his tab bar.

Pros and Cons of Customization

Nachreiner suggests that some of the pros and cons of customization may include:

Pros

More granular level of information, for example:

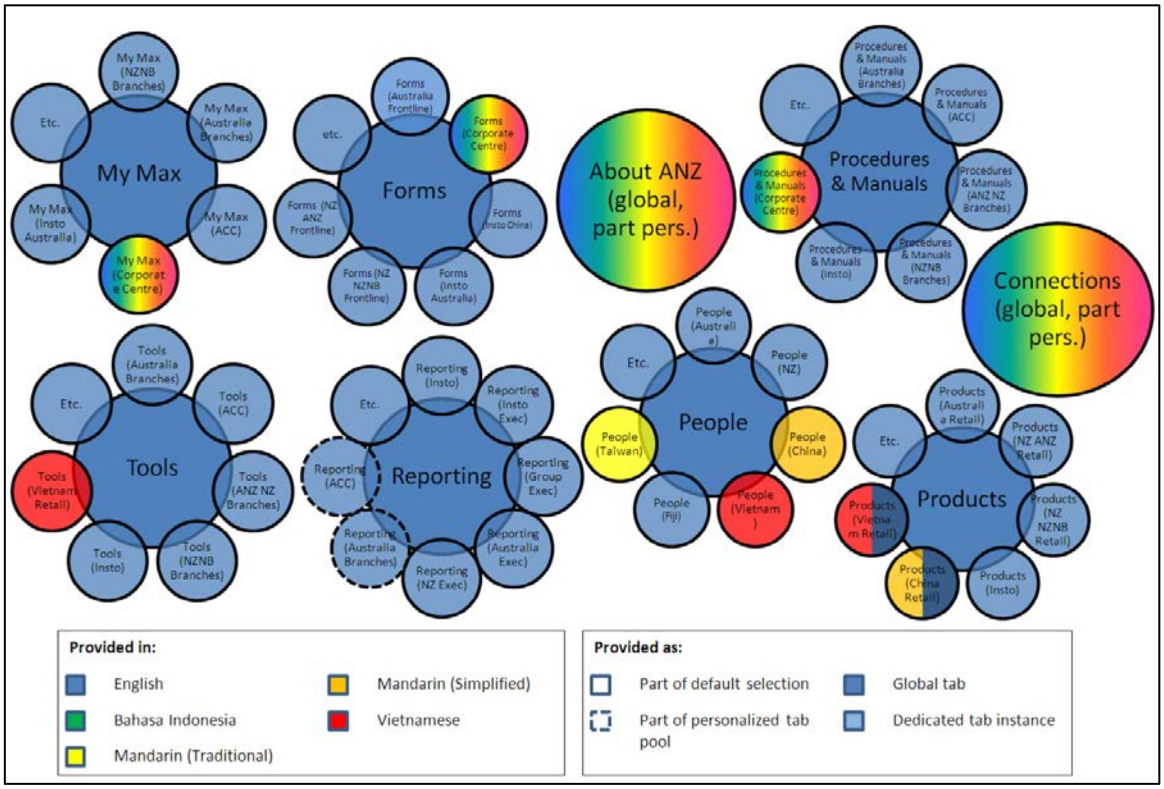
- *My Links*
- *My Widgets*: User decides which widgets he actually wants to be shown (for example, phone directory, share price, weather, *My Systems*)
- A user can move his widgets
- Look and feel would be customizable from a small number of design templates

Cons

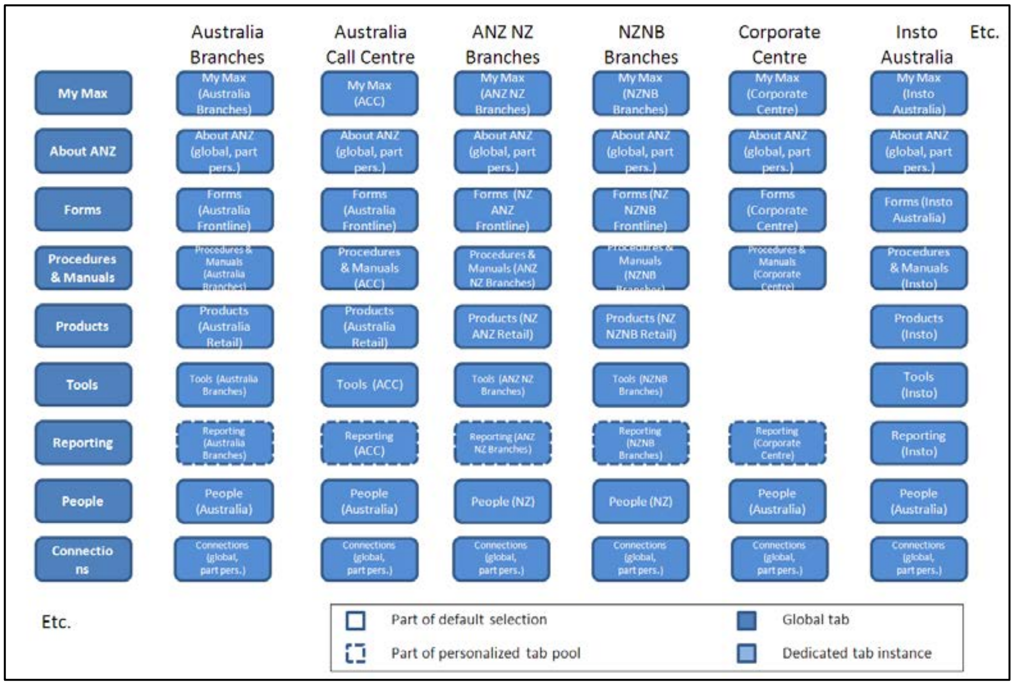
- Some staff work on more than one computer, or more than one person works on a computer so the system would need to save the customization preferences to the server-based profile not to the laptop/PC.
- Need to manage expectations because in reality only a small percentage of users ever customize their settings (according to an expert who consulted with the company, an average is 5–10%) so devoting time and resources to this effort would be a drain for a low return.

He says, in his opinion, the preference would be to get the personalization right and reduce reliance on customization all together. And this is a view shared by many organizations we've interviewed. While personalization can be a valuable tool to help users get to relevant information more efficiently, customization is a feature more requested than actually utilized.

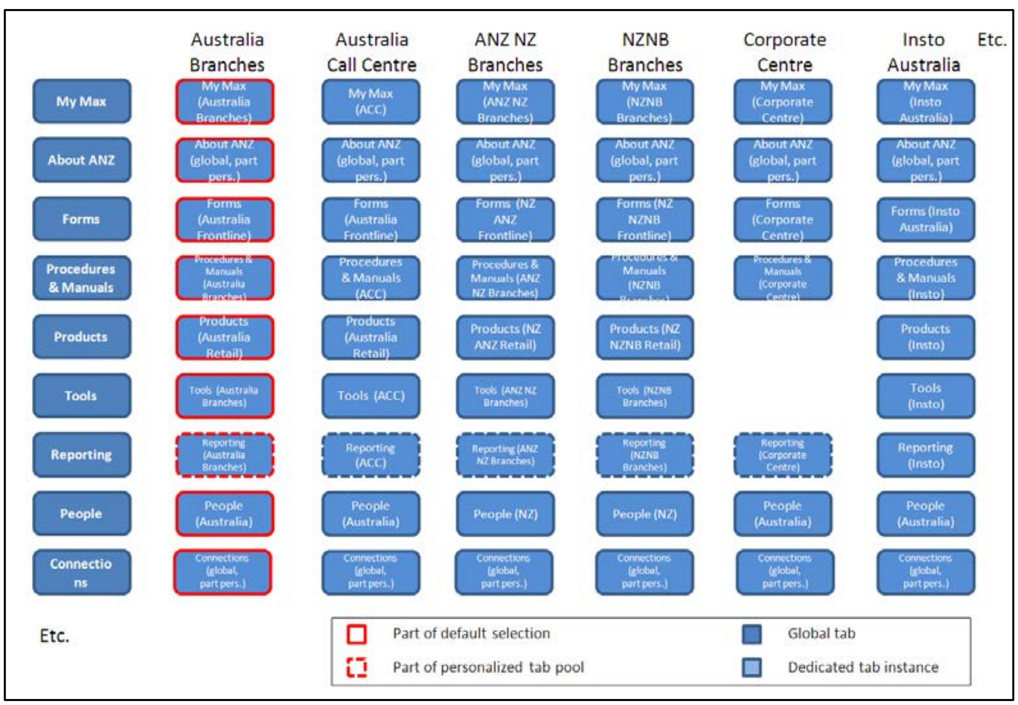
This screenshot shows the ANZ portal design for a personalized start page, which every user can access via the *MyMax* tab. The design is based on the persona "Linda," who is a transaction banker located in Shanghai. As with every other user, she is provided with a personalized and customizable selection of widgets on her start page. The news items and color scheme is also personalized and customizable.



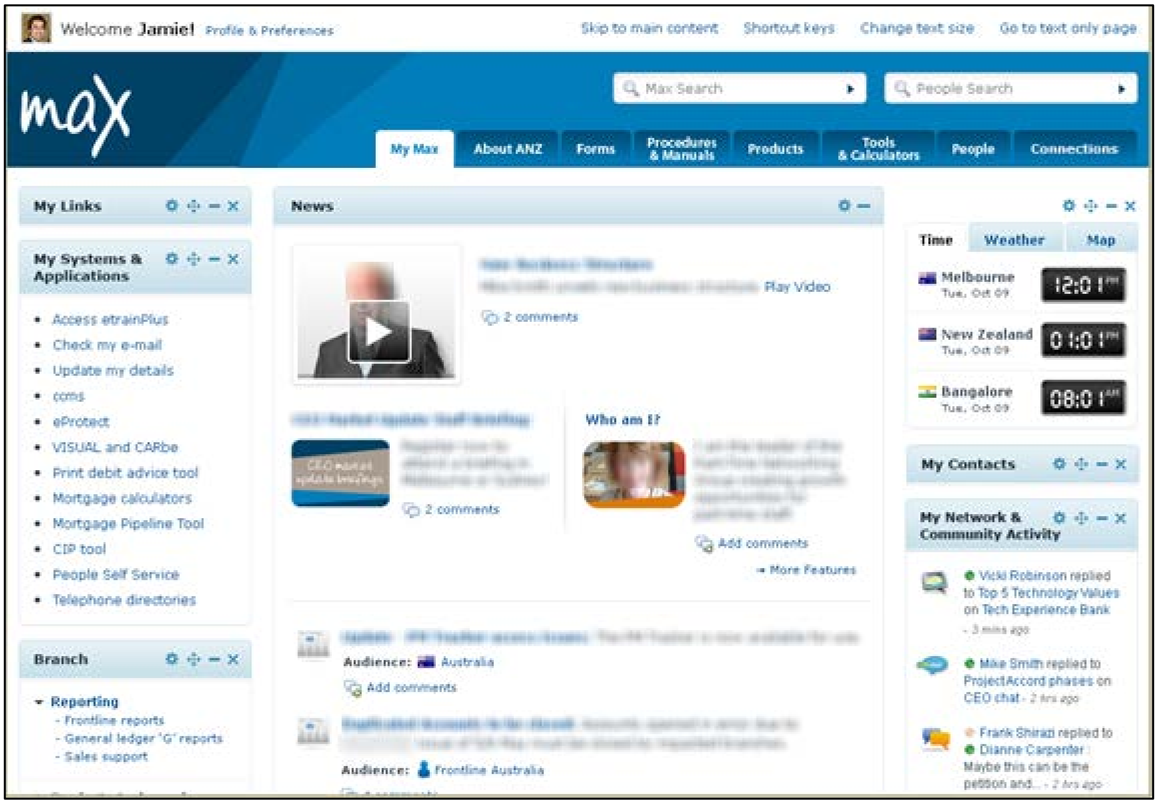
The ANZ portal personalization concept is based on tabs. Every tab exists in as many variants as needed, down to the user group granularity that is required for each tab (for example, the default content of the *Reporting* tab could be different for members of the user groups, Australia Branch Managers and Australia Call Center Managers, whereas all staff members in Australia, as part of the higher-level user group Australia Staff, could share the same default *People* tab).



This screenshot illustrates (as a matrix) the tab selection every user group is supplied with, and the pool of tabs they can use to customize on the ANZ portal.



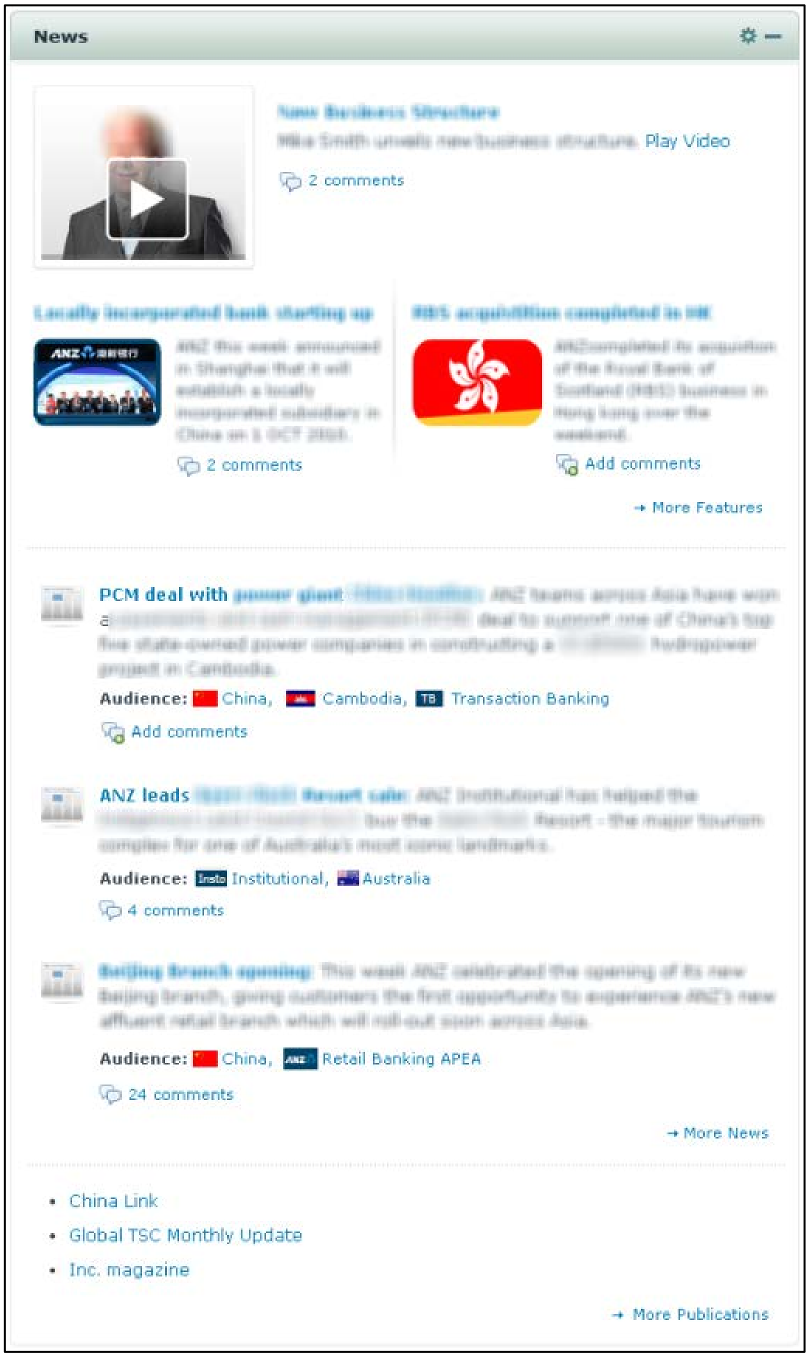
The tabs that are part of the default selection for a member of the Australian Branches user group at ANZ are shown here with a red outline). Tabs that will not be part of the default selection, but will be available for customization to the Australia Branches user group, are shown with a red dotted frame.



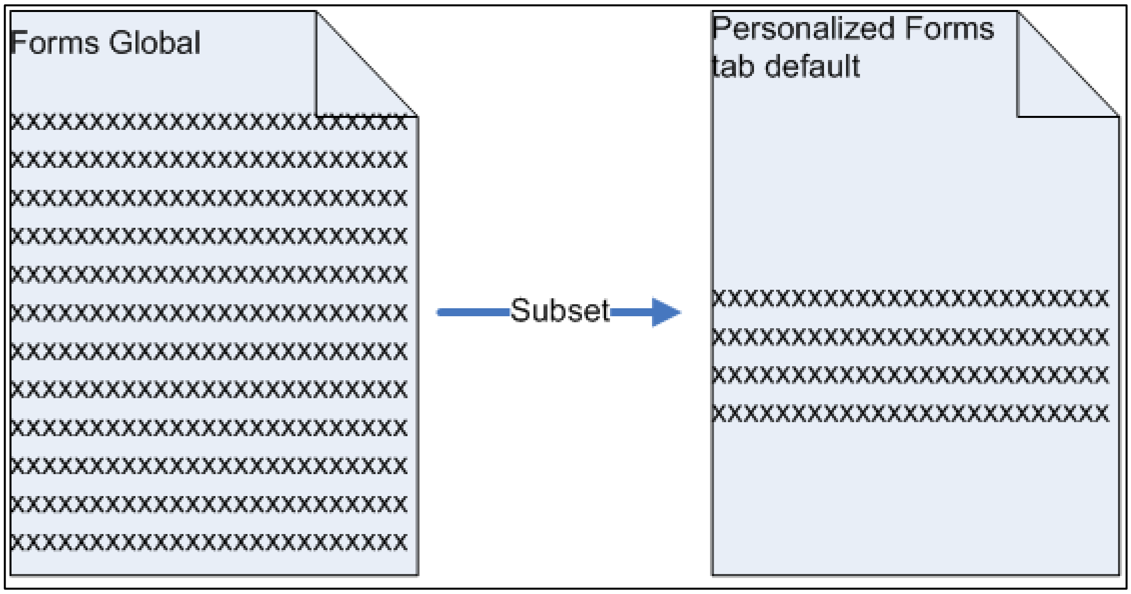
Persona "Jamie's" default start page. This screenshot shows how the default start page would look for the persona Jamie's on ANZ's MyMax portal. "Jamie" is a persona, representing Personal Bankers in Australian ANZ branches.

Persona "Jamie's" customized start page. This screenshot shows what the AMZ MyMax start page would look like for the persona "Jamie" after he customized it. He added the Reporting tab and removed the *Branch* widget and added the *Interest Rates* widget.

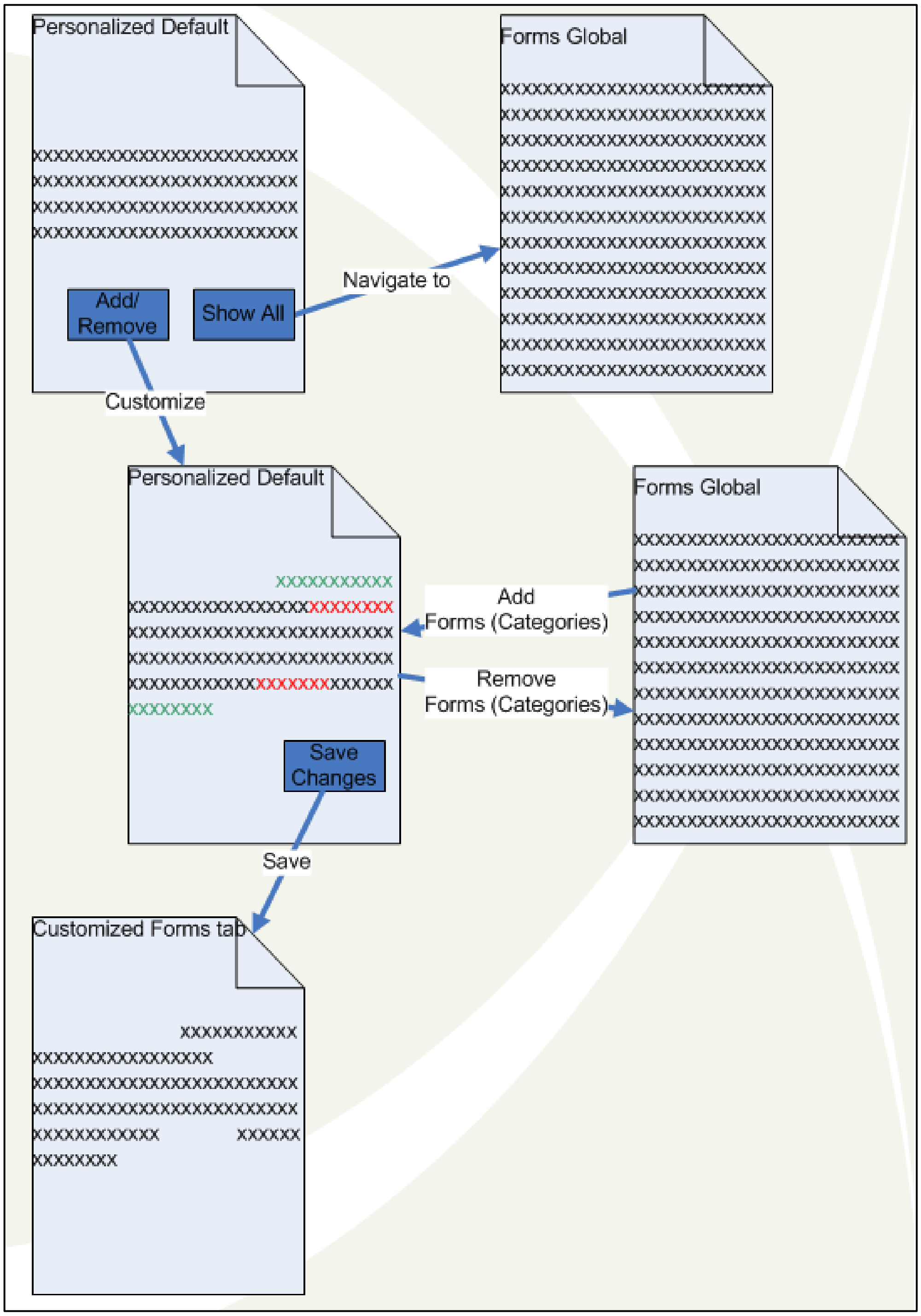
This screenshot shows a draft of how the *News* widget personalization will work on the ANZ portal. This view shows how the widget is presented to the persona "Jamie." This view is in contrast to the persona "Linda" (shown below). At the top there are features that are of interest to all staff, across the organization or a big business area or geography in the company. Below are news items that have one or more defined audiences. If a user is part of one of those audiences/user groups, the news item will be delivered to him. Below this is a link to the publications and newsletters that are relevant to this user.



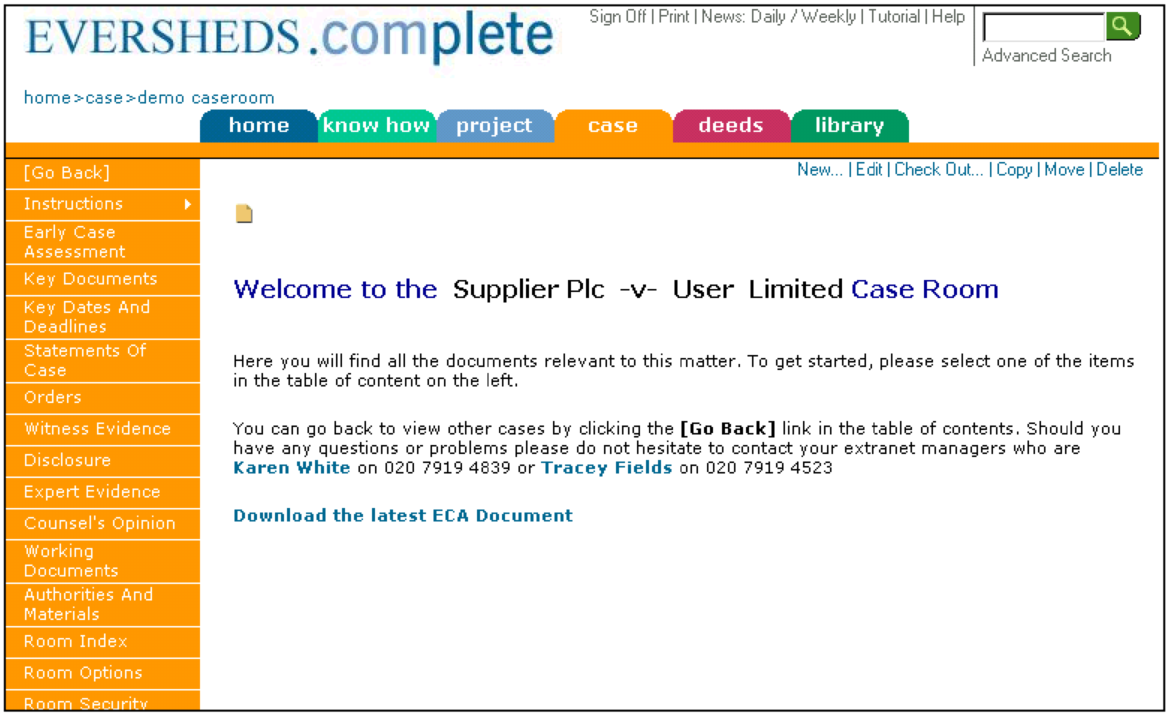
This screenshot shows the *News* widget as it is presented to the “Linda” persona. Generally every user will be able to write and publish news items, based on the permission he is given. The granularity of audiences is flexible though, so this means this can go down as low as to all Personal Bankers in a particular branch or a team of three staff somewhere in HR. Every team member could here be allowed to publish news items to that particular audience.



This screenshot illustrates the concept of progressive disclosure for the personalization of the ANZ *Forms* tab, where every personalized *Forms* tab is a subset of a global forms view. The forms regularly used by branch staff are different than the ones being used by Operations staff or Head Office staff. And branch staff in New Zealand use different forms than branch staff in Vietnam. So the aim should be to present a personalized subset of forms to every user that allows him to access his most regularly used forms quickly and easily.



With the *Forms* tab variant that is personalized to the needs of a user's user group as a starting point, this screenshot shows how staff could opt to navigate to a global Forms view that contains all Forms that are available throughout the organization, or let the user customize his personalized view by adding or removing forms.



The Eversheds client portal presents information customized for specific clients. Here, the Case Room system presents users with a personalized view of information relating to their legal work with the firm.

Is Customization Worth it?

While some organizations experience great success with customizable features others are left wondering if it's worth the time and money spent implementing features that are often requested but not often used. Presenting different views of content to different interest groups has clear advantages but the jury's still out on whether customization at an individual level is a must-have, a nice-to-have, or not-worth-having at all.

"It is a love/hate thing," says SanDisk's senior IT manager, enterprise process management, Ramon Lim. "Some people love it and others are afraid of it. We believe many people simply don't find enough value in it for the time it takes to do it. Relatively few employees customize their Sprocket homepage.

Dobiéy agrees with other portal managers who have said that customization is a much requested and often under-utilized feature of the site. "Everyone wants it [customization] but it is hardly used."

Early attempts at customization skewed toward customization for the sake of customization. Portal users don't want bells and whistles. They want information, and they want to get their jobs done as quickly and efficiently as possible.

Most organizations offer some level of user-controlled customization and many have found it a worthwhile addition to a portal. But layers of user customization such as the ability to change colors, page themes and the like are often either not fully utilized by users or don't offer enough value to justify the effort. On a previous version of its portal, one financial services company we interviewed gave users the ability to change site colors and the top banner. This functionality was ultimately scrapped. The site manager says it was a "maintenance nightmare" and the organization didn't gain much value from the effort.

HP eliminated the individual customization feature from its EMEA partner site due to lack of interest from users, some of whom actually found the feature counter-productive. "These people are professionals," notes Omar. "They use the site in the context of their work, they don't have much time to navigate around, and often they just see individual customization as an annoyance.'

Fraunhofer HHI gives front end users the ability to personalize their dashboard and edit their profiles. Intranet backend users can edit content on the websites they are assigned as editors. This concept of personalization, however, is not popular in the organization.

"Evaluating the usage statistics we saw that user are not using dashboard very much," says Sviridova. "There are only few clicks on it. Furthermore there are two main usage patterns, either users are activating all widgets at once or deactivating all of them."

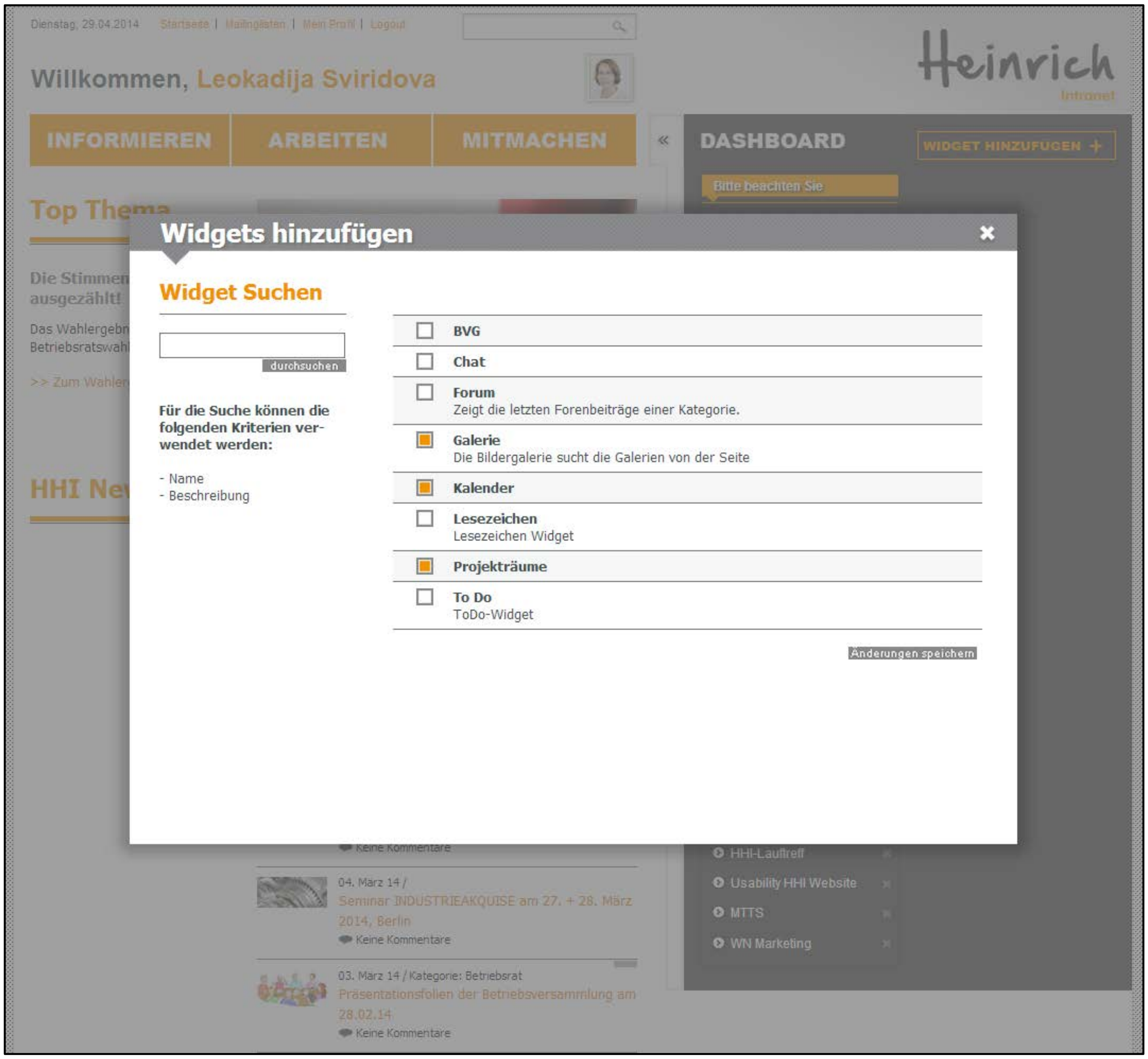
"The customization option is not popular at all. Users are unlikely to fill out and update their profile. Only approximately 25% of profiles are completed. Personalization on the dashboard is also not popular."

The reasons customization options fail can usually be chalked up to inherent value, and sometimes the company culture. Fraunhofer HHI has a predominantly middle-aged workforce, not steeped in the culture of online sharing and don't see its value. Also, there is no clearly communicated advantage to completing a profile.

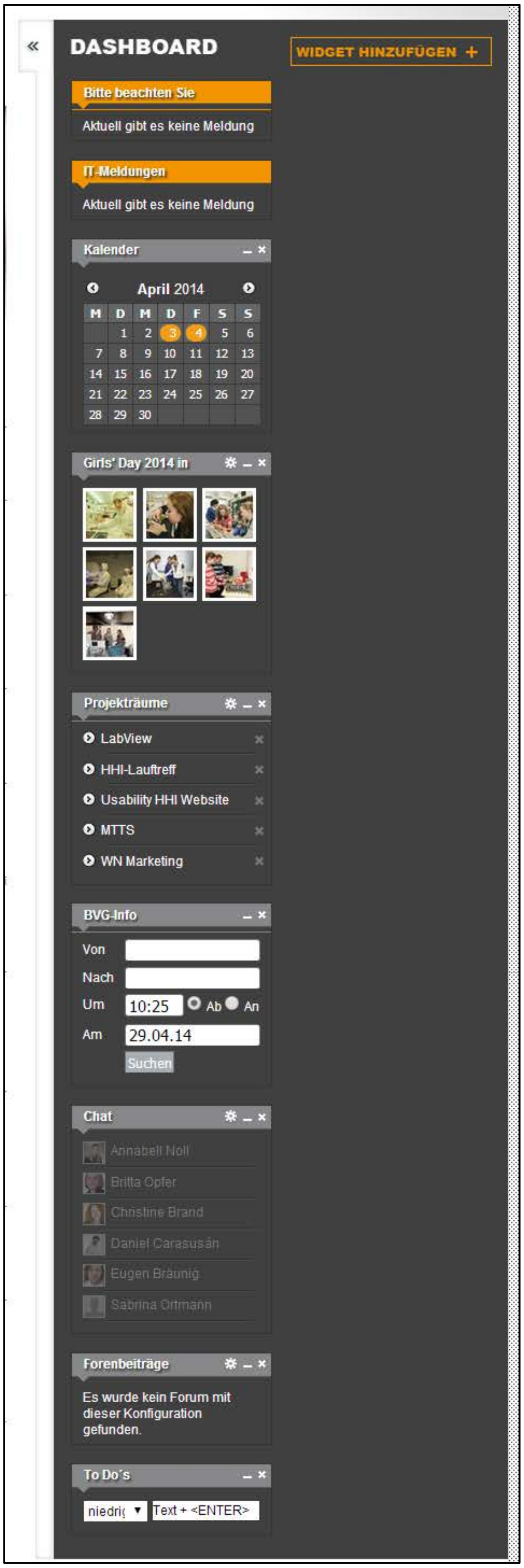
"At this point we could improve it by establishing knowledge management integration," says Sviridova. "In this way colleagues might see the advantage of filling out the profile, if it might result to the usage of their knowledge in cross-functional way, apart of the daily routine."

With regard to the widgets, they don't seem to provide enough value for users to put in the effort to use them.

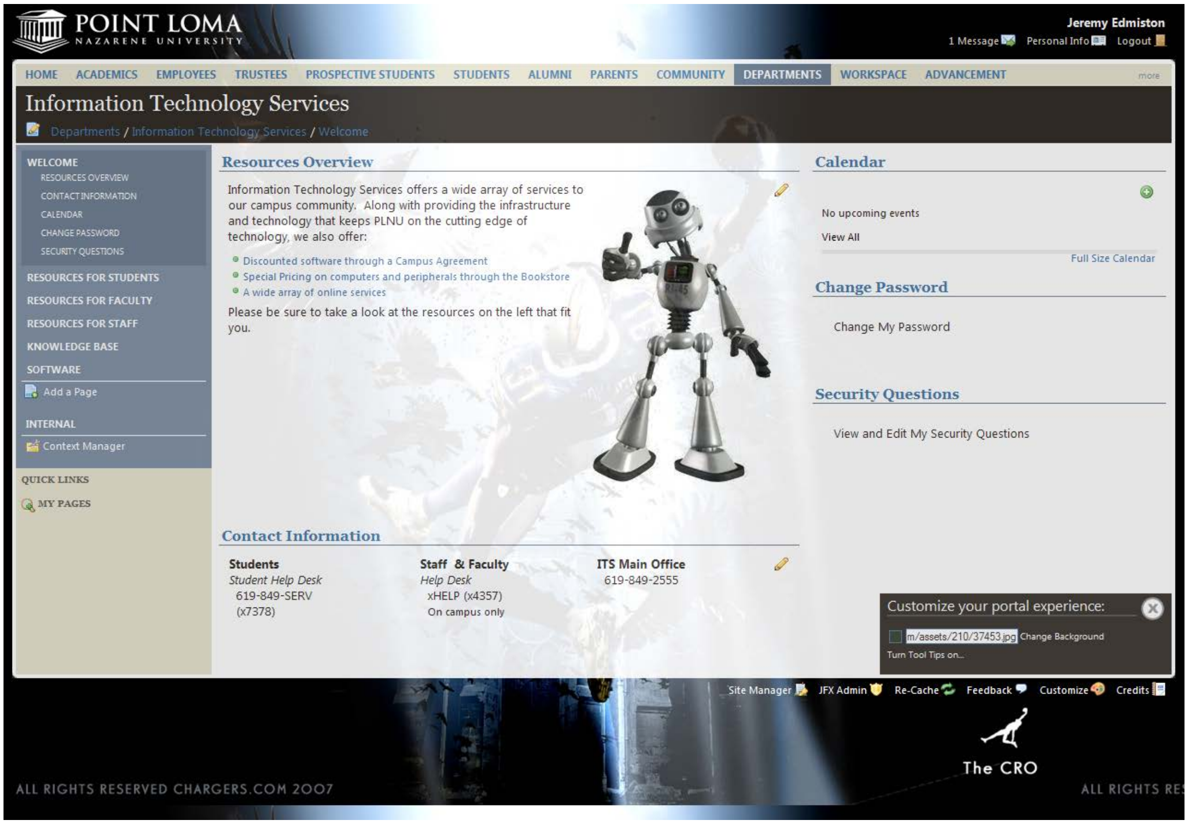
"Widgets are not meeting needs of colleagues," says Sviridova. "For example, the To Do list can be written on the peace of paper. The functions behind the widgets are not satisfying. Another example, the chat widget, there exist many parallel chat systems, which are used in the organization, Jabber-Chat for developers or simply Skype."



Widgets on the Heinrich Intranet of Fraunhofer HHI portal were designed to personalize the intranet for users but resulted in low participation rates.



This is an overview of the Heinrich Intranet of Fraunhofer HHI dashboard with selected widgets.



Point Loma University's student population likes the custom background capabilities (the IT department page shown here is one example). This feature enhancement feature has created a "major buzz" about the re-design. Originally, this feature addition was coded to enable color scheme and layout changes for vision impaired, but was extended to add a cool factor for the students.

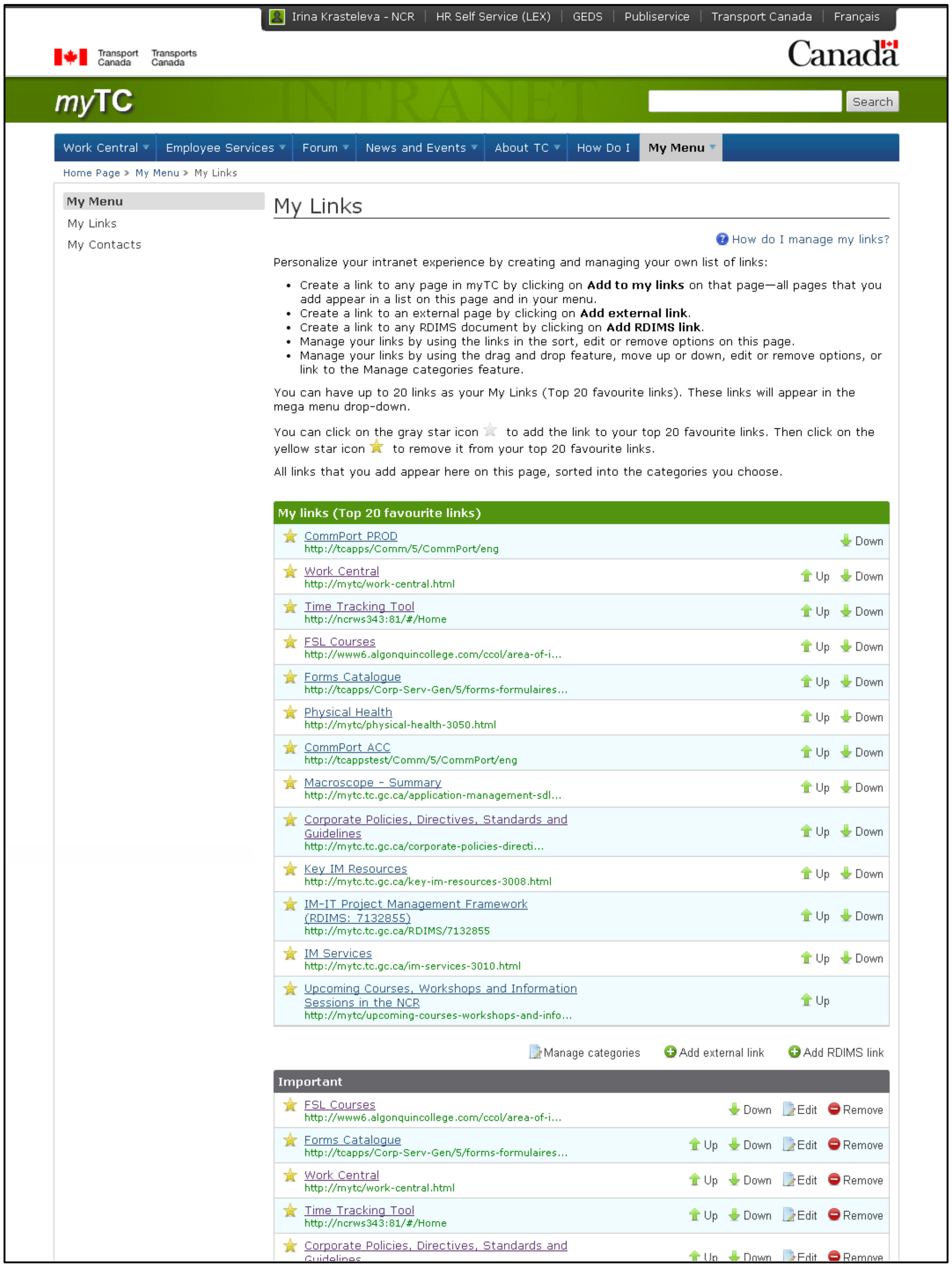
When Customization Works

The paradox of portal customization is that for every flop there is a resounding success story to counterbalance it. One factor contributing to this trend seems to be portal maturation. As portals have matured companies now use customization to help users streamline workflows and portal usage. Where customization once meant more frivolous features such as colors and themes it now usually means task-oriented user-controlled features. Portals that offer customization usually offer the ability to create personal homepages or control widgets that allow individuals to create their own homepage channels or personalized newsfeeds or save shortcuts to favorites and frequently-accessed document libraries.

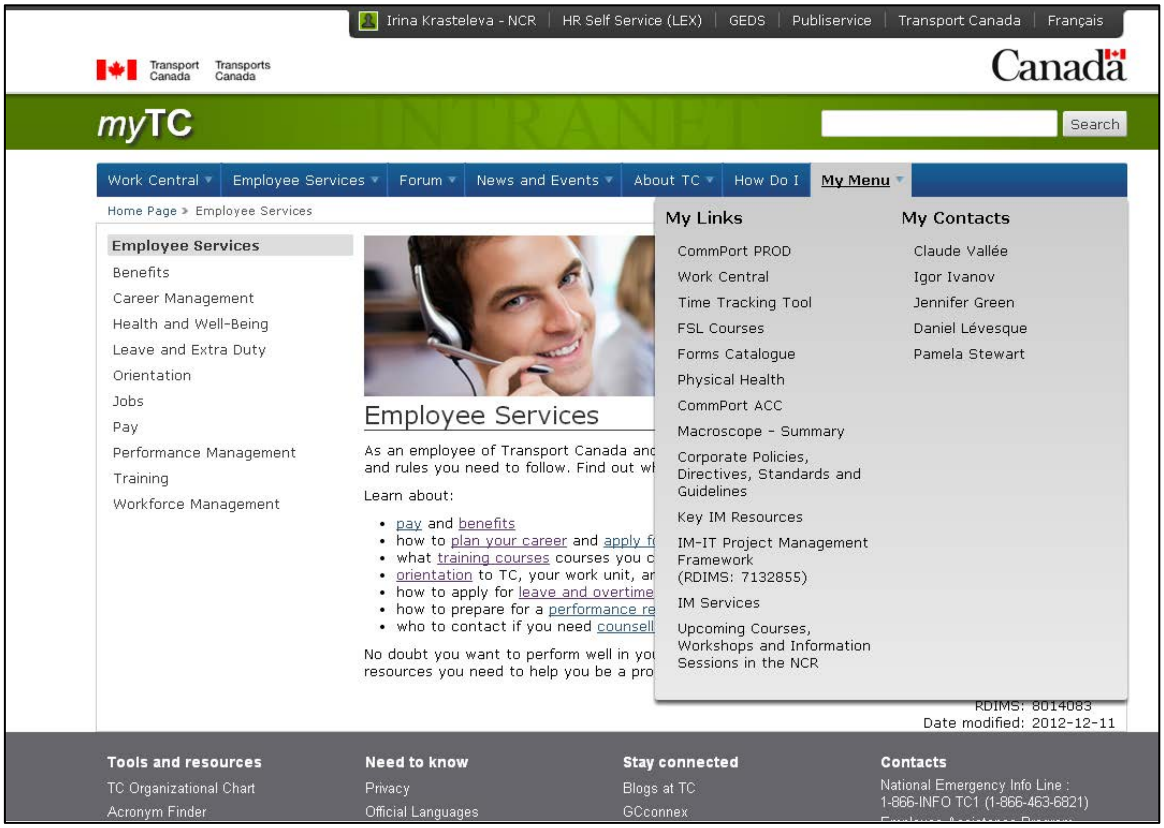
The Carle Foundation uses customizable features to help boost user engagement with the portal. "Improving employee engagement is a priority and this is one solution that we have offered to help with engagement and breaking down silos between departments, locations and individuals," says Skinner.

Some of the ways employees can personalize the site include:

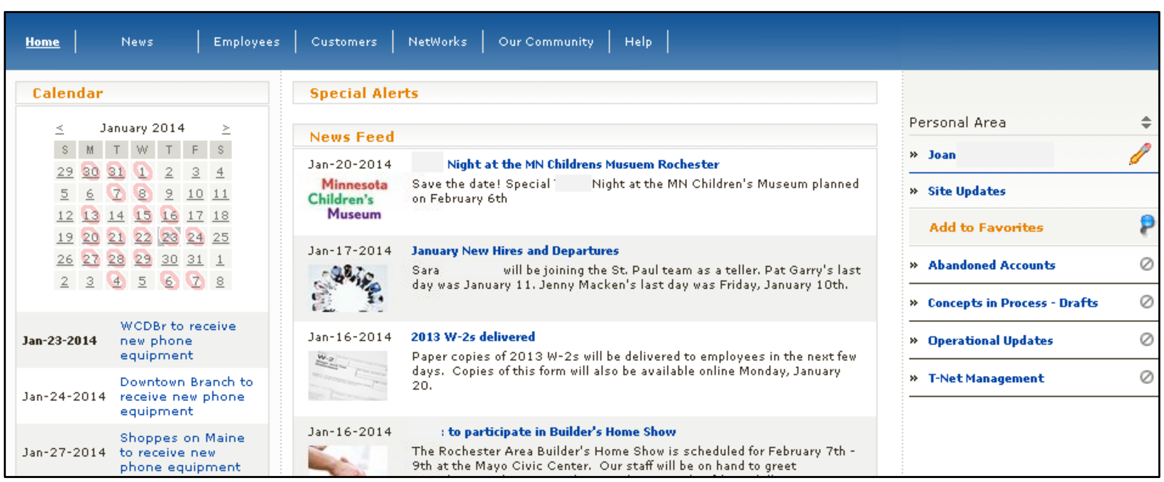
- ***My Links:*** Located on the homepage, employees can use *My Links* to manage a list of links/bookmarks to spots on CLICK (the intranet) or on the internet in general. "This has been a popular feature because employees can put links to their most used tool, form, application, etc. without having to use the menus or search," she says. "Additionally, when employees access the site from home or on a different computer than their desktop, they can access these links. We also have a similar feature called *My Team Sites* specifically for links to team sites. This provides a spot to organize and store these links. This is more used by leaders or departments that currently have team sites, and we anticipate more usage as we provision more team sites when we transition departments to CLICK over 2014.
- ***My Sites:*** Much of the information in the *My Site* profile comes from the personnel records database, but employees are allowed to change their photo can personalize other fields such as *About Me*, *Skills*, *Interests*, etc. This is feature is slowly catching on and the organization is encouraging all employees to complete the *About Me* section as an online way to introduce themselves to their co-workers.



Personalization of *My links* supports unique audience types and/or individual usage patterns on the Department of Transport's (TC) portal. Customizing frequently used links helps employees work faster and gives them timely access to information via links to both TC's website and document repository. The ability to manage and order categories is fluid. The left menu offers similar features for managing individual contacts.



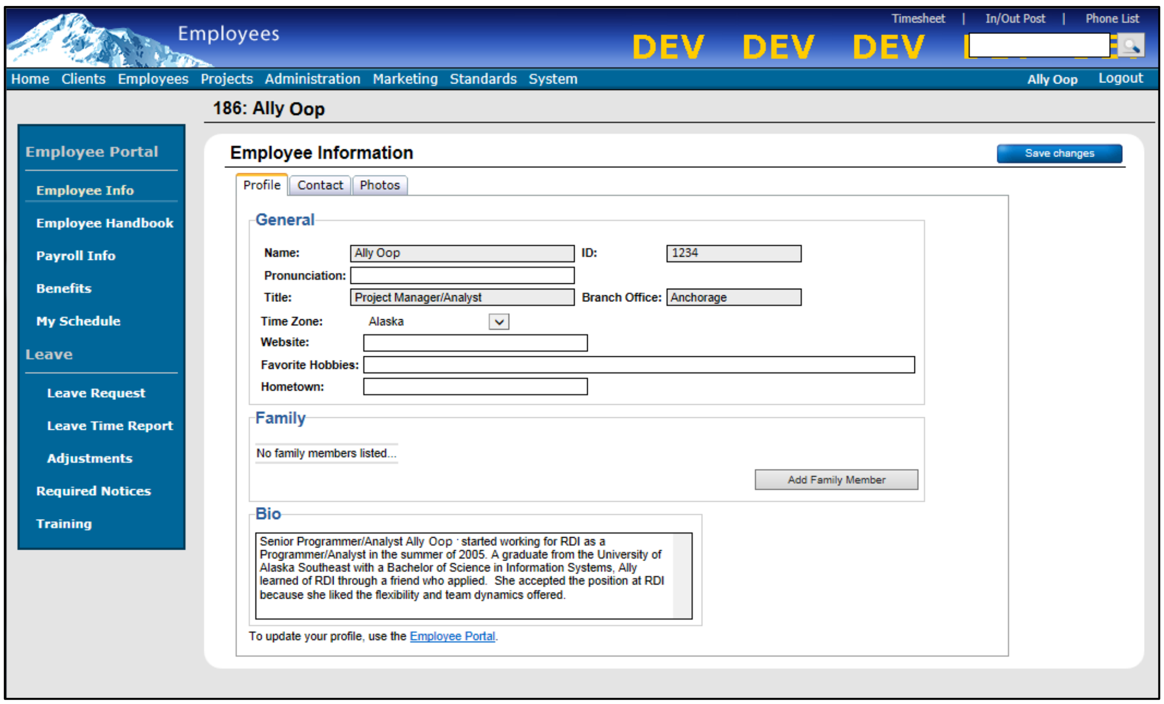
Also on the TC portal, this screenshot shows how *My Links* and *My Contacts* are displayed in the *myTC* megamenu, in the *My Menu* section.



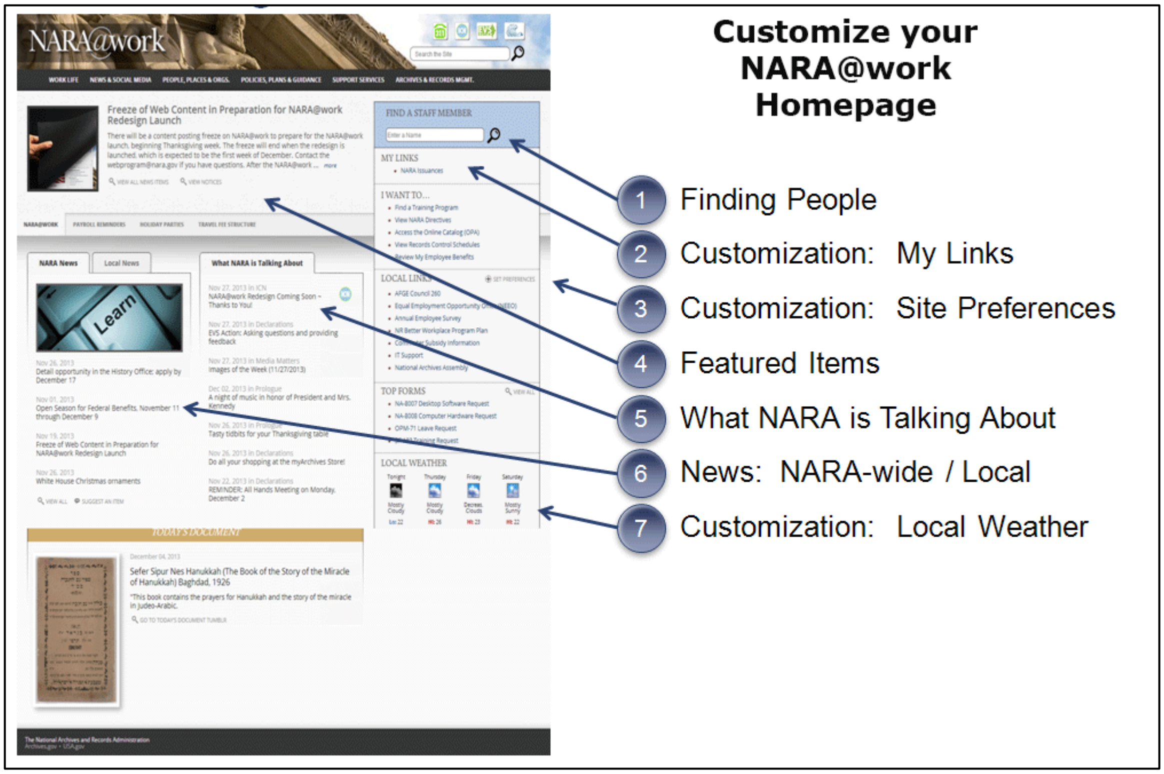
Think Mutual Bank's portal has widgets on its homepage that can be moved and customized. Administrators are given the flexibility to move boxes around. The widgets on the side can also be moved to the middle of the page, and can be reordered. Photos changed and link text edited. The homepage stays fresh because the company can react to the changing needs of the business. For example they can move the job openings to the top of the page or highlight the CEO Blog when there is an important message.

Resource Data gives users the ability to choose which quick links are available to them, choose whether the system will automatically redirect them to the timesheet page if they haven't filled it out recently, decide which kinds of automatic notifications they would like to receive, choose a rotation of photos to show in their profile and on the homepage, remove certain personal information from their profiles, and so on. The success of these features is anecdotal but it seems to be working for RDI's users. Part of the reason for the high user engagement is likely because each of the features that an RDI employee can customize was something requested by an employee in the first place. "Or maybe," says Collins, "it's because our staff are mostly programmers who are accustomed to configuring software to get desired behavior."

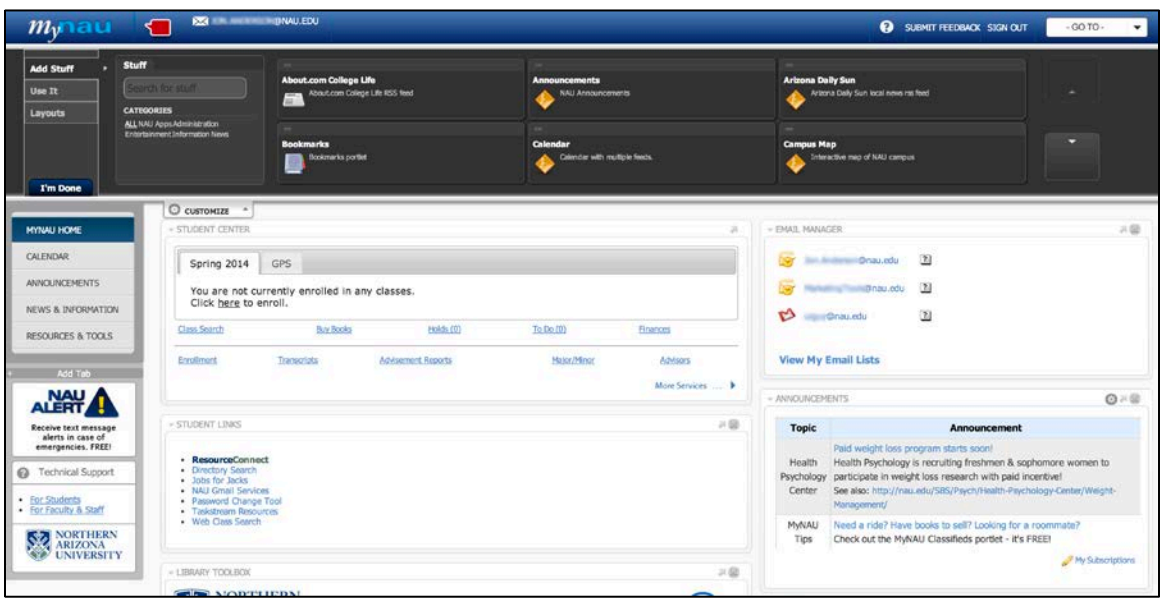
"We have not tracked usage," says Collins, "but judging by the volume of enhancement requests and complaints when a feature suffers a problem, they are popular."



On the RDI portal this tab lets users choose what information to share with the wider company.



This view of the NARA homepage points out some of the possible customizations users have available.



Customization was added on to the NAU portal after the fact. The gray/black customization menu (dropped down from top) was added in later by the IT team after the design was implemented. It allows the user to customize the layout and content but it does not blend well with the current UI.

Challenges of Out-of-the-Box Personalization

One of the biggest challenges with portals built on leading portal platforms such as Microsoft's SharePoint or Oracle and the like is the temptation to try to take advantage of the all of the platform's resident functionality. The fact that these packages offer many features right out-of-the-box makes it easy to underestimate just how much work is needed to fully implement them.

When Piper Jaffray's intranet team set out to include role-based personalization on the new site, they realized, perhaps a little too late, that it would be more complicated than simply connecting SharePoint to the HR database.

"In order to have information displayed based on role, location, etc., the HR database is not necessarily the best place to go," says Swanson. "We needed to gather the necessary information from several sources."

"What we didn't realize was how complex SharePoint would be in the way this information could and would be used. It was a new platform for us," she says. "No one really understood at a full strategic view how that [data] came together.

When companies like Piper Jaffray encounter these sorts of challenges with portal technology, they are faced with a decision: bring in outside consultants to quickly solve the problem or free up internal resources to capture the institutional learning.

"We made a decision to learn as much as possible about the SharePoint infrastructure with internal resources to keep the knowledge within the company versus outsourcing," says Swanson.

In the midst of a portal implementation, that can be a tough decision. If she had known beforehand how complex the data integration would be, she could have ramped up those internal resources in advance. The lesson learned when dealing with complex portal solutions: sometimes you don't know what you don't know.

APPROACHES TO PERSONALIZATION

Because personalization is such a key feature of intranet portals, we decided to continue to include many older case studies from previous editions of this report alongside more current personalization models. We have chosen to present old and new side by side for two practical reasons:

- Personalization is difficult and often complicated to achieve. While personalization is considered a critical component of what it means to be a portal it is not always easy to implement or execute across disparate systems that determine a user's role, needs and access requirements, and
- It's a slow road to achieve comprehensive personalization. Many companies take small steps toward offering personalized access to information on the portal so we feel it's valuable to readers to be exposed to as many different approaches as possible. Including older examples alongside the new ones allow readers to how different models have been executed in a variety of different organizations.

PERSONALIZING COMMUNICATION

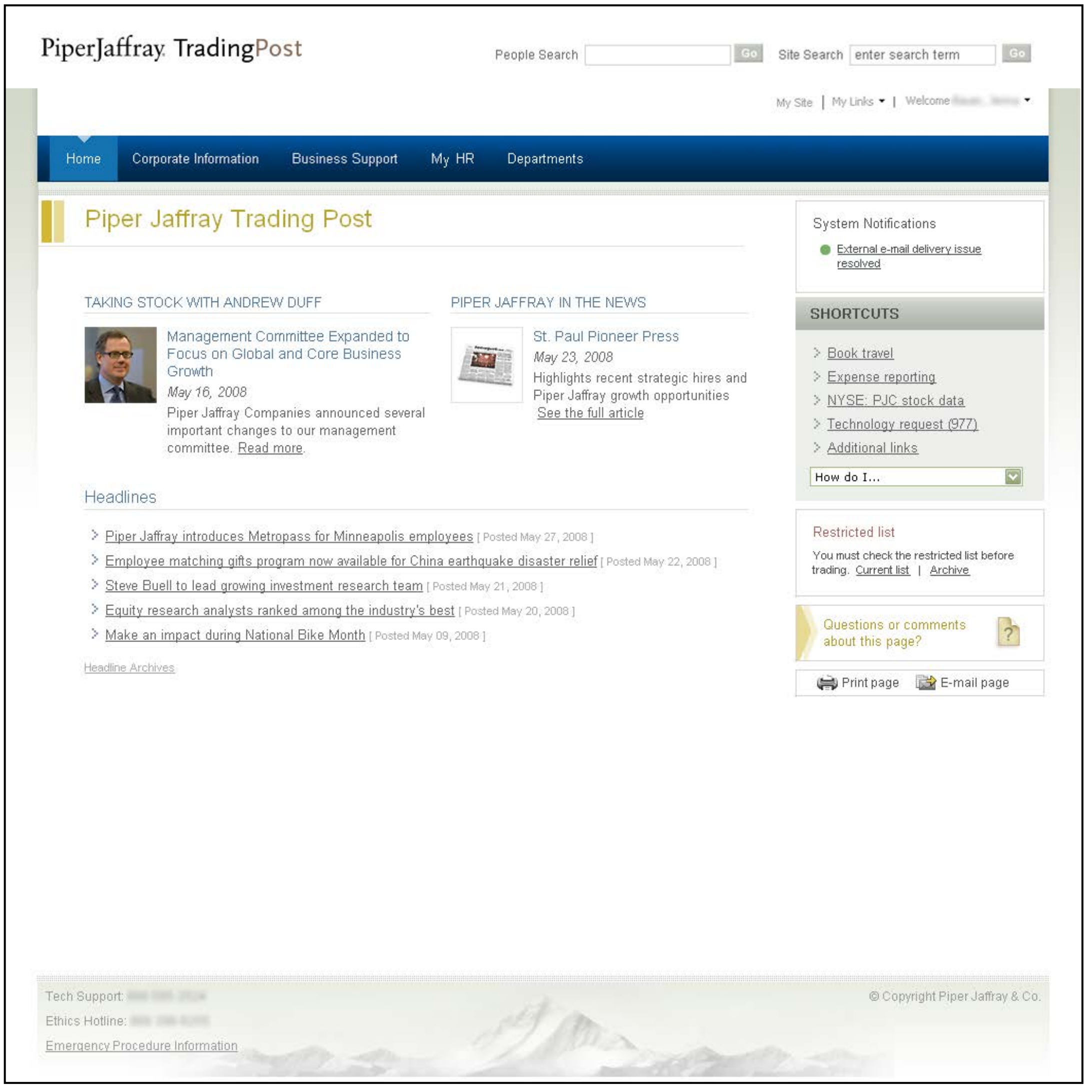
Newsfeeds, RSS, and personalized news are standard features on portals just as they are on many websites. Some portal projects are actually borne from the need to communicate this kind of information more quickly and effectively and in a more targeted way to users across organizations.

This was the case for one financial services firm that rolled out personalization to over 110 roles across one of its divisions. Employing role-based personalization to all the company's branches allowed the organization to send out messages and streamlined news to its nearly 70,000 employees. This same organization uses a company newsfeed to feed targeted news to their employees based on their job function. This types of personalization eliminate the need for mass emails and reduces the clutter in user's inboxes.

Personalized information was not only the impetus for company's portal re-design it is also how the organization is measuring the ROI of the redesign. "Rather than cascading information or passing it along, our communication is more centralized," says an anonymous company source. "We are now able to reach a targeted audience. That is huge."

Users at Strategic Logistical Alliance see homepages that are personalized according to each department's requirements, but they can further personalize the page by subscribing to other business-related data feeds that supply them with data visualization tools and external RSS feeds. All of this customization is accomplished though what the company calls the "communication hub," a single place where all messages, notifications, subscriptions and news can be read. This type of hybrid personalization is common. Many companies employ some sort of role-based personalization along with some facet of individual customization.

Dell's portal allows users to subscribe to RSS feeds for industry and job-related content from the web. Eventually, Moorhead says, he plans to have the portal offer internal feeds as well, but currently there is not enough content to make this worthwhile.



This is an example of targeted headlines for a specific office location (Minneapolis) and system notification messages based on geography and/or department, used on the Piper Jaffray portal.

A HIGHLY PERSONALIZED PORTAL EXPERIENCE

Persistent Systems is the poster child for using role-based personalization for the win. The company's portal is designed in such a way that every component is role based and location aware. Madhuri Tambe, Program Manager explains: "There are widgets developed for specific roles and people can see only those widgets to drag/drop on their personalized home page. There are many analytics dashboards given to people in C-level roles that are not accessible to other employees in the company. These roles are integrated with the employee's roles in the line of business applications and Active Directory."

In addition to the role-based structure, the portal is location aware also and shows the information to people based on their current deputation location.

“We have a role-functionality matrix created by our business analysts,” says Tambe. “It becomes base mapping for roles and widgets enablement mapping. This will define the default page for users in each type of role. People then are free to personalize their page as per their convenience.”

Users can customize (add/remove) widgets on the homepage. They can also rearrange the widgets in layouts of their choosing. There is a portion of the homepage that is fixed. This section is reserved for data elements that are pushed by the company’s executive management. There are also other shortcut links on the page, which also are customizable.

Adding this mix of functionality to the portal means there is a homepage for every kind of user. There is something for everyone, and with personalization features users can pick and choose what they need and what they love to create a portal that is best suited for them.

Applying role-based personalization was a very high priority for the organization. “This feature helps the users to remain focused critical action items and does not dilute it in the crowd of enormous information targeted to everybody/nobody,” says Tambe. “This was not an explicit need people had expressed, but based on various pain points they had told to our BA team, we figured it is needed.”

Most of the users were ecstatic when it was delivered. “It is one of the most loved features of the new intranet,” she says. “It is a must have for an intranet portal.” And role based content delivery is much appreciated by senior management and executives in the organization.

It was also truly appreciated by the employees. Large amounts of content on the intranet were found to be of no use to the employees so the team believed replacing it with more personalized content could lead to enhanced engagement.

“In the old intranet, the highly popular functions were spread across categories (Cafeteria Menu, Leave Management, Company News etc.),” says Tambe, “and were mostly hidden deep inside the navigation, requiring many clicks and pages for access. Providing for a place where users could bring such varied and popular functions together could enhance efficiency of usage.”

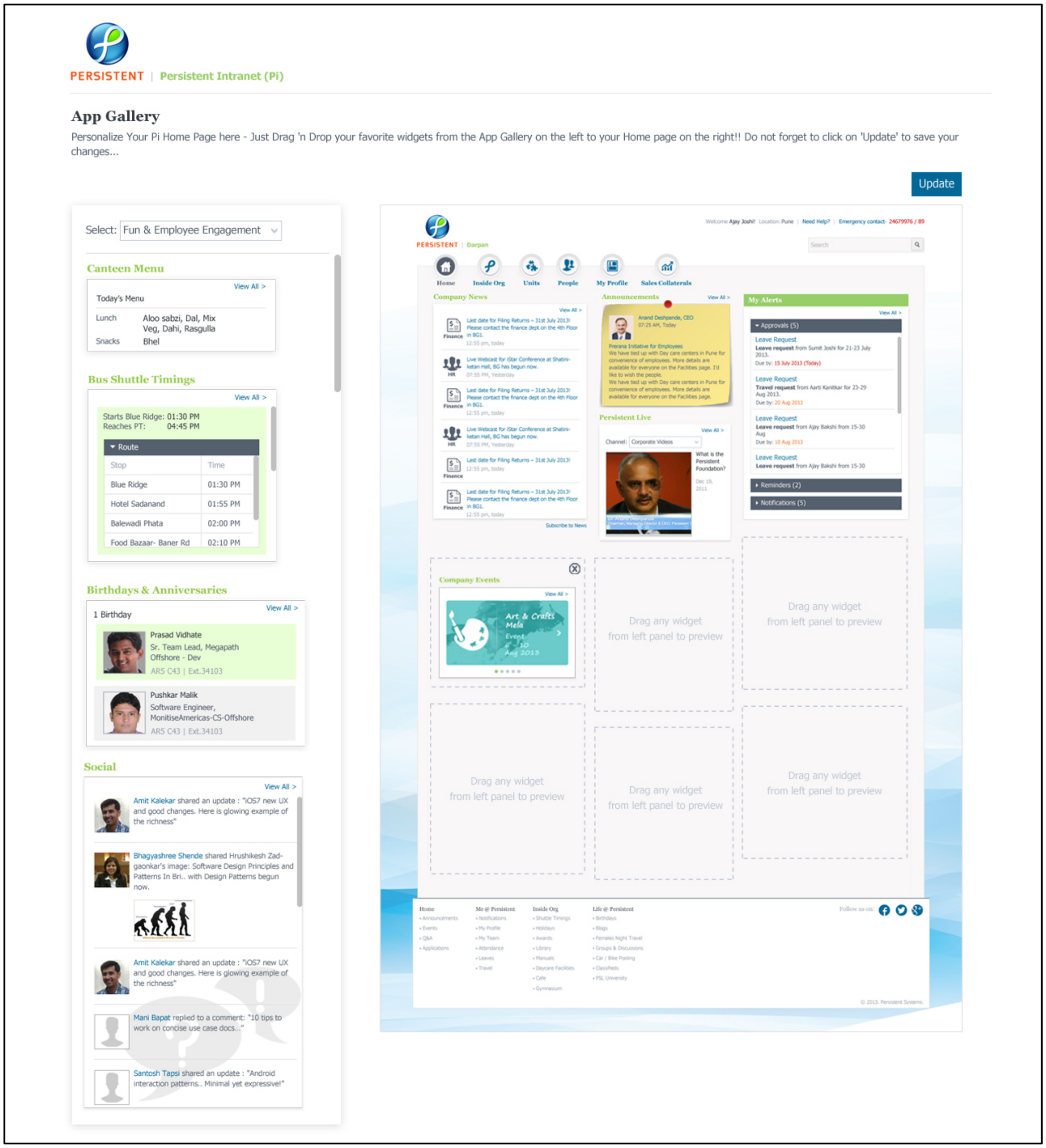
Personalizing the content was also a practical consideration as the site’s most popular intranet functions varied widely across user groups and profiles. “Hence it was not possible to create ‘one’ UI which could cater to the needs of all,” she says. “Customization was thus imperative.”

Before kicking off the new intranet initiative, a user satisfaction survey was conducted. Users were encouraged to share feedback. One of the common complaints was that the old intranet was cluttered and had too much information that was not relevant to many users. That finding led the team to believe that the content needed to be personalized for each user.

When devising the personalization approach for the new site, they articulated two personalization goals:

- Content that is delivered must be role based and location aware, thus delivering content that is relevant to the user
- Users must have the choice to personalize the widgets on the landing page

This targeted approach has paid off for the company. Site usage continues to be very high after implementing the personalization and the only change that is noticed so far is that “the users ‘love’ to visit the portal and may do so even when it not a business need,” says Tambe.

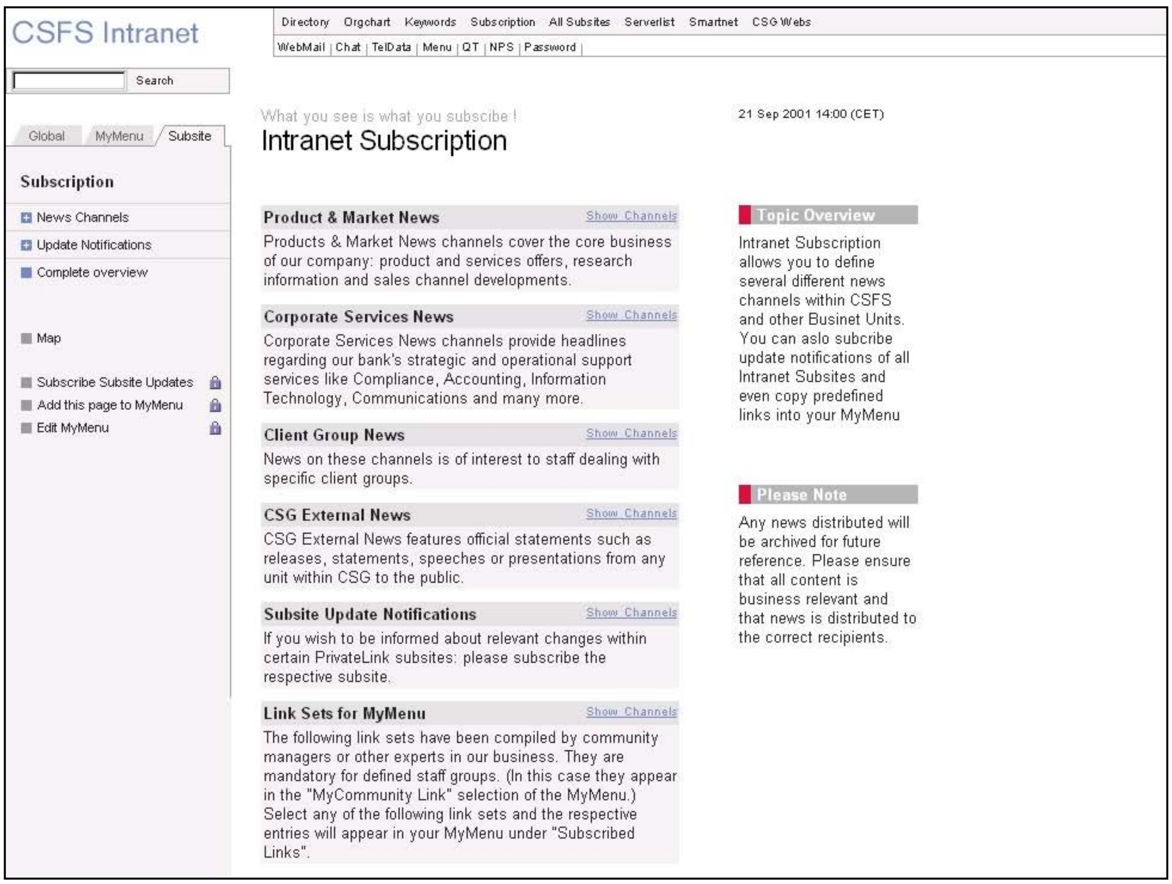


This screenshot from the Persistent Systems portal shows how users personalize the homepage by choosing what widgets go where, based on their individual needs.

CREATING A SENSE OF COMMUNITY AT CSFS

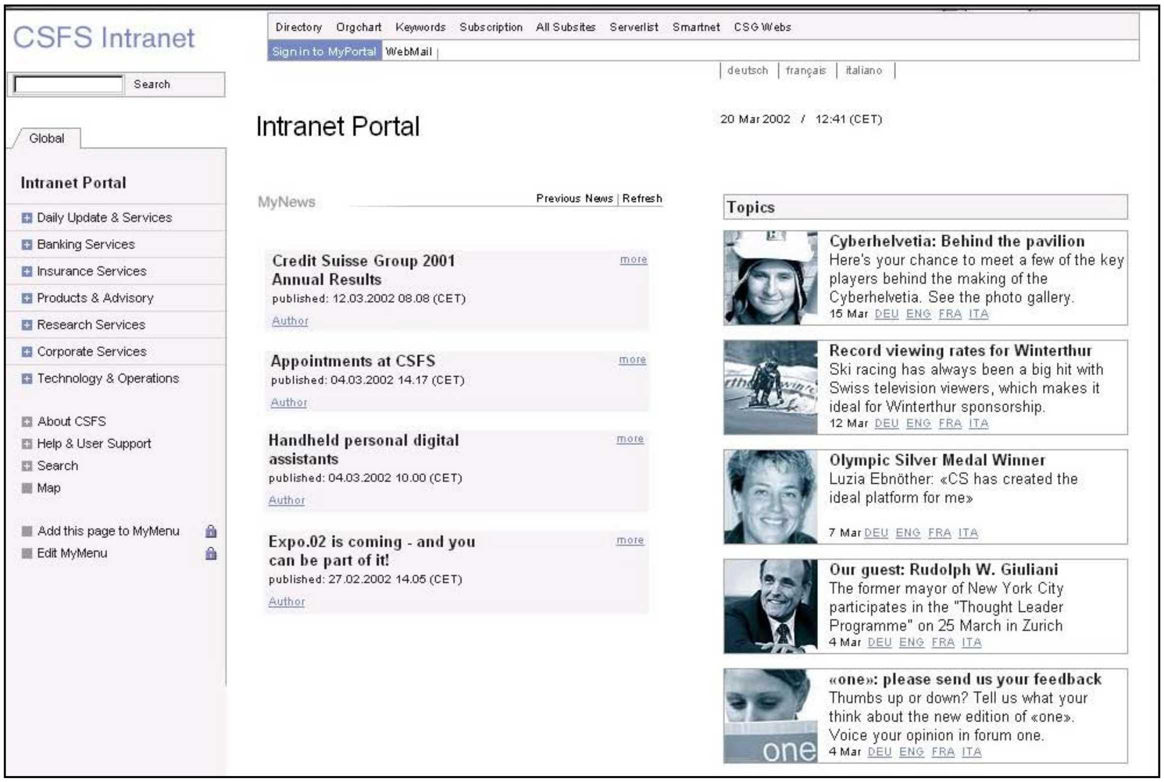
MyPortal, the CSFS intranet, serves a diverse audience of over 40,000 CSFS employees located in the company's head office in Zurich as well as around the world. Besides providing company-wide news, the portal serves as a gateway to 300–400 sub-sites. Overall, MyPortal users have a wide range of jobs and responsibilities, speak a number of different languages, and may use the portal in very different ways, from basic information gathering to complex specific tasks.

For the main homepage, CSFS has also adopted a system of community-based news whereby community managers can push content out to users in a defined community. These community managers choose default information settings for users in their own communities. For example, one user community might cover relationship managers in the private banking area. "Community managers are there to filter information and decide what is of interest to which groups," says Blecic. "Even if you have no idea what a channel is, if you're in a specific community and you log in, you get a predefined set of news subscriptions."

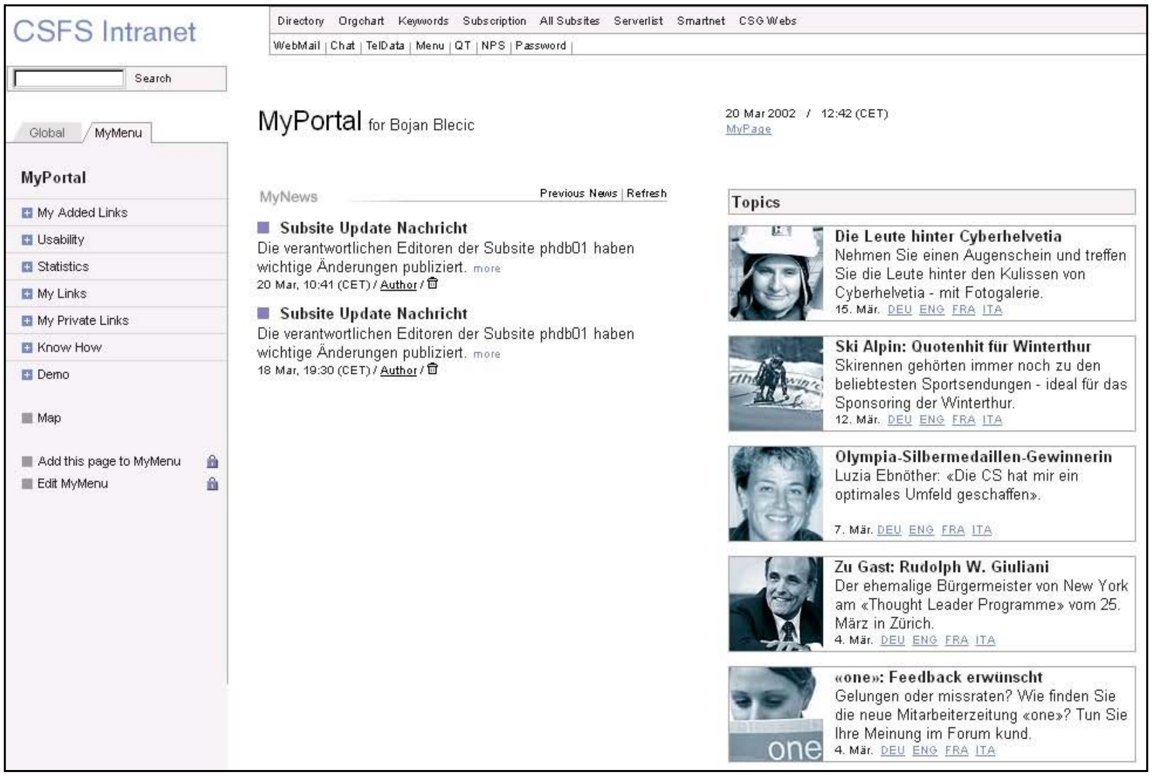


This overview of the channels available on the CSFS portal helps users to decide how to personalize their page.

CSFS users have the power to override these default settings and subscribe to other news channels, and to remove default channels. They can choose from 12 topics, which each have about five channels. Topics include corporate information, banking information, and external news. Users can also alter the layout of the news. "The biggest problem before was that users got one huge list of news, and couldn't easily see what was must-have and what was just nice-to-have," says Blecic. "Now we have a system to customize the portal main page, so you can understand which is the news posted from community managers and which comes from the channels. Once you've logged in, you can change the position of those boxes on the page, and decide which news should be displayed in which box."



The CSFS portal homepage before personalization.

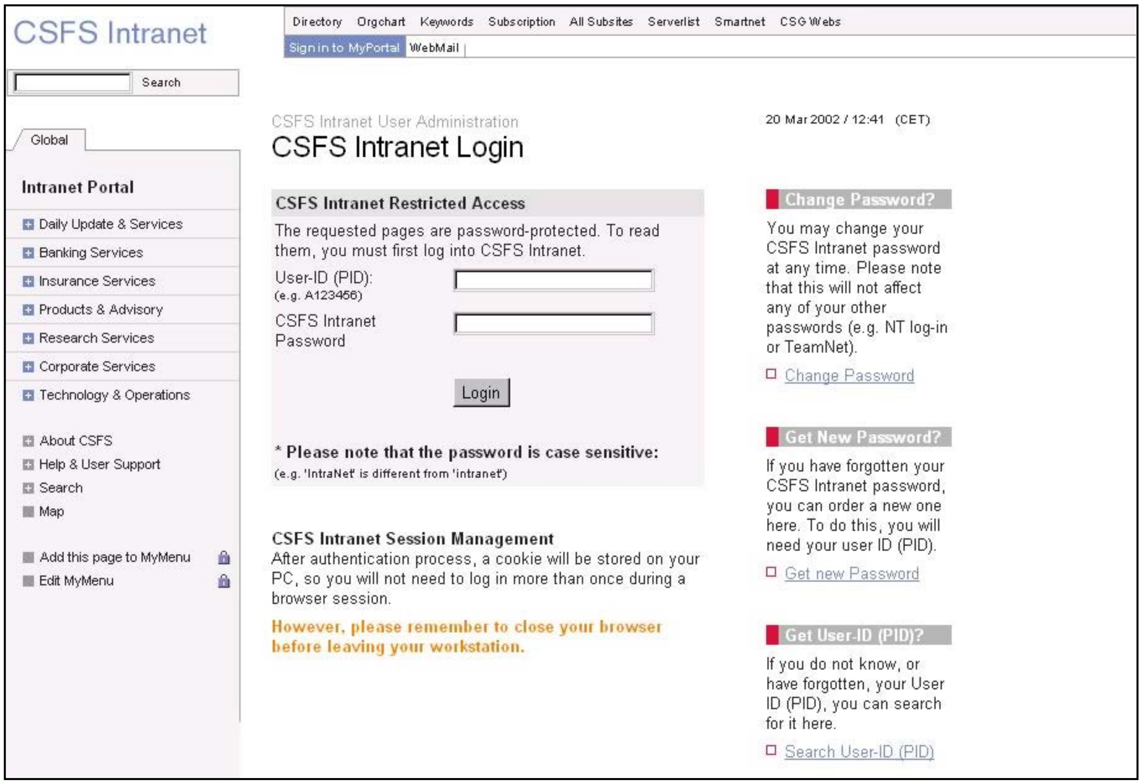


After implementing personalization on the CSFS portal homepage the news items shown have changed and so has the language. Some of the content and navigation on the portal can be made available in German as well as English, depending on the language preferences set by the user. Some content is also published in additional languages, including French, Italian, Spanish, and Japanese.

Despite the ability to customize news, however, CSFS has discovered that most users don't bother to customize the page themselves. Instead, they rely on the settings provided by community managers.

Whether customized or not, certain content providers have the ability to override individual news settings. "Departments such as human resources, legal, and compliance have to be sure that if they have something to communicate, then it will reach its intended audience," says Buob.

Following the launch of personalization, a CSFS employee survey discovered that 60% of those surveyed had logged into the system (this is optional) to see more than general portal and news pages — though this doesn't necessarily mean they are using personalization features. The survey also found a correlation between employees who reported they were happy with the portal, and those who opted to log in.



It's possible to use the CSFS portal without logging in, but users who log in can take advantage of personalization features.

CSFS is considering a customizable menu that would enable community managers to give different sets of bookmarks to different communities. "We haven't done it yet, though, because of the organizational problems involved in finding out who defines which content should be read from which community," says Buob.

MULTI-TIERED PERSONALIZATION AT CISCO

Personalization? Customization? It's all the same to the portal team at Cisco.

"We didn't find the distinction to mean much from an end user's perspective." says Heidi Norton, program manager, CBT, "We simplified the end user messaging and just call it all personalization, because everything has the same end goal — building an experience tailored to an individual identity, including their needs and preferences."

This commitment to delivering personalization is central to Cisco's approach to its portal, overall.

"Personalization is a frequently requested feature," she says, "from a number of stakeholders, the most vocal being professional communicators from the functional organizations, learning/training teams, Human Resources, and the end users themselves."

So to meet this demand, the organization offers different tiers of personalization/customization options. The first tier of personalization is concerned with the site's community spaces. "Community spaces are initially defined as open, restricted or hidden which controls access via viewability and findability," says Norton. These designations break down as follows:

- Open communities are open to the entire organization and membership is completely unrestricted. These communities are searchable and viewable in the *communities* listing page.
- Restricted communities are searchable and viewable but membership is by approval or invitation. Only members can view the content within that community with the exception of that community's public profile. The public profile tends to highlight what the community is about, who should request membership, etc.
- Hidden communities are neither searchable nor viewable and membership is by approval or invitation. Only members can view the content within that community.

The second way that access is controlled through personalization is based on a user's membership in groups that are managed outside of the platform. Users belong to these groups based on criteria associated with their corporate identity. For example, communications and news are delivered to users in these groups based on their work location and the functional organization in which they work.

"Certain applications/portlets," she says, "are also restricted for use based on a user's job role (manager versus individual contributor), functional job title (such as Sales Engineers and Account Engineers in the sales organization), and/or work location."

My View

Personal homepages (called *My View*) offer another level of personalized content, on a more granular level. "Content is tailored to an individual in their *My View* page (personal homepage) on a more fundamental level," says Norton, "So that no two employees see the same aggregation of contact and community feeds (in the Activities application/portlet), Watch List updates, and a combination of custom applications meant to suit their unique identity."

Access is currently offered at the content level, not yet at the application level, meaning users who do not have access to the content or services of a particular application/portlet are given a message to indicate the restriction, but the application/portlet itself is not hidden from their a*dd application* menu.

The individual homepage serves as the window into the Quad collaboration platform at Cisco. This screenshot shows *MyView*, an individual's personalized homepage. It displays corporate and functional news, watch list, calendar (from Exchange), activities feed, and other portlets the user may optionally add or delete.

Page Level Customization

A number of “customization” (our term, not Cisco’s) options are also available to users.

“In addition to the Enterprise Social Feeds we offer the traditional methods of page-level customization,” she says, “or the ability to add, remove and rearrange applications/portlets on a personalized homepages (“My View”), as well as a variety of application/portlet-level configuration options that allow an individual to customize the display and the information pulled into these applications. In addition, we are able to collect metrics about page-level customization in terms of identifying the number of users who have added particular portlets to their “My View” page.”

Tailoring the Social Experience

Quad, the company’s social intranet platform provides users the means for an individual to further tailor their portal experience. Quad gives users a traditional web social experience, letting them follow other users, share social content and maintain a contact list.

“Once a user chooses to follow another user, that user receives updates on all the followed user’s activities,” says Norton, “with the ability to start a threaded conversation on any update by posting a comment. In addition to the personalized homepage (My View), individual users also can personalize their public profile page (My Profile), visible to all other users, to promote their achievements and share their connections with the enterprise, as well as give microblog (like Twitter) status updates (visible on the user’s “My Profile” page and sent to all of the user’s contacts through the activity feed).”

How it Works

The Cisco personalization model is built on the idea of optimizing the relevancy of the individual’s experience through “semantic enablement,” where the system decides what a user may be most interested in based on that user’s relationships to people, content and information, as well as other data available on him/her.

There are also specific community roles that have permission to perform specialized tasks in the community, such Community Owners, Bloggers, Announcers, etc.

A BLENDED APPROACH AT UC IRVINE

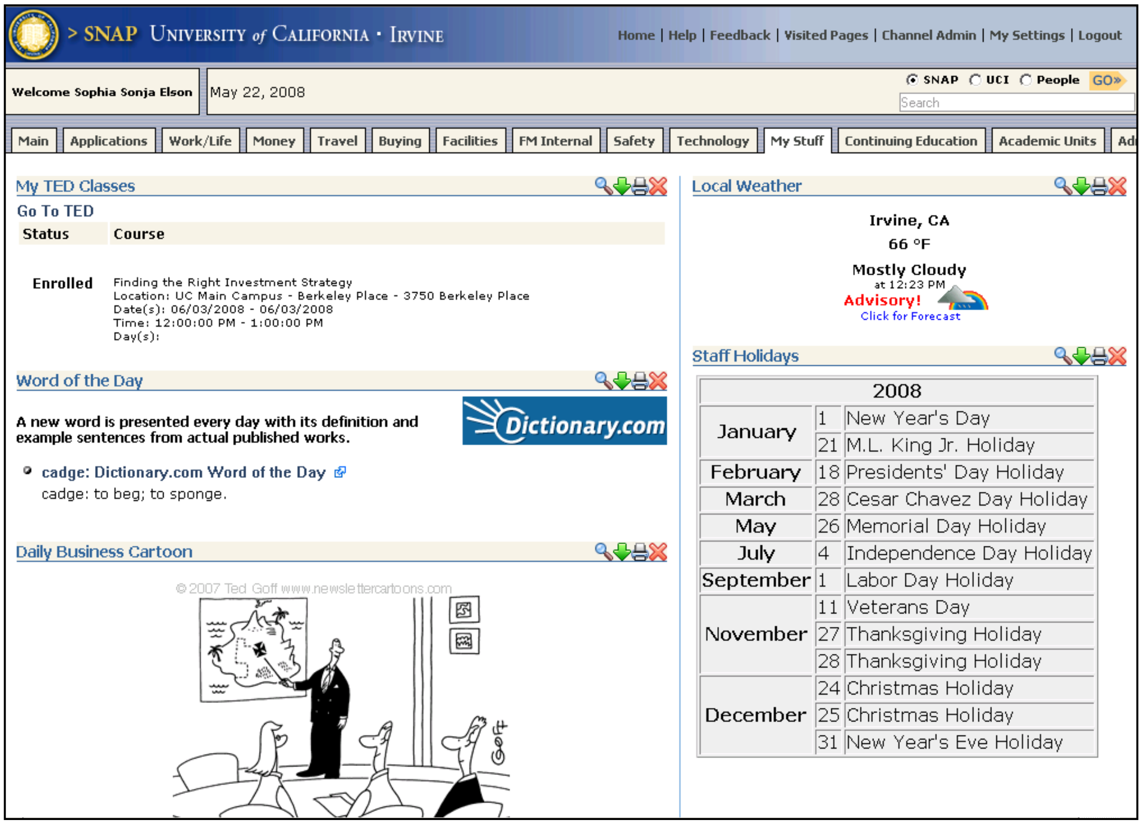
One company’s frivolous add-ons are another organization’s must-have features, proving that perceived value depends on the audience. At UC Irvine the portal team adopted a blended approach that includes a combination of personalized content and customizable features. This mix has proven successful for them.

“We use customizable features to encourage users to log in and discover the power of a portal,” says UC Irvine’s Sadovsky, “To *focus* users’ browsing experience with pulled and pushed content.”

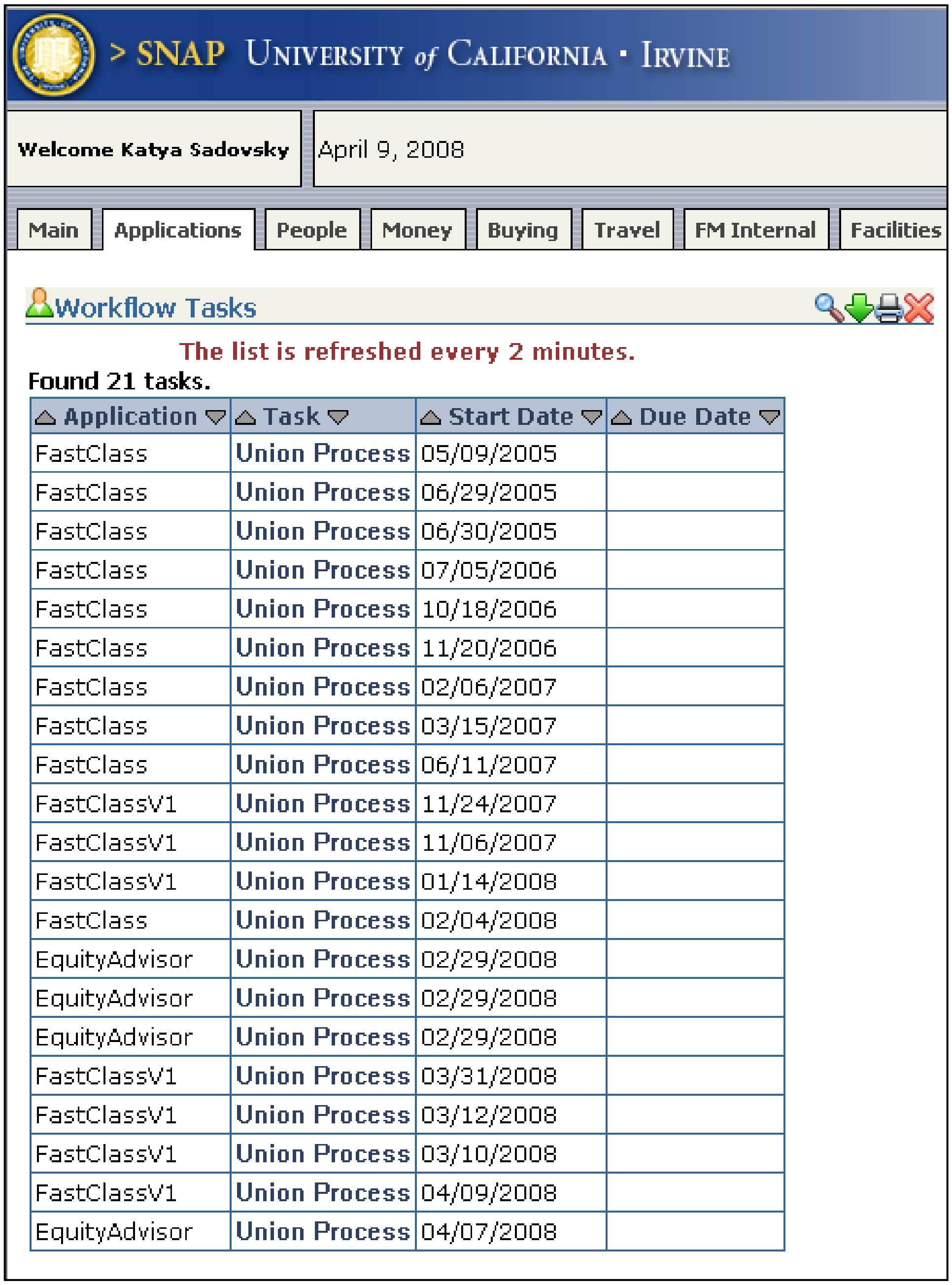
The UC Irvine portal features role-based personalization tools such as a Personal Profile Channel that shows users their leave, sick days, pay, etc. (see below) and other channels specific to targeted groups such as supervisors, campus temporary employees and users’ organizational affiliations, for example their academic unit.

In addition to the role-based personalization the site offers other customizable features that allow users to subscribe to/remove content, change page layout (tabs, columns), change colors and add bookmarks. SNAP users love the customization features and make good use of them. “Users love changing the color skins,” says Sadovsky. “Once users discover customization, they will use the feature.”

UC Irvine’s SNAP homepage shows users special channels related to their role, including a personal bookmarks channel and top five searches if they are logged in.

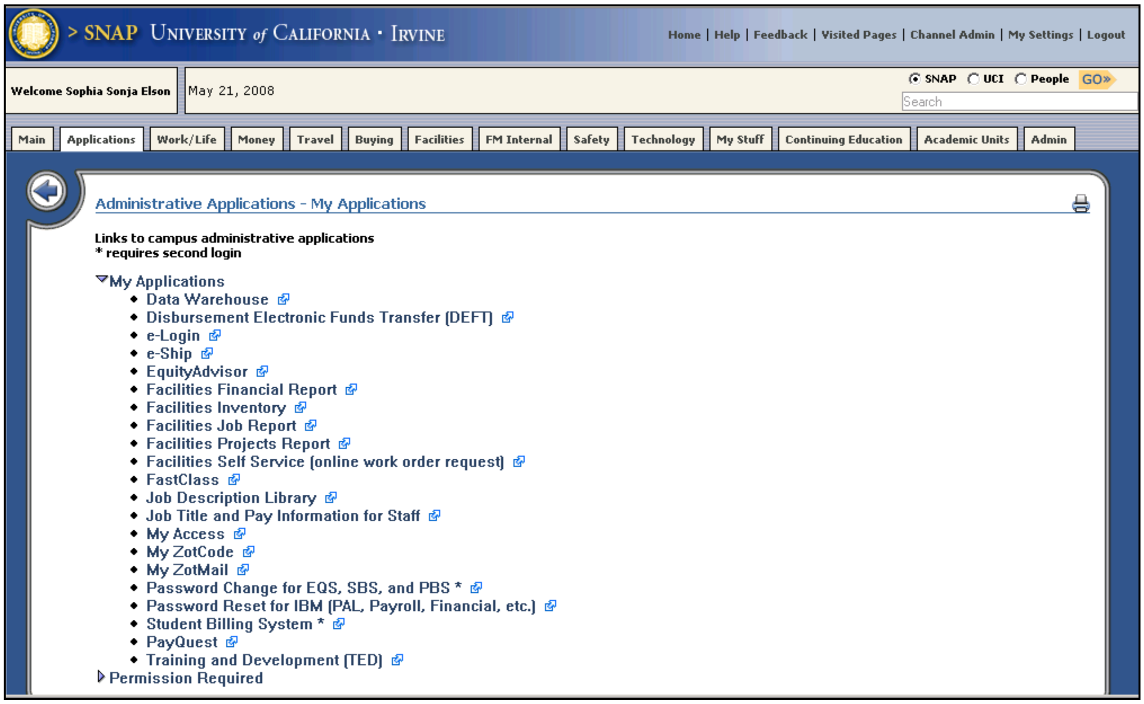


UC Irvine's *My TED* Classes channel is the Training and Employee Development (TED) channel and lists classes for which the user has registered. The channel also links from the employee's personal profile and is found in the *My Stuff* tab. The *Daily Business Cartoon* and *Staff Holidays* channels are so popular that users often move them to the main tab.



Application	Task	Start Date	Due Date
FastClass	Union Process	05/09/2005	
FastClass	Union Process	06/29/2005	
FastClass	Union Process	06/30/2005	
FastClass	Union Process	07/05/2006	
FastClass	Union Process	10/18/2006	
FastClass	Union Process	11/20/2006	
FastClass	Union Process	02/06/2007	
FastClass	Union Process	03/15/2007	
FastClass	Union Process	06/11/2007	
FastClassV1	Union Process	11/24/2007	
FastClassV1	Union Process	11/06/2007	
FastClassV1	Union Process	01/14/2008	
FastClass	Union Process	02/04/2008	
EquityAdvisor	Union Process	02/29/2008	
EquityAdvisor	Union Process	02/29/2008	
EquityAdvisor	Union Process	02/29/2008	
FastClassV1	Union Process	03/31/2008	
FastClassV1	Union Process	03/12/2008	
FastClassV1	Union Process	03/10/2008	
FastClassV1	Union Process	04/09/2008	
EquityAdvisor	Union Process	04/07/2008	

The UC Irvine *Work Flow* channel displays a list of tasks assigned to the user by various systems that are tied to a single workflow engine.



UC Irvine *My Applications*, is a personalized channel that only lists the applications to which the user has access. All other applications are listed in the *Permission Required* bullet for those folks who'd like to see what else is out there.

MOVING TOWARD ROLE-BASED PERSONALIZATION

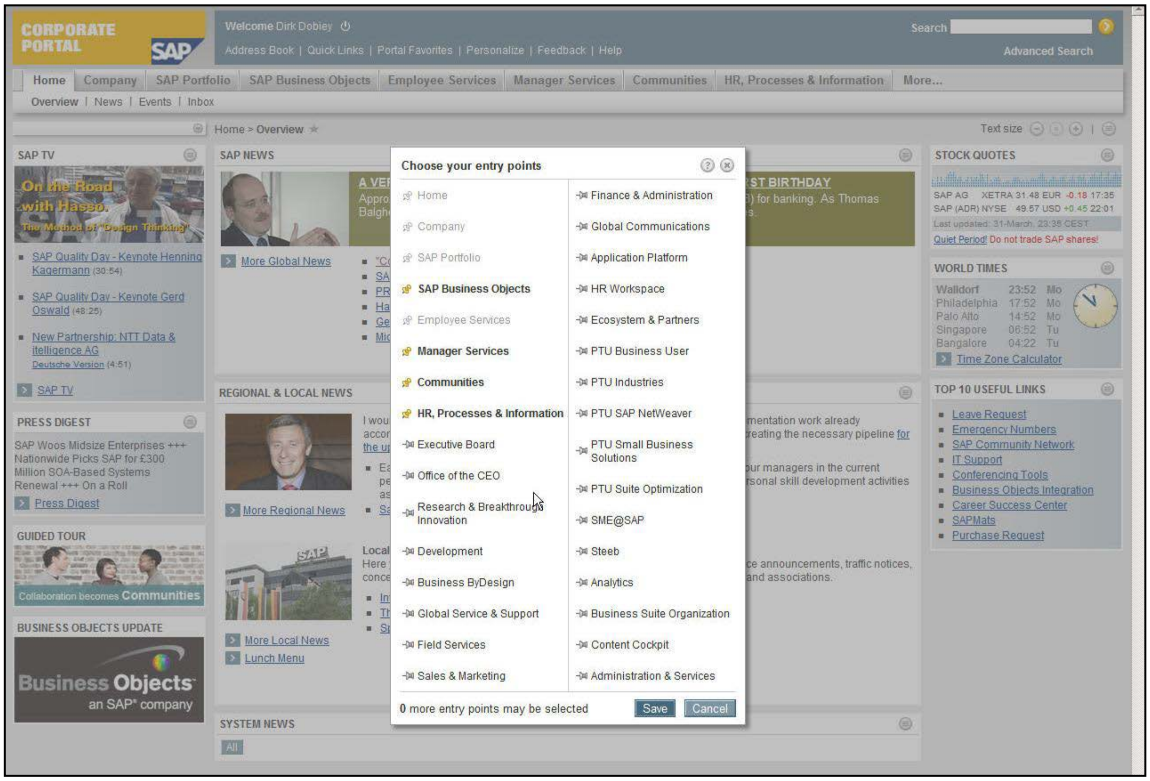
Beginning a Role-Based Approach

When we interviewed them, the Ahold team was trying to achieve the somewhat difficult task of creating “an automated, role-based authentication schema that uses data from HRIS [human resources information systems] to assign employees to specific groups and/or roles based on their job(s) within the organization,” says Tyson. That way, users automatically see appropriate human resources and other information, and are automatically blocked from viewing information they shouldn’t see. Such a system invariably leverages existing stores of information, such as employee directories, roles, and security permissions. “For Ahold, this meant that the entire global security infrastructure had to be in place in order to avoid manually setting up and maintaining hundreds of thousands of users.” Setting up this infrastructure was a more complex and time-consuming effort than originally planned.

The portal development team didn’t have the data stores it needs in place to create a truly automated, and seamless, portal user experience. Furthermore, just “determining the number of roles and groups has become problematic,” says Tyson. “Ideally, we would want many roles/groups in order to customize the right experience for each sub-group within Ahold. However the more groups we define, the greater the set-up requirements, and the burden of defining who gets assigned to which group.”

Even if roles and groups can be defined at a granular enough level, the portal team is still wary of just automating everything. “Having manual oversight, at least over some of the unique groups, is critical for us.”

To oversee its automated processes and ensure they’re functioning properly and securely, and that data being served is both timely and relevant they will create an HR ‘data czar’ to provide oversight for and scrutiny of critical areas which, if implemented and maintained incorrectly, could leave us vulnerable,” says Tyson.



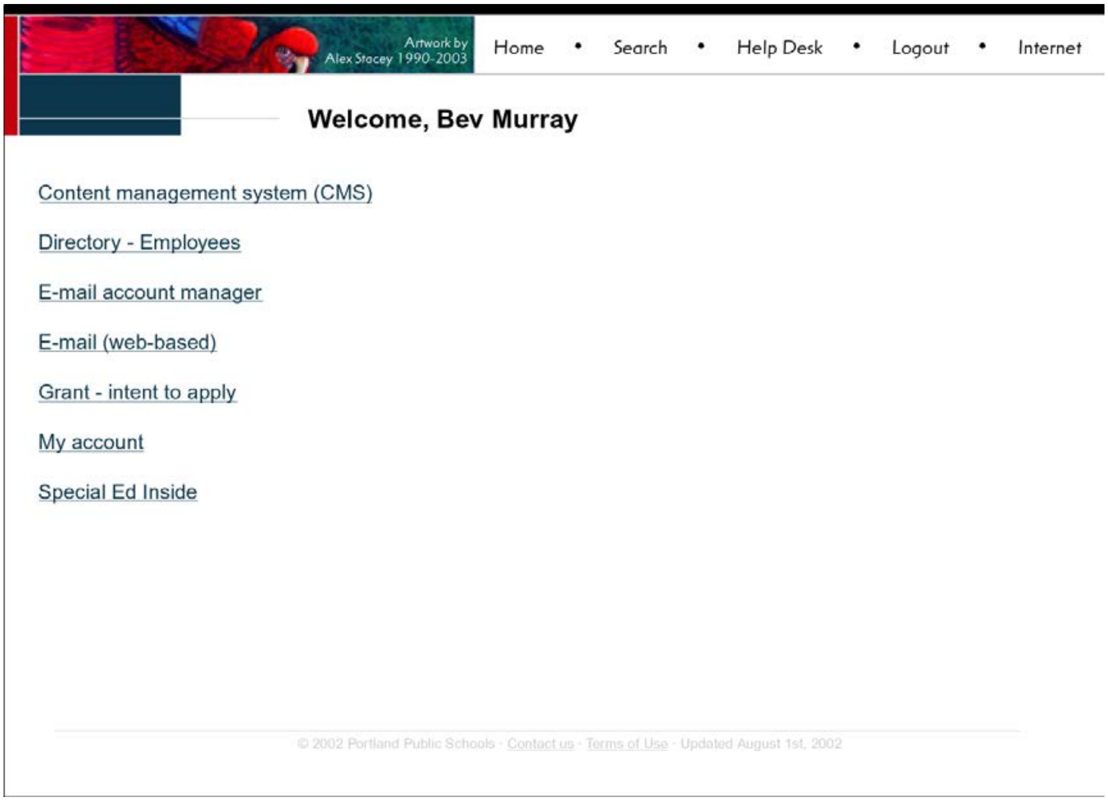
The SAP corporate portal uses role-based top-level navigation. Only *Home*, *Company* and *Portfolio* are predefined. Tabs can be moved to the desired location.

At the time of our interview The Carle Foundation was taking its first steps toward personalization on its portal. "We have started tagging our content with category, roles and locations," says Skinner. "Users can then customize their news feed by choosing their preferred items and a secondary news page that matches their preferences will be displayed. Users can change their preferences whenever they like."

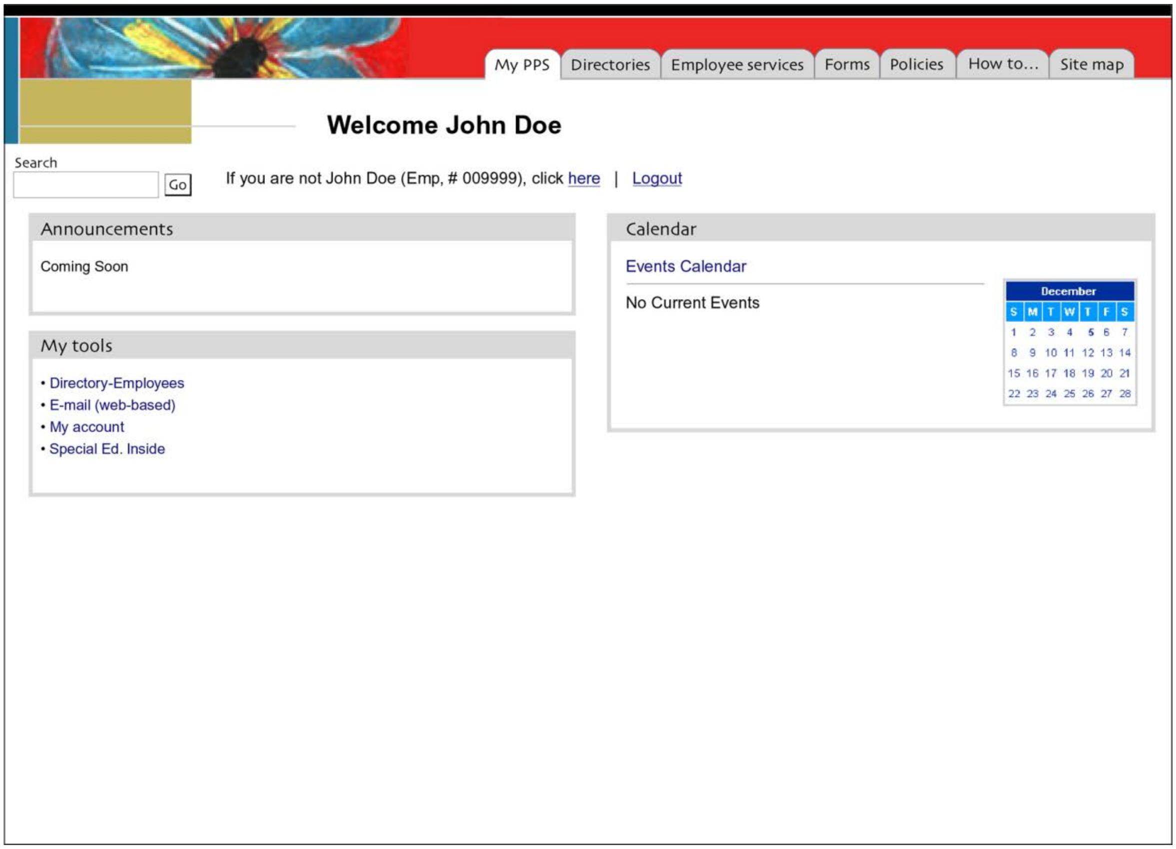
"This was important," she says, "because we have medical staff and leaders who work at different locations through the week but only want to see the information for certain locations when they want it."

A Role-Based Approach at Portland Public Schools

Improving access to information via use of role-based personalization was a major aim of the Portland Public Schools portal project, so the design team implemented personalization features right from the start. When users log in, the portal identifies them by location and job role then shows them links to specific types of web applications and relevant categories of information based on that role.



The very basic original Portland Public Schools portal contained only links to applications according to the user's role.



Prototype of the next version of the Portland Schools portal, after two rounds of usability testing.

The portal team also investigated using the content management system to schedule announcements for specific user groups, such as dates of enrollment for health benefits, or dates by which school principals need to submit certain reports. The team has a longer term vision of delivering role-based alerts via mobile for employees on the go.

Like many organizations, the Portland Schools design team considered adding customization options that would allow employees personalize the look and feel of their own pages, but decided against it. "People may say they would use the portal more often if they could do that, but would they really? In a business setting, many people are just interested in getting the task done — not going in there to play," she says. Her advice is simple: "Letting the individual rearrange their page? I'd sacrifice that any time for more important stuff."

One of those important features, she says, would be for the portal to be able to "track people's patterns of usage and serve up related items automatically" to provide users with even more personalized — and thus more relevant — portal pages.

Segmenting the Audience

On OSUMC's portal, OneSource, content is presented based on which audience group the staff member selects. The groups are based on the major roles/areas of responsibility at the Medical Center. Once the staff member establishes his homepage, he is given access to an area where he may create his own list of favorite links on the homepage. This list follows him when he views the other role-based pages. Content on the role-based pages is open to all staff. In addition, the site offers collaboration sites.

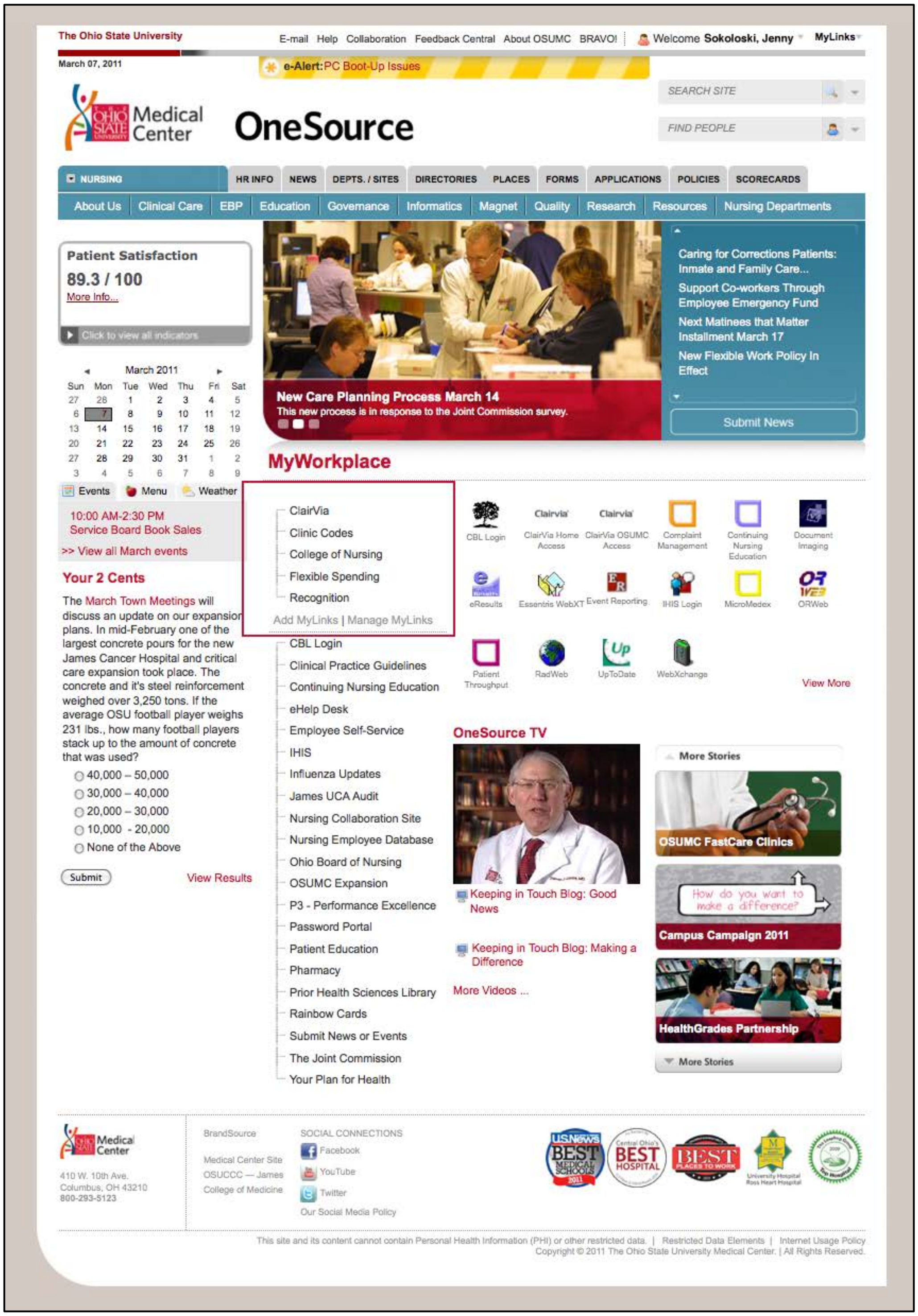
Chad Laucher, OSUMC technical architect, outlines what information is personalized for the users and which elements of the portal users can customize individually:

Personalized:

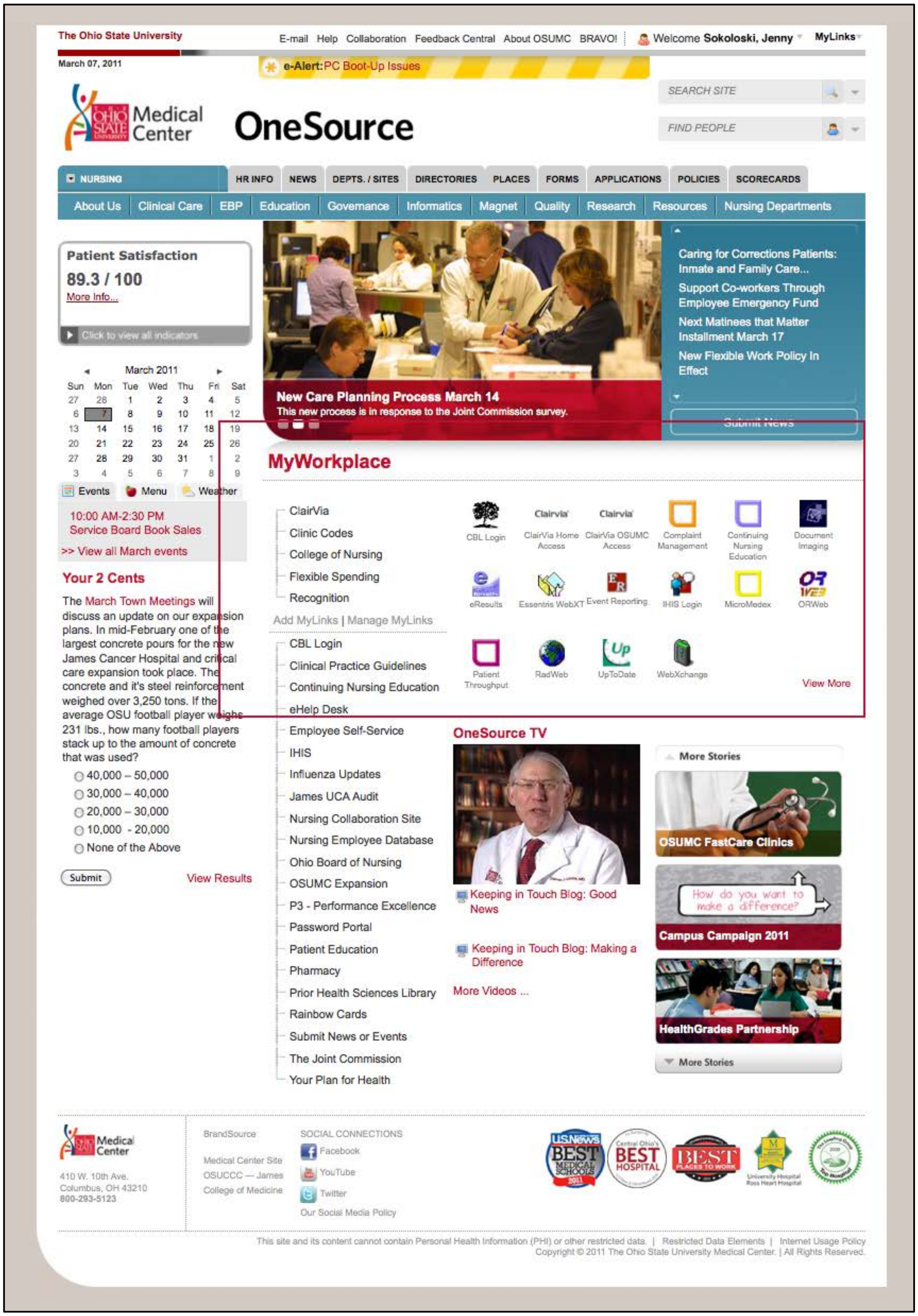
- News is personalized so we can present the information in three different content wells within the homepage based on metadata.
- Events, so we can have irregular recurring events all associated to a main event description.
- People Finder, because we have employees, users that we want to show up in our search results that do not have Medical Center Accounts.

Customizable:

- ***My Links*** allows users to customize a list of links that are available from any page. This is the only content that all employees can personalize.



On the OSUMC portal users can personalize their homepage by adding their own custom links to their *MyLinks* section of the *MyWorkplace* area. The links are established by authentication and the links appear on their homepage even when they log in from home, another work computer, or change homepage views. The team can track how users use this feature.



The *MyWorkplace* area gives OSUMC employees a links area they can manage on their own, allowing them to place their most highly used applications on the homepage.

The portal for the City of Olante, KS uses Drupal roles to segment content access. When a user logs in, they are assigned Drupal roles depending on what's set in their Drupal account or on what groups they are members of in Active Directory. Many of the nodes on the site have four possible states: public, department_public, department_private or department_draft. For a user to be able to access department_private or department_draft content, they must have the appropriate role set. Non-content web applications also grant access based on role. For example, only Customer Service personnel have access to the account initiation application that lets them begin the process of setting up a customer's utility billing account.

Segmenting for Success at Goodwin Procter

Goodwin Procter's personalization efforts were a critical factor in the success of the law firm's portal redesign. They listened to users and found solutions to meet their needs.

"One theme we heard when interviewing our users was that they need quick access to tools and information that will help them work more efficiently," says Kawa. "These items varied based on the user's roles. Often this content was buried deep in either legal or administrative subpages based on the department or practice."

A more functional/task-based approach was adopted during the redesign to make this information more accessible and relevant to the user viewing the homepage.

During the design process the portal team identified four main types of users and which systems and information they access on a daily basis. Now on the homepage users see information and links targeted to their department and their role. For example, attorneys see links to the attorney staffing system while professional staff see links to the administrative time entry system.

This approach to presenting personalized content was considered a nice-to-have feature, but was ultimately a critical component of making the portal a success in the eyes of the users.

"Personalization," he says, "was a requested feature which came out early in our analysis phase. It was clear that users needed the ability to have quick access to what they needed and not see systems and information that was not relevant to their job. At the law firm, the administration staff has systems and processes that do not apply to the attorneys. The same is true for attorneys. Therefore personalized content was critical in this instance so as not provide un-needed features and functionality to users and keep pages from getting too cluttered."

"In addition," says Kawa, "we gave users the ability to customize content on the homepage without giving up a standard consistent look and feel as well as still provide information the firm thought they should have. We created a customizable zone that allows users to customize this area with links relevant to their work."

The value of this customized zone is that it follows users from machine to machine and office to office. This was significant for users who float between different desks and travel to different offices.

On the Firm's portal, much of the substantive content is role-based. For example, in the matter management system (legal cases) only Partners at the Firm have full access to financial data pertaining to a client or matter (case).

"Data points within our matter management system are often personalized for the individual accessing the portal," says Kawa. "For example, an attorney accessing the portal will immediately see a list of matters that he/she has billed time to in the last 30 days." "Additionally, the attorney can switch to one of two other personalized views that show all matters they are involved in or matters they choose to track on a watch list."

"Secretaries' views are personalized for the attorneys they support. Some customization functionality is available to set default views for accessing the matter management system," he says.

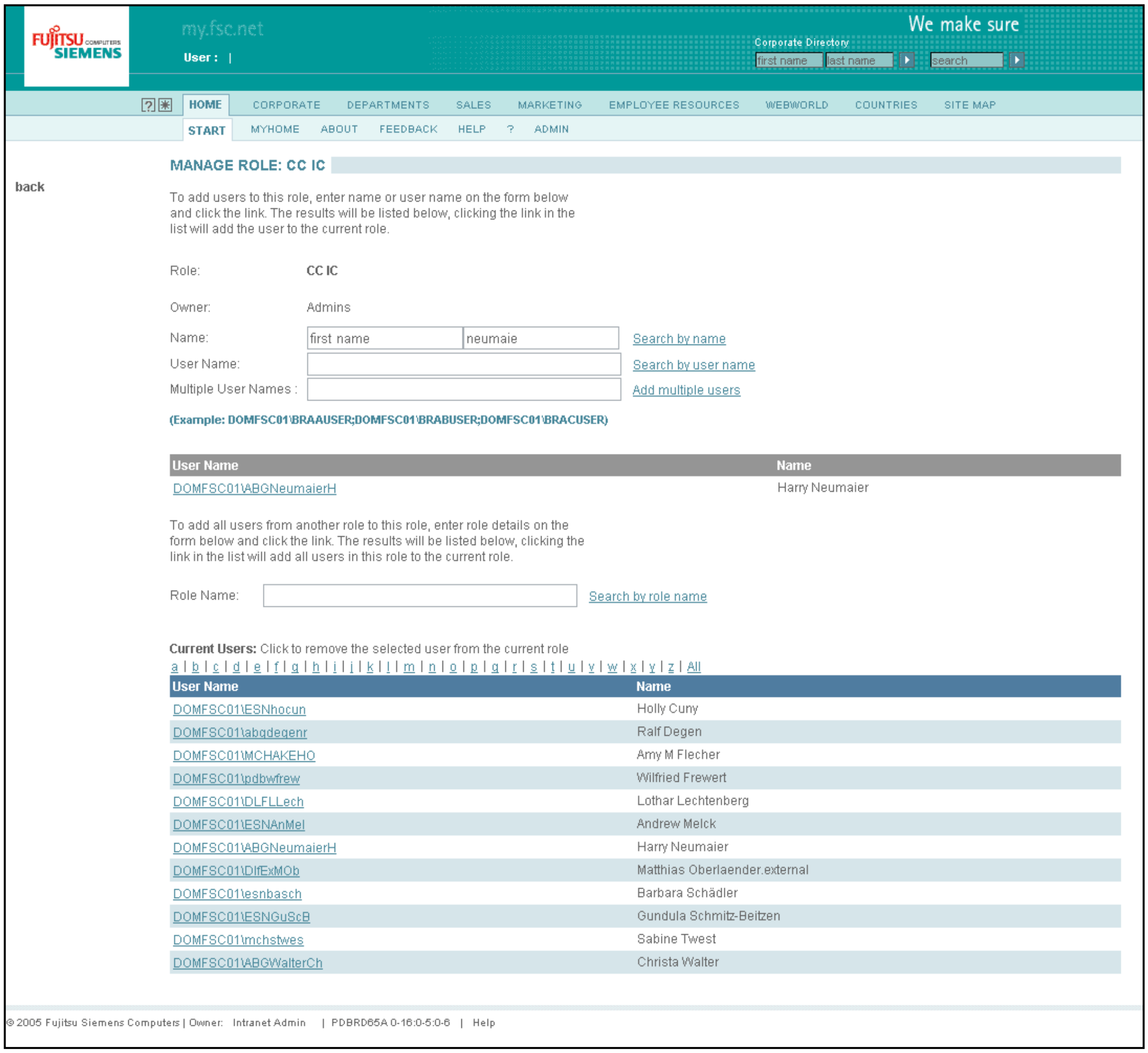
"Ethical walls also play a big part in segregating out users that should not have access to certain information," he says. "This is critical in the law industry since conflicts are a big issue. It is imperative that an attorney not have access to something that he/she is conflicted out of."

EVOLVING PERSONALIZATION AT FUJITSU SIEMENS COMPUTERS

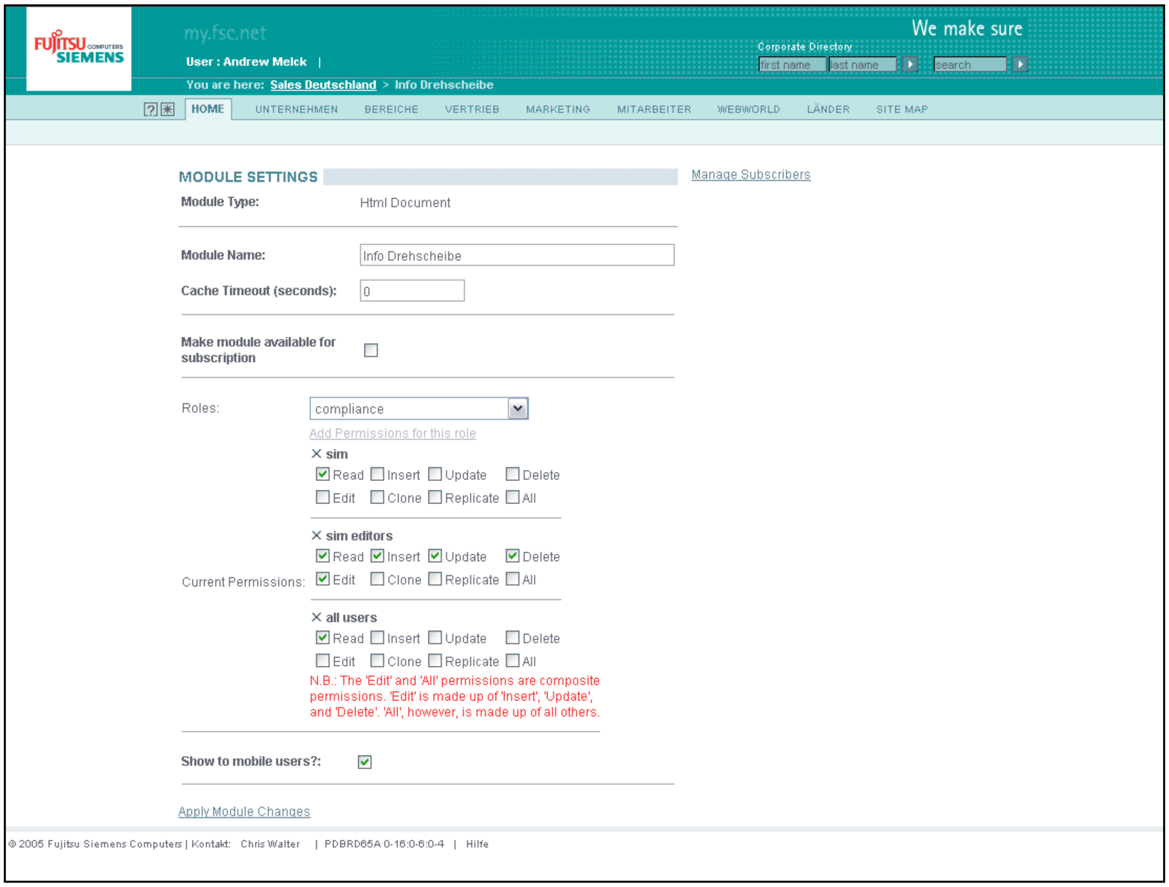
From the start of its portal project, Fujitsu Siemens employed personalization features, yet the company has been engaged in a constant process of tweaking features and functionality.

For example, getting personalization schemas to the point where content editors can use them to ensure the right information reaches the right employees has taken time. The result is that "we now have a highly granular permissions model which allows content editors to set read, insert, and write/delete permissions for individual modules — similar to what Microsoft calls 'Web parts,' as well as whole pages," says Melck.

The Fujitsu Siemens portal has several personalized features. For example, a user's name always appears in the top banner — a necessary feature when trying to solve permissions issues. "Users can also subscribe to modules and then receive updates when new content is added," he says. Furthermore, using single sign-on authentication, the company can control which content users see or are blocked from seeing, as well as which pages they can read, edit, or update.

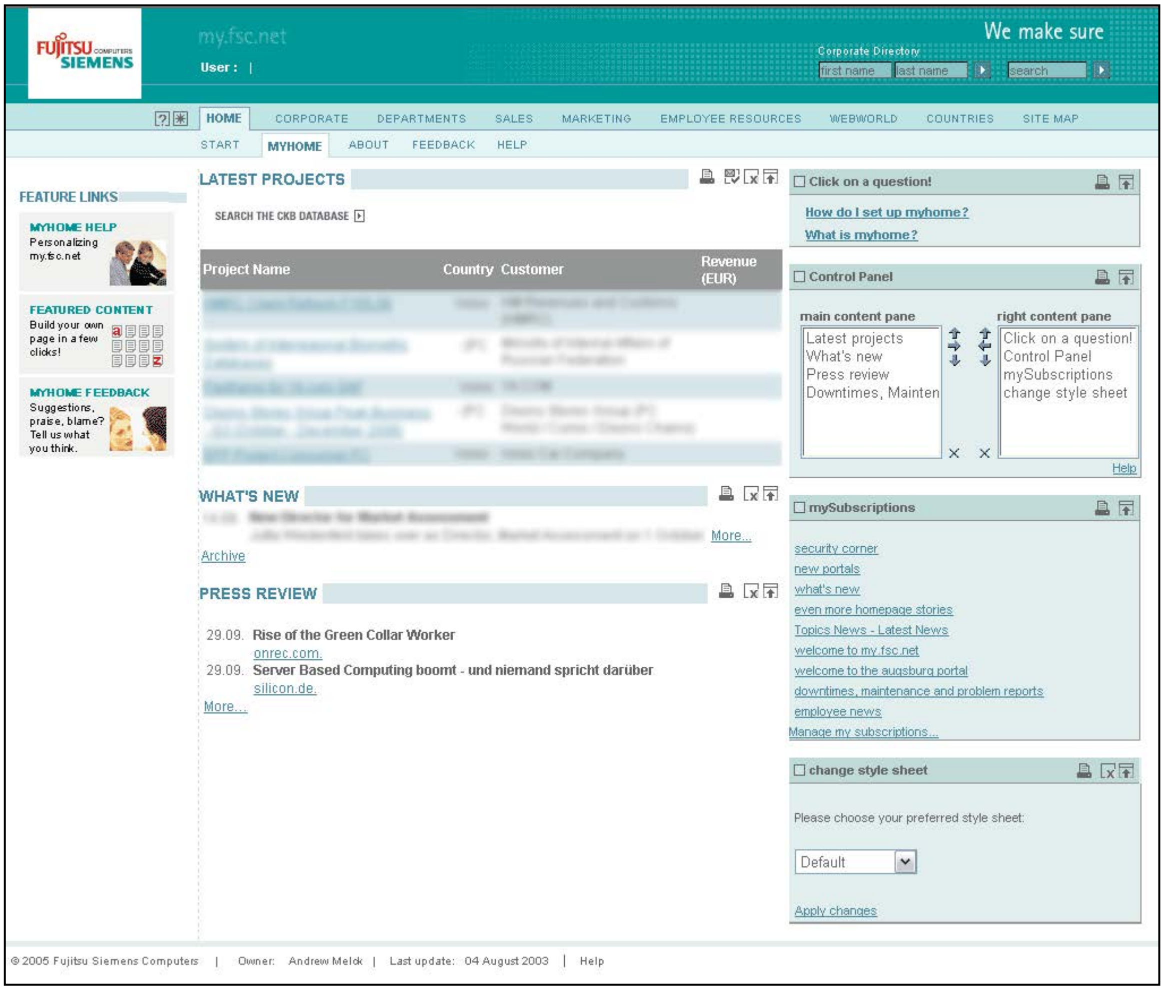


Fujitsu Siemens can manage information employees see based on their designated role in the organization.



This interface allows Fujitsu Siemens content managers to designate, which modules employees can subscribe to, as well as the degree to which they can edit the content in the modules.

Yet users haven't adopted all proffered personalization features. "We have also created a 'My Home' page which users can assemble themselves from their favorite modules around the portal," says Melck. Yet "it's not used very much," he says. "I feel that it's not a matter of people rejecting personalization, rather that people relate to sites spatially, and expect to find stuff 'where it belongs,' rather than heaped arbitrarily in one place. That applies especially if they are the ones doing the heaping." In other words, users likely want to find information where it belongs in the information architecture. (Another possibility is they also just bookmark portal features they frequently access.)



While Fujitsu Siemens Computers offers its employees their own *My Home* page on the portal, many employees do not use it.

PERSONALIZATION INSIDE AND OUTSIDE THE FIREWALL

Accommodating Internal and External User Groups

Sometimes the purpose of personalized content is to segment what one user sees vs. what another sees based on whether their role is internal, external or straddles the two. At Local PI, the agency offers five user login roles: client, agent, case manager, collaborator and senior management. Each group has access to different information on the portal and that access breaks down according to the following roles:

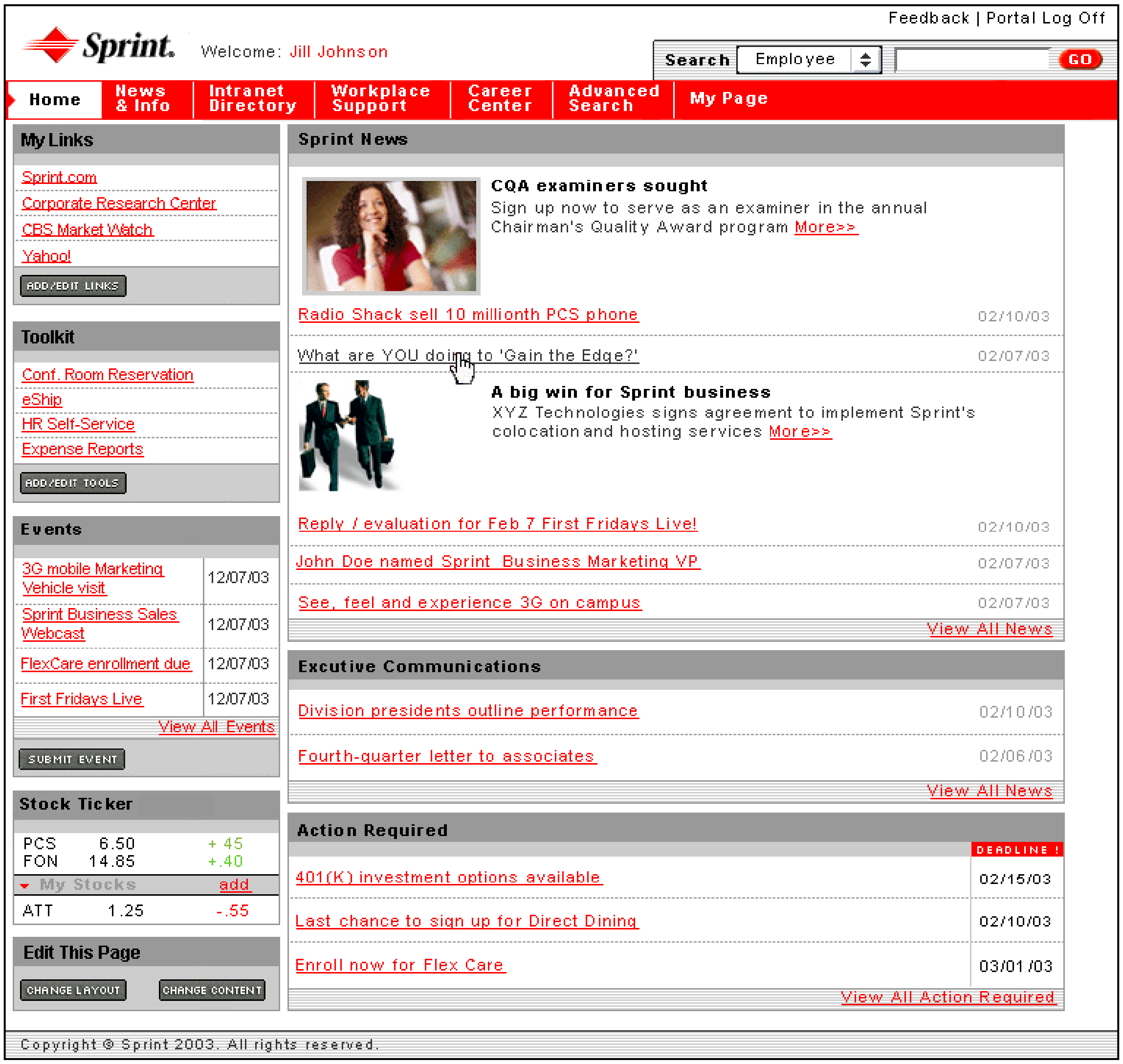
- Clients: have access to their reports and case info only
- Agents have access to information regarding their assigned jobs, including:
    - A job brief
    - A vehicle tracker (if one is being used on the case) so they have a link to monitor it

    - Ability to upload their case reports
    - An *invoice us* link
- Case managers can use the portal to:
    - Assign agents to cases
    - View outstanding expenses on cases
    - View and edit reports submitted by agents on the case
    - View and edit information submitted by clients, and decide which information should be viewable by agents
    - Pay agents invoices by importing the data from the portal (which generates a CSV document)
- Senior management have total access to all information and functions, for example they can:
    - Add and remove users
    - Add new websites, choose which pages, pictures and packages should be shown for the city that it serves (for example vehicle tracking is illegal in Scotland, so that would be excluded on www.glasgowdetectives.co.uk)
- Collaborators (such as a copywriters), have a unique login ID, which gives them access to their own area, depending on their job function.

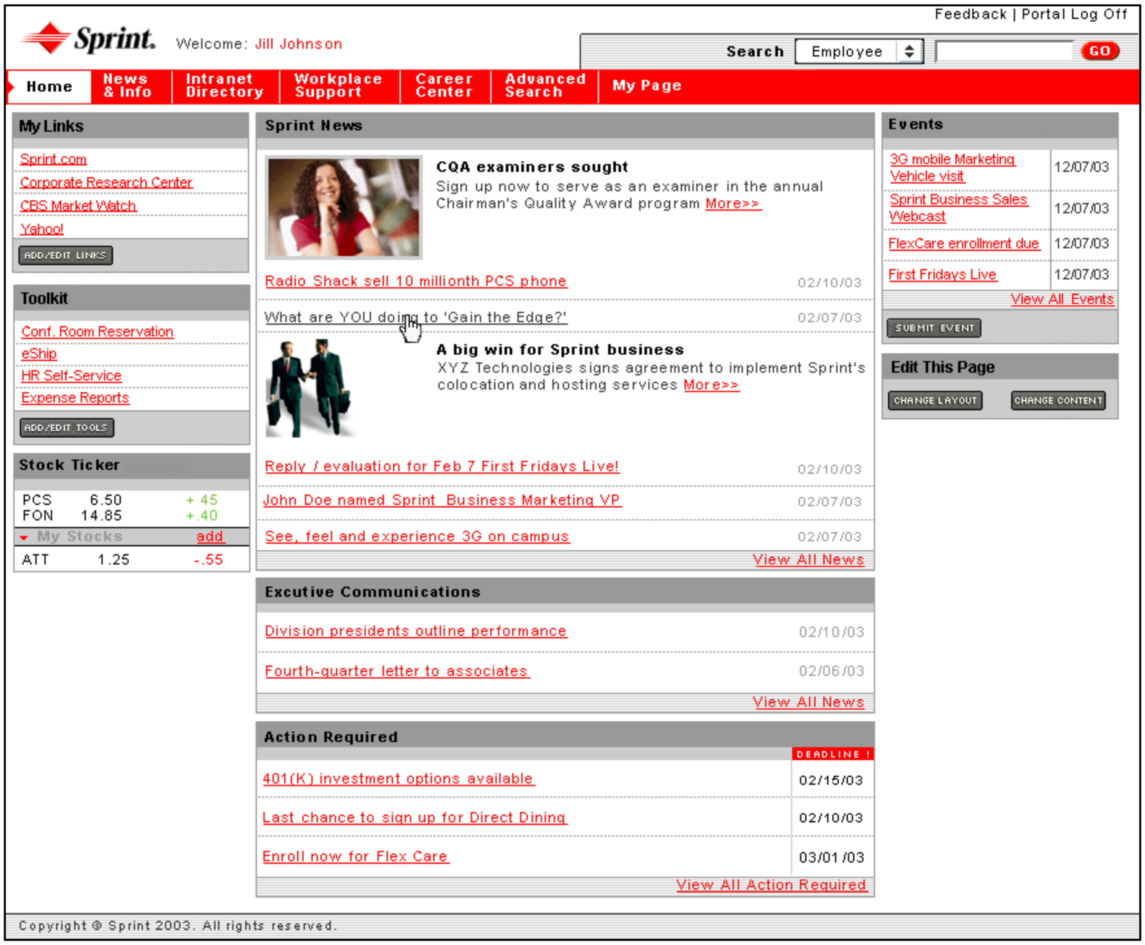
Page Personalization at Sprint

After rolling out a portal, Sprint then began planning how to allow users to customize the way they view a number of portal pages, including the homepage and *My Research* page.

Anecdotally, users said they liked having the ability to choose their own layouts. “[Personalization] comes out-of-the-box with our portal software,” says Backlund, and we’re simply taking advantage of it. Same with Choose Content — it’s a feature available through the portal that we never had before. The idea is to give the user more and more control over his/her page view, while still showing what he/she needs to see and designing a workable interface for those late adopters who may never choose to customize their pages.”



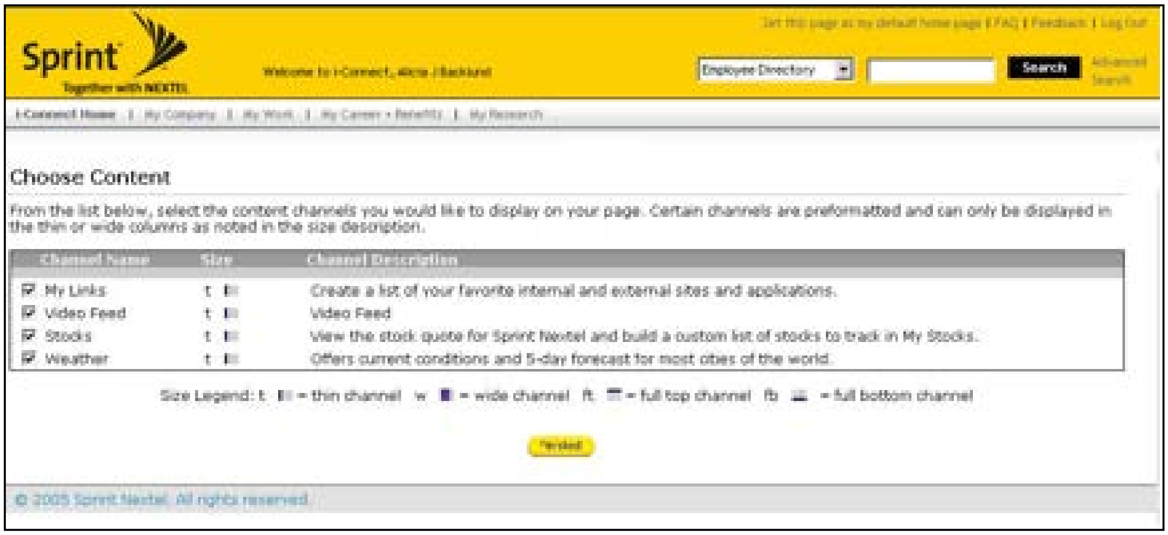
In an early mockup of the Sprint portal, users had several customization options. The change layout button allowed users to choose between three views: a thin-wide two-column version, a wide-thin two-column version and a thin-wide-thin three-column version. The “thin” channels can be moved up and down and side to side by the user. The “wide” *News*, *Executive Communications* and *Action Required* channels are fixed. There is also an additional wide channel, Sprint Services, which is optional and not shown. If the user chooses to see it, it will be displayed at the bottom of the page.



The same Sprint page as above, but with a three-column version.

"Today we continue to personalize some content areas based on organization, job level and geographic location. We can do this seamlessly, presenting personalized content to users alongside content that was targeted to the whole company," says Backlund.

Even so, not all personalization works effectively. "We found that the personalization was too seamless," she says. "People did not understand that certain content was being shown to them based on certain criteria. We've now broken out some personalized content into separate portlets, and are taking other steps to make personalization more obvious."



Sprint users are able to select the news channels they want to see and how they want to display them.

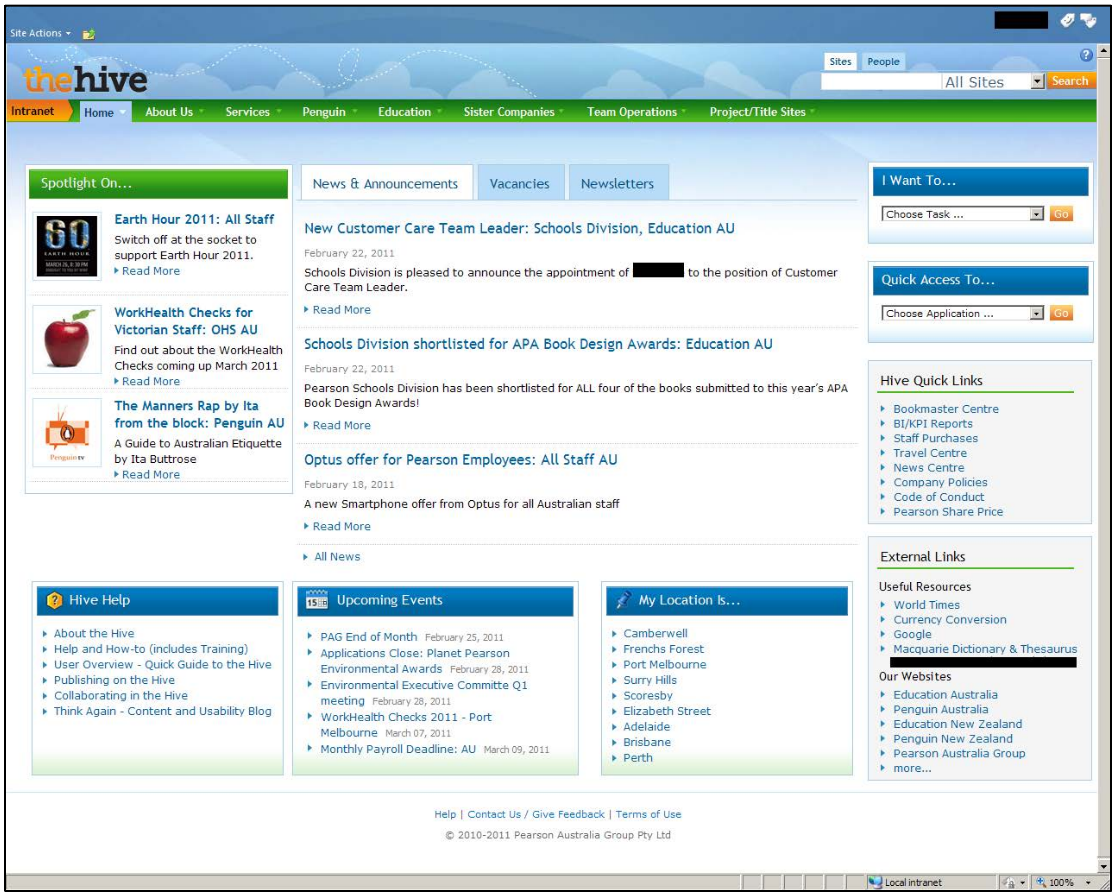
Sprint still allows users to add and remove some content, and to change the layout of some areas. Even so, "early on, technical problems resulted in users losing their personalized settings. This hurt. It's hard enough to get people to personalize once, let alone twice," says Backlund. "Still, we're recovering. In our recent survey, 71% of respondents said they had customized their intranet in some way."

TARGETING CONTENT BY GEOGRAPHY AT PEARSON

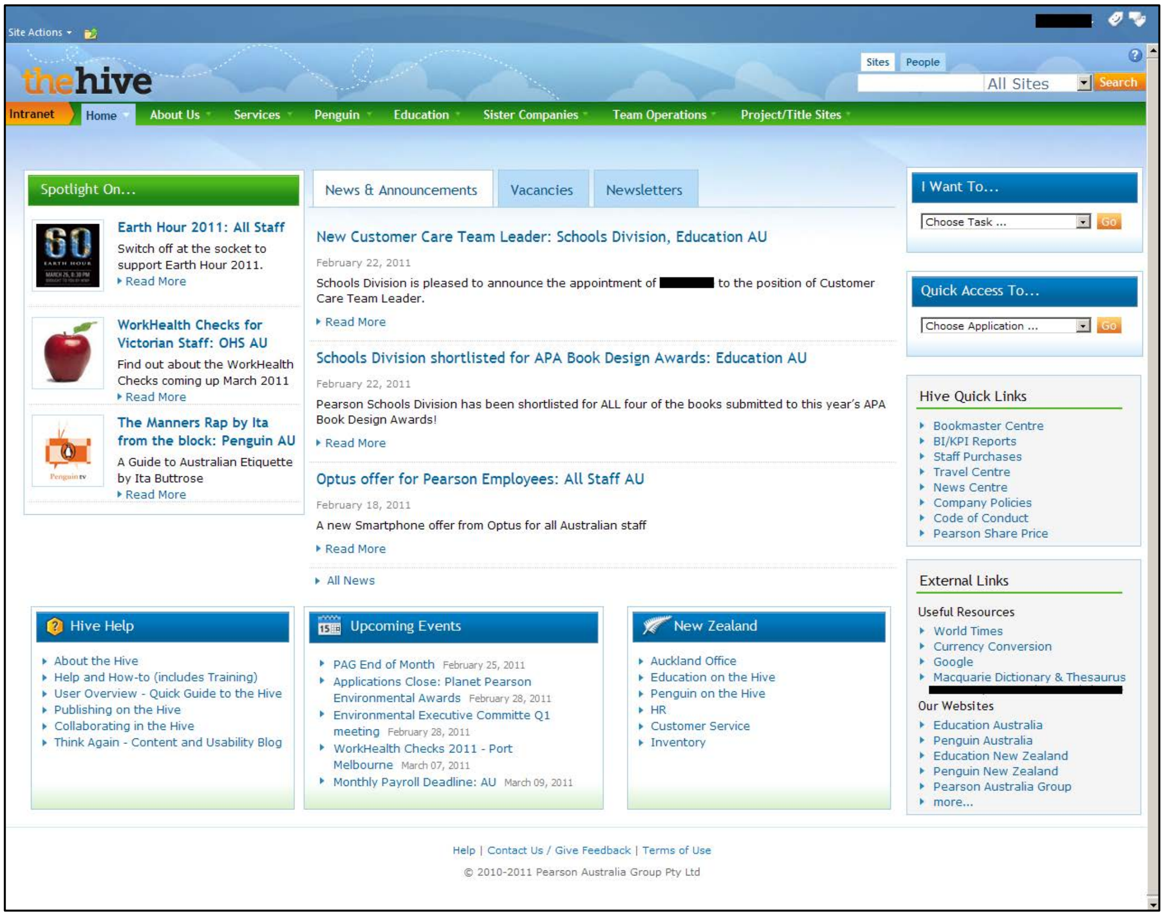
Not all personalization is role-based. Sometimes companies need to parse what users see by differentiating based on geographic locations. At Pearson, audience targeting is used only to differentiate between the company's Australia and New Zealand businesses, so for example switching company policies or the homepage widget based on the user's location.

"In addition to the homepage news," says Starnawski. "Business landing pages are provided for five of our businesses, which enable business-specific news to be targeted to these staff."

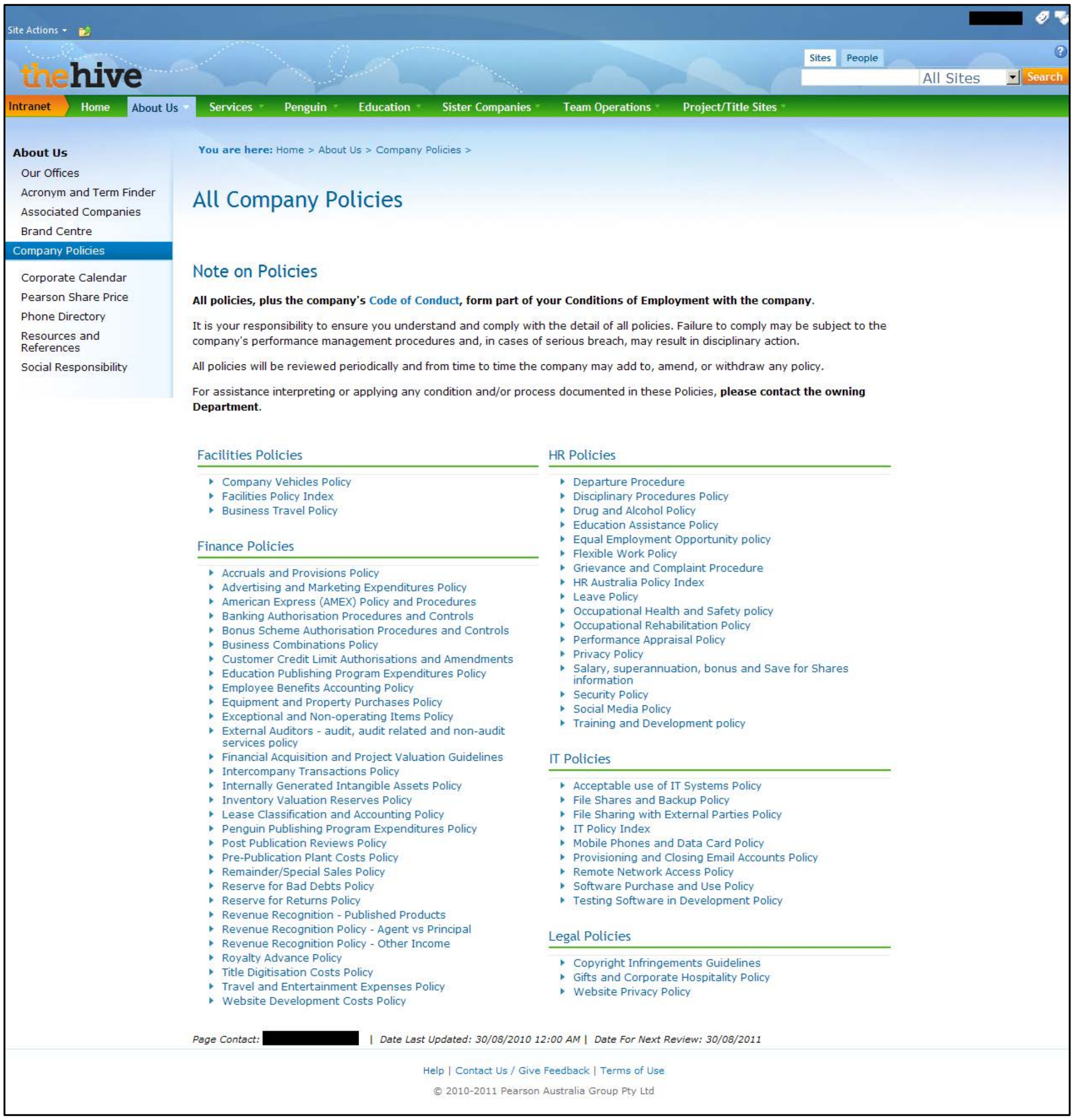
"There are also some menu items in the services departments which are also only visible to Australia or New Zealand-based staff, as required (for example, Telecommunications and Conferencing facilities). This means that all staff see one *Telecommunications* and one *Conferencing* link," she says, "but there are in fact two links." These personalization options are illustrated in the screenshots that follow:



This is the homepage of Pearson's portal, The Hive. Aside from the *My Location* web part (audience-targeted to Australian-based staff according to the users' authentication settings in Active Directory), all staff see the same content on the homepage. See next screenshot for NZ-targeted web part.



This screenshot also shows the homepage of Pearson's portal. But in this view, instead of showing the Australian *My Location* content it shows how New Zealand staff see content targeted to their location.



Site Actions [redacted]

thehive

Sites | People

All Sites | Search

Intranet | Home | About Us | Services | Penguin | Education | Sister Companies | Team Operations | Project/Title Sites

About Us

- Our Offices
- Acronym and Term Finder
- Associated Companies
- Brand Centre
- Company Policies
- Corporate Calendar
- Pearson Share Price
- Phone Directory
- Resources and References
- Social Responsibility

You are here: Home > About Us > Company Policies >

All Company Policies

Note on Policies

All policies, plus the company's Code of Conduct, form part of your Conditions of Employment with the company.

It is your responsibility to ensure you understand and comply with the detail of all policies. Failure to comply may be subject to the company's performance management procedures and, in cases of serious breach, may result in disciplinary action.

All policies will be reviewed periodically and from time to time the company may add to, amend, or withdraw any policy.

For assistance interpreting or applying any condition and/or process documented in these Policies, **please contact the owning Department.**

Facilities Policies

- Company Vehicles Policy
- Facilities Policy Index
- Business Travel Policy

Finance Policies

- Accruals and Provisions Policy
- Advertising and Marketing Expenditures Policy
- American Express (AMEX) Policy and Procedures
- Banking Authorisation Procedures and Controls
- Bonus Scheme Authorisation Procedures and Controls
- Business Combinations Policy
- Customer Credit Limit Authorisations and Amendments
- Education Publishing Program Expenditures Policy
- Employee Benefits Accounting Policy
- Equipment and Property Purchases Policy
- Exceptional and Non-operating Items Policy
- External Auditors - audit, audit related and non-audit services policy
- Financial Acquisition and Project Valuation Guidelines
- Intercompany Transactions Policy
- Internally Generated Intangible Assets Policy
- Inventory Valuation Reserves Policy
- Lease Classification and Accounting Policy
- Penguin Publishing Program Expenditures Policy
- Post Publication Reviews Policy
- Pre-Publication Plant Costs Policy
- Remainder/Special Sales Policy
- Reserve for Bad Debts Policy
- Reserve for Returns Policy
- Revenue Recognition - Published Products
- Revenue Recognition Policy - Agent vs Principal
- Revenue Recognition Policy - Other Income
- Royalty Advance Policy
- Title Digitisation Costs Policy
- Travel and Entertainment Expenses Policy
- Website Development Costs Policy

HR Policies

- Departure Procedure
- Disciplinary Procedures Policy
- Drug and Alcohol Policy
- Education Assistance Policy
- Equal Employment Opportunity policy
- Flexible Work Policy
- Grievance and Complaint Procedure
- HR Australia Policy Index
- Leave Policy
- Occupational Health and Safety policy
- Occupational Rehabilitation Policy
- Performance Appraisal Policy
- Privacy Policy
- Salary, superannuation, bonus and Save for Shares information
- Security Policy
- Social Media Policy
- Training and Development policy

IT Policies

- Acceptable use of IT Systems Policy
- File Shares and Backup Policy
- File Sharing with External Parties Policy
- IT Policy Index
- Mobile Phones and Data Card Policy
- Provisioning and Closing Email Accounts Policy
- Remote Network Access Policy
- Software Purchase and Use Policy
- Testing Software in Development Policy

Legal Policies

- Copyright Infringements Guidelines
- Gifts and Corporate Hospitality Policy
- Website Privacy Policy

Page Contact: [redacted] | *Date Last Updated: 30/08/2010 12:00 AM* | *Date For Next Review: 30/08/2011*

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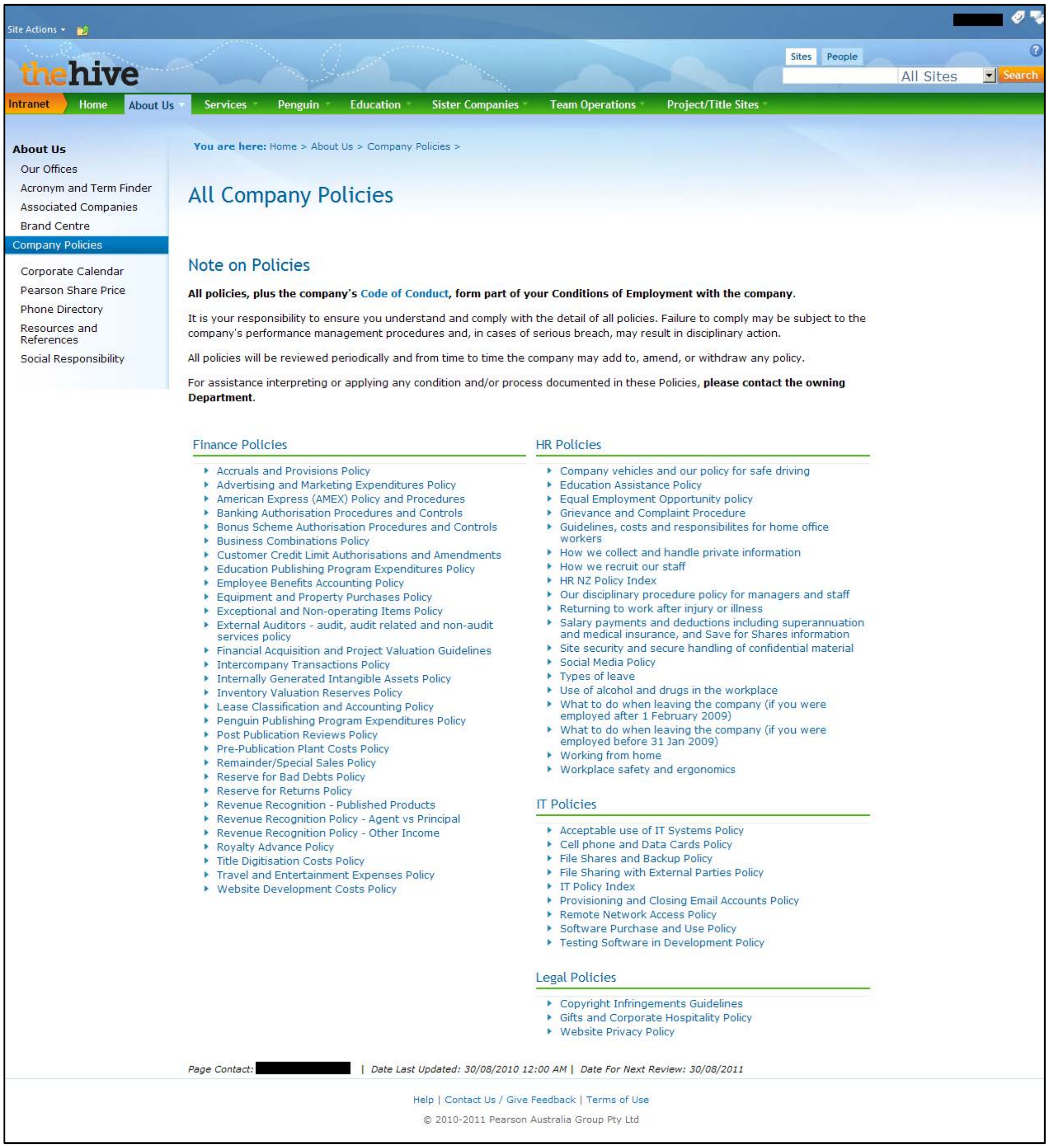
This page on the Pearson portal aggregates all policies (based on a content type applied to the policy pages/files) and displays only those relevant to Australian staff.



[redacted]

Site Actions

thehive

Sites | People

All Sites | Search

Intranet | Home | About Us | Services | Penguin | Education | Sister Companies | Team Operations | Project/Title Sites

About Us

- Our Offices
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- Revenue Recognition Policy - Agent vs Principal
- Revenue Recognition Policy - Other Income
- Royalty Advance Policy
- Title Digitisation Costs Policy
- Travel and Entertainment Expenses Policy
- Website Development Costs Policy

HR Policies

- Company vehicles and our policy for safe driving
- Education Assistance Policy
- Equal Employment Opportunity policy
- Grievance and Complaint Procedure
- Guidelines, costs and responsibilites for home office workers
- How we collect and handle private information
- How we recruit our staff
- HR NZ Policy Index
- Our disciplinary procedure policy for managers and staff
- Returning to work after injury or illness
- Salary payments and deductions including superannuation and medical insurance, and Save for Shares information
- Site security and secure handling of confidential material
- Social Media Policy
- Types of leave
- Use of alcohol and drugs in the workplace
- What to do when leaving the company (if you were employed after 1 February 2009)
- What to do when leaving the company (if you were employed before 31 Jan 2009)
- Working from home
- Workplace safety and ergonomics

IT Policies

- Acceptable use of IT Systems Policy
- Cell phone and Data Cards Policy
- File Shares and Backup Policy
- File Sharing with External Parties Policy
- IT Policy Index
- Provisioning and Closing Email Accounts Policy
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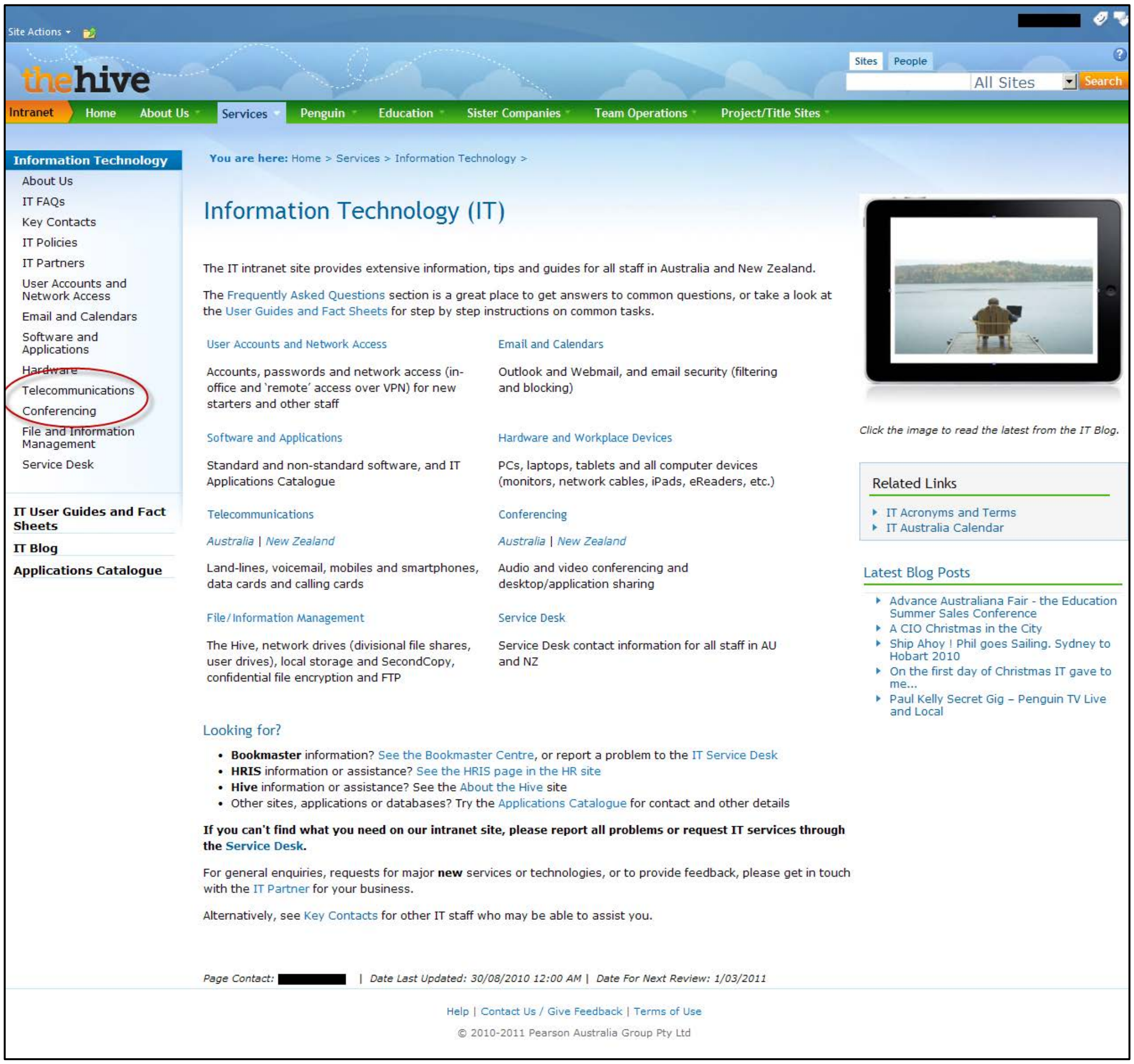
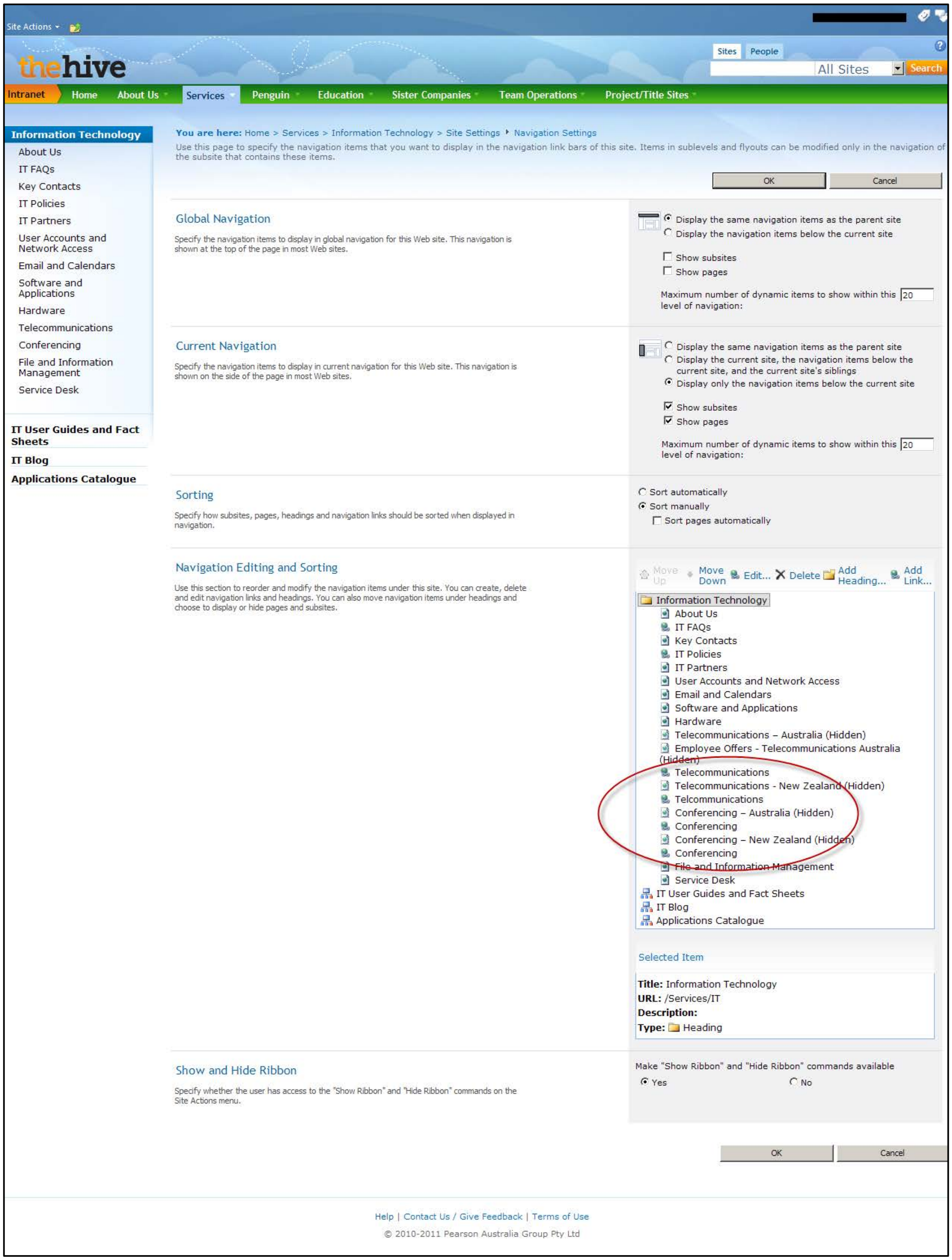
The same policy information as seen by New Zealand staff on the Pearson portal.



Navigation on the IT site is audience-targeted to display only the links relevant to each region on the Pearson portal.



The navigation administration screenshot shows all automatically created pages (which are hidden), as well as the audience-targeted links created to the AUS- or NZ-specific content on the Pearson portal.

YARA PERSONALIZES BASED ON LOCATION

Offering content based on location was also a high priority for Yara, as the company operates with so many different languages. Users said they wanted to see relevant content so the company knew personalization was a priority.

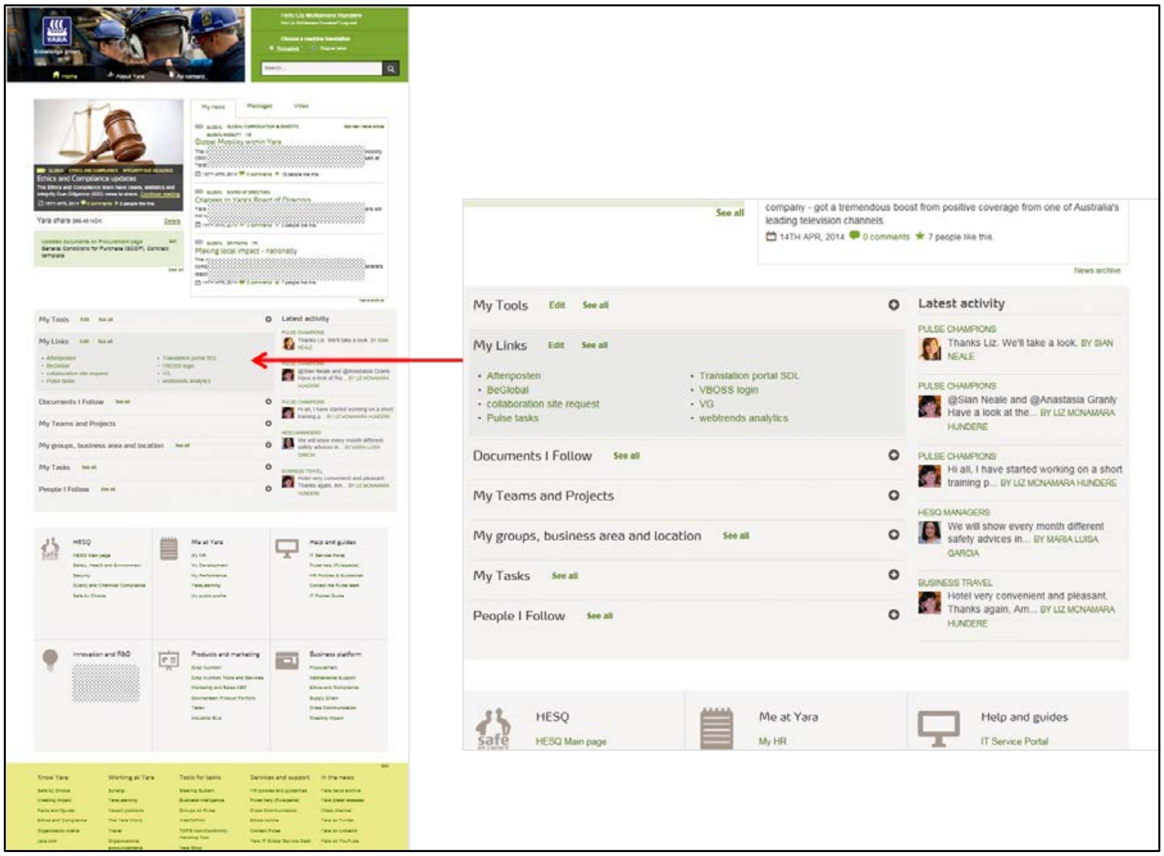
Content is shown based on the employee's role in the company's HRIS and active Directory. Users see content based on their location, the business area/unit in which they work and they can also customize certain content feeds. Most locations have a page as do many business areas/units. Online "visitors" to these pages see different content than "workers." Workers can see whatever the visitors see, but not vice versa.

"Content availability relates more to groups of people at a location or working for a business area/unit rather than roles," says Liz McNamara Hundere, Director Digital Communications, Yara International ASA. "For example, with HR content, employees in Norway will see very different HR content to users in the US. They will not be able to see each other's content."

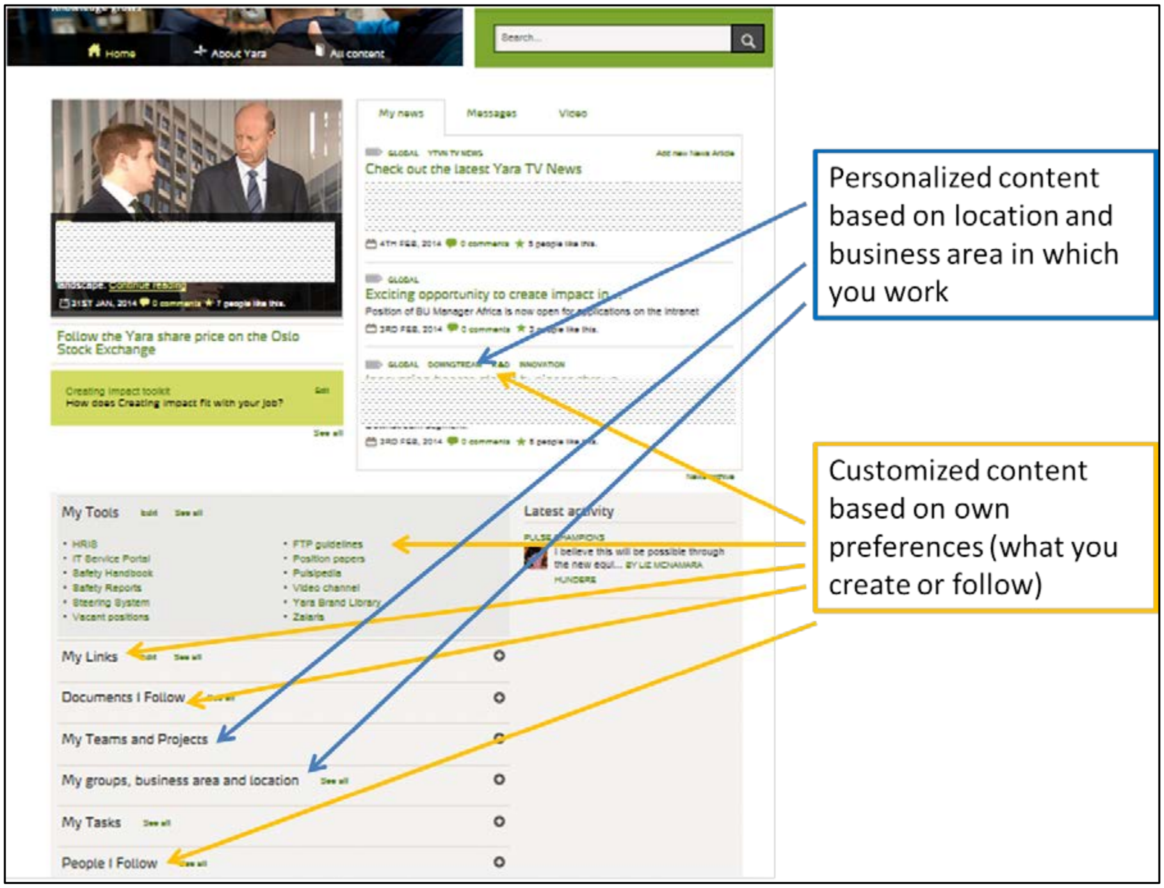
This means that personalization is not individual, rather it relates to all workers at a location (which can be a country or a city or a site (Finland, Oslo, Ferrara), or workers at within and area of business (communications, production, Finland etc.).

The newsfeed, however, is both personalized and customizable. "Each employee receives news tagged with his or her location and business area (personalized)," she says. "They can also follow or subscribe to topics (tags) of their choice. So, for example, I work in Communications in Oslo, so I get news tagged either (or both) Communications and Oslo, and in addition I choose also to follow or subscribe to HESQ news."

Yara users can customize which of the non-mandatory tools they wish to link to. Their list of links is totally customizable (individual). Users can customize which documents and people they wish to "follow" and see listed on their front page and their *My Site*.



On the Yara portal users may add any link they wish. Their choice of 12 links will appear on the front page. All their links are available on their *My Site*.



Users see content that is relevant to what they are doing, where they are working and what they need to know strategically on the Yara portal.

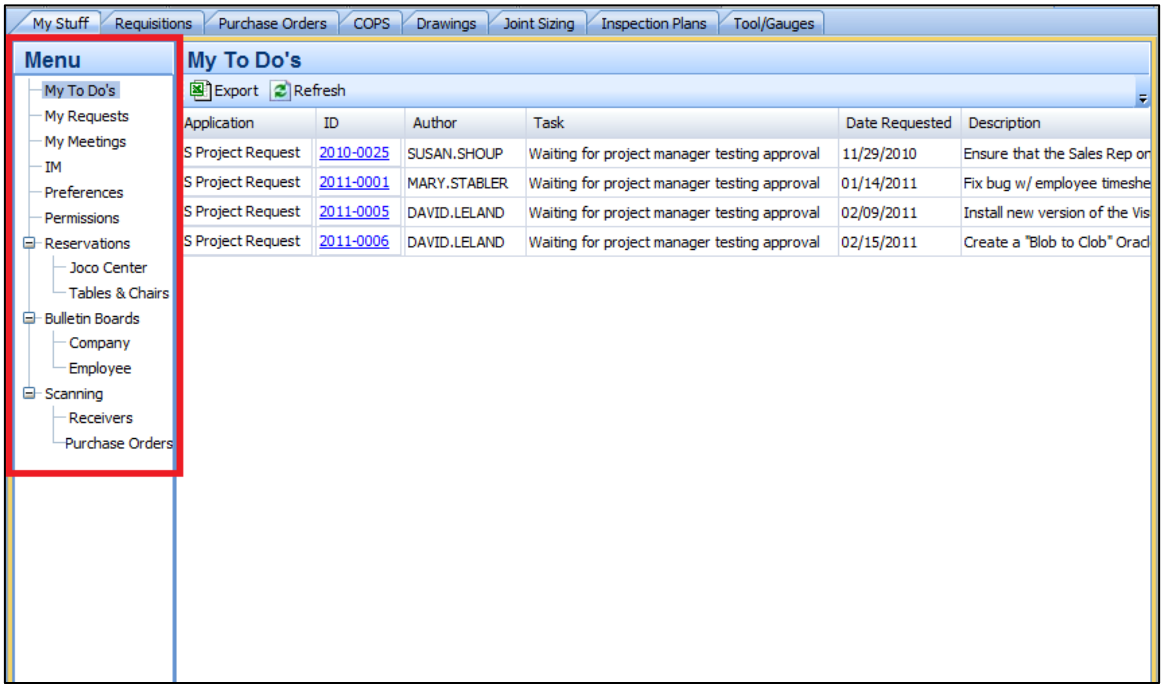
"MY" PAGES

"My" Pages are another approach to personalization that some companies adopt and this type of personalized functionality is a standard feature of many portal software solutions.

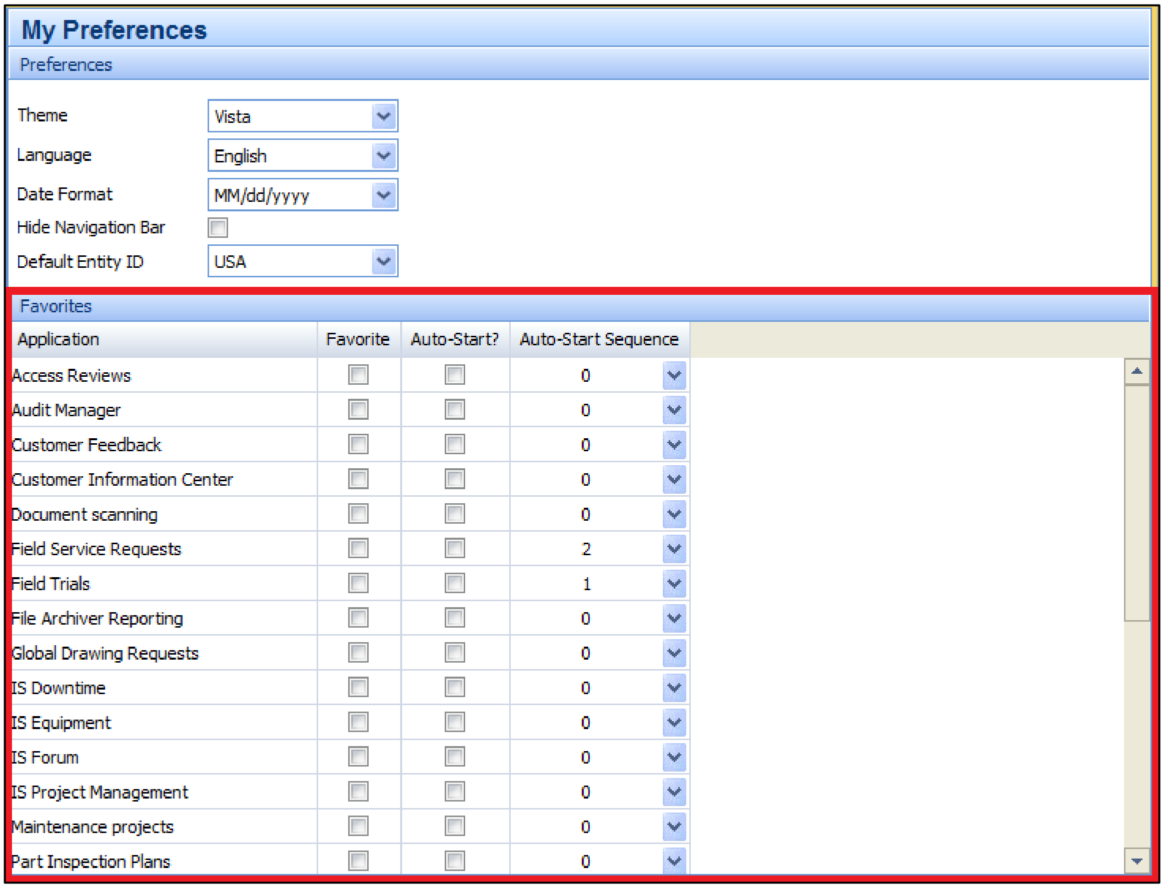
At EMBARQ, the portal offers users just such a section where they can personalize many portlets in both layout and content (stock quotes, weather, news/RSS, my favorites, my collaboration projects, my saved searches, etc.). EMBARQ portal users can create multiple *My* pages and add/rearrange the portlets as they wish. The company introduced the *My Page* area to users after removing personalization from the homepage. This move pleased some users and angered others. One of the tricks with customization is that users won't customize what they don't know is customizable. EMBARQ learned that the hard way. "The *My Page* was not as intuitive as we had hoped," say Hammond, "So some users never bothered to personalize it."

Some companies us *My* pages as a way to improve productivity. For example, the Kadant Johnson portal does not have any personalization per se, but does offer a *My Stuff* area where users can aggregate relevant information and shortcuts to expedite information gathering.

"What we did is to design a *My Stuff* area which houses each user's individual items such as *To Do lists*, *Requests* and *Meetings*," says David Leland, systems support manager. "The final thing we did was to create a *Favorites* area for each user where they could choose which applications they wanted pre-loaded whenever they launched the intranet portal and in what order they wanted them launched. This has definitely helped to increase user productivity."



An example of a user's *My Stuff* area on the Kadant Johnson intranet portal.



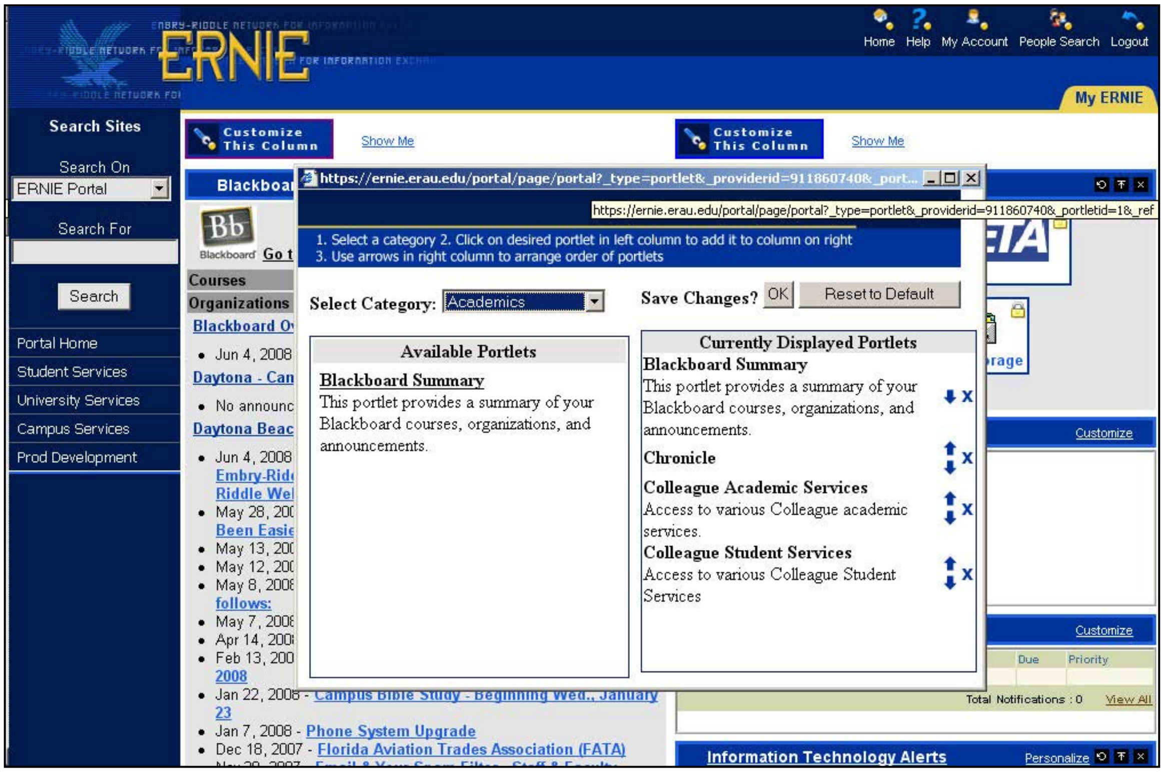
This shows a user's *favorites* page, where the user can choose which applications they want pre-loaded when launching the Kadant intranet portal, and in what order they want them loaded.

"My" Pages while popular at some organizations are not always a clear solution or even something worth building. Like many customizable features on intranet portals, users don't always make enough use of them to make them worth the trouble.

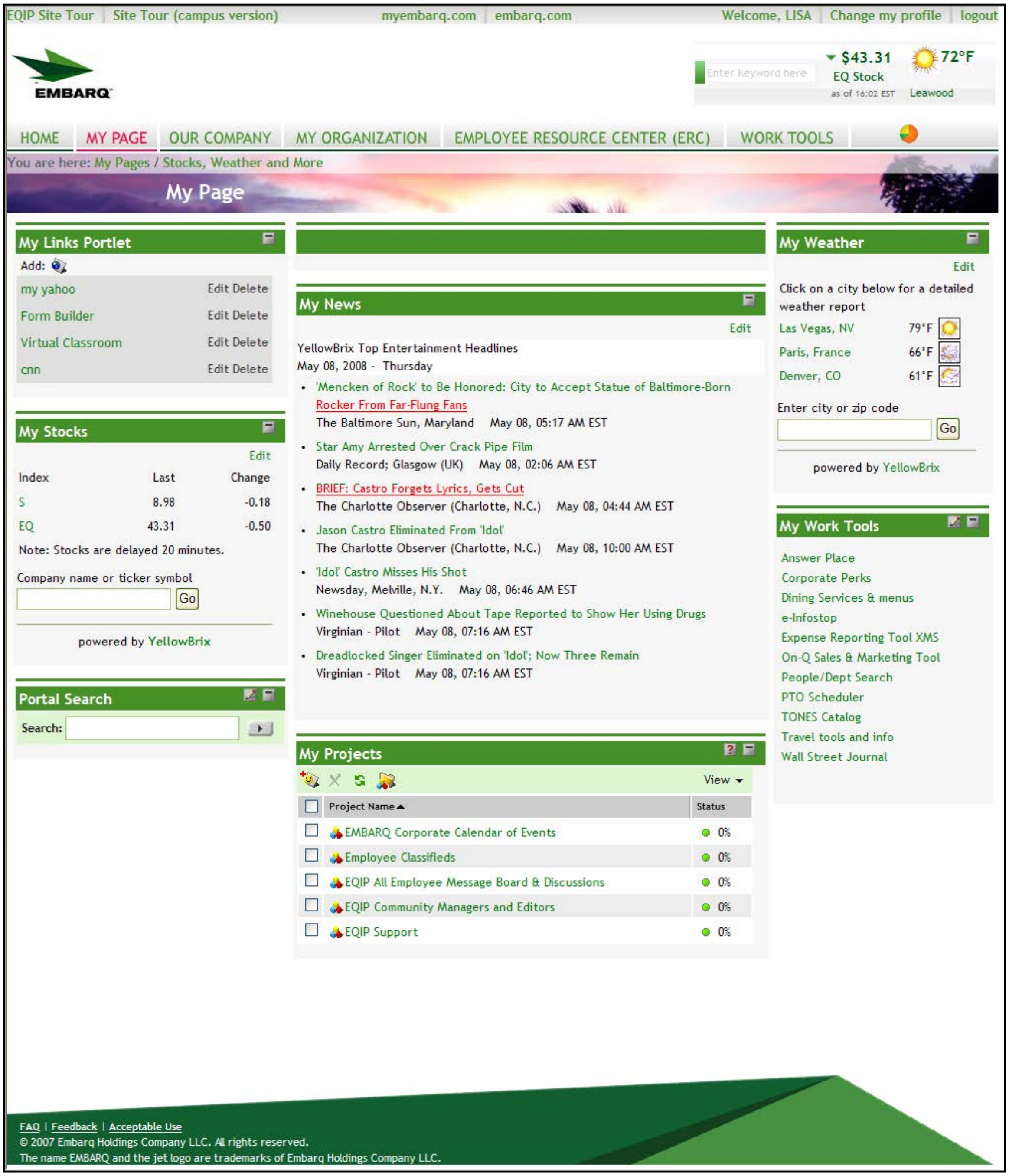
PeaceHealth's portal has a *MySites* option open to users, but the company is struggling with justifying the value of such a feature. "We are in the process of putting together governance structures around it," says Ramos. "There seems to be some traction around the idea of allowing users to customize their own sites, but also many unanswered questions about if this is needed, wanted or desirable."

MySites allow users to customize the look and feel, content and, to some extent, navigation elements, but, Ramos says, "It's too early to tell if users will adopt this or not."

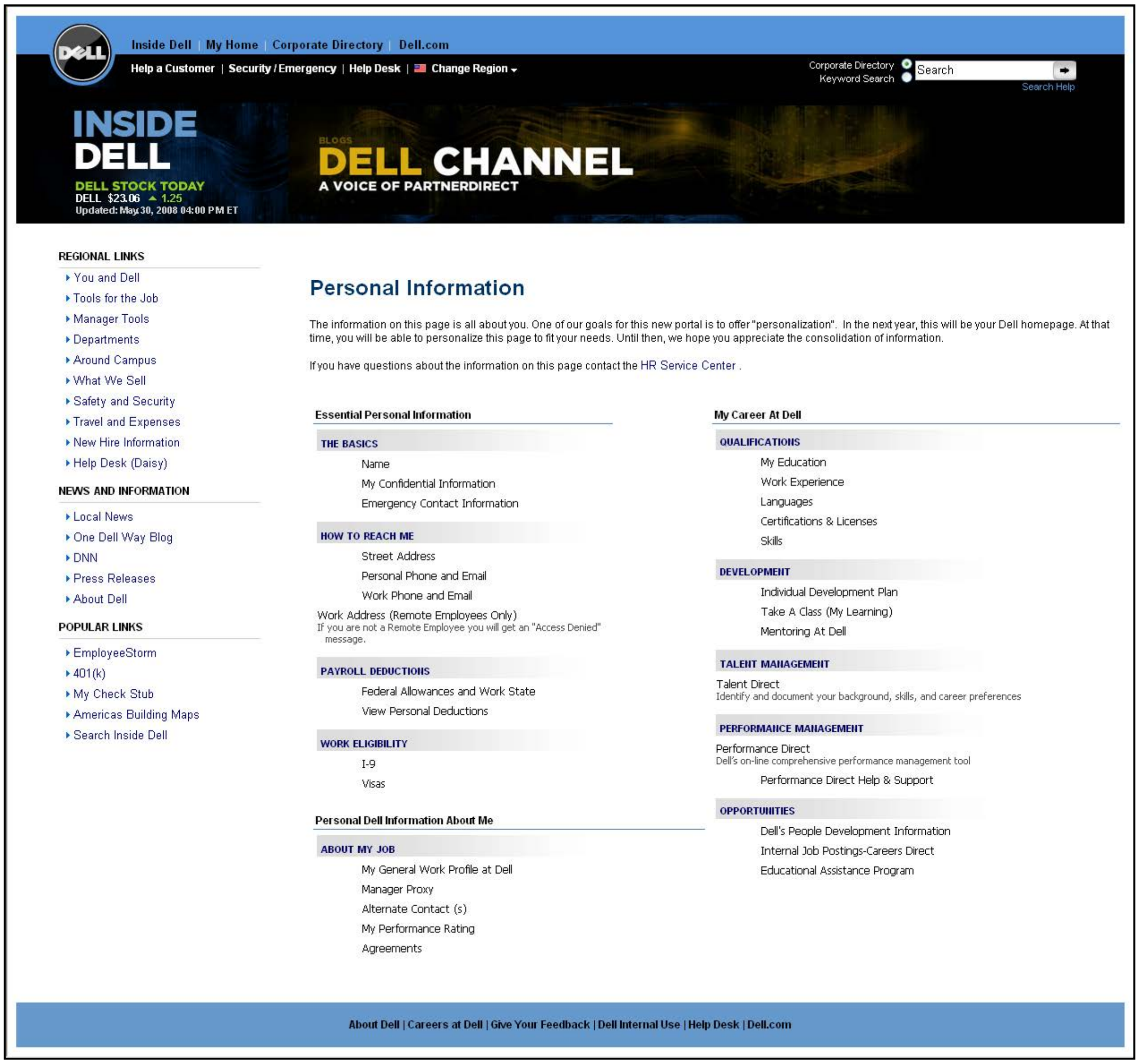
The rest of PeaceHealth's site relies on role-based personalization. When personalization is employed on portals it is often the role-based features that easily demonstrate value and provide clearer cost-justification, but it is also this type of personalization that users tend to appreciate the most.



The *My ERNIE* tab at Embry Riddle University can be customized to add, delete and reorder all available portlets in the two columns.



My Page allows user customization at EMBARQ.

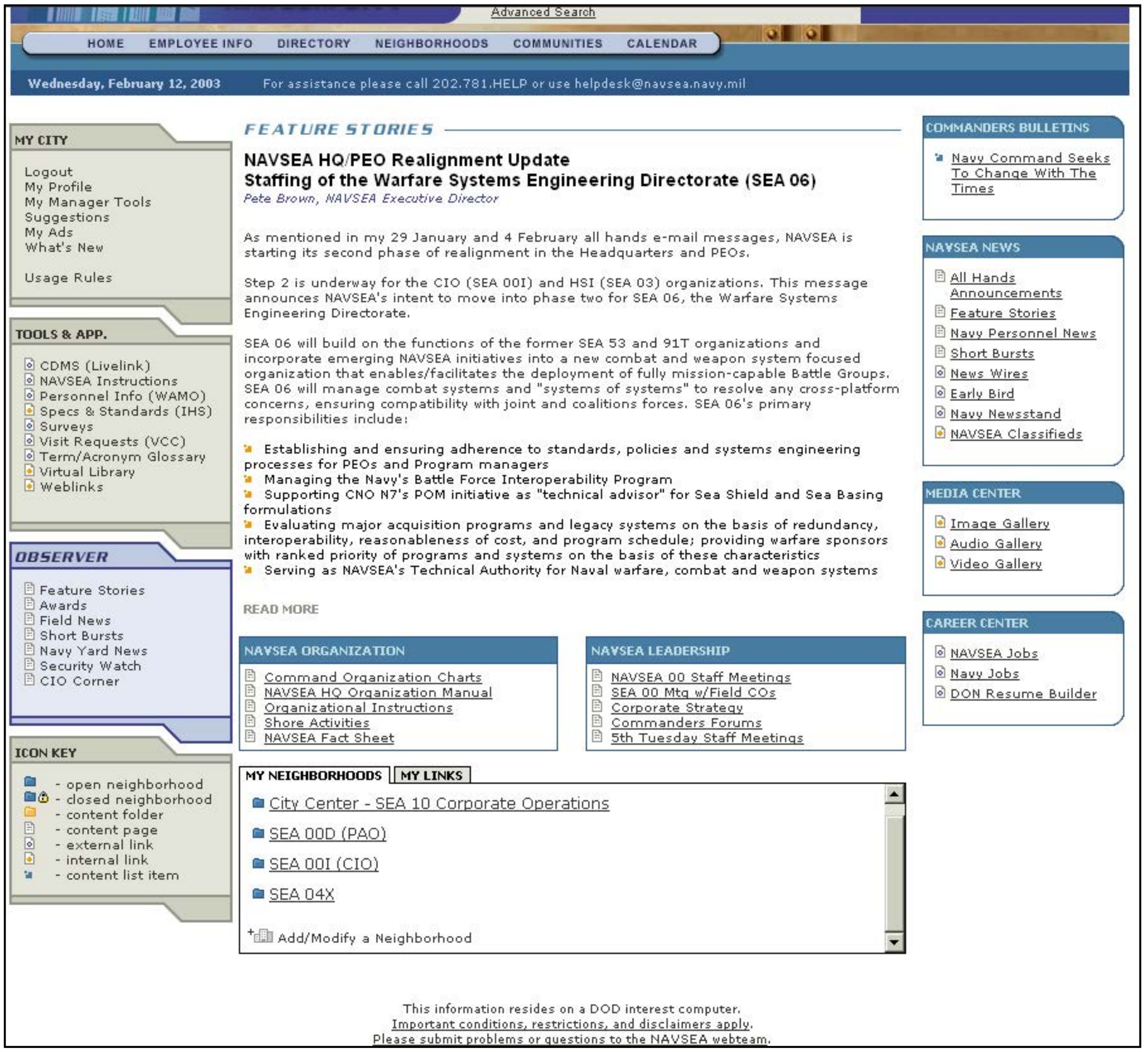


My Home on the Dell portal is the employee's personal portal page, containing links to all the tools an employee needs to make changes to HR, payroll, IT and finance records. In a future phase, *My Home* will have user-customization capabilities.

LIMITED PERSONALIZATION AT NAVSEA

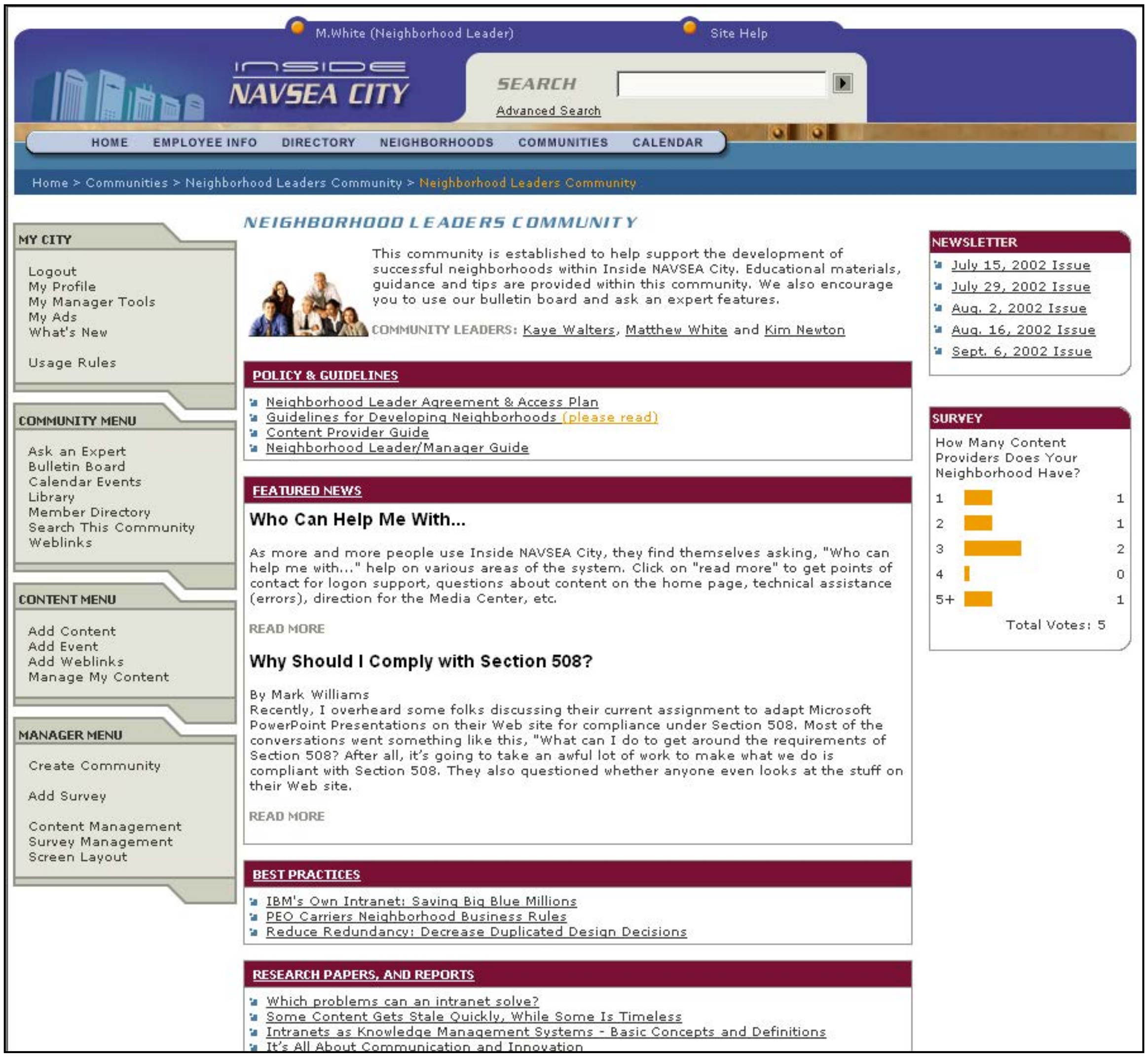
Naval Sea Systems Command (NAVSEA) supervises shipbuilding for the U.S. Navy, employing around 50,000 people in shipyards and maintenance facilities worldwide. The NAVSEA portal integrates existing intranet systems and aims to make the vast collection of information and web-enabled applications they contain more easily available to personnel.

The system recognizes users by their login information and provides some personalization features. These include saving hot links to the user's favorite areas of the site — a boon in a system with millions of pages — plus favorite web links. It also pre-fills various fields, such as the suggestion area, with the user's information, making these areas less daunting to use.



A NAVSEA page showing some personalization features, including links to the user's profile on the left, and personal links at the bottom of the page.

Rather than seeing heavily personalized pages, NAVSEA users will typically just navigate to their own community or neighborhood area.



The neighborhood leaders community area within the NAVSEA portal is an example of a community created to help staff in charge of creating and organizing their neighborhood pages. The community pages are geared towards virtual collaboration and communication, and include links to role-specific tools and information.

As a rule, however, NAVSEA does not filter the information portal users see. “One of our big dilemmas is whether to give people access to stuff regardless of whether they need it or not,” says White.

So far, rather than invisibly blocking them from areas they aren’t entitled to access, NAVSEA instead shows them a message explaining that they don’t have access rights to the area they just tried to access. The message also provides contact information in case the user feels they were blocked in error. This approach maintains greater security, while also allowing users to circumvent incorrect restrictions, though getting a response to access requests can take some time.

Still, the NAVSEA team thinks it's an acceptable approach in an environment with thousands of staff members. In fact, drawing up a foolproof central policy stating who is or isn't allowed to access every kind of information would probably be impossible. "We have access lists for various areas, but getting information on who to put on the lists is very difficult," says Matthew White.

PORTALS WITHOUT PERSONALIZATION

By choice or by circumstance, some portals are not personalized. Some organizations believe all corporate information should be available to all employees and filtering it in any way encourages silos that most are trying to eradicate. For these environments, well-designed and thoroughly user-tested navigation combined with a user-vetted information architecture help ensure users aren't overwhelmed by a flood of irrelevant information.

Personalization as an Imperative

Early editions of this report stated that personalization was an optional component of an intranet portal but that sentiment has evolved. Today, some level of personalization is both expected and necessary for a portal to be successful. While some companies still struggle to make personalization work well, from both a design and technology perspective the bottom line is that they are working on it.

ANZ is one of those companies that doesn't offer personalization but quickly realized that good personalization is one of the keys to making its portal truly effective at serving the organization.

"Due to the size and the distributed nature of our organization — ANZ operates in 32 countries — the lack of personalization and customization is probably the biggest hindrance for the current intranet to be a valuable business tool for everybody in the organization," says Nachreiner.

"Not only do we have to deal with a geographic variety that spreads across four continents and a number of languages that is even higher than the number of countries; we also find that the business is set up differently in every country, encompassing a vast amount of different job roles and business units."

Nachreiner echoes the sentiment of so many companies that started out with an intranet site that grew quickly and expanded and came to encompass more and more information and applications. Before long they realized that drinking from a fire hose is not an effective way for users to consume information critical to their daily jobs.

"From our experience," he says, "a portal for an organization of a certain size and a certain level of variety of roles, has to be a personalized portal, in order to really provide substantial business value."

What once may have worked — everything for everyone — is no longer effective at getting the right information into the hands of the users.

"We currently follow an all-or-nothing approach," says Nachreiner. "Meaning that every page and every piece of content that is published on Max, will be visible to each of the about 50,000 users. This results in a mix of mainly two things: First, some content, in particular the portal start page with its news area, is so 'broad' that it can't have a major appeal on any individual users."

"Second every individual user is confronted with a vast amount of pages that does not apply to her, which makes it hard to find the content she actually needs."

The solution, as they see it is that personalization and customization, including the ability to support content in multiple languages, is now a priority when designing the new intranet.

If at First You Don't Succeed

A failed attempt at personalization can sometimes leave an organization shy to try it again. This was the case at Huntington.

"At one point long before I arrived at Huntington there was an interest in personalizing the intranet," says Maisnier. "They implemented a customization system based on existing LDAP sign-on security that was populated through active directory. It required an additional login to the Essentials intranet however, and many colleagues did not choose to participate."

Studies have shown that users are sometimes not even aware that customization options are available, leading to even fewer users taking advantage of the features. This was one of many things that led to the downfall of the Huntington system.

"The login," he says, "if completed, would default your regional page, which was a second-level landing page, to your particular location. It would also allow for you to choose your own left-hand navigation and sign up for news alerts. Because all of this functionality required user action it was often not implemented. In our recent user focus groups many users indicated they did not even know the option was available to them."

Having had a personalization scheme that failed may work to their advantage at Huntington. Now, they have an opportunity to try something new and in doing so, find a more effective approach that will serve their users.

"Because the previous attempt to implement personalization was in many ways aborted, we have some flexibility in terms of how we utilize personalization in the future and perhaps deferring major personalization functionality to a later phase of the site's development," says Maisnier. "However, we would be missing an opportunity if we did not explore select personalization that could have a deep impact on improving the user experience within the site."

But as they and many other portal teams find in trying to execute personalization options, success is a balancing act, trying to find the sweet spot between segmentation and silo.

"Ultimately," he says, "it is a balancing act to determine what the correct level of personalization is without segmenting the colleague population into silos again. Users want relevant information pushed to them yet the opportunity to tweak the presentation of that information."

BEST PRACTICES

Personalization

- Choose wisely. Deciding which information users need to see is very difficult. Using personalization to de-emphasize — rather than hide — less-relevant information leaves employees' information-finding options open.
- Understand the options. Consider making the distinction between personalization (what the company decides a user sees) and customization (user-customizable viewing preferences).
- Role-based is a good place to start. Role-based personalization often gives users the information they need without them having to spend time and energy digging for it.
- Mapping data to user segments is not as easy as it looks. Don't be fooled by the promise of out-of-the-box personalization functionality offered by portal products. The process of getting accurate data about users, and accurate metadata on content, to effectively drive the personalization can require significant programming and integration challenges. Plan carefully before committing to personalization and make sure the portal team has the resources to support it.
- Personalization impacts content management. Assess the impact of personalization on the content development process, from markup responsibilities to duplicating content for similar audiences.
- Personalization is not the magic bullet. Even the features that come standard with many portal platforms must be thoughtfully applied across and organization and their value considered for the return on investment.
- Plan for personalization. Implement a security model that will support granular roles. As your intranet gets more complex, the more you'll want to personalize it based on user roles. If you build a platform that will support personalization you'll have a good foundation once you are ready for the functionality.

Customization

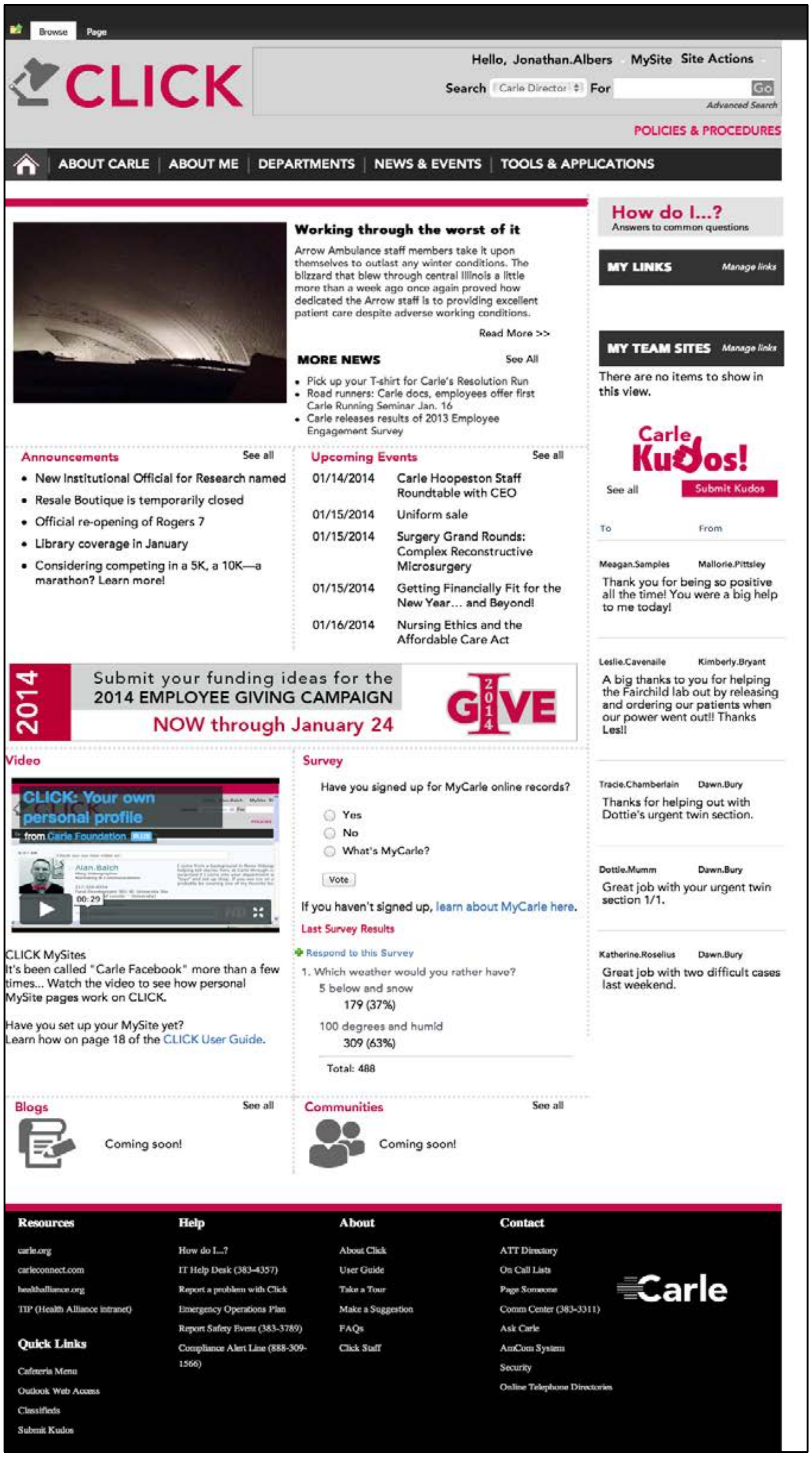
- Customization is (mostly) not worth the effort. User-controlled customization settings are not as much of a good investment as personalization features. Users often ask for these features and rarely use them.
- Test customization features with users. Don't skimp on user testing customizable features. It's important to keep in mind how much usability can affect adoption of those tools if they are implemented poorly.

- Keep it simple. Many users don't bother to customize pages, and are happy to accept default settings. When choosing customization features, keep it simple. Too many options can overwhelm users and are not likely to be utilized. A few, carefully chosen customization features can have more impact than a broad array of frivolous options.
- Make it obvious. Users won't use features they don't know exist and users won't hunt to figure out all that's possible. If a feature is not mission-critical users might never know it's there unless they trip over it. If you are going to offer customizable features make sure it's obvious that these features exist.

Homepage Gallery

Portal homepages can vary greatly from one organization to the next. Many take on the default look of the portal software. Many feature the ubiquitous portlets that are so common on portal platforms. Some organizations take great pains to customize the homepage, not so much with a lot of look & feel or branding elements as they might with a public web page, but with more subtle design elements to make it have the feel of a particular organization. Here we include a selection of portal homepages intended to showcase the wide variety of possible portal designs.

Homepages from Companies New to the 5th Edition of This Report


Browse
Page
CLICK
Hello, Jonathan.Albers
MySite
Site Actions
Search
Carle Director
For
Go
Advanced Search
POLICIES & PROCEDURES
ABOUT CARLE
ABOUT ME
DEPARTMENTS
NEWS & EVENTS
TOOLS & APPLICATIONS
Working through the worst of it
Arrow Ambulance staff members take it upon themselves to outlast any winter conditions. The blizzard that blew through central Illinois a little more than a week ago once again proved how dedicated the Arrow staff is to providing excellent patient care despite adverse working conditions.
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Pick up your T-shirt for Carle's Resolution Run
Road runners: Carle docs, employees offer first Carle Running Seminar Jan. 16
Carle releases results of 2013 Employee Engagement Survey
How do I...?
Answers to common questions
MY LINKS
Manage links
MY TEAM SITES
Manage links
There are no items to show in this view.
Announcements
See all
New Institutional Official for Research named
Resale Boutique is temporarily closed
Official re-opening of Rogers 7
Library coverage in January
Considering competing in a 5K, a 10K—a marathon? Learn more!
Upcoming Events
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01/14/2014 Carle Hoopeston Staff Roundtable with CEO
01/15/2014 Uniform sale
01/15/2014 Surgery Grand Rounds: Complex Reconstructive Microsurgery
01/15/2014 Getting Financially Fit for the New Year… and Beyond!
01/16/2014 Nursing Ethics and the Affordable Care Act
Carle Kudos!
See all
Submit Kudos
To
From
Meagan.Samples
Mallorie.Pittsley
Thank you for being so positive all the time! You were a big help to me today!
Leslie.Cavenaile
Kimberly.Bryant
A big thanks to you for helping the Fairchild lab out by releasing and ordering our patients when our power went out!! Thanks Les!!
Tracie.Chamberlain
Dawn.Bury
Thanks for helping out with Dottie's urgent twin section.
Dottie.Mumm
Dawn.Bury
Great job with your urgent twin section 1/1.
Katherine.Roselius
Dawn.Bury
Great job with two difficult cases last weekend.
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Submit your funding ideas for the
2014 EMPLOYEE GIVING CAMPAIGN
NOW through January 24
GIVE
Video
CLICK: Your own personal profile
from Carle Foundation
Alan Balch
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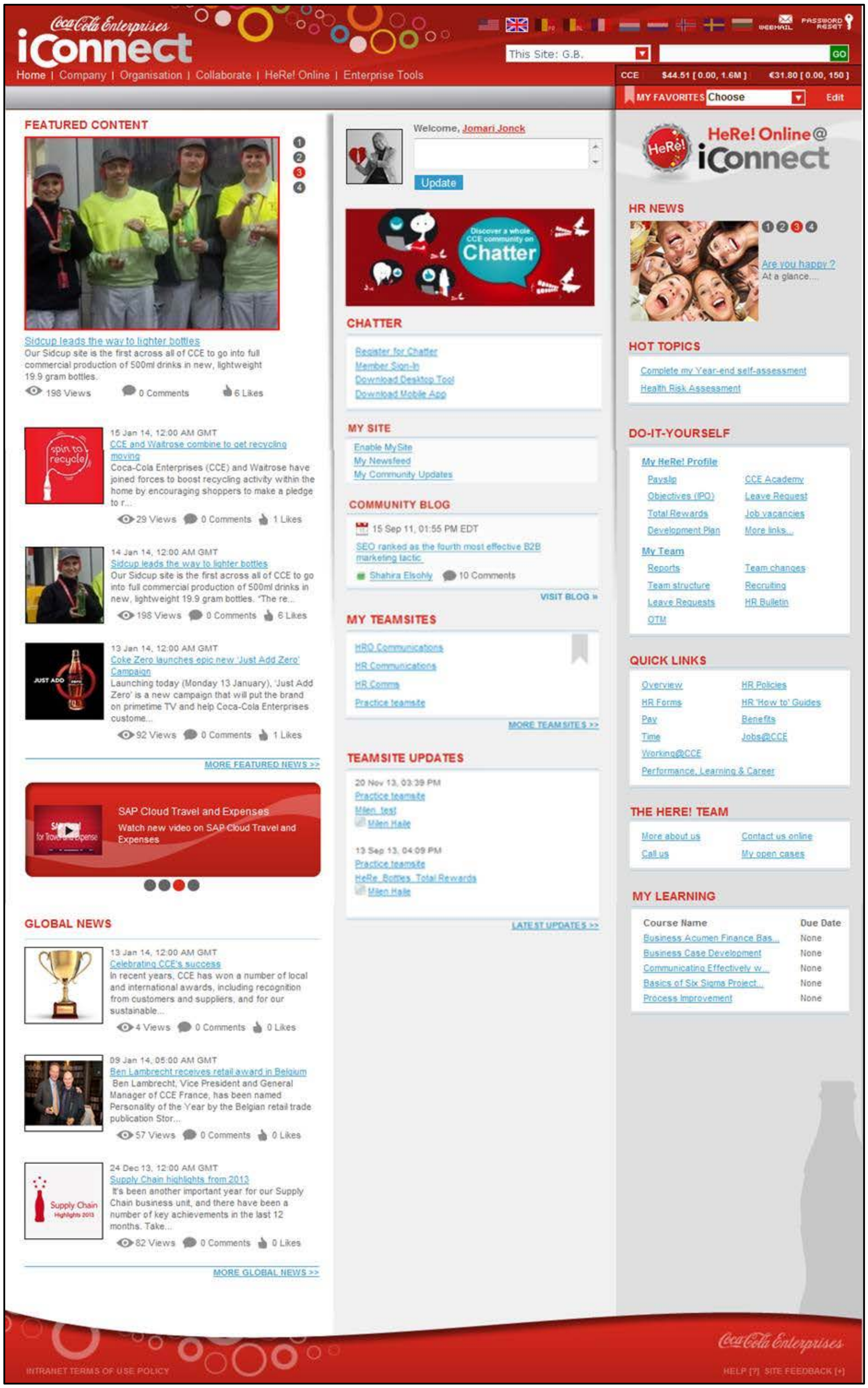
CLICK MySites
It's been called "Carle Facebook" more than a few times... Watch the video to see how personal MySite pages work on CLICK.
Have you set up your MySite yet?
Learn how on page 18 of the CLICK User Guide.
Survey
Have you signed up for MyCarle online records?
Yes
No
What's MyCarle?
Vote
If you haven't signed up, learn about MyCarle here.
Last Survey Results
Respond to this Survey
1. Which weather would you rather have?
5 below and snow
179 (37%)
100 degrees and humid
309 (63%)
Total: 488
Blogs
See all
Coming soon!
Communities
See all
Coming soon!
Resources
carle.org
carleconnect.com
healthalliance.org
TIP (Health Alliance intranet)
Quick Links
Cafeteria Menu
Outlook Web Access
Classifieds
Submit Kudos
Help
How do I...?
IT Help Desk (383-4357)
Report a problem with Click
Emergency Operations Plan
Report Safety Event (383-3789)
Compliance Alert Line (888-309-1566)
About
About Click
User Guide
Take a Tour
Make a Suggestion
FAQs
Click Staff
Contact
ATT Directory
On Call Lists
Page Someone
Comm Center (383-3311)
Ask Carle
AmCom System
Security
Online Telephone Directories
Carle

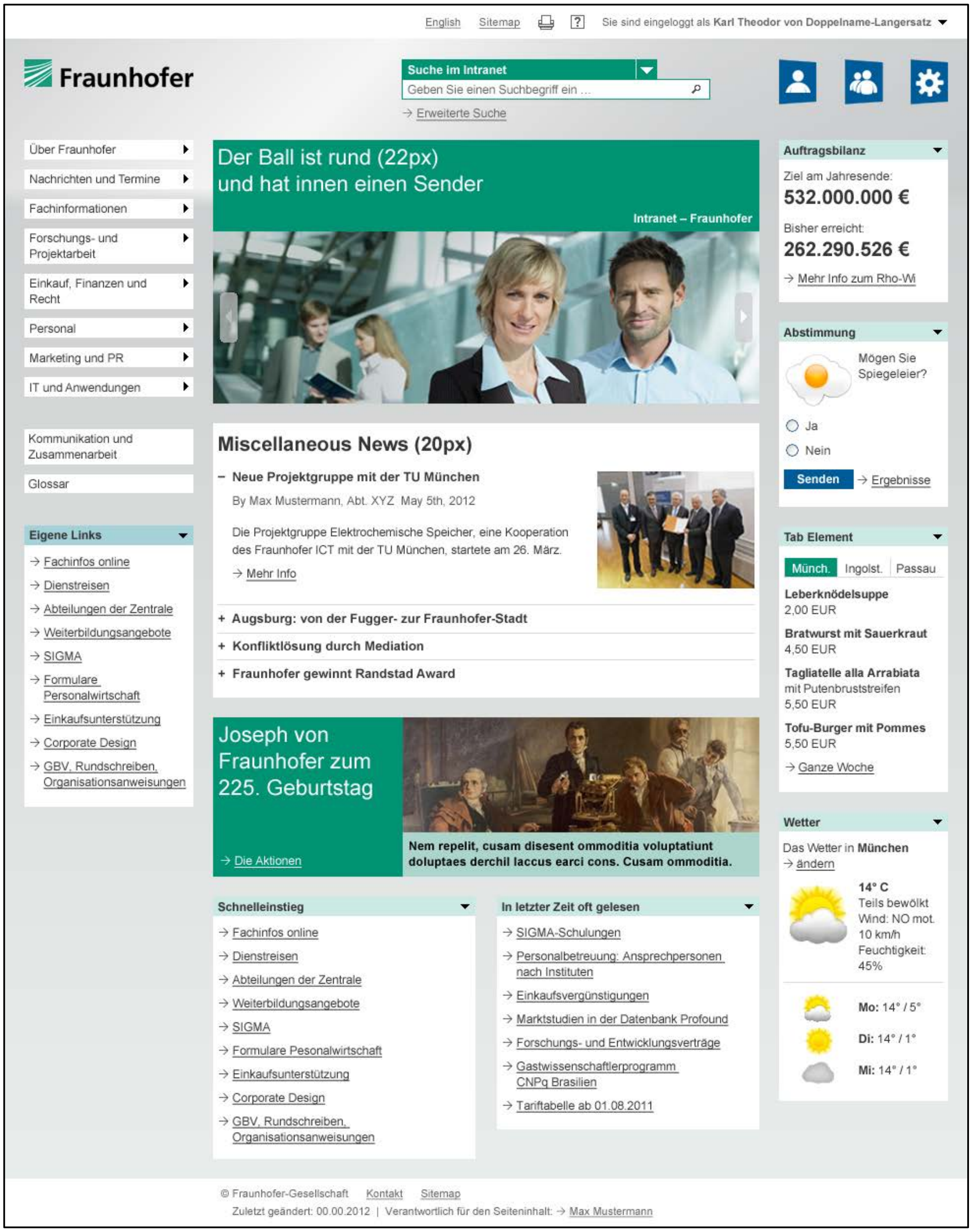
The homepage of the Carle Foundation's portal, CLICK (previous page), is designed to give employees quick access to relevant content and functions. It is the primary mechanism for employees to access the material required to carry out their jobs on a day-to-day basis and connect with one another. The homepage features navigational elements including:

- Top navigation and megamenus: contain the site structure and link users to underlying content
- Footer: holds additional quick navigational links
- Common page elements: search, *MySite*, policies & procedures
- Links: *My Links* and *My Team Sites*
- Editorial space: top news, events, announcements, video, banner ads
- Social elements: *Kudos*, blogs, communities, surveys

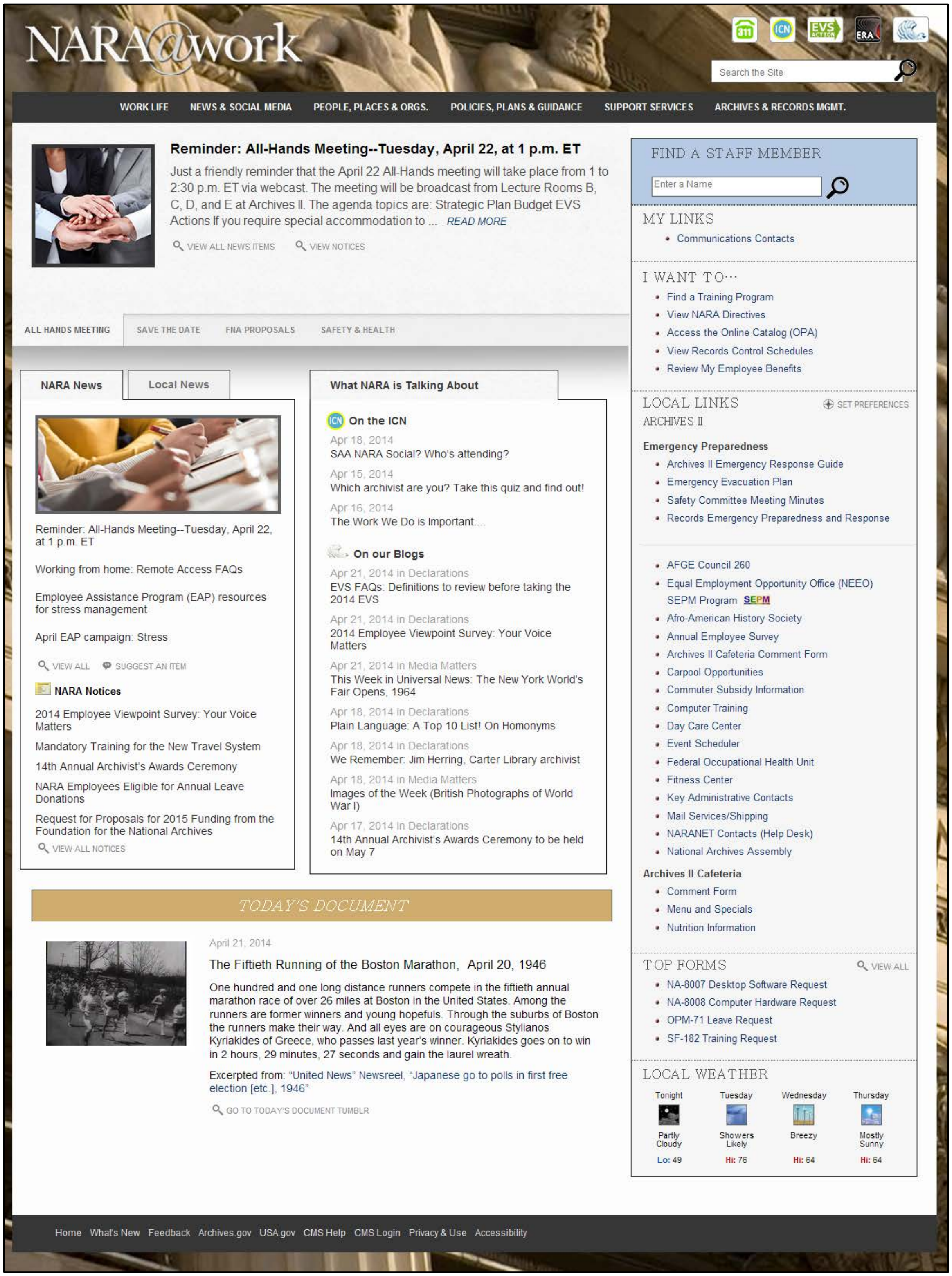


This screenshot showing the homepage of iConnect at Coca-Cola Enterprises shows how the three-column approach gives users quick access to (left to right): communication, collaboration and transactional content.

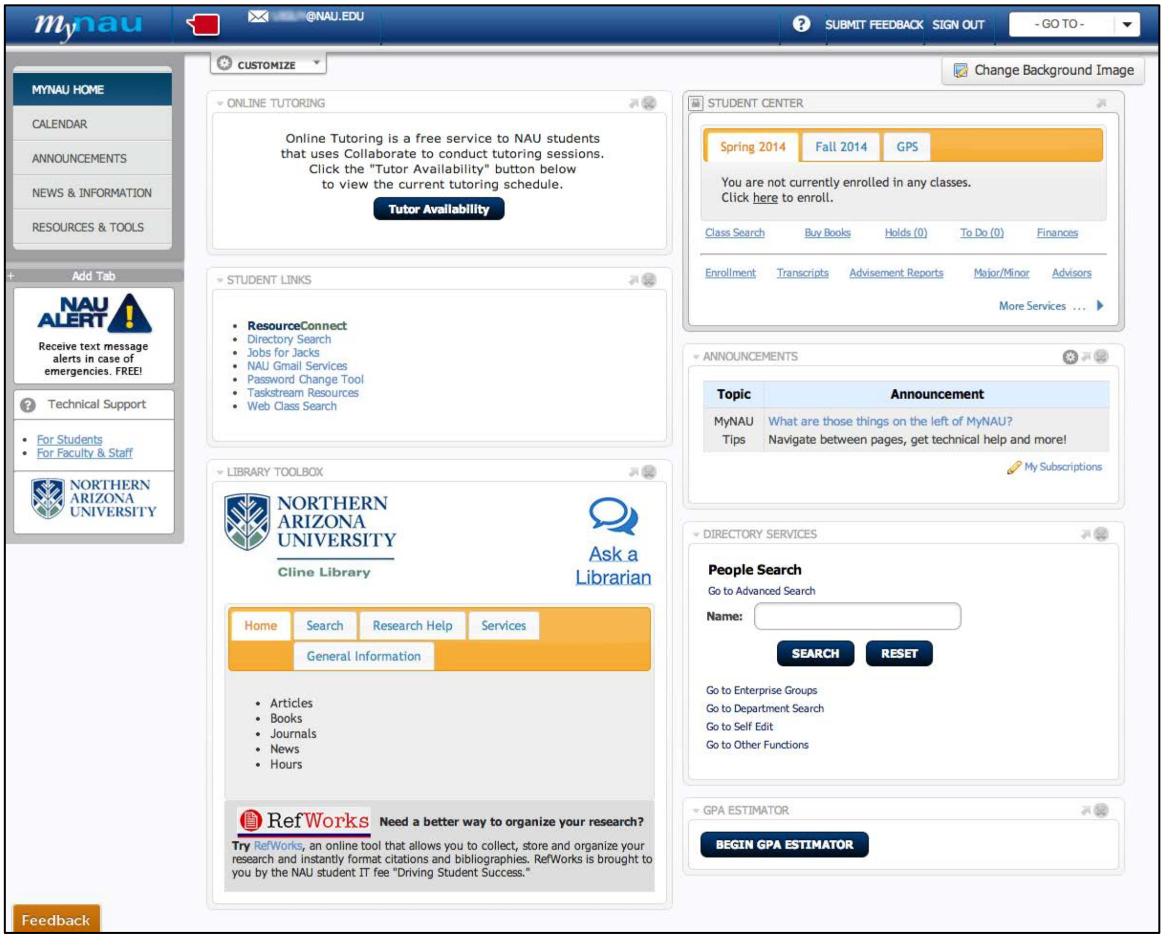
This is the City of Olathe, Kansas' intranet homepage. It features links to news items, video, employee recognition, new employee information and the idea sandbox, among other important links. At the bottom a legend shows which staff members are available on instant messaging.



This shows the design template for the homepage of the central employee portal at Fraunhofer-Gesellschaft, which is used across all Institutes. On the left there is “trail” navigation and personal links, in the middle the main content area with news and announcements and on the right a column with additional information. On the top right are main links to the profile pages, team rooms and the settings.

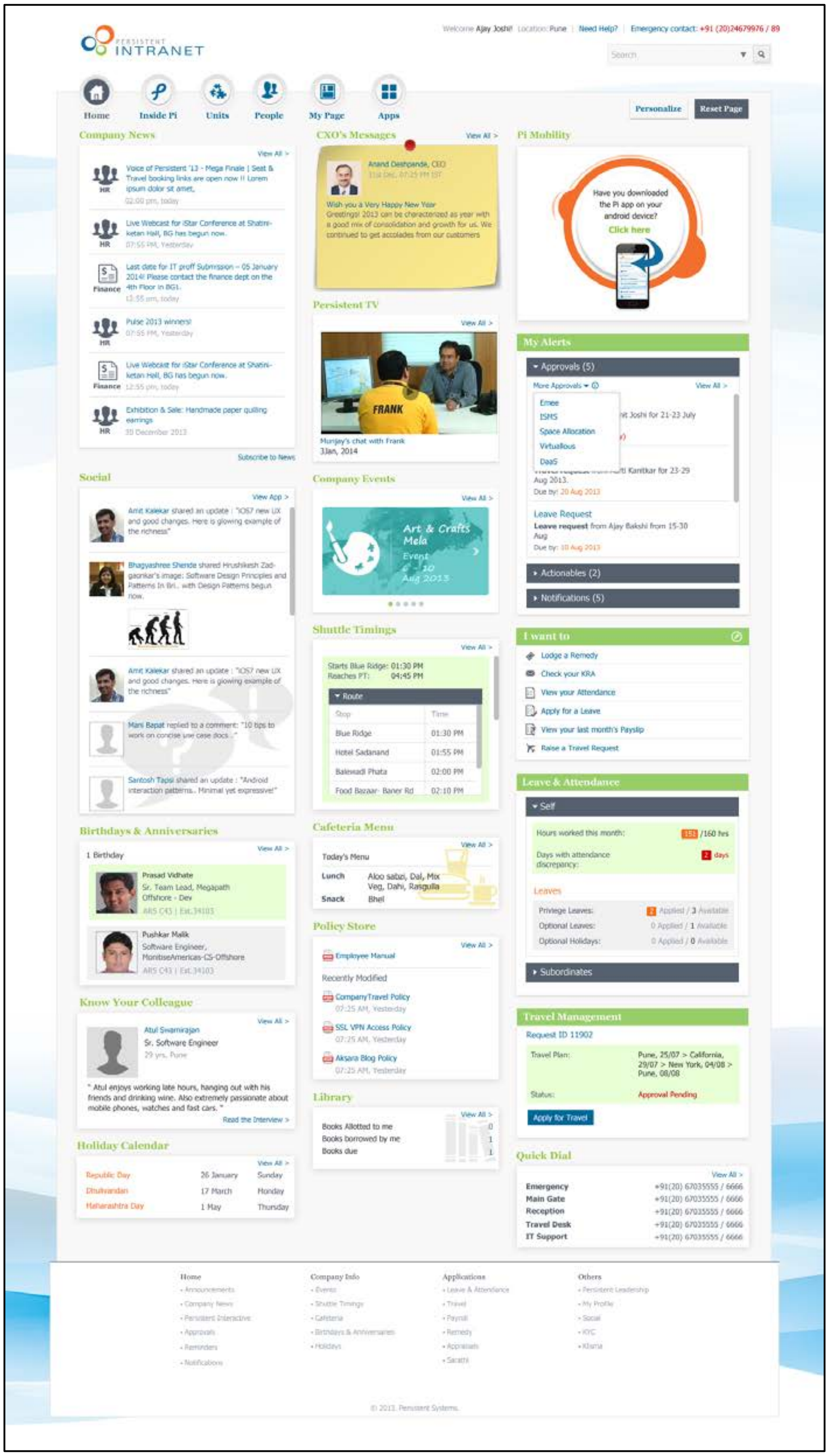


The homepage of the NARA @Work intranet.

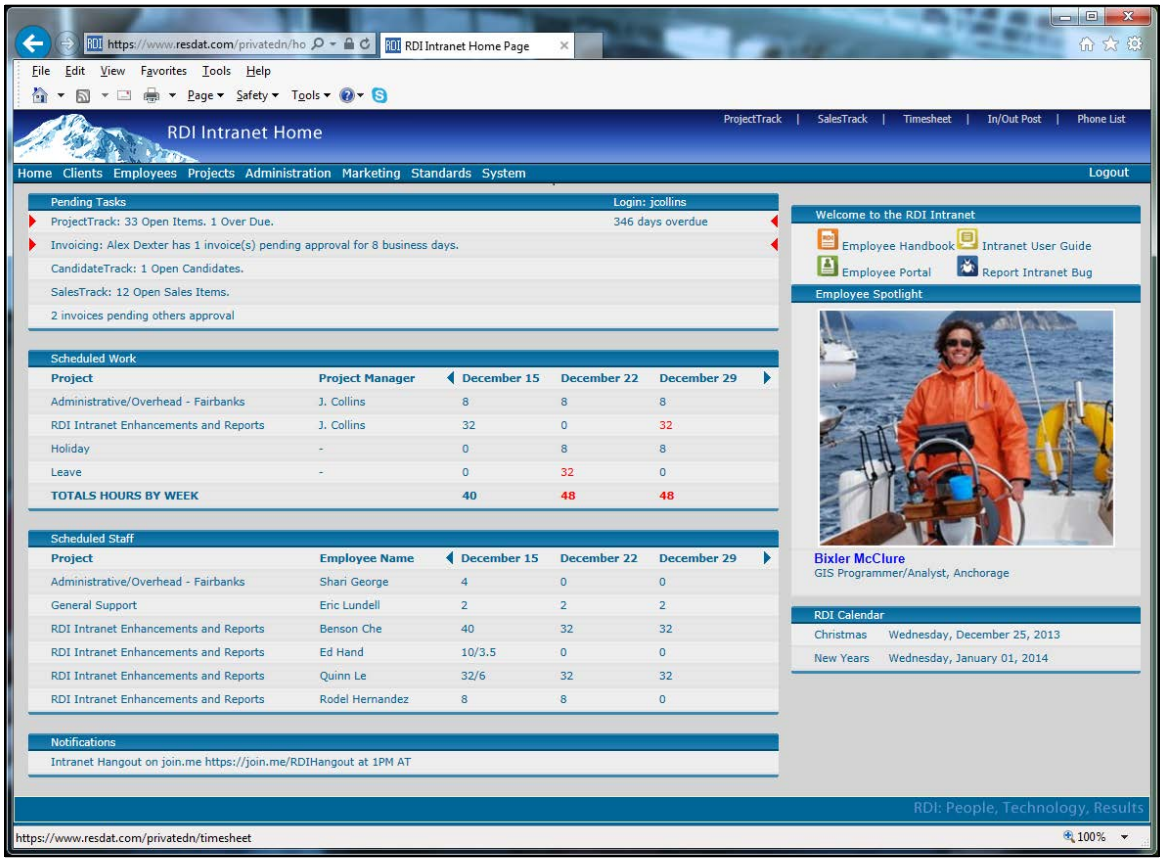


Homepage of *MyNAU* the Northern Arizona University portal.

This is the page employees see when they log in to their computers at Palm Beach County Board of County Commissioners.

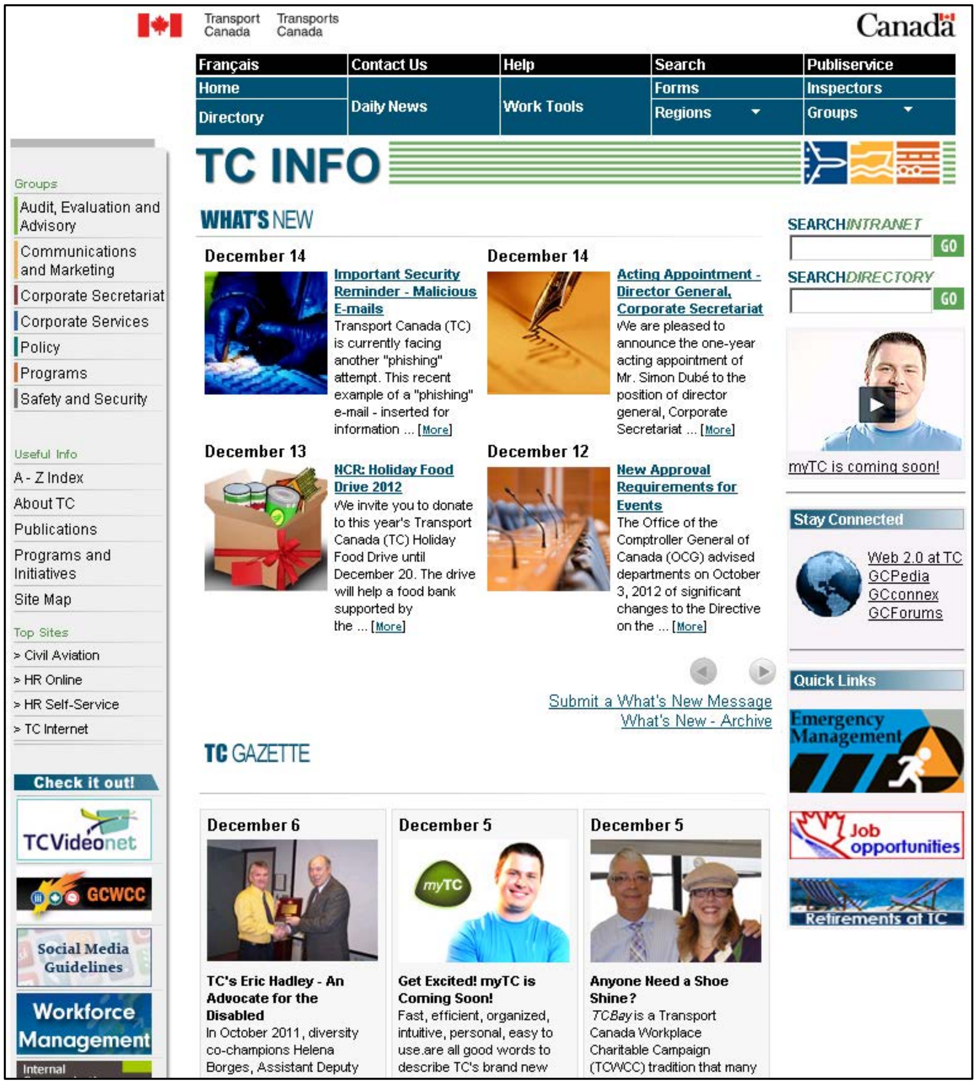


The design for Persistent Systems' homepage was derived from various options based on Persistent corporate color scheme and branding.

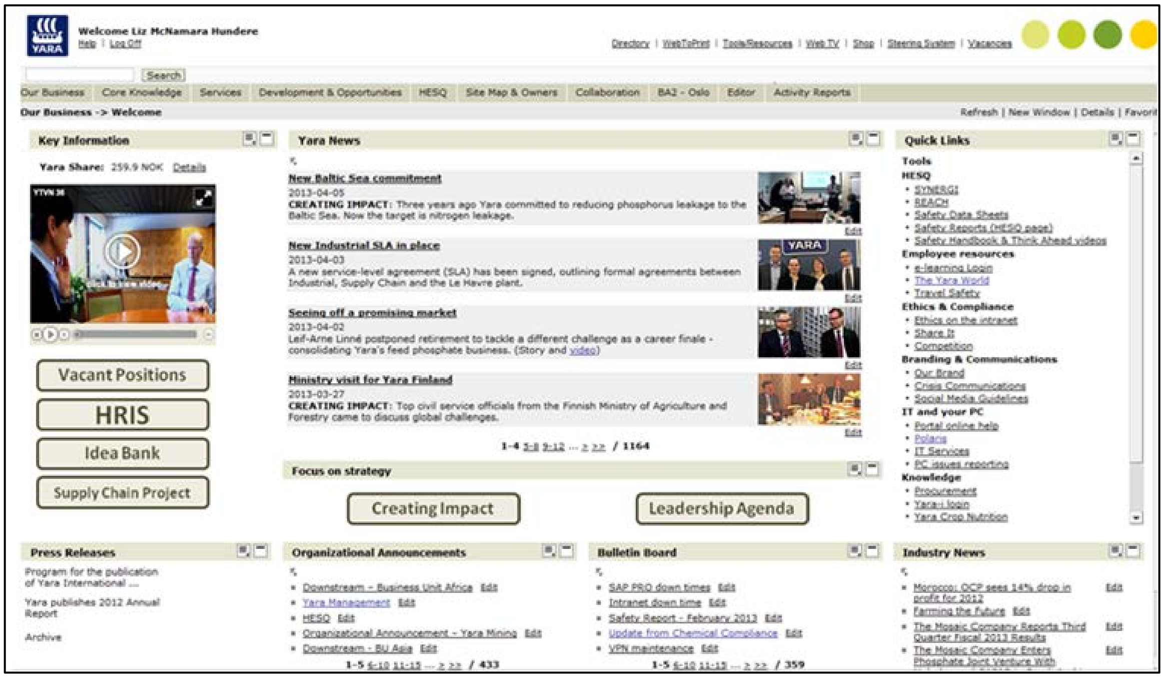


The company homepage at Resource Data, Inc. (also know as the dashboard) where users can see a scrollable three-week range of their assignments, plus a scrollable three-week view of the schedules of people working on projects they manage. Clicking into one of the schedules takes the user to the Workload Manager where schedules can be edited.

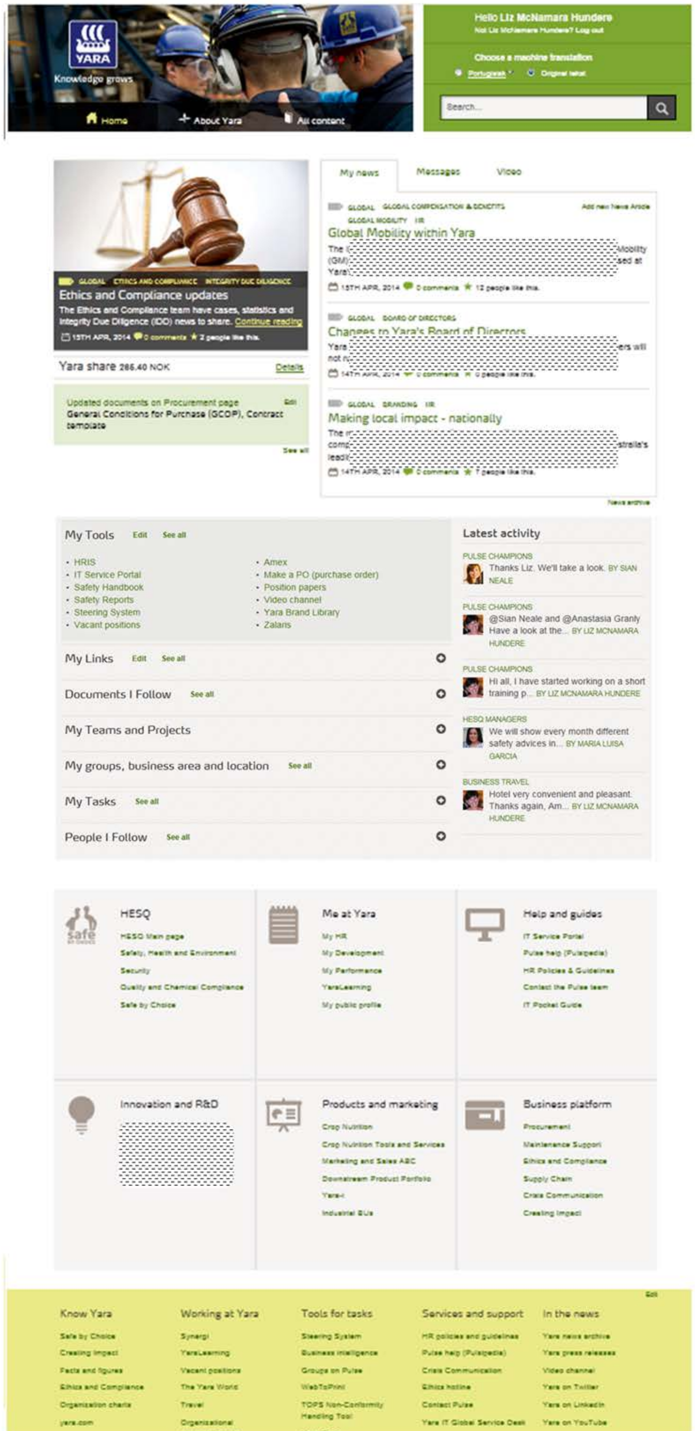
On myTC, Transport Canada's new portal homepage, content and functionality is organized to support employee and business critical tasks. The design is fresh, upbeat and modern, with consistent color schemes and settings that lock in profile choices. This page is a gateway to organizational information through the megamenu and quick links navigation bar. Corporate and national news and events appear on a slider, while regional news sits in the body of the page, below the slider. The widget gallery on the right displays how each employee chooses to personalize and organize content to stay informed.



Transport Canada's homepage prior to the re-design. Nearly identical search boxes confused the users. Multiple daily news stories competed for space, causing new items to rollover into an archives section. Adding unplanned content meant duplicating and mixing business and employee elements together, which made intuitive navigation difficult. Graphics, font, photography and style guides lacked coherence and negatively affected the overall look and feel.



The old Yara portal had limited personalization, no social features and no access to collaboration. It was good for news, but navigation and search were lacking.



This is the header with navigation features, access to My Site (via name) and Search field. It also contains an auto translate widget.

This is the main news section. Showing global (corporate) news and messages, as well as personalized news and messages relating to user's location and line of business. Users may also "follow" topics of their choice.

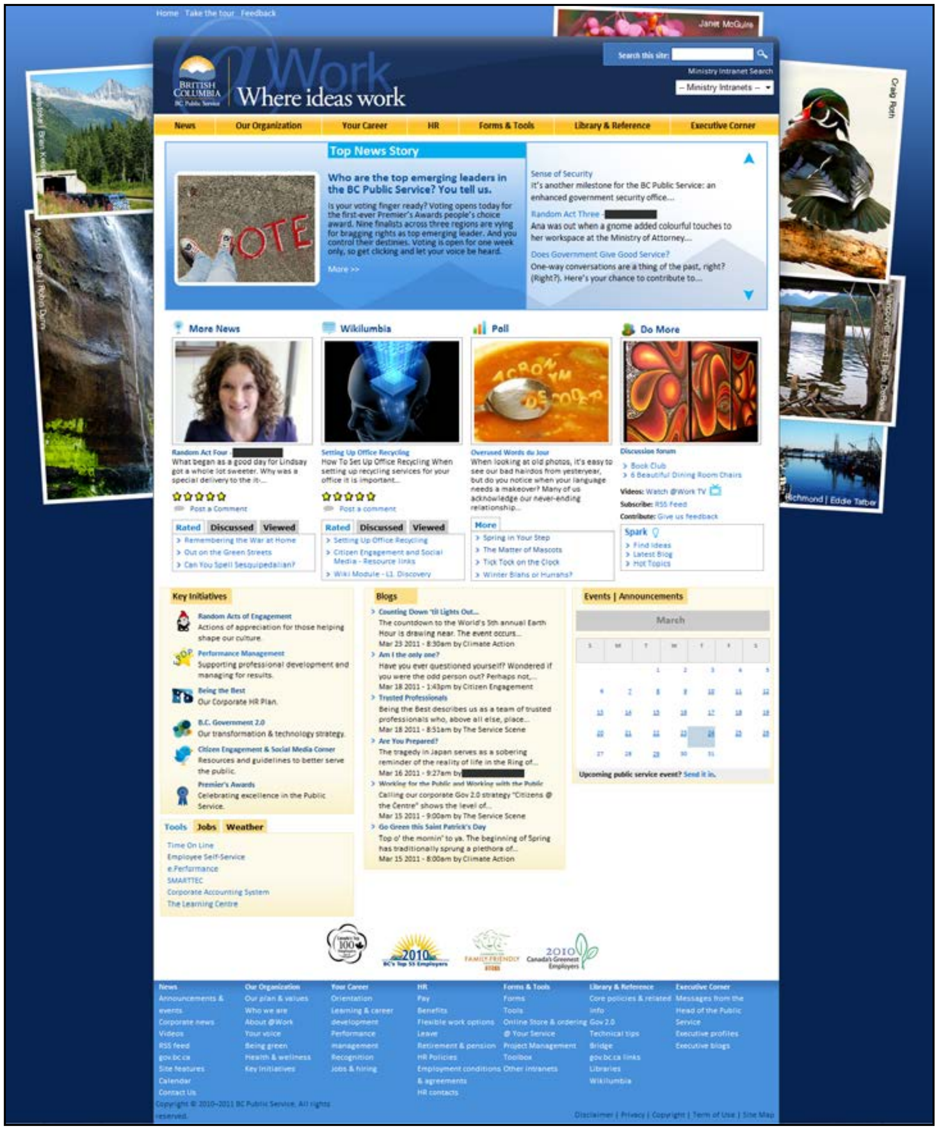
This is the "digital workspace". The headings on the left expand. Users can bookmark favourite tools, links, follow documents and people. They also see mandatory tools and personalized links to relevant content such as their location and business pages on the intranet. Sections provides seamless access to SharePoint 2013 project and team sites.

The feed on the right shows posts made in groups of which the user is a member.

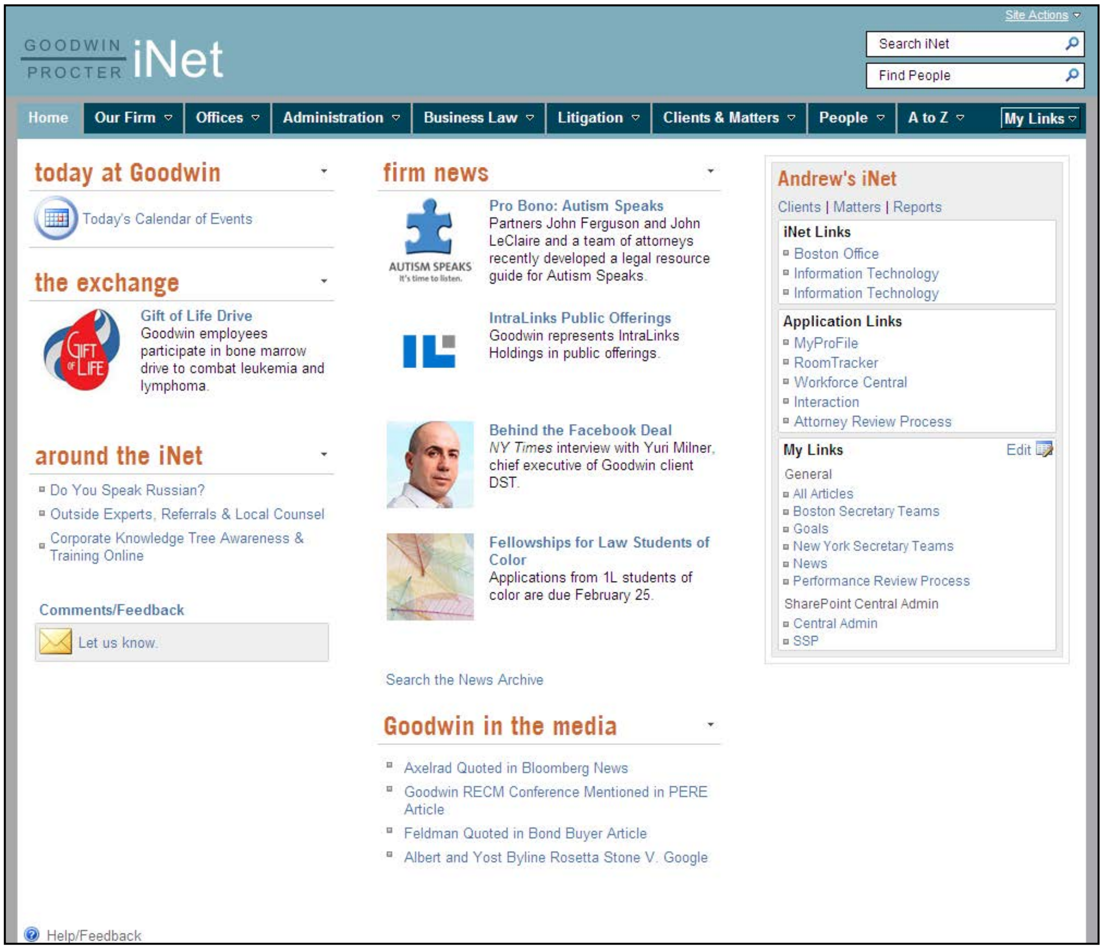
This area contains shortcuts to the primary content areas on the intranet. The lists are composed in cooperation with the business to ensure key information is readily available.

The footer appears at the bottom of every page (except search result page). The links here will be fine-tuned based on usage statistics.

Redesigned Yara homepage is filled with opportunities for collaboration and has more robust functionality.

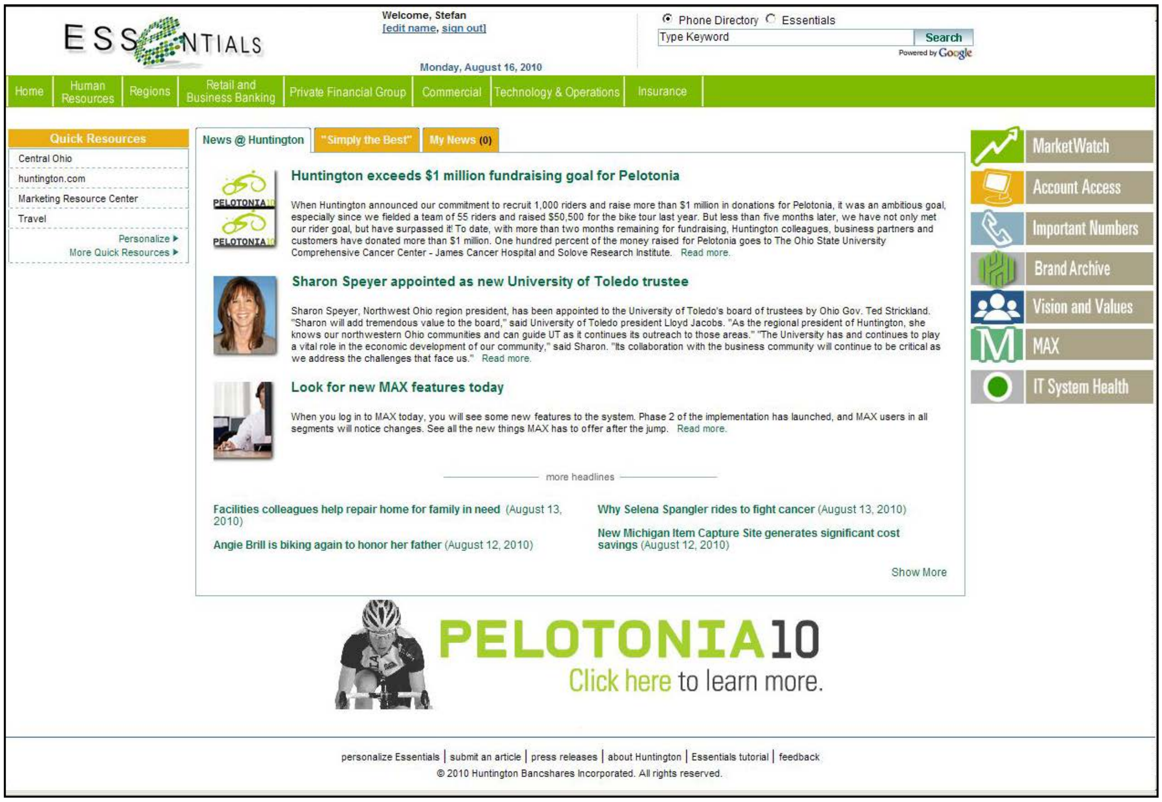


This is the homepage for the BC Public Service portal, which includes top news stories in a scrolling section with a rotating snapshot of eight of the most recent articles. Integrated social media tools such as rating, polls and commenting are viewable from the homepage as well as a quick view of the *highest rated*, *most discussed* and *most viewed* news and wiki entries. There is a calendar which links through to a full event listing, upcoming events and announcements. At the top, there are consistent links to home, a site tour and feedback, the graphical header and a field to search the entire site as well a drop-down containing quick access to ministry intranets. There is a standard navigation bar with two levels of drop-down menus at the top of all pages and text navigation that is repeated at the bottom so users don't have to scroll back up to the top. The photos featured on the homepage are user-generated and are swapped out each month.

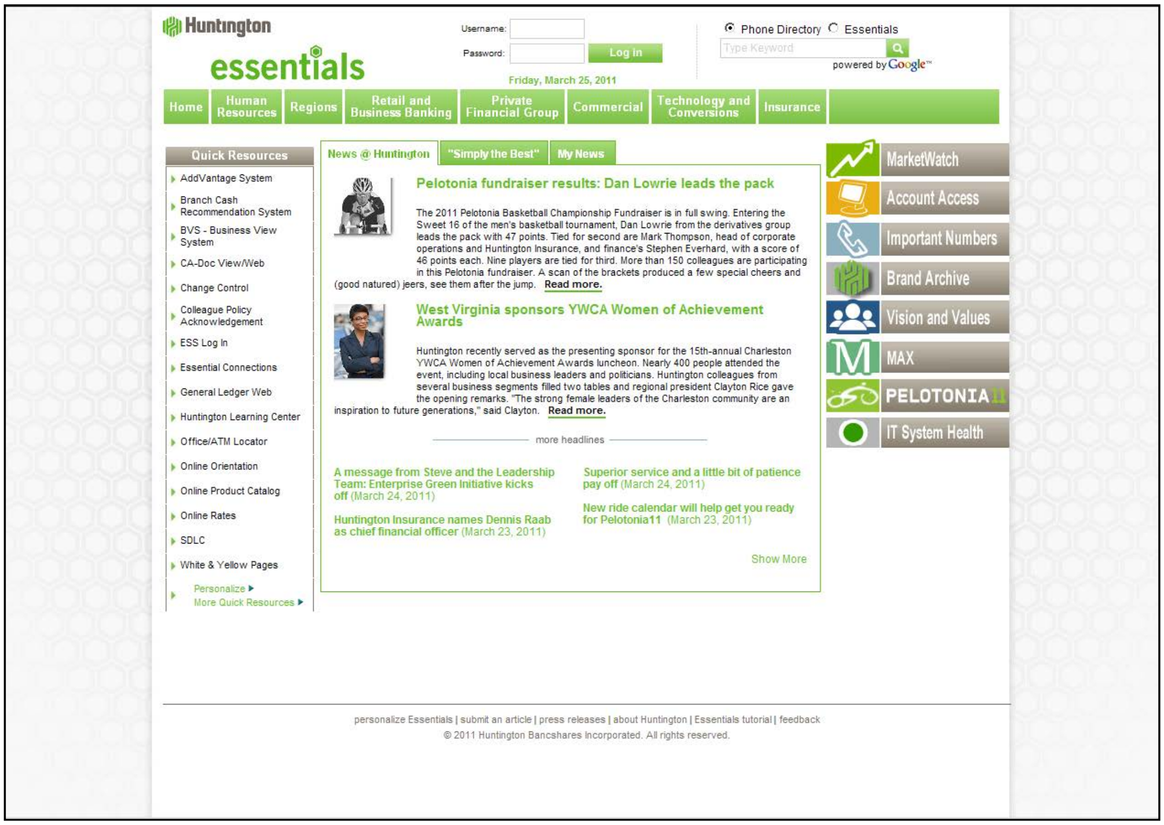


This is the Goodwin Procter intranet homepage. Ownership of the homepage is shared by Human Resources, Knowledge Management and Marketing. The page provides a firm-wide calendar of events consolidating events from across the organization, new developments and features about the intranet site, a social networking feature section, firm news and both customized information about the active user and a personalized section for information and tools the user uses on a regular basis.

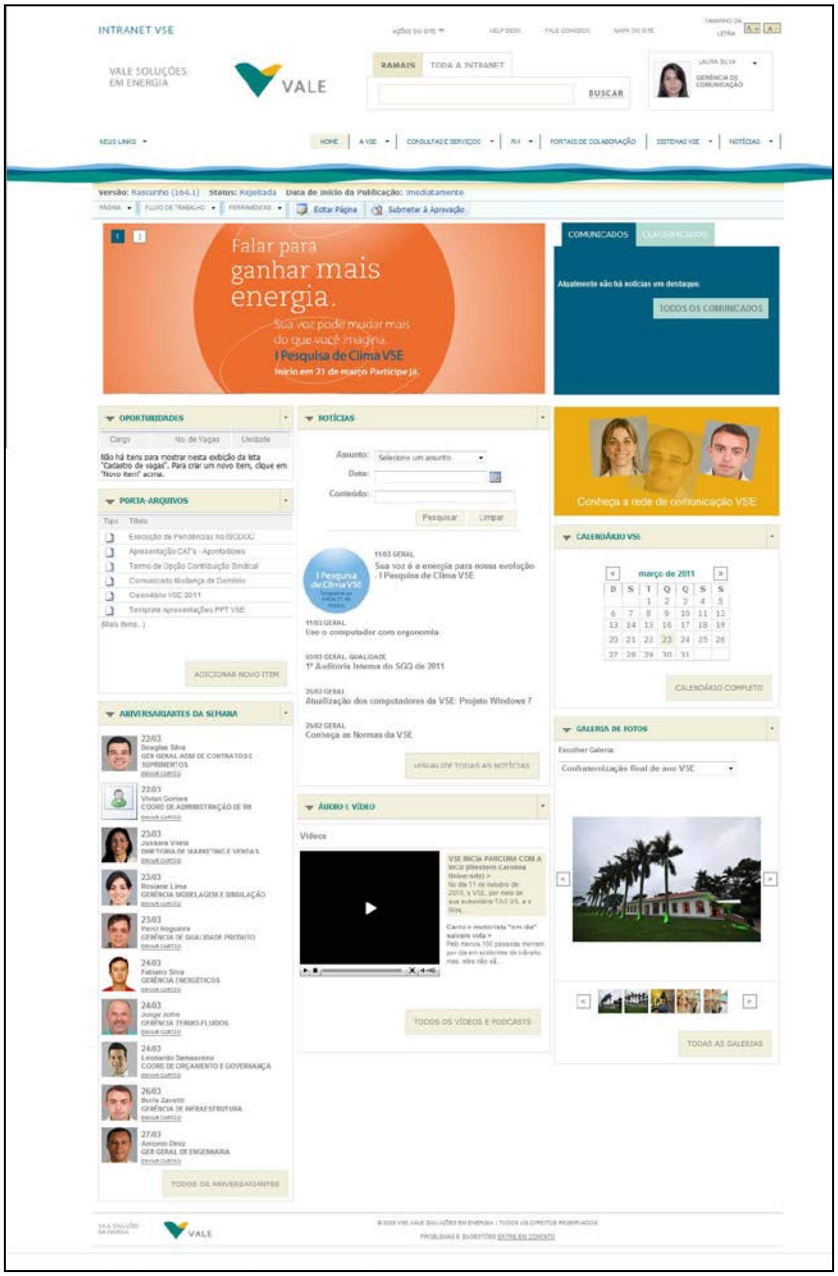
Duke Energy's portal homepage is available inside and outside the company's firewall (with login) to the company's approximately 30,000 employees and contractors and is the browser default for most employees. It features weather, stock price, news, a calendar of events, employee accomplishments and announcements, videos, most-used *Quick Links* personalized *My Links*, and links to the company phone book, org chart and Outlook Web.



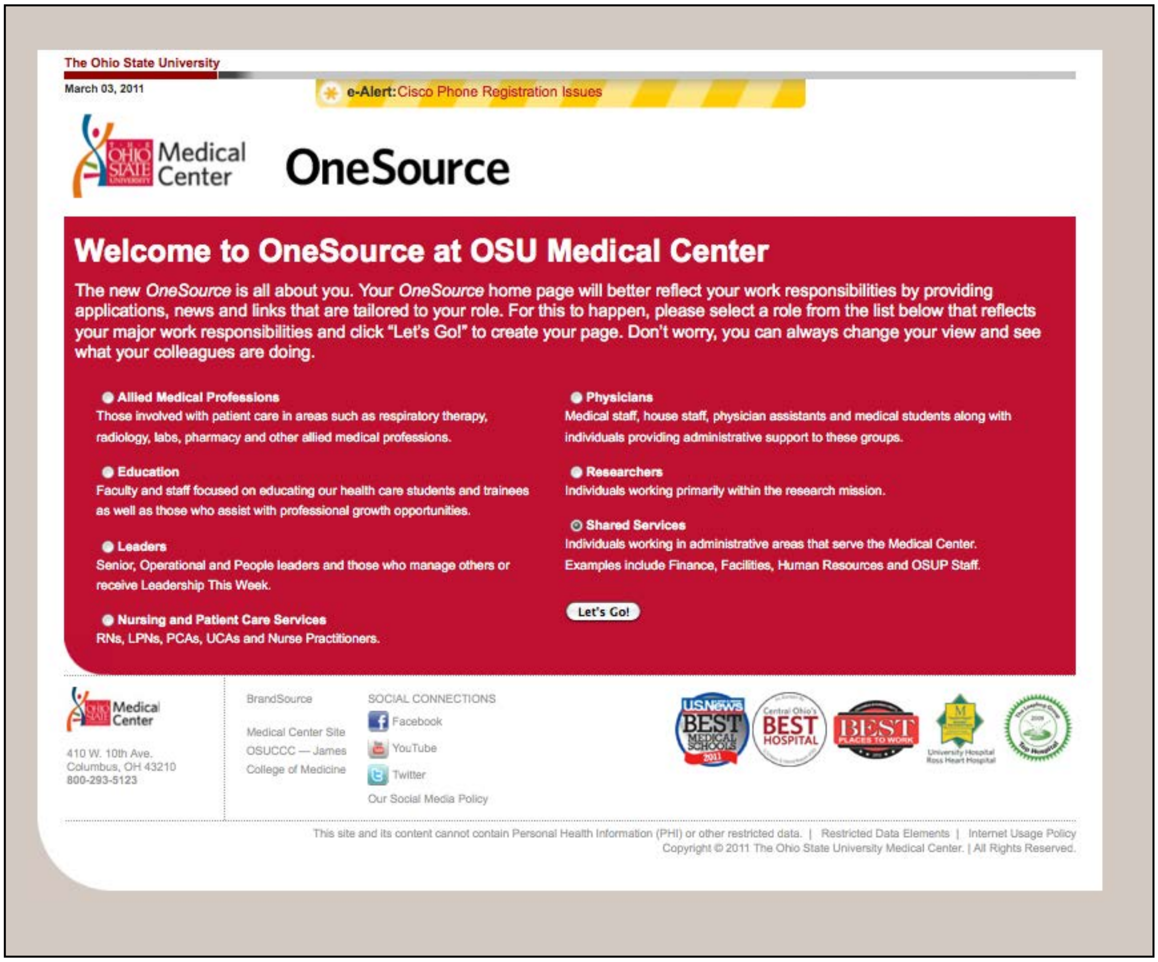
The Huntington National Bank portal homepage as seen before the 2010 design refresh. The next screenshot shows how the homepage changed during the site re-design project.



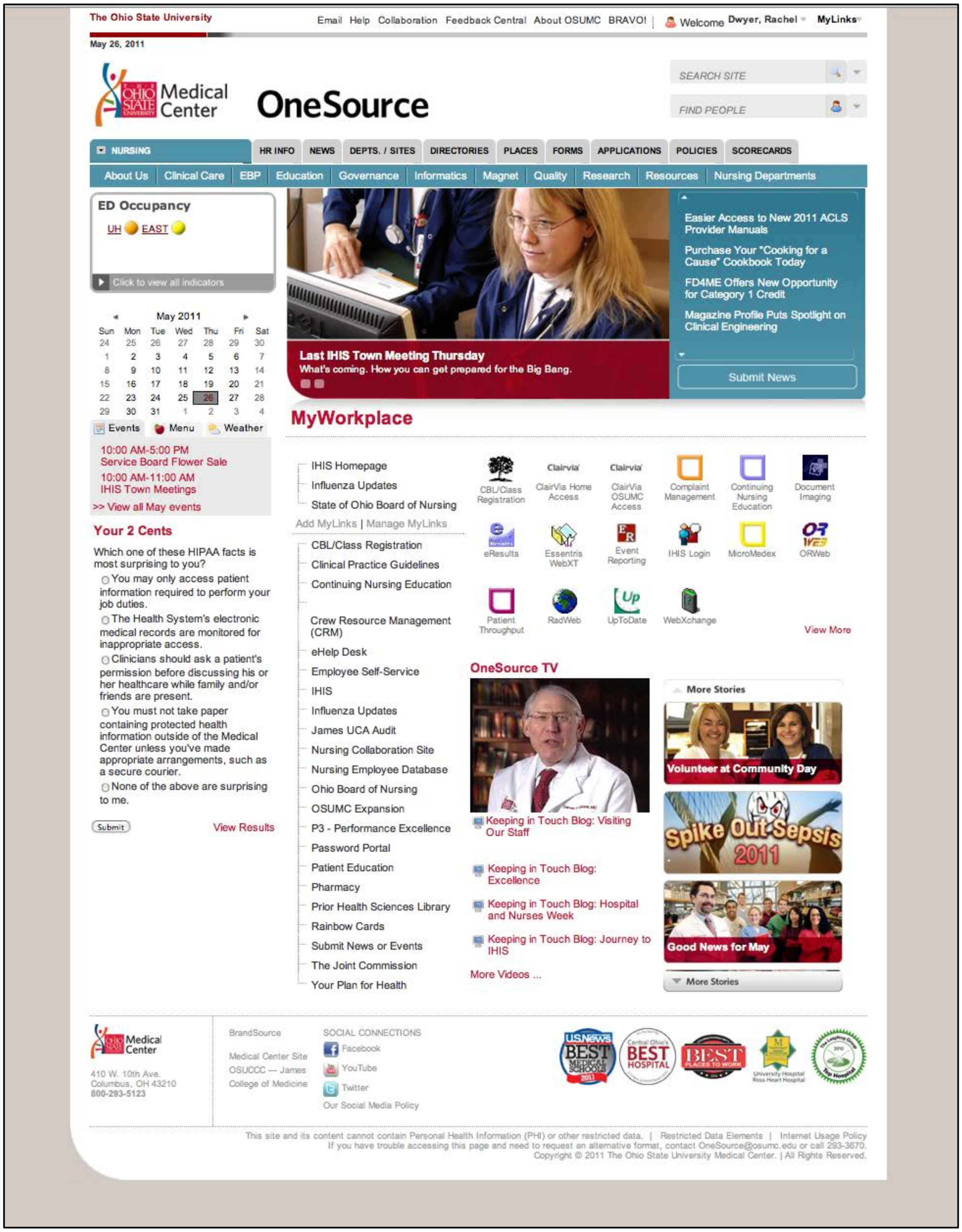
The Huntington National Bank Essentials homepage was updated in late 2010 to reflect the bank's new brand standards including: fixed width design, new logo, consistent color scheme and fonts. No new functionality was employed, but the page now matches the Huntington brand as opposed to previously when Huntington was not on the page.



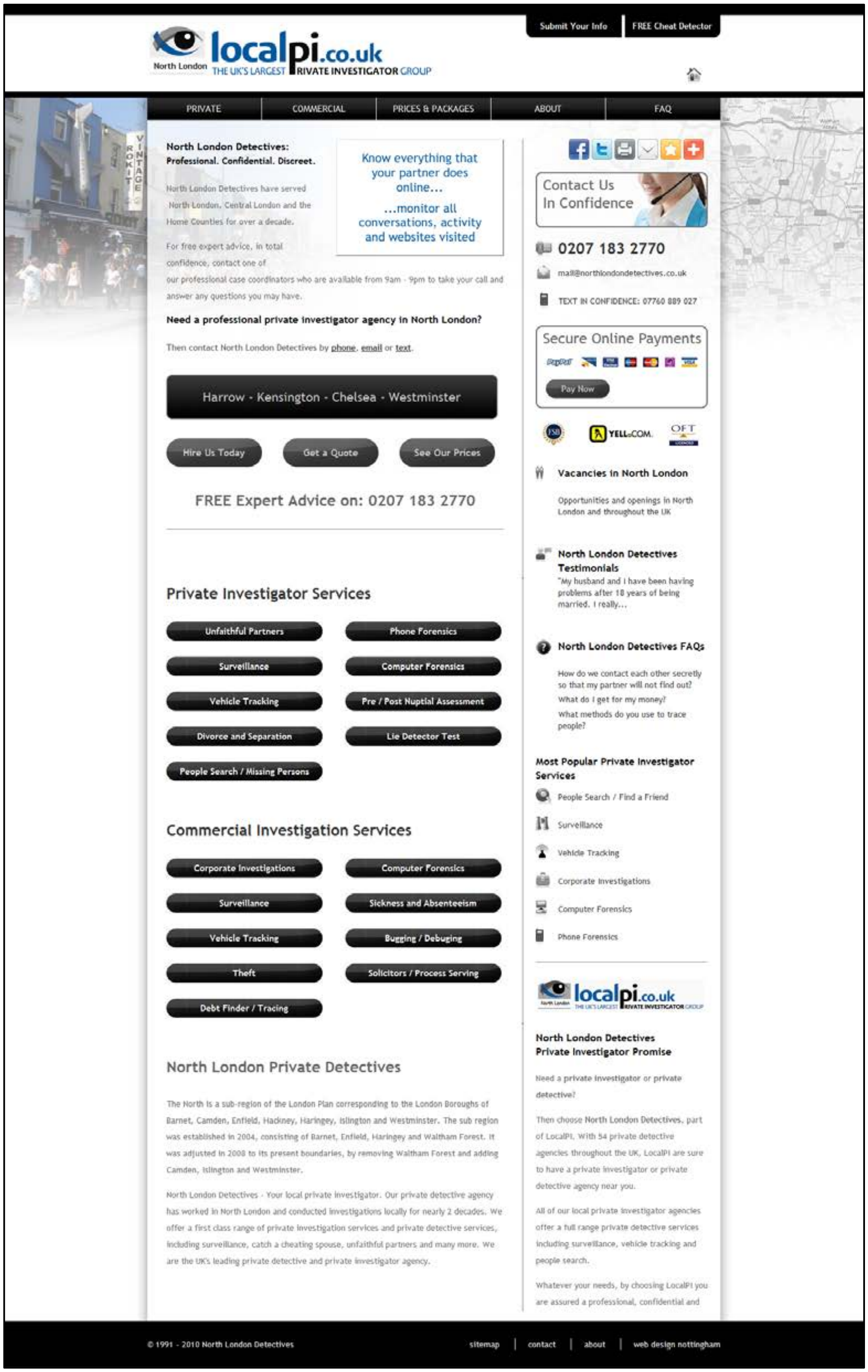
On the VSE portal homepage users can find links to main intranet content, including: personal file shortcuts, news, calendar, official notices, classifieds, birthdays, photo gallery, video gallery, job board, and so on. The user can navigate the video and photo galleries and the calendar without leaving the page. The company uses the large banner on the top, which is called *Top News*, to see what is new. This area is constantly updated and highlights the most important news and information that the organization wants to communicate to employees. They view it as an interesting and simple way to keep the page fresh and drive users to what's important now. To the right, below *COMUNICADOS*, there is a Flash banner that changes periodically also, displaying internal campaign information in an effort to align offline communication efforts with the intranet.



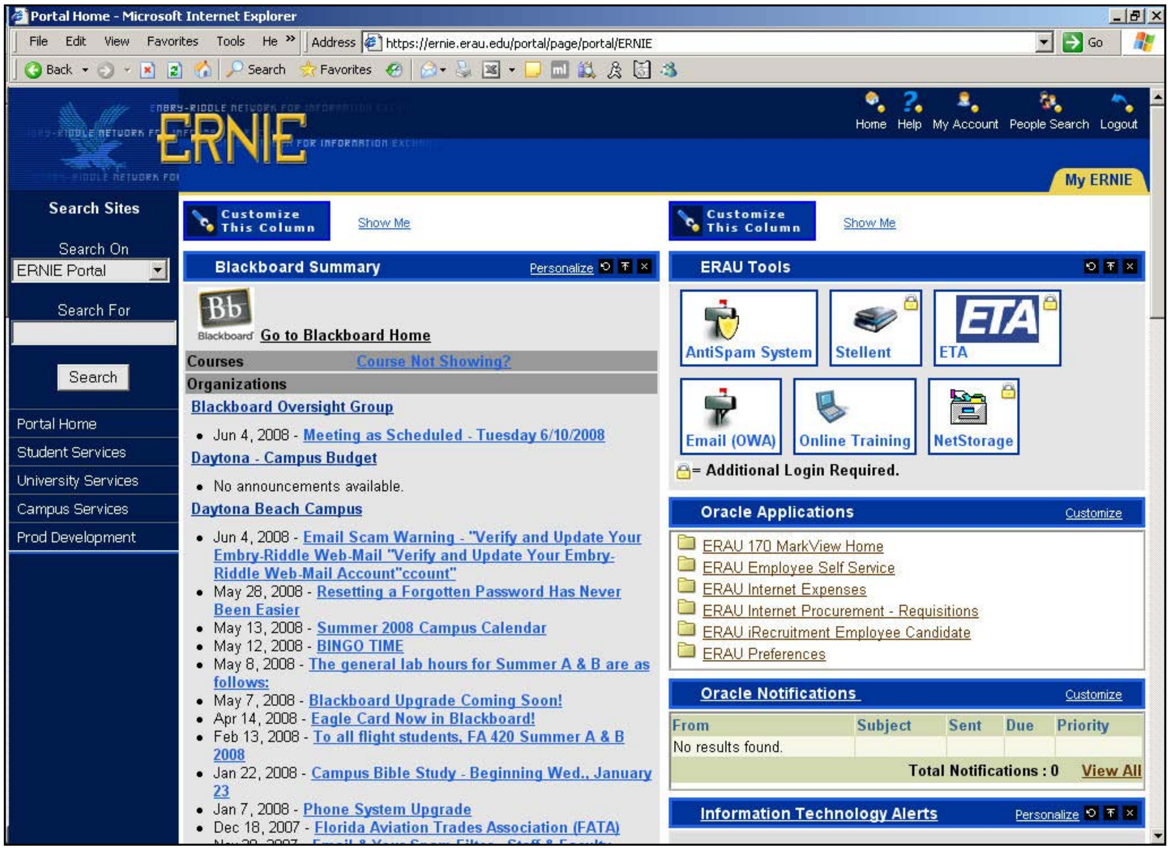
The redesigned OSUMC portal, OneSource has a welcome page before the homepage. The first time staff log in to OneSource they are required to select an audience category that most closely aligns with their job responsibilities. This action directs them to their default homepage. This page is also used by staff to change their default homepage selection if they choose to change it after their initial selection.



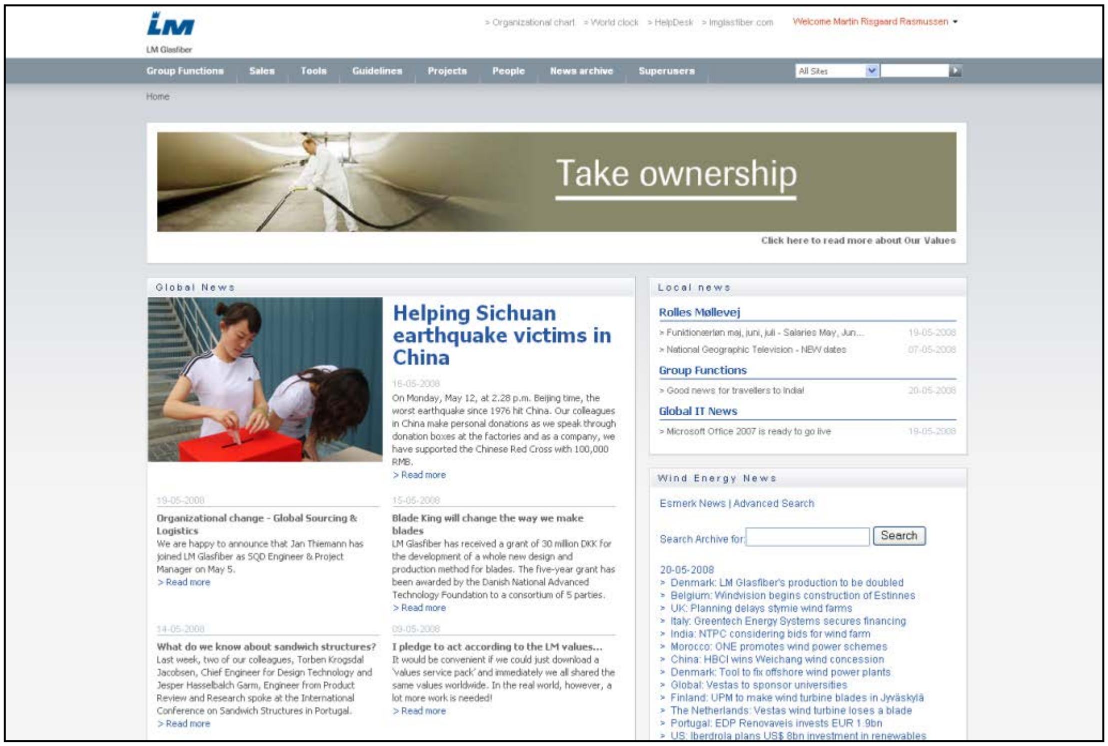
This page is an example of what a staff member would see after selecting *Nursing* as his homepage on the OSUMC portal.



The homepage of a Local PI website. All 54 of the homepages are customizable via the portal.



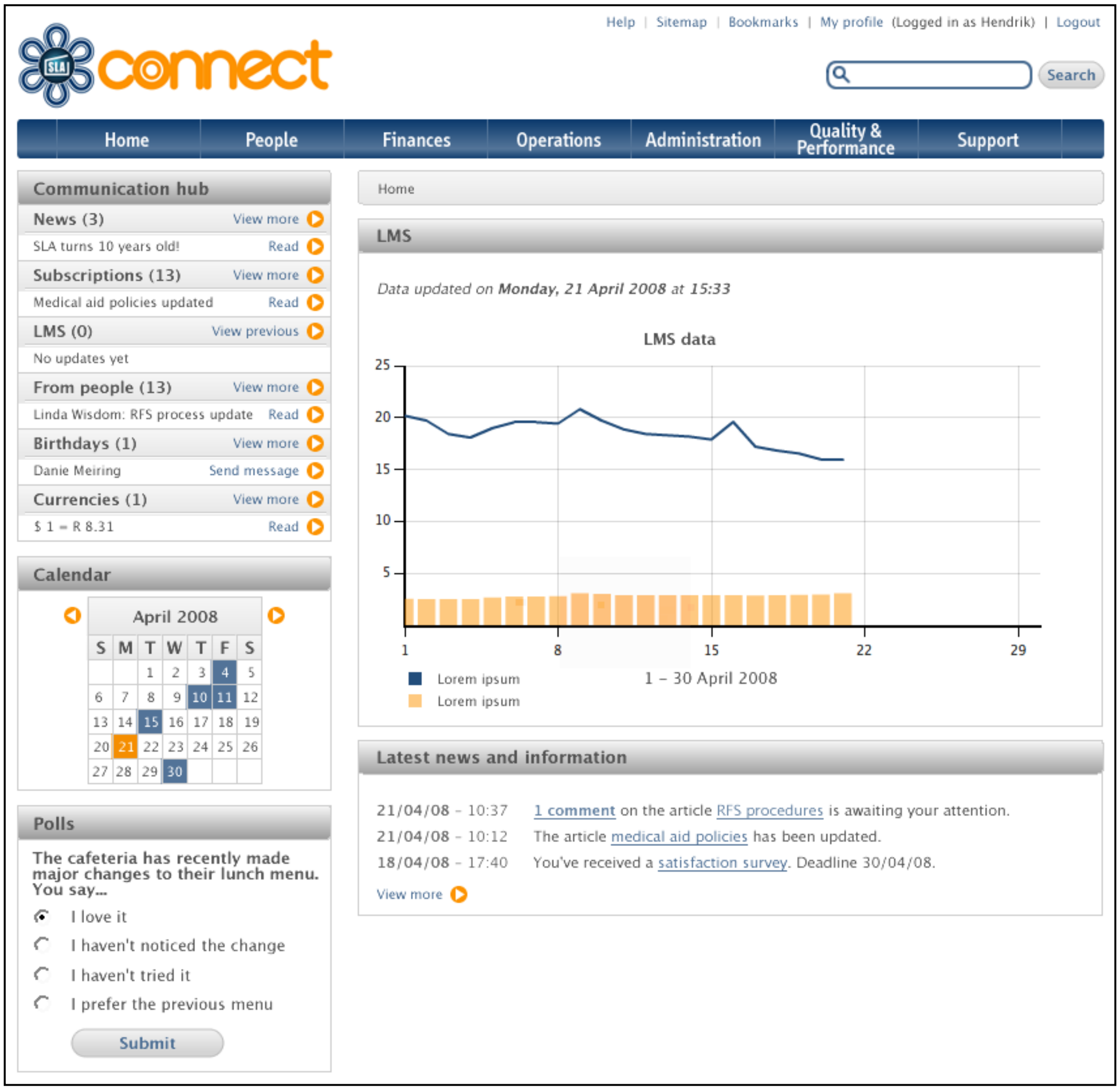
The homepage for Embry Riddle University's portal, ERNIE. This is the ERNIE homepage, presented after login. It is the *My ERNIE* tab, which provides access to frequently used tools such as email and network storage, access to pay slips, purchasing, and recruitment applications, IT alerts, announcements from our course management system (Blackboard) and more.



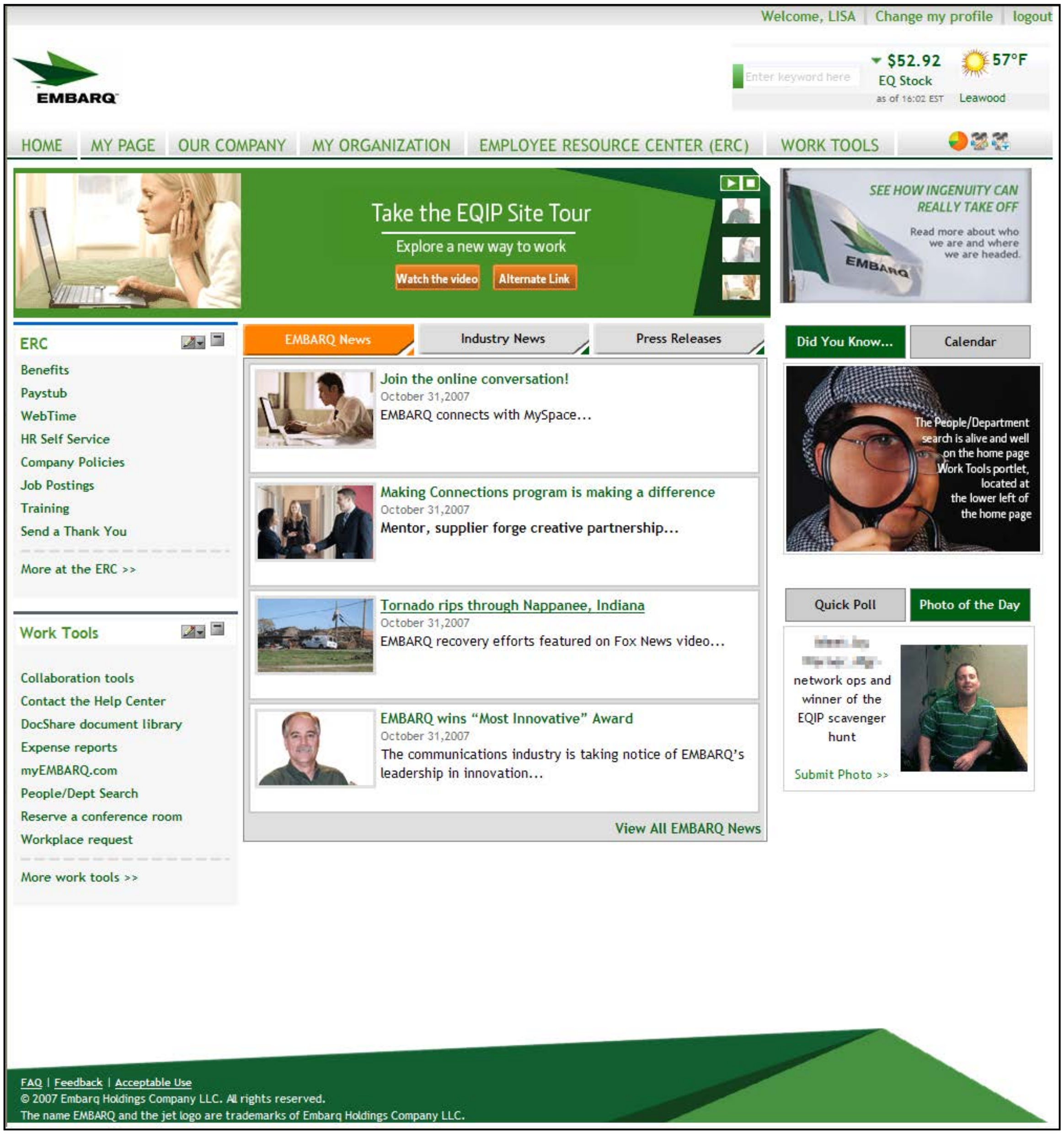
The homepage for LM Glasfiber's portal. This screenshot shows the various news channels offered to users. The local news on the right is personalized according to where the user is located within the company, by both location and by function.

The homepage for Northland Regional Council's portal. This shows the homepage after the portal team made usability improvements, which included moving the *Who What Where* information to the homepage underneath the events calendar.

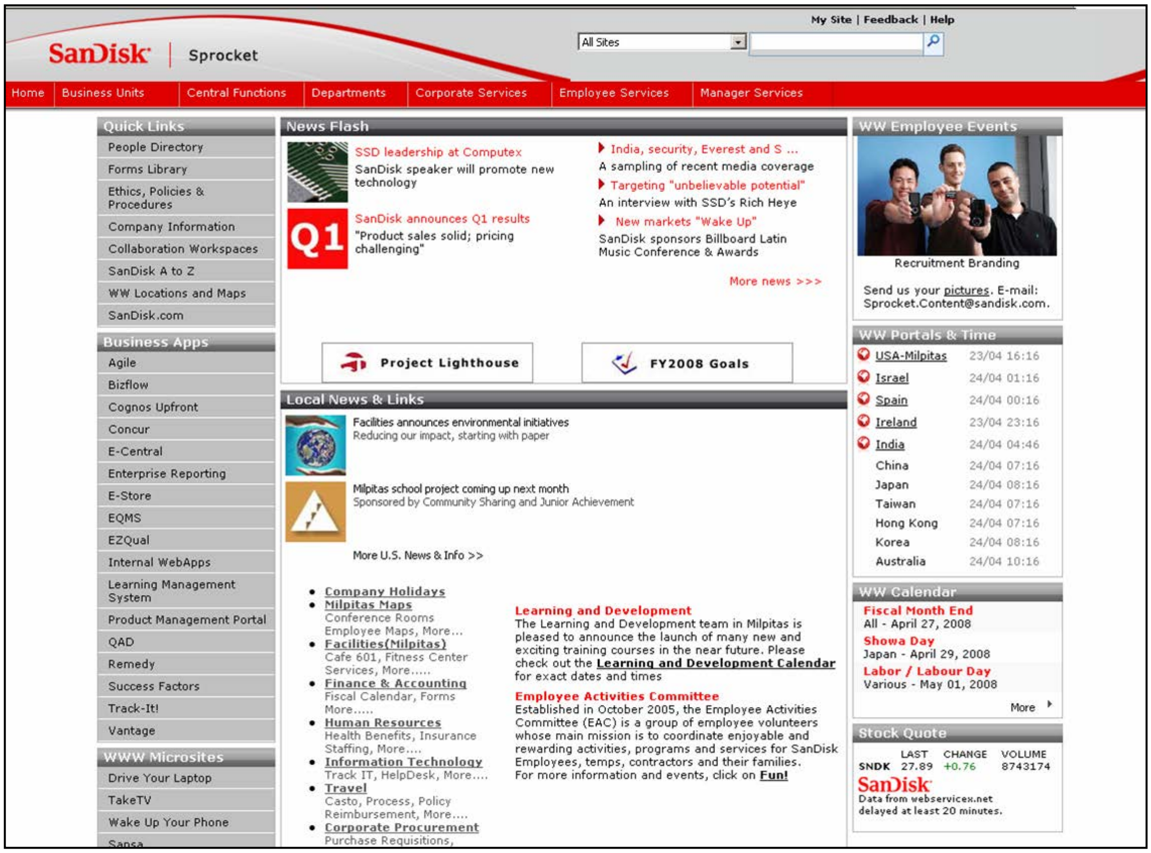
Idaho National Laboratory’s portal homepage. Since the Laboratory’s mission is nuclear energy and the portal is the center of information, the portal team named the portal Nucleus.



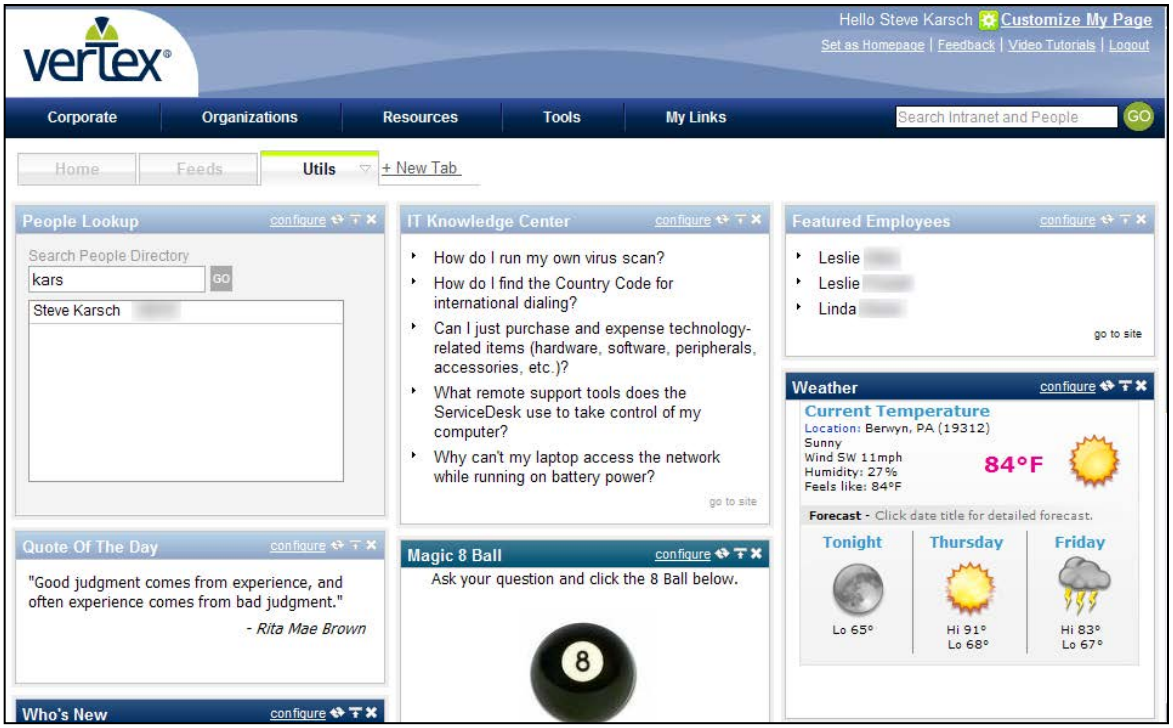
On the homepage for SLA portal the main navigation, gray cookie trail, search box and text links above it are consistent on all the pages. The communication hub (where all RSS feeds and notifications are viewed), the calendar and polls (if any) are on all the pages except on a person's employee chart. The LMS is an external system and the graph displays real-time data from that system. Below it is an overview of the most recent updates. This area could also include summaries of the latest articles or comments on articles the user is subscribed to.



On the homepage for EMBARQ's portal the large green banner above the news articles rotates between three campaigns, every five seconds. The stock and weather icons are clickable and display detailed information. The industry and press release tabs are using RSS to pull news every 20 minutes from the portal's news provider and the EMBARQ.com website, respectively.



The homepage for SanDisk's portal, Sprocket.



The Vertex homepage.

Applications

APPS ATTRACT USERS

Intranets have traditionally been information systems. The ability to access a range of corporate applications and information from the same interface is, for many people, the key feature differentiating a portal from an intranet. This idea has been strongly promoted by ERP (Enterprise Resource Planning) vendors such as SAP, PeopleSoft and Oracle, that all offer portal products integrated with their ERP suites and are keen for customers to adopt those products as their enterprise portal solution.

As corporate portals have evolved, organizations have found more and more ways to make them application-rich environments even if that means adopting one application at a time. Portal teams often have the stated goal of "someday" integrating all mission-critical applications through one corporate doorway and linking them with a single sign-on based on the users' corporate login credentials. Most portal managers know it is better to integrate fewer applications well than try to do everything half-baked.

Most of the intranet portal projects in this report don't use ERP-derived portals. Instead they approach the issue from the opposite direction: starting with information and adding applications, often on a fairly small scale. That is the case with Kaiser Permanente's portal. "We started with a very information-centric portal," says Garrett. "The existing HR portal is very content heavy with limited links to self-service transactional capabilities under single sign-on. We are now working to 'expand'."

Properly done, however, even a few portal applications can produce substantial results for portal teams. A few useful and useable applications can positively impact the image of the portal, encouraging user adoption and management buy-in.

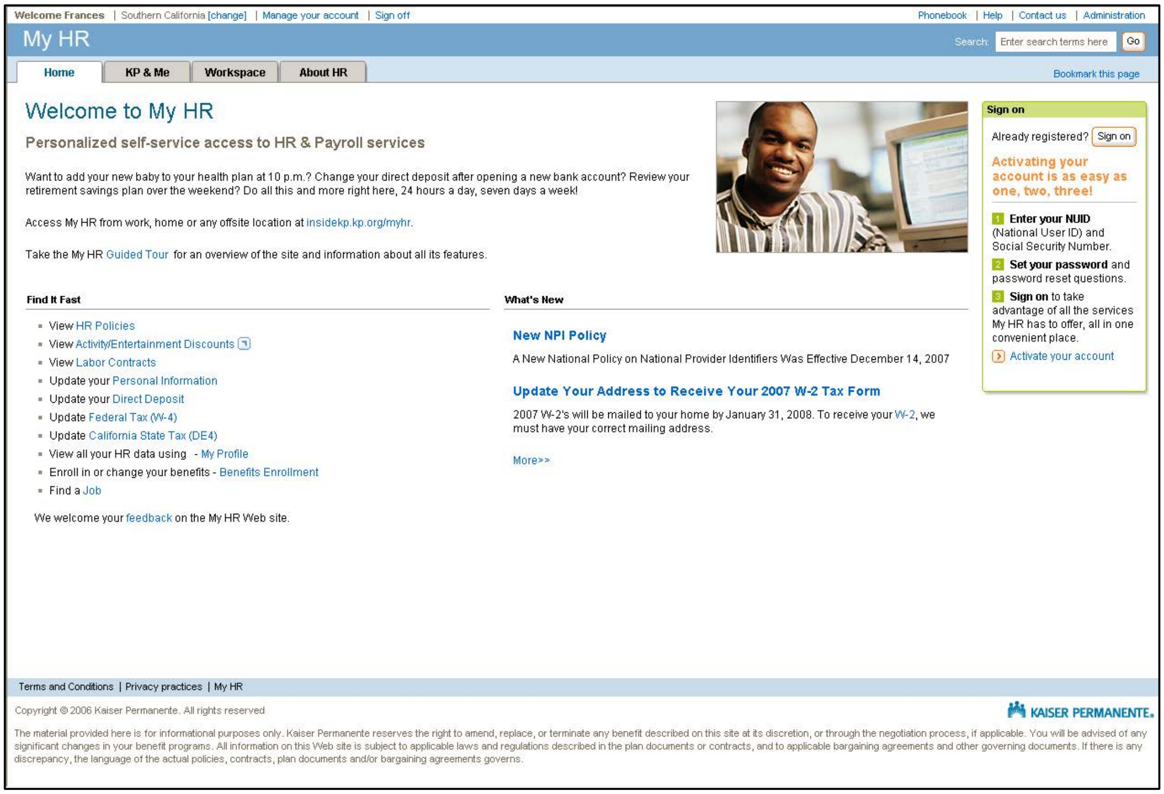
Ideally, before releasing any application for employees, a design team has thoroughly tested it with users. In the case of portals, however, that testing is especially important. According to Boeing's Becker, that's because "all of the people who perceive problems with the applications will perceive the problems to be with the portal."

Killer Apps

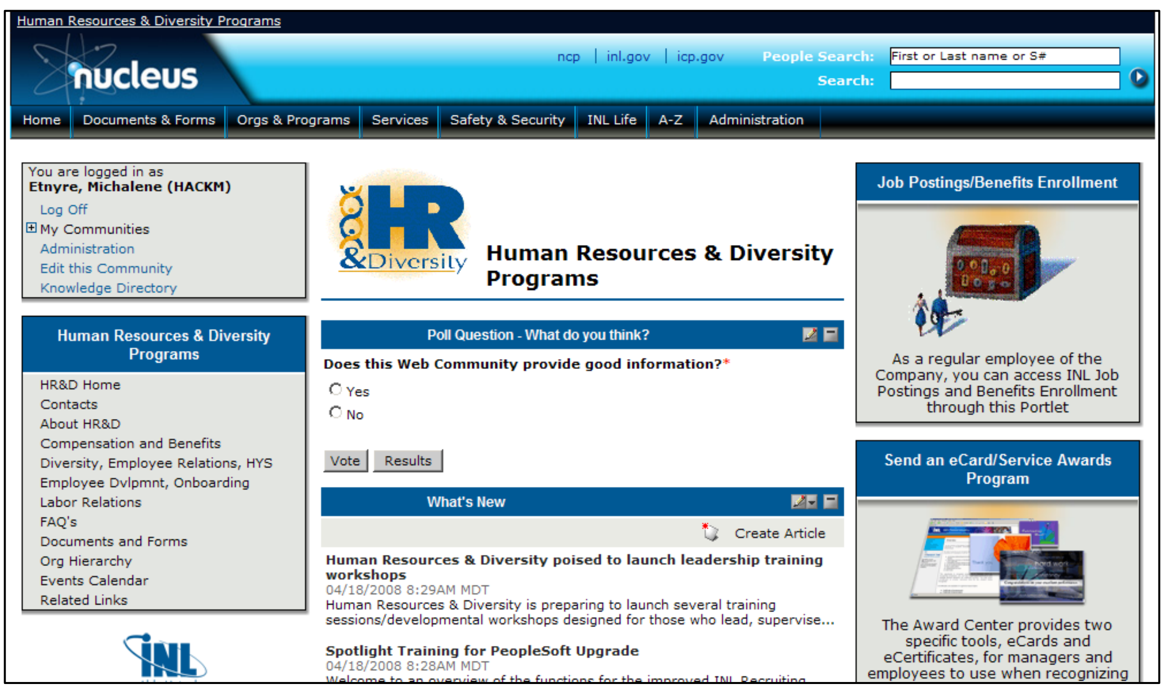
Simple applications can quickly become killer apps if they provide critical improvements in employee productivity or efficiency. Though these apps are often specific to the needs of the organization or the types of workers they support there are some categories of apps that are both useful and popular regardless of what types of workers they support.

Many organizations refer to some aspect of their people finder or corporate directory application as the portal's killer app. Despite differences in functionality and execution across different corporate directories, the ability to quickly locate people based on a combination of skill-based and location-based search criteria is always a big win for users and helps with portal adoption. People finders are also often one of the first applications to be fully integrated into the portal.

Another set of common portal apps are employee-self-service and productivity tools that empower users to more efficiently do their jobs via the portal.



This screenshot shows a self-service hub for HR services at Kaiser Permanente.



Idaho National Laboratory's HR main homepage. It is designed to be a self-service model where employees can navigate to the site and find information, without having to contact someone in HR.

Another tool that has become standard across portals is the simple ability to aggregate, subscribe to and filter news and information via feeds. While popular on the web as a whole, within corporate environments this access to news and information, both internal company news and external news feeds, ranks very high among mission-critical applications for most portal managers and users.

Below, we detail a variety of other portal-based web applications that have made an impact on company portals we've seen.

EMPLOYEE DIRECTORIES

Most people-finding tools are variations on a theme: tweaked to accommodate the specific challenges of a particular industry or type of company, but at their core they are simply a robust corporate directory. Directory tools are popular, well used and often one of the tools that get the most attention during the design phase and the most praise after launch.

OSUMC's People Finder is a great example. "The People Finder application is the greatest advancement in our portal since the redesign," says Chris Finneran, OSUMC senior business analyst.

The organization's People Finder allows users to search for and find staff, physicians and referring physicians quickly and easily. They can see a display all members of a department, reverse-lookup phone numbers and search by physician specialty. In addition, a user can find someone by department (in case they can't remember a name), by hospital floor and several other criteria. In other words the directory does all it can to make sure the user can find who they are looking for.

"It's pretty awesome," says Marshall. "We have greatly increased the possibility that if you are truly looking for someone, you will find them!"

The reason for the app's success may be the amount of detail and planning it was given during the design process.

"From a planning perspective, we gave this feature the most discussion, most meetings, most review from the Focus and Functional teams, the most research and the most thought," says Marshall. "We tried really hard to 'get it right', and I believe we did."

The app is also the portal's most used feature. News and events is widely used (and well-designed according to users) but as the organization's users have pointed out, finding people in an enterprise of over 15,000 people is an important task.

Win Over Users

Most organizations see the employee directory as an opportunity to encourage people to make use of the intranet.[15] Having a single central source of reliable

[15] For more information about employee directories and seven design guidelines based on usability testing of a different set of case studies than those discussed here, please see our separate report, *Intranet Usability: Design Guidelines from Studies with Intranet Users*.

contact information is a huge step forward for many organizations. Many design teams bank on the employee directory to bring users in droves — or at least get them to log in to the intranet. For example, when Portland Public Schools implemented its portal, it needed an incentive to entice users to use the site. So it offered three key resources useful to all employees: a district-wide employee directory, a district-wide calendar of events with category overlays, and a collection of links on a top-level tab titled ‘Employee Services.

“These may sound trivial to organizations that provide these resources in a variety of ways,” notes Connie Lysinger of Portland Public Schools, “but in organizations where this information didn’t exist previously, such tools are a useful way to not only draw people to the portal, but to show what it can do.”

At IBM the employee directory and expertise location solution (called BluePages) is considered “killer.” “That distinction stems from their usage metrics and for BluePages, the associated user satisfaction (80% and above),” says IBM’s Ceplenski. “Along with the time savings they provide to our end users in regard to finding employees in general and expertise specifically.”

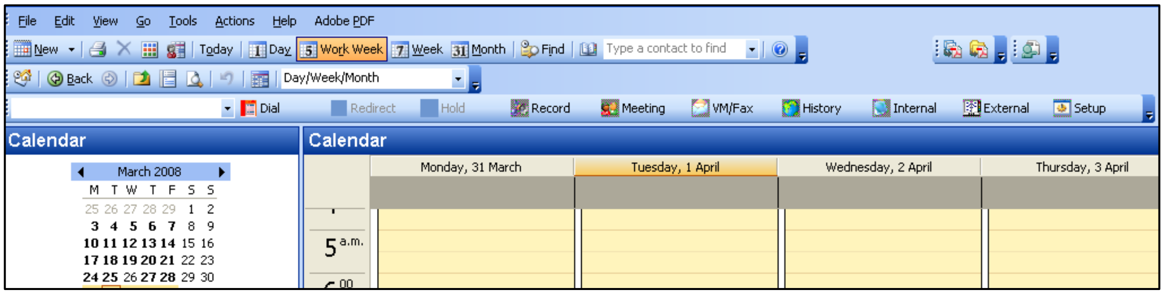
Connecting People

Employee directories were once simply information repositories but now, thanks to integration across technologies many are now functional and interactive. Many portals offer employee directory applications that tie together contact information with communication tools such as instant messaging and Outlook calendar functions.

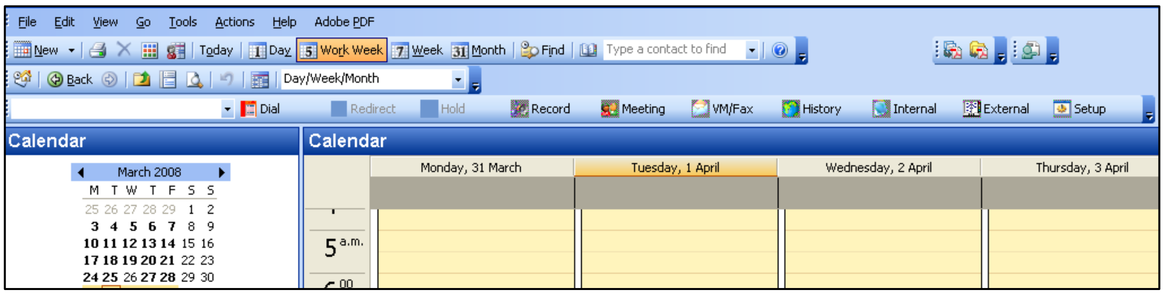
The Northland Regional Council’s portal ties into its Visual Suite telephony system so each users has a status message (for example: ‘out of office’, ‘at lunch’, ‘in a meeting’, etc.). This can be set manually, by users in Outlook, or it can work automatically by pulling information from their Outlook calendar.

The great promise employee directory information on a portal lies in tight integration with the HR databases that once served as siloed repositories of data about each employee. By tapping into these databases and integrating their content into the portal, companies have made the simple employee directory a robust tool.

“We’re looking at connections, not collections,” says KPMG’s Iain Simpson. “We’ve made people aware of our collections of content, but the end-game is to make a connection with someone else and grow their understanding of an industry or client.” One potential for doing this, he says, is via an “intelligent Yellow Pages” that socially networks people with specific, shared interests or areas of expertise. “We want to give new people joining the firm the ability to jump straight into an existing social network; to make it clear to them that we have specialists who’ve developed specific resources, and where they reside,” he says. Since KPMG has a global workforce, a virtual social networking engine can potentially make more connections than employees might otherwise if they were just relying upon local resources or connections made over the phone.



A user's Outlook calendar showing the status option bar at Northland Regional Council.



Northland Regional Council's portal ties into Outlook. Here is an example of a user's calendar showing the status option bar. Users can set their status manually by clicking on the meeting icon (which by default says *Office*) and then change their status and select what time they will be back. Their voicemail message will change to indicate where they are and when they will be back and their status in the directory will also change. The status functionality can also be linked to the person's calendar so that when they go to a meeting it automatically changes.

Take a Virtual Walk Through the Building

Goodwin Procter's Photobook is the company employee directory application. It allows users to search for employees based on almost any piece of data they have about the individual and offers more than 15 different search fields.

Photobook gets its name from its functionality that allows users to search for people by face. Search results returned include a thumbnail of each employee. So if you know the face but not the name then you can simply scan the results to identify the person if you know what the look like.

"One interesting way employees have used this," says Kawa "is that they may have seen a specific individual on a certain floor of one of our nine offices. And because our Photobook allows you to search by floor and office you simply enter the office you were in and the floor you were on and you can get back a list of faces that sit on that floor."

Another unique feature of the Photobook search is that it allows users to search through members of mailing lists. The firm has over 3,000 mailing lists, often comprised of sub-mailing lists. Thus, it is very difficult to open a mailing list and determine who is on that list.

The Photobook also allows users to instantly pull together a group of individuals and collect them in a Microsoft Word document, creating a custom face book. Users can mix and match criteria to assemble a particular set of users. Then, by either selecting all of the search results or selecting specific individuals, a custom group can be exported into a document. Many users at the firm distribute these custom face books for use at meetings and conferences. The face book results include all relevant employee information as well as a photo.

“This [feature] has come in handy at yearly practice area meetings to introduce new members to the practice,” says Kawa. “It has also been used at conferences held by the firm to introduce partners. Administrative departments have used this feature as well.”

Built into the Photobook is an expertise search for searching for attorneys and partners at the Firm who have worked on specific types of cases, giving more weight to ones they’ve spent more time on. The expertise search uses background data such as client names, case descriptions, industries, type of legal service work, who they have worked with, and the practice areas to which they belong to find relevant matches.

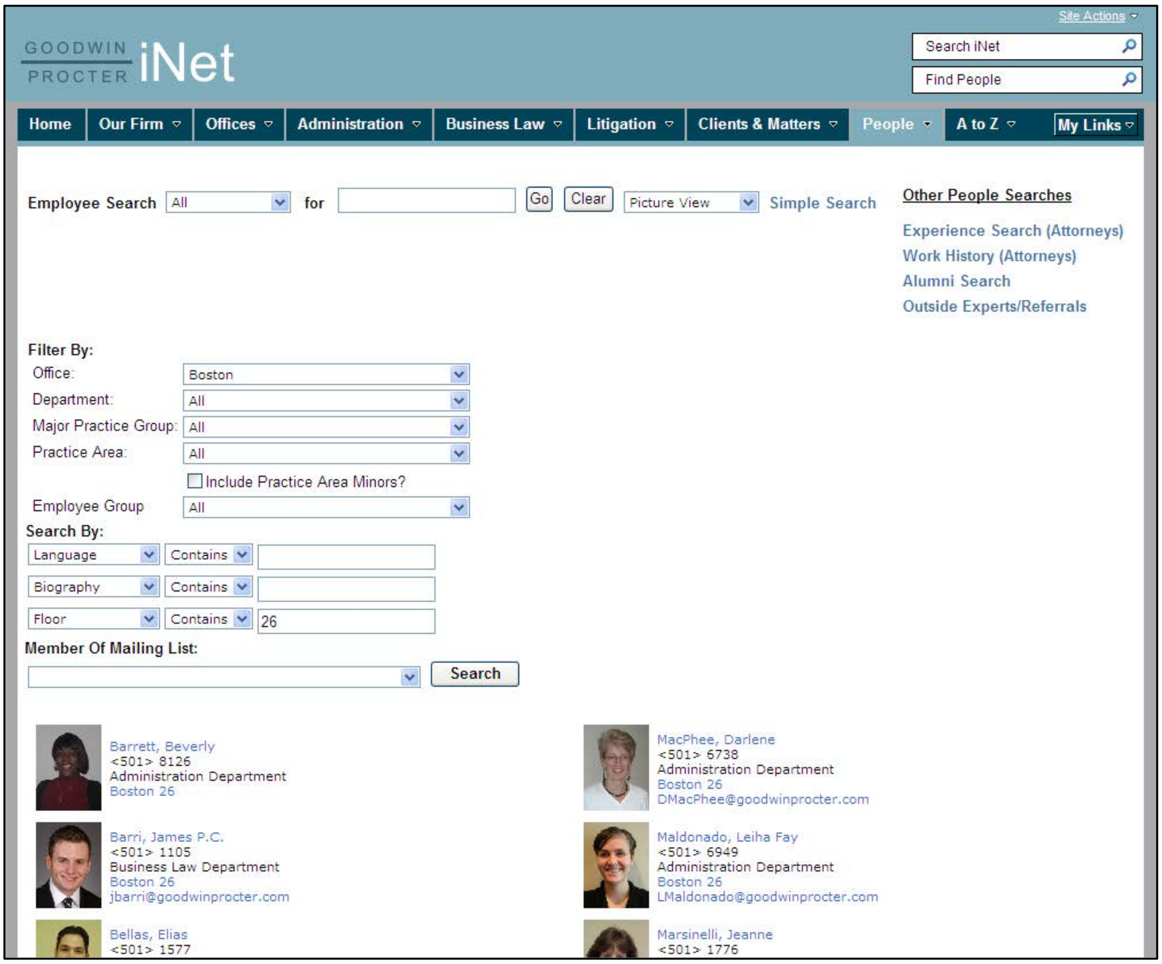
“A good example of how this is used is if someone is looking for attorneys that have experience in asbestos related cases,” says Kawa. “The expertise search will search all industries and legal service codes as well as clients and descriptions for this term and return a list of attorneys that have spent a significant amount of time in this area.”

All criteria can be mixed and matched to create complex composite searches. Users can search for employees by the following criteria:

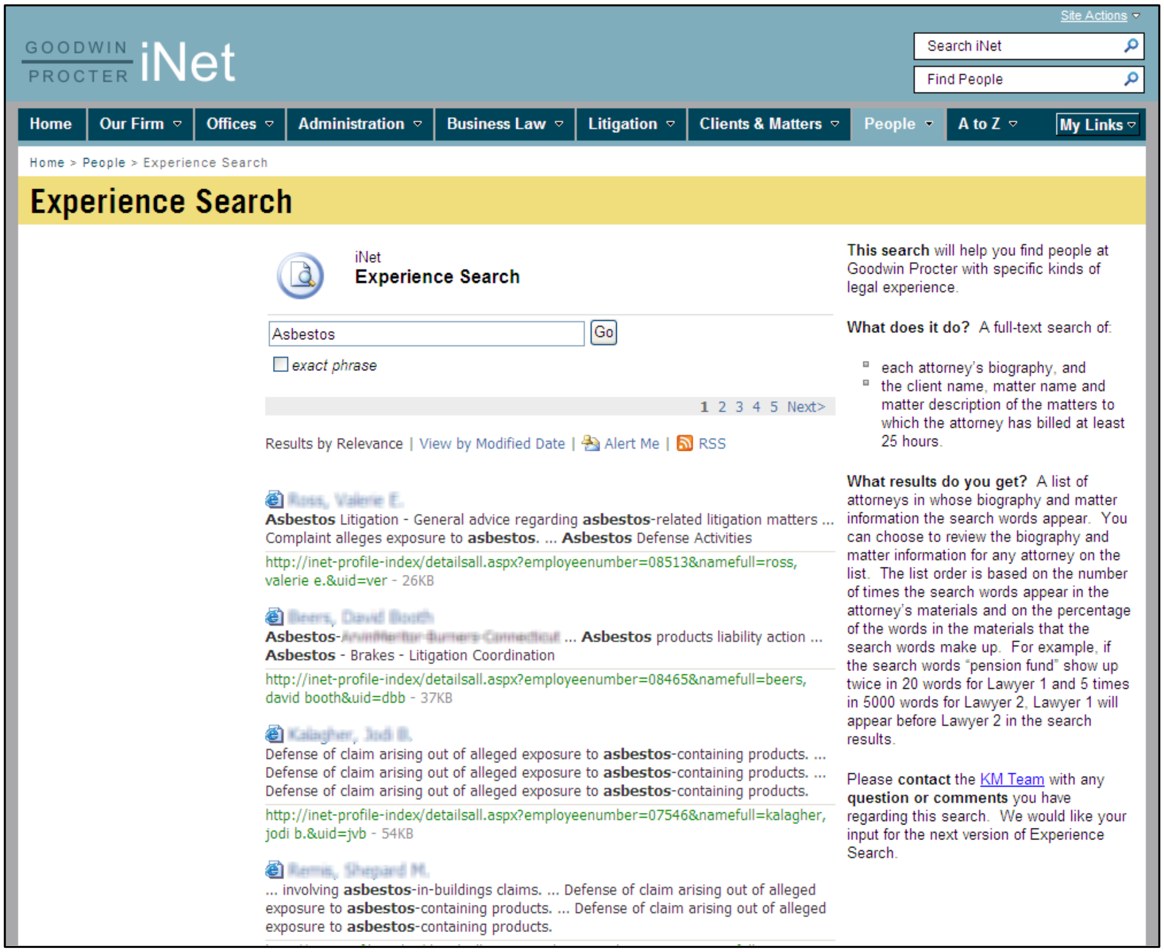
- Office
- Department
- Practice group (IT, HR, finance, Private Equity, real estate)
- Practice area (payroll, benefits, M&A, banking, etc.)
- Committee membership
- Employee group
    - Associate
    - Partner
    - Director
    - Manager
    - Secretary
    - Notary
    - Paralegal
- Languages spoken
- Education (schools attended)
- Floor number

For attorneys, users can search by the following criteria:

- Partner/associate status
- Law school
- Bar admission
- Biography
- Practice area



The most widely used application on Goodwin Procter's intranet is the people search application, called Photobook. It allows users to search for employees using multiple data points as search criteria allowing them to mix and match data points. One unique feature of the tool is that users can search by floor and return a list of results that includes photos. This allows users to identify someone they've seen but may not remember by name. Other search criteria include: biography, languages spoken, department, office, practice area, clerkships, bar admission, bar association, education and committees they serve on. Another unique feature of the tool is that users can search by email distribution list membership. With over 2,000 distribution lists firm-wide it is sometimes difficult to determine who is on what list. This feature allows users to search and identify all the members of a particular list.

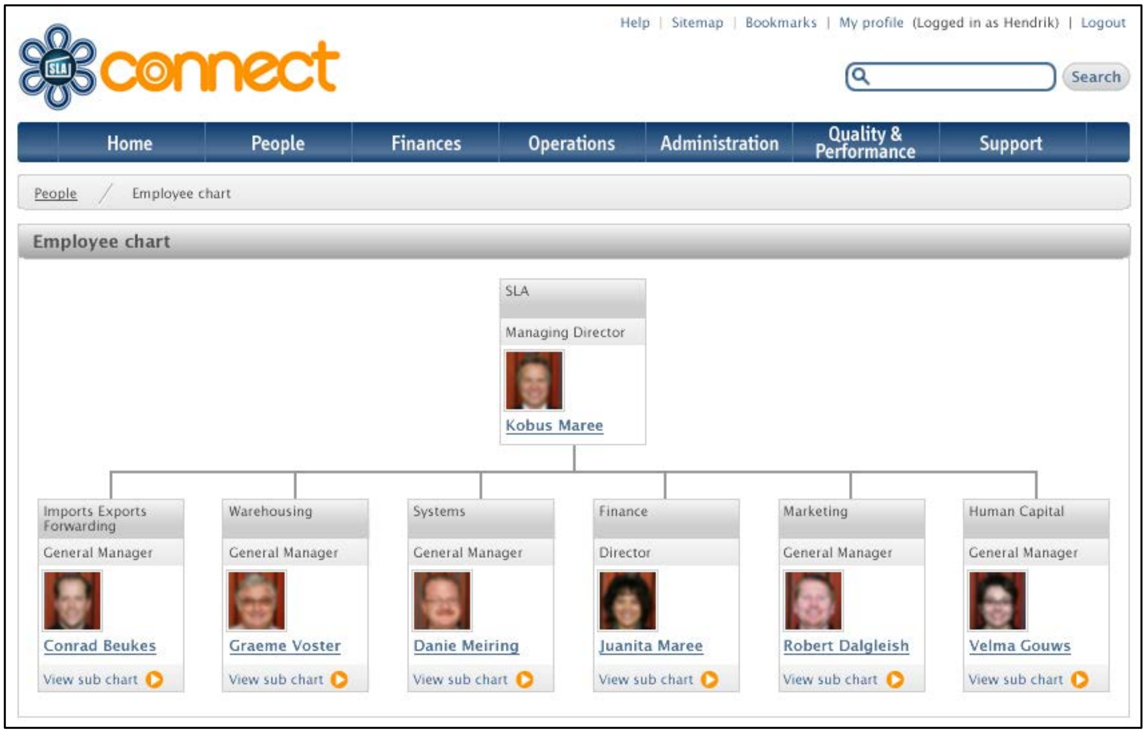


An important feature of Goodwin Procter's intranet is that users can search for employees by experience. The experience search is based on multiple criteria points and the results are ranked by relevancy. A criterion that is factored into the experience is an aggregation of HR data, biography and work product. The work product factors in number of hours to give a higher ranking to someone who has spent more time in a subject matter or case.

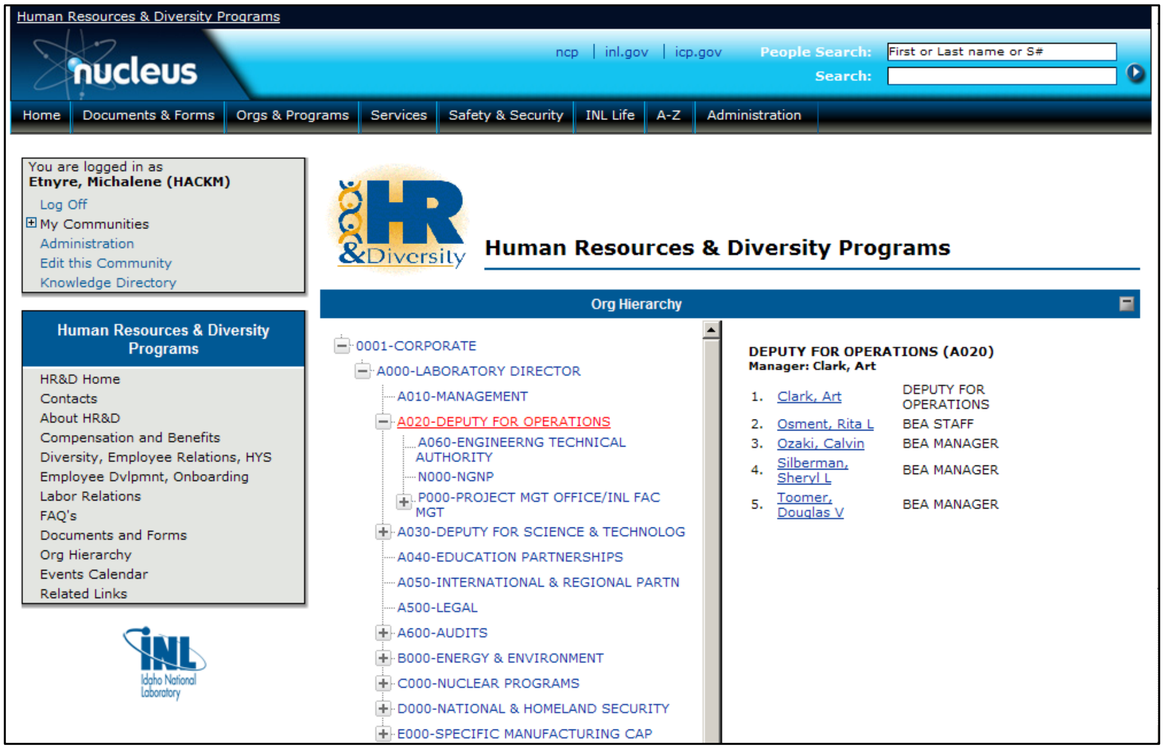
Contextualize Users

Another popular feature on corporate portals is the organizational chart. In the CSFS portal, for example, there's an interactive organizational chart, linked to the employee directory, which can be used to locate other employees. Such applications can be extremely useful, especially after mergers, acquisitions, and reorganizations.

The People Directory on the SanDisk intranet is one of the most popular applications on the site and it is based on the company's org chart. "The directory is based on an organization chart structure so that employees using the tool don't just get contact information, but they see where the individual 'lives' within the organization," says SanDisk's Lim.



Strategic Logistical Alliance's org chart shows a static view of two levels of people in the organization (in this case the top management). The user can click on an employee's name or picture to view their profile. Clicking on *view sub chart* takes the user to the next level in the organization. When searching for an employee in the search box, the user can click to go to the employee's position in the employee chart.

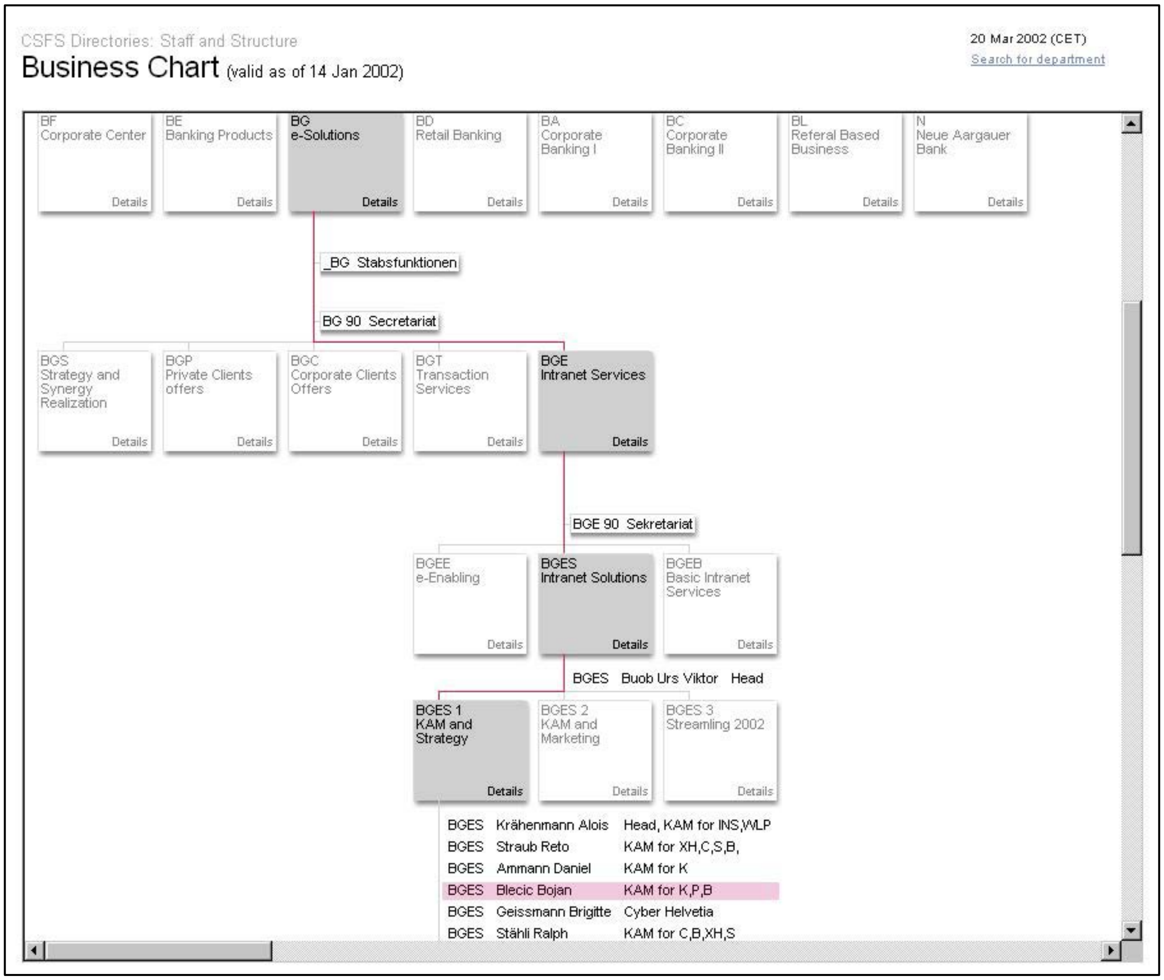


Idaho National Laboratory's organization hierarchy tool in the Human Resources Community with expandable drill down/drill up capability. The user clicks on the organization number (for example, *F100*), and the corresponding manager and employee names display on the right.

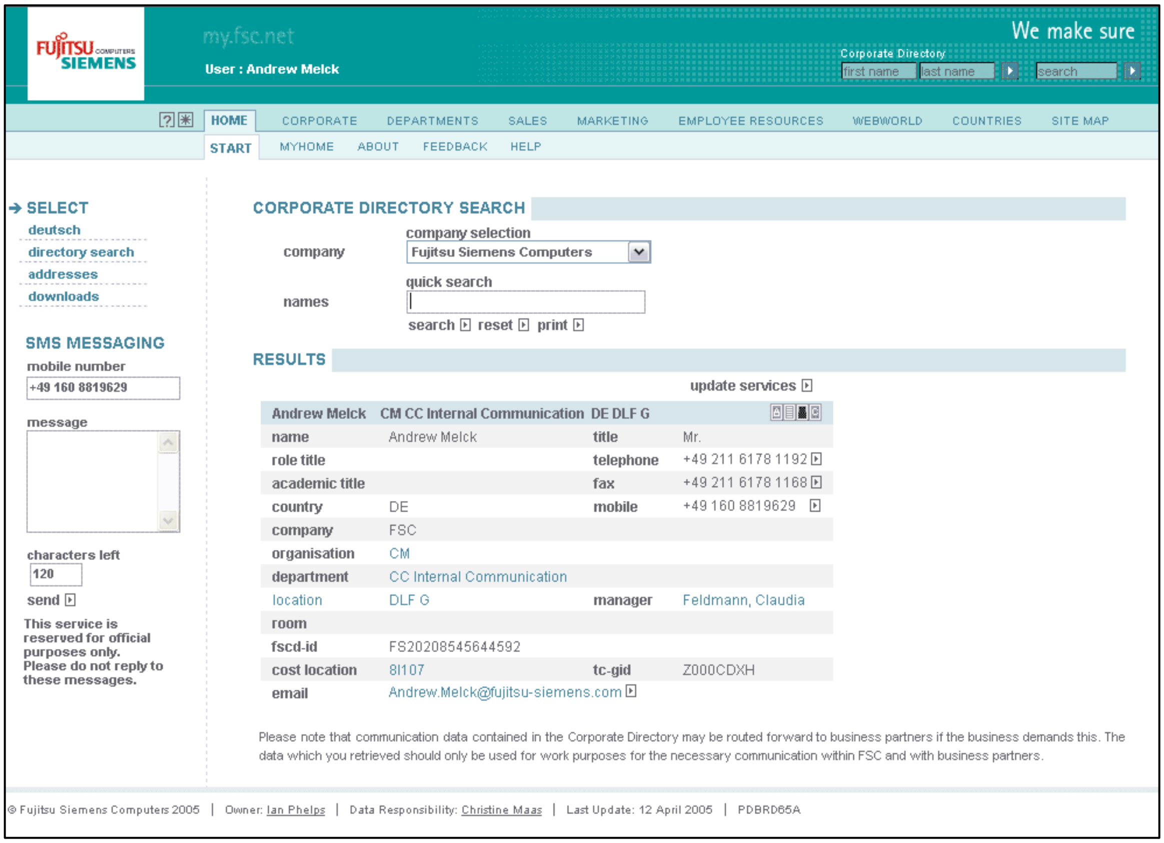
Win Over Management

Politically speaking, a centralized employee directory can be a quick win for a portal design team. Many teams report that starting with small, easily understandable tools can build not only users' interest in the possibilities of the portal, but also, simply put, make the portal design team look good in the eyes of management. Delivering these quick-hit, quick-win applications can be one of the best ways to build a portal, get users to employ it, and keep management happy with the progress.

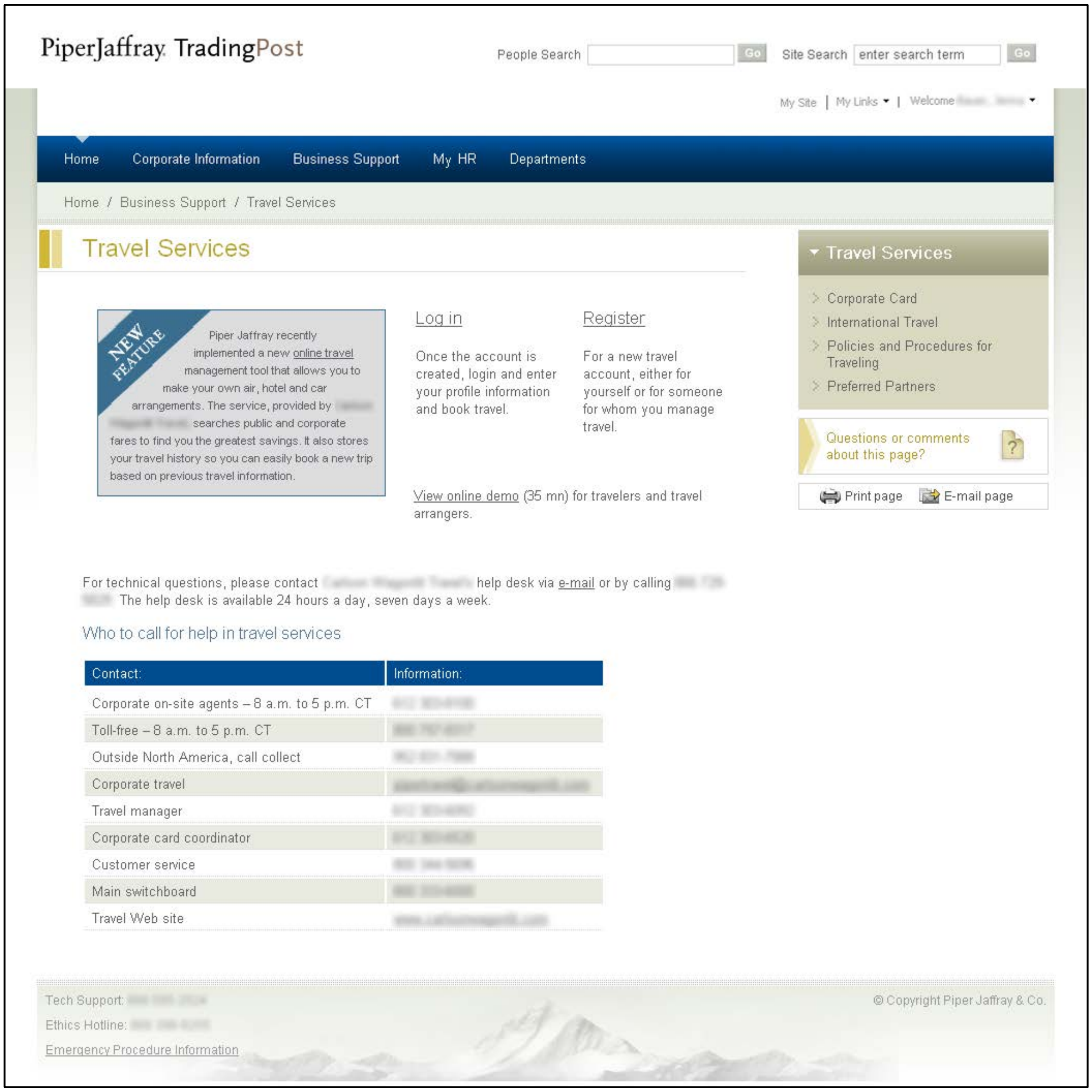
At Fujitsu Siemens Computers, "Our employee directory gets the most hits of any page on the intranet, after the homepage," says Melck. "It's particularly useful because it's possible to navigate from a single entry to that person's manager or reports, or to go to an overview of everyone at their location or in their department. Additionally, SMS text messages can be sent from the interface."



One of the most popular applications on the CSFS portal is the interactive organizational chart.



The most popular page on the Fujitsu Siemens portal, after the homepage, is the employee directory.



Because Piper Jaffray is in a travel intensive industry, the company's intranet portal offers access to an online flight-booking tool, which is more cost-effective than using live booking agents. The site also offers other travel information and services for international bookings, corporate travel policies, etc.

TOOLS TO HELP FIND EXPERTS

Large organizations with offices in many different locations often have a problem leveraging employee knowledge. To address this challenge organizations develop specialized tools that help employees quickly identify co-workers who have specialized knowledge, skills and work experience. These people-finding tools take the idea of a corporate directory to a new level giving knowledge workers tools to find the right needle in a complex corporate haystack.

Integration is the Key to Dell's HR Corporate Directory

Dell's people finder application combines corporate directory information from across multiple sources and in a way that enables users to quickly and easily find experts that meet certain geographic or skill-based criteria. This helps Dell employees efficiently serve customers from anywhere around the globe.

"The application has been a long time coming," says Moorehead. "For years, Dell employees had been asking to have photos and skill keywords attached to their directory entries but we never had the ability to connect people in that way. The company's HR system had functionality to search by skills, but not the portal. We had data in different systems, and we were trying to put them together to leverage existing skills info that is in the talent system."

The new system has powerful search features that allow Dell users to quickly find a co-worker who has the right match of skills and experience and is in a specific geographic location to solve a problem. But it also has many more subtle and useful features.

The HR Corporate Directory pulls skills data from the company's core HR system, an application that was built in-house. Where others might use PeopleSoft or similar tools Dell built its own. The skills data lives in both that system and in a sub-feature called Talent Direct.

"We port 'skills' data over from those systems to the HR Corporate Directory to leverage the best of both," says Moorehead. "It combines talent data with Web 2.0 tools. Imagine an internal LinkedIn or Facebook that was automatically aware of your talent management system. That's what we're doing with the new HR Corporate Directory."

The application features a global time clock. In each person's profile it says what time it is where that employee works and shows a sun or moon depending on whether that Dell office is open or not. The system ties into Outlook and has integrated IM via MSN messenger. Next to each person's name it says if that person is available, out of the office, at a meeting, etc.

Another powerful feature of the application is "Dell Colleagues" where a user can crawl up or down through the organizational hierarchy so see to whom that person reports, who his peers are and who reports to him.

Dell's *Employee Links* allow users to display links to relevant work and build a portfolio of their work to share with the organization. It serves as a reference point of what each person does and provides links to work samples or white papers.

Dell's corporate directory is a great example of what a handful of IT people can do with an off-the-shelf portal product and strong integration with multiple systems. It offers users a powerful communication and connection too and it's a "quantum leap" in terms of customer service.

Making People Search Easy Saves Money and Time

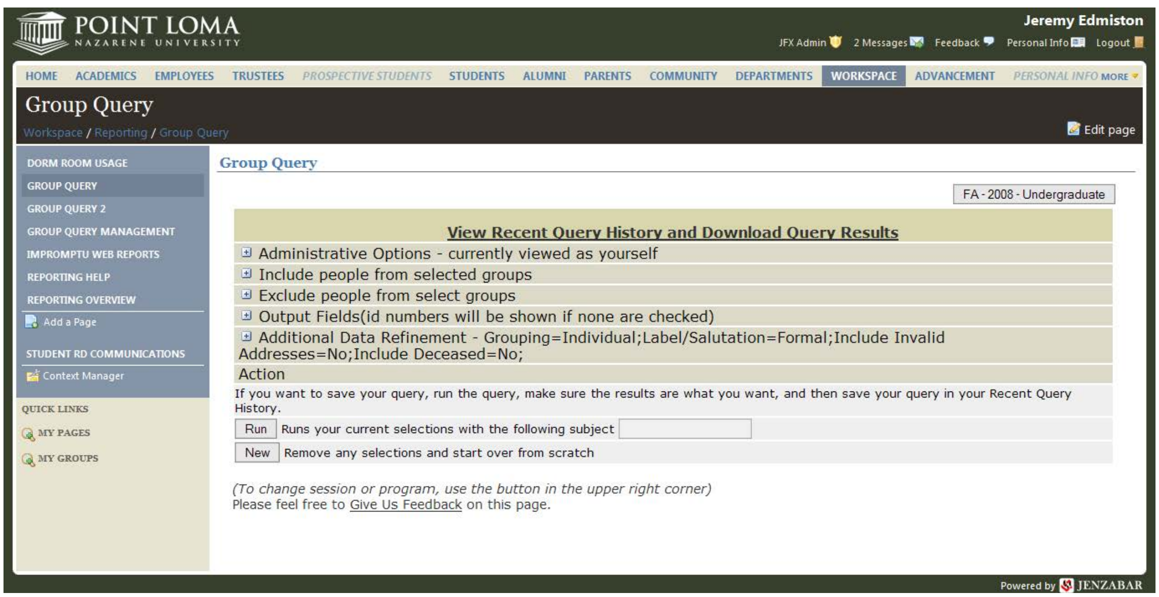
When finding people is integral to a key business function, a well-built people directory with a robust search interface is critical, but only if it's easy to use.

Like at many colleges and universities, Point Loma Nazarene University staff members need to reach out to students and alumni frequently, and in very targeted ways. Whereas the complexity of a traditional ERP system can sometimes be a roadblock between the users and the data, a robust portal application can make this task both easier and more cost effective.

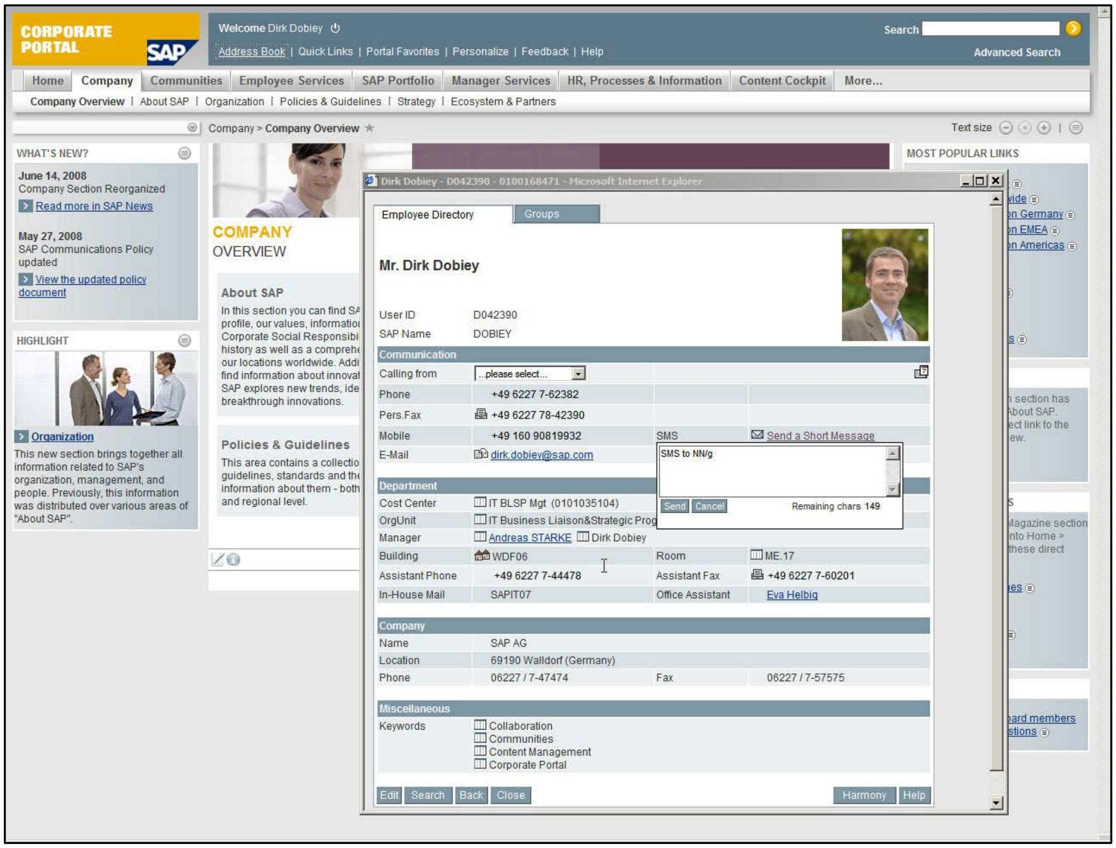
"Our departments send out weekly information to alumni specific to that department," says Point Loma's Edisto. "For instance I might want a list of alumni from California who are over 35. The difficulty of doing this prior to the portal was the difficulty of using the University's ERP system. The users don't like to pull those lists from there."

Before this capability was on the portal, university staff would have to contact IT, ask them to build the list they needed and export it to Excel for them so they could send out their mailings. Because of how cumbersome this process was departments would keep the lists they generated "forever" and end up mailing to bad addresses.

The portal changed everything by putting the power of self-service in the hands of the users. "This [portal] tool has empowered the department users to get the information they need easily," says Edmiston. Additionally, by removing IT from the workflow, he says it has also freed up IT staff to work on projects that they never used to have time for.



An example of the Point Loma Nazarene University query page.



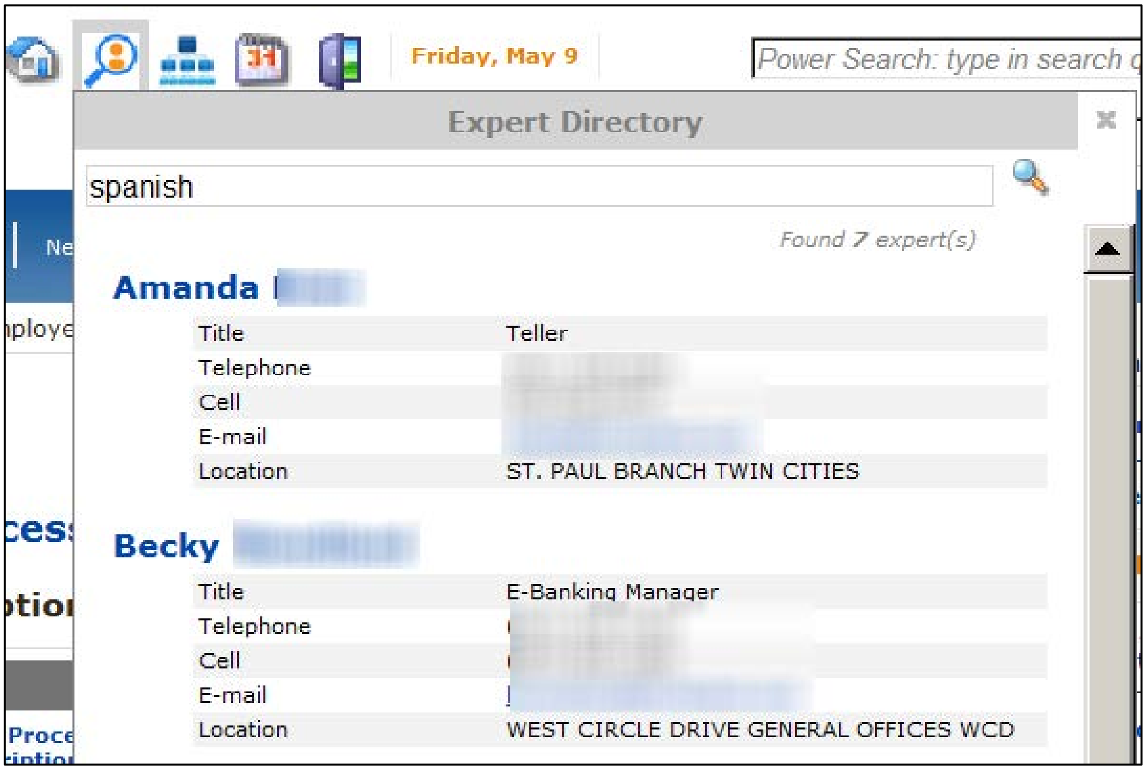
The SAP address book is an example of how one of the site's pop-up applications works. Some applications, like this one, pop-up yet maintain the consistent look and feel within the overall style guide.

Using Advanced Search to Find Experts

Think Mutual Bank also focused on the power of search when designing its expert directory. The company's Expert Directory is powered by the powerful Coveo search with thesaurus, and uses a wildcard added after the characters. The means users can find people with only a grain of information to start their search. "For example," says Stiller, "someone searching for a person can enter "KATH", unsure if she is Kathy, Kathleen, Kathryn, Cathy, Cathryn, etc., and the searcher will get valid results to choose from. The searcher might want a banker located in St. Paul, and they will get a quick list."

The expert-finding tool is the portal's most popular feature, which is not surprising considering the original idea for the tool, emerged from user feedback and a desire to include features that would help with adoption. "Hard won converts came over [to the portal] only after this feature was available," says Stiller.

This enhanced feature was also designed recognizing that those who were having trouble adopting the new system were used to the presentation of the old phone directory, and felt it was more efficient for them to keep using it. "We modeled this updated version against the older style presentation so that the simple format of the output would provide reassurance, but the power of the thesaurus and search would be enticing as well," she says.

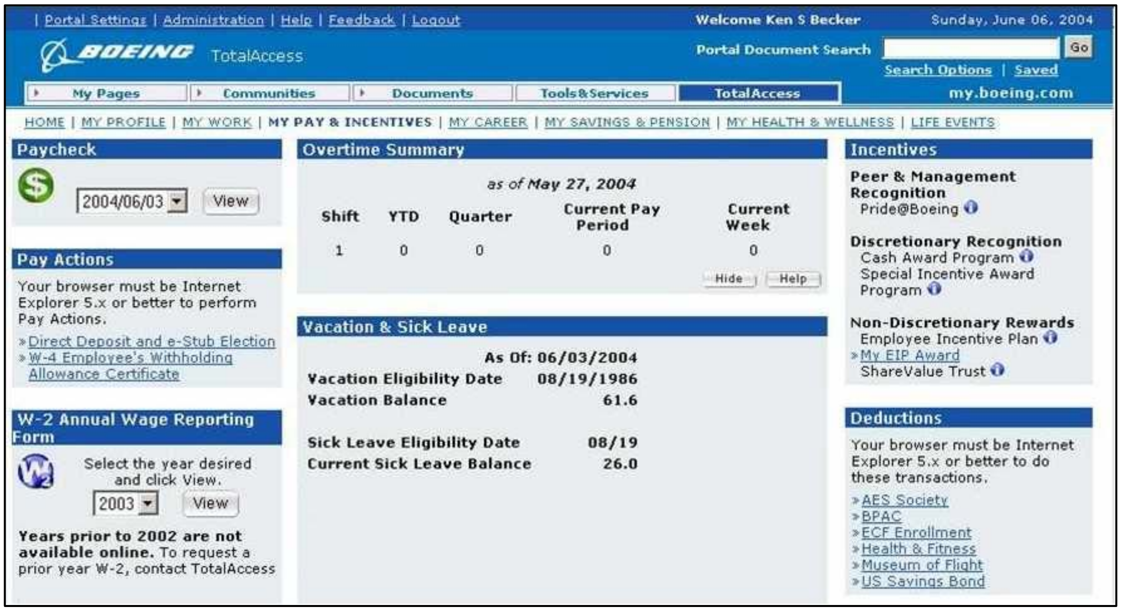


Think Mutual Bank's Expert Directory uses advanced search to help return nuanced results. Users can search by expertise, role or title among other characteristics. The quick view results show title, phone, cell phone number, email and the employee's location in a clear format. Clicking the name allows the user to see the person's complete profile, including reporting structure, additional contact information and a photo. Clicking on the *email* link opens an email message pane that links directly to the company's email server.

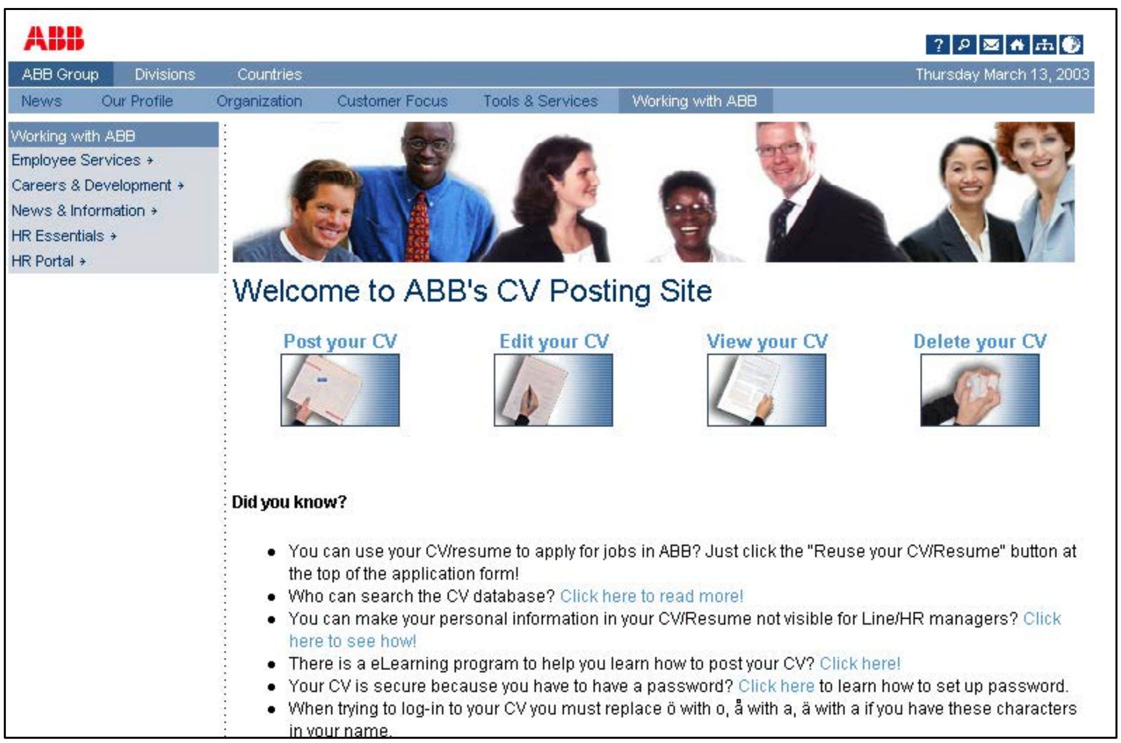
EMPLOYEE SELF-SERVICE TOOLS

A typical human resources employee spends quite a lot of its time updating and processing changes to employee information, and answering employees' questions. web-enabling HR and finance systems allow employees to handle much of this work themselves. With self-service tools employees can update their personal information, check remaining vacation days, submit expense claims, and query salary and benefits information online.

As with employee directories, HR self-service tools are often a quick win for organizations. Automating these features can facilitate notable time-savings for employees and HR staff alike. Features such as these can be used to help build a solid business case for the intranet portal.



Boeing’s personalized vacation and sick leave hours balance page.

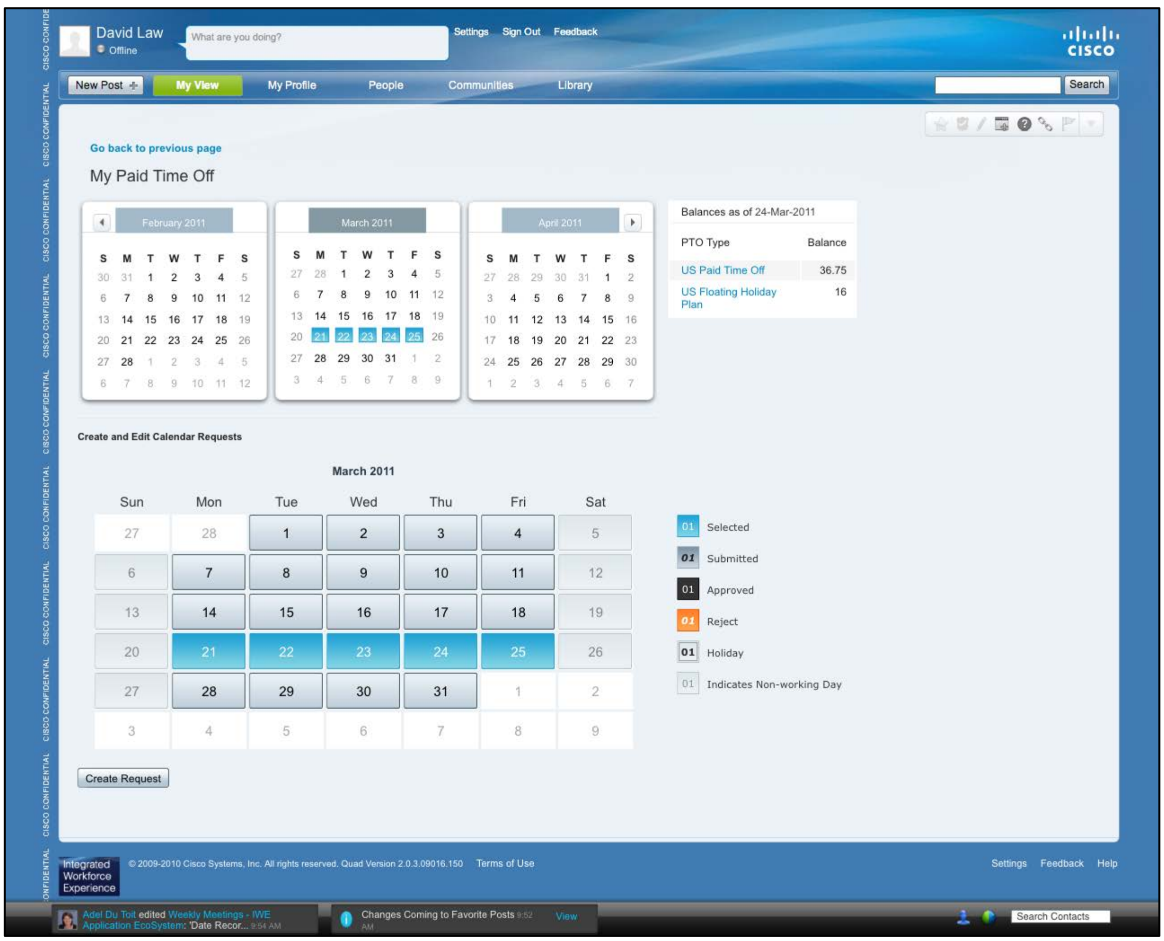


Graphical buttons help users through the steps of putting their CV online, and clearly written links offer further guidance. Note that the text is written simply and clearly. While this is always a good idea, it’s especially important in an organization where many employees may not speak English as their first language.

“Personnel applications are one of the big things for us,” says the City of New York’s Marsha Kaunitz. “We’re hoping to eventually allow people to access the intranet through the internet by single sign-on, so they can access it from home. There are many field employees who do not have desktop computers, and we would like the intranet to be available to them through their home PCs.”

At DFAS, thanks to implementing self-service human resources tools, “our human resources was able to achieve a 20% reduction in staff” based both on the amount of material it put online, as well as new self-service tools it implemented, says Crawford. “Now there’s a lot more automation, so employees can go online to get what they need. If they need training, they submit a request for it online. Not only does it save money, but I know I prefer just being able to get online and send things in.”

Self-service HR functionality was especially useful when the Department of Defense projected a closure of a significant number of its military bases. “Base closures will affect a lot of our employees,” she says. Before that happens, having a self-service human resources section means employees can examine such things as early retirement options and jobs available elsewhere in the organization.

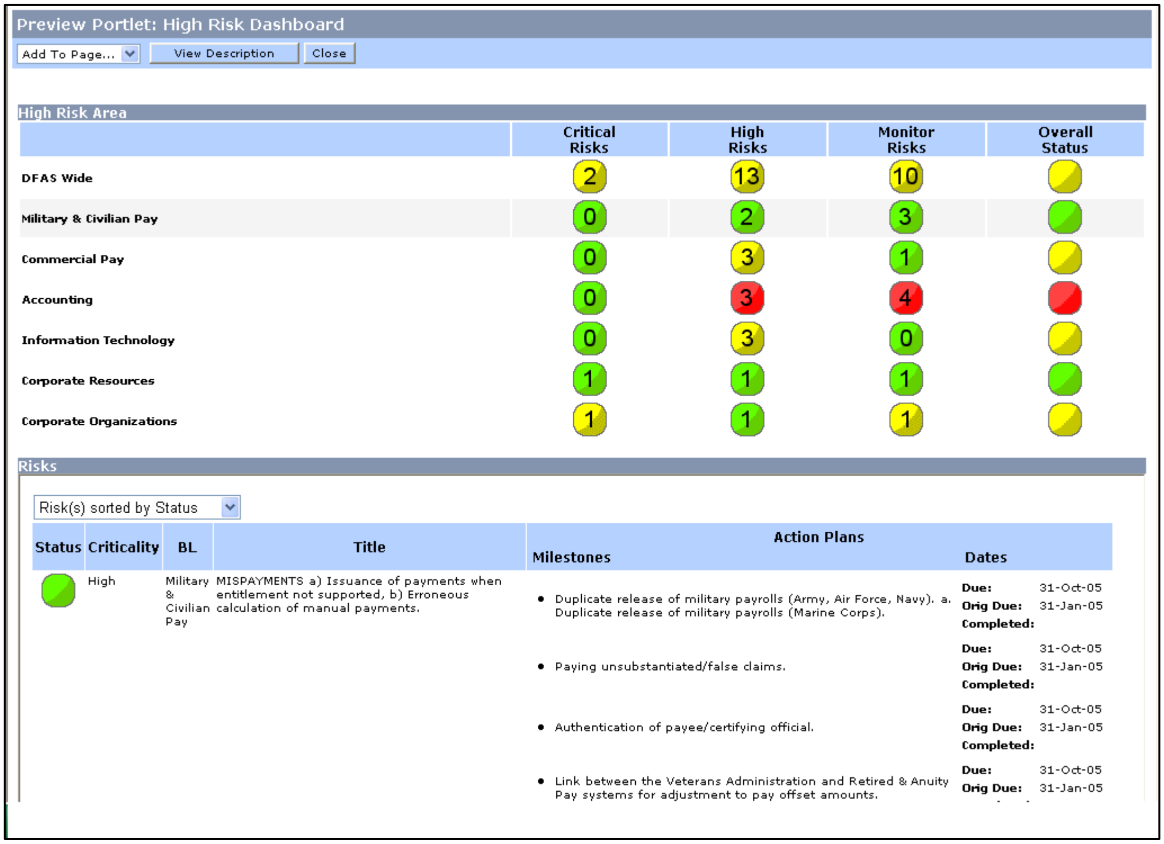


This screenshot shows the details page for Cisco’s paid time off application (PTO). Here, employees can view and request PTO.

DATA DASHBOARDS

The High Risk Dashboard at DFAS

DFAS offers executives a business intelligence dashboard on the portal. "The high-risk dashboard identifies all the high risks in our organization," says Crawford. Every morning when managers come in, they can see whether a number of business indicators are red or green, and can react accordingly to problems.



This human resources dashboard at DFAS gives HR managers a quick way to check current risk levels.

Build-A-Bear Workshop's Executive Dashboard

Retail managers and executives need access to accurate and timely sales data and the ability to track progress toward sales goals. Executives at Build-A-Bear Workshop use this type of information to manage both day-to-day store operations and manage progress toward company-wide financial milestones. The Executive Dashboard was built into Build-A-Bear Workshop's portal as part of a business intelligence toolset that is a growing part of the site's feature set. This feature alone has resulted in an increase in portal usage. "This tool is really the reason why we have so many users on the site," says Build-A-Bear's Somogyi. "It is the number one data provider of in-store metrics."

Due to privacy concerns we were not able to show screenshots of this tool, but the way it works is that it aggregates various sales metrics and gives users access to the data at different levels of detail where they can manipulate the views and zoom in and out.

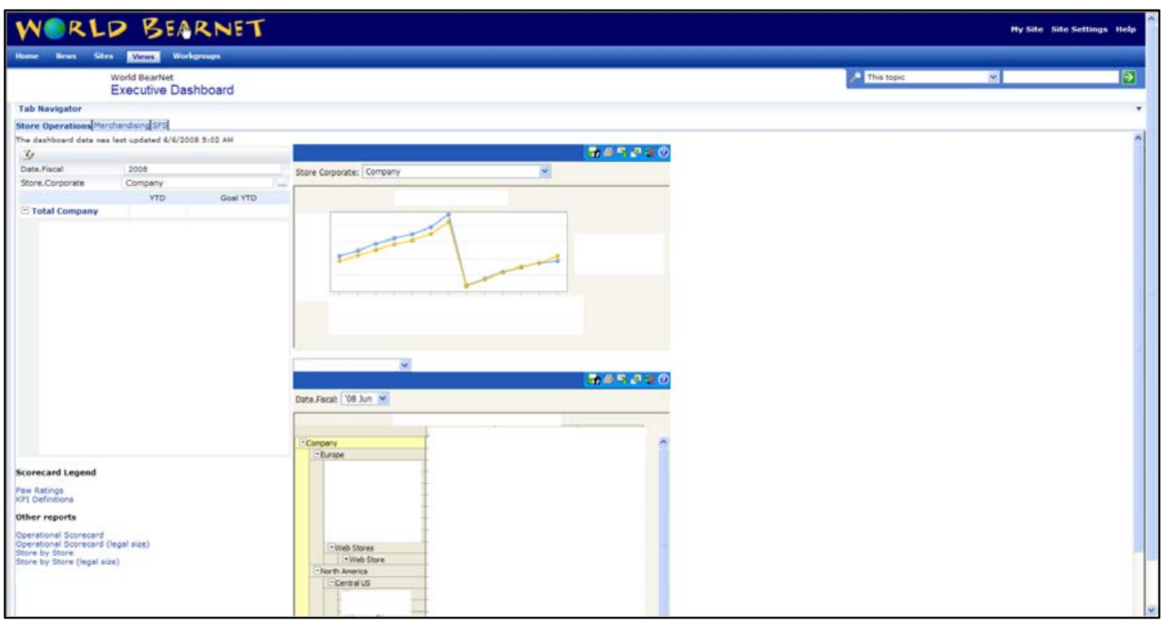
“You can start at the company level,” says Somogyi, “and see data that shows where we are against our plan as a company. Users can drill down into finer detail, to the store level, to see where that individual store is against its plan.”

Though Build-A-Bear Workshop has found success with this particular application, overall portal adoption had been slow to gain momentum and many users still rely on manual processes or offline tools, even for collaboration, when online would create efficiencies.

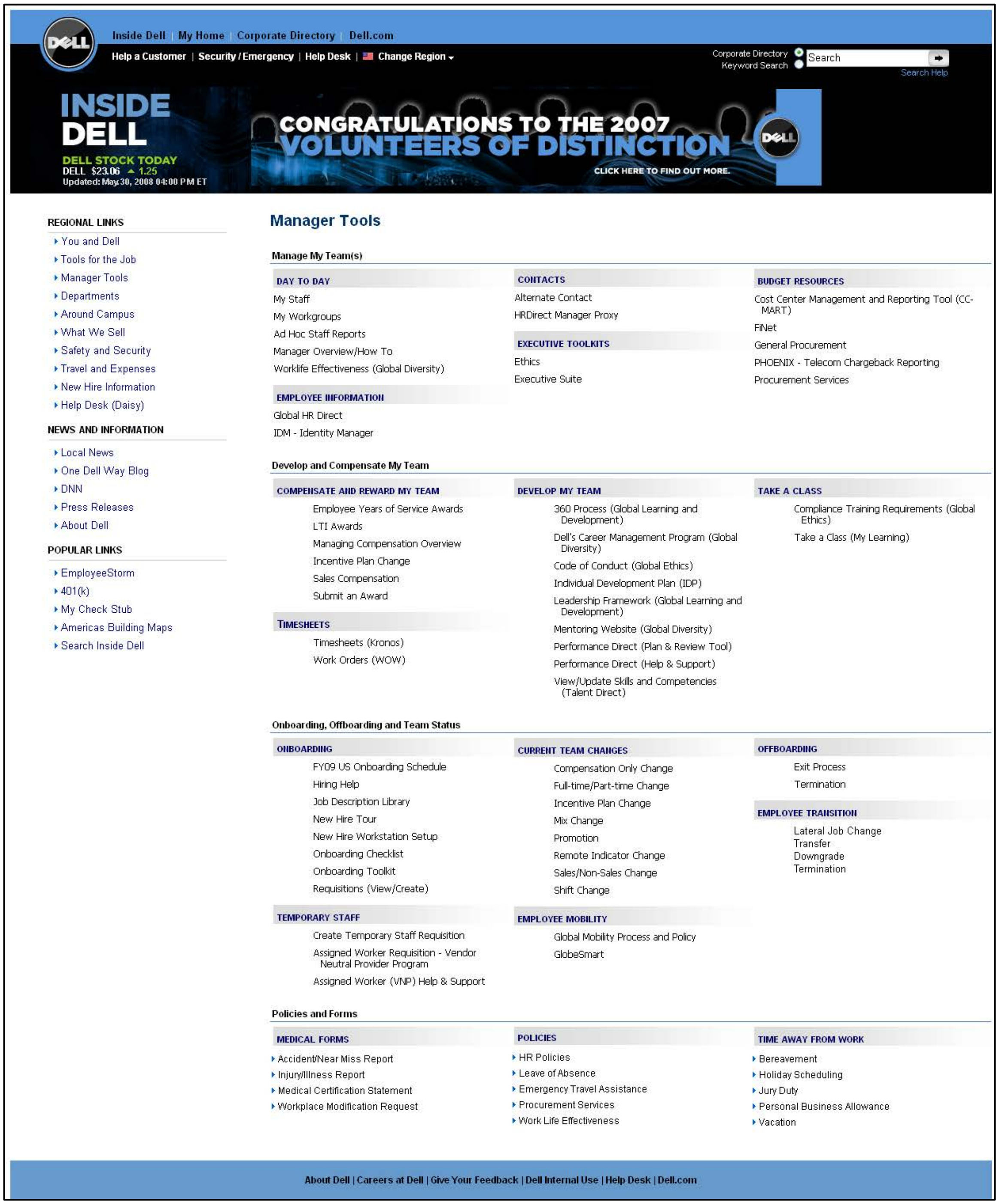
Many factors contribute to this type of uneven adoption, however, the clear message is that adoption takes time and robust applications can really help increase the speed.

When interviewed, Somogyi said that up until now the organization had relied on mostly organic means to grow the portal, but tools such as the executive dashboard were helping to affect change. Tools such as these put more high-level eyeballs on the portal which help raise visibility and awareness and increase the perception of its value.

“It’s hard,” he says. “We have a history of using shared drives here.” And habits like that are difficult to break.



Build-A-Bear Workshop’s Executive Dashboard. Executives and managing directors can view enterprise metrics and drill into metrics, charts and graphs. This dashboard is designed for exception-based reporting to allow fast resolution to issues and recognition for success.



The *manager tools* page at Dell gives the company's managers access to tools that enable them to make decisions more efficiently.

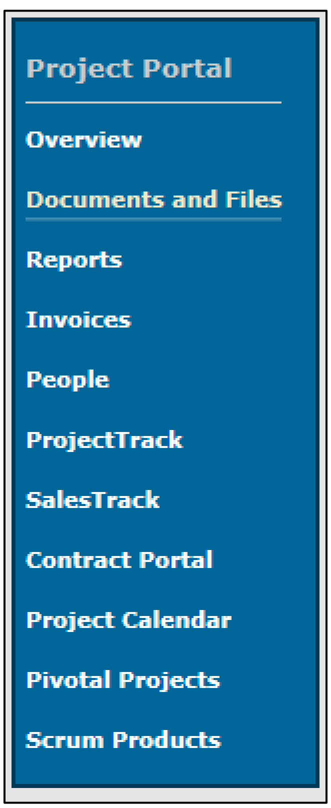
A Project Portal at Resources Data, Inc.

The project portal at Resource Data, Inc. is a one-stop shop for all things project-related, critical to the workflow of a company where almost all staff members are working on client projects and need easy access to real time project data at their fingertips. The project portal is a space where RDI staff and client staff can view/set calendar events, check schedules, identify critical milestones, download project documents, review tasks underway and assignees, view project costing reports, review timesheet entries, and so on. Links allow RDI staff to jump into the marketing proposal that led to the work, the client/contact database, and other ancillary info.

With all this data available in one place the project portal has become an indispensable part of the staff workflow. “Our project teams have become quite fond of the Project Portal,” says Collins. “If it happened on a project, our goal is for you to find it here. Project managers use this to see their projects at a glance and the overview page is their hub for staffing, issues being worked, and overall financials — all on a single page. PM’s can request additional team members, assign work, review timesheets and project financials, publish status reports and other project documents, access contract documents and the original proposal, and more without ever leaving this portal.”

Once the project is complete, the project portal houses an historical repository of the project and all of its deliverables as well as immediate access to who was involved in the project, how much it cost, when the work happened and other information that feeds into future marketing efforts.

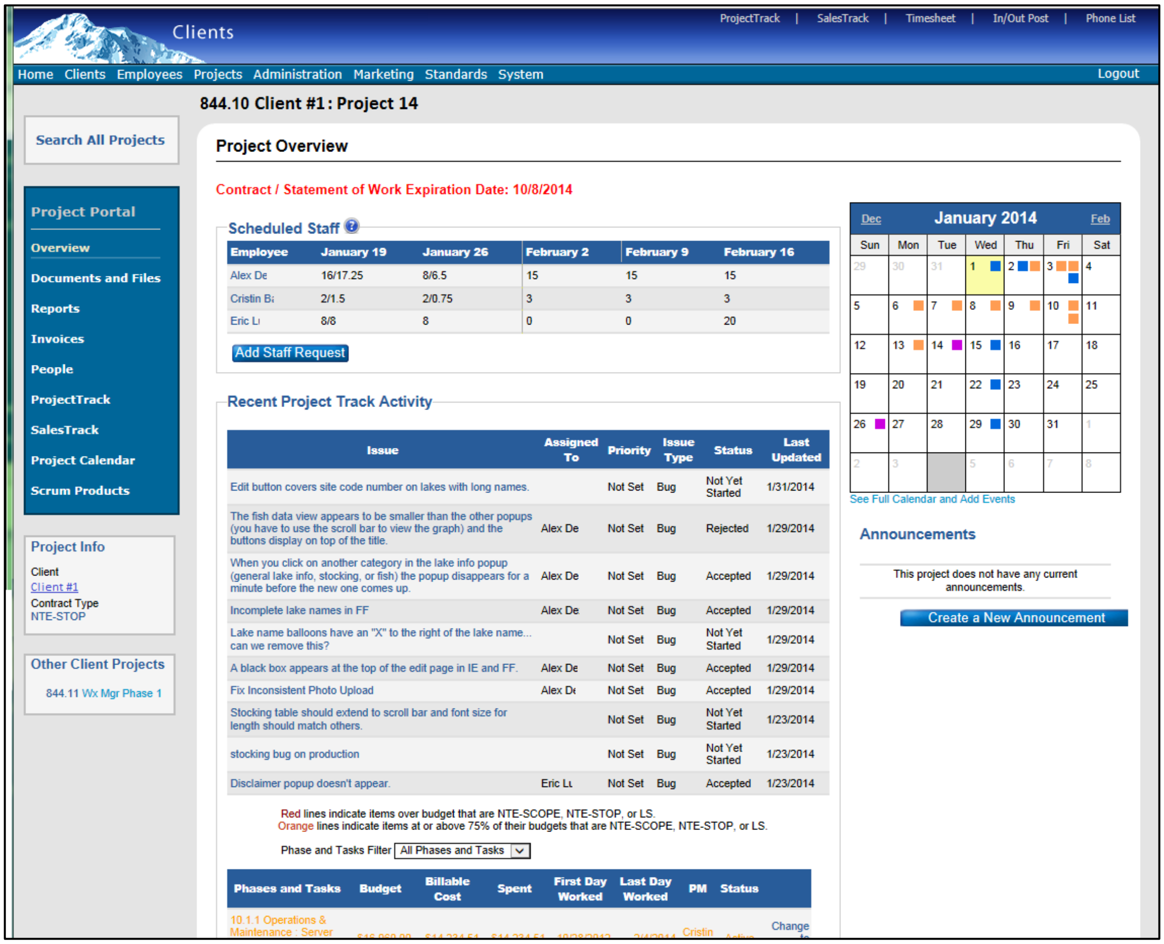
Collins says the “killer app” aspect of the project management portal is the overview page, which serves as a dashboard view of the project. Here staff can see current tasks, issues and financials, at a glance. Another great feature is the People, Documents and Files (especially status reports), Project Track, and Reports (sub-menu shown below).



The *project* sub-menu on the RDI project portal is shown here:

- ***Documents and Files:*** makes available the various files related to the project
- ***People:*** shows all the people who have billed to the project, their work dates, and so on. Clicking on one of the people jumps you to the Skills Matrix, which displays all the education, technologies, project experience, etc. for the employee
- ProjectTrack: is the company’s intranet issue tracking system. This item provides a filtered view of issues associated with the given project
- Reports: allows the user to run costing reports and view completed timesheets. Project managers and clients like to be able to see those things in near real time

"I'd guess that 60% of the time, my questions are answered on the overview page," says Collins. "The rest of the time I'm attaching documents, running a financial report, looking for a contract (really helpful), or checking to see who's billed to an old project."



The Resource Data, Inc. project portal overview page gives a high level look at who is working on a project, what they're working on, the current budget situation (not shown), scheduled events and links to the other portal pages and to other modules that are pertinent.

A Tool for Managing Utilization

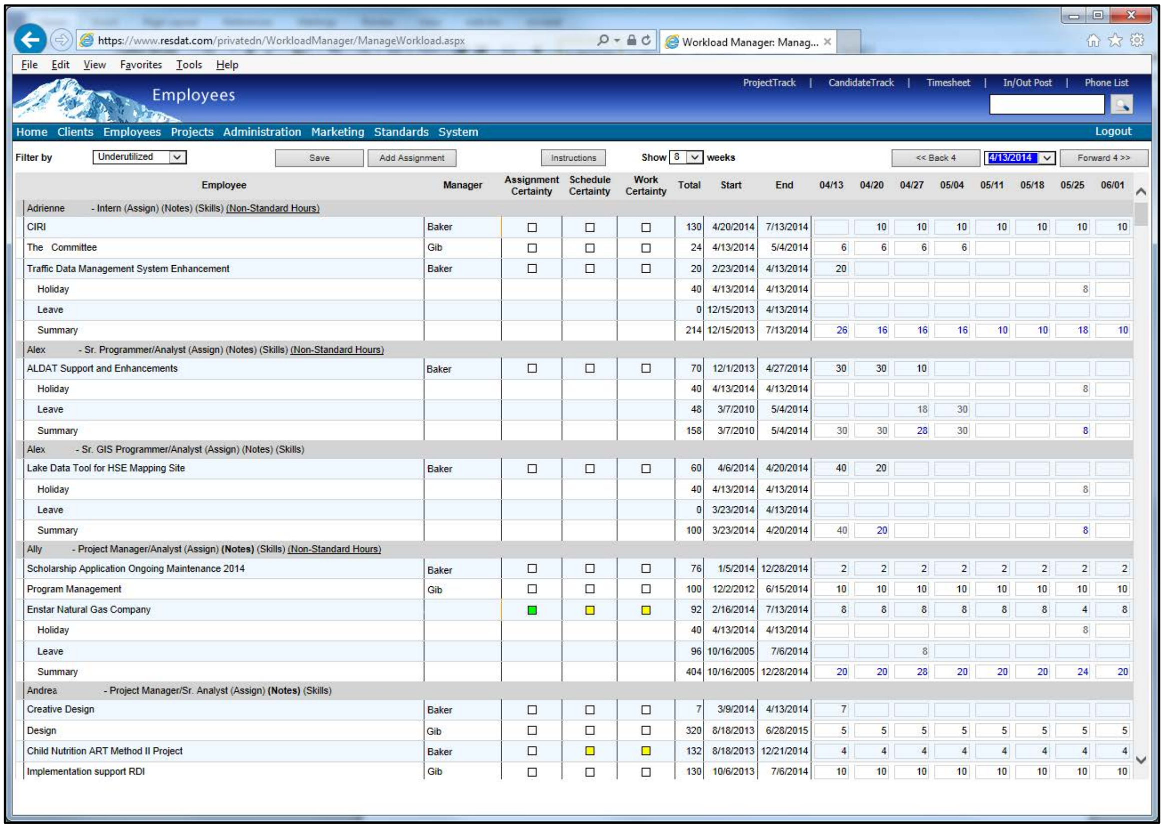
Another valuable tool Resource Data Inc. uses is what they call the "Workload Manager" which helps managers understand utilization rates across the organization. "We are a consulting company with highly competitive rates," says Brian Walch, HR Director (former Intranet Manager). "In order to maximize staff utilization, excel at providing a flexible work/life balance to our employees, and be responsive to client requests, managing our staff workload is something that everyone has to be involved with."

WorkloadManager allows all employees to model their projected workload. Project managers can easily view who is available to decide whom to include on their projects. Employees can view and update their schedules. Branch managers can review their entire staff and do projections and long-range planning in the Workload Manager application.

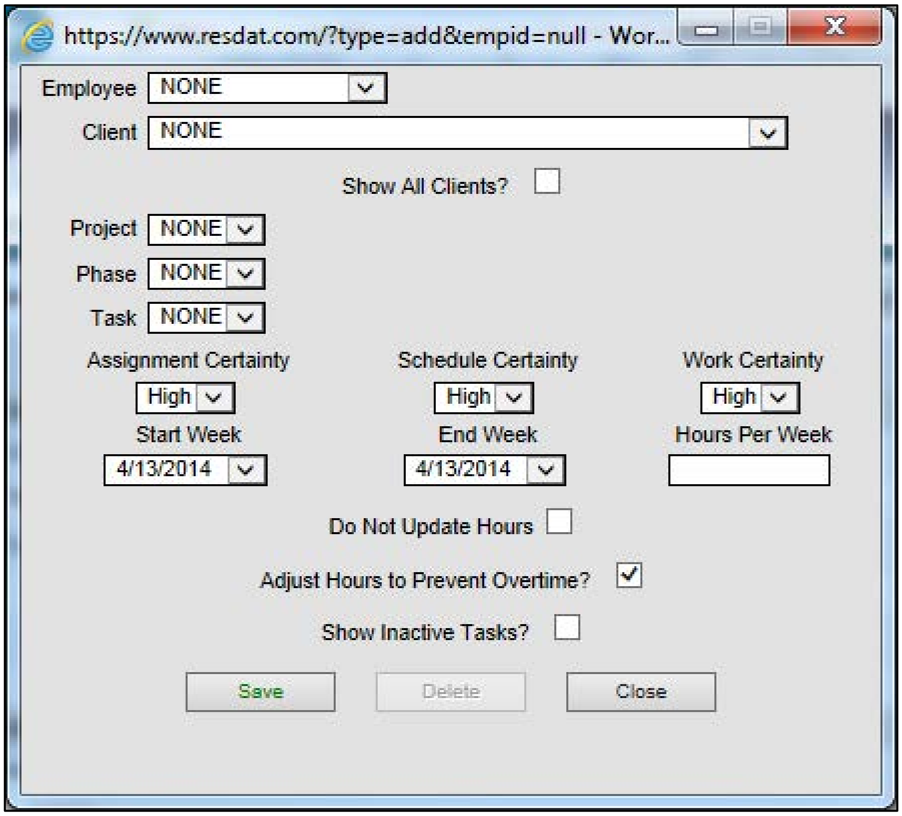
“It is an app that everyone in the company uses as a communication tool and it directly contributes to our bottom line through employee engagement and efficiency,” says Collins.

Collins explains how the tool is used in some real world scenarios:

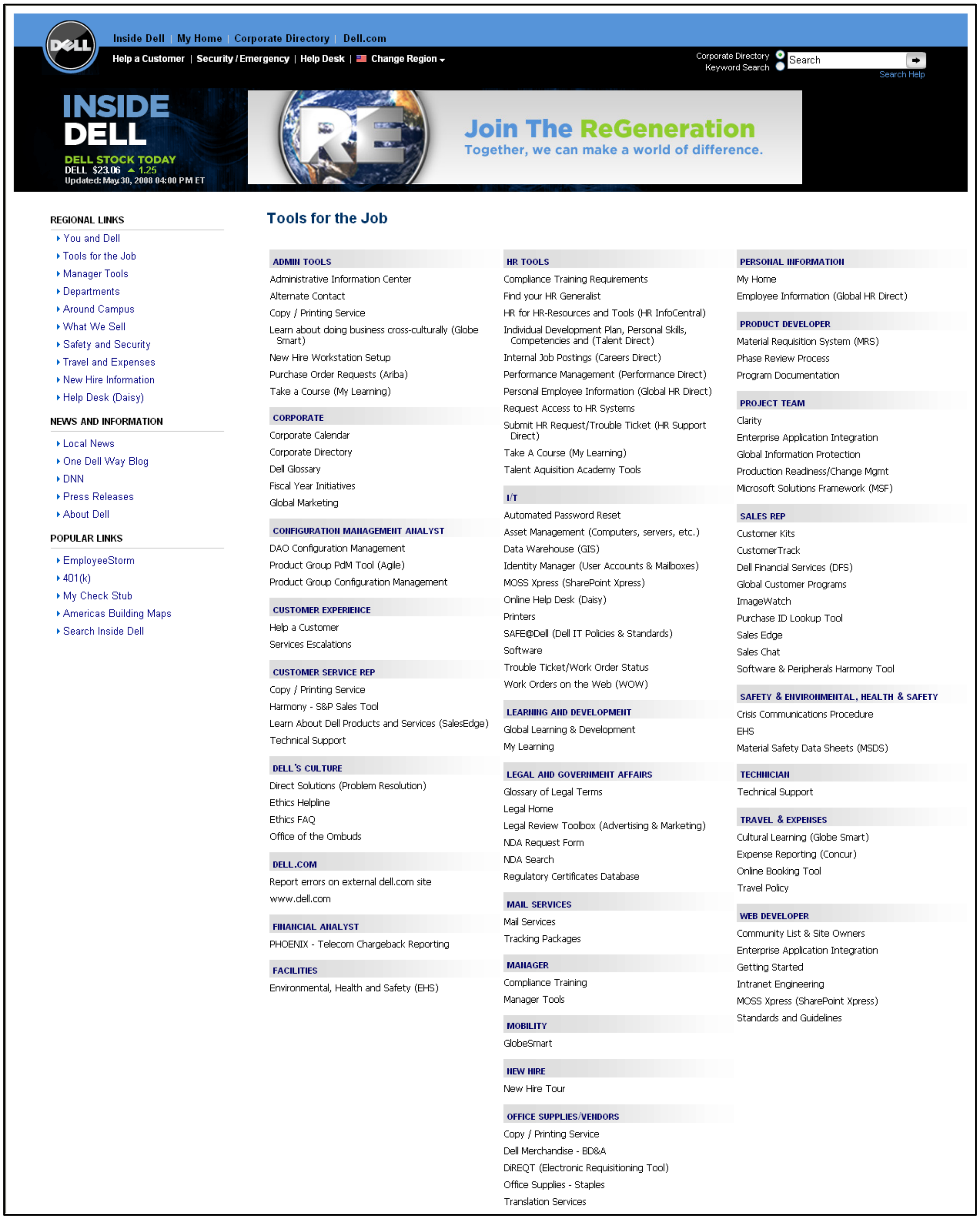
- “A project manager is looking to staff a new project. They pull open Workload Manager (WLM) and look at the *Underutilized* list of employees. Based on that, they start adding work hours to the individual’s schedules that they want to include in their project team. They don’t need to go through a resourcing manager or branch manager.”
- “Employees and project managers often collaborate and discuss projects and work assignments independent of any formal management (many of our developers take on project management responsibilities at times). When this happens, the employee or the PM will go into WLM and update the work commitments to reflect the new commitment level. This is then reflected in real-time to the rest of the company.”
- “If an employee runs out of work, but WLM is showing that they should be fully booked on projects, they know which PMs to go talk to.”
- “When employees book a vacation, they are prompted to update their WLM for the time they will be gone. The system them sends this adjustment to the affected project managers so they are aware of the impact to their project (though they’ve probably already discussed it).”
- “The branch managers for all of our offices meet once a week and review people that are underutilized and those that are overbooked. This helps us make sure we are supporting a healthy work-life balance and also coordinate staff across offices, helping us run more efficiently across a geographically distributed company.”
- “Project managers can view their staff by their project. When allocating staff, they can easily see how holidays and scheduled vacations (which automatically show up in WLM) will impact their expected project timeline.”
- “Employees see their WLM schedule for themselves on their home page. This way they know and can review what projects they are expected to be working on. Project managers also see the staff scheduled for their projects. This alerts them that if they’ve booked someone (such as on a speculative project) that they no longer need, they can go and adjust it right away.”
- “Please let me know if you need more … . I’m sure I can come up with some.”



This is the *Underutilized* view in the RDI Workload Manager. In all views, the employee name, office, title, general skills, type (hourly, salary) and schedule is available so people will have quick access to that information when booking people on a project. The *Project View* will only show the people and hours booked on a selected project, allowing the PM to review the proposed project staffing.



On the RDI Workload Manager anyone can add a work assignment. By default, the system will automatically adjust the hour commitment based on their current work and leave scheduled (i.e. adjust hours to prevent overtime).

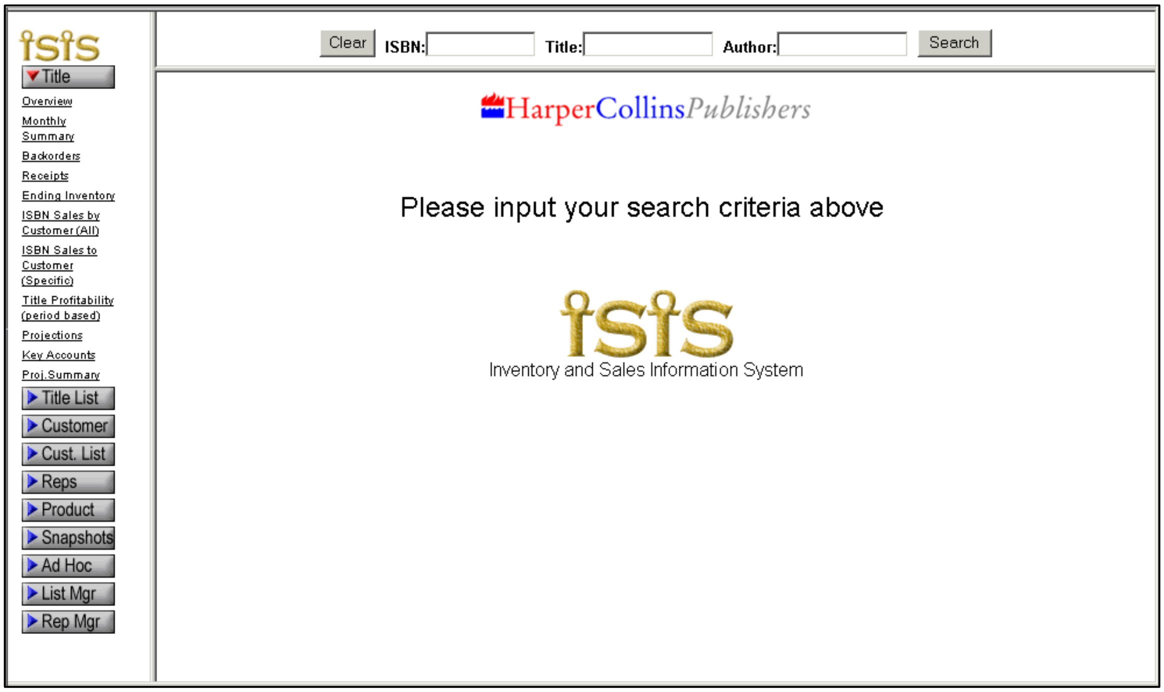


Dell's Tools portal is open to all employees. This page clusters the tools an employee or manager needs to do their job on a daily basis, including links to the help desk, expense reporting, travel booking, etc.

INVENTORY AND SALES INFORMATION SYSTEMS

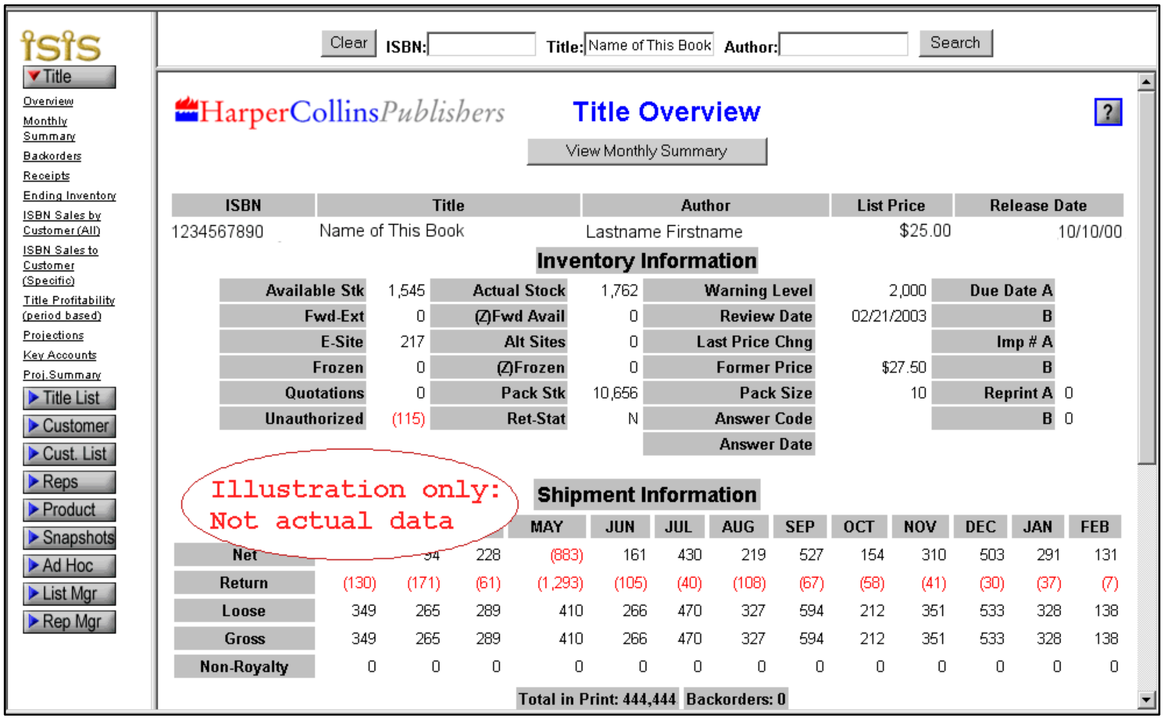
Web-enabled applications have been an important feature of the HarperCollins portal for many years, and have also helped encourage employees to use the site. "The business applications drive people there, because they have to use them to do their job," notes Zigo.

One of the first web applications was an inventory and sales information system (ISIS), designed as a simpler view of the company's data warehouse.



The top page of HarperCollins' ISIS system, a popular application on the Intraweb portal, gives users access to the inventory and sales information system in several alternative ways: through a series of views, or via simple search boxes.

A client/server version of this application had been used for years before it was ported to the web. Then a sub-portal was added to the intranet and it was available through a link on the Intraweb portal. It provides easy access to many kinds of information about HarperCollins titles, including the most-often-viewed reports from ISIS.



Selecting the overview for a specific title brings up summary information clearly laid out in a table on HarperCollins' ISIS system.

While all of the information contained in ISIS is also available to users in other ways, the portal tool has proven a popular means of accessing the data. "It's [the data] also available in a whole set of client/server and other web systems, but they're quite dispersed, whereas the sub-portal ties much of it together," says Zigo. "And not everyone in the organization would have the rights — or the time — to look at the more detailed, underlying product systems."

THE LATTE APPLICATION

Sometimes the portal applications that return the most bang for the buck are the ones portal teams stumble upon. Almost by accident the Point Loma Nazarene University portal team discovered that students wanted an application that would allow them to check their meal card balances via the portal. What ultimately turned into "the latte app" might never have been developed if they didn't think to ask the users the right questions.

"Each student has just so much money in food credit and so many meals left in the [meal] plan," explains Edmiston. "They usually don't find out the remaining balance until after they swipe their card and want their latte."

"As an IT group that didn't make it high on our priority list," he says. "But this is something that students really want.

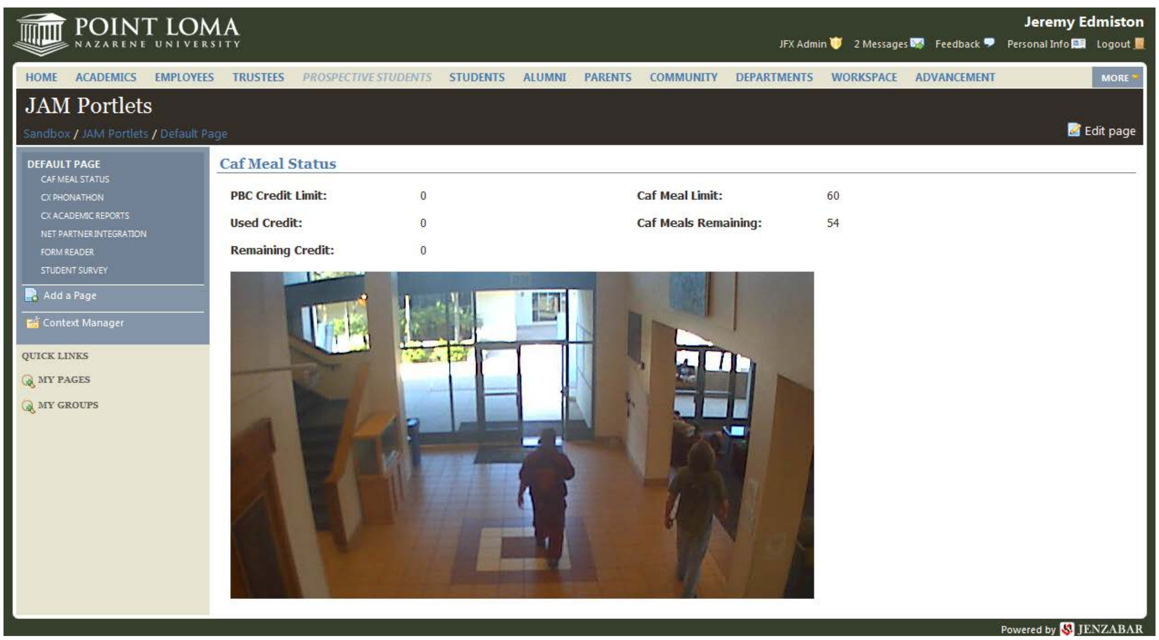
This simple, yet very important portal application, when minimized, shows credit balances in both money and meals remaining. In the full (expanded) view, it has a webcam to show how long the line is in the cafeteria — something else the students wanted.

The meal plan application has not only boosted portal adoption because it's so popular with students, but by stumbling on it, it also taught Edmonton's team a valuable lesson in user-centered research.

"The only way to find out about things like these is by asking questions," he says. "Students weren't asking for this but when we started asking questions we found out that this was really important."

This discovery has had a ripple effect on the rest of the work the team is doing on the portal.

"The University has a diverse range of constituencies and personas," he says. "Too often we tend to look at the product not the people. That's why we've taken a step back and organized the architecture so it's more people driven. With a portal you need to identify the types of users and cater to their needs."



A screenshot from the Point Loma Nazarene University portal where students can check their meal card balances and also see how long the line currently is in the cafeteria.

INFORMATION FEEDS

Aggregating information feeds is so common on portals it is considered part of the standard toolset. Portals often mix information from both internal and external data sources and make the management of those feeds customizable by both the company and the user. Now with the advent of mobile devices, those information feeds provide an opportunity to give users access to news for consumption on the go. Companies have an opportunity to add layers of value to the information provided by these feeds.

Persistent Systems believes its *PLive* app will prove to be a killer app for its mobile users. *PLive* is a corporate content delivery app, much like *Flipboard*, developed by the company's Enterprise Mobility Team to help users stay connected to the organization.

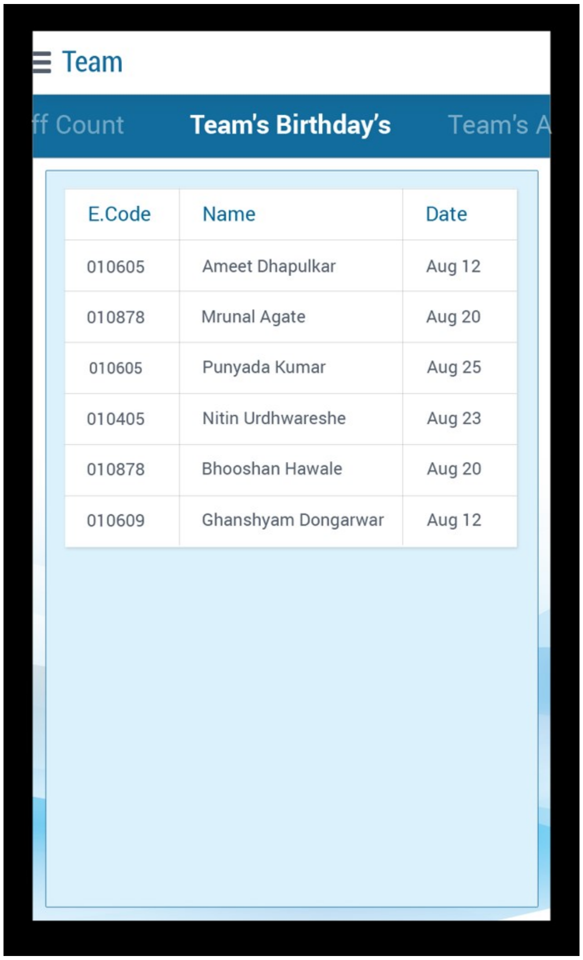
The app, which is designed for Android and iOS draws content and data feeds from various enterprise systems, social media and intranet websites, allowing users to swipe through the feeds for near real time updates.

PLive is designed with a publisher-subscriber model to make the right content available to the right user according to his preferences. . Users choose the data feeds and can subscribe to any channel that interests them. These updates are compiled from the ERP & EIS systems and are not 'push' updates but are available when users start the app.

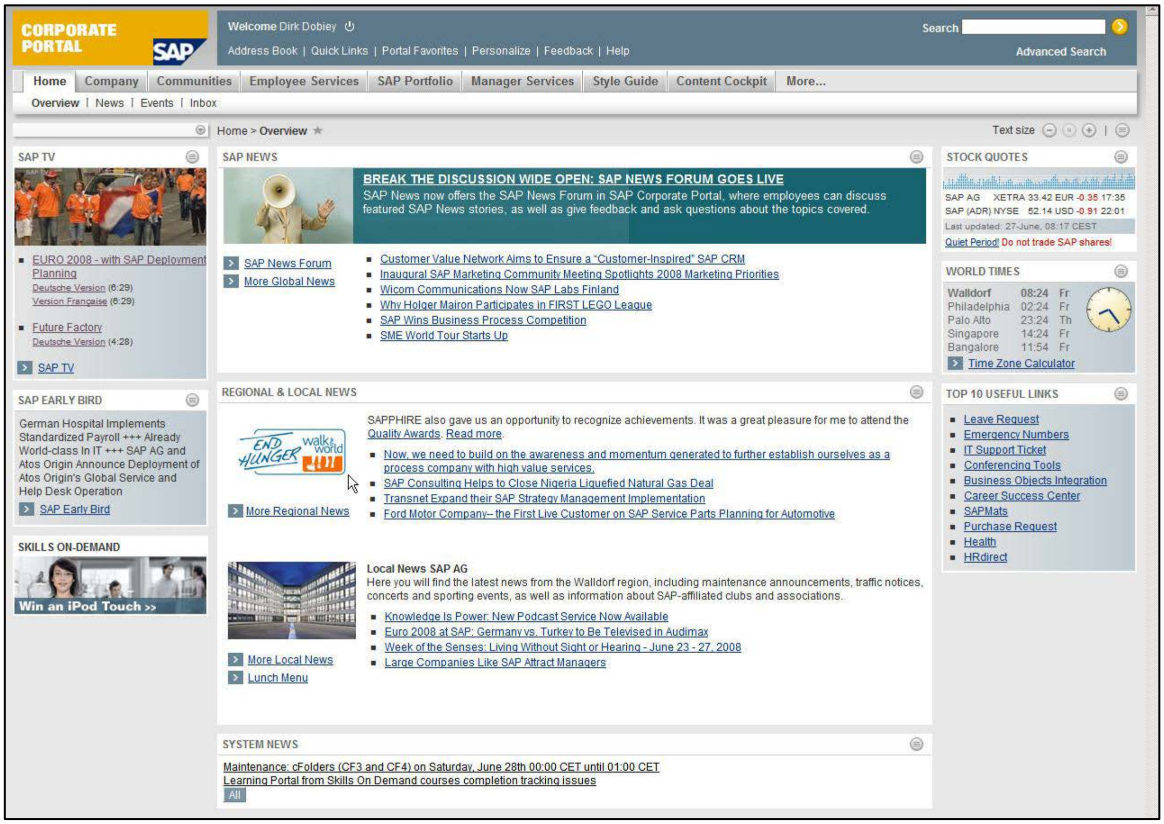
PLive *Messenger*, a component of the tool allows authorized users (employee engagement officers, CxOs and HR representatives) to publish their own content while any user can subscribe to these channels.

Content channels are logically grouped. Users can customize the content based on what they want to subscribe to and organize the sequence of the channels. Channels that publish sensitive data such as Revenue, Resource Utilization etc. are available only to employees in specific roles.

The homepage of Persistent Systems' PLive app shows the channels subscribed to by the user. The channels provide information from various sources consolidated into one app.



Users at Persistent Systems can use the company's PLive app to get a list of team member's birthdays or wedding anniversaries. The app also provides action buttons so the user can either send birthday (or anniversary) wishes to the team member via SMS or can call them. Another channel provides announcements sent by the IT team for downtime or new releases. Content owners can create a channel and start publishing their feeds through this simple yet very effective app with ease.



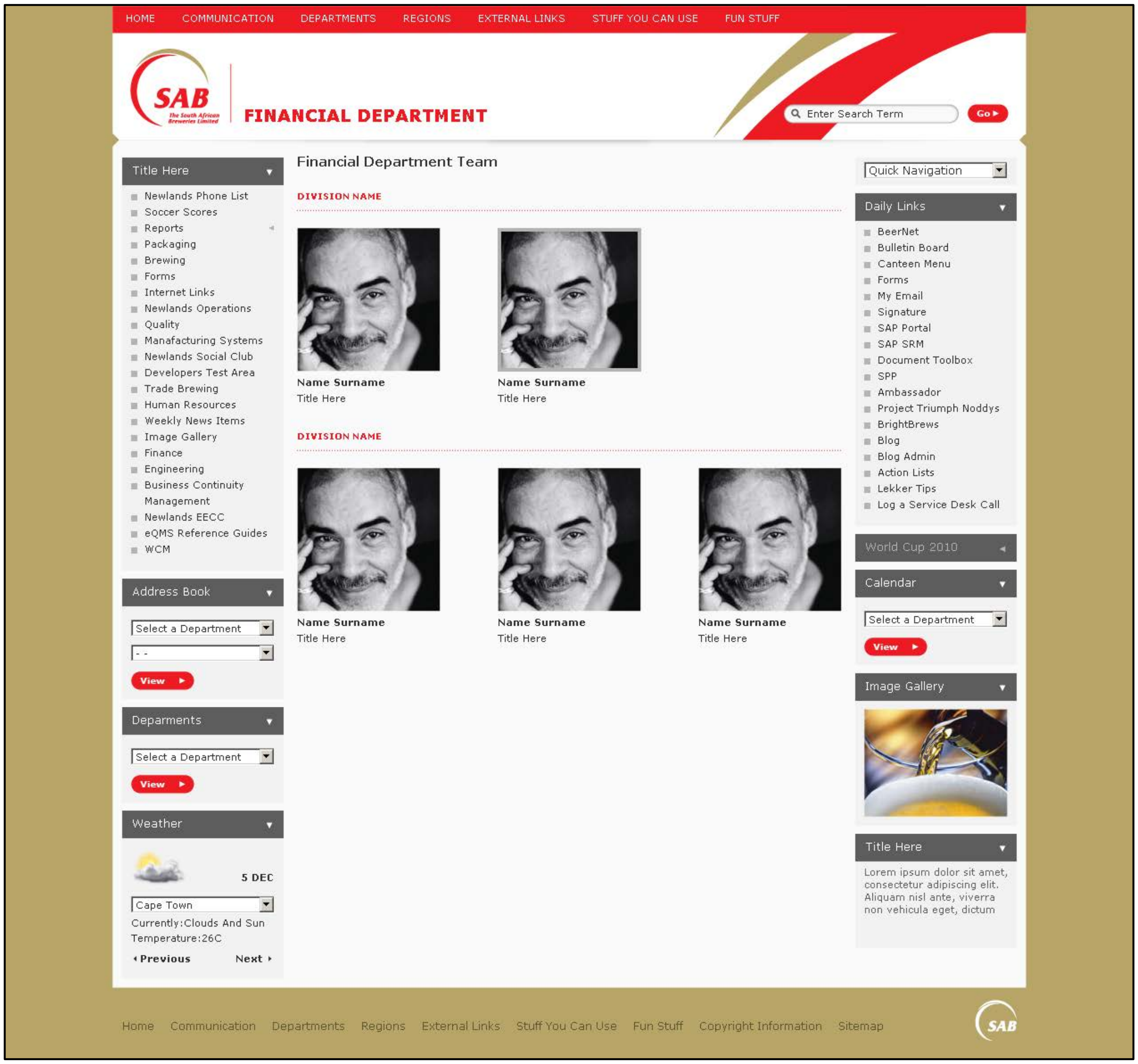
This view of the SAP homepage shows how the company has aggregated and segmented all news and information from inside and outside sources.

THE POWER OF WIDGETS

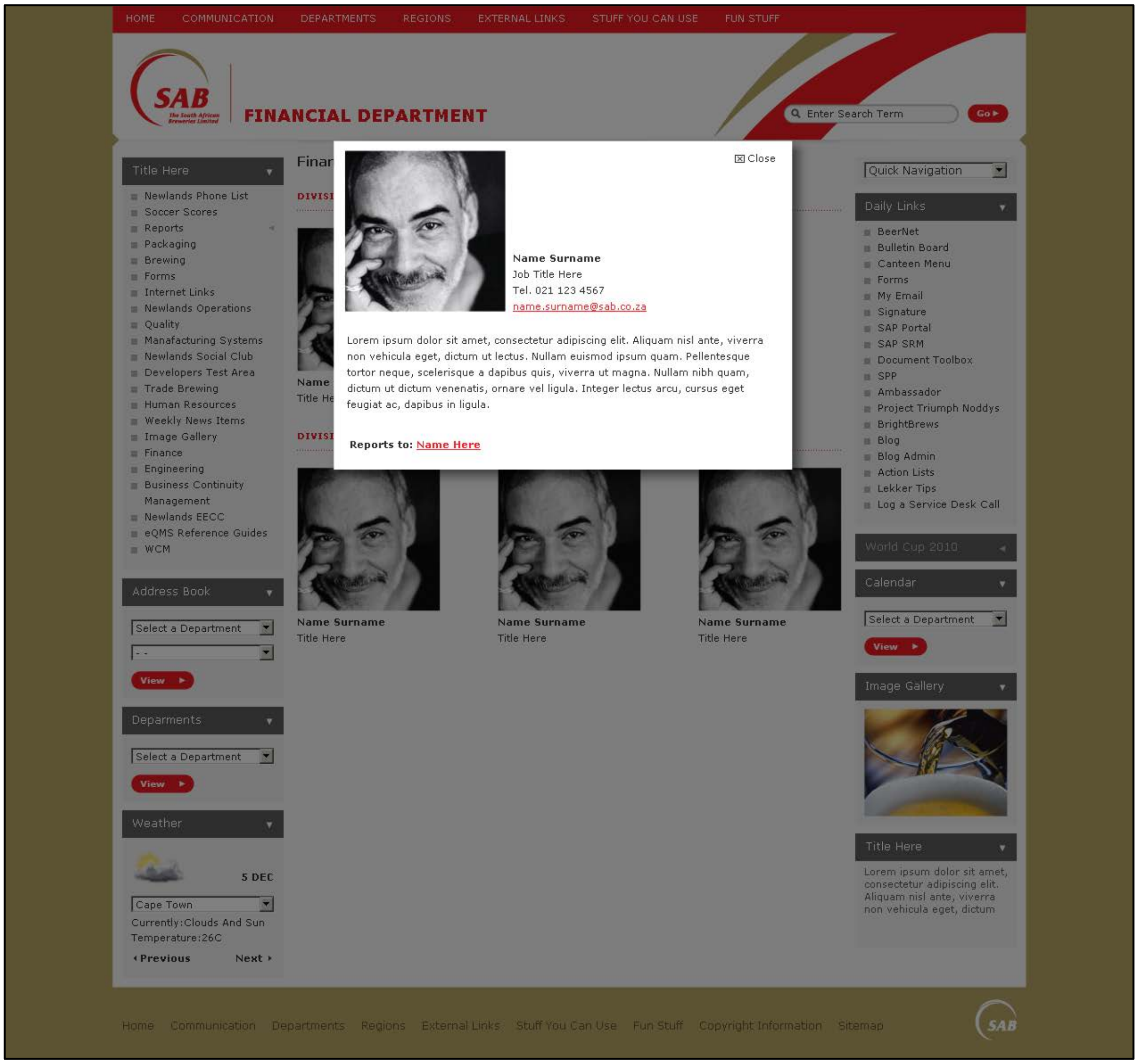
Widgets are a staple of many intranet portals, giving users easy access to a library of simple tools, each one aimed at helping them simplify a frequent task with the touch of a button. The SAB team offers an array of handy widgets on the company's portal. Each one is targeted at helping users accomplish tasks on the fly. All of the widgets can be turned on or off on an individual page basis. Widgets can also be repositioned into either the left or right side panel and CMS users are able to add multiple instances of each widget for different purposes. Some of the site's most useful widgets include:

- Suggestions widget: With the suggestions widget staff members can pose a suggestion or new idea and have their feedback directed through the appropriate channels to ensure a quick response. Suggestions can be submitted anonymously. This feature helps respondents feel comfortable providing honest feedback and suggestions for improvement without fear of retribution. The company's suggestion system helps drive innovation. User suggestions are evaluated for improvements to the organization's tools, processes or work practices.

- Address book widget: This widget gives users the ability to search for any staff member by department and to view the staff member's profile photo, contact details, job description and 'reports to' information and then to view their manager's profile. Results are displayed using a JQuery-style pop-up light box. If the user clicks on the *reports to* link the pop-up elegantly fades away and the next pop-up is displayed with the manager's profile.

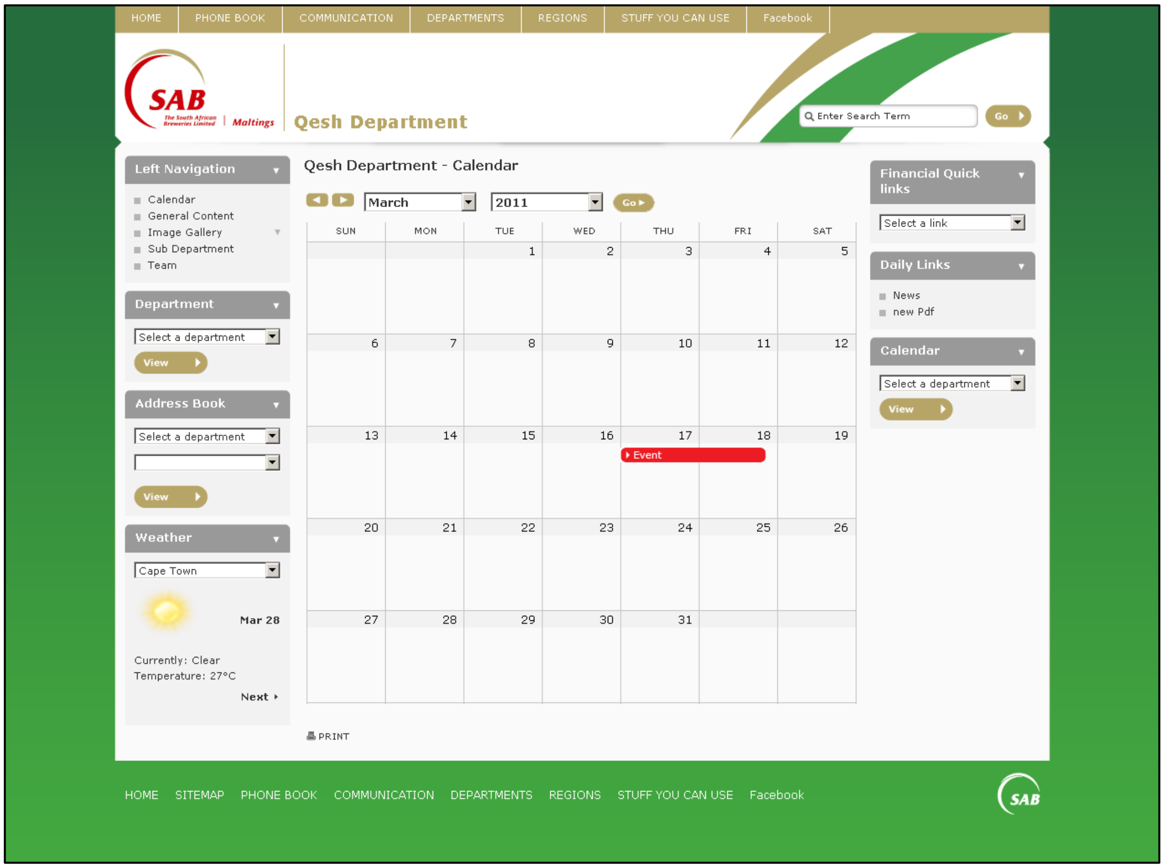


On the SAB portal this screenshot shows how users can view all the team members for a specific department and click on their profile to see more.



This is the pop-up for a team member's profile. Here users can view an employees name, contact details, job title, brief profile or job description and to whom they report.

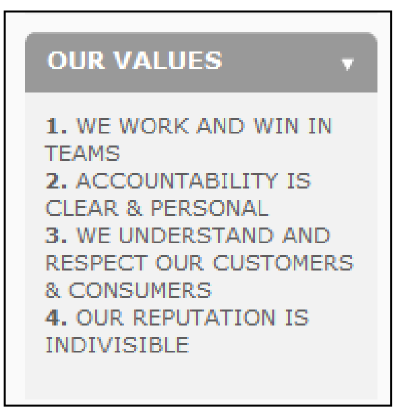
- Calendar widget: The calendar widget gives each department the ability to have their own events calendar. Events are entered via the CMS and can span multiple days. The purpose of the calendar widget is to keep department staff members abreast of what is happening within their department, specifically. There is also a group calendar widget with unique content applicable for the company as a whole.



Users can choose either a department calendar or a company-wide calendar on the SAB portal. Events are created within the CMS and displayed on the calendar. If an event is defined in the CMS to cover a few days then the red bar will extend over a few days.

- Image galleries: Image galleries give each department the ability to have its own image gallery albums. Images are uploaded into the CMS, given a description and displayed within each department's gallery. They are also visible via search queries. In future portal phases, the company will have the ability to comment on images (like in Facebook) and comments will be moderated by admins in the CMS.
- Weather widget: With the weather widget users can see a five-day weather forecast. This widget uses an XML data feed from www.weather.com to display the current weather. Available cities are loaded into the CMS by the administrator and are displayed via a drop-down to the intranet user.

- General content widget: This widget type is a simple widget that can be added multiple times and displays anything the CMS user wishes to display. Content is added in the CMS via a WYSIWYG editor. A fun application of this widget would be the user who wants to display World Cup rugby scores and a photo of a rugby player. The company doesn't restrict widget usage to work-related content. An internal use might be a widget that features a photo and profile for an award such as staff member of the month or similar.



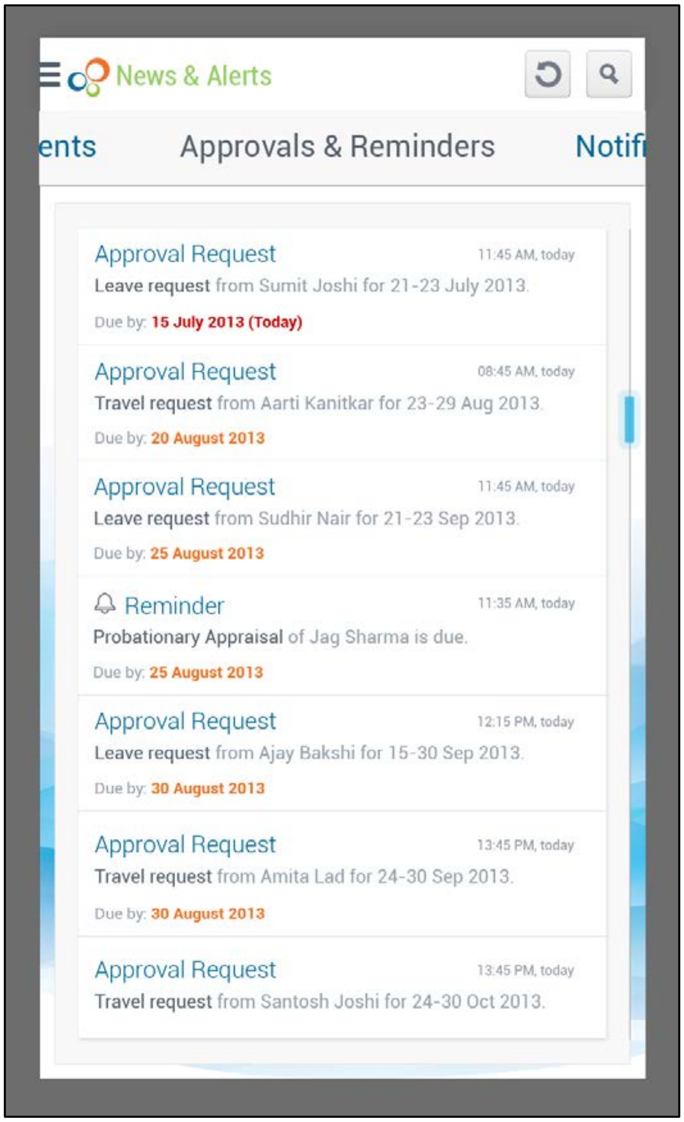
This image and the two above show three different uses for the Persistent Systems Content Widget. The first one contains text content and an image and is used to display a staff profile of the day. The second is simply text. The third is a numbered list to display the company values. The Content Widget can be used to display nearly anything the user chooses.

- ***Ask John*** widget: The Ask John widget allows users to send a question to a specific department or staff member via the intranet. Questions are moderated and responded to by the relevant departments. Within the CMS the department can control who is notified when feedback is sent and who should reply to the feedback received.
- Stakeholders communication widget: This tool gives users the ability to contact a specific business department and give targeted feedback about a business or company-related topic. Users can customize this widget to notify a department of a problem and assign a level of importance to their message. The widget can also be used to provide feedback or to make a complaint. All feedback is moderated and responded to by the relevant department. The department can control what is displayed in the widget drop-downs and who is notified when content is collected via controls in the CMS.

Approval Widget

The consolidated approval widget at Persistent Systems aggregates approvals from over 25 different systems and presents them in a useful consolidated view for managers.

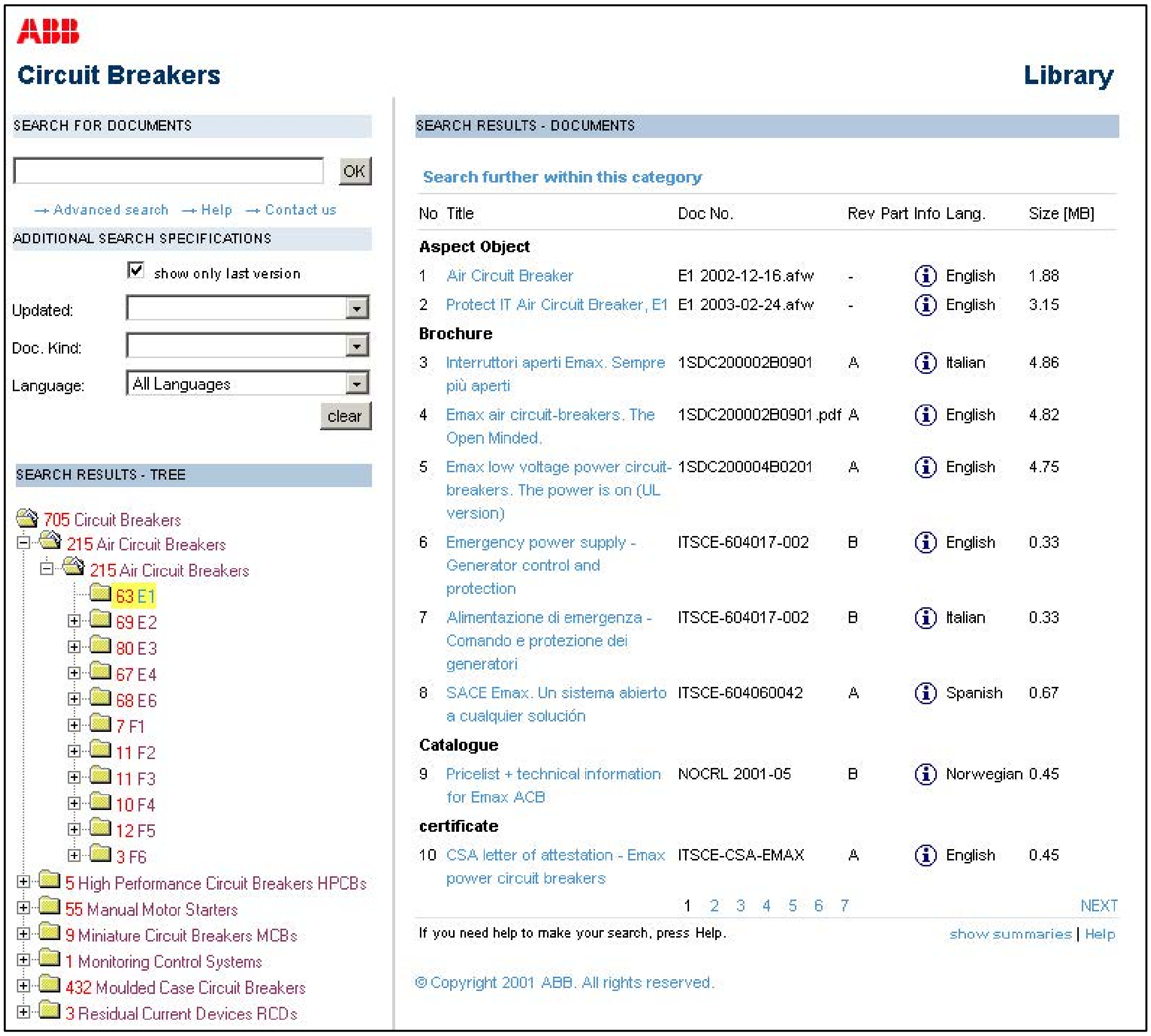
Manager at Persistent Systems need to approve various requests from their team members or co-workers, such as travel requests, leave requests, expense reimbursements, procurements etc. These requests are generated from Enterprise Information System (EIS), CRM, ERP and several other custom apps. "Before the new intranet arrived, users needed to login to each of these systems to approve the respective requests," says Shashank Barve, Architect. "With the launch of new intranet all of these approval requests are collated and are delivered in a single widget, *Approval & Reminders*, available on the Pi landing page. This has resulted into significant productivity improvements and delighted users!"



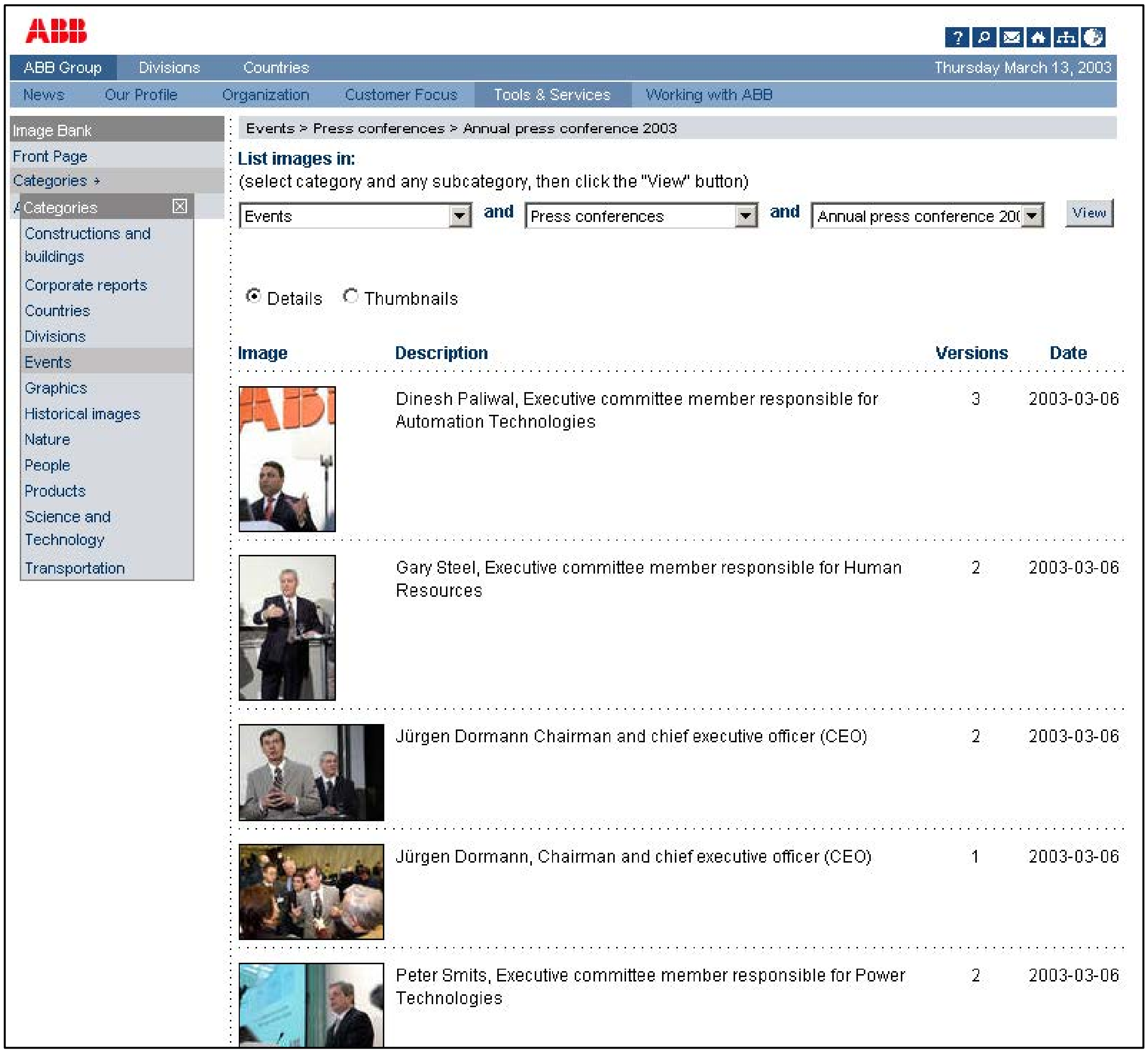
The consolidated approval widget at Persistent Systems aggregates approvals from over 25 different systems and presents them in a consolidated view for managers.

DOCUMENT MANAGEMENT

Portal tools can help employees manage internally generated documents and images yet when sharing these resources across the organization, portal teams must tackle the indexing and presentation challenges while also retraining users who have become dependent on shared drives and email for document management.



ABB's portal includes this system for sharing documents.



ABB's portal also includes this image sharing system. While the look and feel of both this and the document sharing system (shown above) are similar, their different search capabilities belie their pre-portal origins.

In fact many organizations don't end up with just one document and image management system, but often multiple ones. Even when trying to boil down the number of such applications used, organizations can run into stumbling blocks, which is what happened when CSFS attempted to make a document management system from Winterthur Insurance, which it had just acquired, available to the whole organization.

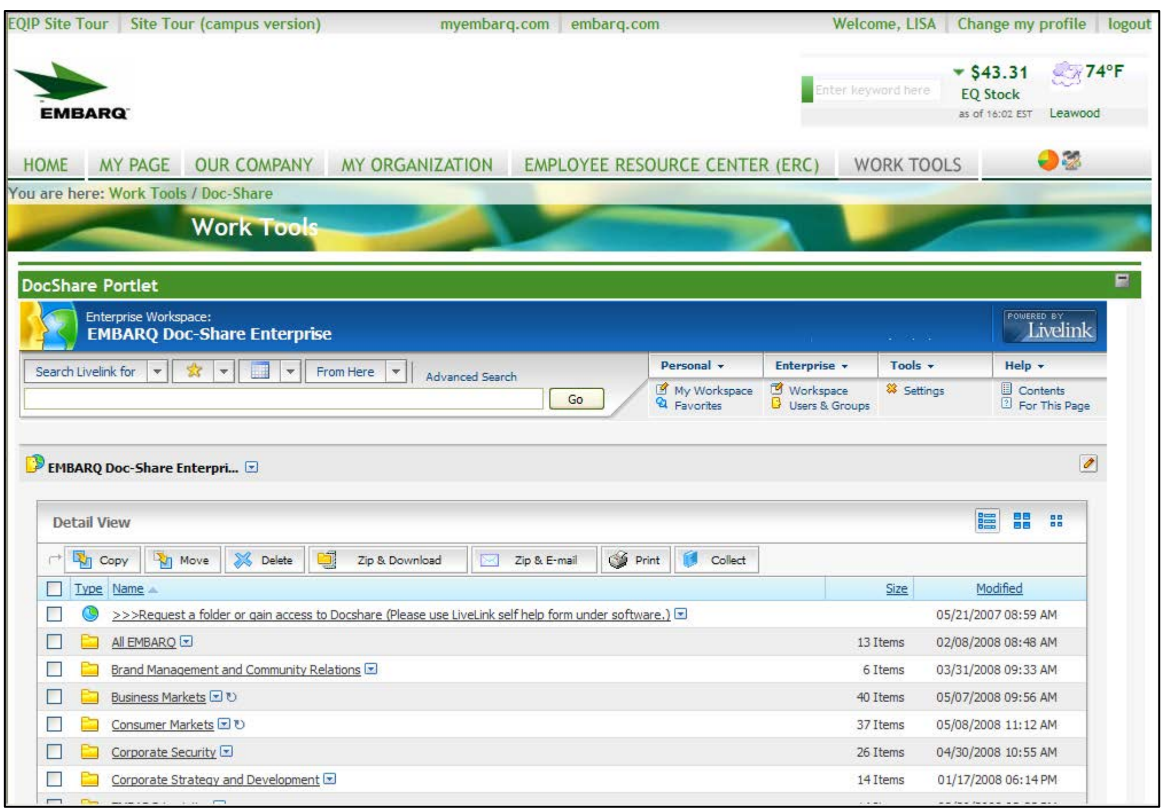
The portal team found that leveraging a single application across multiple areas of the organization can be difficult. "We tried to go for a best-of-breed approach but we found that an approach that works in one company won't necessarily work for the others," says Urs Buob. "Document management can be used in different ways, one of which has implications for workflow and one for document storage, and they have very different requirements. So you end up having to go back and decide on an overall document management strategy before you can decide how to best use the tools that you have.”

For example, just offering the ability to index content isn’t enough, since one department’s view of how to categorize resources will differ from another department’s.

For many organizations, document management is not the highest priority for the portal. Teams often have to work to first establish the portal, gain trust with users and then integrate applications and workflows gradually as time and resources allow. Many put document management on the wish list for the portal but it’s not always included in the first phase. For example, Idaho National Laboratory’s portal links to a document management system, but it is not fully integration into the portal yet.

Some companies, like Kaiser Permanente and Pam Golding Properties use their CMS systems as partial document management systems, though often these types of arrangements mean that documents are managed for the portal through the CMS, but not actually authored and developed via the CMS.

EMBARQ, one of the few companies we interviewed that has a fully integrated document management system in the portal uses Livelink and ties into the portal’s single sign-on so users can open documents in the document management system directly from the portal.



EMBARQ’s document management system is integrated into its portal as a full-page portlet and uses SiteMinder authentication to allow for single sign-on.

Killing Email

Edens & Avant made document management a high priority of its portal initiative in an effort to make broad cultural changes in how people share information. Specifically, the company's portal team also set out to change the email-centric culture of the company.

"We've tried hard to kill emails from the executive level down," says Edens & Avant's manager of information platform, Shani Hall. "With PDF attachments and other documents, now we put it on Elly [the portal] and people don't have to send the email anymore. This is more of a business process change."

To reduce the silos of information that existed prior to the portal, the company has made the portal the central repository for all information and documents. The goal is to have everything available in one place on the portal. Though not all documents reside on the portal yet, all documents are now accessed via the portal. Shared drives that once provided sheltered silos for different departments are now accessed through the portal, rather than as a local solution.

"It's a one stop shop," says Hall. "You don't have to log in to this, log in to that. The portal is making things visible and easy to access and less convoluted. "It's more in your face."

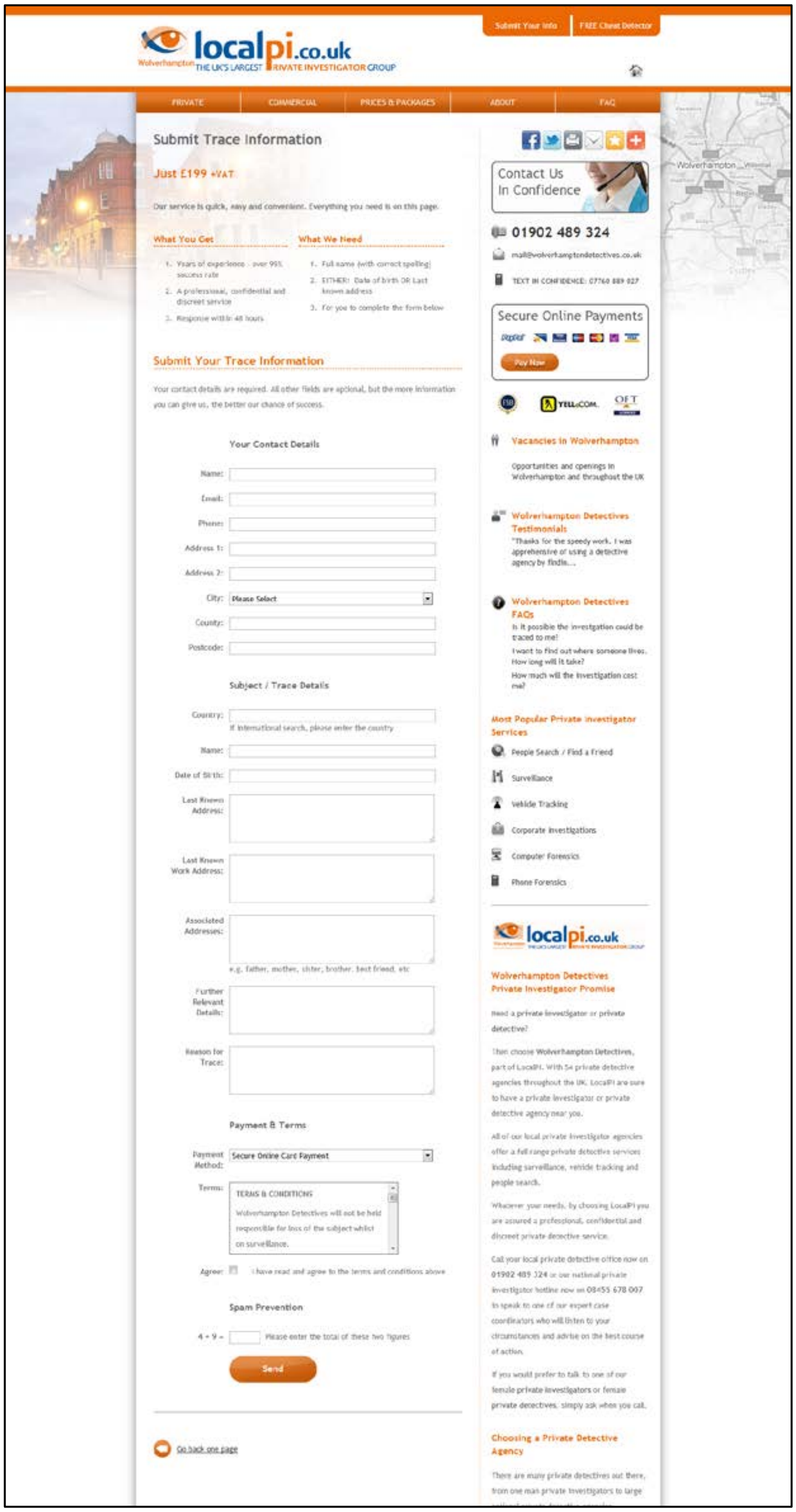
SUPPORTING A COMPANY WORKFLOW

The Workflow ***is*** the Portal at Local PI

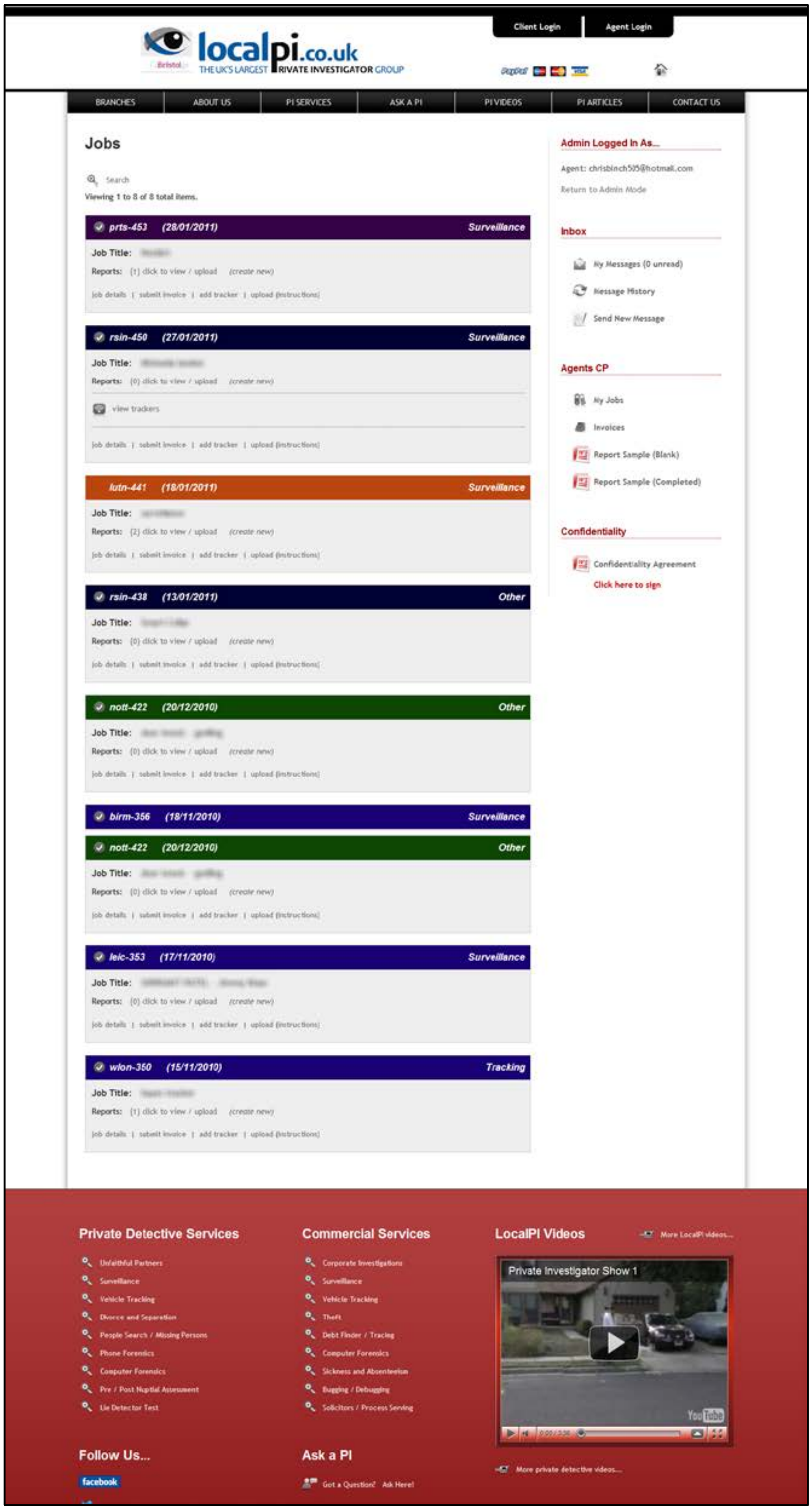
Local PI is in a unique position where its portal basically represents all aspects of the company's workflow.

"The entire portal's features combine to form a single killer app that has been developed organically over time and in response to feedback from all levels," says Riding. "Most features interact, build and depend on each other." Here, he outlines how this workflow proceeds and where/how it touches the portal:

- A visitor submits a surveillance inquiry via the organization's website: www.wolverhamptondetectives.co.uk.

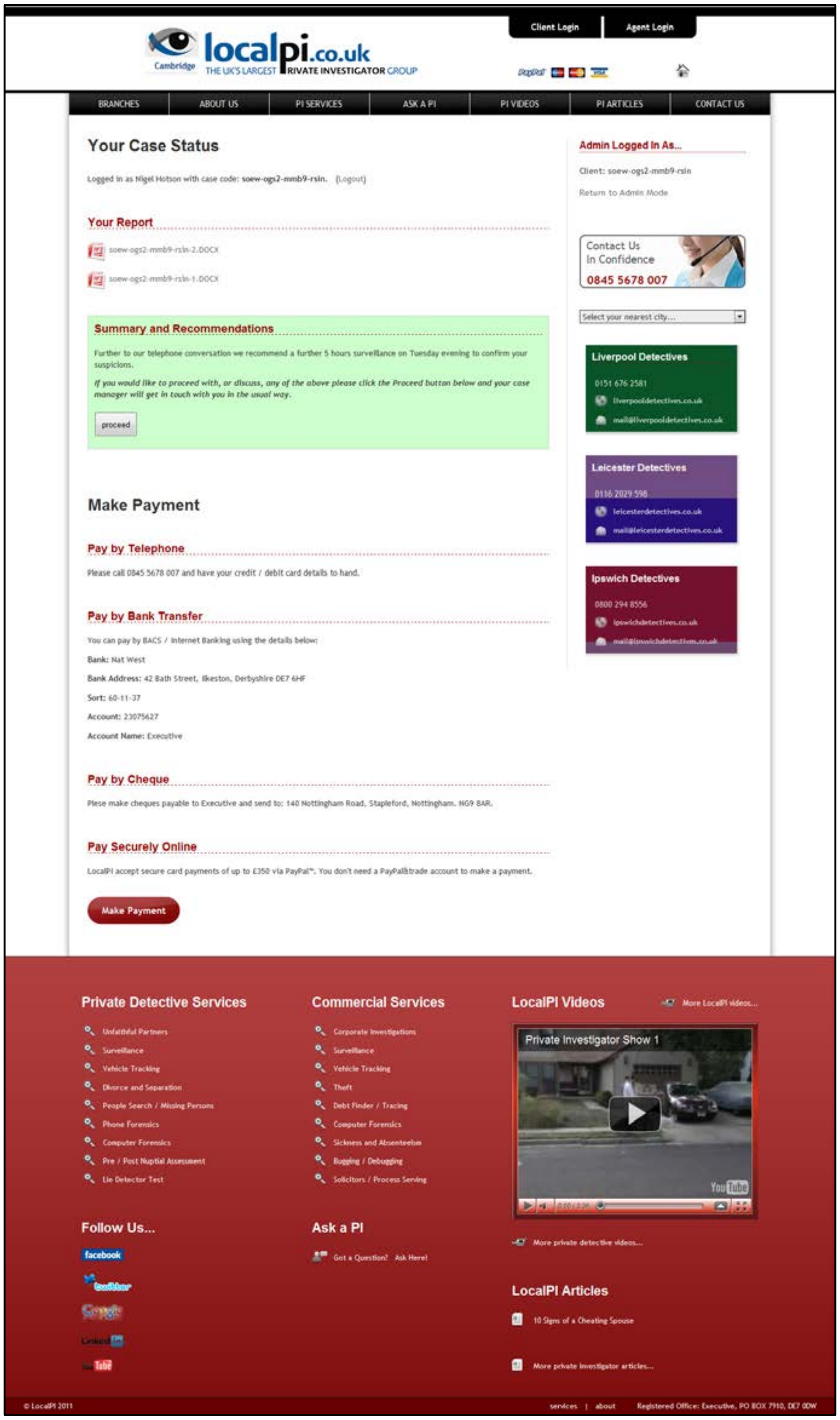


This screenshot shows how a visitor to any one of Local PI's 54 websites submits trace information to open a surveillance case. A new case is opened on the portal and the case manager receives an email alert.

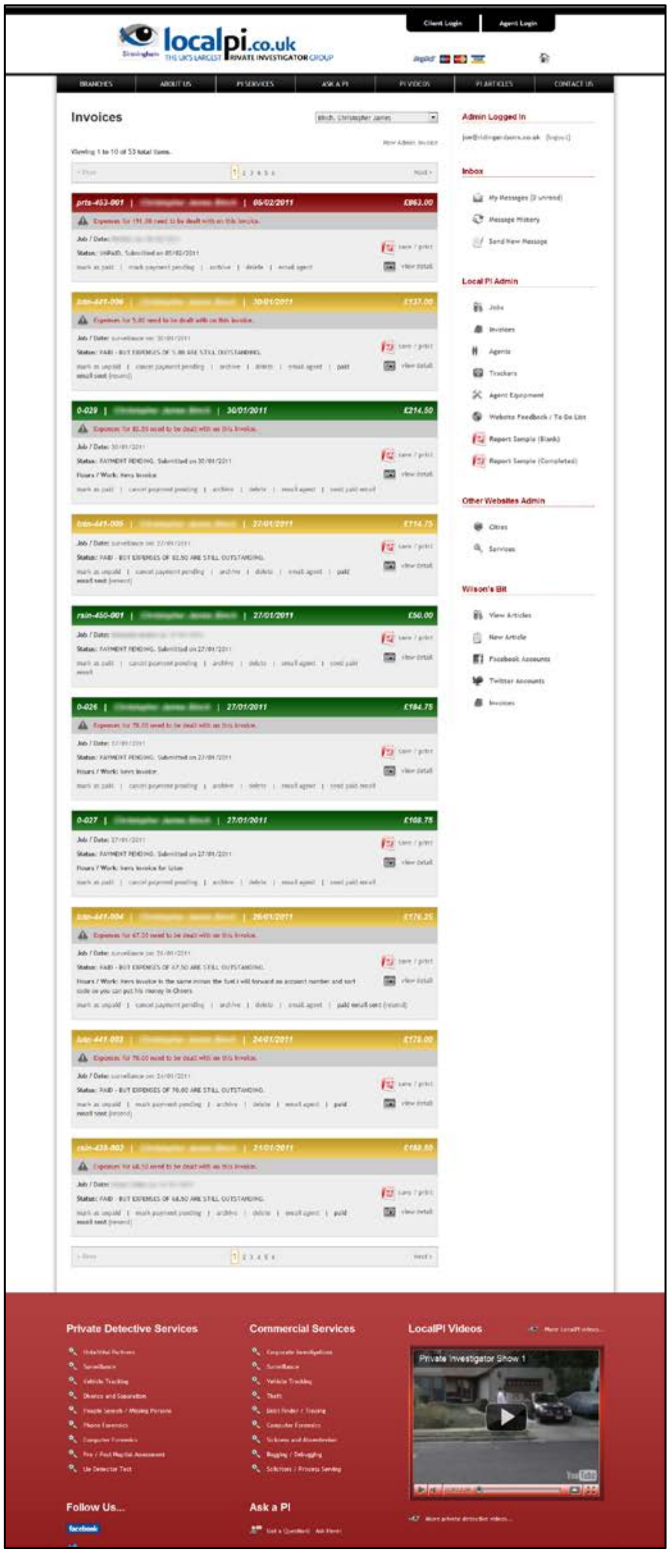


This screenshot shows what an agent sees when he's logged into the Local PI portal. Specially, this shows what jobs have been assigned to that agent.

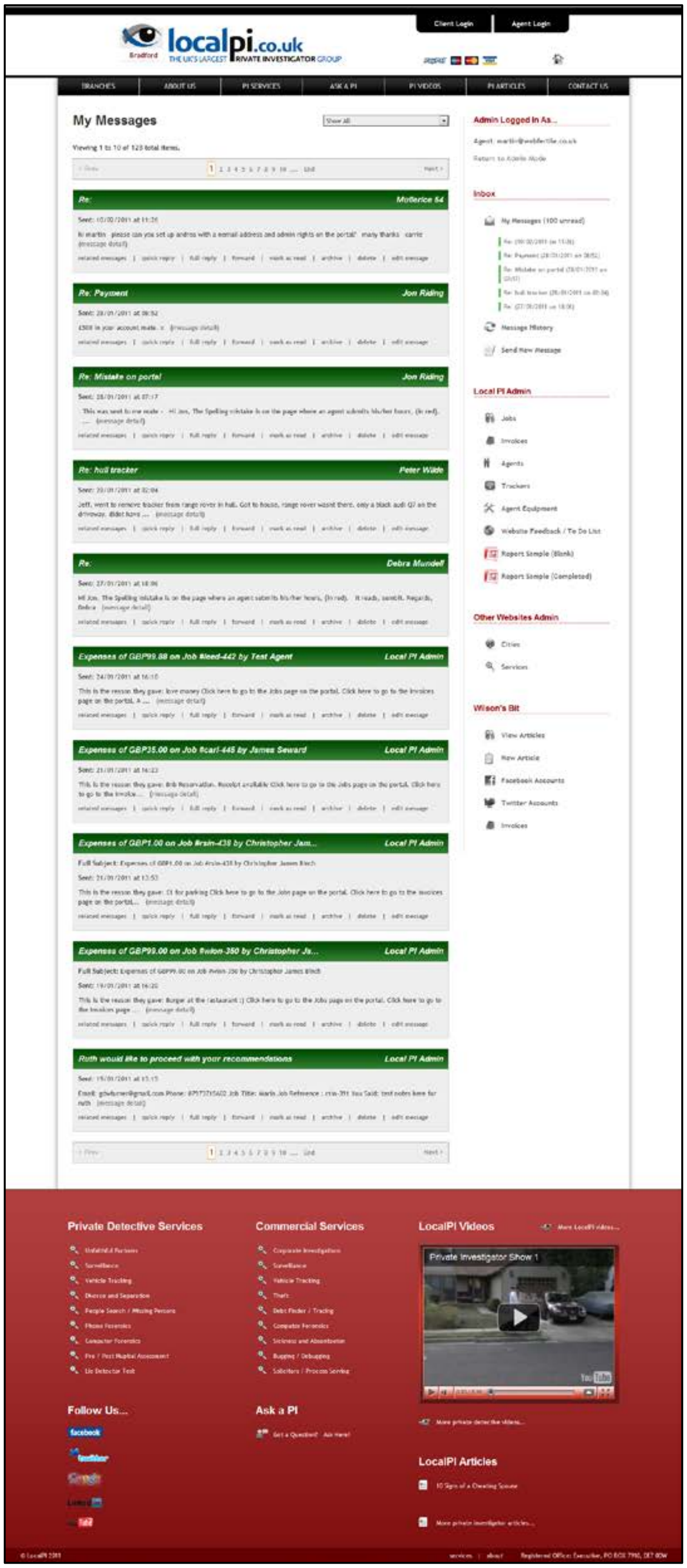
- If the agency accepts the case, the manager will take payment (by phone or via the portal) and assign agents to the job.
- The agents assigned to the case are alerted by email and also on the website the next time they log in.
- The agents view the case details on the portal and carry out the required tasks, which include uploading a case report to the portal. The case report allows them to invoice the client, including detailing expenses, mileage etc.
- The case manager is alerted that the report has been opened and invoices the client when the job is completed. Both the report and the invoice are editable by the case manager if required.
- Once the case manager approves the final report, it is made available to the client via the website from which the inquiry was submitted.
- At this point the case manager can offer the client a “summary and recommendations” report, which is an opportunity to up sell the client on additional services.



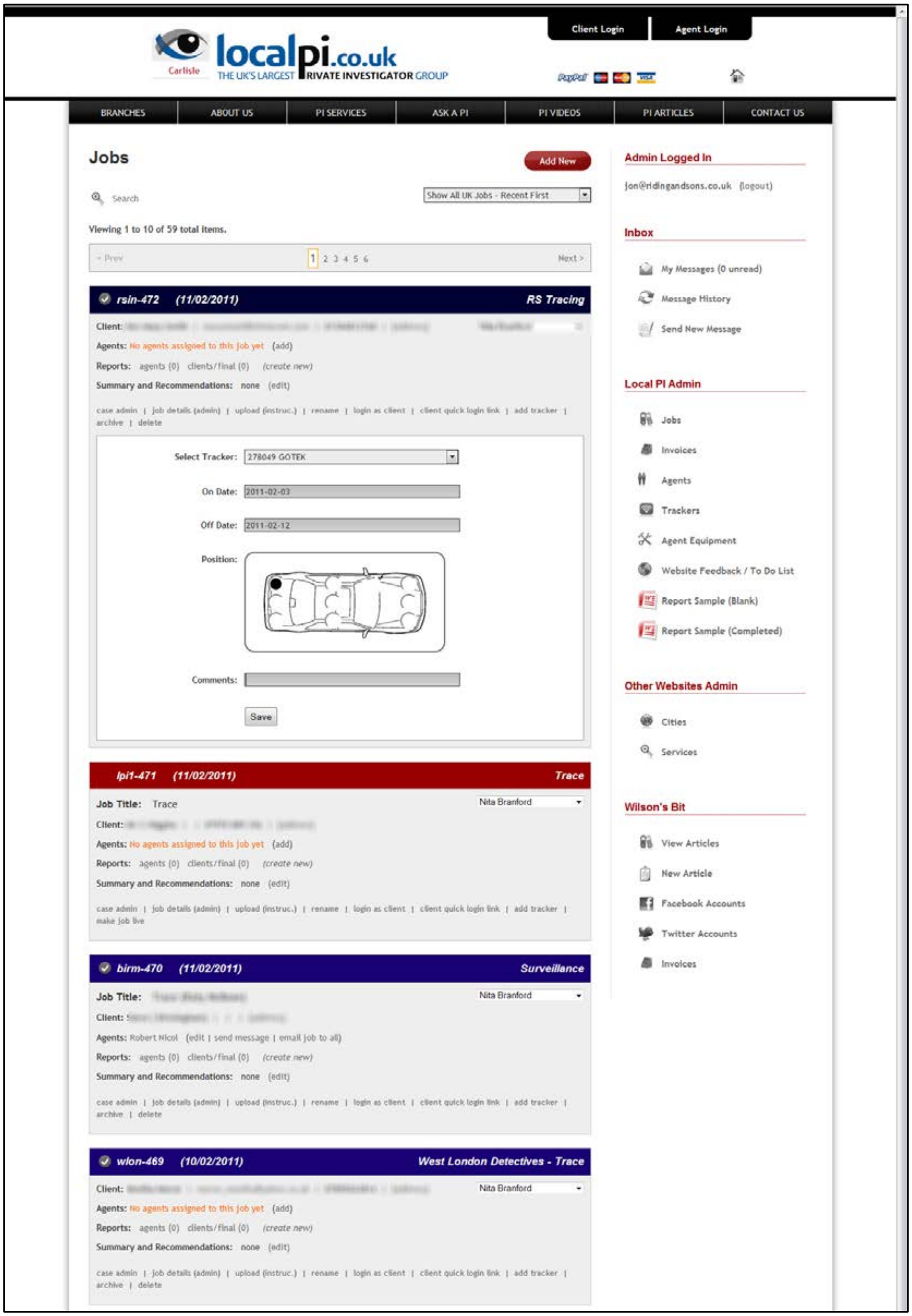
This screenshot shows a sample reports page (what a client sees when they're logged into the Local PI portal). Unclaimed expenses (expenses incurred on the job by agents — for example a gas or restaurant bill) are highlighted for the case manager. Once resolved, the case manager marks the case as closed and it is archived on the portal for future reference.



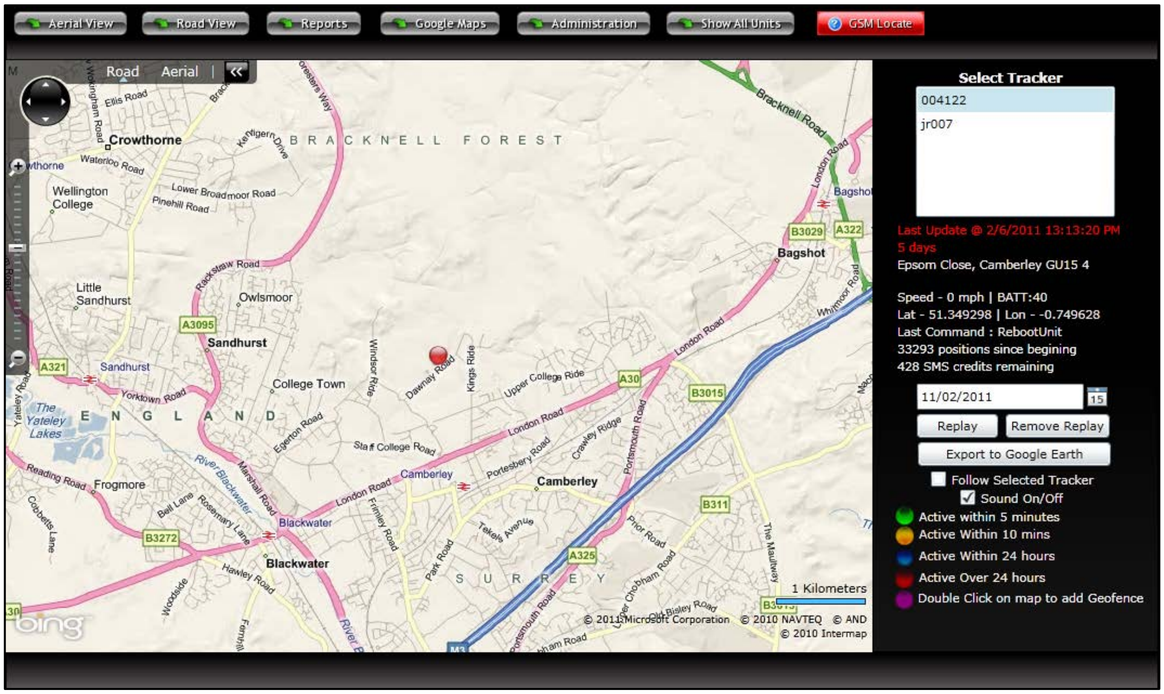
The management invoice admin area on the Local PI portal features a messaging system, which also sends email alerts, manages any queries or questions during the case.



On the Local PI portal the last five unread messages appear permanently in the sidebar on the right hand side.



This is an example of how a user would associate a vehicle tracker to a case on the Local PI portal. This is done via a drop down box on the job's admin page. Here an agent adds *On Date*, *Off Date*, and *Notes* if required.



This the view clients and agents have after logging into the Local PI portal's vehicle tracking area.

Following the Paper Trail at Goodwin Procter

Cases are the lifeblood of what law firms do so the case management process is tightly integrated with the firm's portal. Note: The firm refers to legal cases (as they are known in the US) as "matters."

"Everything we do at the law firm is client and matter focused," says Kawa. "That means any document, piece of information or data point can always be tied back to a client and matter number regardless of what system the data resides in. Matter Pages (the Firm's case management app) pulls all this information together into a single, consolidated, standardized, 'one-stop-shop' view for our users."

The Matter Pages system is accessed from the firm's intranet and provides a consolidated view of data as it relates to clients and cases across the firm's disparate enterprise systems. Data from the contact management system, document management system, time and billing system, finance systems, CRM systems, trademark and patent systems, and custom applications is all pulled together to create this true portal of information.

Here are just some of the functions provided by the system:

- The system is both customizable and personalized to individuals.
- Attorneys can provide access for their secretaries to see their personalized information. Targeted personalization allows attorneys to immediately access matters they are currently working on or are listed as a contact.

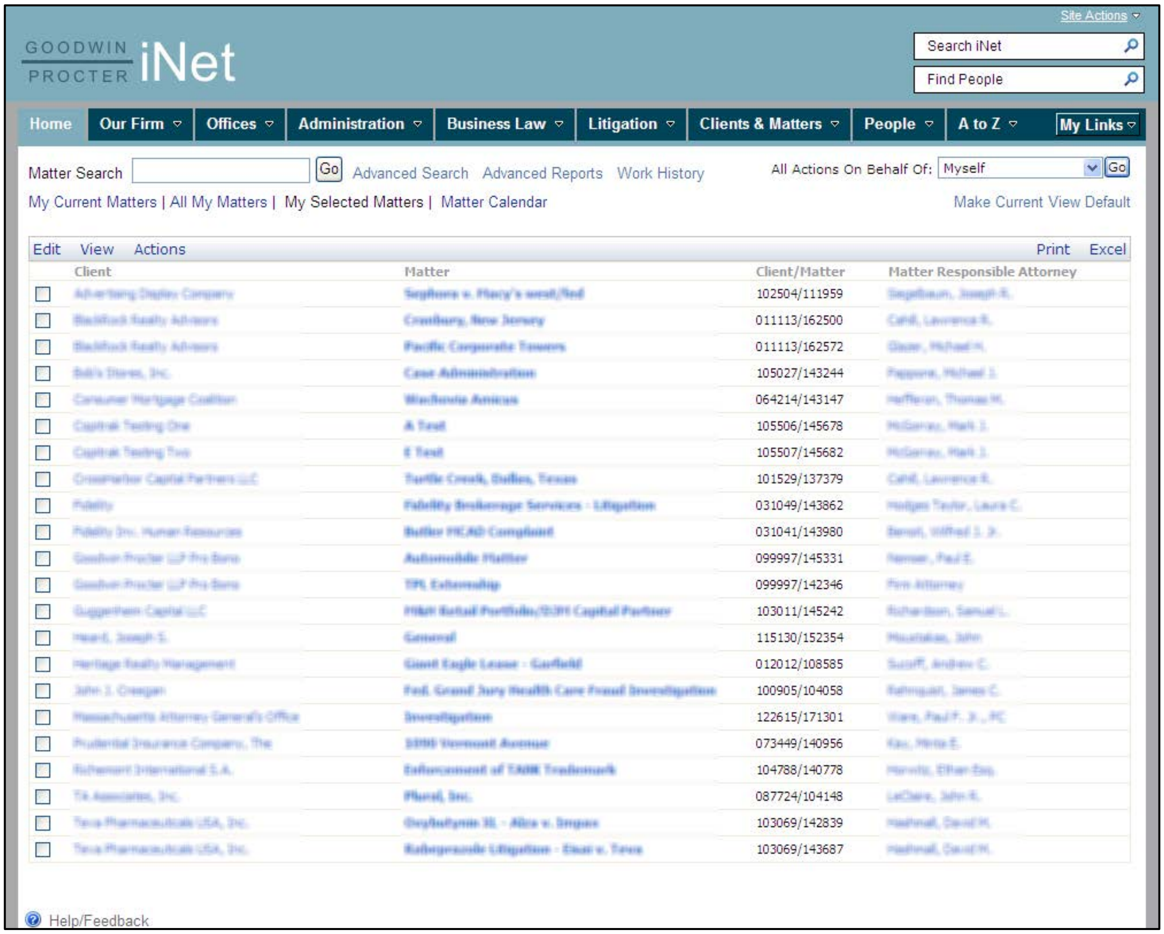
- Attorneys and secretaries can create watch lists of clients and matters that they are interested in monitoring.
- Full text and metadata searching provides a robust search engine that allows users to search by the more than 150+ metadata fields.
- Users can search by individuals involved in a matter, industry, number of hours billed, client contacts and many other criteria. This search spans across the multiple systems that actually store this data.

"The key advantage to our Matter Pages portal is the consolidation of the information," says Kawa. This type of system is critical to provide a consolidated view of disparate data.

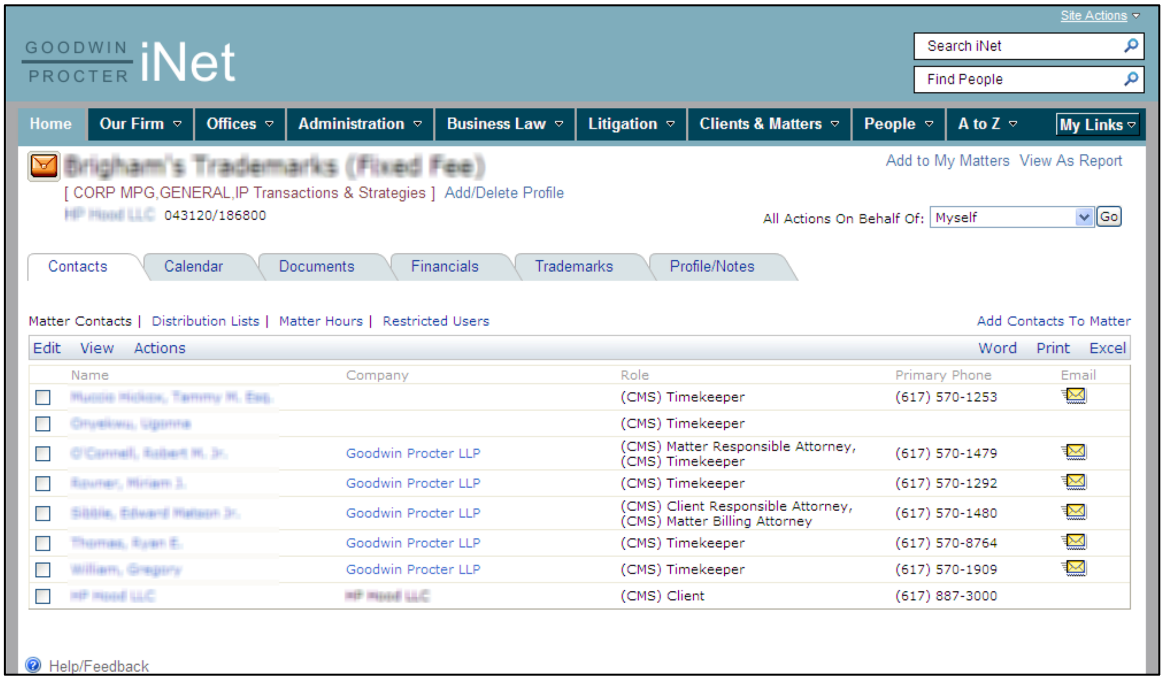
"If it were not for Matter Pages, users would have dozens of icons on their desktops, no knowledge of what information is stored in which system and no ability to search across all data points," he says.

The Matter Pages system brings all this information together in a "one-stop-shop" view that has completely changed the way attorneys work.

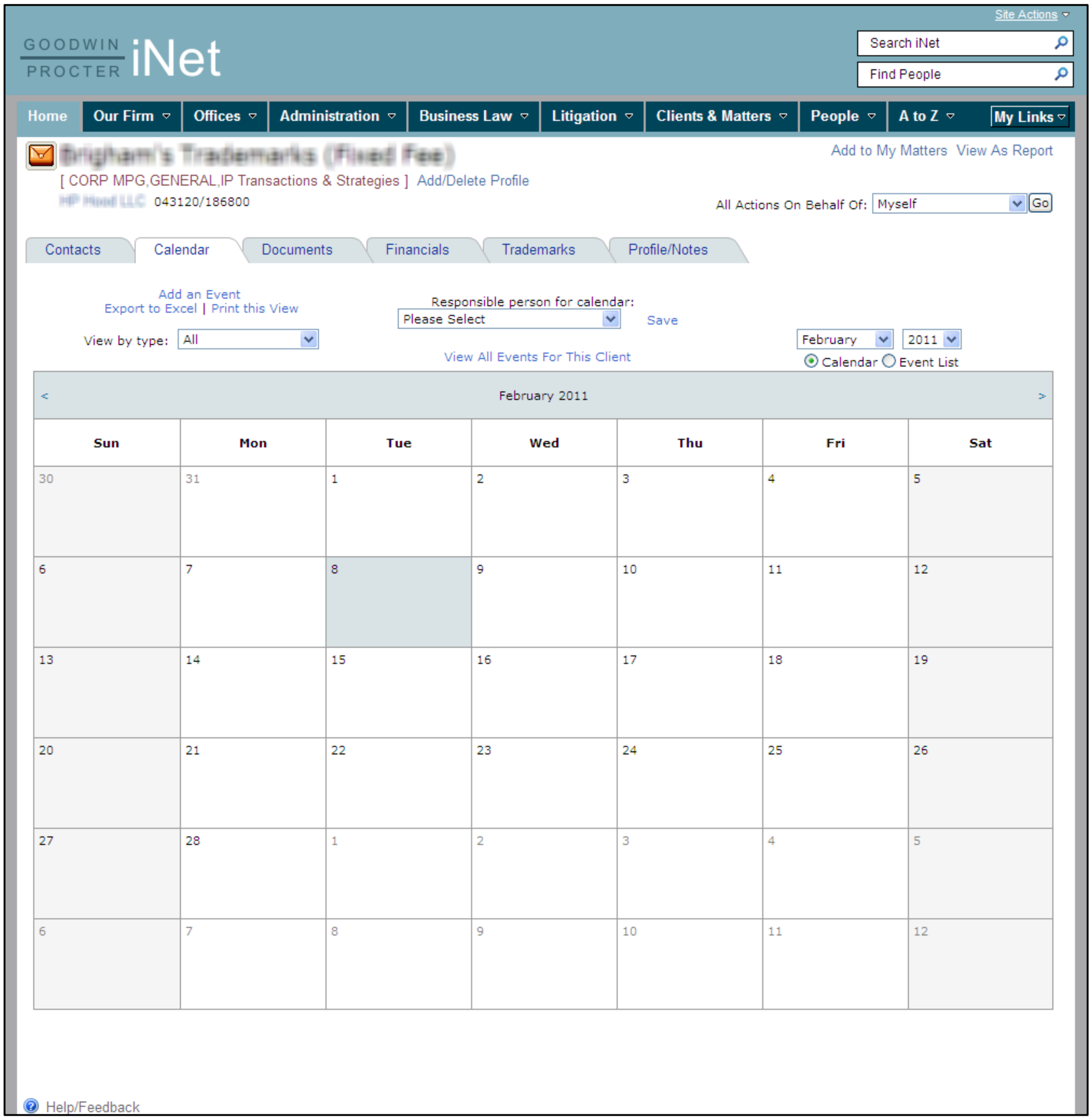
"They can now interact with clients on a real-time basis when discussing their matters whether they are in the office or on the phone," he says. "The platform is also the basis for many of our knowledge management systems. It provides precedent information as well reusable information that allows attorneys to work more efficiently."



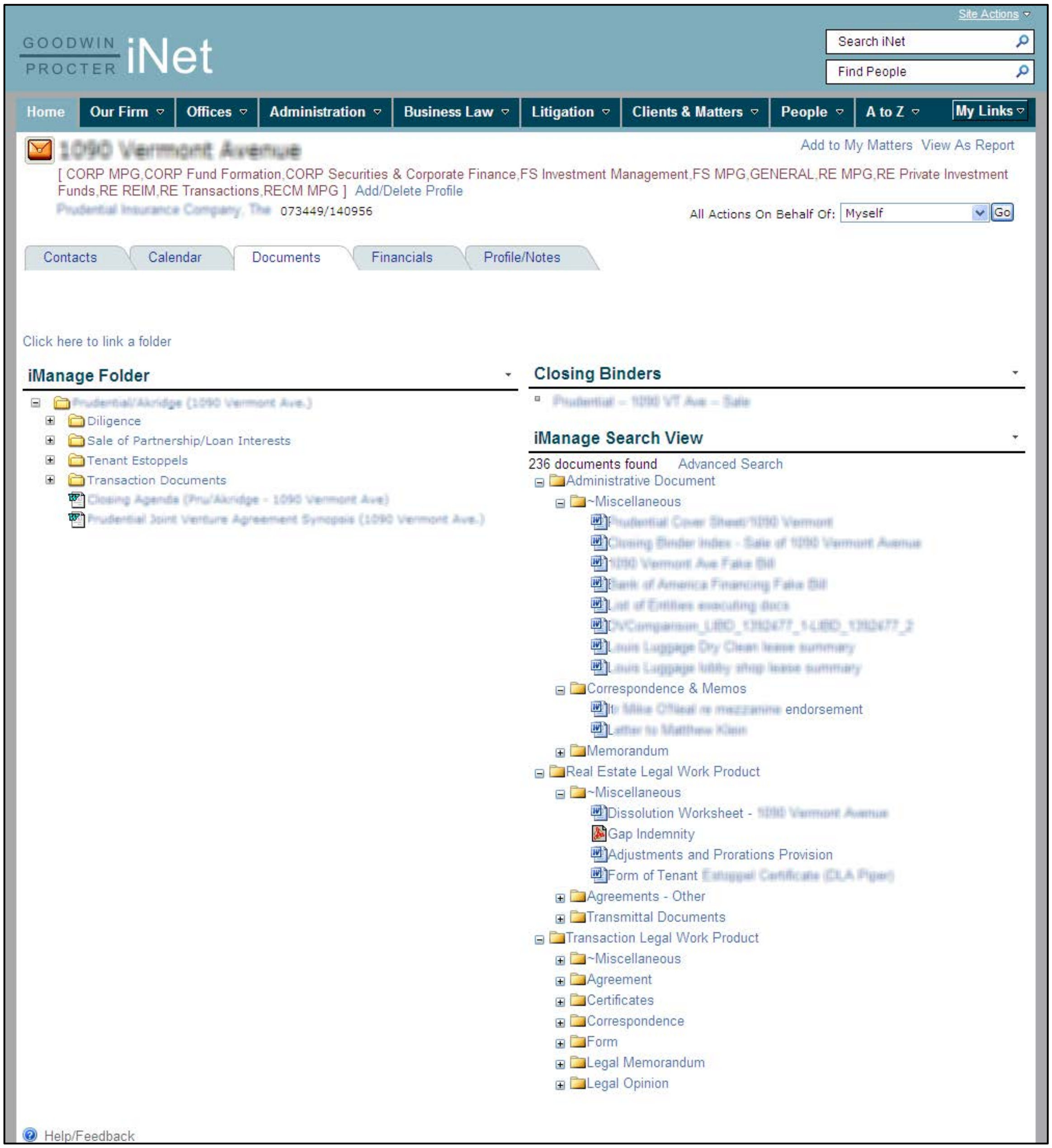
The homepage of Goodwin Procter's case management system called Matter Pages.



This screenshot shows the point of integration between Goodwin Procter's Matter Pages and its contact management system (Interaction) that lists all contacts associated with the select matter (case).

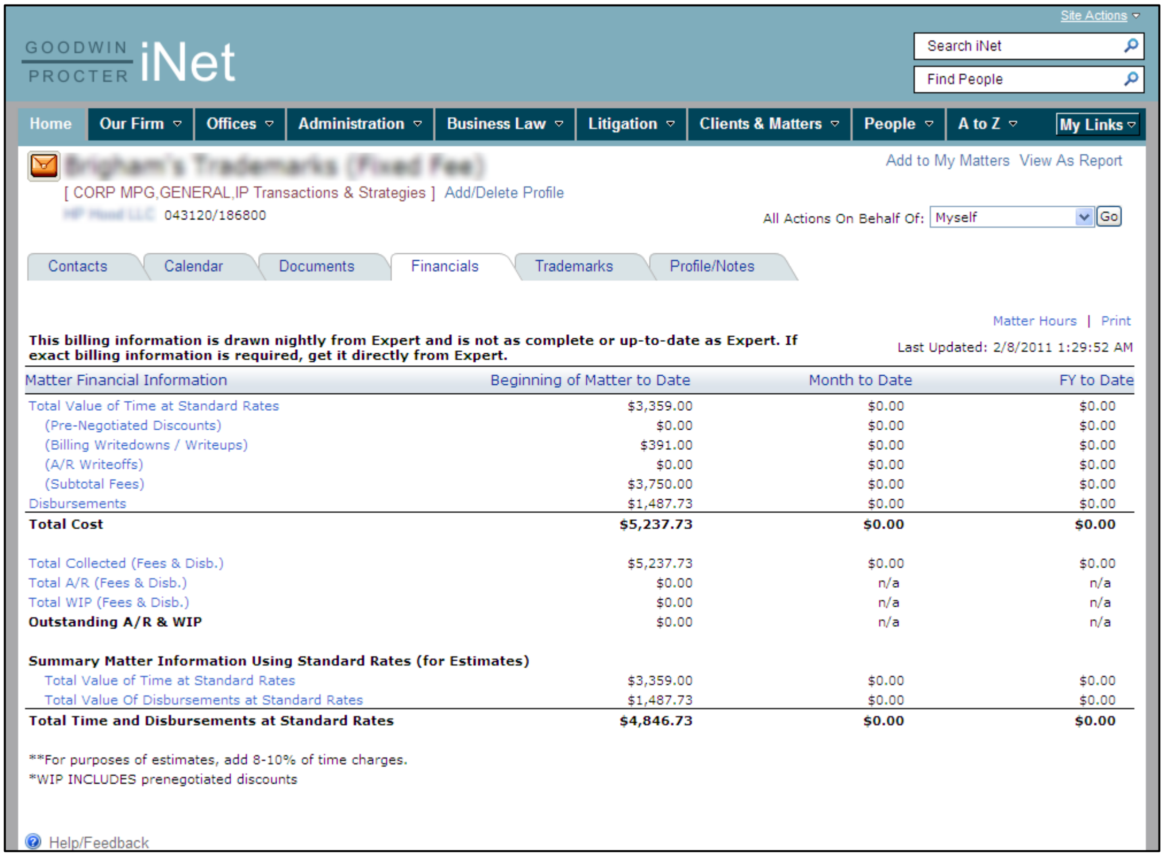


The point of integration between Goodwin Procter's Matter Pages and the firm's matter calendaring system. It shows all events that are associated with the selected matter (case).



The point of integration between Goodwin Procter's Matter Pages and the firm's document management system. All documents related to the client/matter are pulled in automatically from the document management system based on the selected matter (case).

This tab displays when a matter (case) is designated as a trademark matter only on Goodwin Procter's Matter Pages portal. The data is integrated from the firm's trademark and patent system.



This tab on the Goodwin Procter portal is the point of integration with the firm's financial system. It is only available to partners and directors at the firm, but the data displayed is all the financial data for the selected project.

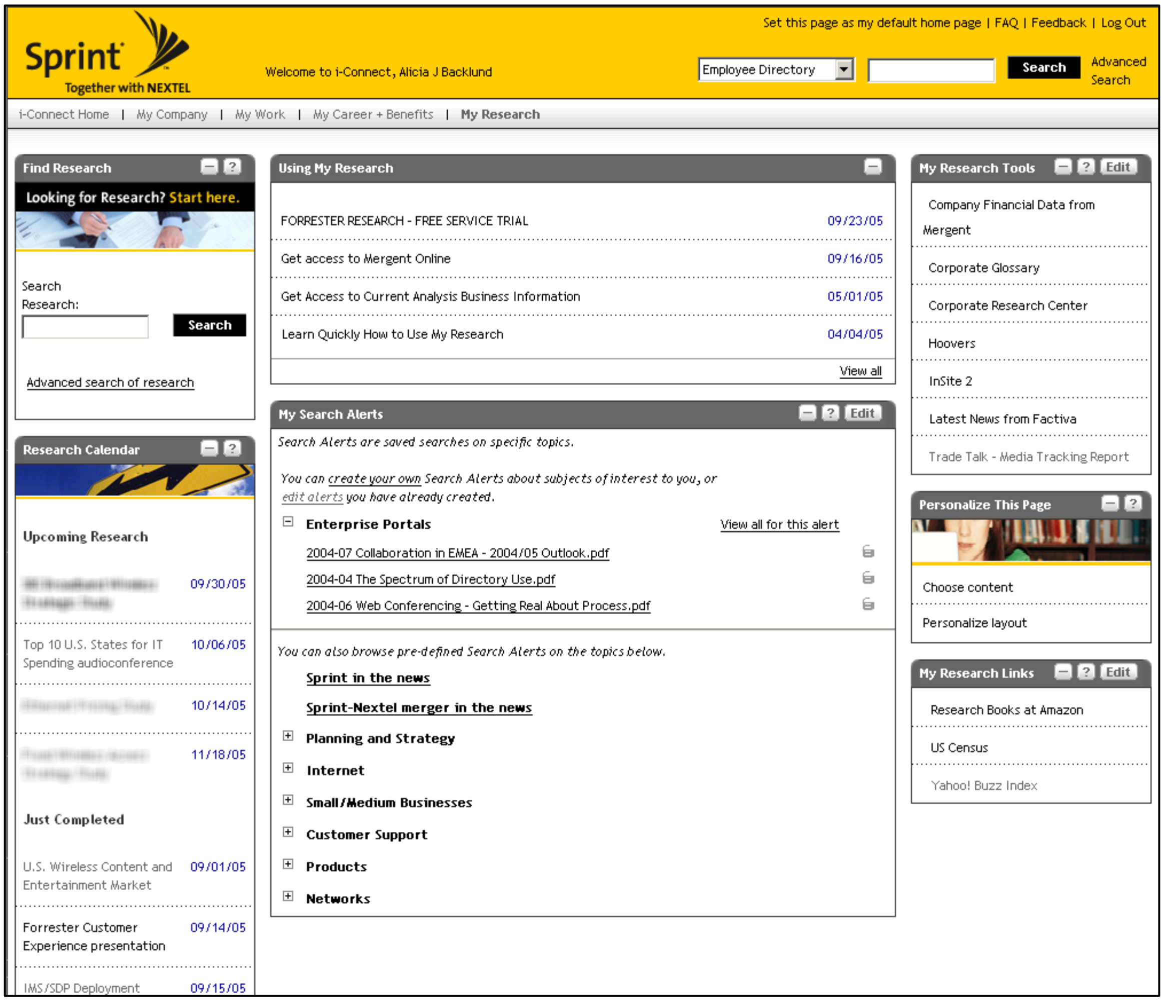
RESEARCH MINI-PORTAL

Sprint had a very specific need that they filled by building a customized section of their portal that they call a research mini-portal. The mini-portal aggregates market research into a single location to avoid duplication. It was designed for Sprint's in-house market research users and is accessed via the "My Research" tab on the top of every one of the Sprint portal pages. It uses our personalization features to present content based on permissions."

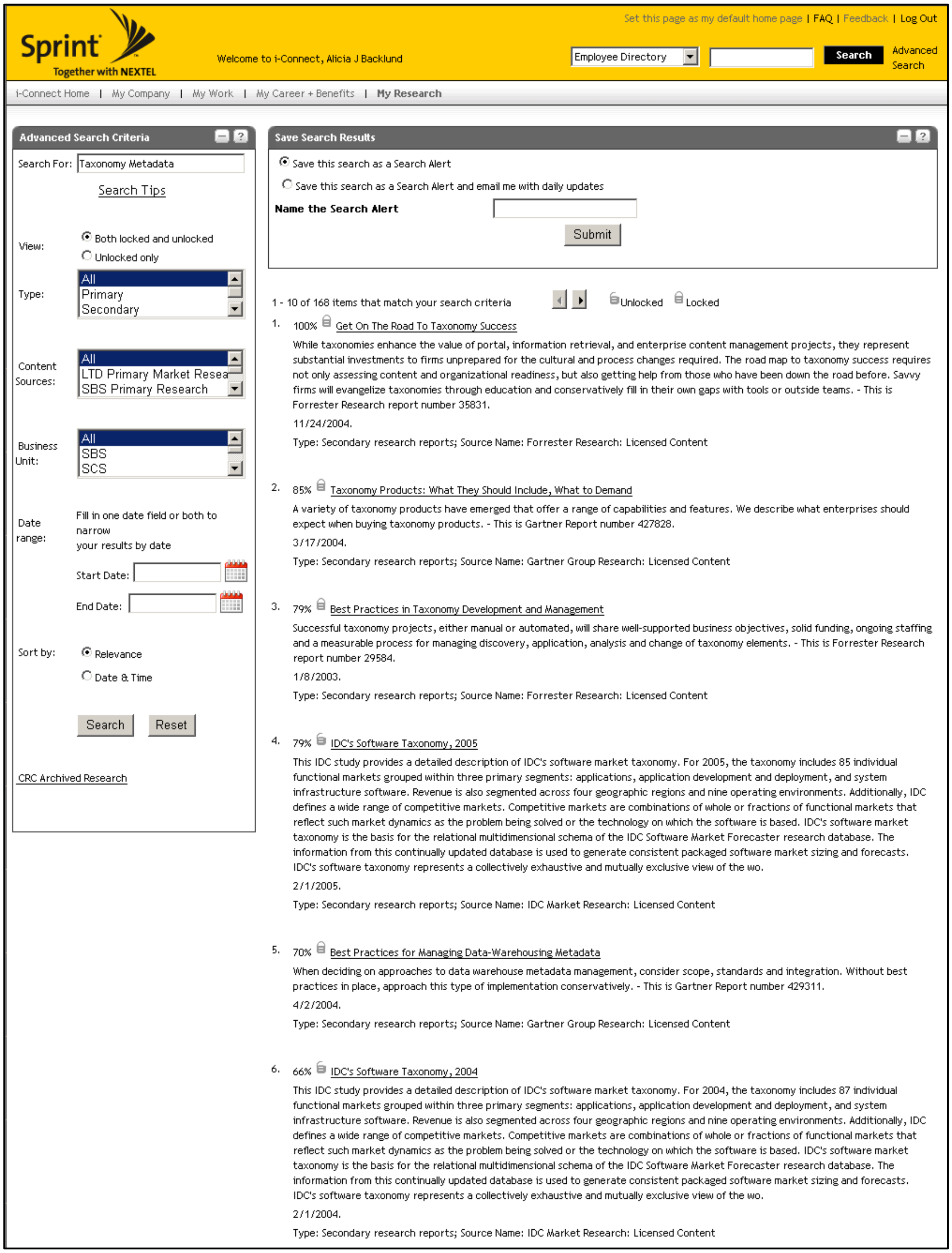
"We have an entity here within the organization that handles the purchase and distribution of secondary market research," says Backlund, "Then within the lines of business we have people handling primary research. We kept hearing that the research was not being aggregated properly, so money was being spent on duplicate studies."

So the intranet team researched vendors who could help them aggregate research they created, purchased, and that is available for purchase. Ultimately, they selected a search-engine-cum-content-congregator that has relationships with a number of research companies, and thus can provide information about what kind of research is available, even if Sprint doesn't subscribe to that service.

"We allow people to be aware of content that is available but hasn't been purchased yet," she says. For example, say a research firm issues a report and Sprint doesn't have a license for it. Employees can learn of the existence of the report, and then if interested, pursue avenues for purchasing the report. Groups inside Sprint who conduct proprietary research can also make the existence of their research known to others internally, without necessarily releasing full details to anyone who's searching. Rather, if someone wants more information, the search results tell him whom to contact.



The homepage for Sprint's *My Research* mini-portal. This section of the portal is accessed from one of the top tabs that is present on every page. Much of the information on this page comes from, and is managed by, a third-party search firm and content aggregator, so even if Sprint hasn't purchased the available content or research, at least employees know it's available.



On the research mini-portal Sprint employees can search for primary and secondary market research as well as competitive intelligence.

To implement the "My Research" portal, Sprint used a mechanism to crawl Sprint's internal repository, so it could return both internal and external results. Then the vendor's developers, and Sprint's developers and designers, did the hard work of making the search window look like just another part of Sprint's portal. "It was not a minor task, for sure," says Backlund.

Now, the "My Research" tab allows users to search for research from a variety of sources, and also set up search alerts, which notify them when new research is available. "Let's say you have an interest in a particular type of research, such as teenagers' interest in wireless handsets. You can set up a search, and once you get the search set up, you can save it as an alert, then whenever that information changes, or a new report is added, you'll get an alert letting you know," says Nellor.

Another feature of "My Research" is a research calendar, "so if groups are planning a research project, or they have a readout on research they've done, they can publicize it to other members of the company via the "My Research" tab," says Nellor. "That way you can see upcoming events and events that have just finished, as well as contact information for both."

Beyond giving users access to needed information, or at least alerting them it exists, this portal-within-a-portal also "helps from a cost-savings perspective," notes Backlund. "If you're getting ready to commission a study and you're in the consumer group, and you see that the business group is already doing a similar study, you can get involved," she says. Simply put, "it helps the right hand know what the left hand is doing."

A HOLISTIC TOOL TO MANAGE REAL ESTATE

The Pam Golding Properties portal team has been working for nearly four years to deliver a single application to serve all aspects of its core business function, property management. The fruit of this long labor is Alchemy, an all-encompassing property management tool that, when finished, will provide employees at every level of the real estate transaction with mission-critical data about properties, buyers and sellers.

Alchemy's functionality enables agents to manage clients, contacts, properties and transactions and share information and leads between agents and branches from a consolidated data repository and interface, via the company's portal.

Growing customer relationships is key to the company's business and the property management tool facilitates how this is done. By storing all customer information (people looking for properties, people selling properties, past and present clients) all in a single location, the company is able to better match buyers with sellers in a more streamlined and holistic manner. In addition to managing the full client relationship through this system, users will also be able to reach out to clients and prospects by sending emails, newsletters and the like directly from Alchemy.

Before the company built this tool, users gathered and stored these data pieces in different locations, some public and shared, and some private and siloed throughout the organization.

"Helping agents stay in touch with clients and tracking their potential future needs," is what Karalis says the tool was developed to do. "Though the application focuses on functionality, its impact will be to provide further customer connections across the organization."

The ultimate goal of Alchemy is to help the company improve customer retention, the key to growing a real estate business.

VIDEO

Video Sharing at Cisco

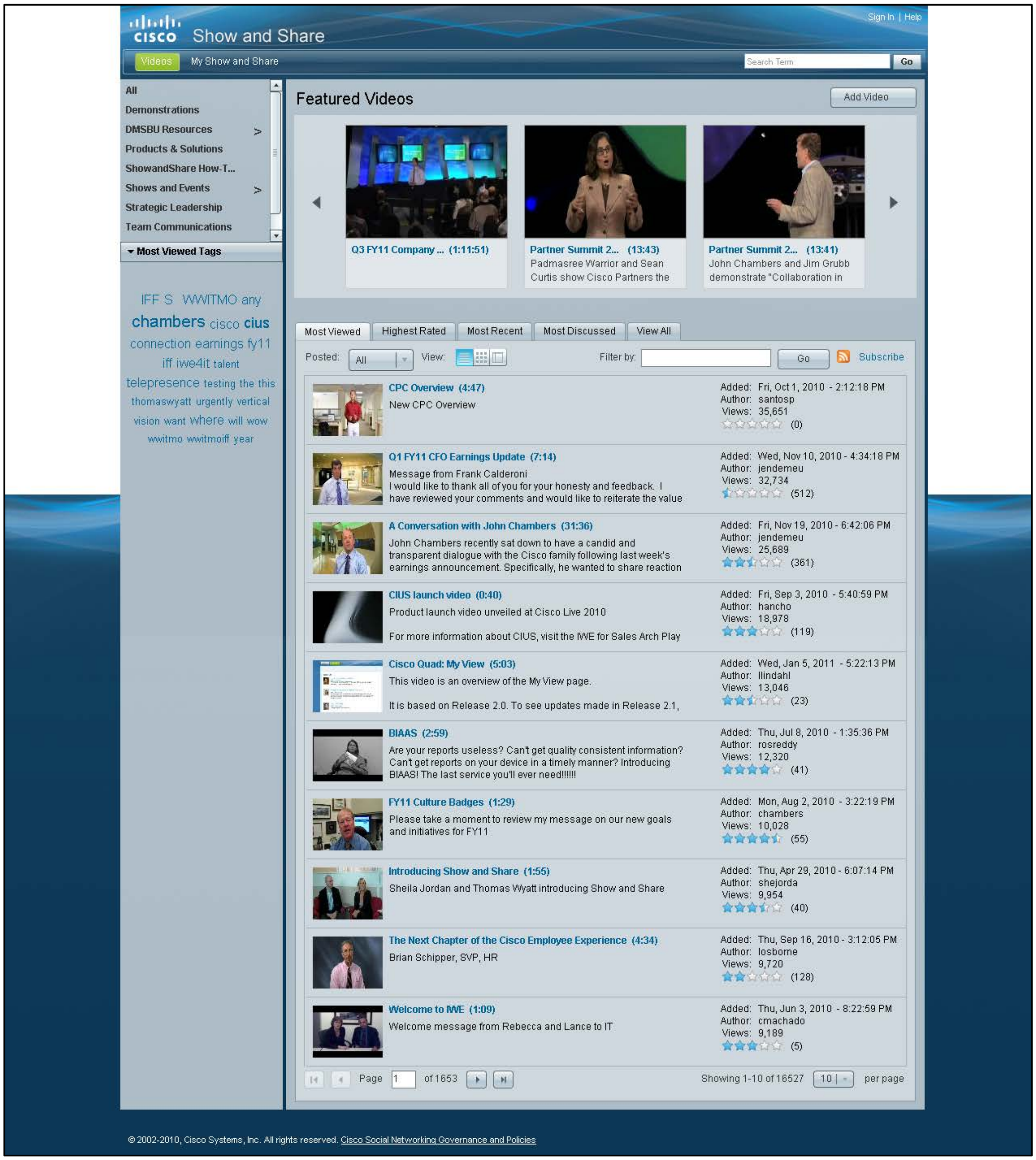
Though Cisco has supported in-house video production for many years, with professional TV studios located in five locations globally, those studios are used for formal content creation and don't lend themselves to the everyday needs of casual video creation. However, CISCO realized that an informal video distribution network would provide value to the organization far beyond the formal productions they already distribute so the CISCO team created what is essentially an internal YouTube.

This video sharing system allows users to author and publish videos without any formal approval process. This open environment facilitates content sharing and collaboration. Users are restricted only by adherence to the company's social networking policy and Code of Business Conduct that guides their other activities online.

The system started with a proof of concept called "C-Vision" that proved to be very valuable for communication, knowledge sharing and training across all levels of the organization. That success translated to wider adoption by the organization.

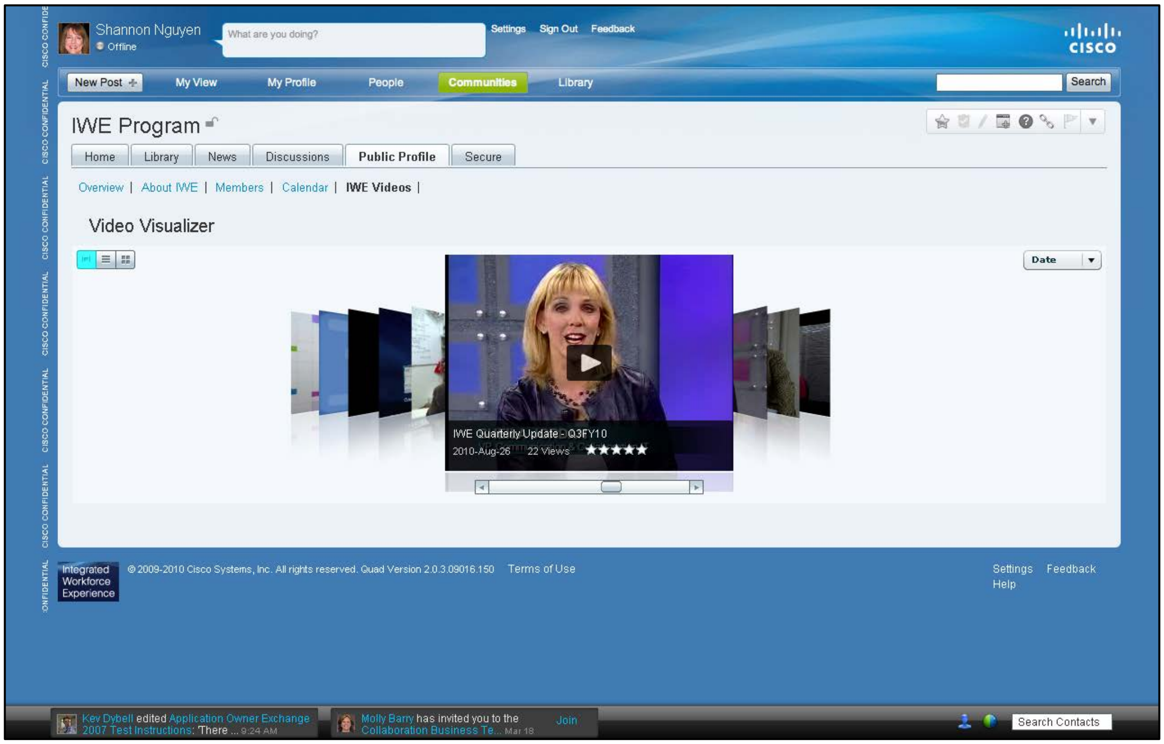
"Our customers saw how powerful the platform was in transforming our own communications and asked for it," says JoAnn Wilson, program manager, CBT. "Cisco now provides a more robust solution for its customers in the Cisco "Show and Share" product, which integrates with other Cisco products such as Cisco Quad, MXE and Cisco Pulse. Once the external product was developed, we shut down our internal proof of concept and started using Cisco Show and Share."

Cisco "Show and Share" manages all of Cisco's video assets into a single portal, similar to YouTube, while the digital asset management portion is currently being architected. Through an easy-to-use interface, users can quickly upload their videos in a variety of different formats as well as record video directly from their desktop cameras.



The homepage for the internal video sharing system on the Cisco portal, Cisco *Show and Share*.

One of the company's core requirements for the video platform was seamless integration. "Cisco 'Show and Share' integrates easily with Quad, says Wilson, "to allow contacts to upload and share related videos within their communities and embed video into informational Posts to each other. An application/portlet within Quad, known as the Video Visualizer, using tags on the videos, allows a filtered set of videos to be displayed anywhere on their "My View," in a community or on their profile page. Videos may also be shared via email or hyperlinks."



This screenshot shows a community page, specifically the *Video Visualizer* portlet within Cisco's Quad platform, displaying a set of playable videos filtered by tags integrated from Cisco Show and Share video sharing portal.

A critical component of the platform's success is its built-in functionality to transcode the raw assets users supply. This seemingly simple step goes a long way in explaining why the tool is so successful. By taking the technology out of the equation users can focus on the content.

"When a user publishes/uploads a video through the Show and Share user interface, it goes through a video transcoder (Cisco's MXE product)," says Wilson, "Which is seamless to the user but allows viewers to enjoy a consistent and smooth video playback experience by ensuring all uploaded videos are converted to the same format."

Users may also upload to Show and Share through the Post interface on Quad. Show and Share also integrates with a content delivery network (CDN) that distributes videos from local servers, so the network is balanced and not cluttered with high bandwidth video traffic. This playback experience is replicated when viewing embedded videos or the through the Video Visualizer from within Quad.

One significant challenge the company faced by offering video sharing was the issue of storage. As anyone knows who has worked with video files: they're big.

"One challenge we faced with the implementation of Show and Share was storage space," says Wilson, "but this was addressed by adding a Cisco Unified Computing System (UCS) flexible server farm to support large amounts of video files. In addition, users have the option to set an archive date upon upload and we are looking at implementing an automated archival policy with user notifications in the future thus further addressing storage concerns."

Performance was another critical challenge for the team. Large video files with high bit rates were causing playback issues for users on slower connections such as VPN or wireless. Wilson says that adding the video transcoder has resolved this almost completely, "as we've seen little to no playback issues since its implementation."

Training with Multimedia

New Century Financial also uses multimedia — for training purposes. For example, the company produces videos to highlight major initiatives such as branding, privacy, and cost reduction changes. It also offers training via web presentations, streamed via WebEx.

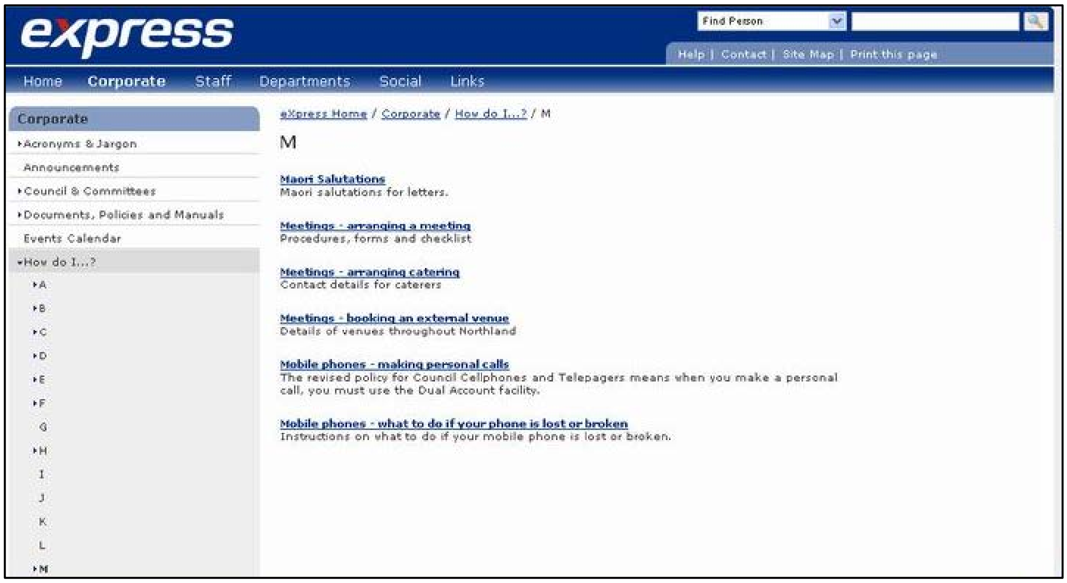
Take for example, "RBCM Integration," a section on the homepage. The acronym stands for Royal Bank of Canada Mortgage Company, which New Century Financial recently acquired. "All of a sudden we had 2,000 employees whose content has been migrated to the New Century intranet, and their previous intranet was taken down," says Cullinan.

To help acclimate the new employees, the homepage features a link to *Intranet Tour (WebEx 19 minutes.)*. As advertised, the link heads to a WebEx training video. "We have a trainer; I showed him the site, then he wrote the script and recorded a 19-minute tour of the site for employees," says Cullinan. The result is a relatively quick introduction to their new intranet. Furthermore it's cost-effective: since the company already has a WebEx subscription, which streams the training presentation, creating this feature didn't cost anything except for the trainer's time.

ASKING QUESTIONS

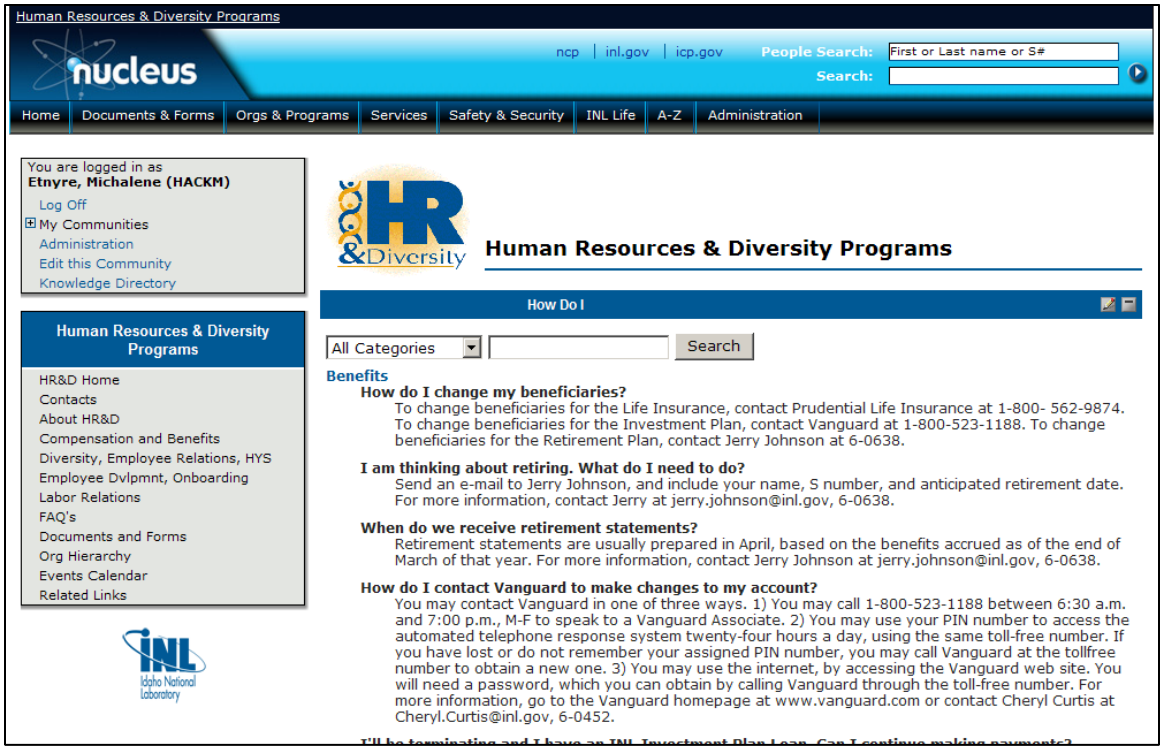
Support and ***How To …***

Some portal sites offer a specific section for help topics or a *How Do I?* quick reference guide. Below are some examples of how different companies handle this challenge:

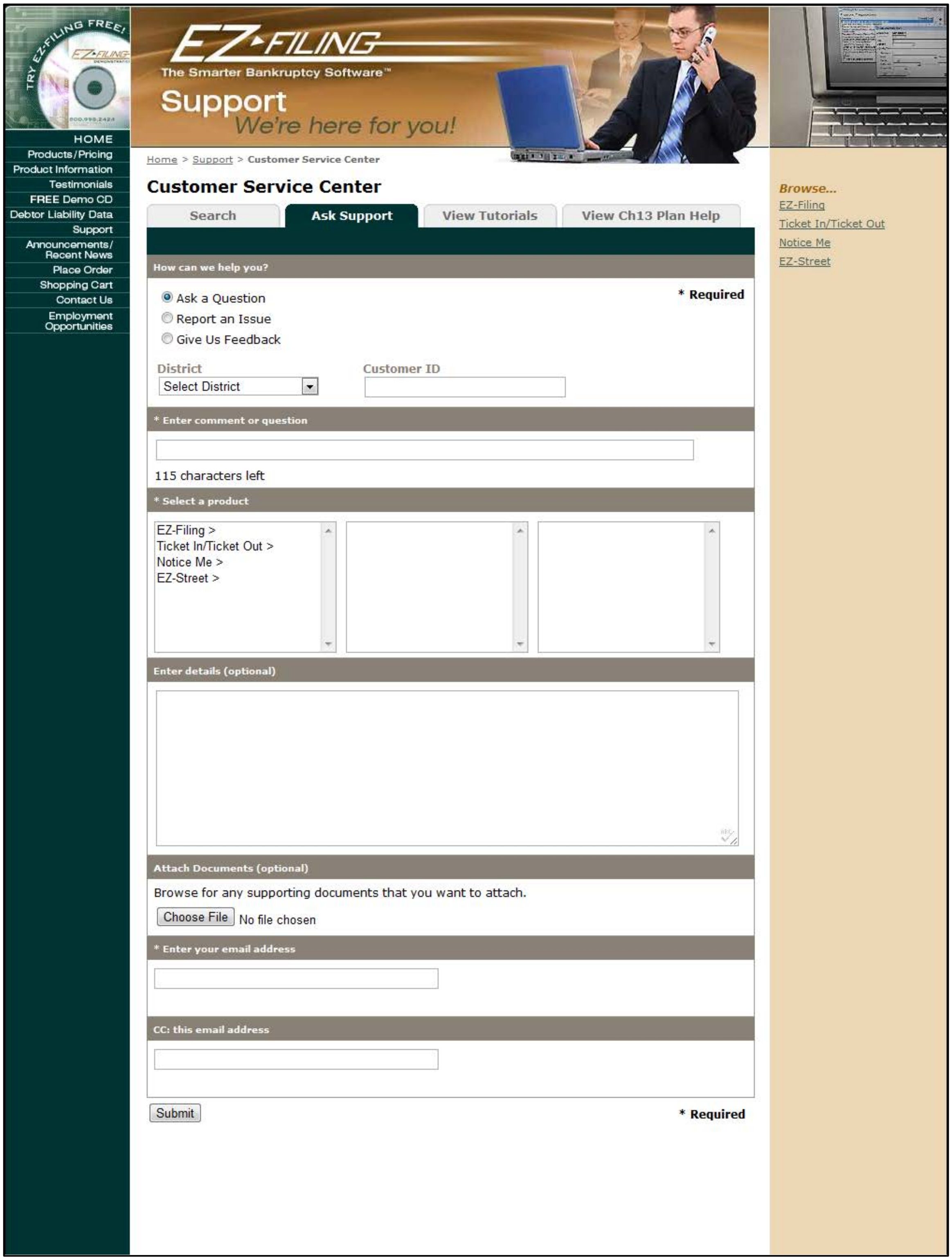


Northland Regional Council's *How Do I?* section prior to the site redesign.

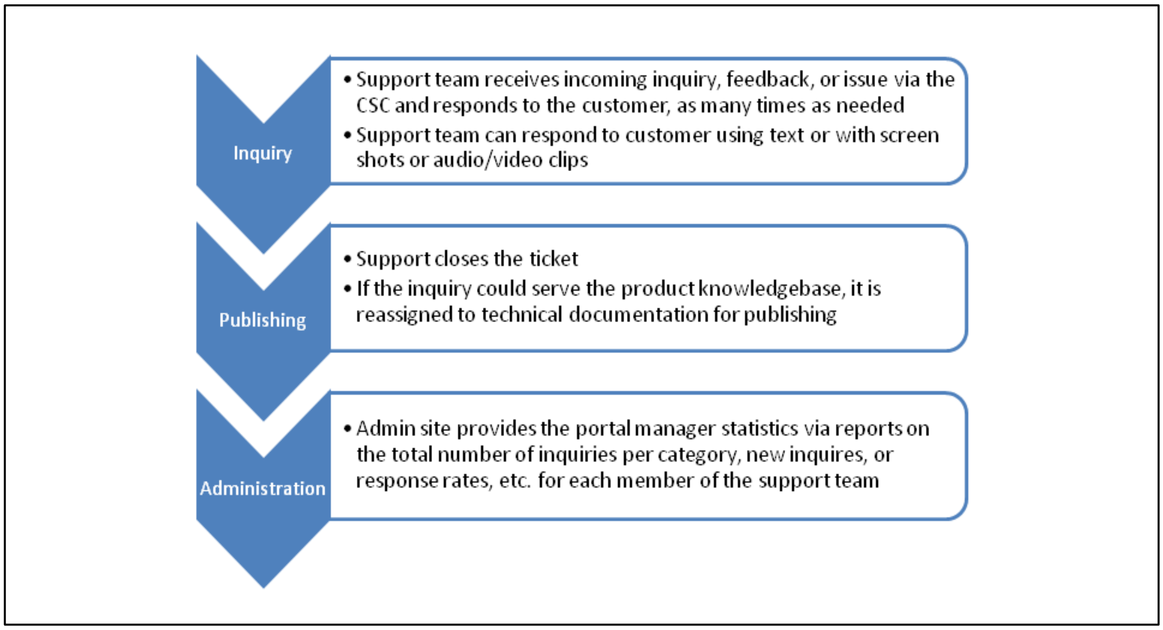
This shows how the Northland Regional Council's *How Do I*? section looked after the team conducted usability testing. They added the alphabet along the top and added a search box to that area of the site.



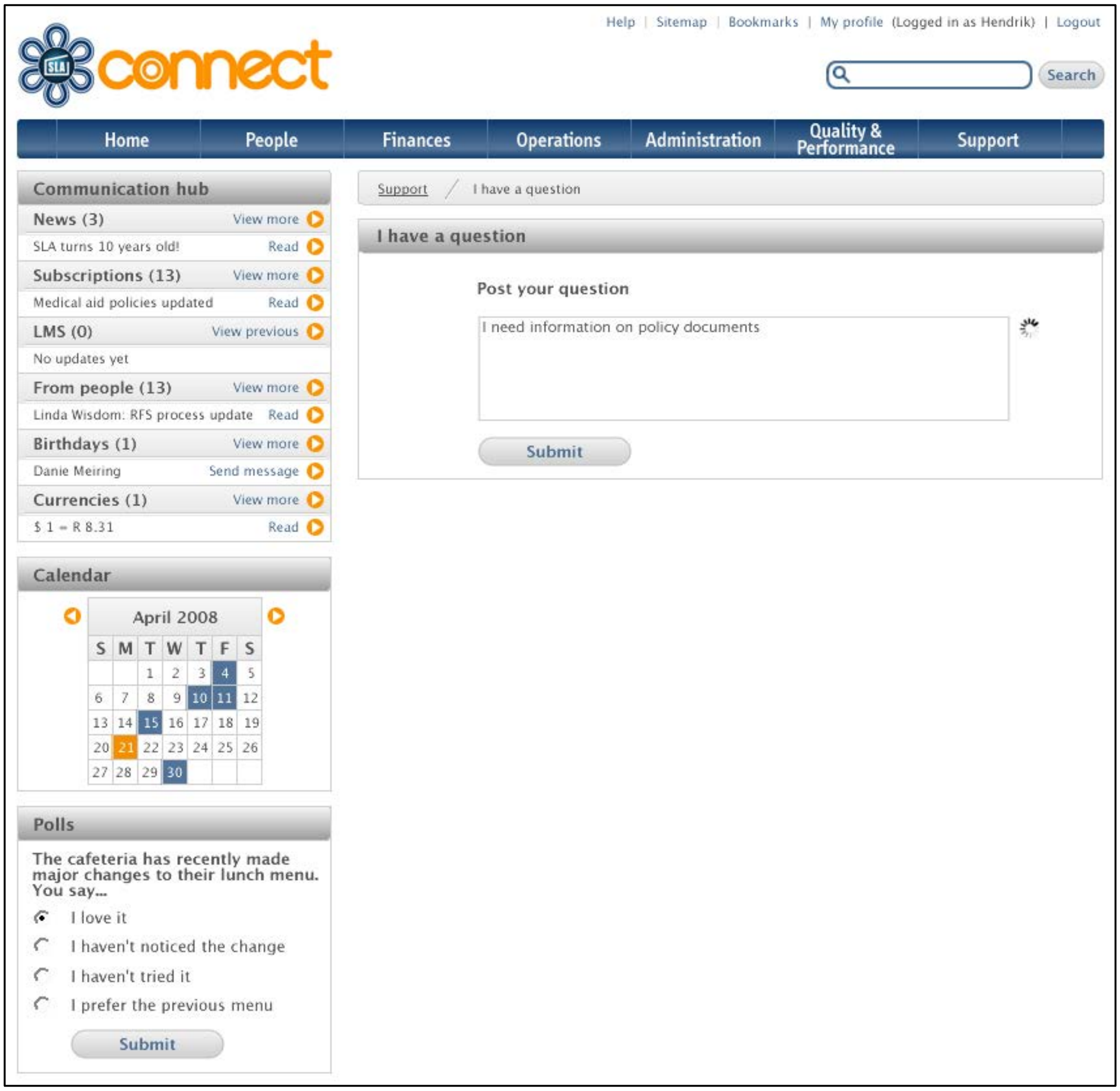
Idaho National Laboratory's *How Do I* information is broken up by specific categories, or all categories (default). The most commonly asked questions and answers are displayed.



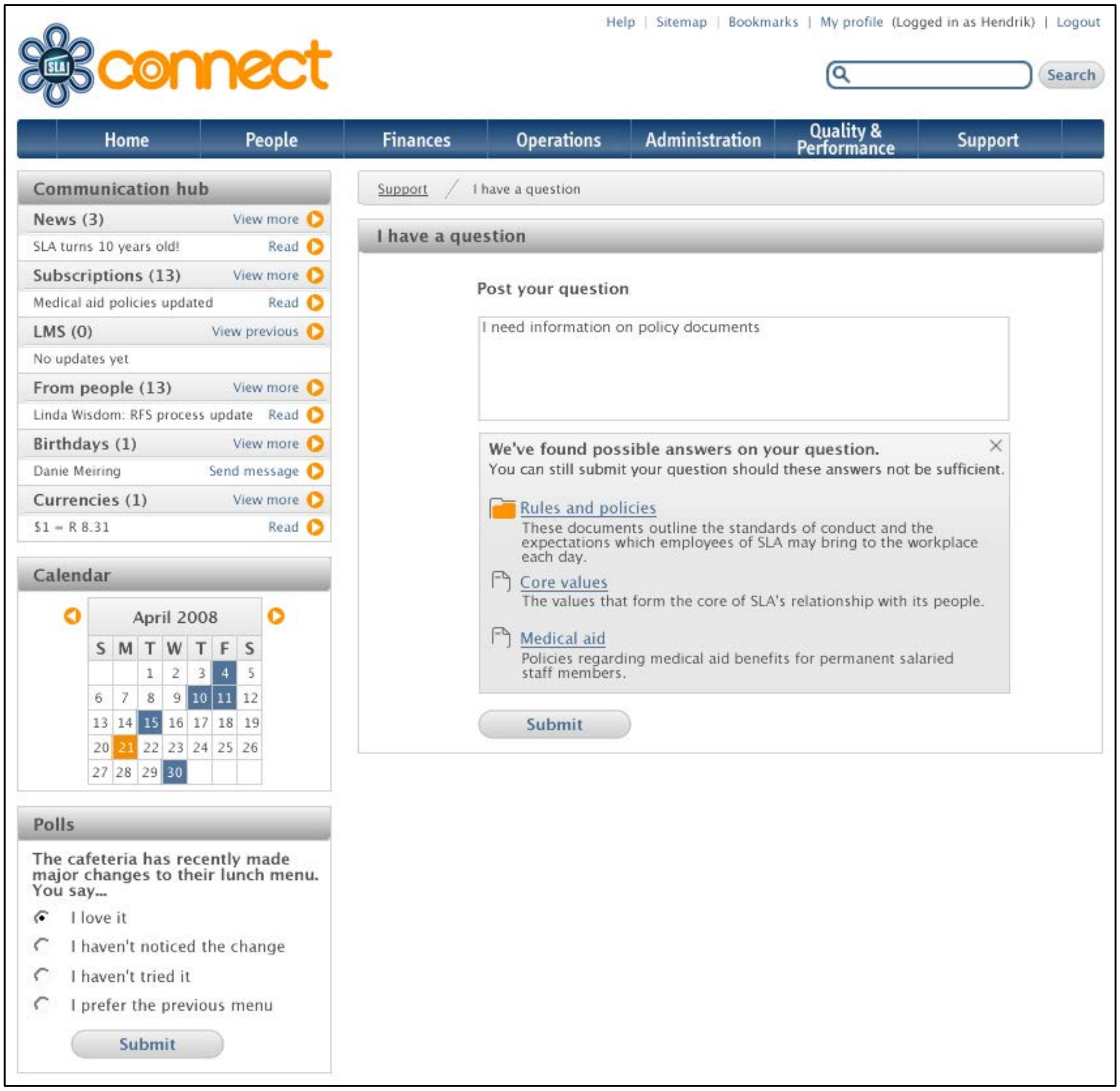
The EZ-Filing CSC *Ask Support* page. On this page, existing or potential customers can submit questions to the tech support team about the product. They can make an inquiry, report an issue, or provide feedback.



This illustrates a high-level workflow of the inquiry management process (front-end) from customer to portal interface to documentation team for the EZ-Filing public portal.

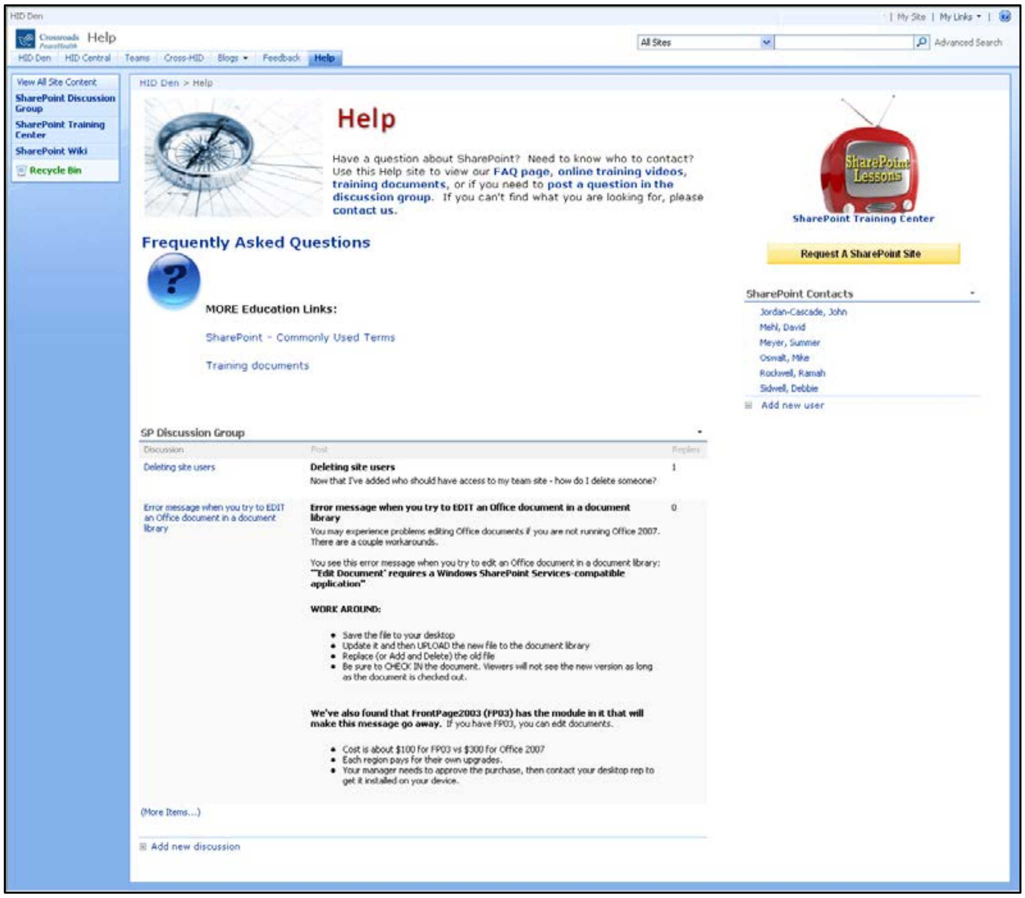


Strategic Logistical Alliance has a support section on its site where users can search support topics. Here the user has typed in a support question.



In this view of SLA's support section the user has entered a support topic in the search box and the portal has searched for the three most relevant answers and displays them as possible answers to the question. The user can link to the articles to see if they are relevant or choose to submit the question to a help desk.

EMBARQ's homepage after the portal team added *EQIP Site Tour* in the upper left. The video was written and recorded by the intranet team highlighting how to navigate, personalize and collaborate on the new portal.



PeaceHealth's HID Den portal help page includes a FAQ section, links to training resources, including videos, and a discussion group and wiki.

The Idea Sandbox

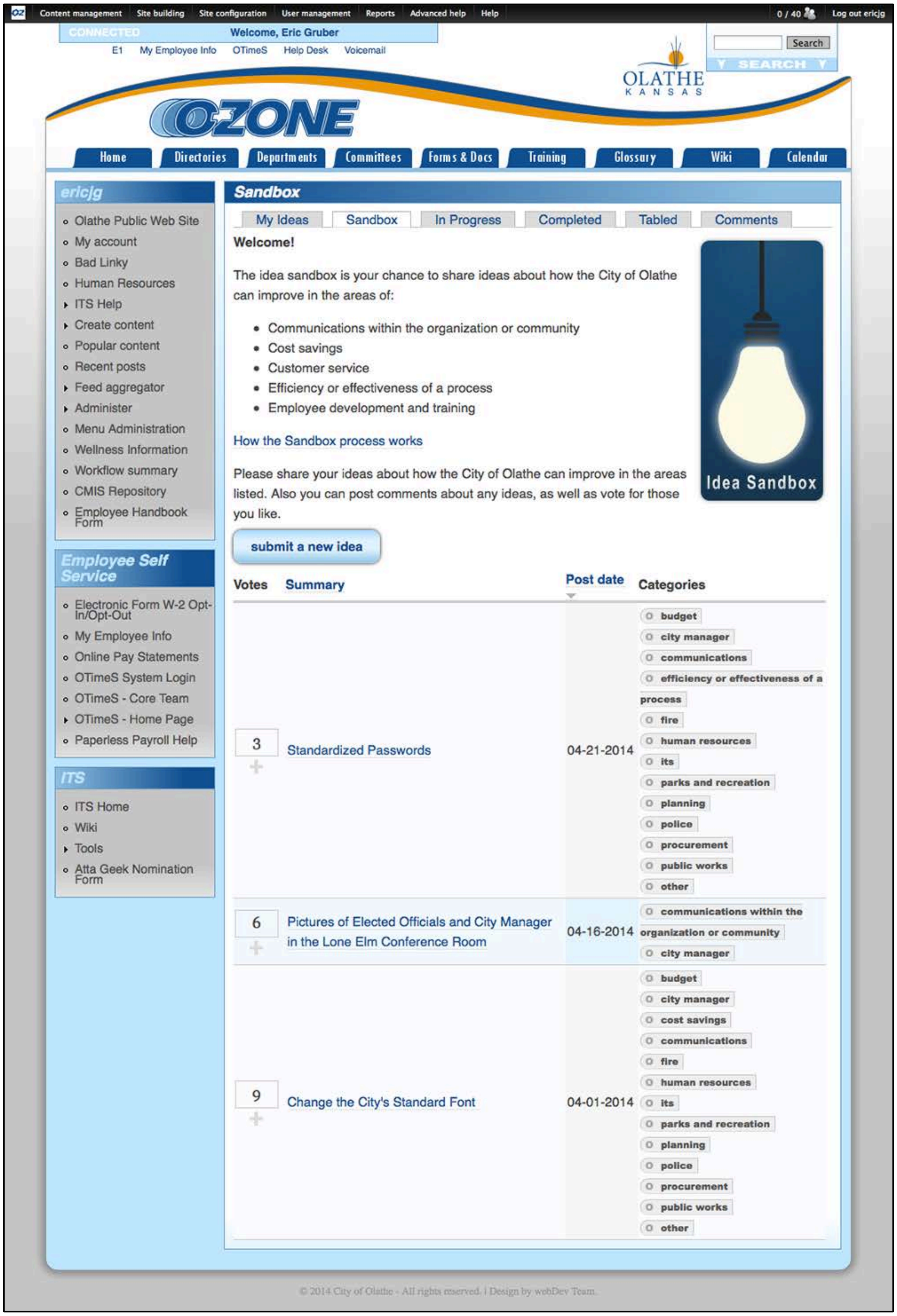
One of the more popular features on the City of Olathe, Kansas intranet is the Idea Sandbox where employees submit ideas and then other employees can vote on them.

"The idea sandbox works a little Digg," says Gruber. "Ideas are submitted and employees vote them up, comment on them and give feedback, or they can contact the original submitter and talk directly to him/her. Posting isn't anonymous; it's tied to their network account."

This tool has led to a culture of healthy discussion at the organization. "Discussions are thoughtful but civil," he says. It has also helped surface some great ideas. The Idea Sandbox has led to changes and improvements across the organization.

"If an idea is moved to the "In Progress" stage, then a department is assigned to review the idea to see if it's feasible to be implemented," says Gruber. "The department will give a response to the submitter along with an estimated timeline for implementation. If the idea ends up not being approved for implementation, the submitter will receive a statement why."

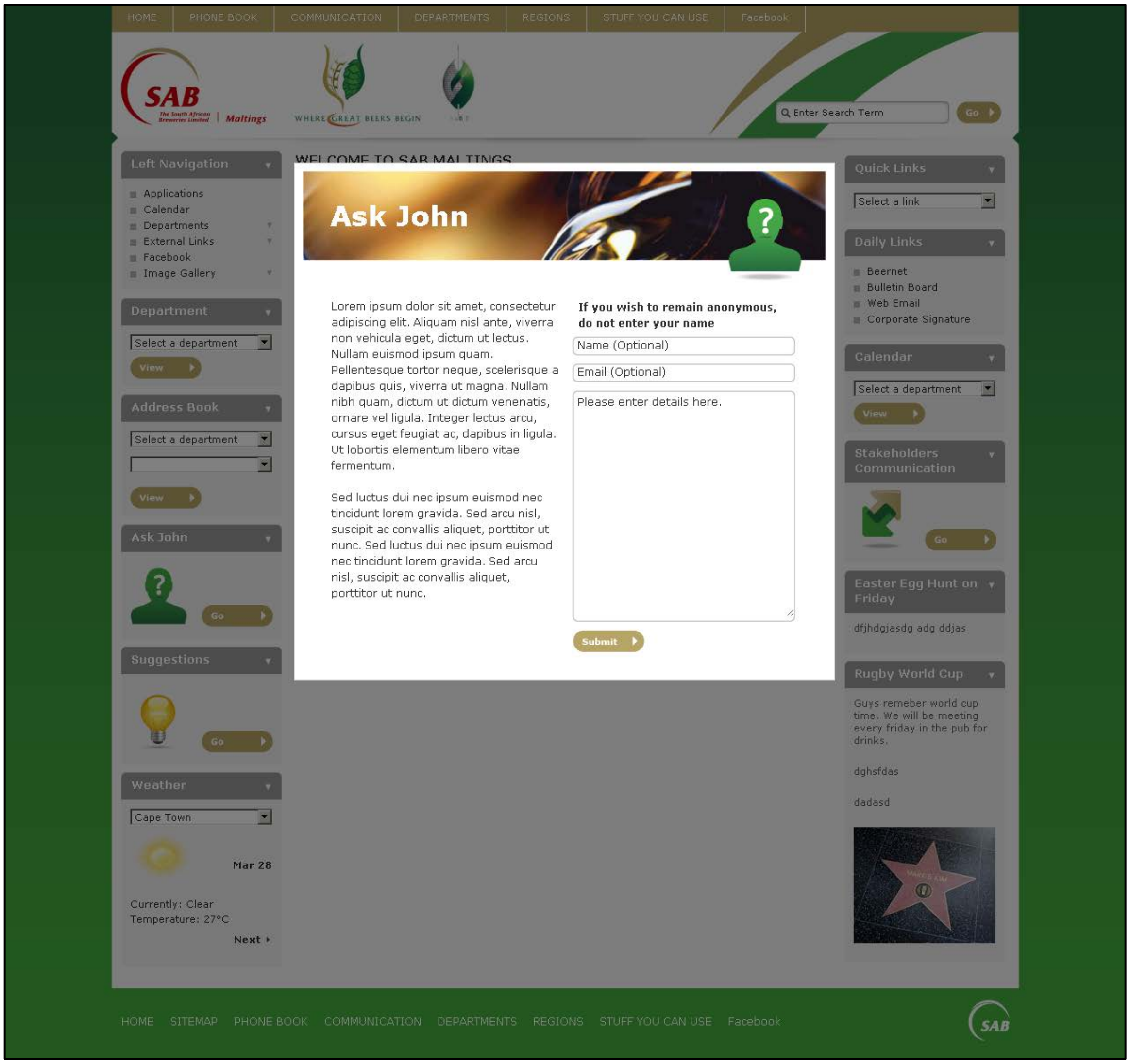
Once an idea is fully implemented, it is moved to the "Completed" section of the Idea Sandbox as a historical reference for all employees to view.



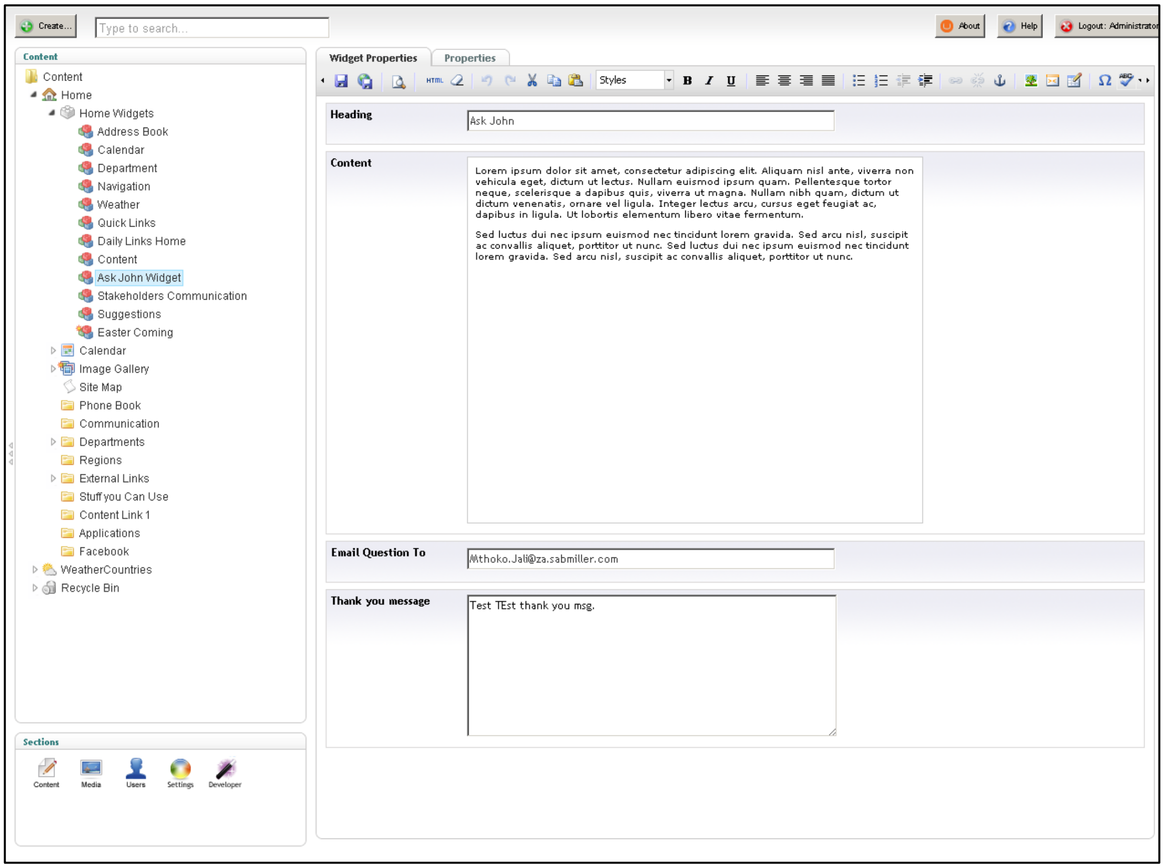
The homepage for the Idea Sandbox, an idea generation tool at the City of Olathe, Kansas.

Question Tools

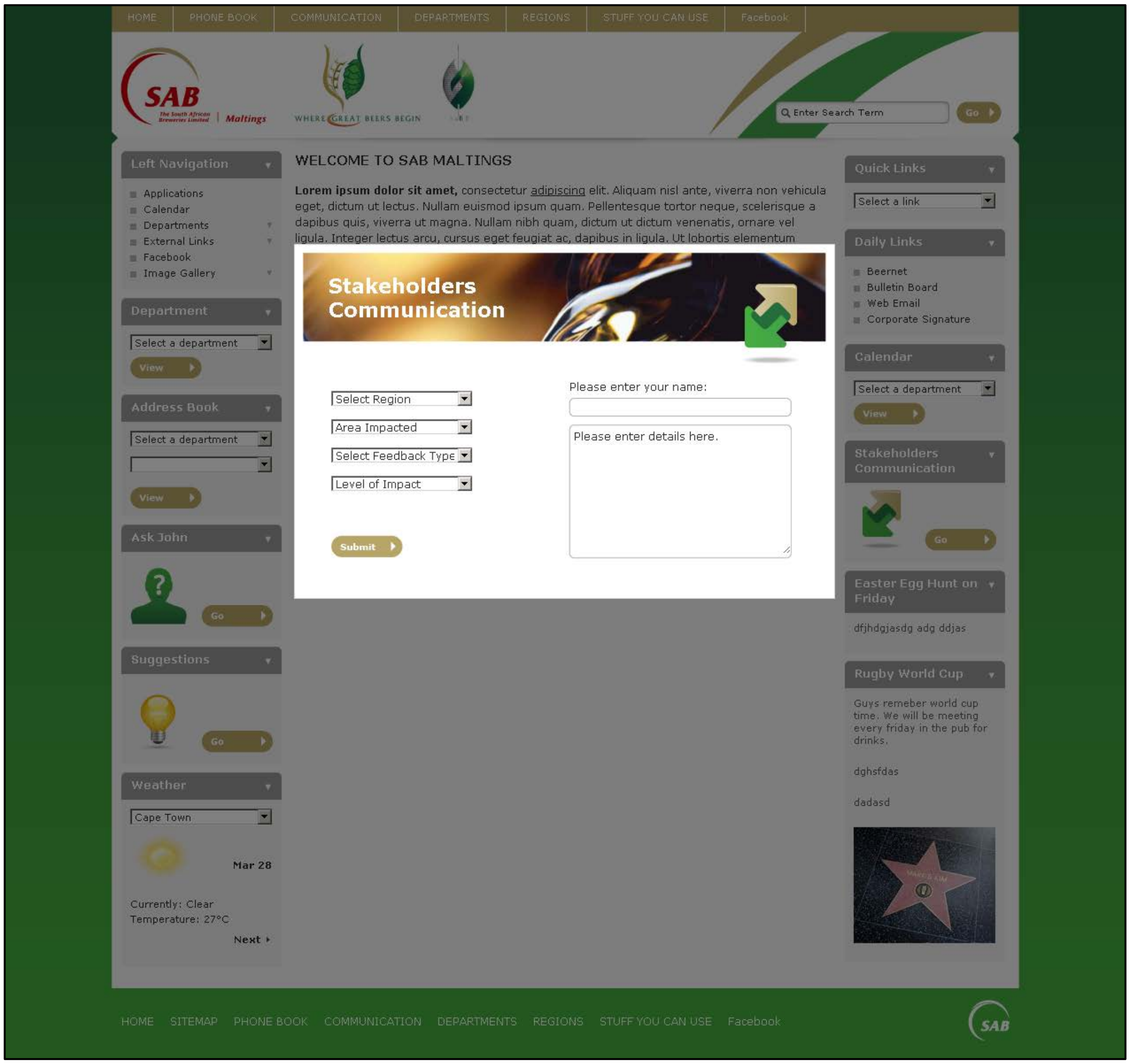
Some companies build mechanisms into the portal so users can send questions directly departments and staff outside their own groups without using email. Here are some examples:



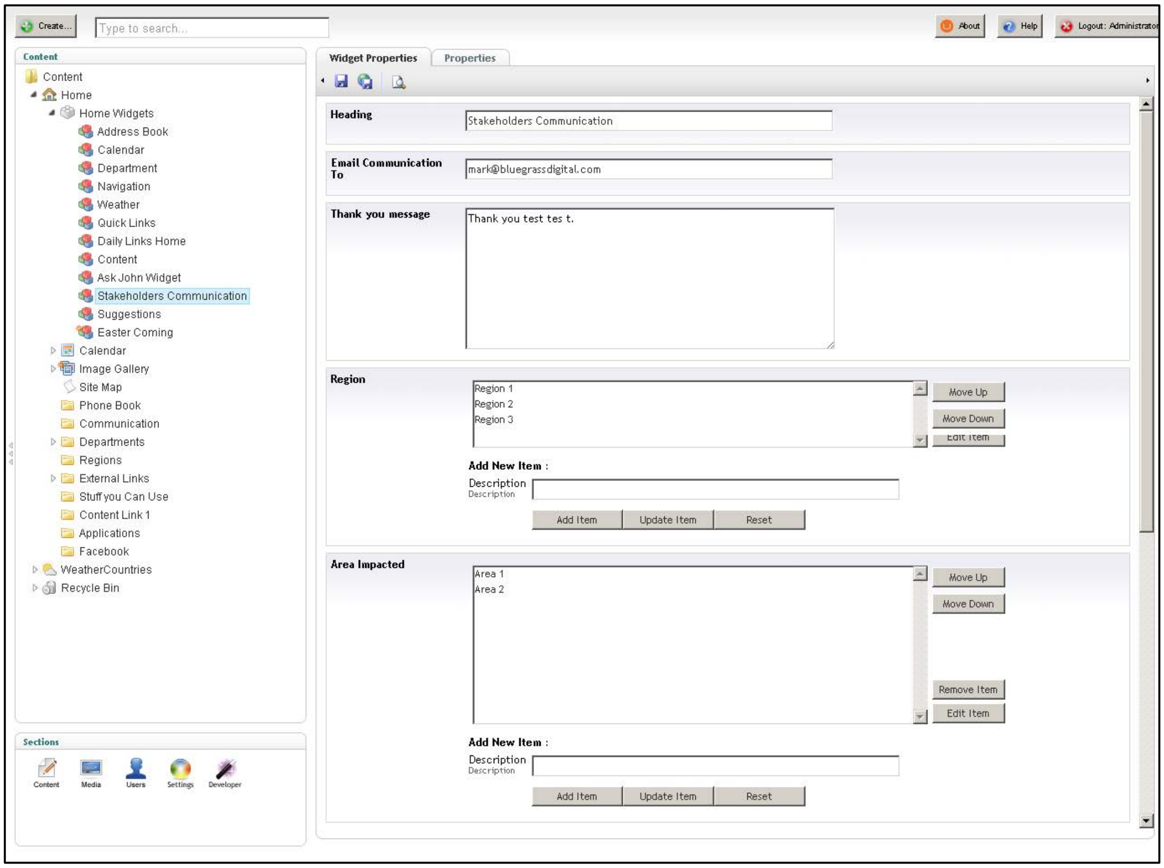
This screenshot shows the SAB portal widget tool called *Ask John*. A tool that gives staff members the ability to send a question to a specific department or staff member via the intranet. Questions are moderated and responded to by the relevant departments.



This screenshot shows where a department can control what appears in the SAB *Ask John* pop-up. Here, admins can edit or change the heading, content, define who should receive the feedback and what the thank you message should say.



This shows the SAB *Stakeholders Communication* pop-up that gives users the ability to get in touch with a specific business department with targeted feedback about something business- or company-related. Intranet users can use this widget to alert business departments of a potential problem that has arisen and to assign a level of importance to their message. Or the widget can be used to provide feedback or to make a complaint. Feedback is moderated and responded to by the relevant department.



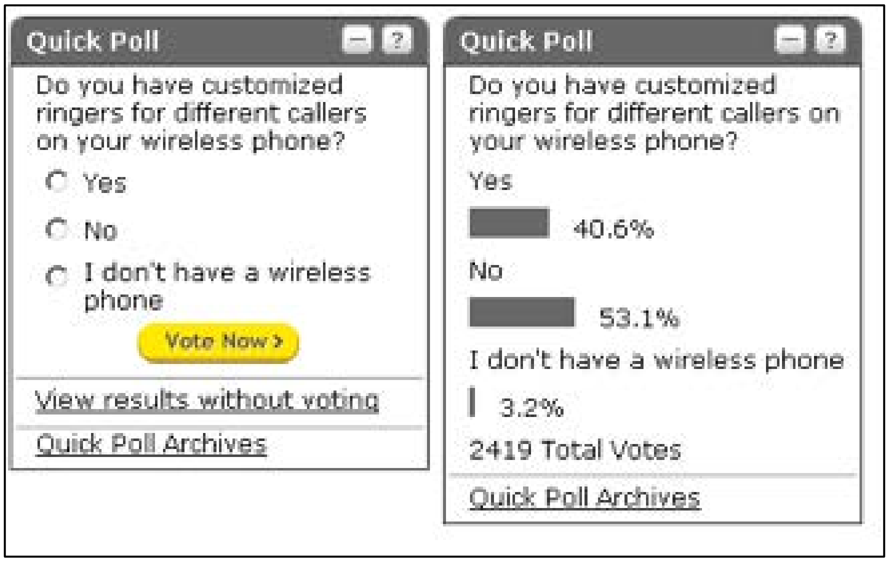
This screenshot shows the admin panel for the stakeholders' communication tool on the SAB portal. The department can control what is displayed within the widget drop-downs and who is notified when feedback is sent.

POLLS

While they're not a hard-hitting web application, many organizations report success with having a quick poll on their portal homepage. Sprint offers such a feature on its portal. "It's like an instant poll you might see on USA Today [website]," says Nellor.

While the portal design team implemented the poll for fun, employees' attachment to it grew beyond expectations. "The quick poll is really popular; we found that out when we had to take it down for maintenance," says Backlund.

"When the poll went down, there was a lot of hate mail; people wanting to know where their quick poll was," says Nellor.

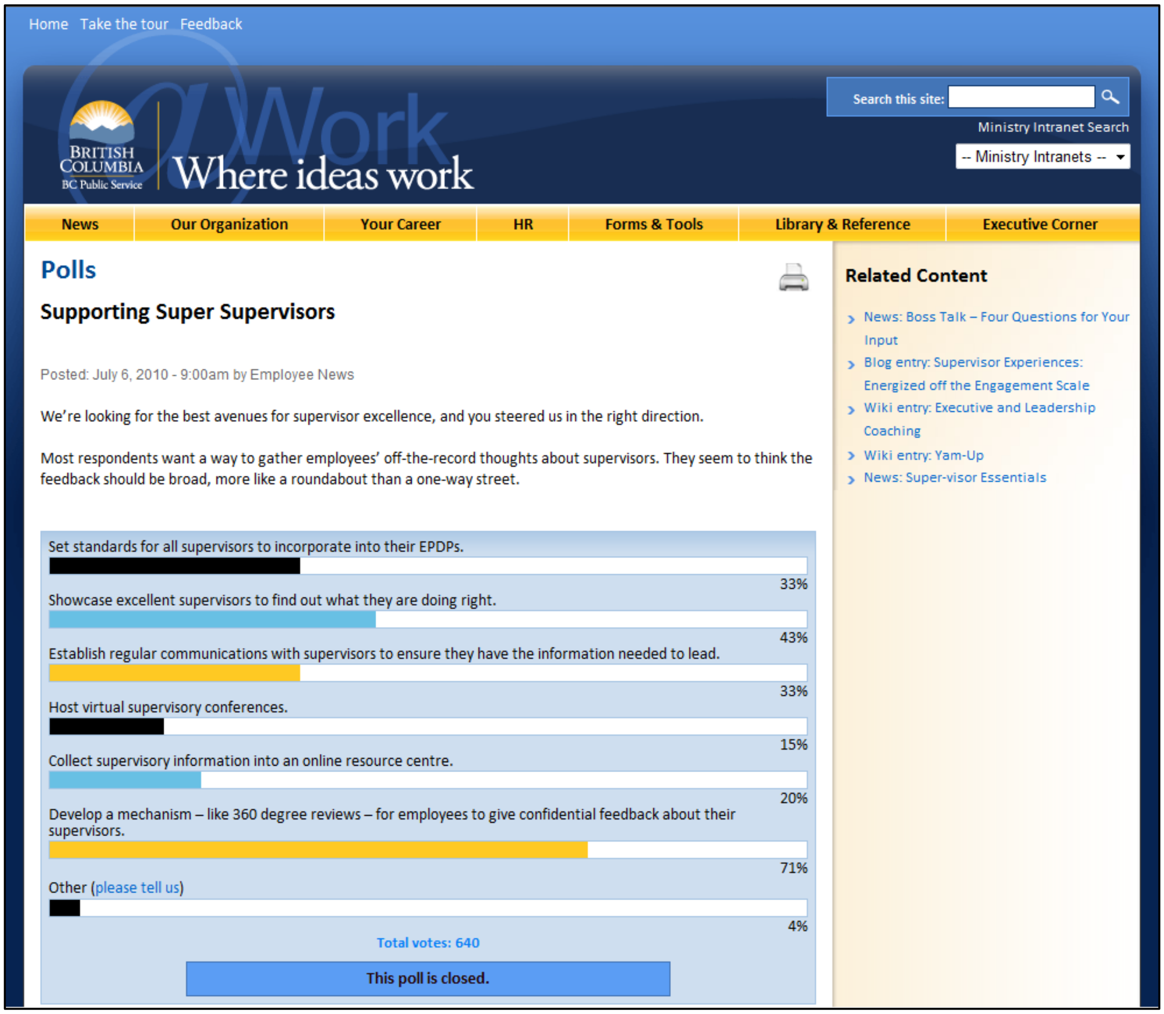


A quick poll portlet is featured on the Sprint portal homepage (shown before and after a user votes). The poll is sometimes business-focused, and sometimes frivolous. Users love it.

Some poll questions are business-focused, while others are completely for entertainment. Even so, log analysis revealed that poll receives 7,000 to 8,000 responses a day, "which is pretty decent," notes Backlund. "That's more than 10% of our user population that answers the poll every day."

According to Nellor, "I come in at 7 or 7:30 am every day, and it's not unusual for there to be 1,000 responses already."

So while portals, by definition, give users with the tools they need to better do their jobs more effectively, it's important to remember — company culture permitting — web applications such as a quick poll can also ensure the portal is a fun place for employees to be while they get that work done.



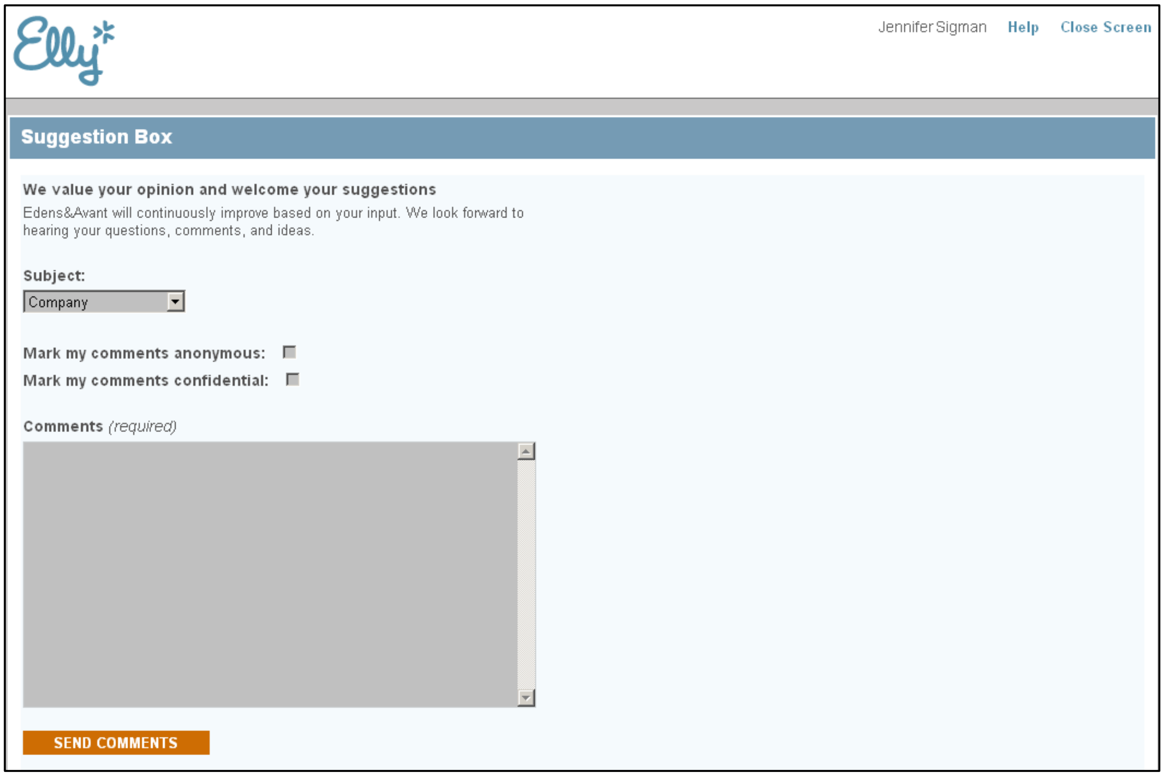
This is an example of one of the weekly polls on the BC Public Service portal. The poll functionality has many options and is comment-enabled to encourage discussion.

TOOLS THAT GATHER PORTAL FEEDBACK

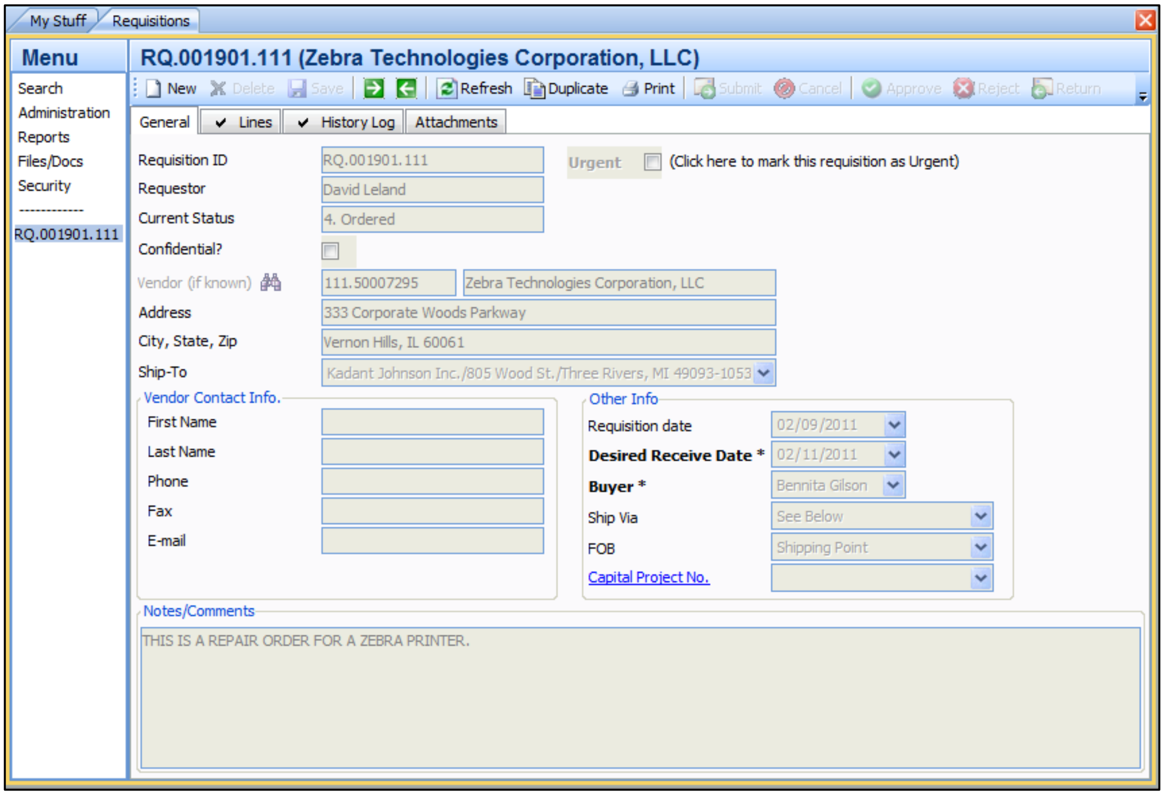
User Feedback Portlet

To query users directly about what its portal could do better, DFAS offers a "Trying to find something in the portal?" portlet. "It's for us to refine our taxonomy and usability," says Crawford. "If someone can't find what they're looking for, they can fill out the portlet with what they were looking for, tell us how they tried searching, and so on. Then we gather the data and analyze it for potential changes."

The *Trying to find something?* portlet, which is present on many DFAS pages, allows the organization to gather information from users to refine the portal's taxonomy and usability.



Edens & Avant's Suggestion Box was created after employees expressed a desire to be able to communicate with members of management or HR anonymously. The emails are sent to a central mailbox and then routed to the appropriate individual for their attention.



This is one example of an application page on the Kadant Johnson intranet. It is a module that has been plugged into the intranet portal framework. Most applications on the portal have a similar look and feel: a menu structure on the left and tabs and toolbars, to provide inter-application navigation, on the right.

BEST PRACTICES

- Build apps based on research. Through user research, portal teams can learn information that is immediately applicable to building tools that users need.
- Aggregate information sources. Aggregating internal and external information sources can save users time and provide them critical knowledge to help in their jobs.
- Lead with indispensable apps. By providing useful, feature-rich applications that users can immediately use can be a big win for portal adoption. Lead with apps that will either become an indispensable part of a user's work life, such as an expert-finding tool, or is something users will immediately find satisfying such as Point Loma University's "latte app."
- Plan first, code later. Don't code without a detailed specification. Make sure that you write a detailed specification and plan the layout of the intranet backend clearly before you begin coding.

The Portal Platform

NEVER UNDERESTIMATE THE COMPLEXITY OF THE TECHNOLOGY

Portal vendors hype their technologies as űber problem-solving solutions, when in fact the portal platform itself can be the source of great frustration and cost. Because portal solutions are usually behemoth systems, their customization, integration and administration needs can gobble up valuable time and resources for portal teams.

Even portal teams who make what they think is an informed decision about the technology platform can find themselves under water, dealing with the considerable learning curve and many unknowns associated with these complex systems. This realization can come as a surprise on even the most carefully planned projects.

Piper Jaffray for example, decided on SharePoint because of the knowledge and experience they already had with the .NET environment. By choosing SharePoint they didn't have to learn another platform or technology or need to staff up to support it. This made SharePoint a more effective long-term cost solution, but it didn't spare them from some of the pain associated with SharePoint's significant learning curve.

The lesson for companies choosing portal technology is never underestimate the complexity of the portal solutions. When planning projects try to take into account the consulting and integration services that might be required. At the very least, allow time in the project plan to accommodate the unexpected or unknown because both are inevitable.

Choose Carefully

When it comes to portal platforms there are two prevalent choices: build a custom solution or choose one that is out-of-the-box. Both choices lead to challenges, it's just a matter of which set of challenges a team is willing and able to tackle. No off-the-shelf solution is ever really ready to use out-of-the-box, meaning ready to use without customization. And no custom solution is ever a small project.

Our survey respondents offer some advice on a few things to consider when choosing a portal product:

- System architecture: How well does the purchased portal match the existing system architecture, including web framework, databases and security?
- Authentication: What type of authentication system does it use, and can that be integrated with existing authentication systems?
- Integration: Can it be integrated with any content management solutions currently in use?
- User interface: How is the portal's user interface constructed, and what's required to integrate it with existing website navigation, look and feel? Does it use style sheets, templates and includes? Does the vendor make the user interface source code available so it can be maintained going forward as the intranet evolves?

- Customization: Some platform solutions are not easily changed. Many products have a vendor-controlled and maintained user interface, creating a dependency on their programming staff, with its accompanying schedule and cost impacts. In this case, usability improvement through ongoing testing and iteration may be difficult or impossible.

We purposely don't take a stand on specific technology solutions in this report, as doing any sort of thorough evaluation of software products would be outside the scope of this research, but since the choice — build vs. buy — often has far-reaching affects on the portal and its user experience we do listen when companies offer advice from their experiences with portal platforms and building portals from scratch.

"I think that it is important to take the time to really assess your current system, what available resources you have both internally and externally, and what your needs are," says the Carle Foundation's Skinner. "It helps to have a good idea of what you want in general terms of functionality to help evaluate products and compare applications on an even ground. We did most of this front work on our own and it was a bit challenging as an internal communication professional with limited IT background. We did look into working with a company to help us with this assessment and make an impartial recommendation, but that seemed very cost-prohibitive."

"You need to educate yourself and ask lots of questions," she says. "I don't know if SharePoint would have been my number one choice to use, but with all the factors that we had to consider, it was the best decision for our organization."

IS SHAREPOINT FRIEND OR FOE?

SharePoint, one of the most widely adopted portal platform solutions, is so ubiquitous in the enterprise space that people have compared it to Kleenex or Band-Aid when explaining its pervasive presence ("no one installs 'portals' anymore, they install 'SharePoint"[16]). Microsoft has come to call the product a "business collaboration platform" and yet it is still one the first names that comes to mind when a large company talks about its "portal."

SharePoint is often an IT darling. The enterprise market is awash with Microsoft-centric enterprise environments so adding another Microsoft product to the mix can create a sense of security for risk-averse IT departments. And since this group often call the shots, it's usually hard to win if they've got their hearts set on SharePoint.

None of the companies we've interviewed that have considered SharePoint and decided to keep looking are likely going to put a dent in Microsoft's bottom line but it's worth considering why these companies have made the choices they have. There are a number of pros and cons associated with choosing SharePoint. These include:

[16] Real Story Group Blog, "Is SharePoint the end of (portal) history?"
http://www.realstorygroup.com/Blog/1275-Is-SharePoint-the-end-of-(portal)-history

Pros:

- IT recommendation. IT departments are often the driving force behind the decision to use SharePoint. Often, the reason behind this decision is to take advantage of the free version that came with the Windows network environment, used for a company's server technology. This is listed as a "pro" because it's sometimes just easier to use what IT wants you to use. It reduces the battles that may break out if a communications or HR function wants to use another product.

  "We knew there would be significant costs and learning curve in bringing in a new product and our IT department was unwilling to provide in-house support if we chose to use a product other than Microsoft," says Skinner. "Choosing a different solution would necessitate contracting with outside developers and the number of developers and resources for applications like Kentico in our area was less than those available for SharePoint and Microsoft."

- Integrates with an existing Microsoft environment. Choosing SharePoint for the platform means easier integration with existing Microsoft enterprise tools Oftentimes, tools such as Office, Communicator, Project and EPM are already in place in many organizations.

- A safe technology bet. Microsoft SharePoint is a leading platform product so it has a sizable market share and offers a clear upgrade path.

- Scalable and extensible. Given the size and complexity of SharePoint there is great potential to scale and extend the product over time as business needs develop.

- It includes a lot of functionality "out of the box." SharePoint's out-of-the box functionality is a paradox. It offers a comprehensive list of functionality and increasingly more and more social-type functions yet it requires a lot of development resources to truly make it work for any particular organization beyond basic functionality so we list its out-of-the-box functionality as both a pro and a con.

  "In 2008, we were looking to move off of our legacy system to a more collaborative platform," says Phillips. "SharePoint allowed us to have a communications-facing employee intranet with collaboration tools built in. Users could provision their own team site and immediately begin collaborating and sharing documents. SharePoint also allowed us to have a platform for Executive blogging, which was not previously available within the enterprise. We also had the ability to provide content in multiple languages with SharePoint locales."

Just because SharePoint is an IT darling, however, doesn't always make it the best solution for an organization looking for the best portal they can buy. Many companies we've interviewed over the years have struggled with SharePoint implementations and warn against the downsides of the product, including:

Cons:

- High cost and effort. SharePoint is a classic example of the limitations of an out-of-the-box implementation. The product is notorious for requiring considerable investment in time and effort to get it working to the specific needs of any organization.
- Limited design flexibility. Companies like their portals to look and feel like *their* portals. Our interviewees say the tool has limited flexibility for custom development and design. In other words, it's hard to make it not look like SharePoint.
- Lack of control: "The simple reason behind developing our portal from scratch was the idea to include our business needs in a platform where we can take full control of what we want displayed, keep control of our database, and in the future, improve our intranet from client's and employee's feedback," says Antonio Ciuccolini, Co-Founder and Senior Developer, AlternaBit of FDC Solutions' efforts.
- Steep learning curve. SharePoint has a steep learning curve for administrators training on the product.
- Too techy. One of the requirements for many intranets is they need to be user-friendly and easy to maintain for non-tech staff administrators. SharePoint can be quite a big, cumbersome tool and complicated to maintain and to deploy from a non-technical persons point of view.
- Requires a heavy reliance on IT support. Though Persistent Systems has had a very good experience building its portal on the SharePoint platform, even they admit the effort required to maintain the platform should not be underestimated: "SharePoint 2013 is a massive platform and the administration of SharePoint is a very involved activity," says Bhishikar. "The effort and expertise required for this activity should not be under estimated."
- Intimidating. Along the same lines as the last point, the interface can be intimidating for non-tech savvy end users.

While SharePoint is a powerful solution to some portal challenges, it is a product with a long trail of frustrated intranet managers left in its wake. Goodwin Procter is just one.

"SharePoint itself is a beast," says Kawa. "This is a multi-function, multi-feature rich platform that allows for document management, content management, data integration and custom applications for such tasks as knowledge management, business intelligence, collaboration and now social networking."

In other words, if you just use is as your portal's CMS you are perhaps under estimating both its power and the complexity that comes with that power.

"If you look at SharePoint as an application or content management system then you are completely underestimating its power and support requirements," he says, "A SharePoint deployment requires a great deal of planning and organizing. Research and analysis is required as well as a solid understanding of both the business and the technology. You really need to know what features you will turn on and which features to disable. You will need to understand the architecture and platform and you will have to be able to provide training to your users. You can do so much with SharePoint and build so many robust applications as well as integrate systems to address business needs but you will need to provide services and governance around all this."

Many teams underestimate just how much of a commitment this requires.

"Planning and infrastructure play a key role in this technology," says Kawa. "You must have the resources that can understand and support a platform of this size and nature."

As we've discussed here, there are many advantages to SharePoint, but those advantages come with trade-offs and it's important to take both into account in advance.

"There are strong advantages," says Duke Energy's Martha Brown. "The familiarity of the SharePoint user experience has really helped us grow the number of content managers within the company, and they are actively managing their sites."

"The security model is 'easy' (relative to other products) to implement and manage," she says. "Using the product has saved us money, since we already have enterprise licensing to manage our SharePoint environment. We were able to retire third party software. We were also able to streamline our technical support organization. As program manager for our portal, I've found that it's helpful to share our technology platform. With over 4,000 SharePoint "team sites" within the company, the Portal can take advantage of features that are developed for those environments. Business drivers have a broader impact and can develop momentum when they are shared."

Keep IT Involved

One of the benefits of SharePoint also represents its greatest challenge. "Users can create more complex solutions without the knowledge of the IT Department," says VSE's Santos, "and this can become a problem for the maintenance process of that solution that was created without IT's knowledge/authorization."

"It is necessary for the IT Department to retain full control over the creation of processes in order to effectively develop tools/solutions following company's policies, otherwise important services that were created by unqualified collaborators without IT's knowledge can become jeopardized if they leave the company. To avoid this type of issue, it is necessary to establish a solid governance plan that incorporates rules for this type of situation.

BUILDING A PLATFORM FROM SCRATCH

Building a portal to serve the specific needs of one organization sometimes means building it from scratch. For a variety of practical and political reasons many companies choose to have their portals reside on top of a platform such as SharePoint. The truth lurking behind SharePoint and other intranet software solutions is that while they can be a good starting point, they are rarely adequate to support the full scope of integration and application needs of a large-scale intranet portal on their own. So, if you're going to have to build on top of such a platform, why not just build a custom intranet portal from the ground up.

Building a portal from scratch is one solution wherein a company is ensured that it will have a system to address the specificity of its portal needs but the cost and resources required could be prohibitive. Regardless, some companies take the leap and these companies tend to be either big, such as Dell or small, such as Kadant Johnson.

“We started about three years ago designing a simple intranet but quickly realized that what we were really developing was a place from which various applications, systems, etc., could be accessed,” says Leland. “It was at that point we changed the name to ‘intranet portal’. Our vision is to include ‘everything but the kitchen sink’. And in making this decision, the company’s leadership chose to build the portal platform from scratch.

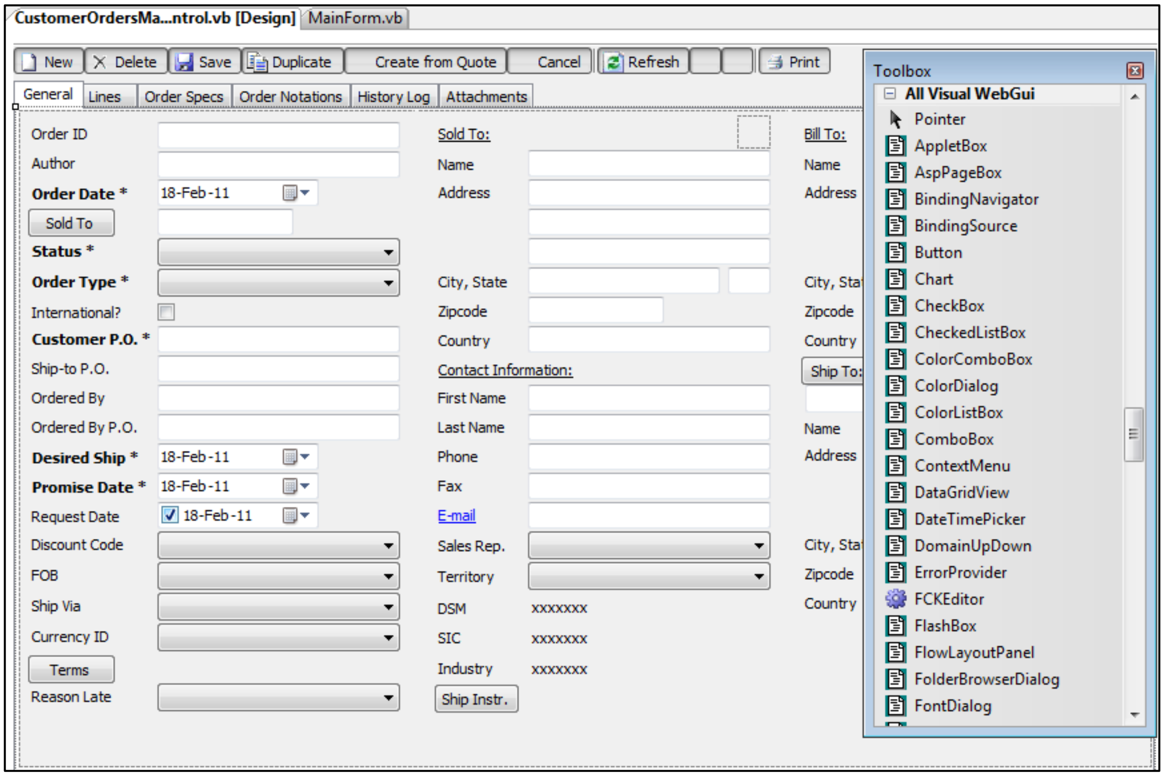
Toward a Comprehensive Framework

What started as a corporate directive to replace our Lotus Notes email with Microsoft Exchange ended with a framework which positions the company for future application growth, and the application development technology to support it all.

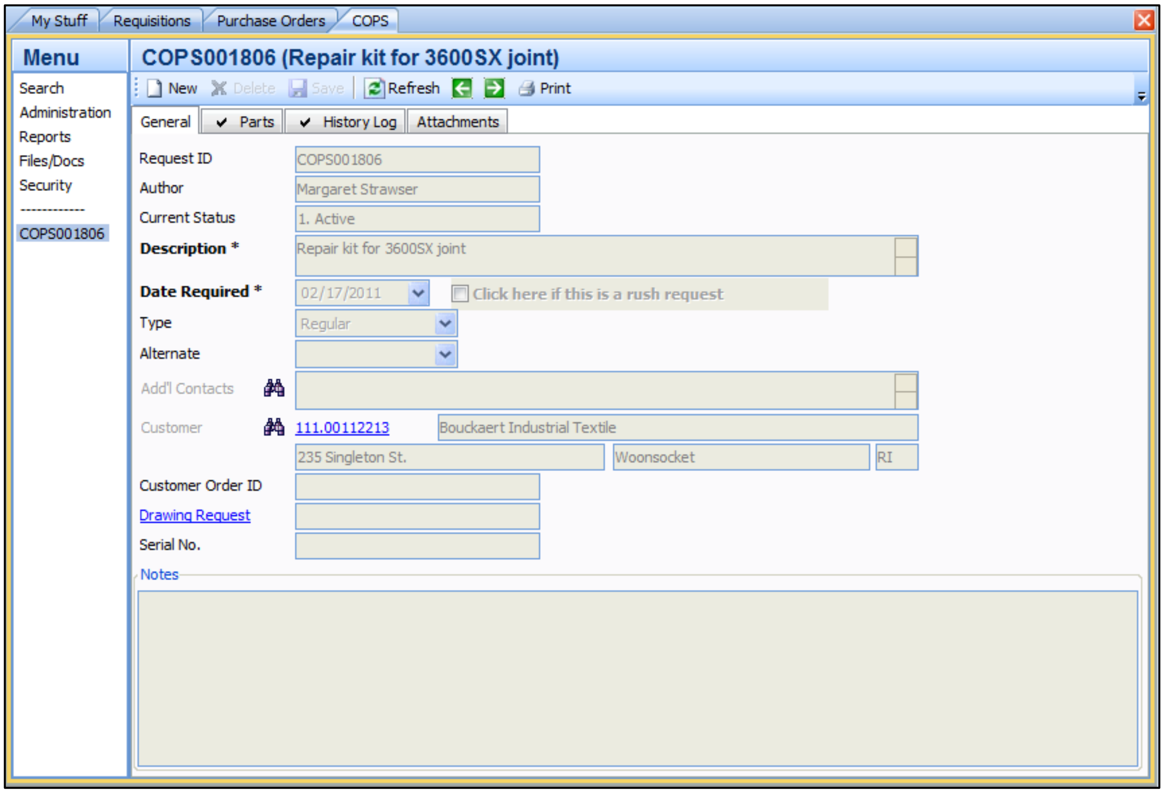
The directive to migrate the company’s email services from Lotus Notes lead the team to research possible approaches to replace all the Lotus Notes applications in use with some sort of web technology. This path led to a focus on Ajax and specifically settled on an application development platform called Visual WebGui from Gizmox, a company based in Israel.

Early trials revealed that the platform would provide an extraordinary ease of use for the types of applications the team was looking to build.

“We were floored by the ease at which we could do this,” says Leland. “So much of VWG was exactly the same as what we were already doing in our Windows application development. From ‘drag-n-drop’ creation of the user-interface to event-driven programming, it was all so familiar. And, the clincher was that the resulting application was robust and fast.”



This page shows an example of how UI development is a matter of simple drag-n-drop on the Kadant Johnson intranet portal.

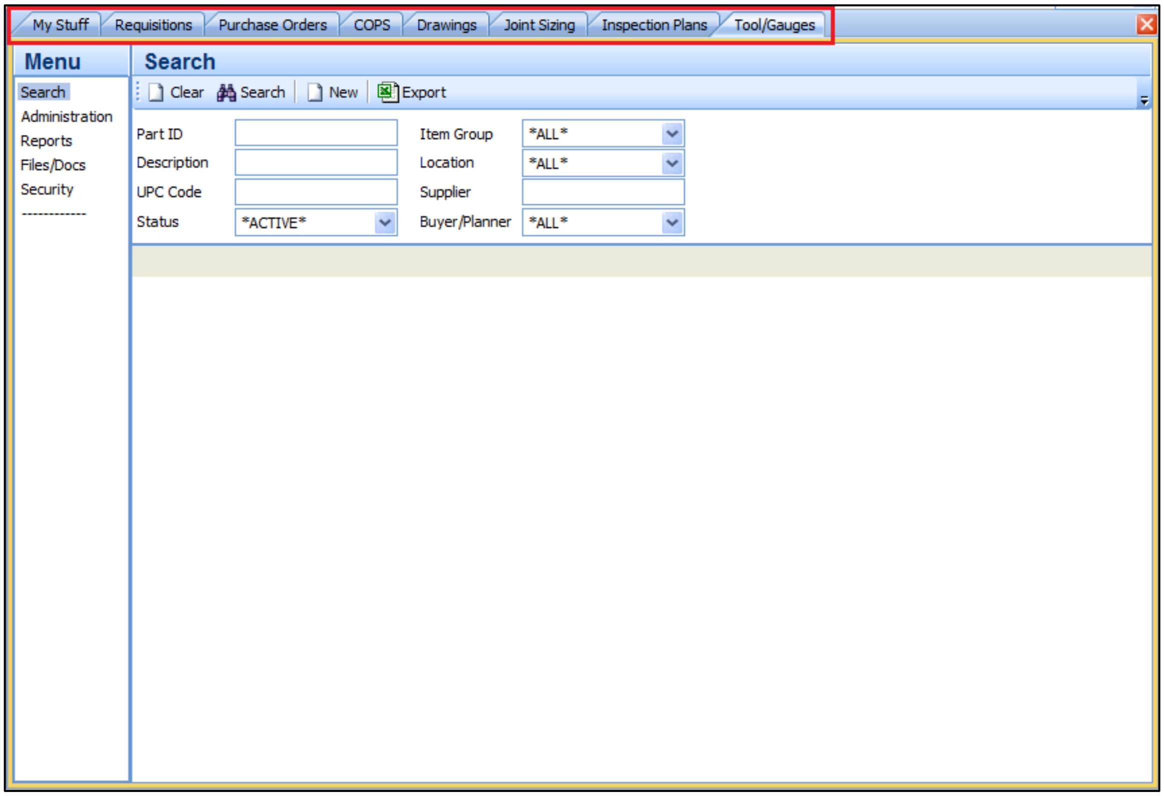


This is an example of an application page on the Kadant portal.

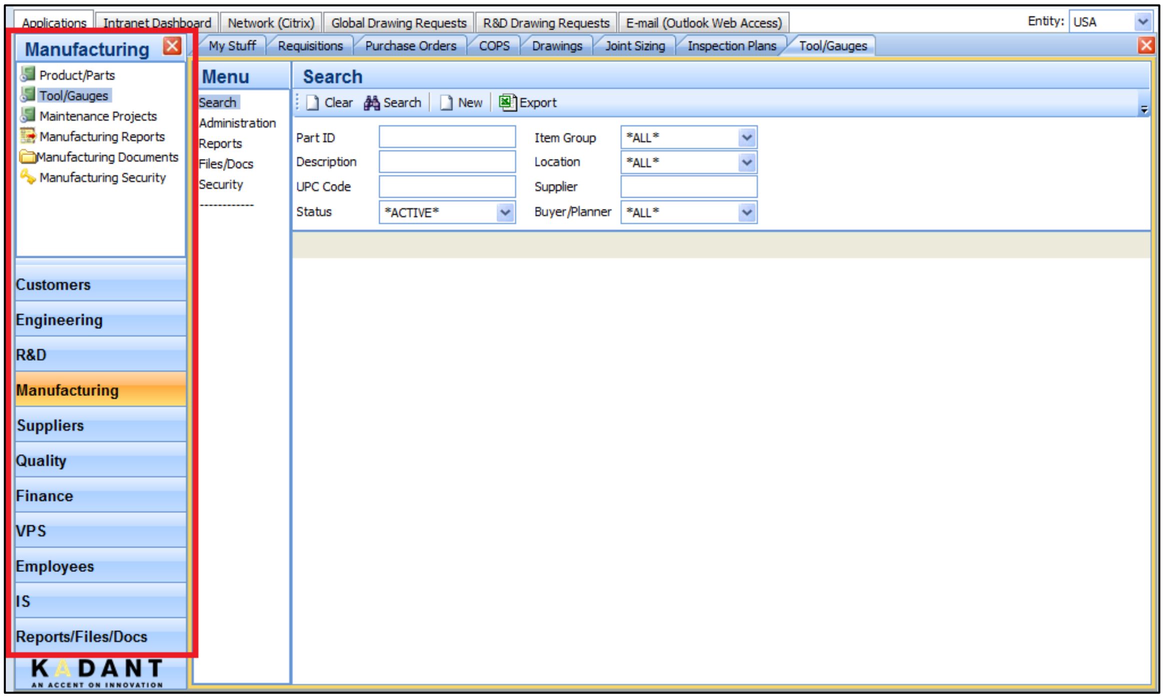
With the application development platform chosen, the next step was to design a framework. And the team knew they wanted more than just eye candy. "We knew that we wanted more than a 'pretty' user-interface," says Leland. "We wanted to create a framework that included elements essential to good application design: navigation structure, security, printing, database connectivity, etc. And we especially wanted this framework to allow for 'plug-in' application modules."

The team spent a lot of time designing the framework, looking at its strengths and weaknesses. And the result serves the organization with a level of specificity that wouldn't have been possible with an off-the-shelf solution.

"While our intranet portal looks almost nothing like Lotus Notes, there are actually a number of ideas that were borrowed from it (linking from application to application, the ability to open multiple apps and be able to leave them open and see them in a tabular fashion, etc." says Leland.



This page is an example of how, as users launch applications, these applications are simply added in a tabular fashion on the Kadant Johnson portal. This functionality allows easy navigation among all of a user's open applications. Closing an application is accomplished by simply clicking the *close* button on the far right.



An example of Kadant's Outlook-style navigation structure, with a collapsible menu on the left and tabs and windows on the right.

After finalizing the initial navigation design, they turned their attention to rounding out the framework by adding essential developer-friendly elements such as database access, security, printing and document handling. Leland outlines the details of the thinking behind these elements in the sections that follow:

- Database: "We spent a lot of time thinking about and working on establishing and maintaining a connection to the database in a way that would be easy for our developers to utilize. This might seem like a small thing to non-developers but we did a lot of research and found that the 'best-practice' for web applications is to connect to the database every time information is needed, and then immediately disconnect after the information has been retrieved. We felt that this would place an undue burden on developers of our intranet portal applications and would also negatively impact user response time. We knew that this 'best-practice' was just not going to work for us. We talked with other developers and 'borrowed' an idea one of them was using for a different purpose. That idea turned out to be exactly what we were looking for — the ability to share a database connection among all of the portal applications, and also to automatically close the connection when the entire portal was closed. We had some developers tell us this wasn't possible and it was a bad idea but we knew it was exactly what we needed. And after some twists and turns, this 'bad idea' has turned into the perfect way (for us) of connecting to our Oracle database. Developers of our portal applications don't have to even think about this. They can always count on the connection being there."

- Security: "The idea of security was constantly on our mind as we were developing this framework. We knew it had to be integrated, flexible (for example, role-based) and easy to utilize from a developers viewpoint. What we came up with was a dual-approach. Each application is free to have its own 'components' and 'roles' but yet the portal framework controls overall security clearances. This dual security scheme has worked very well and is easy to maintain and use."
- Printing: "Printing is another area that we knew needed to be well thought-out and integrated deeply into the intranet portal. This too might seem like a small thing to non-developers but it can be a real pain for developers. We again spent a fair amount of time researching how other companies handled this task. As with most elements of the portal, we had to backtrack from our original idea and do something a little 'outside the box. We knew we wanted to use Crystal Reports on the backend because we have a substantial investment in this technology. But our original idea was to also use it on the front-end. However, the Crystal Reports front-end left a lot to be desired, both in terms of user-interface and also speed. So, we borrowed from our previous experience with the AS/400 and created a method for batch processing of reports. Now, report requests are submitted to a server where they are generated and a PDF file of the report results is passed back to the requester. We are really pleased with the results of this both from a user and a developer perspective.
- Document handling: "One of the last big pieces of the intranet portal framework that we had to tackle was the management of application-related documents. As with every other major piece, there was research and trial and error before we hit upon what has proven to be a solid design. The key to the design is in the way in which documents are stored. The typical way of storing documents is in the OS file system. However, the result of handling application documents in this fashion is that it adds another layer of programming complexity. Files are stored in a folder type structure, which is not as easy to work with as a database. In addition, the developer must deal with a file system under which he does not have total control. Files, folders and their security can be manipulated outside of the application. So, again, with a little out-of-the-box thinking, we implemented storage of documents in the database itself, in Oracle BLOB (binary large object) fields."

A Custom Platform Yields a Big Payoff

The result of this type of careful evaluation, design and research is that the company's platform works and suits their needs to a T.

"Needless to say, we discovered things we hadn't thought about and did more tweaking to our framework," says Leland, "But, in the end, our framework 'worked'. In fact, it exceeded our expectations. We found that not only could we create and plug our own in-house written applications in it, we could also use off-the shelf applications written in ASP.Net."

Now, three years later, they have almost 50 application modules "plugged" into the intranet portal, comprising over one quarter of a million lines of code (which includes the framework itself). And they are happy with the results.

"In fact," says Leland, "All new development is geared towards our intranet portal. "We're even currently looking at taking some of our core ERP applications and writing them as modules in our intranet portal.

So, with this kind of success behind them, what's next for the Kadant portal? "Beyond moving more and more of our core applications into it," says Leland, "the newest releases of our development platform (Visual WebGui) either already do, or will shortly, support Mobile, HTML5, Chrome, Safari, Firefox … limits — what's that?"

In other words, the sky's the limit — within time and resources, as always.

BEST PRACTICES

- Never underestimate the complexity of a portal platform solution. Take into account the consulting and integration services that might be required to use a portal platform product. At the very least, allow time in the project plan to accommodate the unexpected or unknown as they are likely to occur.
- Know when you need an expert. If you choose one of the large, portal platforms and your organization does not have in-house expertise with the product hire someone who does. Ideally hire someone who knows the business or industry well, and can "read between the lines" not just someone who knows the product. Have that expert on board as early as possible.
- Don't just focus on the technology. SharePoint, and a few select other content, document and portal solutions, provide a considerable jump start on the technologies necessary to support user needs. However, no solution delivers a perfect blend of functional capabilities through an intuitive and obvious user experience while also supporting those who must care for and feed those technologies. The best approach is a healthy focus on not just in the technology and infrastructure but also in making the technology do what's critical for users and thereby drive value for the business.
- Don't be fooled by an easy setup: While a portal platform might be easy to set up, you might need external support to implement governance and an information architecture that can work.
- Don't expect developers to read your mind. If it is not spelled out letter for letter in your functional specification, the developers may not think of it. Take a good hard look at your design, and be tough with it. Cut anything that is not going to add value to the end product.
- Choose wisely. Investigate the business requirements as thoroughly as possible, to determine not only the most appropriate system to achieve immediate quick wins, but also the system, which will support the business on a three to five-year journey.
- Have good support. Make sure you have in-house expertise or have a good vendor that will help you edit/modify the site. Oftentimes teams run into situations where they don't really have a good handle

on how to modify certain features and feel stuck, unable to really enhance the usability and scalability of the portal.

- Keep IT as a partner. While it may serve the portal team to keep IT away from the ownership role, it is the rare intranet portal that can survive without some sort of custodial support from IT. Keep a seat at the table for IT.
- Users before vendors. Design your portal after careful scrutiny of the communication needs of your users, rather than let the current market products paint you into a corner.
- A custom solution can have a big pay off. While the investment in a custom platform may be a hefty sum, the pay-off is also big. Investing the time, resources and money to develop a custom intranet platform for an organization means the company is the master and the technology is the slave. While the investment maybe be big, the pay off may be bigger.
- It's all about the framework. If you develop a good, complete framework, your intranet portal will have a better chance of living up to your expectations.
- Choose technology carefully. Customizing out-of-the-box functionality is not always easy (or affordable) and yet the individual needs of companies are complex. That means the underlying technology can greatly affect how a company achieves its portal goals. All-in-one systems, which pretend to do everything, are not always the best choice. Sometimes a combination of small tools is more effective in their specific solution areas than one big system that's trying to do everything.
- Keep your eyes on the prize. Be sure to look at the big picture. What are you trying to accomplish by creating an intranet portal? Do you have a vision for where you want to go with it once you've accomplished your original purpose? Don't be afraid to choose functionality and usability over a fancy UI and eye candy design.
- Look beyond the tried and true. As your mother may have told you: "just because everyone jumps off a bridge doesn't mean you should too." The same goes for technology and portal platforms. Don't be afraid to look beyond the top tier products and try some of the new, emerging technologies. You just might be surprised what you find.
- Sometimes it's better to leave well enough alone. Some companies learn the hard way that platforms such as SharePoint are better when left alone. It's sometimes better to live with a platform's shortcomings rather than make changes and risk incongruities with the product upgrade path. This is especially true if you don't have the technical resources to accommodate the implications of the customization as the product changes over time.
- Technology must be scalable. Consult the vendor's technology strategy to ensure that the portal will be capable of evolving along with it.

Enterprise Mobile

THE MORE THINGS CHANGE THE MORE THEY REMAIN THE SAME

It’s nearly impossible to make a blanket statement about the state of mobile adoption within the enterprise. It would be just as accurate to say “it’s coming soon” as to say “mobile is an integrate part of enterprise strategy for serving employees’ needs.” That makes it challenging to prognosticate about the future of the mobile enterprise so for now we’ll tell you that when it comes to mobile portals there are innovators in this space and there are laggards. We’ve interviewed both and can affirm that each have valid reasons for where they are today.

While the mobile landscape outside the enterprise is a hotbed of innovation with major waves of improvements in both hardware and applications released all the time, inside the firewall there still hangs a “coming soon” sign announcing good intentions, a sense that it’s important, but progress toward this goal is not yet the standard.

“We consider a mobile intranet to be very important,” says Gruber from the City of Olante, Kansas. “Many staff members use tablets and smart phones to access the intranet, and we have created a mobile strategy to help us move toward building a mobile-friendly site within the next year to 18 months.”

“Users can access the site with a mobile device just like any other computer with a browser, but it’s not yet optimized for mobile viewing,” he says. “Only one application that is linked from the intranet, a type of wiki for documenting standard operating procedures called “OPro,” is optimized for mobile. It launched in December 2013.”

What’s Standing in the Way?

One thing to keep in mind regarding mobile is that it is fast moving. While the enterprise mobile landscape may look mired in caution and planning today, tomorrow everything could change. This is especially true because organizations have been watching, learning and planning for this inevitability for some time now.

“It’s not ‘here’,” says Starnawski. “and was deliberately de-scoped from the project timeframe for our implementation, but is expected and desired by staff. I expect it to be one of our key enhancements in the next 12 to 18 months.”

Many participants in this year’s research echoed this sentiment. Mobile is a priority but it’s also another big project and not done quickly or easily if done well.

Piper Jaffray was one of those companies in the last edition of this report for which mobile support was moving quickly. “A year ago it wasn’t an issue. It’s amazing how fast it evolved in a year.”

When Piper Jaffray began work on its new intranet redesign, mobile access wasn’t even included as part of the project. A year later, Swanson said she believed the requirement was likely to be escalated to a higher priority.

The struggle for Piper Jaffray, and for many companies, is first to figure out *what* to provide on mobile devices and then to figure out what can be supported by the current technology. The first thing organizations learn is that it’s not reasonable (or possible) to just open up the intranet to mobile access. Given the depth and complexity of most portal environments it's a project unto itself just to decide what to optimize for mobile, never mind to do the actual work of optimizing it.

Security has been another perpetual challenge for organizations. Incompatibilities between a company's mobile device standard and the portal platform itself can sometimes be difficult. That was the case at Piper Jaffrey. Due to industry regulations, all of the company's mobile information must be delivered based on role, just like it is on the site itself.

"We have to have the mobile device interpret the user ID just like the site does," says Swanson, "So until we can enforce security, we are trying to figure out what we want to do."

"Time" is what's standing in the way for Local PI. "With 54 websites already live and a further 100 to go live within the next six months, we want to concentrate on getting that right, before tackling the mobile issue," says Riding.

Lack of time is also behind Duke Energy's slow approach to mobile. "We planned to do some interviewing and research around how different areas of our business would use a 'mobile portal'," says Brown. "We want to begin with the key functionality that would be most useful, whether it be facilities directions, reports, phone directories or news feeds."

With a merger to contend with, the goal of a mobile intranet has been pushed off for now. "Our goal was to do this work in 2011," she says, "but we are now in the midst of a merger, and all of our resources are allocated to integrating our two company intranets."

Waiting to Do it Right

Mobile is something requested by users at Huntington Bank but they are going to have to wait until the company rolls out its new portal to have any real mobile experience. After a half-baked implementation on the company's current portal, mobile has been determined as a requirement for the new portal. To their credit they'd rather wait and do it right because they know just how hard it is to do.

"We are designing the new intranet completely with mobile in mind. Designing for mobile can help ensure clarity, focus and simplicity," says Greene. "Mobile experiences, by nature, need to be streamlined and intuitive. Most successful mobile experiences are very singular in the tasks they are trying to accomplish. The users have essentially asked for a set of singular tools, such as communication, search, news and connection. We are designing essentially a collection of the most needed tools with modularity that will allow for use within a corporate desktop environment as well on a remote mobile device."

The mobile experience of their current site is what's driving their desire to do a better job next time.

"Users can access the intranet on BlackBerry currently but the site is not optimized well if at all," he says. "It often takes forever to load and is nearly impossible to read since it is really just the same user interface as the normal intranet site you would access from a computer."

In the future they are working toward a more optimized mobile experience for BlackBerry, iPhone and iPad.

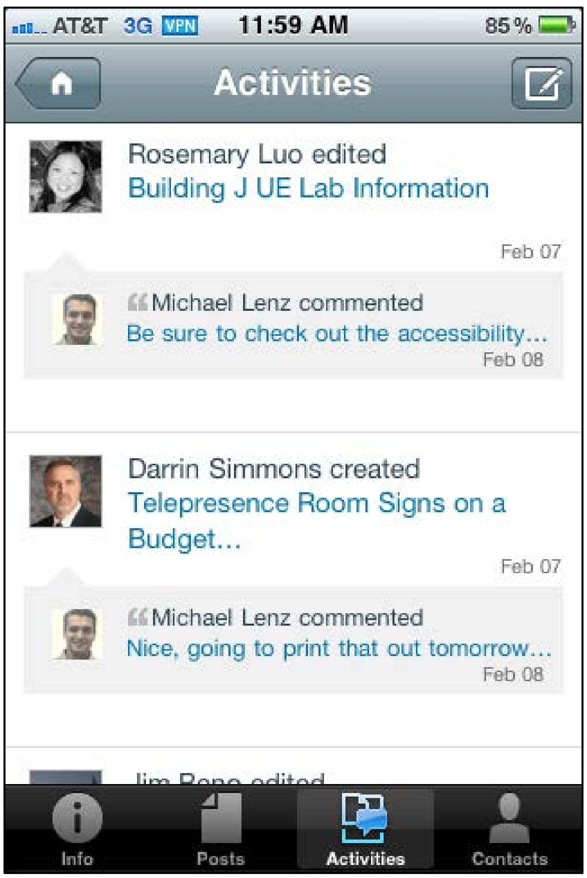
TAKING A PHASED APPROACH

Cisco Optimized the Mobile Portal One Group at a Time

Cisco, like many companies, has singled out a particular audience to target for mobile access in the first wave. Since it's difficult to both figure out what portal functionality should be offered on mobile devices and even harder to execute on that, it makes sense to target either a key audience of highly mobile users or segment a set of applications to optimize for mobile.

Currently, the primary mobile users are members of the company's sales force.

"They have been mobile-enabled for several years with access to Cisco's intranet via a number of devices (iPhone, Blackberry and Android) via our mobile VPN solution or Cisco AnyConnect. Our internal directory continues to be a key application available to our mobile users so they can connect to experts while on the road."

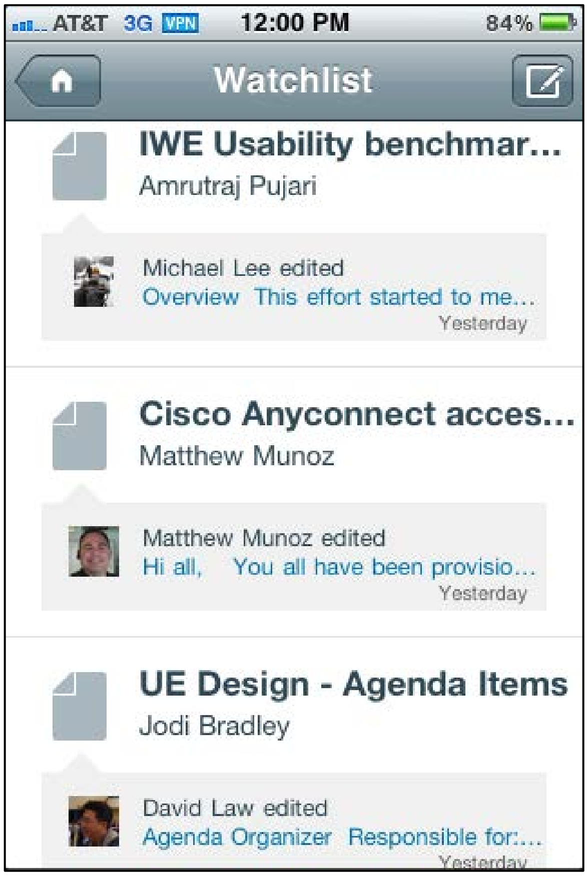


The mobile app for Cisco Quad (as seen on an iPhone) displays available options/functionality within the application.

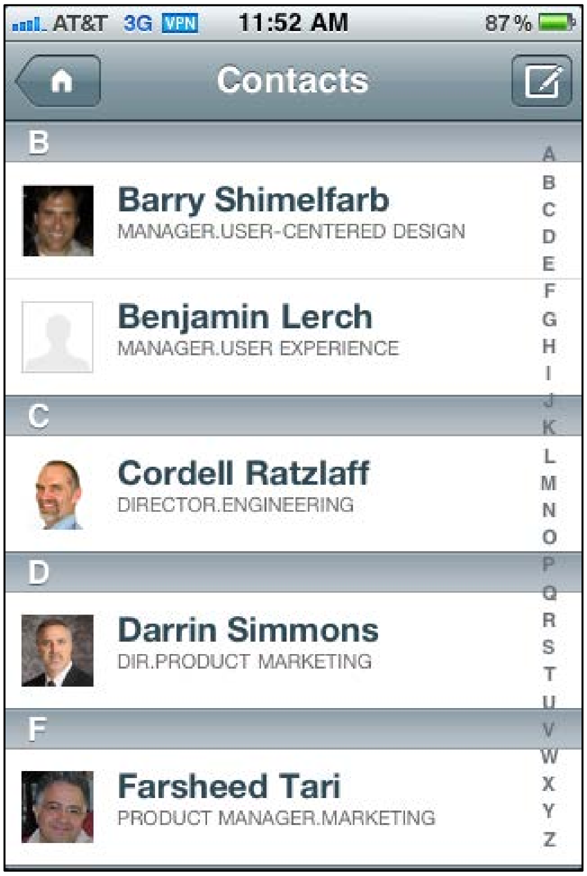
A set of robust services from the company's social media platform, Quad, was rolled out recently for access on the iPhone and iPad with plans for other devices to follow soon after. Users will be able microblog, check their "Activities Feed" and "Watch Lists," receive and view notifications, access their contacts with click-to-call and click-to-email enabled. In addition they will be able to join and leave communities and add, view or comment on Posts.

“The functionality for Quad will be in the form of a set of applications,” says Lenz, “much like your Facebook apps, with page optimization and mobile-specific features.”

The activities feed from Cisco Quad on iPhone.



The *Watchlist* from Cisco Quad on iPhone.



The people (contacts) list view from Cisco Quad on iPhone.

Creating Confidential Access at Goodwin Procter

Goodwin Procter has taken a segmented access approach also. Mobile access recently became an important aspect in one area of the company's intranet: secure communications between executive management and the partners. Because secretaries have complete access to their partners' mailboxes a new approach to secure communications that did not involve email needed to be designed. The solution was the creation of a secure area on the company intranet that only partners could access. This required that access be provided to this secure area from mobile devices for partners who were out of the office.

"The secure site was an ideal solution," says Kawa. "because partners could access it from their mobile devices and still email the link around. For any user without access, clicking on the link was denied access. Therefore secretaries with access to mailboxes could not access the secure site even though they had the link."

This secure site is now used on a regular basis for highly confidential matters and more often than not is accessed from a mobile device.

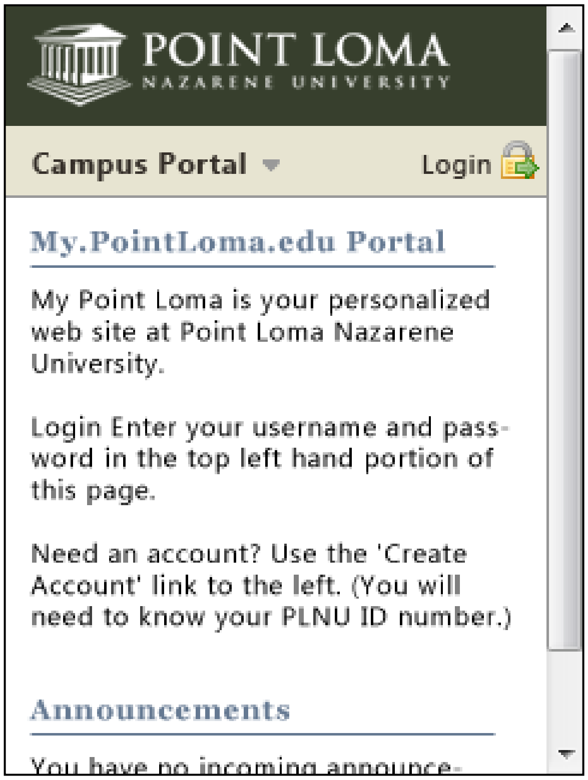
TAKING THE LEAD

Point Loma Nazarene University

Though most companies see their mobile initiatives as at least a few years out, a few that we interviewed are taking a serious look at the possibilities mobile offers for the portal today.

Jeremy Edmiston of Point Loma Nazarene University reports, "We are actually working on plans for a mobile portal environment. We have been tracking portal usage and have seen some access from mobile devices, specifically an increased amount from iPhones that we anticipate to grow even larger with Apple's marketing."

Edmiston says the university's portal currently offers some limited mobile functionality, "but as for the full portal, we are still in the planning phase for that."



A mockup of a potential interface for mobile portal access at Point Loma Nazarene University.

"The primary issue we are looking at is functionality," says Edmiston. "Not all of the portal resources are relevant to mobile usage scenarios, so we are paring down the capabilities of the portal and looking at exposing only those features that could be beneficial to a mobile user."

One potential usage scenario the team has been working on is the school's meal plan application, mentioned above, where students can check their meal plan account balances and may someday be able to also check the cafeteria line by accessing a webcam feed into the portal.

If the portal offered mobile access for this particular application, "it would allow our students to rollout of bed and check meal credits and the line into the cafeteria from their phone on the way to class," say Edmiston. "This would allow them to make a quick decision if they have the meal credits or the time to stop before class."

Probably not a make-or-break application for most portals, but this application has been a big win for the portal team in terms of user adoption, a key success determinant. Adding mobile functionality to an already popular application would give the portal another boost with users.

But before this and other more mission-critical mobile functionality can be rolled out, Edmiston and his team have to solve many of the same issues other organizations are working through: hardware/software compatibility, security, prioritizing what information and functionality to make accessible first, and one of the biggest challenges when moving data to the small screen: the user experience.

"We have a lot of work to do not only on the UI, but the interactions with different devices (touch/non-touch, keypad/keyboard)," says Edmiston.

Designing for Mobile First at Persistent Systems

Persistent Systems' mobile first design strategy emerged from the results of a contextual study.

"After a profound contextual study, we realized that our intranet site and the way we use it needs a fundamental change," says Nitin. "We decided to create this transformation based on three important things: treating users as human beings, increasing productivity significantly, and considering the mobile first approach."

The overarching goal was to transform the company's existing fragmented and rigid user experience into a cohesive, flexible, and personalized experience. Key to achieving that goal was mobility.

"Mobility is the game changer for IT industry," says Bhishikar. "So it was high time that [our] intranet functionality is offered on mobile as well."

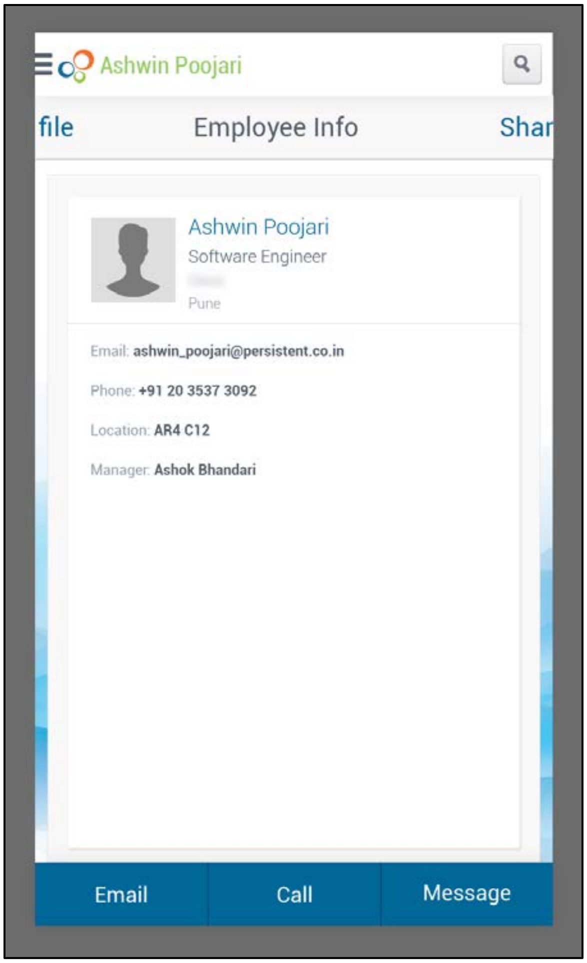
"Mobility first" became the team's design mantra.

The company's existing intranet was nearly ten years old and was essentially a collection of links to various apps and systems. "It had long outlived its purpose," says Bhishikar. "It was time to move to a personalized, role aware, and dashboard-based intranet available anytime, anywhere."

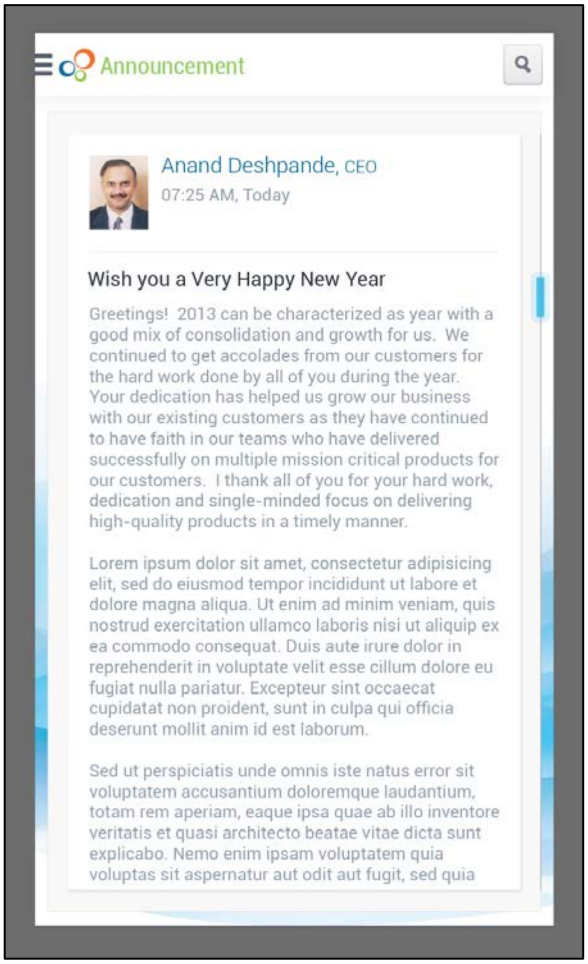
The company's new intranet, *Pi* was the result of the team putting the mobile needs of users ahead of those of the desktop.

"We classified information and identified what information needs to be mobile and decided include only relevant information," says Bhishikar. "Our Mobile intranet is hence sleek and more focused. Only information that is needed 'on the go' is what has been added to mobile roadmap."

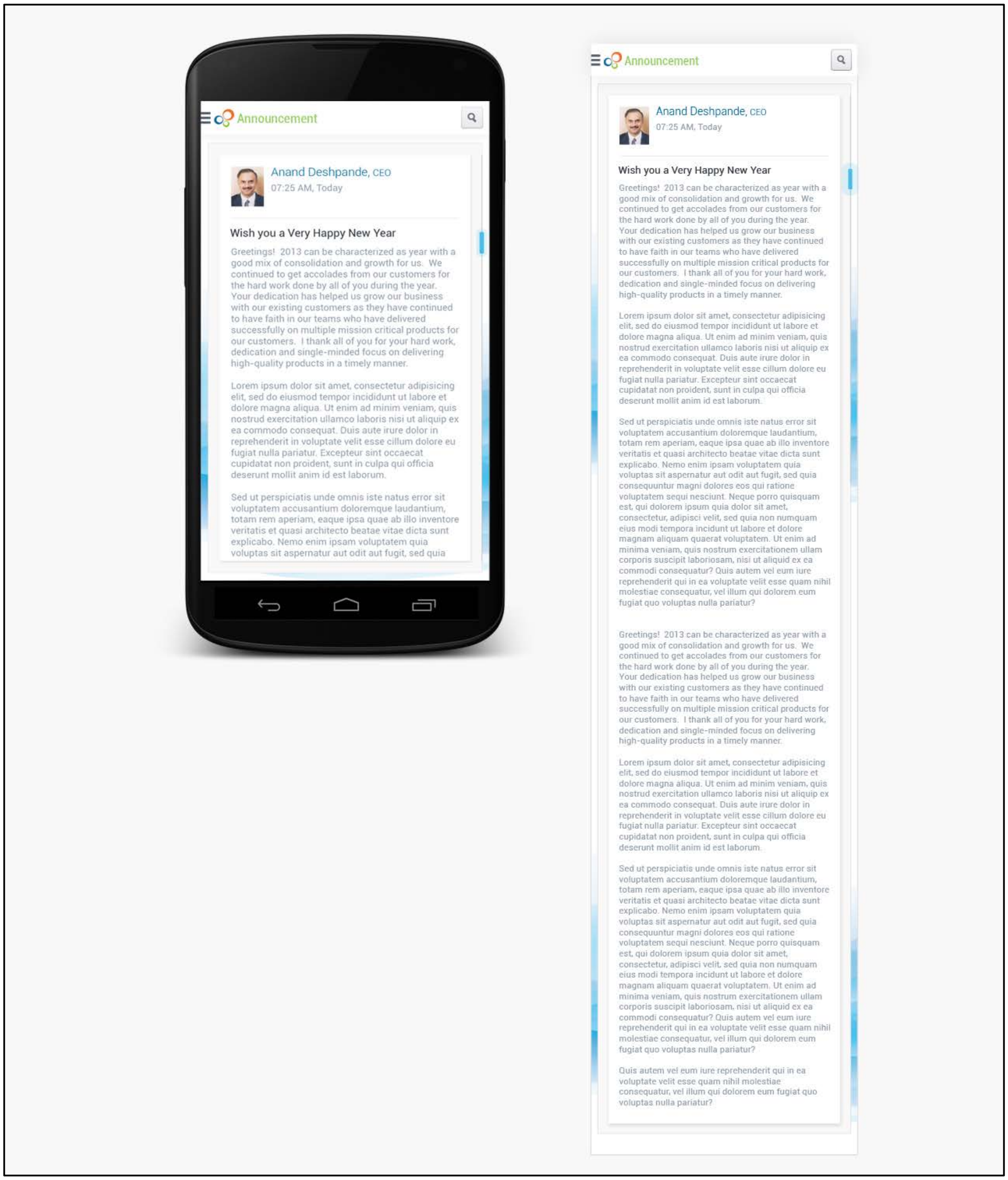
"Emergency contacts, inter-office shuttle details, company news and CXO messages are some of the information items that have already been offered on the mobile. Also the urgent items like approvals (collated from all line of business applications) and reminders are also made available on mobile. Leave & Travel (both the application and approval process) are available on mobile as well," he says.



This shows the employee profile page of the Persistent Systems portal on a mobile device. It also gives users the option to call, send an email or send message to that person.



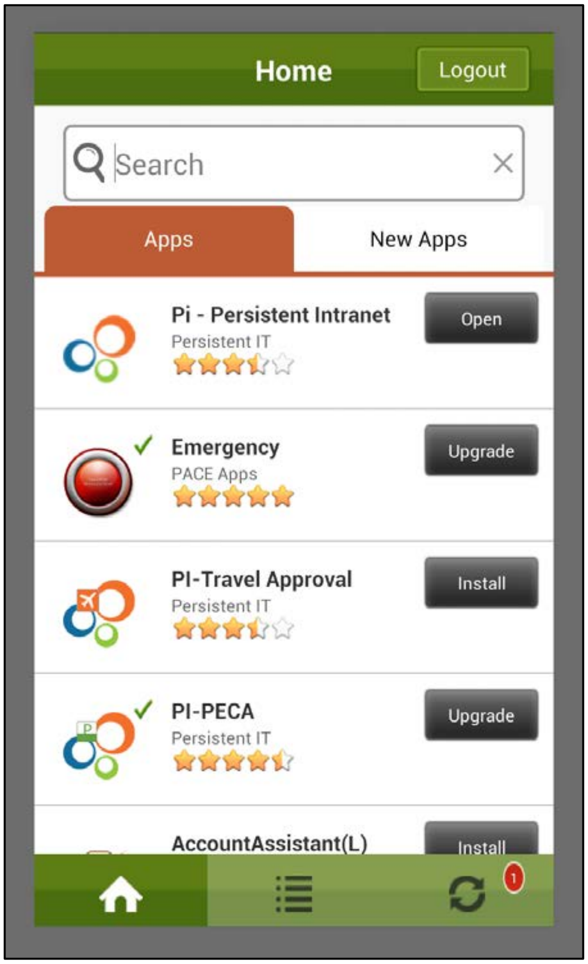
The mobile announcements page on the Persistent Systems portal is where an employee can read announcements from either higher management or specific departments.



This image shows the announcement detail page on the Persistent Systems portal as it appears on a mobile device (left) and also what the whole page looks like as a user scrolls.

There are many more features in development that will be made available on a mobile app soon. The company has three active apps (as of this writing) and plans on releasing at least two every month, for the foreseeable future.

Bhishikar and his team believe this app-based approach is the best route to deliver functionality. "When it comes to mobile information access, going with native apps is what delivers the best performance and user experience," he says.



This is the homepage of the PEAS, an app gallery at Persistent Systems where users can browse and download all available apps.

Mobile is the Killer App at Coca-Cola Enterprises

With an increasingly mobile workforce, and hundreds of field-based roles becoming equipped with company smartphones, CCE recognized a game-changing opportunity to create a mobile version of *iConnect* and transform the site's reach and efficiency. It did so with the with the following guiding principles in mind:

- Re-use existing technology to avoid significant costs and 'double-publishing' of content
- Every element of the user experience had to be made for mobile
- It had to work on both iPhones and Androids — company issued or privately owned
- It had to deliver the most critical content and functionality for the target audience — which the project team identified as daily news and key HR transactions

- Like the main *iConnect* site, it had to be multi-lingual and remember employees' language settings.

In April 2012, CCE launched its new intranet, *iConnect*, migrating several separate sites to one integrated SharePoint solution in support of the company's desire to have its 13,000 employees think and act more as one business. Considerable efforts were made to make *iConnect* as accessible as possible, leading the organization to take great efforts to launch a highly functional mobile version.

In April 2013, the company launched *iConnect Mobile* across nine countries (US, Great Britain, France, Belgium, Netherlands, Luxembourg, Norway, Sweden and Bulgaria) and employee feedback and uptake has been overwhelmingly positive. The company's mobile site provides quick access to quick read information or quick process transactions that can easily be completed in spare minutes between customer meetings. It's also device agnostic and as such can be accessed from any device anywhere.

Jomari Jonck, Senior Manager, Digital Communications, HR Strategy explains how the team delivered the mobile site:

- "The URL for the login page (https://employee.cokecce.com) is the same whether a user is accessing via a home PC or a smartphone, but it detects the device and presents the right design. This responsive design approach drives adoption through consistent use of a simple, well-known web address."
- "We've created a mobile interface (see screenshots below) that's compliant with SharePoint 2010 before Microsoft even developed one, using an HTML 5 mobile masterpage. When our IT team presented *iConnect Mobile*'s technical architecture at Microsoft's annual SharePoint conference, they were told no other Microsoft Office365 dedicated customer was doing this type of mobile work."
- "*iConnect Mobile* allows employees to book leave and view payslips through single-sign-on access to SAP applications that have been re-designed specifically for the smartphone. Feedback from users about this functionality is so strong that we're now reverse-engineering the design of the desktop versions of these SAP tools."

The results of this initiative have been nothing short of phenomenal. In just a few months, the team had already realized the following benefits from the launch version of *iConnect Mobile*:

- 13,000 page views from 2,100 unique users, with 92% of them visiting more than one page per session
- Global news readership up by 50% — demonstrating that employees are taking more interest in stories from other CCE countries
- 8,000 leave requests and approvals completed; 5,000 payslips viewed; 2,500 labor distribution reports verified for SOX compliance. ("This makes HR very happy," notes Phillips.)
- 10% of visits are from personal smartphones — meaning even employees without a CCE-issued device are accessing *iConnect* content.

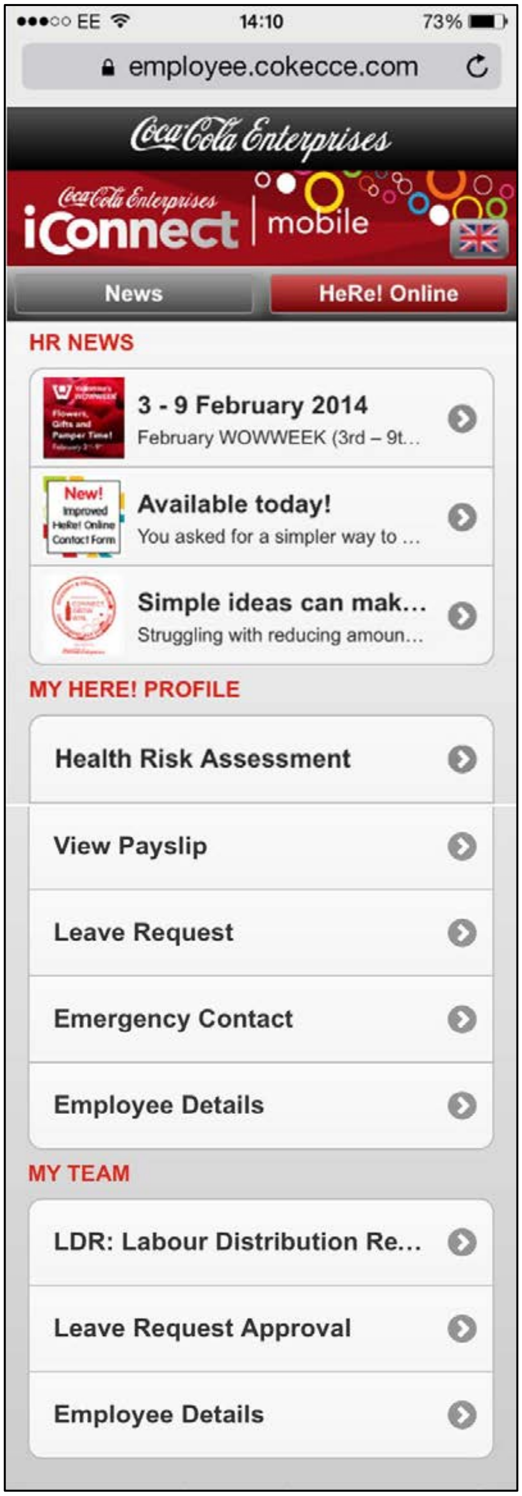
- 50% of senior leaders and 30% of managers are using *iConnect Mobile*, helping to build buy-in and making them feel more informed and efficient.

"In addition," says Jonck, "feedback from employees on the new intranet has been fantastic." Here are a few example testimonials:

> "Brilliant … . This goes such a long way in helping me manage my time and work life balance … Simple things like this enable me to spend more time doing the important things as opposed to waiting for the laptop to fire up and log on just to look at a payslip … . Great work!" (Field Sales Manager, Great Britain)
>
> "iConnect Mobile is fantastic. As the world moves to mobile, it's great that in CCE we have this technology available." (Group Operations Director, Supply Chain)
>
> "Awesomely good job! A great solution for us who use the phone and the tablet often!" (Field Sales, Sweden)
>
> "iConnect Mobile looks fantastic. I can't wait to talk about it at our team conference next month." (Vice President, Sales & Marketing, Great Britain)
>
> "The iConnect team have done it again. Not content with delivering an award-winning intranet in 2012, they have re-defined the landscape to bring the best content to where our field employees need it the most — on their smartphones. This is what enterprise mobility is about. Don't stop innovating." (Senior VP and Chief Information Officer)
>
> "It's critical for our employees to feel informed about our business, especially those who are on the front line representing our company with customers. iConnect Mobile has only been live for a few months but is already making a significant difference to our people. The project team have created a demand for even more and I know they will continue to rise to the challenge." (Senior VP, Public Affairs and Communications)

Initial feedback has been so strong that development has already started on iConnect Mobile 2.0. This update will include push notifications for news alerts, and new tools for time and talent management and travel and expenses.

This screenshot shows the first section of the CCE iConnect app mobile homepage displaying three local and three global news items.



The mobile HR section of the Coca-Cola Enterprises app provides do-it-yourself transactions such as access to online pay slips, leave requests, etc. It also includes a section targeted to people managers only (*My Team*).

BEST PRACTICES

- Plan for a mobile future. Though mobile support on portals is not yet widespread, it will soon be a high priority required feature. When planning portals today take into account what features and information are appropriate for mobile distribution.
- It's not all or nothing. Companies should not feel compelled to make the whole portal available on mobile devices. On the contrary, it's better to provide the most important or high demand features for mobile access rather than expecting users to wade through a whole world of portal features.
- Base decisions on research. Not everything needs to be optimized for mobile, but base the decision of what to include and what to leave out on research with users rather than the opinions of decision-makers.
- Usability matters even more on mobile. It's one thing to struggle to find things or use applications in a browser-based environment but on the tiny screen of a mobile handset usability is paramount for even the most basic tasks. Don't skimp on usability when creating mobile apps and providing mobile portal access.
- Tablets can be a bridge. Because of the bigger screens, it's easier to create a good user experience for tablets. In contrast, tiny screens are much more demanding and require a stricter design. Experience from fielding a tablet design with a smaller user segment can serve as a proving ground before tackling the harder work of offering mobile design on phones.[17]
- Design for mobile. The mobile device is very different from the desktop and a simple port of the solution to the smartphone will not create a winning experience for employees.
- Listen to users. Take time to listen to potential users and understand what information or transactions they need at their fingertips. Cross-reference this demand with what is practical to deliver to a 3.5" touch-screen.
- Design with the small screen in mind. Image sizes, text sizes, buttons and more all need to be reconsidered.
- Design with touch in mind: Employees will navigate and interact with the mobile version of the intranet in a very different way. Further, they will have different (often higher) expectations of the user interface. Test prototypes against these expectations regularly to ensure you don't disappoint.

[17] See our separate report, *Mobile Intranets and Enterprise Apps* for a larger set of design guidelines for mobile phone user experience.

Collaboration and Social Tools

Social media tools are so much a part of everyday life that it almost seems old-fashioned to discuss them as a stand-alone entity or a feature to be "considered" on a portal. Social communication and collaboration is tightly woven into the fabric of society and yet inside the enterprise many companies are playing catch up on their portals: trying to figure out how to govern the use of social tools, trying to change the perception of what communication can and should be controlled (and what can't — and shouldn't) and trying to evangelize the business case for an open environment. While social tools are commonplace in the outside world, inside the corporate firewall their use is still a work in progress. Social is moving into the enterprise in the same manner as most things do in the enterprise — slowly.

However, a funny thing happened while organizations were figuring out how to manage a social toolset for their employees. A whole generation of workers came of age whose cohorts can't remember a time when these tools weren't the default.

"As social sites (like Facebook and LinkedIn) and social tools (like Skype/chat and Twitter) become more popular, they become the interaction models and standard set of tools for users outside of work," says Huntington's Greene. "Users already know how to use and make the most of these tools. These tools bring people and their experiences, their knowledge together. Couple familiarities with the power of these tools and you have a great chance at quick adoption, satisfaction with use and increased productivity."

We cover the topic of Enterprise 2.0 in depth in our report: *Social Features on Intranets: Case Studies of Enterprise 2.0*,[18] but it's worth exploring how these topics play out in portal-specific environments.

NEW TOOLS NEW CHALLENGES

Our research finds that companies seem to land in one of three places along the continuum of social adoption:

- Not ready: These organizations are not ready for social or not fully convinced it will be an imperative for their organization. They are either not culturally ready to embrace open communication or they don't trust their employees will do the right thing when given the freedom of open forums. For these organizations social will be a struggle, but in order to remain competitive they may have to figure it out whether they want to or not.

[18] *Social Features on Intranets: Case Studies of Enterprise 2.0*, Nielsen Norman Group.

- Cautiously optimistic: Many companies are testing the water, adding individual tools to the toolkit or adopting a social stack that sits beside the corporate intranet or portal. These organizations are not only testing the impact of social inside the enterprise they are also searching for best practices to address the many challenges that come along with the benefits of social enterprise. These companies may not have everything figured out but they are forging ahead, knowing that they must find ways to make social work.
- Pushing the envelope: Some companies saw the writing on the wall and embraced social tools as soon as they were available (or as soon as they could build them). These organizations have mature social platforms which are fully integrated into the portal environment, not individuals tools sitting next to other tools. These organizations have moved beyond the first wave of experimentation and reaping the benefits of fast-track, open communication. Their social tools are proven so they are now facing the problems of social maturation, struggling with integration and measurement challenges.

Social Tools Must Support a Business Need

Another finding that holds true from the Enterprise 2.0 report is that tools for tools sake don't work. As with most sound technology decisions there must be a business need to fill otherwise social tools aren't effective.

At Goodwin Procter the introduction of social tools into the workplace has resulted in additional challenges for the team. "The biggest challenge is getting the users to really understand the business problem that needs to be solved rather than simply addressing the 'I need a wiki or blog'," says Kawa. "It is easy for these social tools to clutter up or decrease the value of the portal."

"This is why the process is formalized. Part of the formal process involves understanding the business need and then evaluating whether this technology is the correct way to proceed. Many times users hear about a blog or wiki and say 'that's what I need', he says.

EARLY ADOPTERS REAP THE BENEFITS

Cisco has offered collaboration technologies to its workforce for over a decade, with early tools such as collaboration spaces giving way to more sophisticated offerings. Something that became clear in our interviews for the Enterprise 2.0 report is that companies, such as Cisco that started early with social tools are now reaping the benefits, while others struggle to just get started.

"Cisco is a mature organization when we look at adoption of collaboration capabilities internally," says Lenz. "Collaboration technologies have been available through our intranet, to our workforce, for over a decade. Wikis, blogs and discussion forums have also been leveraged extensively since their initial implementations."

"We have already moved through the intranet Web 2.0 phase ourselves," he says. "The challenges for our internal programs and products today are for those issues that most people will see in the next two to three years."

Cisco places social tools at the core of its business. In fact, collaboration is at the heart of the company's intranet portal, so much so that they are currently transitioning to a social software platform called Quad.

"The collaborative and cross-functional nature of work at Cisco that spans many markets, languages, geographies and functions has necessitated a platform that allows information sharing, personalized productivity and cross-functional collaboration without the operational overhead that comes with traditional portals," says Lenz.

Quad marks the evolution of the company's portal from "tools" to an integrated collaboration approach.

"Quad combines an enterprise collaboration platform with productivity portlets/applications," he says, "YouTube for the enterprise (Cisco Show and Share), document management capabilities and real-time collaboration such as IM and online video conferencing (WebEx)."

The demand of internal organizations to move to this new platform is a testament to the enterprise demand for collaborative web technologies at Cisco.

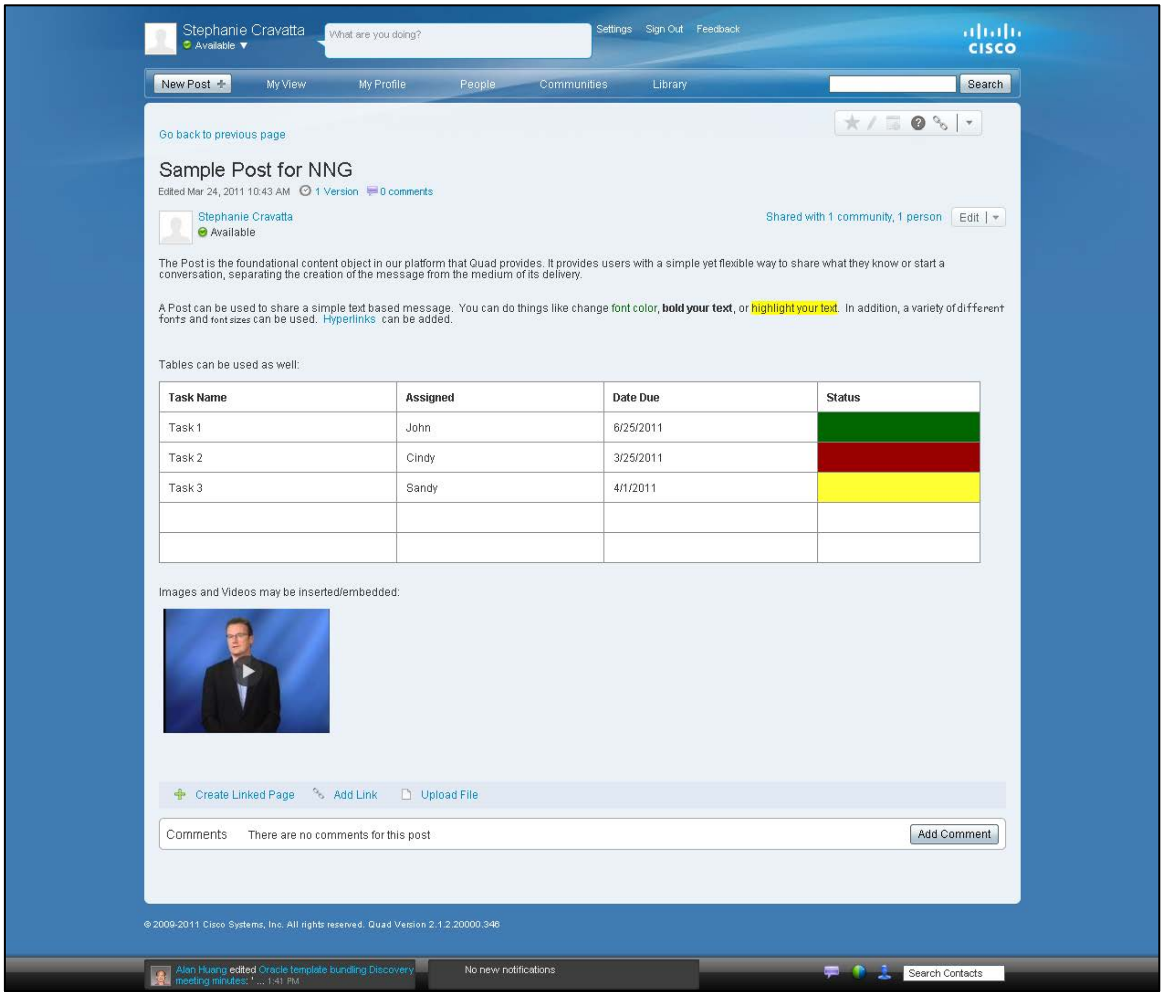
Cisco employees working together on an initiative or a project can use a community space to share project-specific documents, files, video and use discussion forums and project-specific productivity tools (portlets). These communities are also increasingly used to host virtual company events that combine TelePresence, real-time web video and chat room environments to bring together geographically dispersed audiences.

All employees have a profile (*My Profile*) that pulls basic employee information from the corporate directory and allows them to update it with their expertise and interest tags, their own blog and/or a list of reputation-building publications. The profile information, including click-to-chat, click-to-call, and presence (instant messaging availability), is available through integration with Cisco's Unified Communications so it is available whenever a user rolls over the name of a post author, the name of a commenter or a person whose name appears in a search result. Users can also write on each other's walls and view their personal blogs.

The good news for organizations that are not as far along as Cisco is today is that even they are still working out the details, including the best governance paradigm. "Governance of this platform is emerging as a hot topic at Cisco," says Lenz.

Though the governance at CISCO is nascent, it is built a foundation of trust.

"Governance is the balance between open collaboration and the ability to set boundaries to the unstructured world of social enterprise," he says. "Rogue behavior is not the centerpiece of enterprise social governance. Since all authors are known and visible, and employees are expected to follow our Business Code of Conduct, the platform is basically self-regulatory."



An example of a *Post* on Cisco's Quad and some basic formatting and functionality that can be utilized within.

READINESS COMES IN STAGES

Three years ago when we published the previous edition of this report we wrote that Enterprise 2.0 was "coming soon." That statement still pretty much holds true, so it begs the question: what's holding back progress?

Some companies still operate with the mind set that collaboration is what takes place in team rooms and the like, while social is something lighter and less work-related.

"Collaborative tools are work spaces that we provide on the site for teams to use as they wish," says Think Mutual Bank's Ryan. "Social tools are company wide and less work related. We have news, blogs, profiles of employees showing their interests and special expertise, and community activities with slide shows, drawings, polls, etc. These help our employees feel the culture of the bank across our locations and unify us, everyone knowing the latest at the same time."

"We have enjoyed getting to see comments from each other in regard to blog posts, and photo galleries from events at various locations," she says. "Our live holiday party was better than ever after we connected all year through our intranet. We are seeing people move around more in the company and taking new roles. Something as simple as seeing the photo of the person that you are about to talk to can be so positive and important for building relationships."

Social tools used to enhance work relationships and effective customer support are considered part of the core purpose of the intranet at Think Mutual.

"We currently use social tools sparingly with purpose," says Stiller, "such as our CEO blog, where employees can comment openly on a topic suggested. The capability to send feedback directly to owners of the content on the page was a key feature that changed the mindset of what success was regarding the portal. This created an accountability between the owner and user of the content, a social connection across functions that has a collaborative purpose in delivery of accurate information and streamlined service, and builds trust and relationship."

"In addition," she says, "People use Facebook and other sources for fun sharing on their personal time. Our site needs to have a professional appearance as it provides resources that customers could view as our employees use it. Sometimes social tools aren't front and center in a business because the workers don't see the value. Not everyone immediately recognizes the value of social collaboration."

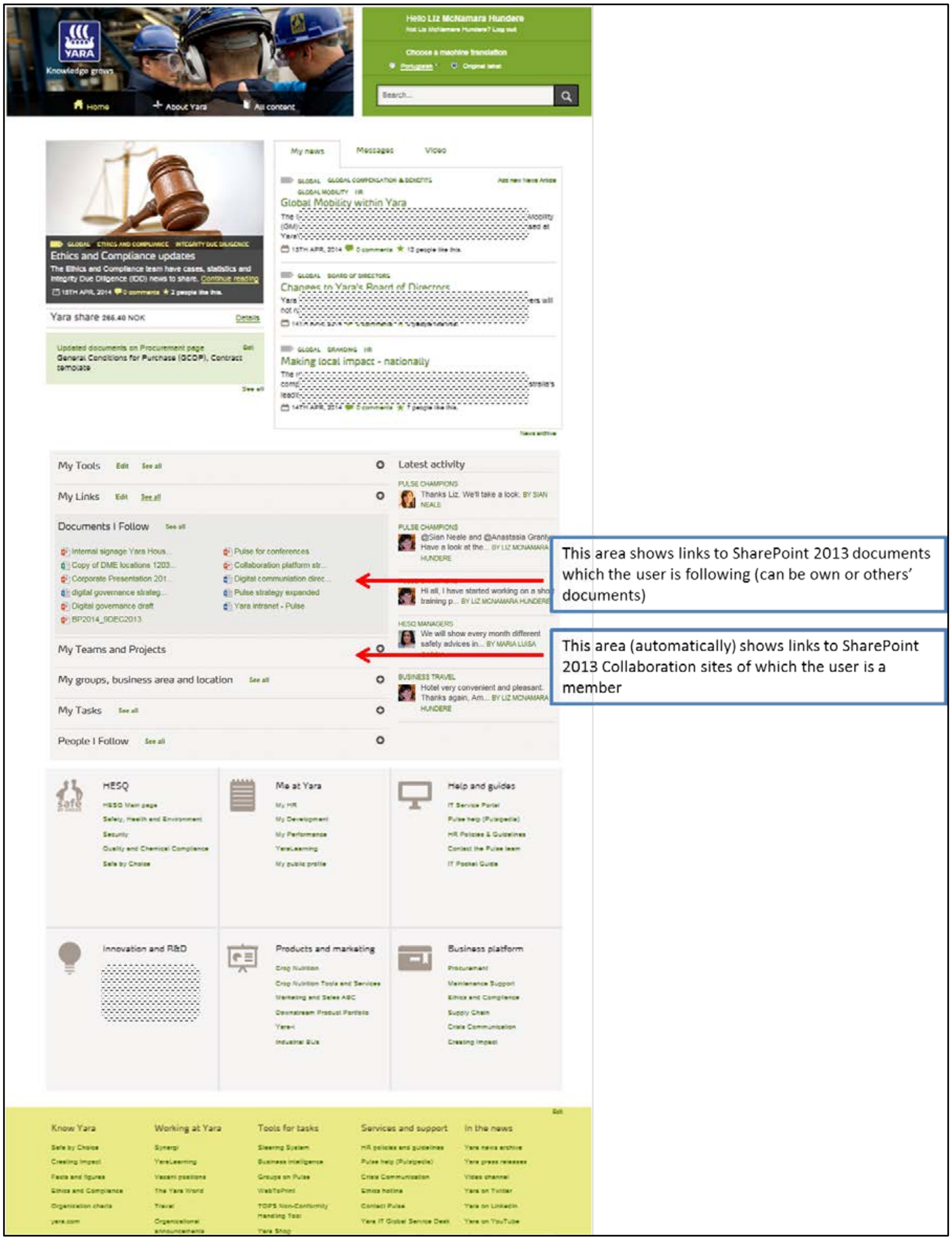
"We have run a number of pilots with social media internally, over the past seven years," says Green of Canada's Department of Transportation, "and staff simply weren't receptive or engaged. They don't see social media as a tool to help them work better: at least not yet. There are also government-wide collaboration (wiki) and social media (social networking, blog, microblog) tools available, so an internal flavor was not a priority. Introducing collaboration and social media is a full time project, and we are still considering it down the road."

Social Collaboration — Still On the Fringes

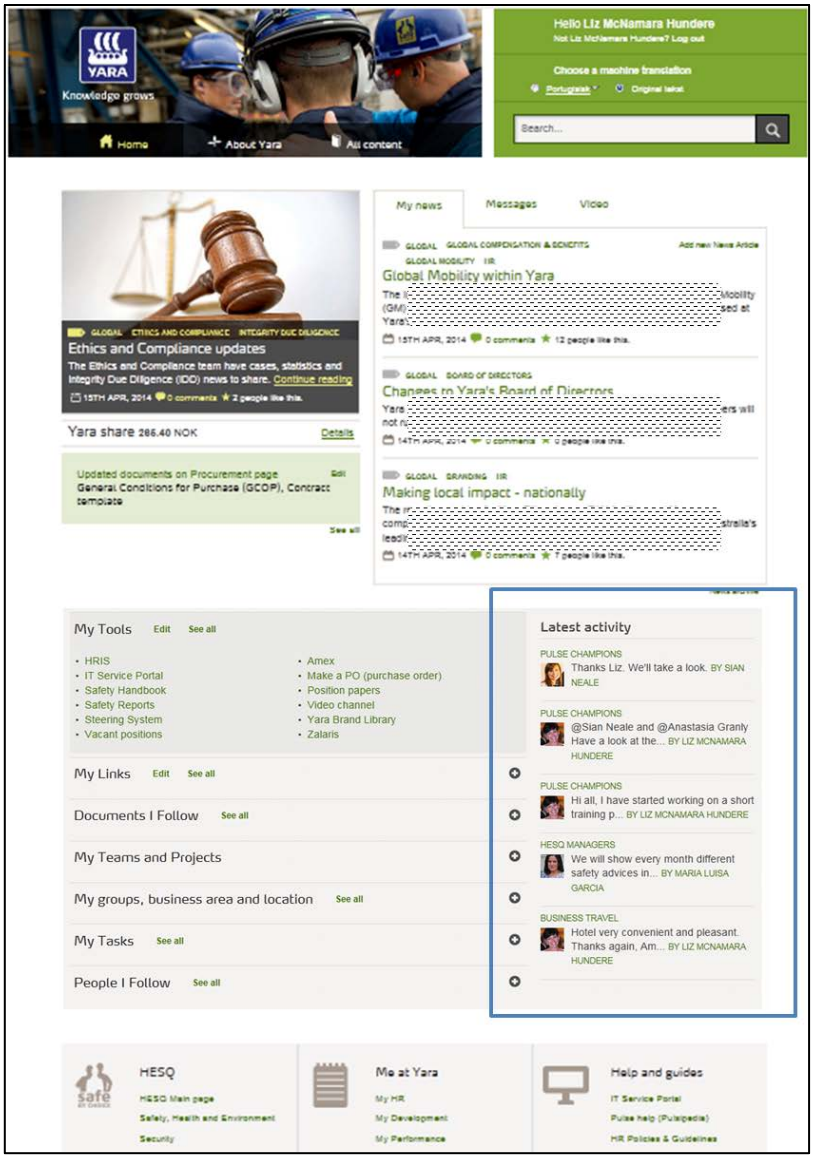
For most companies, the first challenge is to get the portal up and running. Distribution of information and access to tools are the first order of business, and collaboration is often a later priority. Sometimes companies use a portal launch or a major re-design as a window of opportunity to introduce social collaboration. Yara took this approach.

"We had zero social media on our old portal," says McNamara. "It might not be at the center of our portal strategy right now, but it certainly has a prominent position."

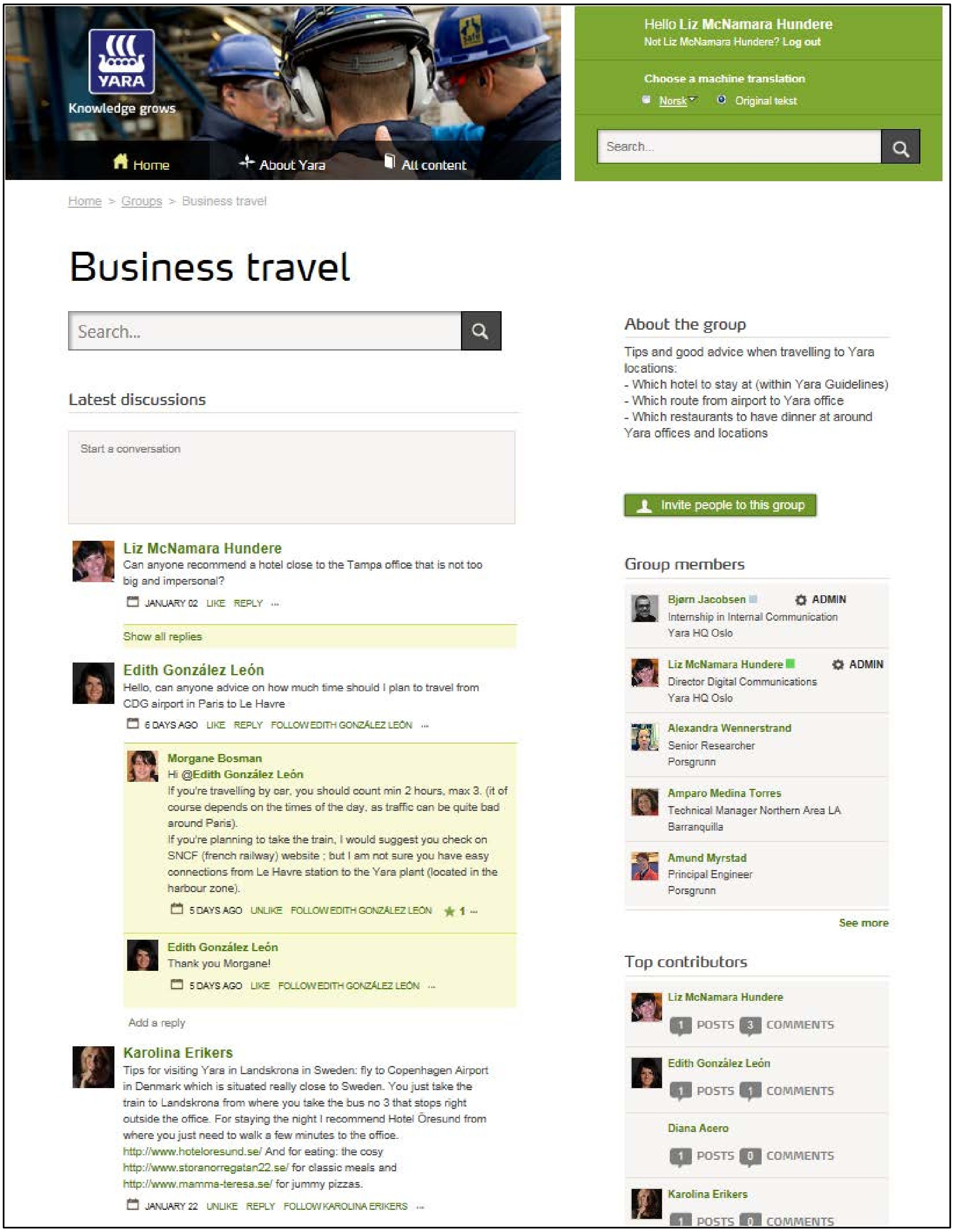
"We are using SharePoint OOTB social features to connect people across the organization, and open up the lines of communication," she says. "Two of the intranet's goals are to promote knowledge sharing and build a common internal culture. Social features are seen as a way of helping us achieve those goals. People are testing the water, not quite sure how this will work and whether it's right for them. But we are convinced social media can drive our knowledge business and we continue to promote it. There is lively interest both from people using them actively, and others interested in how they might in the near future."



This part of the Yara front page is called the Digital Workplace. In one dialog box users find links to the team and project sites of which they are member. In another, they see links to the collaboration documents that they are following.



On the Yara homepage users see updates from the groups in which they are a member.



Discussion groups are very new on Yara's intranet. This page is an example of a special interest group related to business travel.

At Canada's Department of Transport the top section of the homepage is used to highlight the company calendar, special alerts related to system or security issues, a Facebook-like social news feed that is updated daily, and a personal area where employees can access favorite pages, see site updates at a glance, and edit their own profile with a click of a pencil (icon).

For every company that embraces collaboration with open arms there are probably ten companies like ANZ where collaboration still means discussion forums or an executive blog, an organization where there are still many obstacles before Enterprise 2.0 is truly "coming soon."

"In the current intranet, social media is not really happening," says Nachreiner. "For the intranet upgrade project we are trying to capitalize on the benefits that social tools can provide in a corporate environment. There is a certain ambivalence between recognizing the need for furthering the social and collaborative side of the organization and concerns around staff productivity and information security."

Many companies see both the value of the tools and also the cultural change that will be necessary to accommodate the use of these tools. So for them, the challenge is overcoming the risk to make way for the reward.

"We do see collaborative tools at the center of the new intranet and connecting people as one of the things it needs to do in order to be successful," says Nachreiner. "We are aware though, that cultural change will be needed to further the understanding for the benefits this can bring to the organization, the willingness to share knowledge and collaborate and the readiness to be approached at any time for ones expertise. This will be as important as great technology or even the implementation to provide a superior user experience."

On the Edge of the Abyss: Ready to Jump

At Goodwin Procter social tools have not taken center stage yet, but the company is ready to take the plunge.

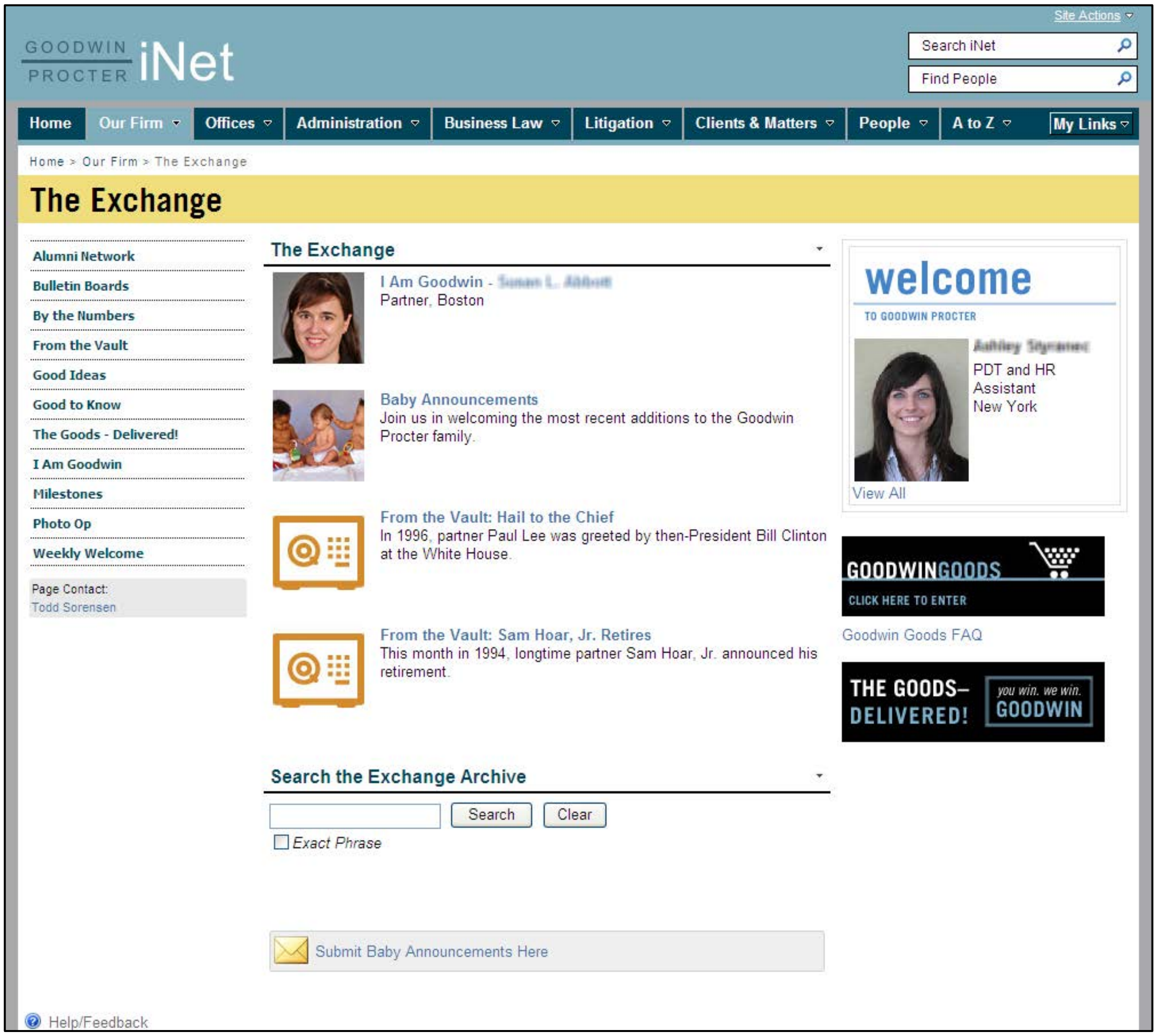
"Social media is currently on the edge of our portal strategy but it's beginning to evolve," says Kawa. "The use of wikis and blogs has really taken off since our re-design initiative but it's still considered a tool at the department or practice level as opposed to an overall strategy. Many practices have leveraged wikis and blogs for the dissemination of information and for collaboration."

Another company that sees the potential value is Huntington Bank.

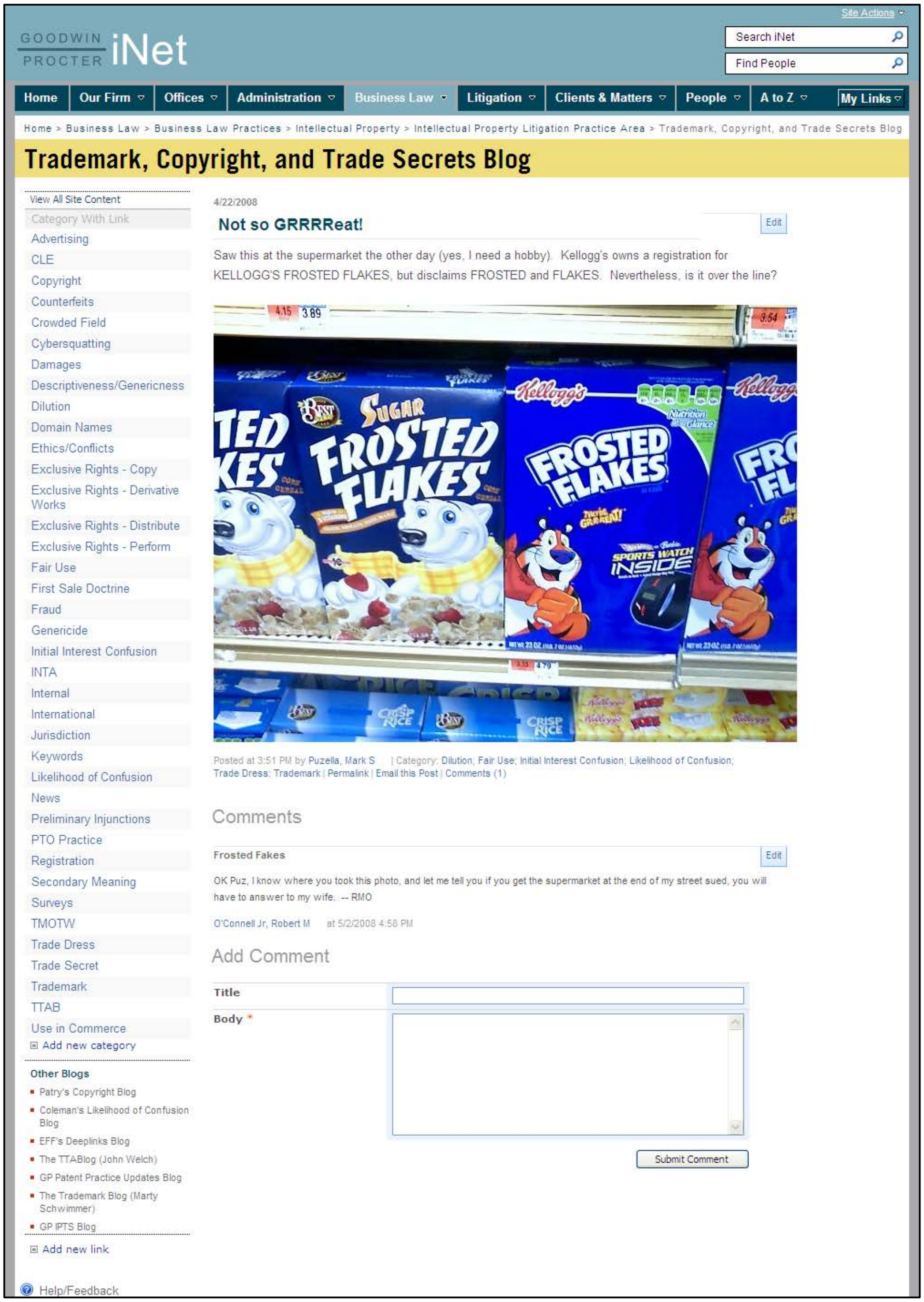
"We're sort of on the edge and I think the social media possibilities could be hugely valuable," says Smith. "The ability for colleagues to interact with news on the site via comments and sharing stories; the ability to post a question and get feedback; the potential to do polling and create profiles, etc."

It just makes sense for the company to take what they have to the next level.

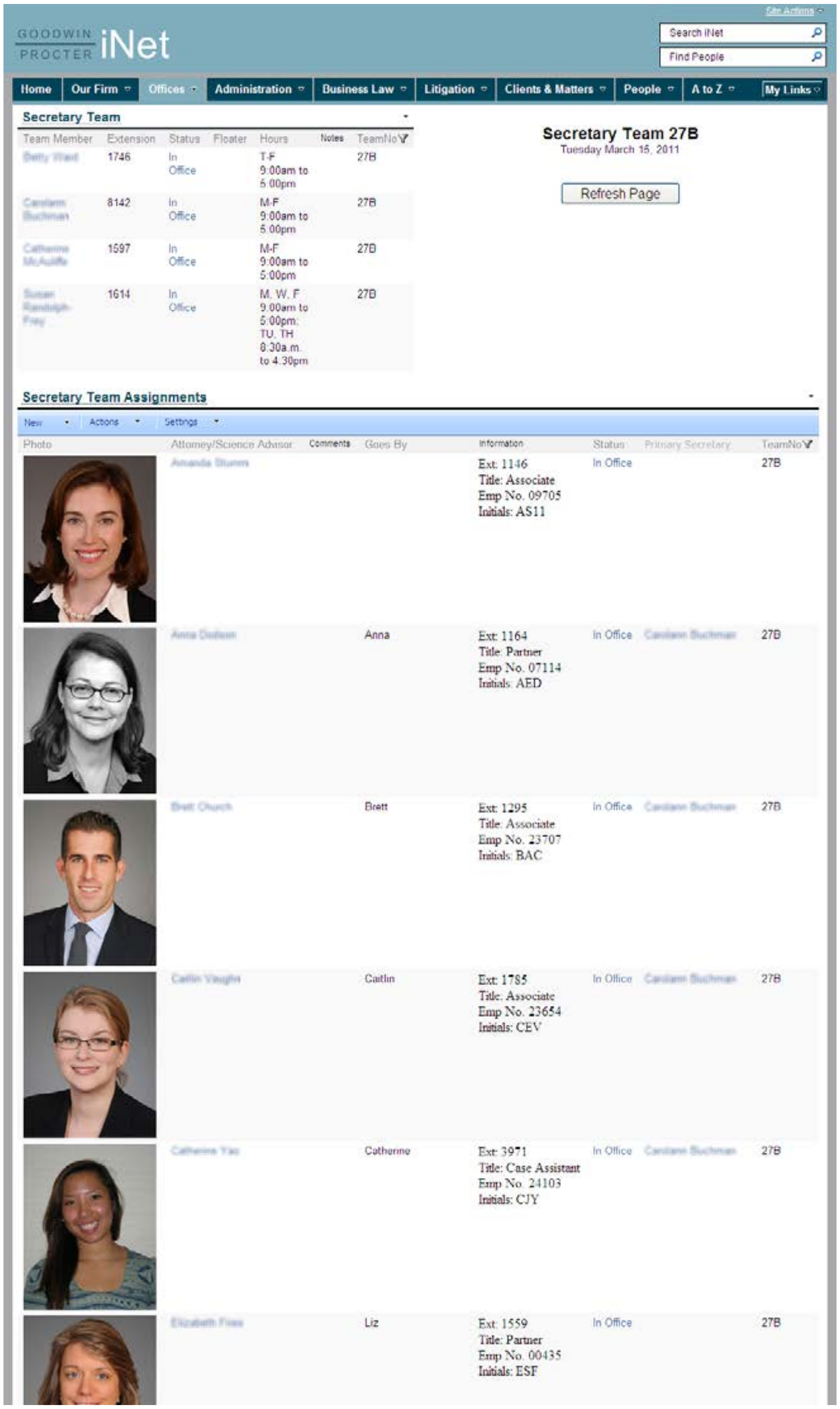
"We sort of already have profile information," she says. "So why not take it to the next level beyond who someone's HR generalist is. I think it encourages an environment of collaboration that can help with referrals and customer relationship management. The intranet should create a collaboration environment even with the actual sales taking place in another platform."



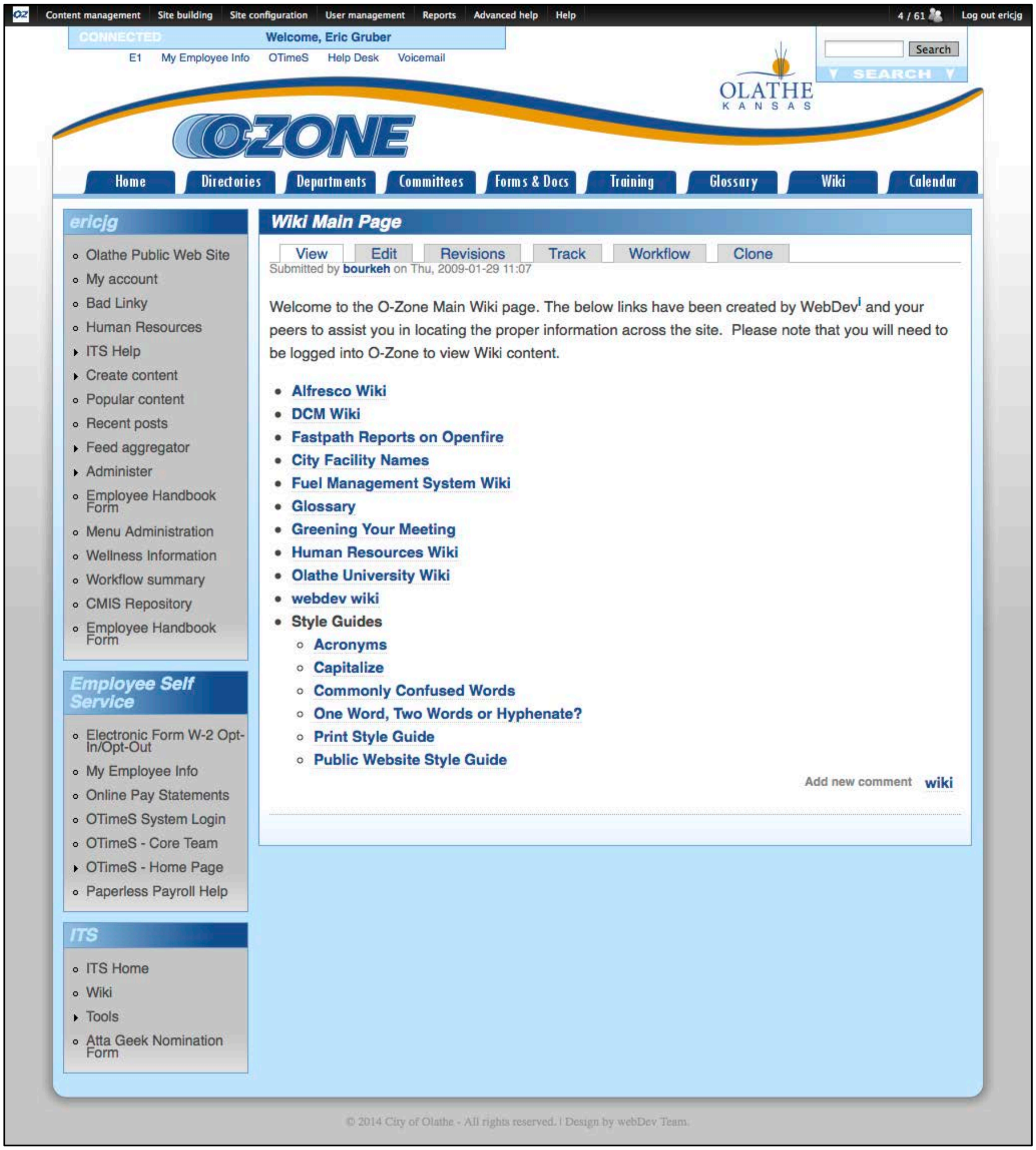
This is the homepage for the social networking site on Goodwin Procter's intranet. The page features social information and employee spotlight information as well as firm history and fun facts. Employees have the ability to send thank you notes through an automated system called Goods Delivered. Each week an existing employee is spotlighted and new employees are introduced. Users have the ability to search the social site for past articles and spotlighted employees. Through *The Exchange* users can access the Firm bulletin boards for tickets to events and classified ads such as referrals and rentals.



This is one of Goodwin Procter's many blogs. Employees use the blogs as a means of collaboration and knowledge management. Wikis and blogs have been useful tools for team collaboration, knowledge sharing and to help the firm leverage past work product.



This screenshot shows how Goodwin Procter uses the portal's collaborative capacity to support the firm's secretary teaming initiative. They are using a team-based approach to provide secretarial support for attorneys. This means that a team of 3–5 secretaries may support 10–15 attorneys. An online bulletin board system was set-up to support collaboration and information sharing amongst team members. Each team has its own board.

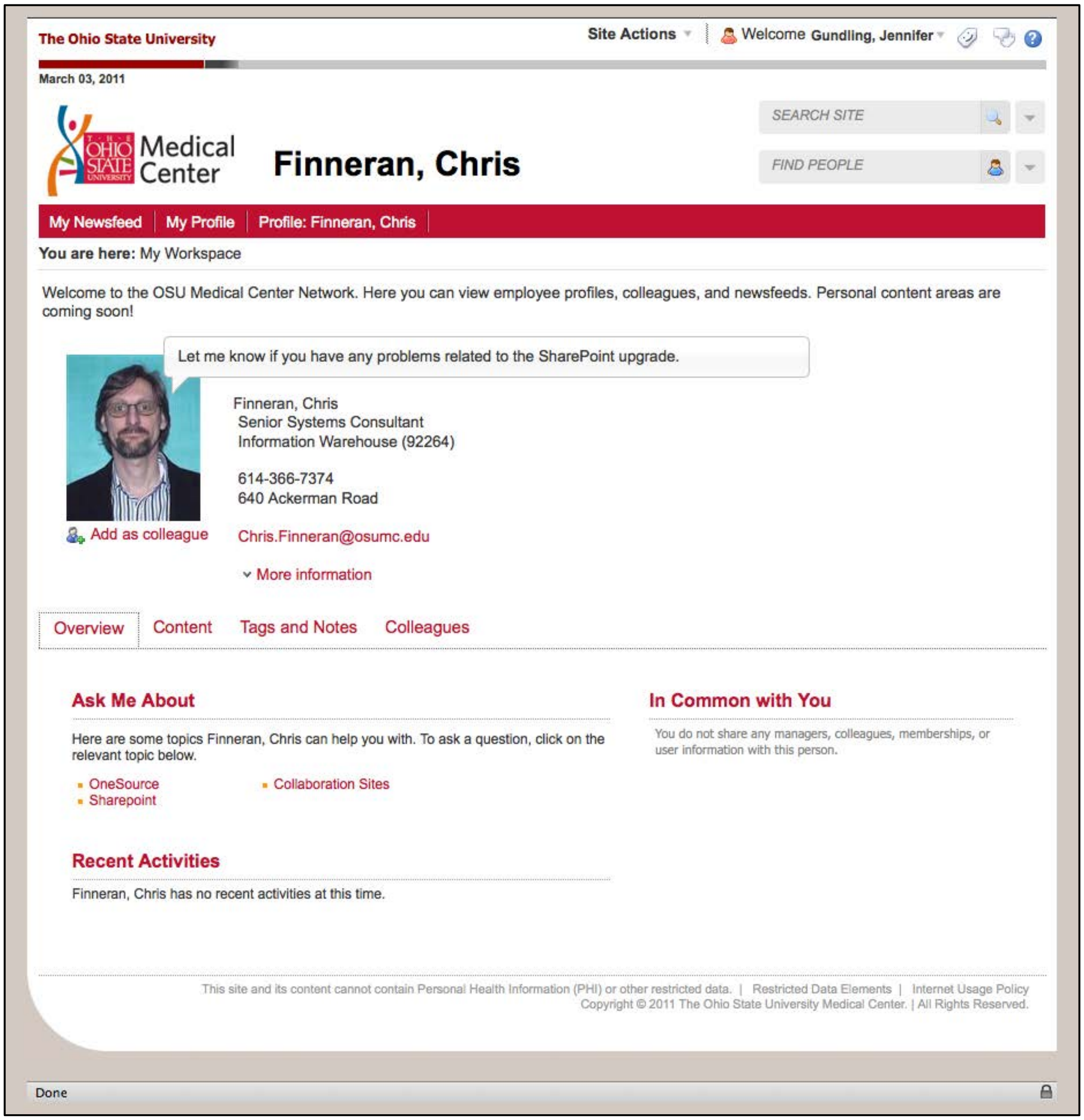


A listing of the various wikis available to employees at the City of Olathe, Kansas, to help increase their knowledge of the city and its procedures.

Looking Toward the Future at OSUMC

Collaborative tools are on the horizon at OSUMC. When implemented, these tools will focus on bringing a sense of ownership and interaction to the medical center's employees.

"We are looking at establishing more of a social presence in the future with the development of *My Sites* for individuals," says Scott.



The OSUMC OneSource team will be establishing more ways for staff to collaborate and build community online in the future. *MySite* (pictured here) pages for staff will be the next feature that is released. This page will let staff share biographical information, post photos, leave comments, collaborate on projects, tab content on each other's pages and can provide blog space etc.

My Sites will include the following features:

- My Workspace: *My Workspace* websites are personal sites in Microsoft SharePoint Server 2010 that provide users in an organization with a rich set of social networking and collaboration features. These features give users a way to share and discover areas of expertise, projects, and business relationships from one central location.
- My Newsfeed: Provides updates on all users you have marked as 'Colleagues.'
- My Content: Shared and personal documents and pictures, and recent blog posts.
- My Profile: Maintains current user information, including:
  - Status: update your status
  - Recent activity
  - Common relationships
  - Expertise: Ask me about
- Overview: Shows recent activities, team organization chart, subjects of interest, and what other users have in common with a particular user.
- Content: This section contains places to store personal and shared documents and pictures. Personal blogs are also stored in this location.
- Tags: Tagging enables users to provide information about content and resources. The tags are viewable by others on your "My Site" page.
- Social bookmarking. Social bookmarking is the practice of sharing bookmarks with a community of users to help build the knowledge and perspective of the community as a whole.
- Colleagues: Shows other users you have added as colleagues. You can add new colleagues or manage current colleagues here.
- Organization: Shows your organization in an organizational chart view.

Other social networking features on the site will include blogs and discussion boards. "Each user within the organization can have their personal blog linked to their My Site making it easy for other people to find," says Scott. "New blog posts are added to the Recent Activity section of the user's *My Site* homepage. Other users can comment on your blog."

Newsgroup-style threaded discussions will offer users the opportunity to post questions to which other users may respond.

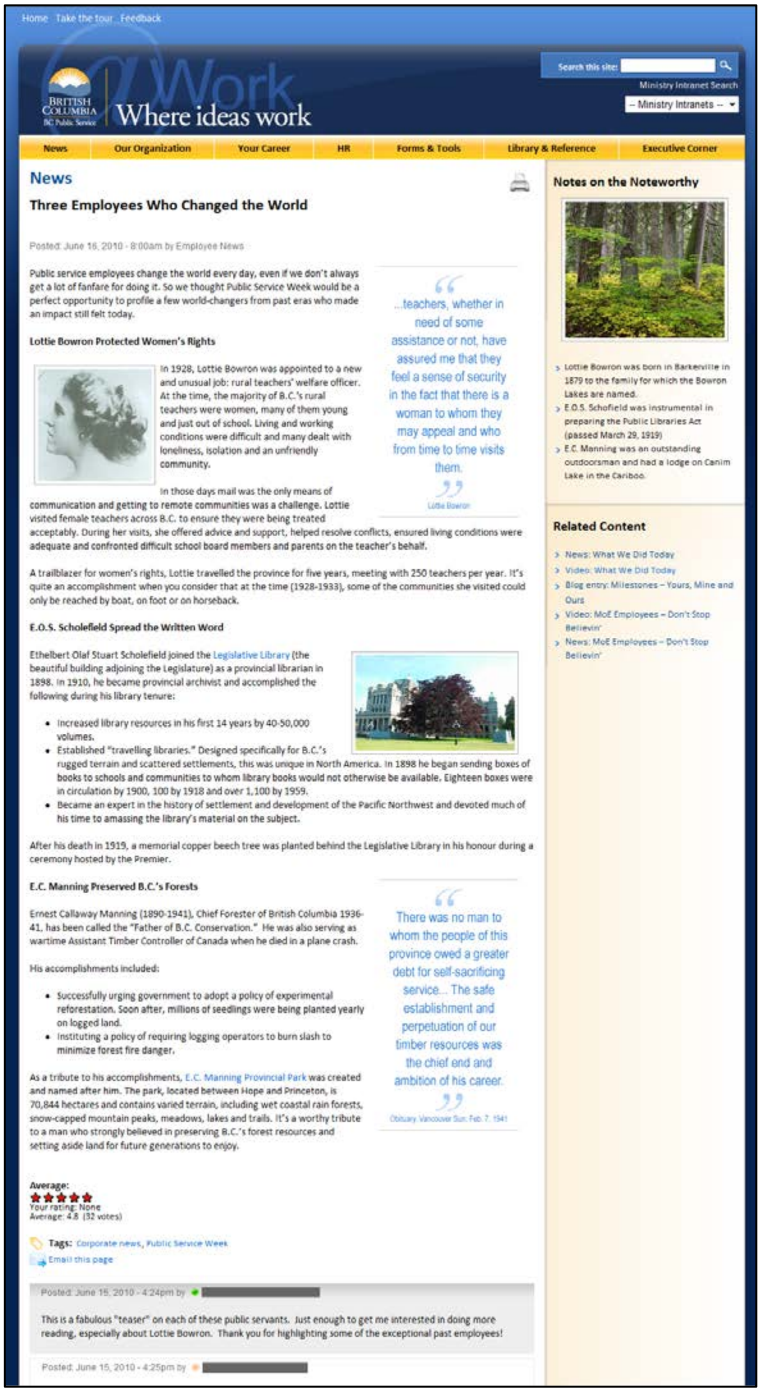
Embracing Change With Open Arms

While some organizations crawl forward with trepidation, others march ahead with gusto — seeing only the rich possibilities ahead rather than the potential risks and pitfalls they might encounter along the way.

The BC Public Service portal falls into this category. "Yes, we've been implementing several social media aspects within our site (blogs, polls, wikis, video, commenting, forums, rating, and notifications)," says Farr. "Our current intranet strategy for 2011 is based on social media concepts, including going where our employees are, bringing the tools they need to them, and allowing them to customize their intranets."

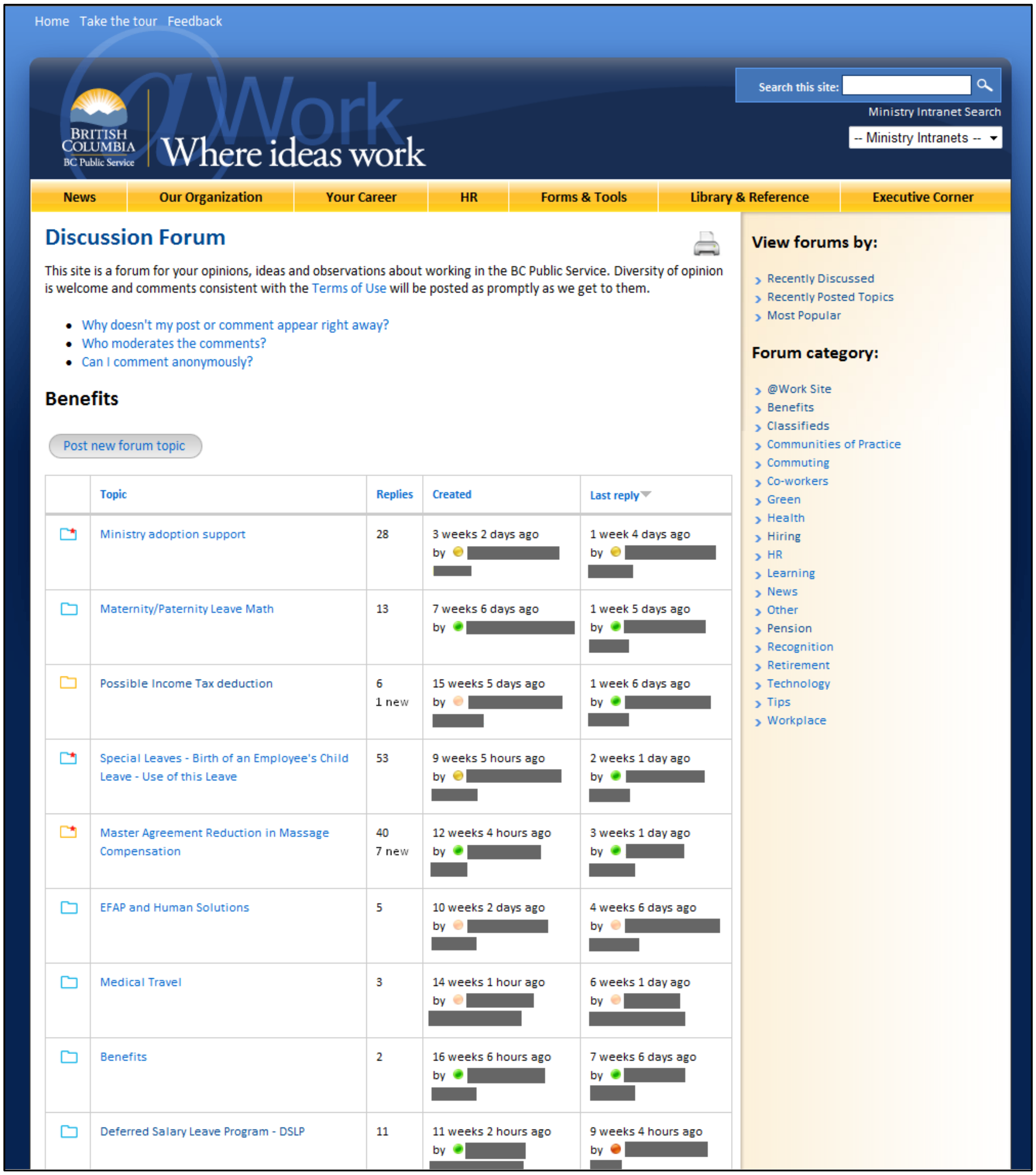
"[Social media] is the biggest shift since the industrial revolution," says Jim Martell, Manager BGS Labor & Social Statistics, Ministry of Citizens' Services. "Glad I work for a government that is on board with it! Very exciting times ahead."

The organization's enthusiasm for collaborative media is evident by their site's many offerings, which are illustrated in the following screenshots:



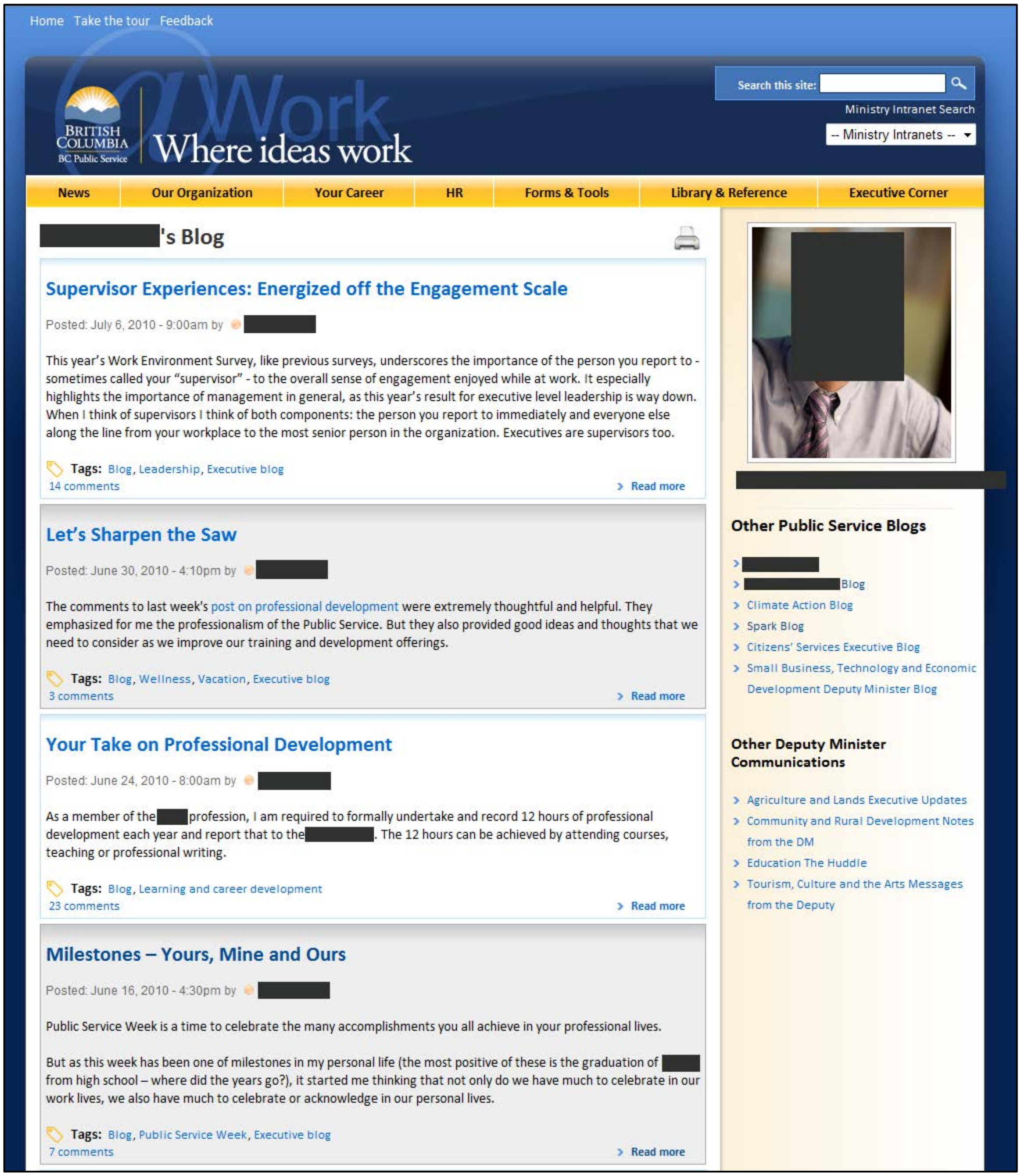
This is a news article on the BC Public Service portal. These articles are usually corporate messages or messages related to employee engagement and are updated on a daily basis. Images and video are often embedded within news. Users can rate (using a 5-star system) and comment on articles and send a link to a co-worker. Clicking on taxonomy tags automatically brings up related content (events, announcements, backgrounders, news, videos, wiki entries, blogs, polls) in the right hand navigation.

This is the BC Public Service corporate wiki homepage. The wiki allows staff to create, edit and view revisions for all entries. This page highlights three wikis: a featured one that can be promoted for corporate messaging, the most popular wiki, and the newest. Categories were initially created based on an information architecture analysis conducted prior to the site's re-design. The search in the right hand navigation is specifically for this section. Users can rate, comment or email any article. Clicking on taxonomy tags automatically brings up related wiki content in the right hand navigation.



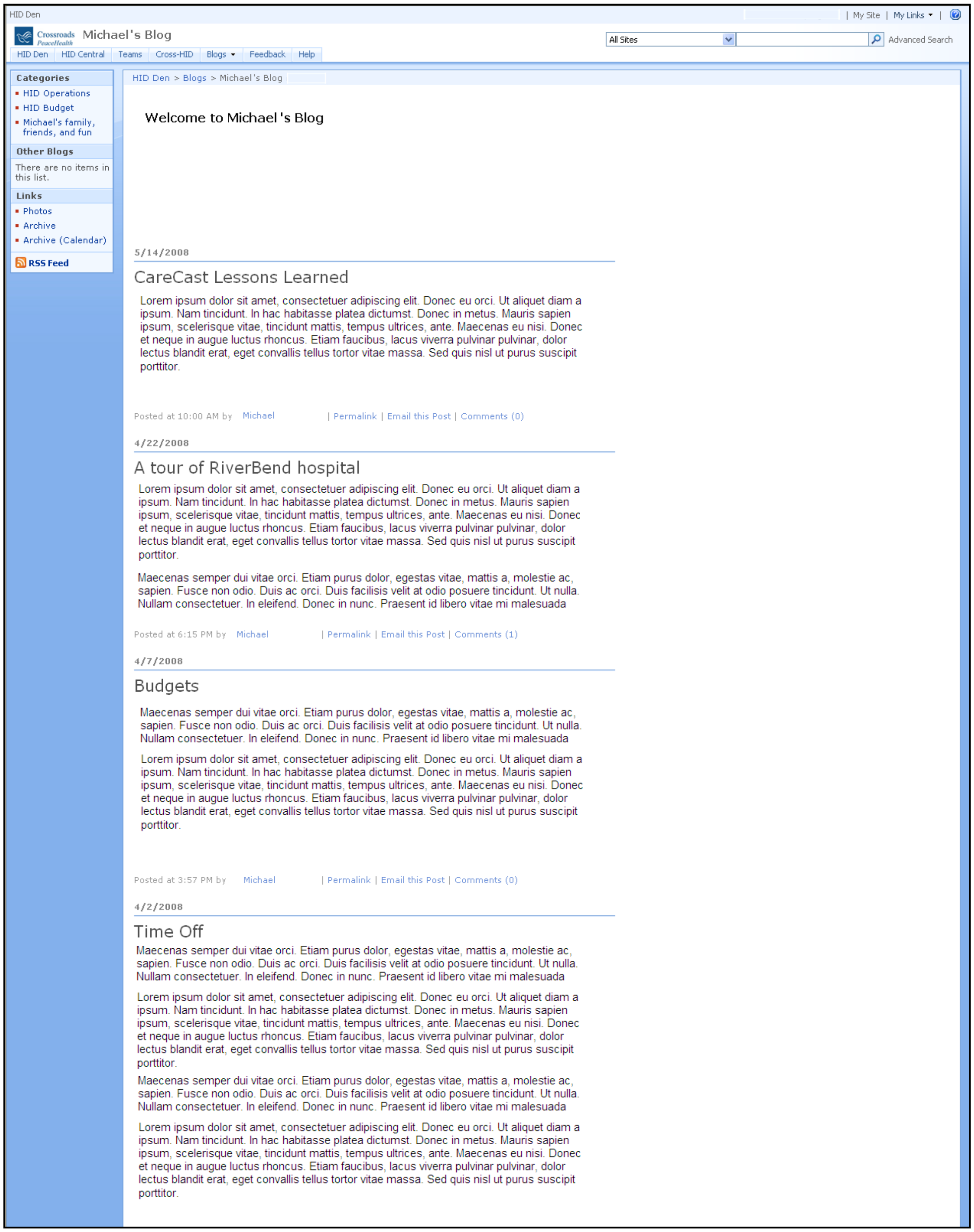
A discussion forum regarding benefits on the BC Public Service portal. Staff can create new threads at the root of a category such as this or drill down to post comments on individual threads. Each category main page shows a dashboard of recent activity (number of replies, date created, date of last reply, as well as using icons with different colors and styles to indicate if there are new posts (cookie based). Also, there are several filters in the top right navigation to help the user view lists of popular threads: recently discussed, recently posted and most popular. There is also a list of all the main forum categories in the right navigation on all forum pages.

This is one of the most well received corporate videos on the BC Public Service portal. It runs as a Flash file with standard video playback options. The users can see the number of views and ratings (based on a 5-star system). Comments are enabled. If there is speaking in the video, a transcript of the text is embedded under the video for accessibility. The right hand navigation offers links to all videos and filters based on criteria such as most popular, highest rated and date. Clicking on taxonomy tags bring up related videos (as thumbnails) in the right navigation.



This screenshot shows an example of an executive blog main page on the BC Public Service portal. New blog posts are submitted on a regular basis, aiming for at least two new ones per month. The site also has many other blogs, including team and corporate initiative blogs and select individual blogs.

The BC Public Service "Government Social Media Guidelines" provide details on best practices in the use of social media for citizen engagement, as well as details on how to incorporate the tools into engagement strategies.



PeaceHealth's HID Den blog, shown here, is an example of a blog written by an HID director.

Seeing the Value in Social Media

Social media is front and center in Persistent Systems' Pi [the company's portal] project strategy. "We believe there will be measurable business value in the social components of Pi," says Bhishikar.

Social is a huge part of roadmap for the future of the portal. Executive sponsors are well aware of direct and indirect benefits of employee engagement initiatives. A social portal will be an effective way to host periodic events like 'idea share' where folks can contribute content online."

The company's immediate plans include enterprise social deployment with SharePoint communities and a Yammer-based microblogging solution. Currently employees can set up public communities to share experiences and expertise. Communities will also be used to help provide regular updates about various company events (and initiatives) as well as share photos, videos and presentations after the events are concluded and communities such as 'Rent, Buy & Sell' and 'Photography' will help employees share common interests.

Goodwin Procter's Knowledge Tree: More Than a Wiki

Goodwin Procter uses wikis throughout its portal with much success. "The use of wikis has also played a large role in collaboration," says Kawa. "Having a centralized knowledge repository where users can collaborate on content has proven to be an asset on project work as well as substantive legal knowledge. Wikis are widely used throughout our portal in this capacity and have been very successful."

The most successful example of the use of wikis is with the company's Knowledge Tree wiki, a custom solution built on SharePoint and .NET. This collaborative information repository is a hierarchically organized topical wiki that deals with substantive legal knowledge and precedent.

"It organizes legal topics into a hierarchical structure and links to substantive legal knowledge throughout all of our enterprise systems," he says. "The Knowledge Tree is accessed through our portal and is indexed by our portal search engine so that Knowledge Tree content is ranked and returned along with portal content."

The Knowledge Tree designates content owners and topic owners. These are partners at the Firm who are subject matter experts in their given areas. They are responsible for ensuring their topics are maintained and relevant. A history log shows all changes made to the tree and allows users to see what has changed from version to version. Usage charts and graphs are created on a weekly basis to determine which topics are used the most.

The Goodwin Procter Knowledge Tree is a custom wiki application that is tightly integrated into the firm’s portal and provides a broad range knowledge across the entire organization.

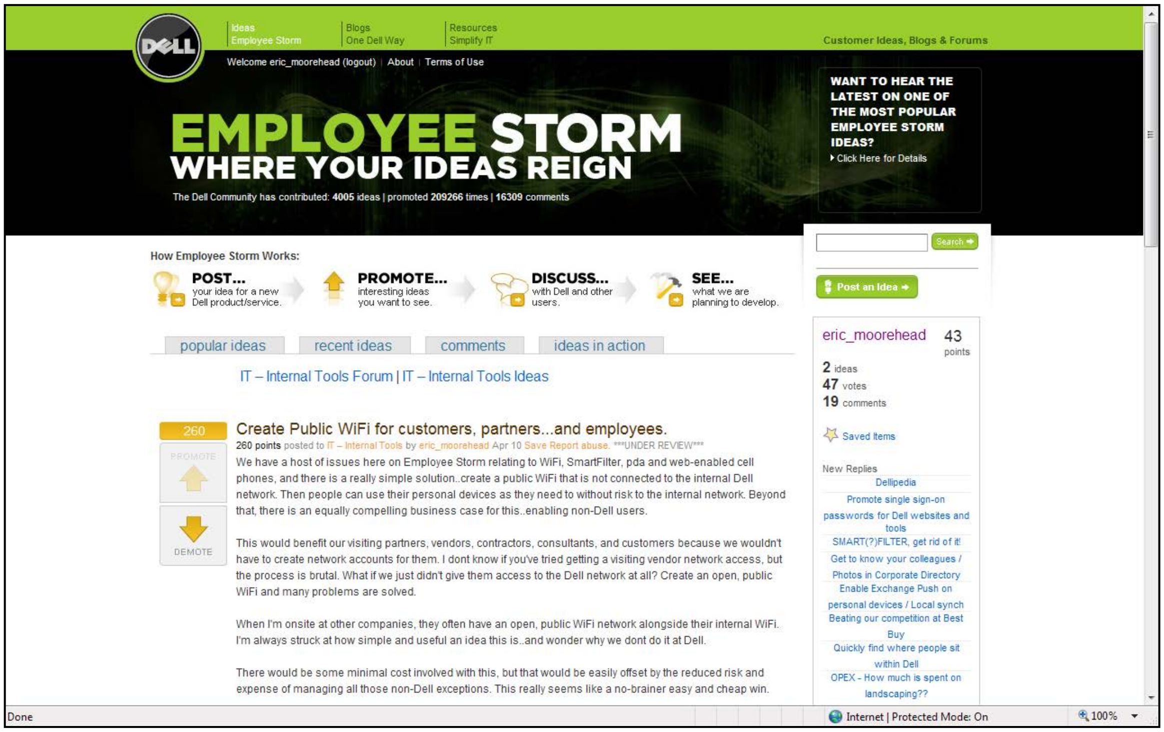
Dell Helps Employees Speak Their Minds

At Dell, employees participate in an employee forum called, “Employee Storm” where users can give feedback on the company, including airing gripes about things they don’t like about *working* at Dell. The Dell culture welcomes this type of open exchange because the company is committed to taking positive action on issues that are raised on the forum.

“Not everybody is happy with every aspect of working at Dell,” says Moorehead. “We want to take that issue head on.”

The way the system works is that users rate each other’s posts and those ratings trigger the posts to move up or down in popularity rankings.

"We leveraged the Salesforce.com application we use to allow customers to give us their ideas and suggestions to improve our products and services," says Moorehead. "Employee Storm" is an internal, employee focused version of that system."



A posting in Dell's Employee Storm feedback tool.

Dell has enabled a profanity filter on the forum and the posts are moderated by staff, but he says that moderation is rather light. Moderation is based on only two main criteria: whether it is "business appropriate" and as an effort to combine similar items.

"The goal is really to have a dialogue," says Moorehead. He says that Dell management is genuinely interested in this feedback. "Many ideas from Employee Storm have come to fruition."

This open approach to communication and governance is what works in social media. Smart companies build their social media governance on a foundation of trust.

Govern With a Light Hand

One of the key findings in our Enterprise 2.0 report was that without fail, users behave themselves when they interact in social environments at work. Even when provided with very little in terms of rules or oversight, people know they are at work and act accordingly. In that report we surveyed many companies with mature, established social tools and they consistently report that open tools work, even with very little oversight, as long as attribution is required. Companies interviewed for this report concur.

"I think overall people want to do the right thing," says Huntington's Brown. "You may on occasion come across a bad apple, but I think people will try, like anything, to keep their jobs and follow the guidelines."

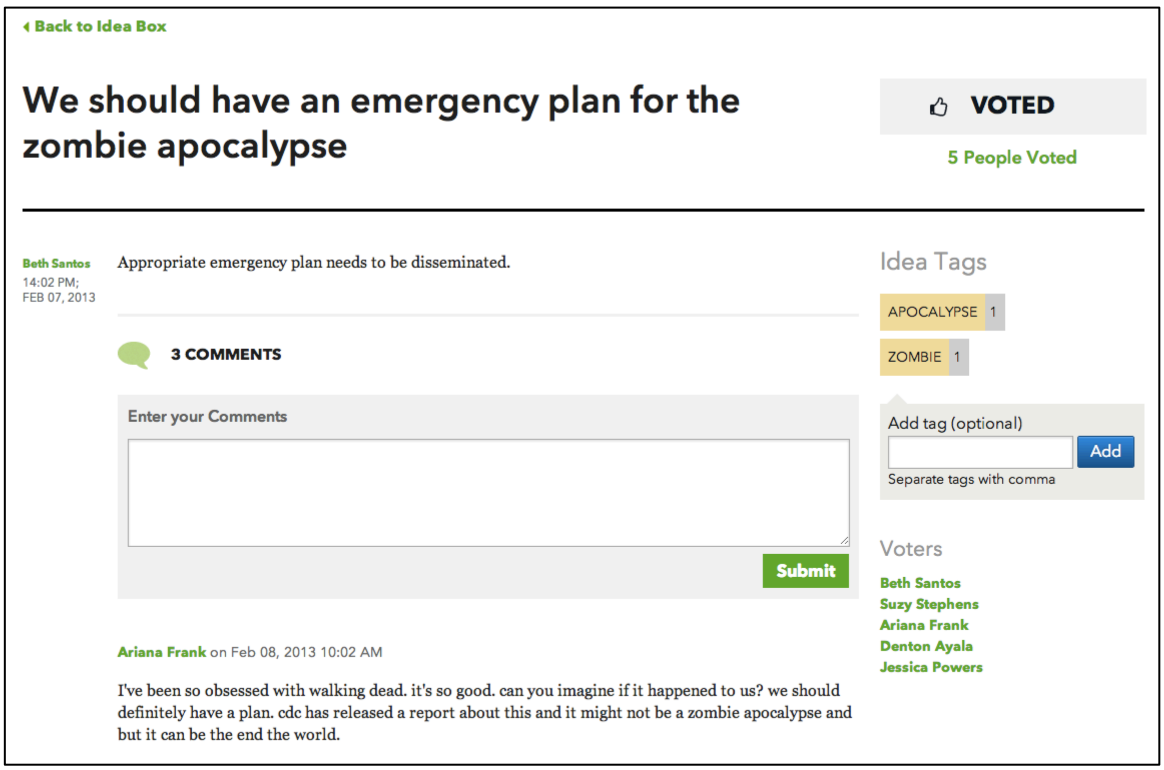
"Yara's general social media guidelines apply both internally and externally," says McNamara. "On the intranet that means there are no anonymous posts, discussions are keep to business related topics, all groups are open unless there's a very good reason for them to be closed (rather leaves the gate wide open), and posts shall not offend or be un-ethical."

Pam Golding Properties has user-contributed content on its portal and all content is tied to a user's login credentials, ensuring attribution and helping users take responsibility for what the post.

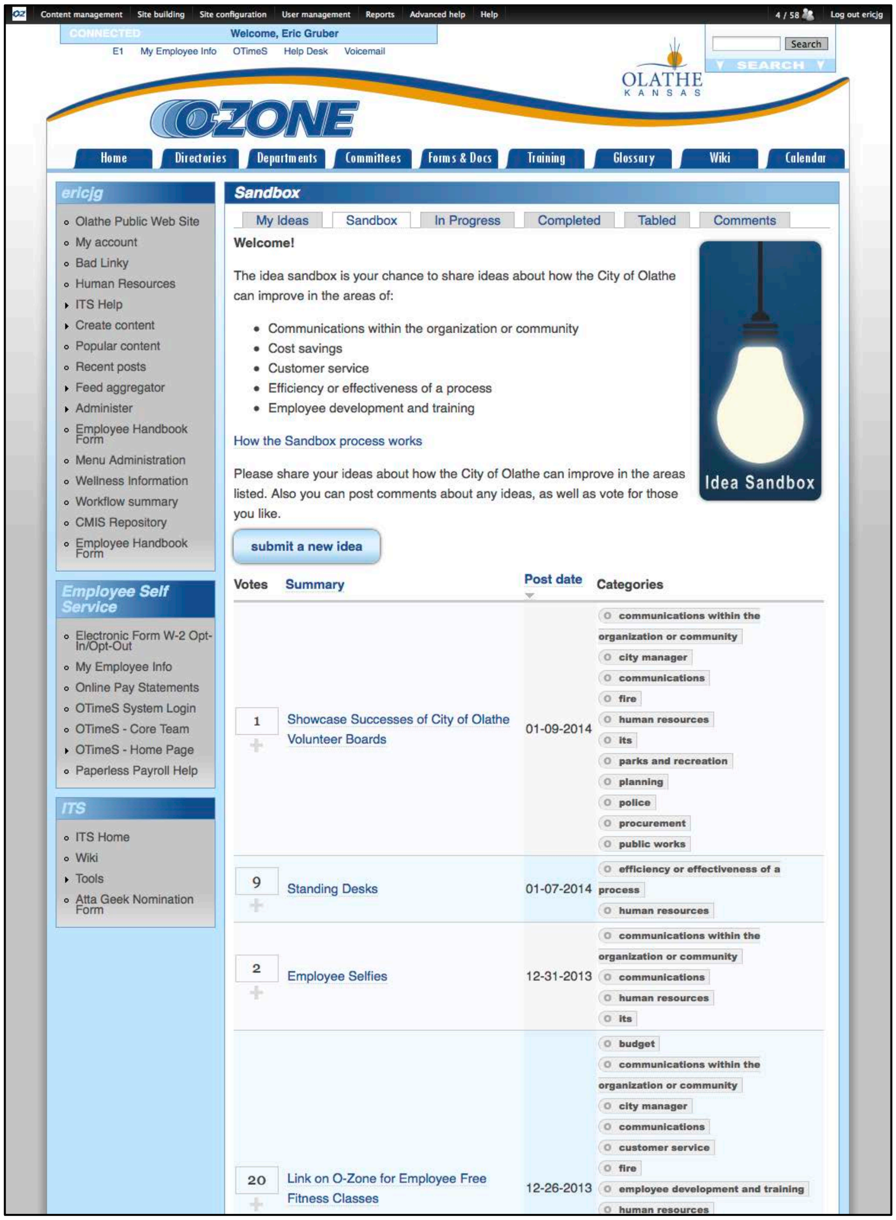
"There are no anonymous postings," says Karalis. "Profiles with photos appear with comments. People won't post something they don't want to be associated with."

Idaho National Laboratory uses a variety of collaboration tools on its portal. Policing is done by community owners and content managers who are required to take training classes to learn "what a community is, what it is used for, and how they will use it with the tools we have procured," says INL's Tina Chapman.

"The only governance we have for collaboration communities is that they must follow the standards in place for content management — no business sensitive or classified documents can be posted in these communities," she says. "They also have to understand that document repositories do not take the place of our enterprise document management system."



The CFPB's idea collection tool, Idea Box allows anyone to post an idea. Users can comment, add tags, or *like* an idea to up-vote it. Ideas are displayed according to the popularity of terms measured in most comments and most likes. These ideas can also be segmented into categories to provide answers to specific questions.



In the Idea Sandbox on the City of Olathe, Kansas intranet staff can submit and vote upon ways to improve their working environment and/or improve processes for citizens of the city.

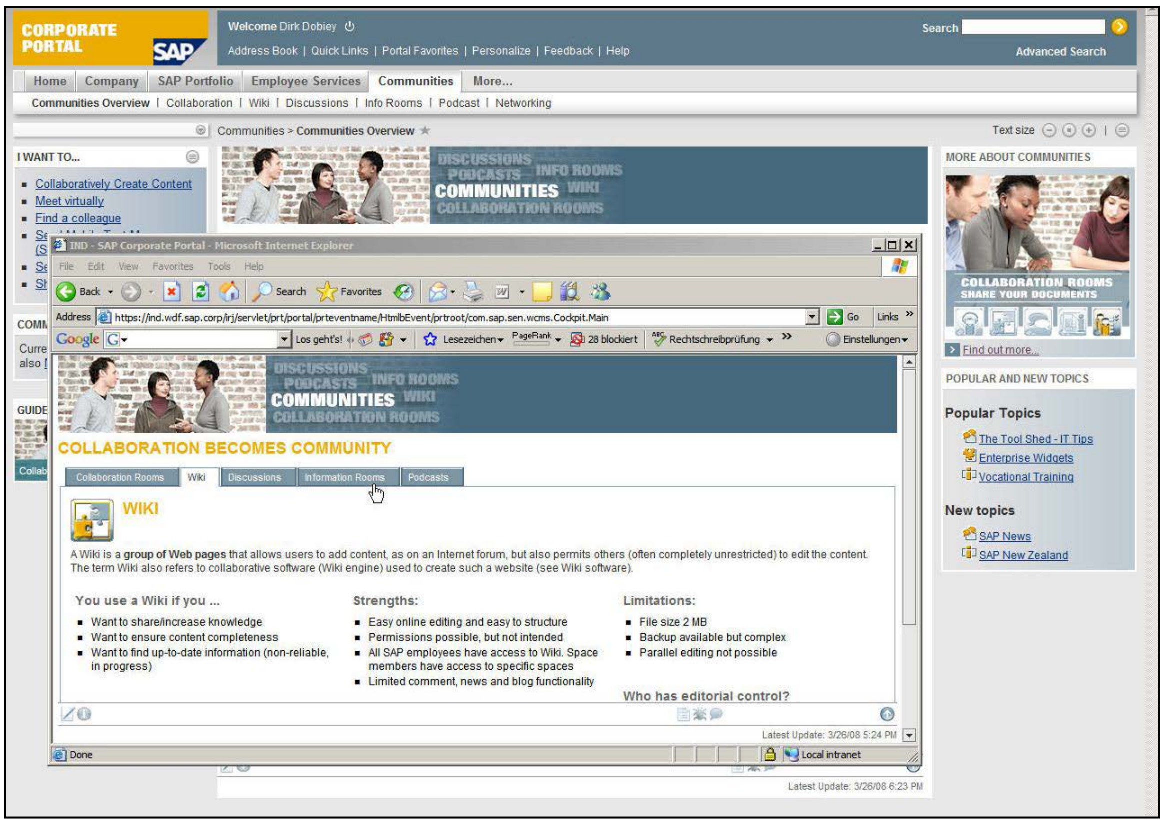
From Collaboration to Communities at SAP

As part of the Enterprise 2.0 revamp at SAP it has changed the name of its *collaboration* menu item to *communities*, on the corporate portal, clearing the way for new features.

Mirko Friedrich, head of Employee & Community Collaboration explains the new "Communities" welcoming page: "We now offer employees a clearly structured, subject-oriented overview that makes it easy for them to find what they're looking for quickly. The overview page pulls subject-based content from various applications, such as discussion forums and wiki spaces, while the application view can still be found in the navigation.”

One of the site’s new features is a wiki where SAP teams all over the world can collaborate on searchable content and actively exchange information on a specific subject.

To facilitate user adoption of the site’s new features, the site features a guided tour, which gives users an overview of the new community concept as well as tips on how to use the tools. A tool overview presents the strengths and restrictions of the individual applications, allowing users to determine which tool is the right one for their needs.

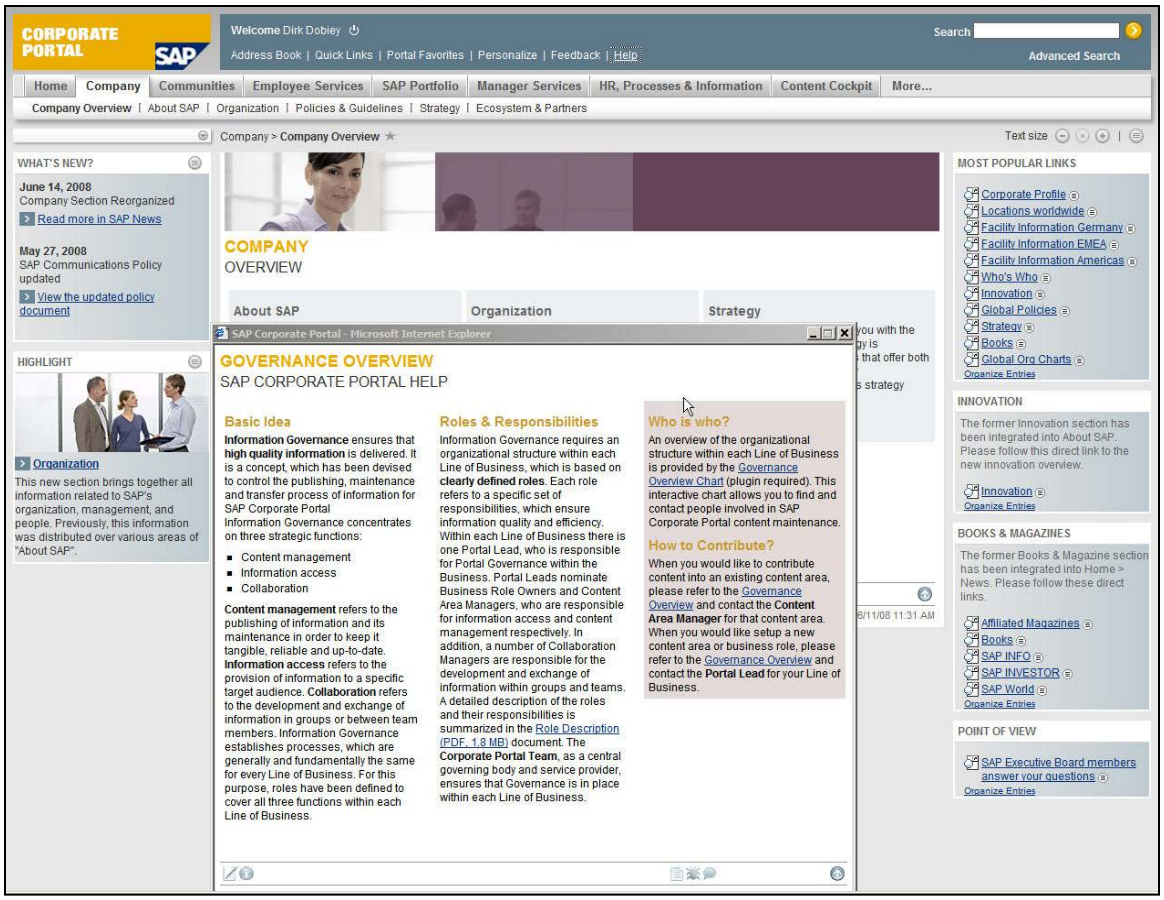


SAP changed its *collaboration* menu to *communities* to highlight new features. Best practice examples and how-to-guides support the correct usage of tools and help employees understand the variety of new options.

“While we are doing pretty well in governing managed content, community governance is our number one challenge this year,” says SAP’s Dobiéy, “because we indeed struggle with this topic. We need to define the right level of ‘umbrella-governance’ where we don’t want to govern the single community, but rather the offering.”

The company took its first steps toward establishing guidelines on "what to use how," and is now focused on developing an enhanced community/Enterprise 2.0 strategy that will help push them to the next level of intranet evolution. According to Dobiéy, this strategy will integrate a few strategic dimensions, including:

- Open, limited and closed communities
- Real-time and asynchronous collaboration
- Internal and external collaboration
- Individual, team and organizational perspectives



SAP's portal governance page defines the site's governance and explains roles and responsibilities.

In its most recent portal redesign, SAP added various Web 2.0 collaboration tools to engage users and encourage participation, but building the tools is not enough to keep them alive. "We need to create awareness that community building and maintenance is an ongoing job," says Dobiéy.

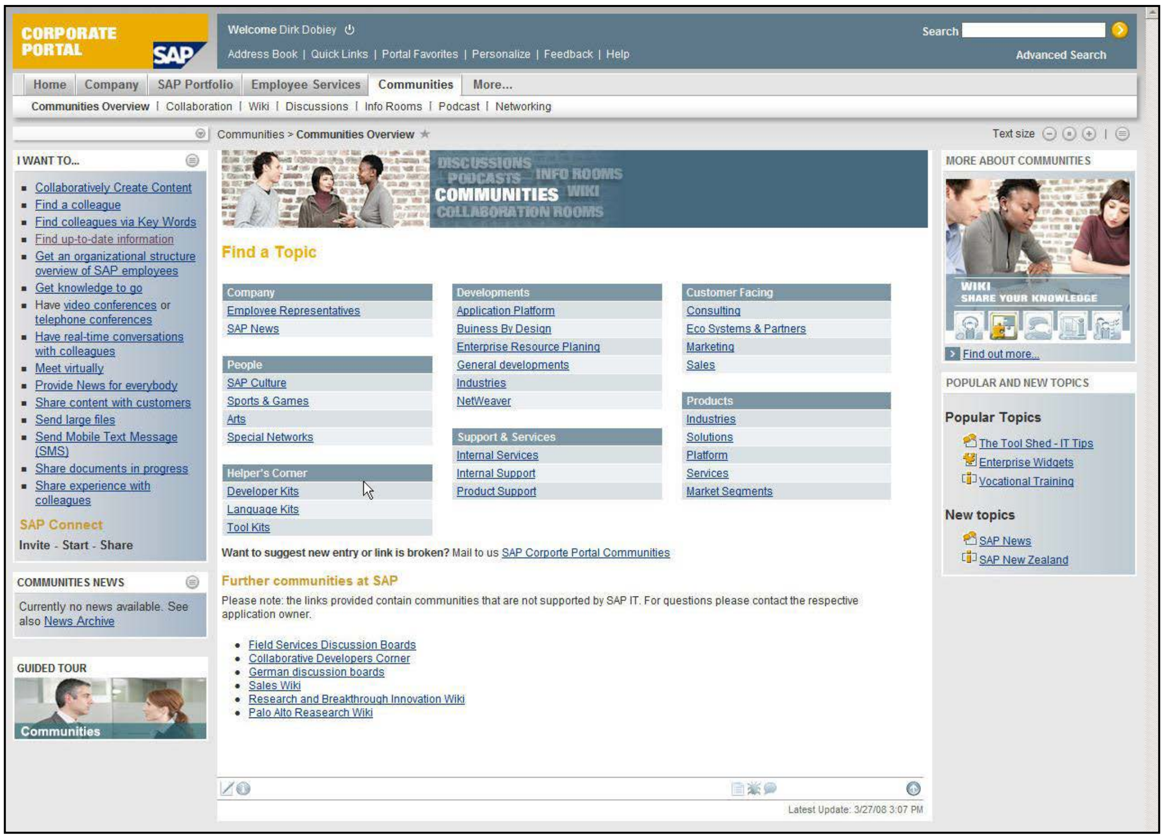
"We need to engage our distributed stakeholders to help us enforce the standards," he says. "We need to establish more formal guidelines (without hindering people from building communities) and last but not least we need to provide good change management for people so that everyone understands why we do things like we do them and what they have available to make their community a success."

Dobiéy says he thinks corporate governance is critical to the tools' success, not only to control what content is in or out, but to keep the content fresh and the communities alive and valuable to the business.

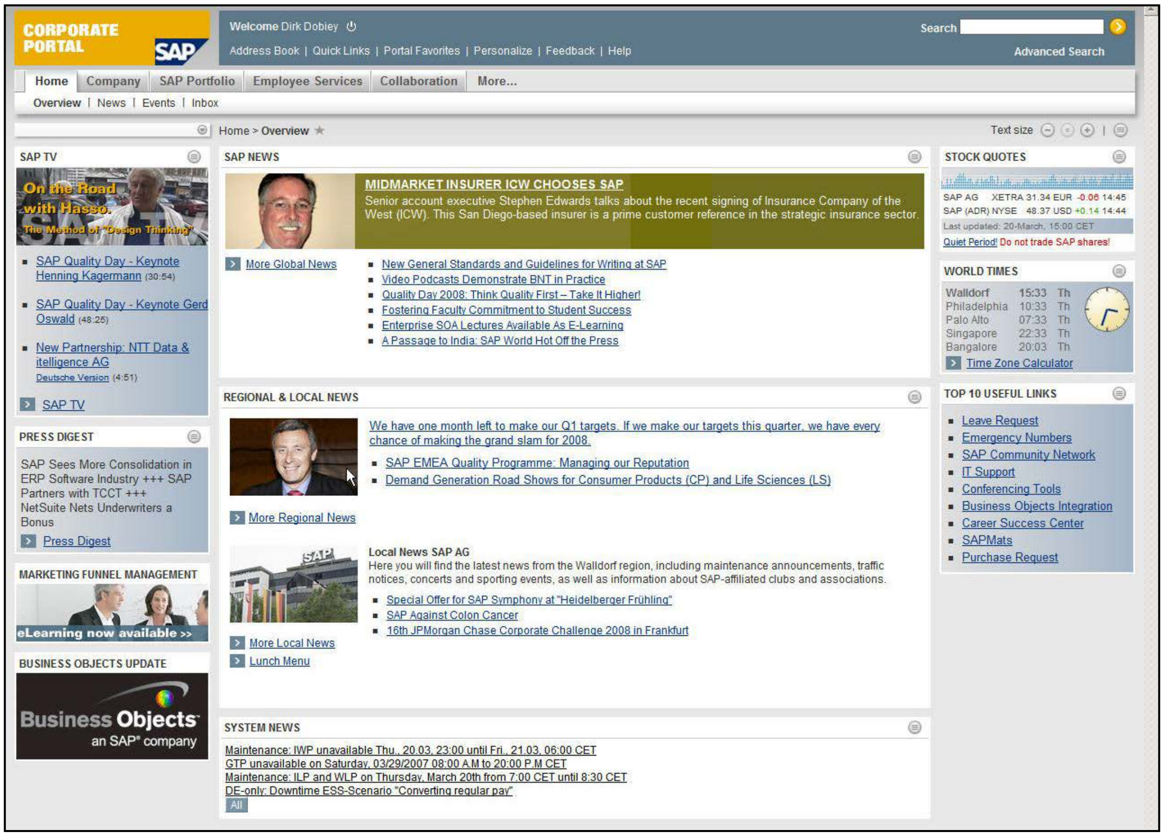
"It is wrong to believe that they work without governance and everything is 'free and open'," he says. "Even Wikipedia governs the site and content."

Perhaps more important than actual governance is the business purpose behind the communities. The business purpose is what makes these collaboration tools vital to the enterprise. Dobiéy uses the example of the site's consulting communities, which are focused on information exchange and best practice sharing.

"Community managers will be assigned, which is a crucial role in every community," he says. "If so, we don't need to enforce, it just happens since the business knows they need it to make the process successful."



The new community landing page on SAP's redesigned portal.



SAP's new portal homepage shows the site's improvements in navigation, design and the addition of Web 2.0 collaboration functions.

Embracing Conversation at Duke Energy

Some companies truly believe in the promise of social communication even if they don't have a fully executed program in place just yet.

"Social media is a big part of our roadmap because we believe it will change the way people work," says Brown at Duke Energy "And that it helps organizations solve problems and create opportunities. Social media helps organizations transcend organizational silos of information and supports a geographically dispersed workforce. It also supports ideas and innovation that create new opportunities."

The company invites employee interaction across a growing array of social tools on its portal. "We have commenting on our news stories and videos, and out Internal Communications team invites employees to submit ideas for stories," says Brown.

"Recently our Internal Communications team created sections for *Wild Cuts*, which features photographs submitted by employees in the promo space on the homepage, and *On the Side*, which features stories about interesting and often, inspiring things our employees do in their personal lives." She says.

Some of these stories have generated the most comments. For example, a recent *On the Side* story described how an employee makes school desks for special needs children in his hobby as a wood worker. It received 24 comments showing support, including one that read: "I do not know you, but I am proud to work for a company who employs people who take other's needs into consideration. Special needs children are all of our children and they need to learn too."

Comments are not anonymous, and each commenter has a name and a photo displayed alongside his comment. Comments can be recommended and recommendations are anonymous.

"Recommendations are a small barometer of employee sentiment," says Brown. "On all types of stories, employees have been quite candid. Some of the most passionate dialog — from opposing views — has been around the announcement that Charlotte, our headquarters, will host the Democratic National Convention in 2012."

The company's Internal Communications Team removes comments only when they violate its Social Media Guidelines, and they notify employees when that happens, which according to Brown, is quite rare. Above the *Comments* box is a message that reads: "Internal Communications welcomes your comments. The more voices engaged in conversation, the better, but do it in a respectful and professional manner." A *read more* link follows this message and links to the company's Social Media Guidelines.

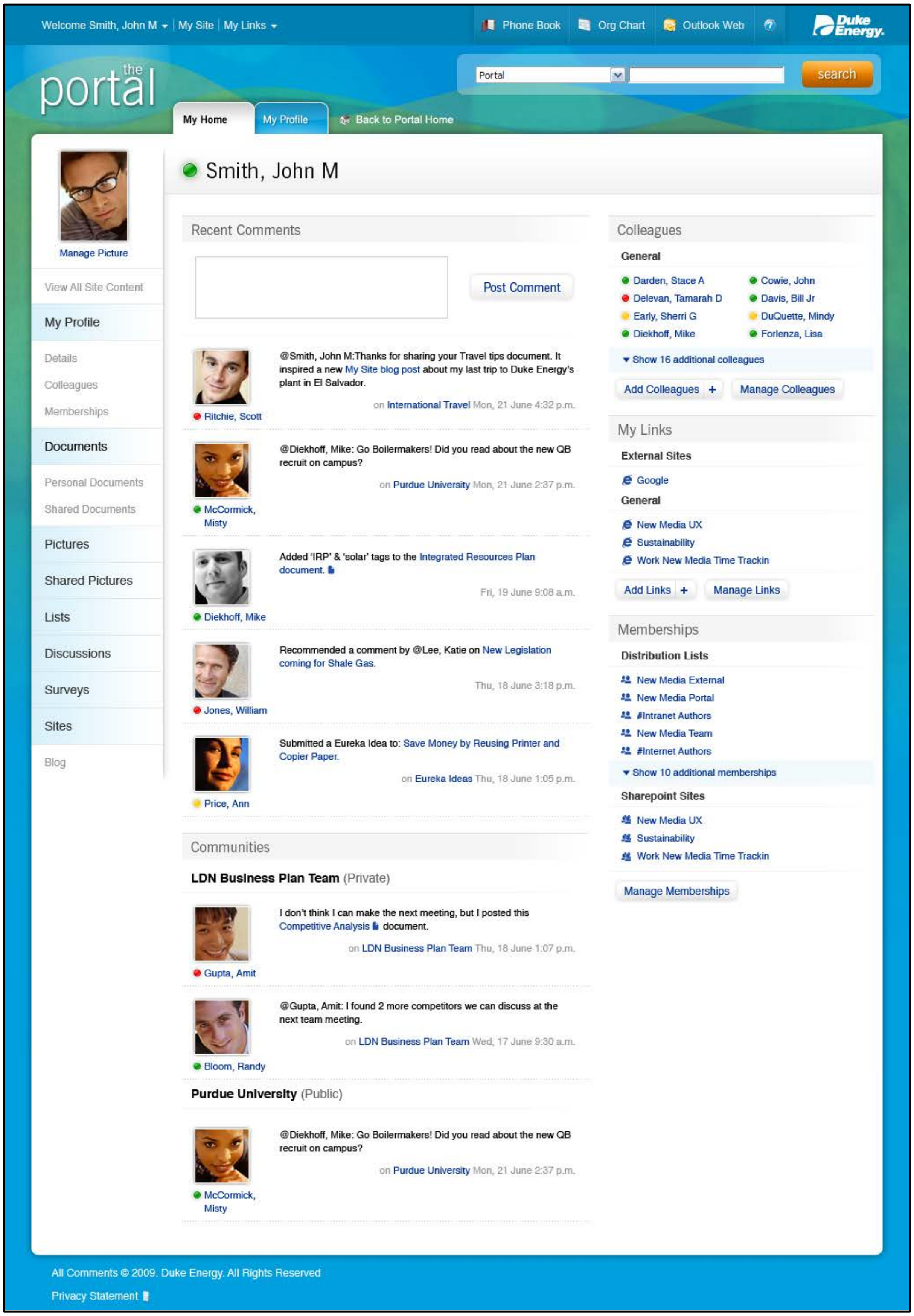
"Some employees remove their own comments when they either change their minds or realize that comments are not moderated and will appear without censorship," says Brown. "While it's important to allow employees the opportunity to remove their comments, it can give the appearance that the company is removing them, which might impact trust and perception of transparency. Over time I think our employees have become more trustful of the dialog, seeing a number of controversial statements stand."

When questions are asked through comments, Internal Communications answers them or asks executives to "weigh in" with their own comments so that employees know they are being heard and their input valued.

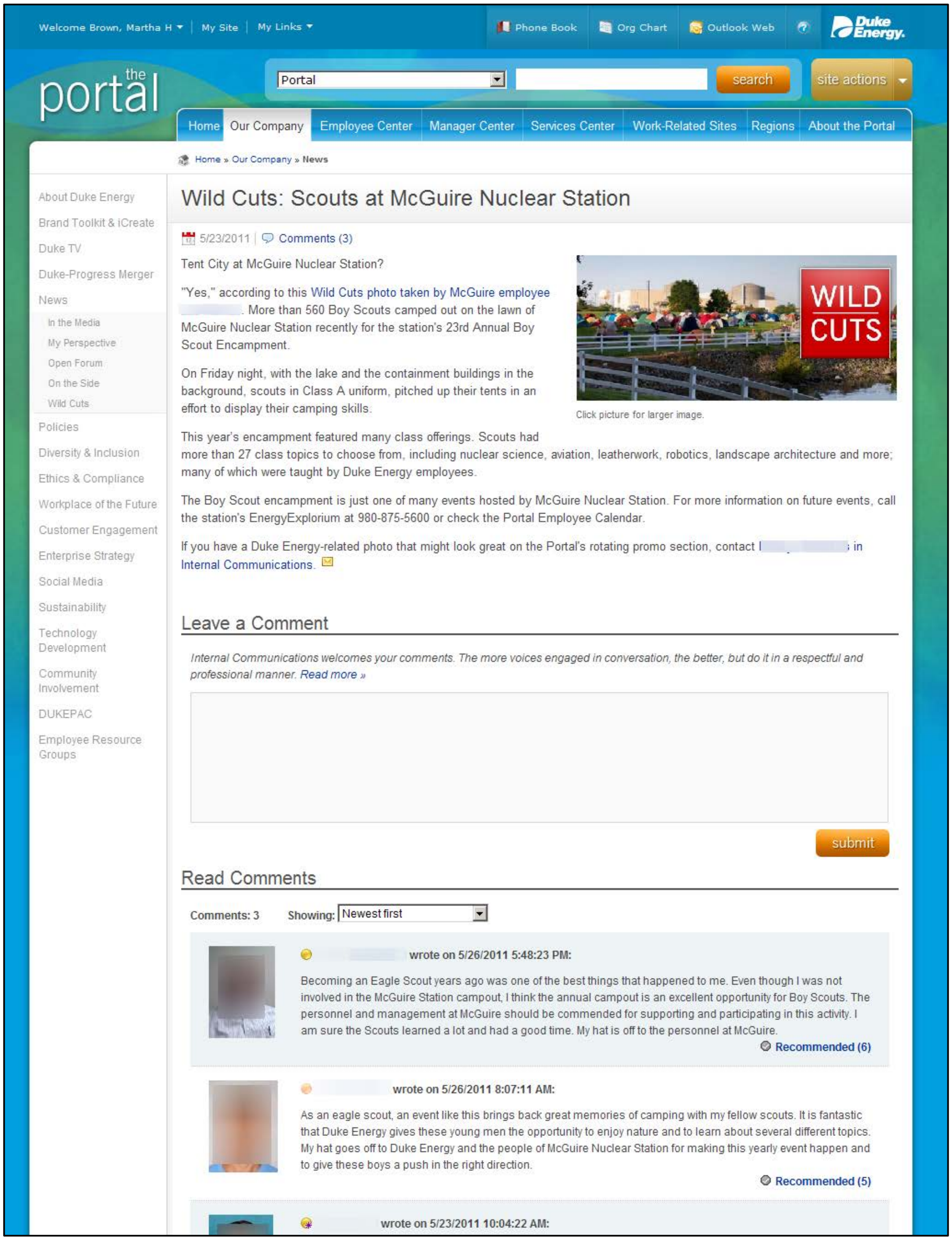
The Duke portal also features a number of tools to facilitate employee interaction. These include:

- Employee accomplishments: The homepage lists employee accomplishments and personnel announcements (submitted by employees).
- Management bloggers: A *My Perspectives* blog rotates on and off the homepage with blogs from various company leaders.
- Blogs to inspire action: Other blogs, hosted by the company's Customer Engagement team, are designed to inspire employees to advocate in their communities for products and services that will help Duke Energy reach its goals for sustainability and clean energy. One of its Employee Resource Groups, The Business Women's Network, has just launched a blog on the portal, designed to engage participation and educate employees about the value of the BWN.
- Profile pages: All employees have a profile page where they can enter their skills and areas of interest.
- Colleague lists: Employees can also manage their list of colleagues.

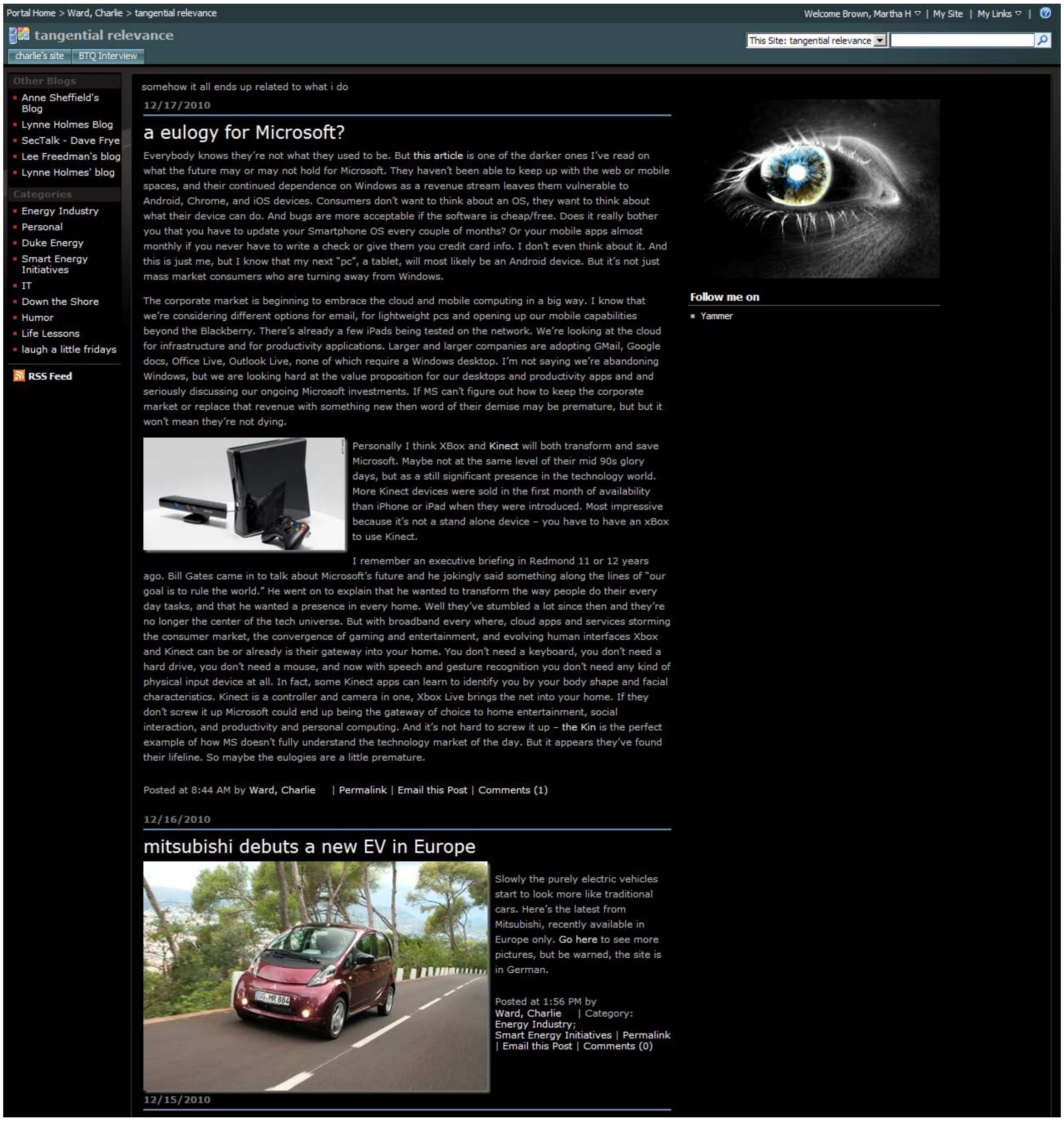
- Individual employee blogs and wikis: About 4,000 employees can create their own blogs and wikis on their profile pages. About 4,000 employees can create their own blogs and wikis on their profile pages. Approximately 55 blogs or wikis have been created on "My Sites." Most were created to share knowledge or expertise. A few were created as a call to community involvement, to share ideas or stories, or just to engage a conversation around a topic. Over time, though, most of these blogs have been neglected because they are obscure — no one knows they're there — and bloggers become discouraged from the lack of response. Activity feeds that push "My Site" activity, whether in blogs, document uploads, or status updates, to the user's colleagues or communities would make a big difference, and the Portal team is hoping to provide that functionality in the future.
- Profile photos: Every employee has a photo that defaults to his or her badge photo. These can be changed, and employees can opt out of the photo if they choose. Employee photos appear beside comments.



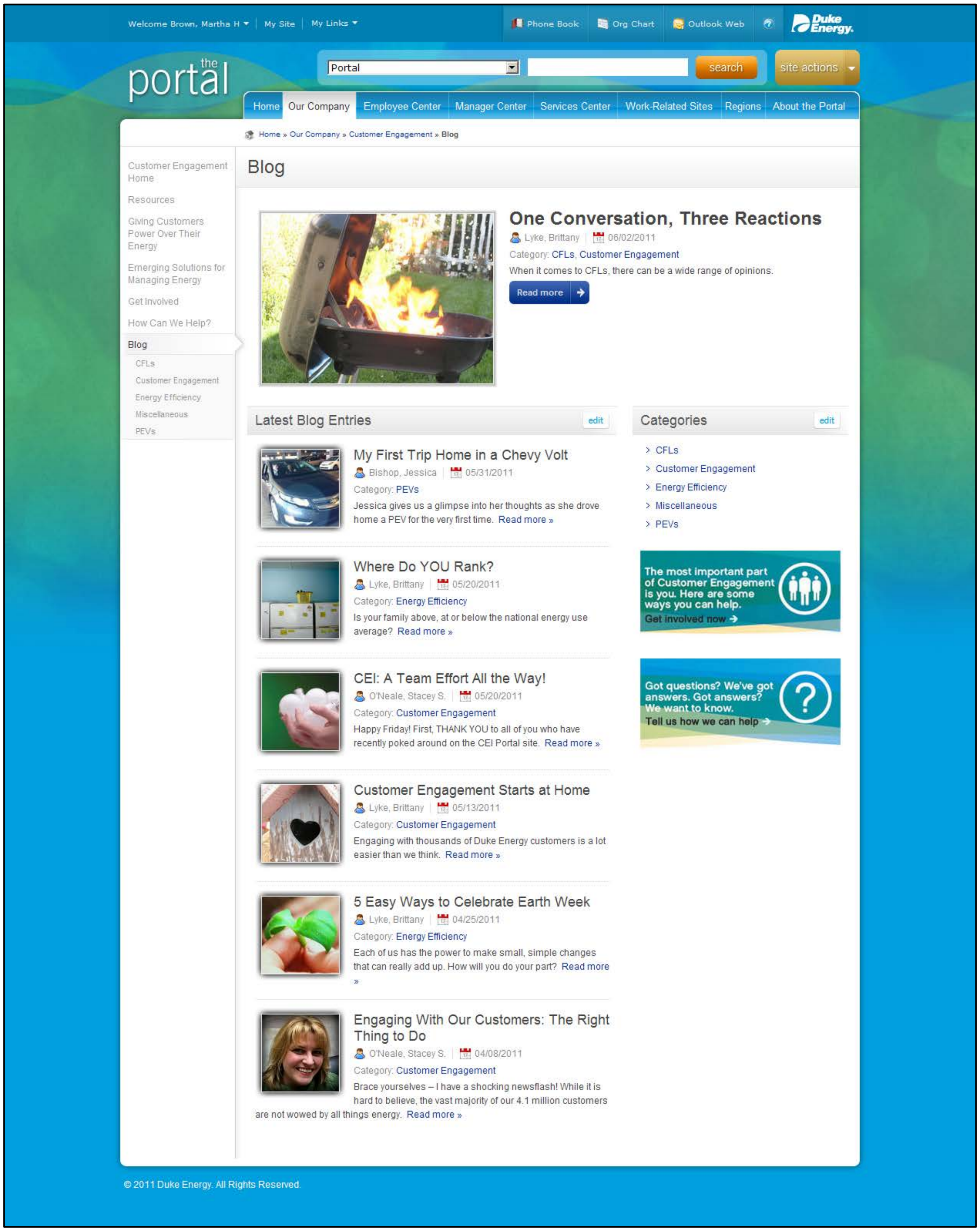
This mock-up shows where Duke Energy is headed with its profile pages, incorporating activity feeds and branding. The portal's current profile pages are out-of-the-box 2007 SharePoint functionality.



A *Wild Cuts* story page. The company's Internal Communications department implemented a series called *Wild Cuts* to feature photos and stories submitted by employees. The one shown here is about a Boy Scout encampment at one of the company's nuclear stations.



This is an example of *a My Site* blog on the Duke Energy portal. Employees are site administrators for their *My Sites* and can choose their own branding and colors, as this employee has done.



This screenshot shows the blog page for the Customer Engagement Team at Duke Energy. It lists the current post at the top, with previous posts under *Latest Blog Entries*. Each post has a thumb nail image that appears in the list.

Local Collaboration vs. Global Collaboration

Though the new ANZ intranet portal was not completed at the time of this writing, portal team members involved in the planning and design say the new intranet will be "all about collaboration."

"Of course it is still early days," says Nachreiner, "but from the project team's viewpoint ANZ's intranet will be the main platform for collaboration across the organization. It will enable improved communications, bottom up, top down and peer-to-peer, as well as supporting business productivity."

The ANZ team differentiates between types of collaboration: local collaboration and global collaboration.

As they define them, "local" collaboration tools are distinct pieces that have a specific purpose and allow for collaboration to satisfy that particular need. "Picking the right tool for a particular business requirement will hopefully allow us to emphasize the beneficial uses of social tools in a corporate environment," he says. "It is obviously not about blogs and wikis for blogs and wikis' sake, but to make use of those different new technologies in the right way, so problems can be solved that couldn't be solved before, or at least can be solved more elegantly."

Global collaboration describes features that are ubiquitously available, that are baked into the intranet and that the user should perceive as general characteristics of the new workplace user experience. "Hopefully," says Nachreiner, "they will be accepted as the new and easier way of doing things and be an element in driving the cultural change that will be needed to create a collaborative environment (for example, presence awareness indicators will be an integral part of displaying a staff member's name and will invite to immediately interact; 'finding an expert' will be a feature that is present on every search results page that the system presents to a user, which will hopefully create an understanding that the new intranet allows you not only to find content on a certain topic or search term, but also people that are experts for that respective domain.)"

The company's new portal will provide a wide range of collaborative capabilities, giving staff an opportunity to collaborate in formal and informal ways, including:

Local collaboration

- Wikis
- Discussion forums
- Team workspaces
- Executive chats or blogs
- Referral tool

Global collaboration

- Find an expert
- Microblogging
- Office communicator
- Click-to-call

- Presence awareness
- Commenting
- Rating
- Interactive staff directory

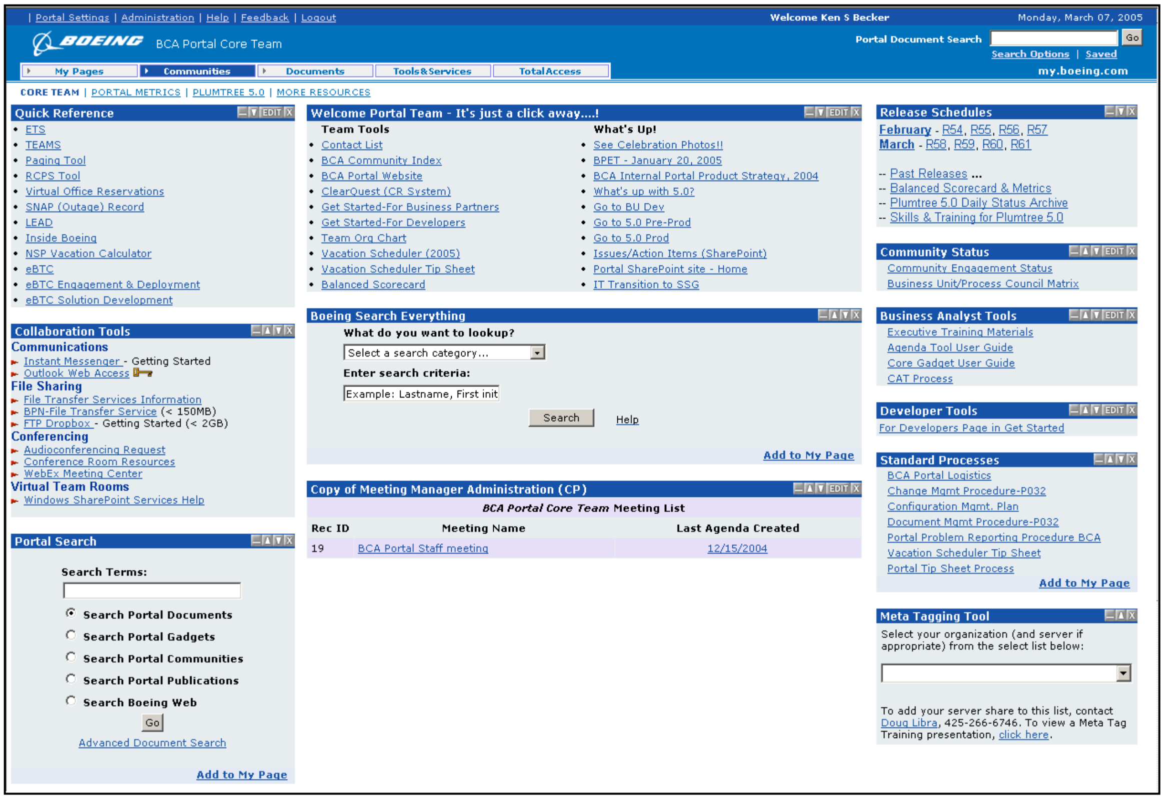
Community Building: Boeing's 85–85 Rule

Not all portal features will appeal to all users, but there are some tricks for ensuring portal adoption. For starters, when designing portal communities for discrete groups of users, ensure there are enough tools and content to lure users there. For example, Boeing launched three community pages at the same time: one for the core portal team plus two aimed at departments. The portal team page was used six times more than the others.

Based on such experiences, "I have this rule for creating a relevant page of community content: the 85–85 rule," says Becker. "So 85% of the information appearing on a community page should apply to each member of that community, and 85% of their online tools should live there."

Why that holds: if 85% of the tools the group needs aren't going to be in the community, in one place, then the community doesn't actually help; it's a hindrance. And they won't use the space. "If we've gotten to where a lot of information is useful, but we haven't gotten to the point where 85% of their tools are in one place, then we've just added another tool to their toolbox," says Becker. That's probably the last thing users need. Hence the 85–85 rule. "We're not really improving anything if we don't get to this point."

While implementing these communities, Becker discovered something interesting: "It turns out that developers are not the best candidates for a portal community, because they use such a wide variety of tools. In our case, they're working on the portal itself, and they're not actually using the portal to get their jobs done." Even so, the 85–85 rule still holds, because there are only a few developers on the portal team.



Boeing's community for portal developers is a good illustration of the 85–85 rule: while there are a few developers on the team who use a wide variety of tools not found here, in general the community works well for almost everyone on the portal development team.

Becker says this rule also makes information retrieval faster for users. That is, when information on a page is highly relevant to users, they tend to be able to use it, even when a page is dense. "Interestingly, on a busy page with a lot of links, it doesn't really get busy until a lot of it doesn't apply to them."

Making so much information accessible in one place makes users able to retrieve it more quickly. "Improving visibility makes the most important things just a click away," he notes. As a result, there's a corollary benefit to the 85–85 rule: users have "the perception that the portal is faster."

TEAM SPACES AND TRADITIONAL COLLABORATION

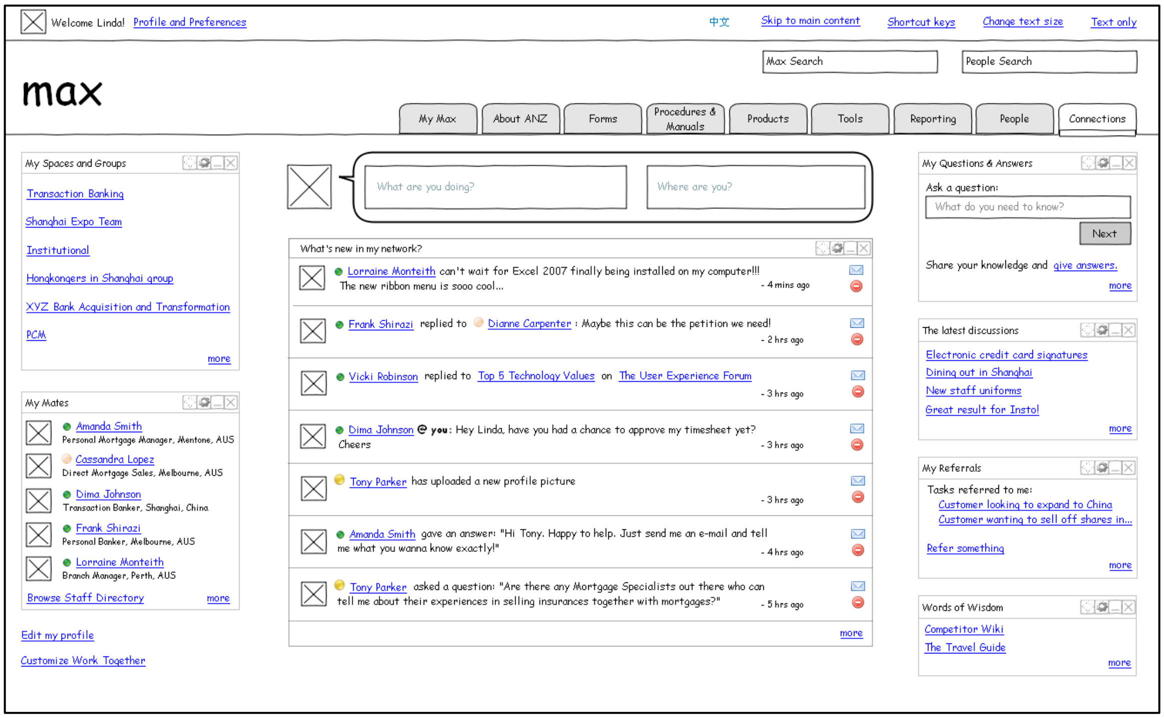
Team spaces have been a staple of intranets for a very long time. These semi-private areas enable teams to form, collaborate and share information in a protected environment. SharePoint platforms are especially known for this portal feature. Many companies interviewed for this report use team spaces as a critical component of their collaboration tool kit.

At OSUMC "collaboration is very important in the portal," says Finneran. "Each department or center has the opportunity to have a department site, which allows content to be managed by a department representative."

In addition, collaboration sites for small teams and workgroups are available. Training is required for all site managers.

At ANZ collaboration spaces are a key part of the company's portal plans. Collaborative spaces will exist for projects and teams, as well as interest groups (such as User Experience, Mortgages or members of a gender diversity network).

"Access to those spaces can be provided from any intranet page where it makes sense," says Nachreiner. "Additionally a first level tab *Connections* will be home to everything to do with connecting people." There, a widget for all of an employee's own spaces will be available, which will serve as access point to a 'collaboration portal'.



On the new ANZ portal, the *Connections* tab is one place that should provide access to all social and collaborative aspects of Max (mock-up shown here). So while the different social and collaborative elements will surface throughout Max in various ways, this should be the place where "working together" and "connecting people" can happen with ease. A *My Spaces and Groups* widget provides access to all collaborative spaces a user is a member of (top left).

Goodwin Procter has integrated several collaboration tools into its portal, the biggest of which are project sites and client team sites.

"Users have found that having a centralized point of storing information, sharing documents, managing project schedules and timelines, and task tracking greatly improves the communication and timeliness of the project," says Kawa. "It insures that all team members are up-to-date with the same information."

NSHS uses SharePoint team sites to support specific departments or groups working on specific projects.

"Collaboration is very important as we have a large organization that expands across several regions in the metropolitan area," says Kelly. "It really brings these users together. Version control is also a big piece of this, as well as reducing the number of emails going out with large attachments."

A Long History of Collaboration at Coca-Cola Enterprises

At Coca-Cola Enterprises social media tools and social collaboration have been part of the company's portal strategy since 2010. "Social has always been part of our roadmap. We started with comments on news articles and blogs in 2010, and the roadmap has grown based on how our users use social tools over time," says Phillips. "We turned on *MySites* in our environment in 2011, and we've had team sites since Q1 2009."

This early and consistent commitment to social tools has paid off.

"There has definitely been an increase in productivity with social," he says. "We have sales people in the field who are able to share what they are doing in a real time scenario. It gets employees involved and excited to do their jobs. Employees over time will likely use their social tools ahead of email. Less waiting for a response provides more time to productive on the day-to-day tasks and responsibilities."

As the organization continues to complete its upgrade to SharePoint 2013, they will integrate more social tools and social behaviors into the intranet, including blogging for all employees integration of social feeds from other social tools into a single newsfeed/activity feed.

"We have a roadmap to fully integrate all of our social tools over this year or next year," says Phillips.

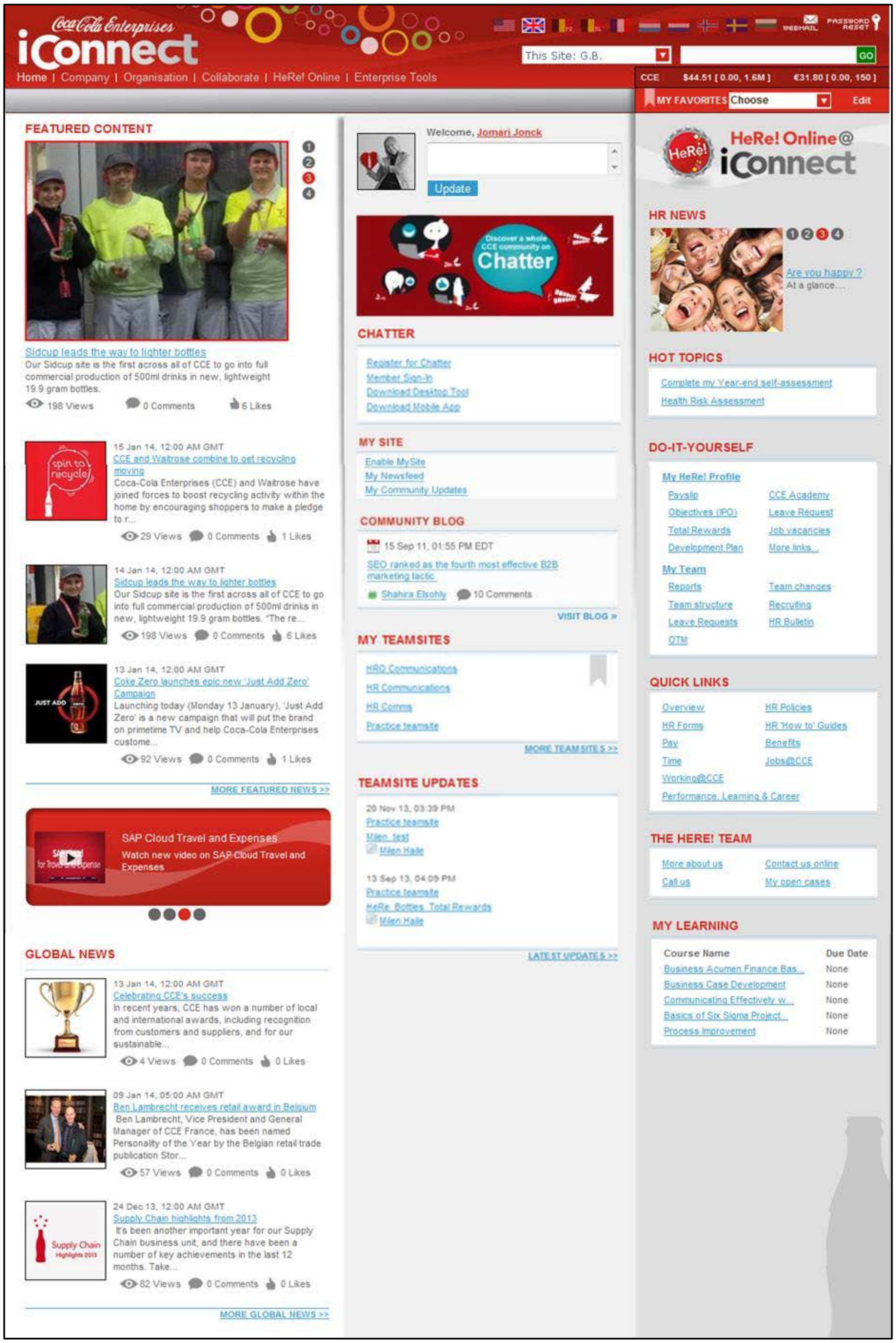
While some of CCE's social components are part of the company's roadmap, *team sites* have been a staple for a long time. "Team sites are the de facto collaboration platform for employees," says Phillips. "In and of themselves, they're a powerful, useful way to share knowledge and work collaboratively, but in having this as a core feature of our portal, it helps drive traffic for the other features and functions."

All employees have access to team site facilities. These collaborative spaces are for virtual and real teams and their project work. The company's governance structure doesn't define what the technology is to be used for but instead encourages "fair and appropriate use through policy."

"We liken our collaborative spaces to meeting rooms," says Phillips. "We define how to use the room but not precisely what the room is for. We encourage employees to find their own purpose." This light-handed approach seems to work as CCE currently has approximately 4,000 team sites serving the needs of its business.

"Employees can self-provision team sites or *Chatter* groups at will to instantly enable collaboration," says Phillips. "*Chatter*, built on the *Salesforce1 Platform*, is an enterprise social network that allows teams to collaborate at work. *Chatter* groups can be opened up to customers or business partners for specific projects."

Team sites and *Chatter* groups are archived after 90 days of inactivity.



Social features are an integral part of the CCE portal. The homepage features several well-used tools for employees.

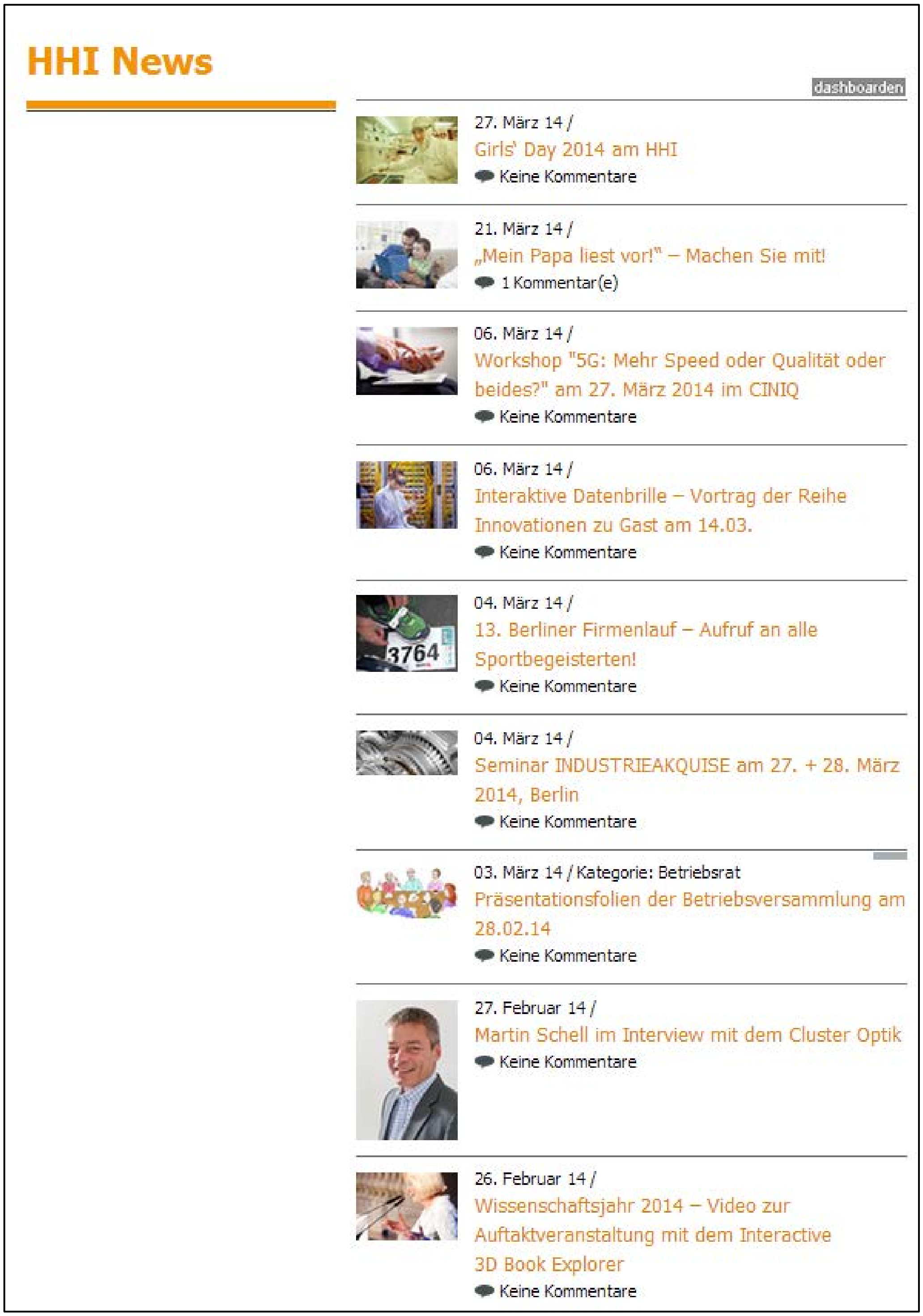
Helping Teams Communicate

The portal at Fraunhofer HHI offers two main collaboration tools: project rooms and communities of practice (CoPs). Project rooms are designed as self-managed areas, which anyone can create. Then the room's owner can invite other users. Inside project rooms users can collaborate on documents, store project documents and projects within a dedicated forum.

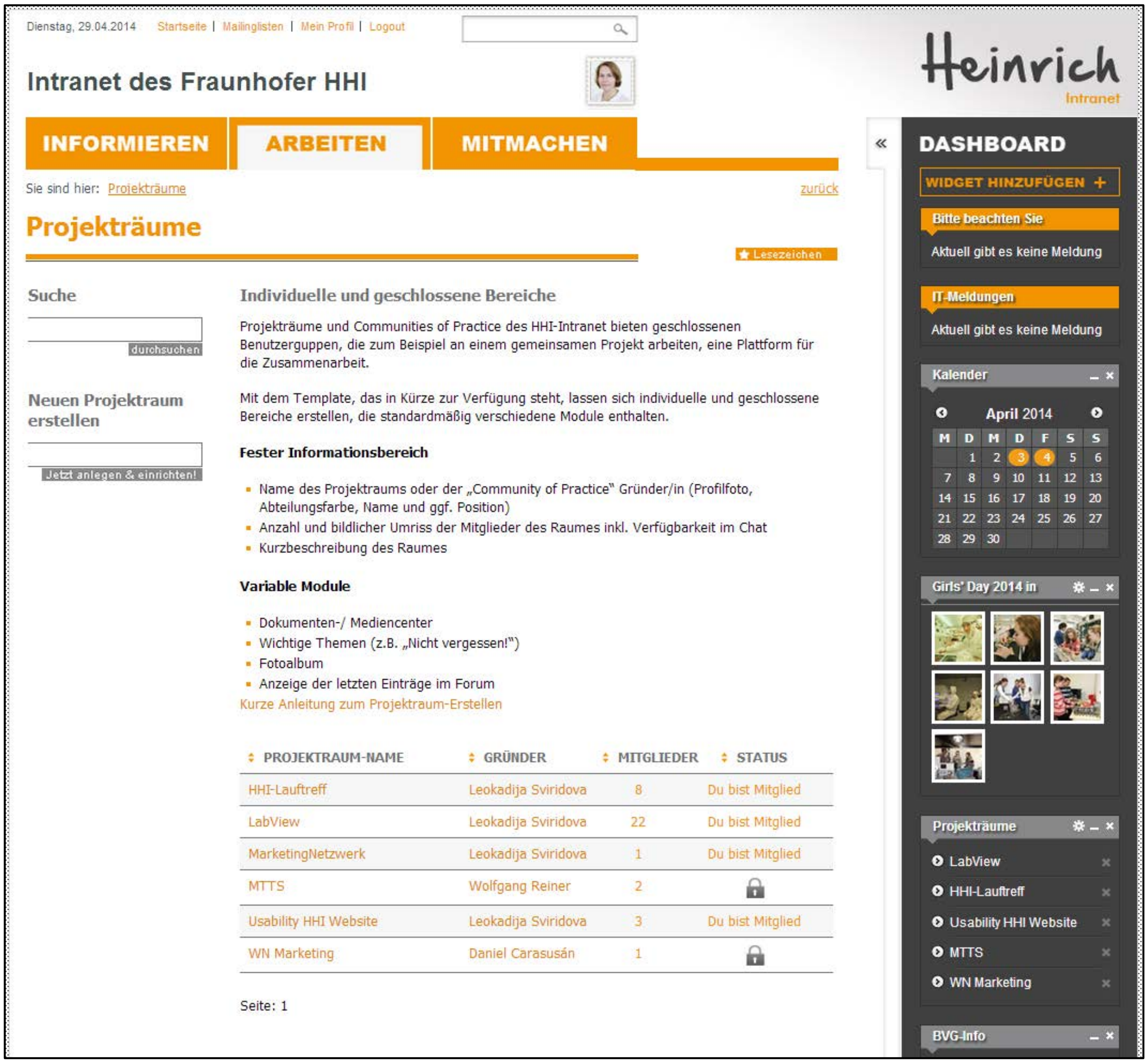
Communities of practice consist of forums dedicated selected group of people. Each one is managed by the administration of intranet.

The organization doesn't just offer them up for use and hope people show up. They actively work to evangelize the tools and teach people what

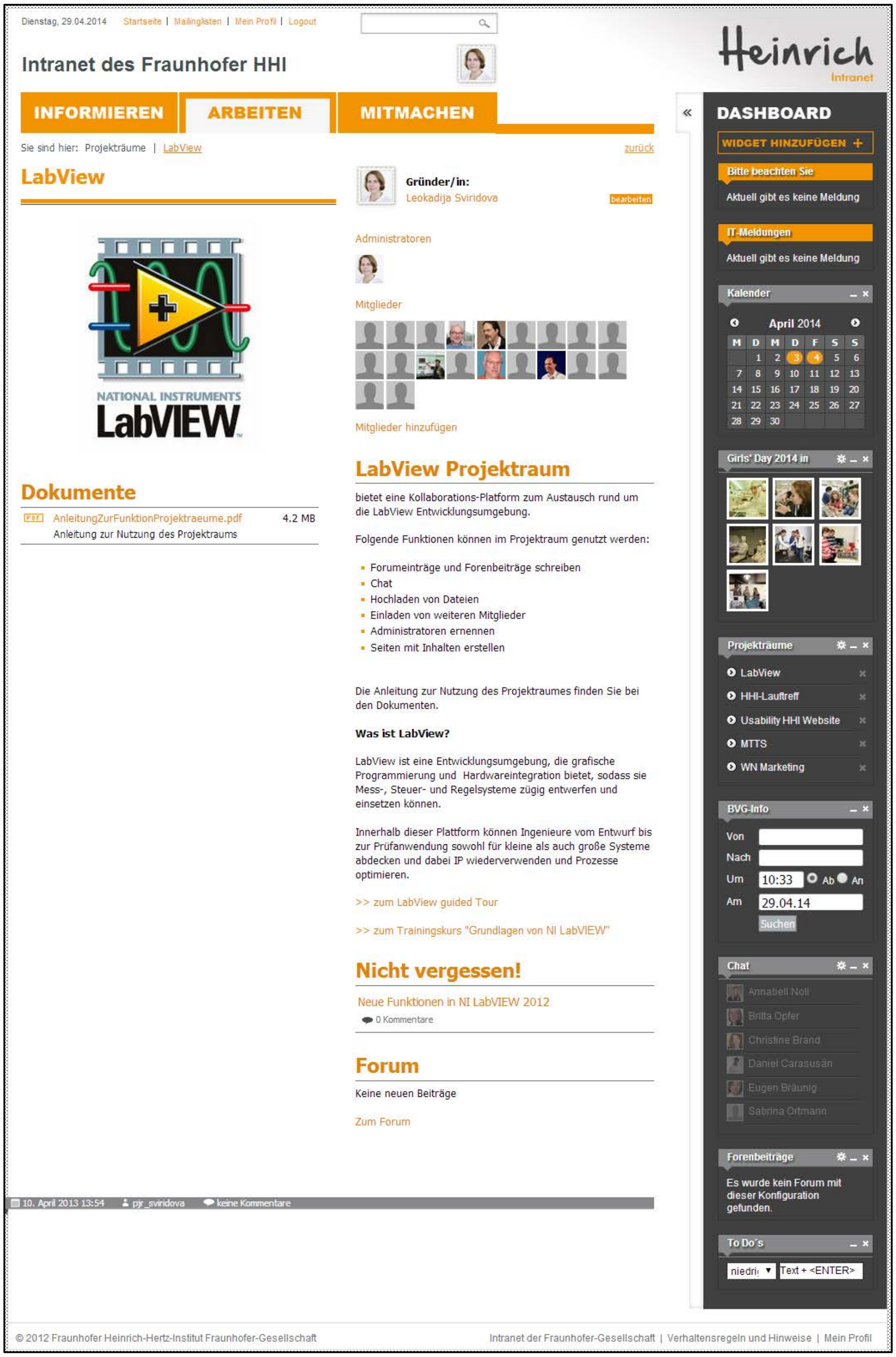
"We are constantly offering workshops to teach co-workers about how to use collaboration tools," says Sviridova. "There is step-by-step documentation on how to begin using the tools and initially there was a marketing campaign with outreach in the organization's in-house newsletter on how to use collaboration tools."



Every page and every new item on Heinrich Intranet of Fraunhofer HHI portal gives users the ability to leave a comment.



Heinrich Intranet of Fraunhofer HHI portal users can create project a room or see a list of project rooms. If a user finds a particular project room interesting he can apply to participate.



This shows the collaboration functions inside project rooms on the Heinrich Intranet of Fraunhofer HHI portal. The project room founder uploads the image and provides the room description.

IF YOU BUILD THE TOOLS, WILL THEY BE USED?

Idaho National Labs Gets Mixed Results

Just because companies put collaboration tools on the portal, doesn't mean users will necessarily flock to use them. As with other portal features, it somewhat depends on the company culture and how the tools and features are introduced that determines whether they will sink or swim.

"We have deployed collaboration capabilities through our portal," says INL's Tina Chapman. "We are currently up to approximately 60 collaboration communities internally. Users love this capability as it allows them to collaborate on projects and initiatives among cross-functional groups, participate in electronic discussion threads, post documents for review/comment with version control capabilities, utilize minimum project management capabilities, such as task assignments and status, post events, milestones, and tasks to group calendars."

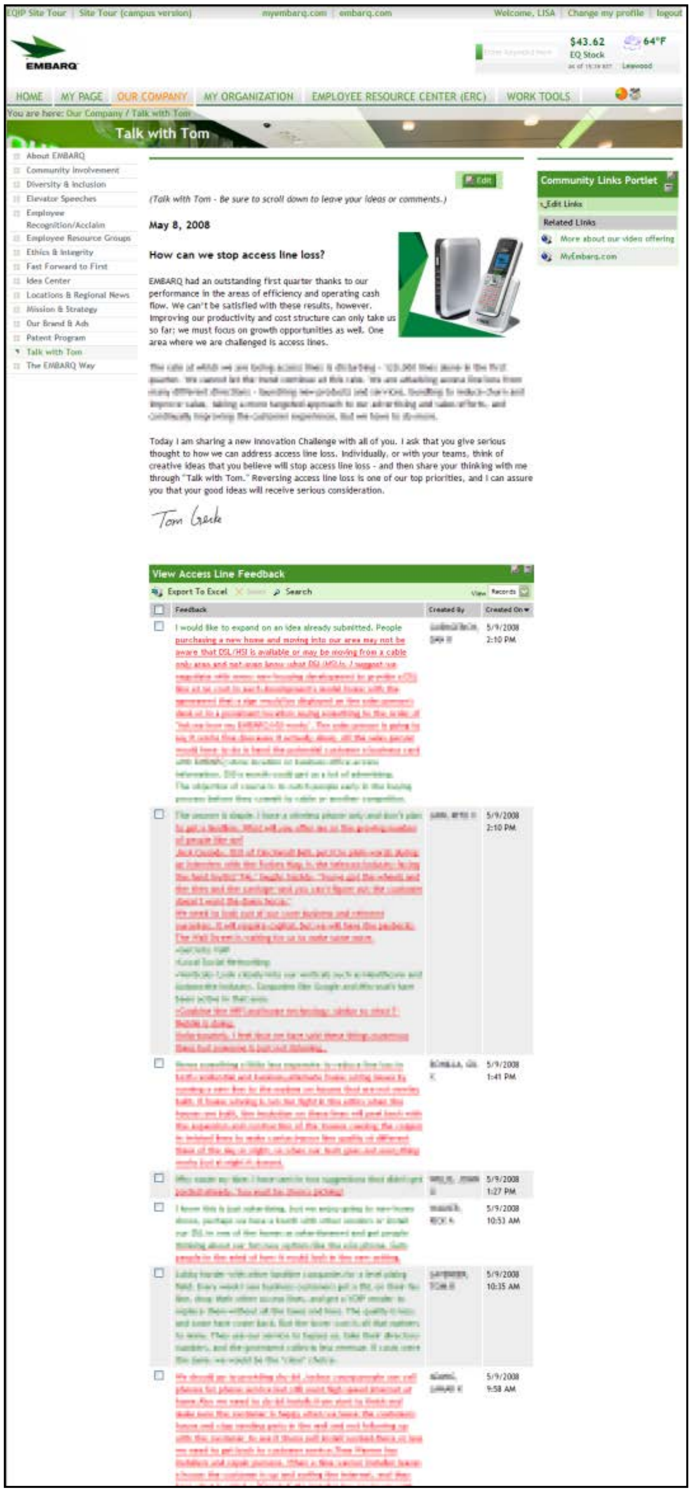
Though users love this functionality, INL has experienced mixed success with utilization of the tools. "I would say approximately 60% of the collaboration communities are being utilized," says Chapman. "Part of this has to do with the fact that a lot of the early community owners have not been trained yet. Once users receive training and begin setting up the collaboration communities, they normally use it."

The organization tracks usage through analytics tools and will eventually establish a formal process for notifying users and removing the communities, but not yet. Also in the works is a fee system where community owners will be charged a nominal monthly fee to have the portal host their community. "This process will weed out the communities that are not currently being utilized," says Chapman.

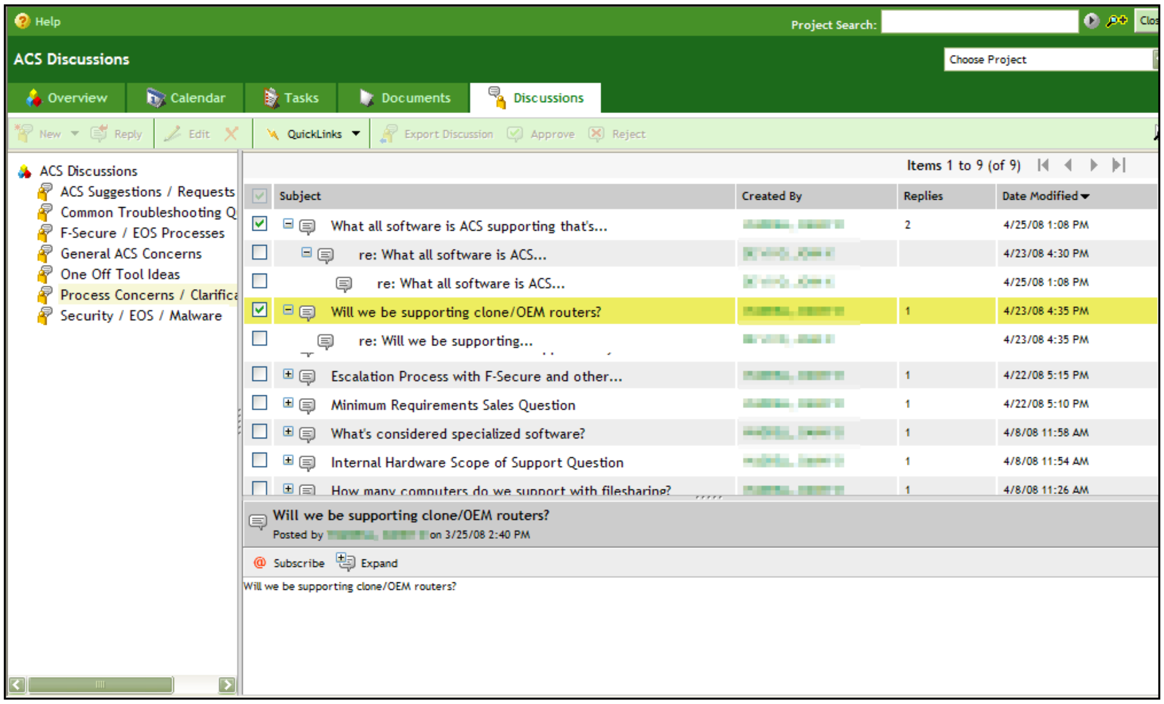
EMBARQ Identifies Champions

EMBARQ's portal offers users project collaboration tools and discussion threads. "Projects must be requested via an online form so that we can control how they get built and ensure the assigned project leaders get properly trained," says Hammond. The company uses these spaces for tracking issues and responding to questions/feedback. In addition to the collaborative workspaces, the company has ventured into the Web 2.0 realm lightly, by adding a few executive blogs to the site.

Getting users to use the tools, however, has not been as simple as build them and they will come. "We have found that it's quite important to have 'champions' for new tools, who are committed to driving use of the tools and attracting other users," says Hammond.



EMBARQ's CEO blog uses out-of-the-box portlets for posting and viewing employee comments. The company's new portal allows for more interaction among employees. This page shows the CEO *Question of the Week* with the ten most recent responses.



EMBARQ's portal takes advantage of out-of-the-box portal collaboration tools. Shown here is an example of a discussion thread using collaboration. Note the multiple tabs for tasks, calendars and discussions, all of which can be updated by project team members.

SanDisk Trains Users

The SanDisk portal team provides one-on-one training to work groups that are interested in creating collaboration sites. The company is also offering classes related to posting and managing Sprocket content, and using Sprocket's collaboration tools to all employees through the company's Learning & Development Department.

Once a portal team offers tools for collaboration and perhaps even trains users, there is still no guarantee that people will make good use of them, especially if they don't have a good business reason to do so.

"Many users feel that they don't have the time to use these tools, and are also unsure about how to use them," says Lim. "Clear governance and direction need to be given to the employee base so that they know how to use these types of tools for their work, and can devote the time to learning how to use them."

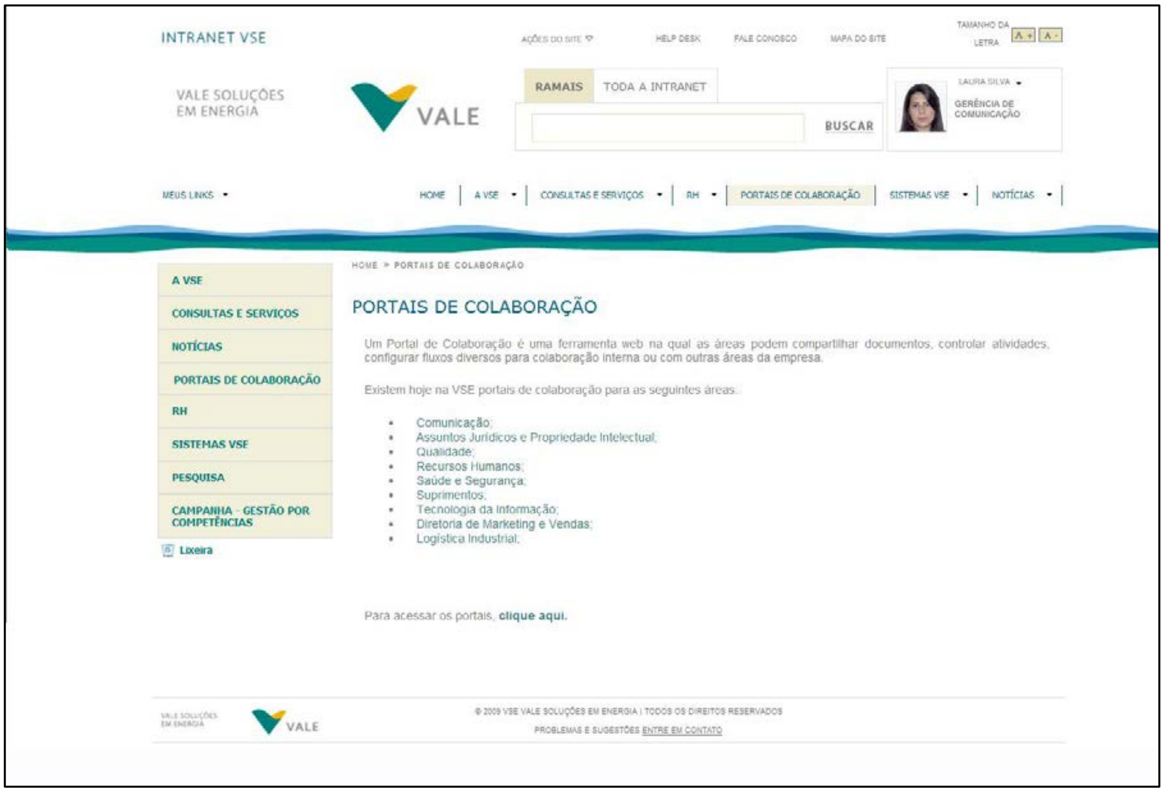
IBM

At IBM there is a similar belief. "Integration is key," says Ceplenski. "Instant messaging, web conferencing, wikis, profiles, community spaces, etc. are all good examples in which you need to think about how their associated capabilities get served up in the context of existing solutions employees use to do their jobs."

"Don't be afraid of governance!" he says. "It seems like this has become an ugly word/concept in recent years and it is leading to 'scatter', dis-integration, and a proliferation of solutions that seem to be almost identical."

Tools for tools sake is not really a solution. They work best when the organization takes a strong stance, offering the right tools for the right purpose in the right context.

"Support innovation, mash-ups, etc.," Ceplenski advises. "But at some point do your employees a favor and provide some direction or even make bold choices about which solutions the enterprise continues to support and which ones it kills."



The page *PORTAIS DE COLABORAÇÃO* (Collaboration Portal) at VSE is organized by department. Through this page, the users can navigate through all departments and find important information about each department, as well as share files, in just a few clicks.

BEST PRACTICES

- Evaluate the need. Before adding Web 2.0-type collaboration tools to a portal, make sure there is a business reason that necessitates their use. Find the right tool to accomplish a goal rather than following a whim or a trend.

- Plan for success. If you build it, they might not come or they might come in droves. There is no golden rule as to what will work in any particular organization. Choose tools that fulfill a business need. Try to match the tool with the purpose, and then try it out. What doesn't work in one instance may be a huge hit in another. There is no perfect recipe.
- Accept the inevitable. Social tools have so permeated the internet that their use is considered mainstream. That means employees expect a certain level of interaction both inside and outside of work. Don't bury your heads in the sand and hope this trend will go away. The manner in which people communicate and collaborate has changed. Embrace the change and put these new tools to good use for the benefit of the enterprise.
- Develop guidelines in advance. Develop and promulgate appropriate and necessary social media guidelines in advance of release of the tools.
- Governance is a work in progress. Governance can take many forms and no one has figured out the perfect model. Assign distributed stakeholders to monitor and engage in communities that relate to their business area. Makes changes as the tools grow and gain popularity.
- Ban anonymity: Do not allow anonymous commenting. People will share openly and appropriately in a work environment. Demonstrating a tolerance for diverse — and sometimes strongly worded — opinions builds trust.
- Train users. Training can be one of the key success factors for collaboration tools on a portal. Teach users how to use them and how to best use them.
- Take off the training wheels. Monitoring every comment is just not feasible. It might seem like a good plan to trial a tool or community by keeping a tight reign on each and every post, but it's not manageable in the long term. It's better to establish terms of use and police infractions. There likely won't be many.
- People behave. Research shows that users behave in professional social environments. Don't be afraid to give users freedom to contribute their voices to the conversation. They will, almost without fail, act appropriately.
- Strike a balance. Try to strike a balance between freedom, which encourages user participation and guidelines and structure, which is necessary for the long-term life of communities.
- Make the tools easy to use. Like most new features, it is best to employ collaboration tools that are easy to use, rather than just putting something up on the site for the sake of having it there.
- Clear the dead wood. Pay attention to unused communities and weed them out if necessary.

- Define the rules but don't define the purpose. Provide every employee with social media guidelines, but be careful not to stifle creativity and serendipity by tightly-defining the purpose of social. Allow employees to find ways to weave it into their workflows.
- Legitimize social. Make sure people know it's work, not work avoidance. A good way to start the ball rolling is to have C-Level executives visibly using social channels. This makes a bold cultural statement about the importance of social channels.
- Find and nurture evangelists. Seed content and community through key people in key departments using the tools.
- Smart small and build. A small initial initiative can build momentum for a larger effort. Don't try to do it all at once.
- Publicize successes. Use internal communication channels to share successes so that that all employees, not just early adopters, fully understand the new channels.
- Create, then curate. Community Manager roles are critical. People in these roles seed ideas and help the communities grow.

Security and Single Sign-On

Combining corporate applications and information resources into a single location can make life easier for users, but it also creates daunting behind-the-scenes security questions and tech challenges. While some portals simply grant unrestricted access to all users, other portals restrict access to either certain groups, or even to individual users. From a usability perspective, when portals are the front end to access applications, having a single sign-on (SSO) is the best approach, and the one for which almost every user will vote. As Ivy Eisenberg at Verizon notes, "if users didn't have to keep typing in different passwords, that would really be a quick win."

Passwords, of course, aren't just a portal problem. Everyone knows that asking users to remember multiple passwords and logins results in usability problems, security issues, and wasted help desk time. One organization profiled for this report admitted that users often wrote down their passwords and hid them under keyboards. At any organization where a user must remember multiple passwords or change them with high frequency, assume this type of behavior will be the norm.

For Vattenfall, single sign-on, beyond being a convenience for users and improving their password handling, has also boosted overall enterprise security. That's because Vattenfall now provides access to multiple SAP applications via the portal. Thus instead of having to maintain multiple information stores with usernames and passwords, Vattenfall's information security practice can maintain one database. This saves the information security department time, and also gives them a consolidated view of who's accessing what.

Despite its desirability, achieving portal single sign-on is easier said than done. The biggest problem is, of course, that integrating multiple applications, each with their own unique authentication schemes takes time and effort that some IT departments just can't afford. "It is certainly something that users ask for," says McNamara, "but it's up to IT and the amount of time and money they wish to use on this."

The bottom line is that achieving complete SSO will likely remain a goal rather than a reality. Companies won't achieve ubiquitous single sign-on unless they choose their applications with this in mind and spend a great deal of development time to make it happen on legacy applications.

THERE ARE MANY STOPS ALONG THE ROAD TO SINGLE SIGN-ON

The Challenges to Integration

Single sign-on is like a train route. There are many stops along the way and each one is a step closer to the end point but yet can be a destination unto itself. Getting to the destination of single sign-on must be achieved one stop at a time and it may take time to complete the journey.

At Huntington Bank single sign-on is a yet unfulfilled, but often requested feature. "Single sign-on is a feature requested by the users and a requirement for design," says Gerianne Bartocci usability strategist for Intuitive Company, one of Huntington's design agencies. "To what extent Huntington will be able to accomplish this, we are not sure but we will be pushing for the reduction of repetitive logging-in to different systems as much as possible."

Some portal teams struggle with application integration because the applications are just not that easy to integrate from a programming perspective. Also, cost, logistics and politics all play a part in the challenge of achieving single sign-on. Yet, the overwhelming challenge to unified authentication is that many disparate third-party applications weren't made to use the same authentication standard.

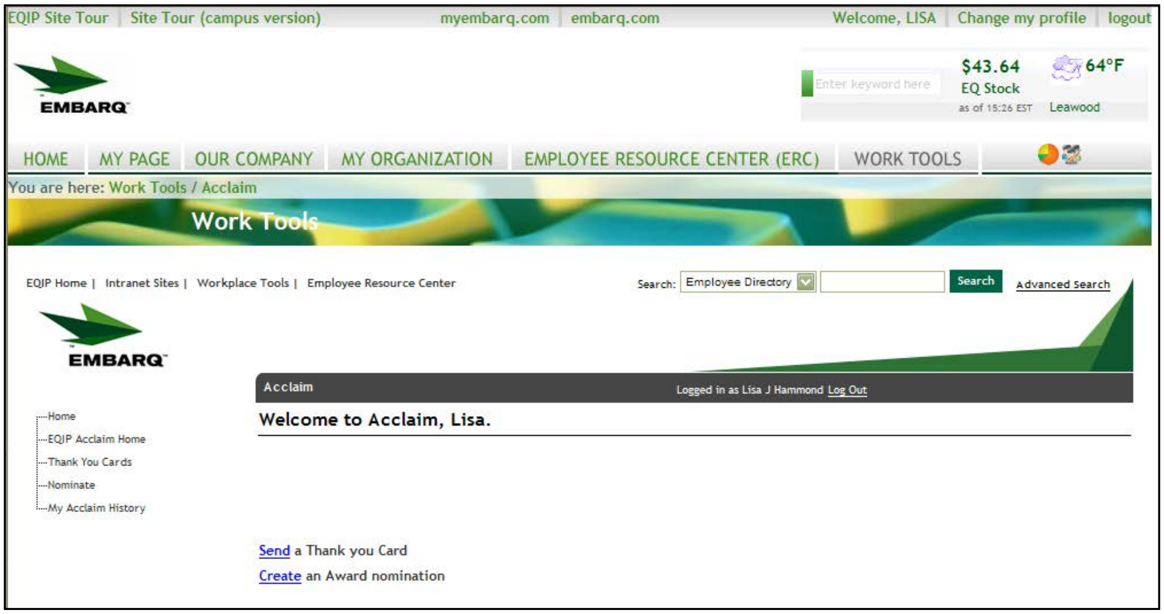
The vast majority of portal teams wrestle with such issues and many don't have the clout to change outside vendors. Typically, portals bridge quite a number of applications — some newer, some legacy, and most not built to work with the other in any sort of unified infrastructure.

For example at Persistent Systems the organization has SSO as a portal goal but it has yet to be fully achieved. "We are working on SSO implementation for all enterprise web applications used in the organization," says Bhishikar. "We are also working on oAuth based SSO for our mobile apps with enhanced security with Two Factor Authentication."

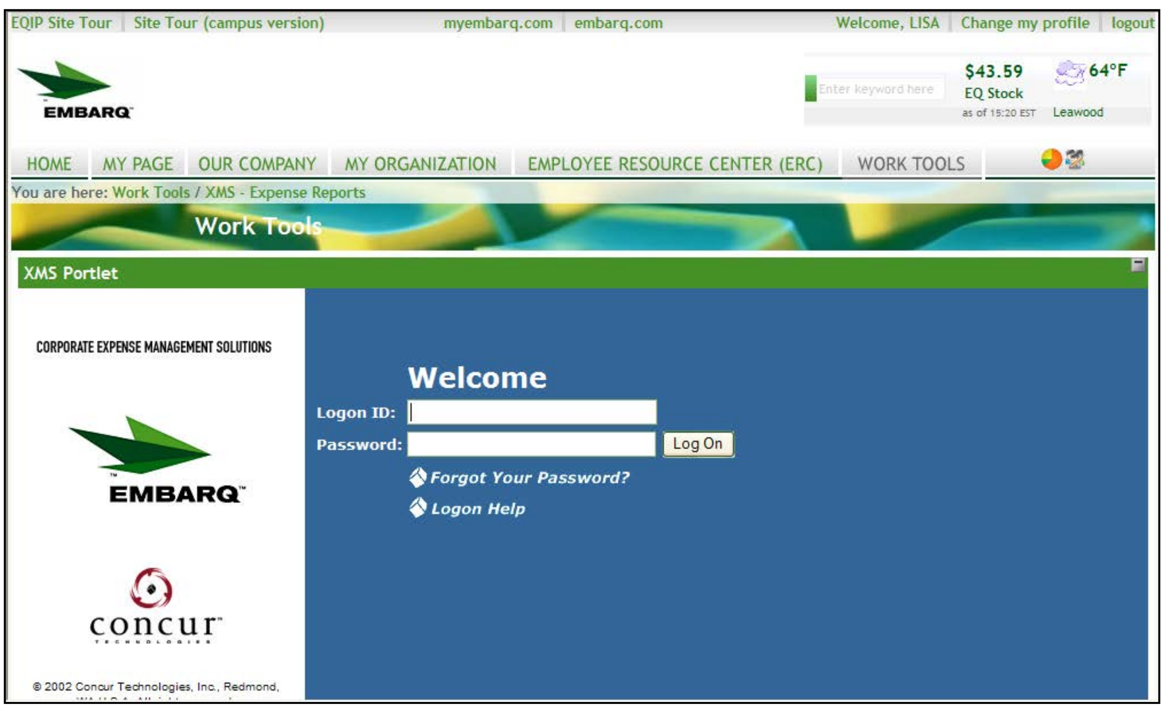
"However," he notes, "legacy line of business applications are outside of the SSO scope as they would need to refitted for SSO support. This is on the roadmap and will be addressed shortly."

Single sign-on barriers may also exist because different parts of the portal are hosted by different third-party organizations, as is the case at one of Towers Perrin's clients. "We host the health and welfare information but another vendor hosts other information, and employees have to log in separately to access the different areas of the site," says Siegel.

This is partly a technical issue. "We have a process to work with clients we build sites for, whereby we can provide single sign-on across different hosts if the hosts will accept trusted partner status," notes Siegel. "But in this instance the other vendor just won't do it because of the level of security that their site requires. And in the case of information held in PeopleSoft systems, for example, you have to provide role-based definitions for all the employees, which can be mapped to their security structures. It's possible, but it takes a lot of work, which is another limiting factor."



This screenshot from EMBARQ's portal shows an application that is hosted externally but the design team was able to surface it on the portal, in a portlet, so that it is branded consistently.



This is the expense reporting application on EMBARQ's portal. This is an example of a *work tools* tab/menu item and the application as it is surfaced within the portal.

On Piper Jaffray's site, third party services are utilized for various tools and applications. "Securing corporate data is a top priority," says Swanson. "So whenever we need to connect with another system, we involve our internal information risk management professionals to make sure we meet their standards."

"Some vendors do not do encrypted pass-along that could be fed into the site," she says. Therefore the company does not currently offer single sign-on.

Going forward, though, they are trying to overcome this challenge by using the power of the portal platform to persuade their third party vendors to accommodate their need for secure encrypted pass-along.

"We are saying to our vendors, if you want to do business with us, you have to change," says Swanson. "Now that we have a platform, we feel we are in the lead. We feel we can do some of this in-house and that will drive us to push our vendors a little more."

For organizations operating on a tight budget, single sign-on is also a cost they must be able to justify. Portland Public Schools would like to have single sign-on to the applications on its site but has been put off by the cost. "Many of the single sign-on technologies are products that carry a fairly hefty price tag for an organization like ours," notes Connie Lysinger.

For companies that are about to implement single sign-on, the initiative can take many forms. Embry Riddle University has a sort of mixed bag right now — some portal applications are integrated into the portal and some are merely links. The portal alerts users when they are about to jump to an application that is radically different than the portal. Single sign-on for them would allow them to take advantage of pushing role-based content to their users.

Pam Golding Properties is in a similar situation; single sign-on will be part of the portal's next phase. When it comes, the organization plans to put it to good use to secure its collaboration tools. When users contribute content to a blog, message board or just about any other open forum their contribution will be attributed directly to them based on their system ID. This will be a big win for the organization in terms of policing its online tools says Pam Golding's Sophia Karalis.

Don't Blame the Portal

Even for organizations that make single sign-on a priority and execute it to the fullest extent possible, some applications still can't be integrated, at least not yet. UC Irvine's portal team has a slogan that they live by: "One place, one log-in"

"The users are happy to get rid of multiple log-ins," says UC Irvine's Sadovsky. "The users were enthusiastic. There are still issues with technology in some cases, and security constraints in others."

Some legacy applications are harder to integrate than others and the team just doesn't have the resources to re-write all the applications to accept the single sign-on, right now. "But over time we plan to phase them all in if possible," she says.

The Network and Academic Computing Services department implemented the university's portal single sign-on service and portal team members say it was fairly easy to integrate.

UC Irvine's SNAP homepage before logging in. This is the view a guest sees. It shows the main tab with news channels and information about the portal. Other tabs reference job related functions.

Like the Kaiser Permanente team (discussed below), UC Irvine's portal alerts users when they are about to open an application that requires additional authentication.

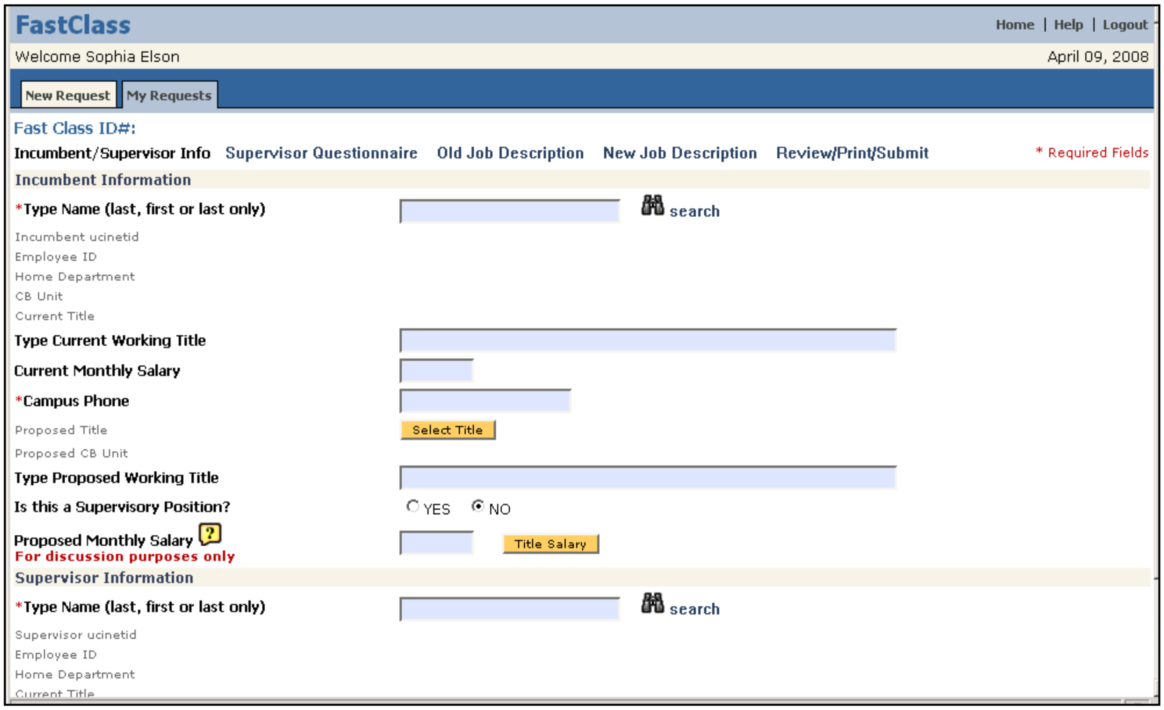
Another challenge for single sign-on integration is the varied time-out period of sensitive applications housed within the portal. The portal has a long timeout and some of these applications have a shorter timeout period. The team chose to have these applications open in a new window, users may have to log in again, but the site tries to explain why.

"Users don't understand; not fully," says Sadovsky. "They think it's the portal."

"User's also get confused if something goes wrong with applications that are contained in the portal," says UC Irvine's Godfrey. "They think it's the portal."

When users send feedback, the portal team directs them to the proper person who can help. And to further aid the users in getting results, the Administrative Computing services department formed a help desk team so all feedback goes through a single help desk. Those help desk personnel are trained to answer questions for any application. This not only helps the users feel they can get answers without getting the run-around. This system also helps to filter out the requests that come down to the portal team, since the help desk sorts out which complaints are about a particular application and which complaints are about the portal itself"

"Lately, the complaint feedback on the portal itself is nil," says Elson.



A user who is logged into SNAP on the UC Irvine portal, and has selected an application, will see his name at top of the application and can proceed to use it (based on his specific access rights). The applications all conform to GUI standards for the portal.

Helping Users Understand the Boundaries

While tech teams grapple with the expense and technical challenges of implementing the sign-on, the users bear the burden of multiple sign-ons across portal content and applications. Portal teams that acknowledge that can take measures to ease the pain.

“Until there is real single sign-on) we take a hit on the user experience,” says Kaiser Permanente’s McDonald. Kaiser Permanente’s team made accommodations in the UI by putting an icon next to any link that requires the use to log in again and has the site open those applications in a new window.

“We give them the context that they are stepping outside of portal,” says Garrett. “We are trying to make it expressed.”

Another hit to portal usability at Kaiser Permanente is the way the SSO was designed. “It was designed as an ‘application,’ with a user interface, pages, etc., so the user signs on to the SSO application and is then passed back to the application requesting authentication/authorization,” says Garrett.

“The user experience is disjointed,” she says. “And because the SSO application is an enterprise application, it was designed to be rather generic (no branding, no control over the flow through the application, no variation in messaging, etc.).”

“If I had it my way, SSO would have been designed as a service that you can ‘call’ in the context of another application such as Portal,” she says. “So instead, the SSO application would be ‘under the covers’ with a specific set of services or functions an application can use to authenticate/authorize a user. That way, we could design the login experience, but rely on a common set of services."

Despite its challenges, single-sign-on can be a boon for users. "I see tremendous benefits for the end user," says Kim Garrett.

The benefits she notes include: fewer usernames and passwords to remember, seamless transition across secure applications and to the enterprise, better password management, better security, reduction in help desk support for password resets and consolidated administration/maintenance, just to name a few.

BIG POTENTIAL SAVINGS AT VERIZON

At Verizon, the portal team has identified a clear need for some kind of single sign-on: improving employees' productivity. "The reps have several different systems they have to sign in to, and it takes them a minute each time," says Eisenberg. Yet when it comes to changing that, there are often formidable technical and organizational difficulties. "The packages we've seen that will support [single sign-on] have to live on individual workstations, which are administered by the local LAN group. So keeping that updated is very hard to do," says Eisenberg. One approach to single sign-on is to put a wrapper or layer of middleware around all the systems on the portal. Users sign on once and the middleware then takes care of signing on to the various underlying systems. But in practice, this can be difficult to manage. "People work on systems that may be provided by external vendors, and they have different password expiration intervals," says Eisenberg. Managing those and avoiding locking users out of systems — including ones managed by third parties — can be difficult. "We have to figure out a way to help them change the password without having them kicked out permanently," says Eisenberg, who thinks that "if you're going to have one wrapper for single sign-on then the portal is in the critical path for any system changes — and it becomes a bottleneck."

A PRAGMATIC APPROACH AT NAVSEA

The NAVSEA portal provides access to a wide range of legacy applications, a majority of them web-enabled, but as yet there's no single means of authentication and users typically have to sign on multiple times. Security is obviously a hot-button issue for the Navy, and the Navy's move toward Department of Defense Public Key Infrastructure (PKI) authentication is helping the portal team decide how they'll manage intranet access at an individual user level. Indeed, it's likely users will use public key authentication via a smartcard — which entails having a card reader for each workstation.

Technically speaking, however, the scale of the task is daunting. "Some custom-built applications you could integrate into the portal quite easily, because they use the same authentication table," notes White. Yet for legacy applications, you could use a single sign-on to cross-reference some kind of master database of applications, but that would mean writing an API for each of them from the portal. There are thousands of legacy applications, and it's just not feasible to do that for all of them."

Beyond all of those APIs, some applications have specific license requirements, such as the number of people who can use an application concurrently. Or as another example, "the corporate document management system is only licensed for a certain number of people to use."

NAVSEA's approach will be to try and incorporate the most-used applications into some kind of single sign-on infrastructure. "We'll go for the low-hanging fruit," says White.

SINGLE SIGN-ON AS A SEPARATE INITIATIVE

At Cisco a single sign-on (SSO) solution was implemented several years ago as a separate initiative (apart from the portal program) so the portal team did not need to directly address that issue. "There are a couple of legacy systems that started before our single sign-on solution was delivered," says Jewell, "and these tend to move into the SSO umbrella at a major upgrade time. In some limited cases, where the lifetime of a system is limited, the decision is made to never enable SSO."

The experience inside the platform is consistent with SSO because the policy for portlets/applications within Quad requires that those applications utilize SSO. However, where users have published links to legacy applications internal to Cisco, the user may have an imperfect experience, requiring them to log in again to that application.

REDUCED SIGN-ON AT KAISER PERMANENTE

When asked about single sign-on at Kaiser Permanente, Kim Garrett the company's user experience lead replies, "We like to refer to it as 'reduced sign-on'." Rollout has been slow, she says. "New applications are coming onto single sign-on, but it is slow. It is an organizational challenge," she says.

"We have a single sign-on (SSO) enterprise initiative," she explains. "But each application/resource has to fund integration with SSO and there is a backlog of requests (which means applications often build their own authentication/authorization to meet their schedules), so I have not seen the traction I would hope to see."

The Kaiser Permanente portal was the first enterprise application at the company to leverage a group-based approach to security with single sign-on. This separated the administration of security in the application from the provisioning of users, in that security in the application is set based on groups, and membership in the groups is managed separately by the business, explains Garrett.

"This was a huge win," she says, "As the provisioning of users in an enterprise of 150,000 people can be burdensome and traditionally comes with a lot of centralized IT overhead."

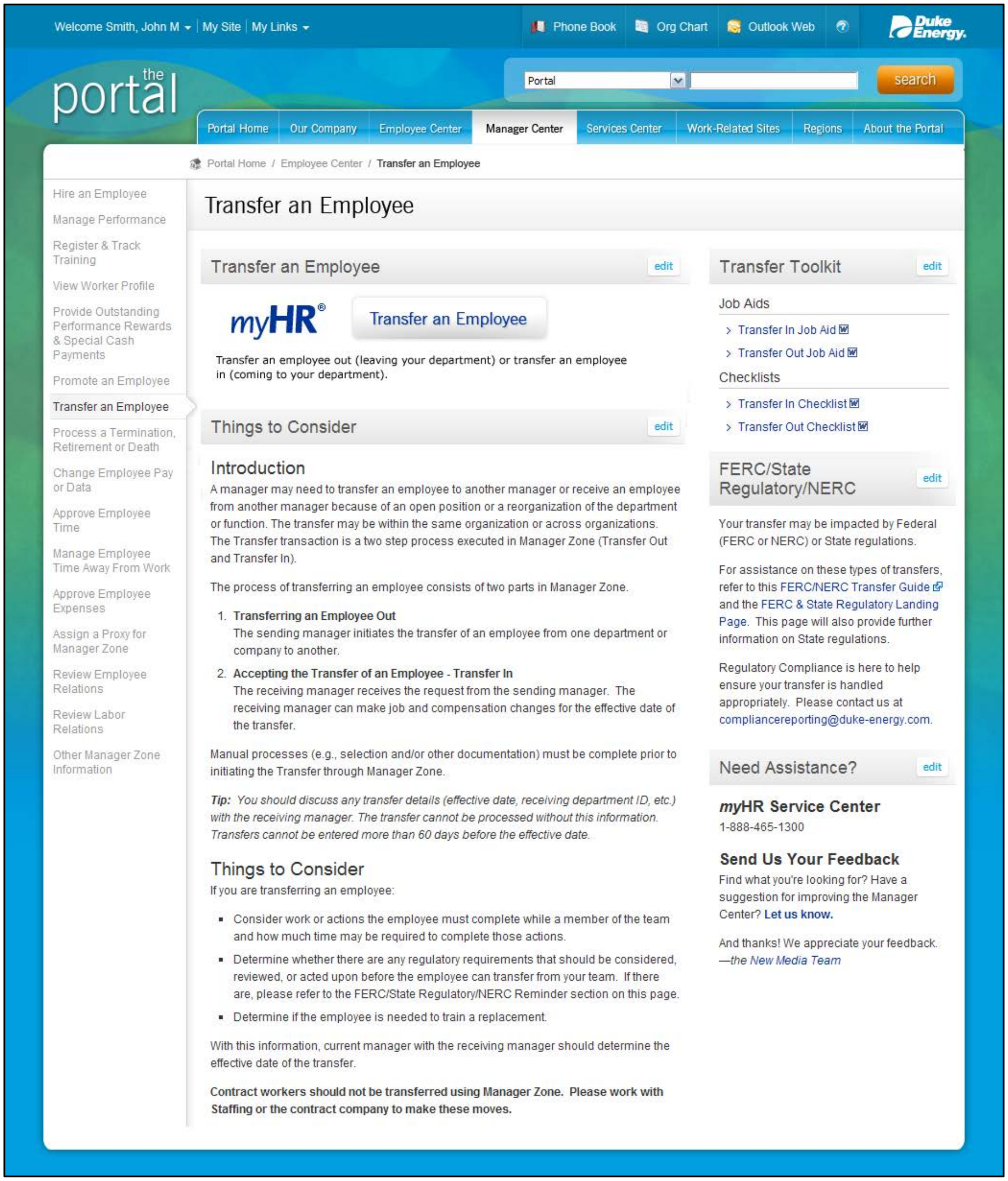
In addition to a slow rollout, the team also struggled with integration challenges with its portal solution. Like many features of large portal platforms, executing single sign-on can require customization that can swallow time and resources.

"In our case, there was not "out-of-the-box" integration with the portal software," she says. "So the integration involved some customization and was one of the more problematic aspects of the initial release of Portal."

EVOLVING SINGLE SIGN-ON AT DUKE ENERGY

At Duke Energy single sign on has been a priority since the portal first launched. "In the last few years," says Brown, "we built a custom tool to facilitate single sign on with multiple applications."

At Duke Energy, single sign-on has been in place from the beginning, but it was a custom situation with each application. A custom tool was built in 2009 as a one-stop-shop for single sign on. It basically operates as a behind-the-scenes sign-on interface between the Portal and the application.



A site within Duke Energy's Manager Center — *Transfer an Employee*. This is an example of the design for one of the transactional pages that take the user to an external application. The design team has used the clearly labeled button feature, placed near the top of the page, to quickly identify the path to the application, knowing that users, in most cases, come to these pages to get things done.

UNLOCKED CAN FEEL UNSECURED

When organizations put single sign-on in place, users can struggle with the transition from a multiple-login situation to a single access point, especially for data or applications they feel contain sensitive information. This is mostly a trust issue that can be overcome, but it is important to keep in mind when considering how to roll out single sign-on.

At IBM, the intranet had a single userID/password but users were required to authenticate again on secured sites or applications. "We have also started to rollout a true single sign-on experience using Tivoli Access Manager," says IBM's Ceplenski. "Once it's completed, users will only have to sign in one time on the intranet to have access to all secured content and applications. There is some concern that all applications are 'unlocked' with a single authentication."

"Having to re-enter security credentials (ID/password) is often mentioned as a pain point by our users," he says. "Most of the push back has been from application owners who want ways to ensure that their data is secured."

For end users, he says they will provide additional communication through news items and indicators on individual pages, telling them that they are authenticated with single sign-on. "Like all other applications that require user authentication (email, instant messaging) corporate workstation security rules are in place to ensure that data is locked when a user is away from their computer," says Ceplenski.

Beyond technology, security often involves questions of politics and procedures as well. "There's also an argument that multiple logons have a psychological benefit when users are accessing personal information they may want to be sure is secure. Human Resources feels that it's a comfort factor for employees," says Siegel. "By having someone sign in again it's like you're reminding them that this is really secure stuff." Though Siegel feels that "users would always rather just sign in once," having an additional sign-on could be useful in situations where the portal is going to be left open on the desktop all day, but users don't necessarily want their confidential information to be left lying around on the desktop too.

LOCKED CAN FEEL BURDENSOME

Kaiser Permanente had a related challenge. "Our key challenge was business/user resistance to the introduction of sign-on/authentication to access information that had been previously available on the intranet," says Garrett.

Putting the portal behind the SSO had many benefits for users: including offering personalized content that was formerly genericized.

"HR information was migrated into secure systems that personalize the content to show information appropriate to the specific user's eligibility, benefit elections, etc.," she says. "Our key challenge was business/user resistance to the introduction of sign-on/authentication to access information that had been previously available on the intranet."

To overcome this resistance, the team developed a communication strategy and plan. "The HR organization developed a communication plan to anticipate and address the stakeholders' and users' concerns," says Garrett, "and explain the benefits of a transition from an intranet-based to portal-based experience for HR content and applications."

For users, the communication focused on the benefits of sign-on, such as enabling internet access to HR information from home and the delivery of personalized benefits content. “We also worked closely with the Help Desk to ensure they were aware of the deployment and could respond quickly and effectively to any issues or questions from users,” she says.

Despite concerns about user resistance, the team decided the value of single sign-on outweighed the potential backlash. They put the information behind sign-on for several reasons, including:

- The company’s portal is available over the internet, not just the intranet, so additional security was needed.
- The portal needs authentication to drive a personalized experience for the end user.
- Much of the genericized HR information was migrated into secure systems that personalize the content to show information appropriate to the specific user’s eligibility, benefit elections, etc.

MOVING TOWARD SINGLE SIGN-ON AT SPRINT

Unfortunately, low-hanging fruit isn’t an option for Sprint. “Most people’s jobs are so specific that applications prevalent across the whole organization are not that easy to find,” says Bowen. Ideally, Sprint could at least make these “universal” applications single sign-on — and standardize all IDs an employee must use — since the average Sprint employee must remember anywhere between five and 15 passwords to access various enterprise applications. According to one Sprint survey, “30% of the 8,000 people who replied said they had so many passwords they couldn’t even tell us how many they had,” says Bowen. “Forgotten passwords is one of the top reasons for calling our IT help desk.”

Even as it acknowledges the problems this situation creates, plus the drain on help desk resources, there’s no easy answer, and over the past few years, one hasn’t presented itself. Speaking several years ago, Bowen noted that single sign-on was “one of the most beneficial things we could explore,” though it nevertheless would also be “one of the hardest to coordinate — there are so many stakeholders with competing interests, and a lot of the universal applications are third-party solutions, which aren’t entirely under our control.”

Even today, Sprint is still struggling. “Single sign-on continues to elude us. Ownership, technical complexity and security issues have slowed our efforts,” notes Backlund. “When we ask our users what they want from their intranet, their top responses are ‘fewer passwords and better search.’ Yet we’ve discovered it’s not easy to make that happen.”

AVOIDING SINGLE SIGN-ON

For some organizations, however, single sign-on isn’t on the agenda. For example, New Century Financial has resisted putting any web applications on its intranet portal that require authentication beyond just network access. They can be accessed via the portal, but are not part of the portal.

Why is that? “Part of it is a practicality thing, but when I worked at a major media company on its intranet and we did this, a lot of people created secure areas, and it became very duplicative. So many people would do the same thing over and over again, and if you didn't have access, those parts of the site would look empty," says Cullinan. That design wrinkle — empty spaces — resulted from proprietary portal content management software. At the time, there was no off-the-shelf content management software yet available.

Yet even with new content management software, New Century Financial tries to avoid using secured applications. "When we talk about that with employees, we say it's better to default to publishing content openly, and then only secure what you need," notes Cullinan. "I always say our intranet is for freely distributed information that we're trying to disseminate more efficiently."

For some organizations certain parts of the portal are not covered by SSO and that is by design — at least for now. The reasons behind this decision can be money, time, the difficulty of integrating legacy or hosted applications or even just the security of having sensitive information behind an additional sign-in.

British Red Cross keeps its finance systems, email and corporate wiki outside the SSO environment. Immaculata University keeps HR functions such as pay stubs outside of SSO and BC Public Service has not integrated payroll, leave management, performance applications and many other internal government apps yet.

The road toward a complete SSO environment can be long and oftentimes difficult, so organizations sometimes have to choose their battles.

Shared Work Environments

Single-sign can be prohibited because of the ways users access the portal. In organizations where users share computers, it can be difficult to have a portal with sign-on. We interviewed a healthcare provider and a real estate company, both that struggle with the desire for single sign-on to help create role-based content vs. the challenge of not being able to accommodate all the users with individual computers.

"Some users don't have their own computers, they share," say Pam Golding's Karalis. "There will be problems trying to get them to have their own workstations," she says. For now users will have to sign in and sign back out again.

The Carle Foundation also keeps application login outside the perimeter of the portal for similar reasons. "There is single sign-on to access our portal CLICK," says Skinner. "When a user logs on to our network no matter which computer they are accessing, they can automatically access CLICK as their homepage."

"However," she says, "we do not have a single pass through sign-on to all the applications in the portal. These apply both for clinical applications like our electronic medical record (EMR) system and for non-clinical applications like our personnel records (Lawson) or our timesheet application (Kronos)."

As a healthcare organization Carle must comply with regulations that protect personal health information (PHI) so any application that provides access to this protected information requires dual authentication. Additionally, many employees share workstations, especially in clinical areas, so applications that access an employee's personal information must be protected through an additional sign-on.

"We did provide access to CLICK to employees at home through VPN access and this has added another layer to the need for security," says Skinner. "On our Tools & Application page there is a comment about whether or not a particular program or application needs a log-in and whether or not it is available from home or needs a security token for two-factor authorization."

As illustrated in the examples outlined here, achieving single sign-on is an ongoing challenge. Organizations must, of course, adapt to their particular circumstances as needed but anything short of providing users with a single point of entry to everything in the portal should be treated with careful consideration as to how it affects the users. Here are some tips on how to do it better.

BEST PRACTICES

- **Evaluate carefully.** Thoroughly vet any single sign-on products' ability to work with legacy applications before adopting them.
- **Know there will be limitations.** Portals with third-party applications or services are often more difficult to integrate with single sign-on technology.
- **Prioritize applications based on use.** For organizations with many legacy applications, consider beginning a single sign-on project by integrating the most-used applications first.
- **Signing in can feel "comfortable" to users.** Note that signing in again may be a comfort factor for users when they access personal or sensitive information. When changing over to single sign-on, consider users' concerns. Content may feel insecure when multiple logins they were used to suddenly go away.
- **Accommodate authentication outliers within the interface.** Let users know that certain links or applications will require additional authentication by marking them with an icon or grouping them. Open the applications in a new window so the user can return to the portal.
- **Single sign-on can be a big win to users.** Single sign-on can be worth the investment to accommodate users by giving them a more cohesive experience on the portal. It is frequently requested and valued by users. Single sign-on can also assist with delivering role-based or personalized content on the site. This can add to the value of implementation. Despite it's complexity to achieve, SSO is worth the effort.
- **Single sign-on helps with attribution.** As companies embrace Web 2.0 technologies like blogs and wikis, single sign-on can facilitate governance practices by forcing user attribution that is tied to their logins.
- **Accommodate the rest of the sign-on experience.** Find a solution to single sign off and/or time-out sessions.

Search

SEARCH IS IMPORTANT

By hook or by crook, portal search must be at least good, if not great. Companies that skimp on providing the time and resources necessary to ensure that portal search results are useful and relevant often find themselves penny wise and pound foolish.

Internet users have been spoiled by the powerful search tools they have at their fingertips. Google has upped the ante for enterprise search by providing web users with highly relevant results at lightning speed. Adding to the burden is the high levels of tolerance web search tools have for spelling errors and even ambiguity in search terms. This puts pressure on portal teams to make search results inside enterprise applications better and more relevant. A portal may be judged by how good the search is.

"Search has been identified as an issue by employees," says SanDisk's Lim, "who are increasingly 'spoiled' by the use of commercial search tools and who expect at least as good a tool on Sprocket, the company's portal."

In addition to meeting user expectations, a good search tool is essential for helping them get their jobs done.

"Search is vital to the success of the application," says Bartocci. "By providing an extremely robust search, we can allow users to find what they need quickly and easily. Robustness is aided by enabling users to teach and improve the search engine's ability to deliver 'the right' search results more often and more reliably."

Users want Google but achieving Google-like precision to portal- or enterprise-wide search is easier said than done. Search is only as powerful as the search engine that drives it and implementing effective search, even for a basic intranet, can be difficult. Searching across a diverse portal site that incorporates sub-sites and legacy applications requires rigorous fine-tuning and an ongoing commitment to testing.

Challenges

Users put a high premium on search so portal teams must grapple with a number of search challenges. Among these challenges are whether or not to adopt one a global search approach? Implement a number of sub-site searches? Opt for keyword? Full text? Or take another approach such as semantic search? They also must decide which search engine to adopt, figure out how best to present search results, and deal with the specific challenges of the onslaught of searching socially generated content.

None of these are simple challenges nor is there one right answer. Organizations have to carefully assess what's right for their particular needs yet at the same time try to get the user to the desired content in short order. The many challenges associated with portal search fall roughly into five categories:

- Technology: Because search is only as good as the tool that drives it choosing the right technology is critical to its success. Are the native search capabilities in the portal product good enough? How difficult is the integration of third party tools? It's hard for portal teams to know exactly how any particular product will fare given the specific environment of their portal and organization.

- Information silos: Searching across multiple information repositories can be challenging. Teams have to decide what gets searched (and what doesn't), where to put the burden of deciding — on the system or on the user and how to filter results to include whatever is left out of the initial search.
- Relevance: The demand for relevance is high. Good search technology is forgiving of misspellings and ambiguous terms. Getting content tagged properly is really only half the battle of making sure the search results are relevant.
- Presentation challenges: Deciding how to configure that tiny search box on the homepage is only the tip of the iceberg when it comes to search interface design. Decisions about how to structure and design search results pages are the make or break point for happy users.
- Refinement: Refining the accuracy of search results is a never-ending battle. Teams that do it and do it well say that the work never ends. Making search work well is a marathon not a sprint. It is not a set it and forget it task.

CHOOSING THE RIGHT SEARCH TECHNOLOGY

Most portal products come with a built-in search engine, and many organizations — because of inertia, budget considerations, or because they actually like the technology — end up with this "default" search engine. Even so, search engine effectiveness varies widely, especially for different tasks. Sometimes the differences and limitations of search tools also dictate what the organization can do with them.

For example, Kaiser Permanente has an enterprise search tool, Verity K2.

"That search engine is used on Portal," says Garrett. "It is very brittle and not really scalable enough for portal, for the dynamic nature of the portal environment."

"With Verity you crawl through the front door. If we have three different regions, we have to have a crawler for each region," she says. "It is not scalable from a spidering perspective. We had to make concessions regarding which search engine we used for portal search.

K2 could not support the authentication the company's portal needed to allow the crawler to effectively browse the site as a user, so the team had to switch to Ultraspider, which according to Garrett, was more limited in its configurations and capabilities in other aspects.

The challenges of adapting the enterprise search tool to the company's new portal spurred Kaiser Permanente to look for a search tool that can be applied across the board.

"There is an RFP out for a new search engine for inside KP and the portal has been the driver," she says.

The Limitations of SharePoint Search

Many portal teams rely on SharePoint for their portal platform and SharePoint has a lot of strengths, but teams tell us search is not one of them. That means that even if you use SharePoint for just about everything on your portal you might have to look elsewhere to deliver a really great search experience.

"Enterprise search is still a problem," says Collins. "We [Resource Data Inc.] had a prototype using the SharePoint 2010 search API but it ran into difficulty when canvassing all branches and consolidating the results, partly because of differing network architectures and partly because of bandwidth issues."

The Resource Data team encountered many issues with using SharePoint's native search capabilities, including: bandwidth constraints, introduction of lag into critical systems, security when canvassing the files on various operating systems (different client documents have differing restrictions (for example users may include personal files in their work folders, etc.). "As for searching the intranet itself," says Collins, "since the vast majority of the content is dynamic, the search machinery needs to force the pages to generate in response to the given the search parameters."

SharePoint 2013 search is said to address each of these problems but the jury is still out.

Coca-Cola Enterprises has had similar difficulties with SharePoint's out-of-the box search tools.

"Search has historically been a challenge for us because of the amount of content we maintain and the lack of out-of-the-box good search tools," says Elsohly. "Understanding that meta-data drives search, it is also important to remember that the search engine has to be multi-faceted to pull pages and information that the user is expecting. With the SharePoint 2013 upgrade, we will be taking advantage of a dynamic search engine that utilizes FAST search, BING and SharePoint search capabilities."

Elsohly and her team have augmented SharePoint's capabilities with custom scopes.

Making Search Better One Step at a Time

The Yara team has experienced similar challenges with SharePoint search out-of-the-box. "The out-of-the-box SharePoint search tool on the new portal has yet to deliver on our expectations," says McNamara. "It's meant to be very efficient, but it needs to be adjusted, fine-tuned etc. etc. It doesn't always work as you'd expect it to. We need to make sure the right filters are in place and work, so that it's really easy for people to find what they are looking for. This is probably one of the biggest problems post launch."

Yara's experience with improving its search results also reflects the challenges associated with how the quality of content affects the quality of search results and how hard it is to make that happen.

"For example, some information in our HR database may not be correct or updated," says McNamara, "meaning users get incomplete results when searching for all people at a location etc."

"In some cases the information is okay in HR system, but not synced with our Active Directory," she says. "In 80% of cases the entries are okay, but of course, any inconsistencies are unwelcome and cause frustration."

"Excellent search was something people were really looking forward to," says McNamara, "but we have a lot of work to do here."

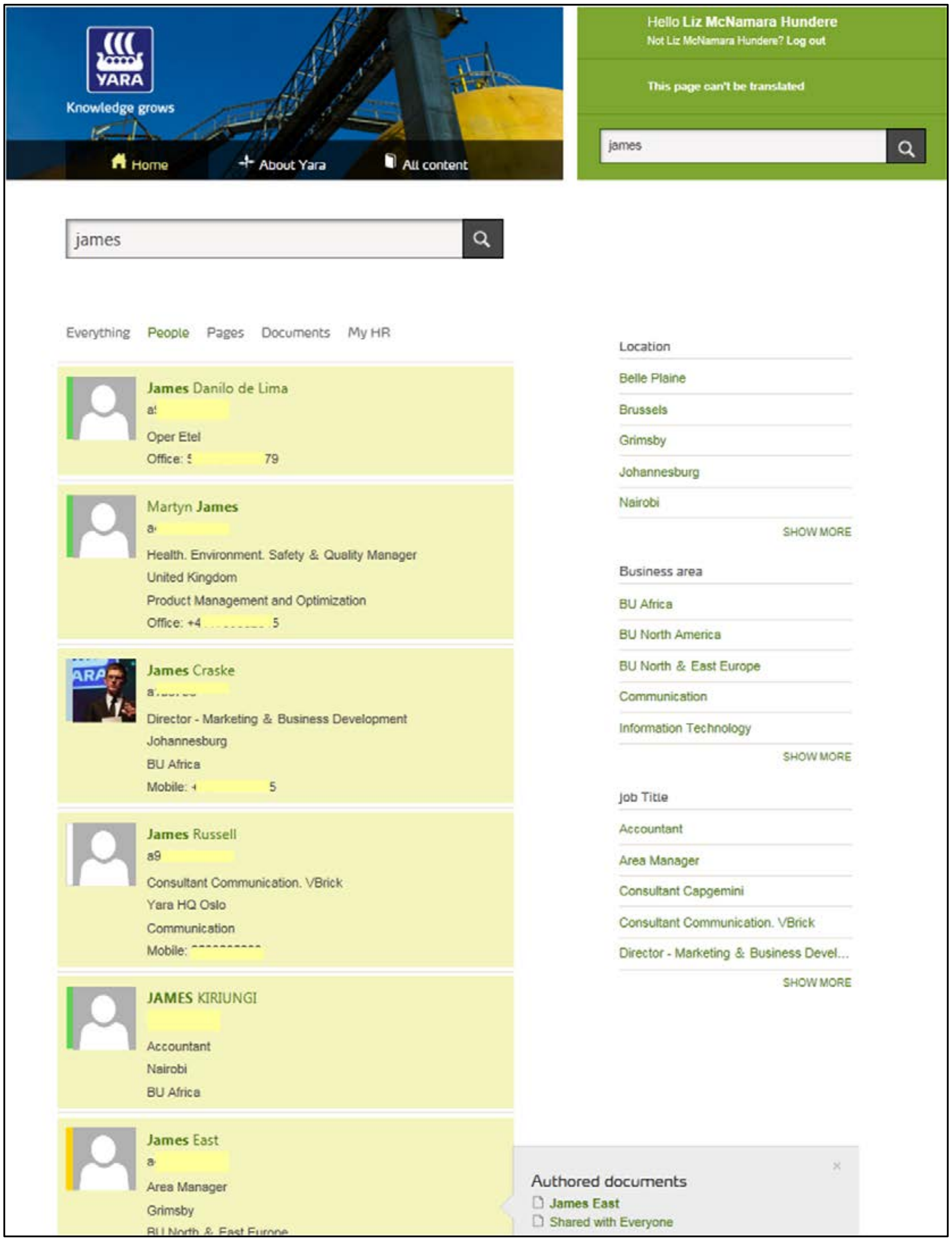
We've said it before, but it bears repeating. Getting search right is not easy. The only thing a team can do is forge ahead and work incrementally to fix the problems and make improvements.

The Yara team is doing just that — making search better one step at a time, including:

- Remove unwanted lists: The team is in the process of removing unwanted lists (such as the footer links) from the search index.
- Add top 10 promoted results: Work is underway to implement a top ten promoted results feature.
- Improve tagging: Also, they are working improvements to page tagging and tagging for other content types.
- Enhance search results: They are adding more intuitive categorization to the search result page to make it easier to refine searches, for example in addition to *Everything* and *People*, they are adding refiners such as *Pages*, *Documents*, and *HR and Key word* refiners.
- Encouraging people knowledge: Knowing that people search results are only as good as the information people put in their profiles, the portal team is working to encourage employees to add relevant information to their profiles and thus improve people search results.

All these efforts may seem small, but they add up to big wins for the team and the portal and the organization overall.

"The more people use search the better it becomes, but work behind the scenes is just as important" says McNamara."



Yara's people search (built on SharePoint 2013). In the short time they have been using it, employees are getting used to searching for people rather than using the old dictionary feature. The people filter on the results page is easy to spot and the results are user friendly and visual. From the search result a searcher can open an employee's profile and find their contact details. If the person has added a picture and information about their knowledge and projects, that will be shown also.

Search that Tolerates User Errors

Think Mutual Bank uses Coveo for its portal search. One of the tool's big advantages is its tolerance for user error and ambiguity. "Our challenges include misspellings and old names for things," says Stiller. "We can solve both with Coveo, which provides a thesaurus and a scarce results feature, suggesting alternate searches if a word is not found or autocorrected."

When a Think Mutual employee searches the search engine searches everything and results are filtered out only based on the user's Active Directory permissions. Search also returns results breadcrumbs that show where the page is from. The user can add filters to remove community forum or blog pages from search, as desired.

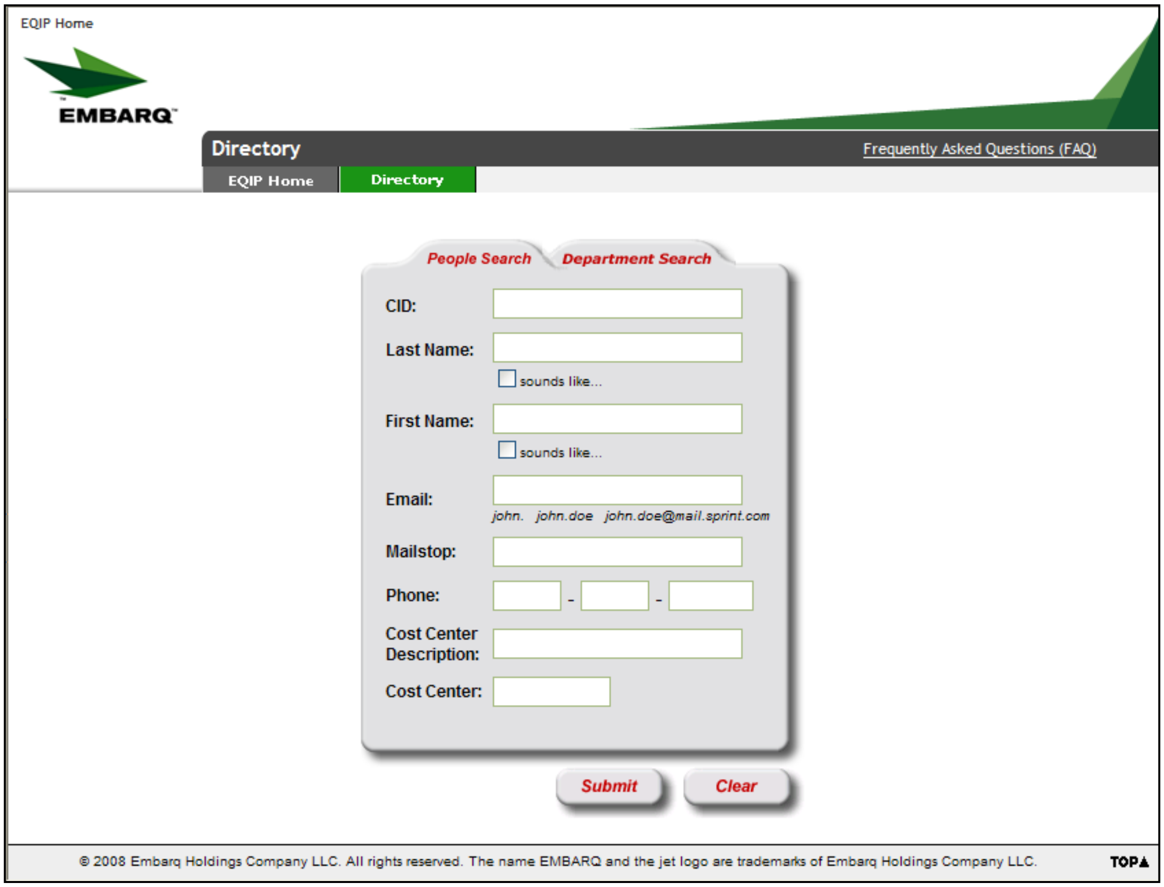
"Excellent content is of no value if users cannot find it when they need it, or locate it among the results provided," says Stiller. "Building up the internal knowledge in our intelligent search makes it smarter, brings relevant items to the top, and helps build trust among the users that the intranet supports their work."

The Limitations of Search Tools

Just because a portal team wants to do the right thing and provide a single search box to search across different types of content, doesn't mean that the search tools will necessarily allow them do that, easily. This was the case with EMBARQ's portal.

"Our design called for a custom search box in the banner area and we had great difficulty getting the API to honor our search parameters," says Hammond. "We were unable to get the DMS content indexed and integrated within the portal search."

In cases like this when teams are restricted by the capabilities of the tools they often have to rely on an interface fix to a technology problem.



EMBARQ's out-of-the-box portal search didn't measure up to the previous people search, so now they have both. A user can search any of the fields shown, including partials or multiples or reverse-number lookups.

SEARCHING ACROSS INFORMATION SILOS

Deciding What to Include

One the most vexing challenges for portal teams is choosing which, if not all, information repositories in which to search with a standard search request. That decision comes with its own set of challenges for large, complex organizations, but finding the right balance between inclusion and exclusion is more than meets the eye. Searching for content across an entire portal can be more challenging than on an intranet. "The challenge in working with a portal rather than a website is with a portal you don't have structure to the content," says UC Irvine's Sadovsky. "No parent/child relationships and less control because users can place whatever channels they want in their tab layout."

"We manage a lot of content within the portal site and the challenge is to get the users to the content within three clicks," says UC Irvine's Elson. "On the portal, because there is so much, we can't put everything on screen."

"Search is very important," she says. "We index most content. The power of the portal is that you can tailor the layout, choose what you see, but that is also the challenge. Users don't go see what's available."

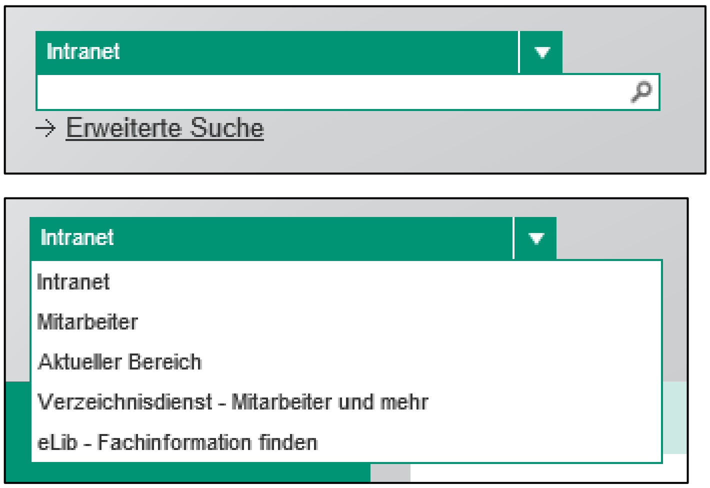
The vast amount of information being generated across the enterprise has made search results more important than ever to users. And it has made the challenge of delivering good results more complicated than ever.

At Cisco "two of the biggest search challenges we face are information overload and relevancy of results," says Kellene Ikegami, program manager, CBT. "With the ability for anyone to create content with ease, users are now overloaded with information so it is even more critical to deliver the most relevant content. We currently utilize filters and scoping tools to help users narrow down to the desired result. Soon, we will implement semantic technology, enabling a better match between the meaning and intent of the user and the search results."

On the E-Z File portal, the first tab shows the search functionality available for the company's product knowledge base. Customers can search the product knowledgebase using a keyword search that searches through question titles and other keywords that have been added to a topic.

Users Decide Where to Search

At Fraunhofer-Gesellschaft there are different search engines for different content and knowledge areas and users have to choose which area they are searching when conducting an intranet search. "For example, we distinguish between "Intranet content", "libraries and knowledge databases," "employees" or "fileserver structures," says Johannes Jüngst, Fraunhofer IAO. "There is no full integration of the search engines. You just have to choose your area and you will find your information."



Fraunhofer employees must choose where they are searching: intranet content, libraries and knowledge databases, employees or file structures. Currently there is no integration between the various search engines.

Putting the burden on the users, to figure out where information lives is not ideal but there are ways to make this work if it's the only technology solution available. One way to help users is to create connection that guides them. "We have short links like "search again in … ," says Jüngst. "This makes it easy to switch between search areas."

"The aim was to find an easy and fast access solution to access different repositories and to make use the benefits of each specialized and already existing repository search (for example the electronic library with direct access to individual licensed literature)," he says. "A federated search was too expensive and didn't provide the specialized functionality such as that of the electronic library."

The design team did some testing with users when developing the search approach, but it didn't result and any big changes. Jüngst says more work needs to be done to evaluate how search is working and how it can be improved.

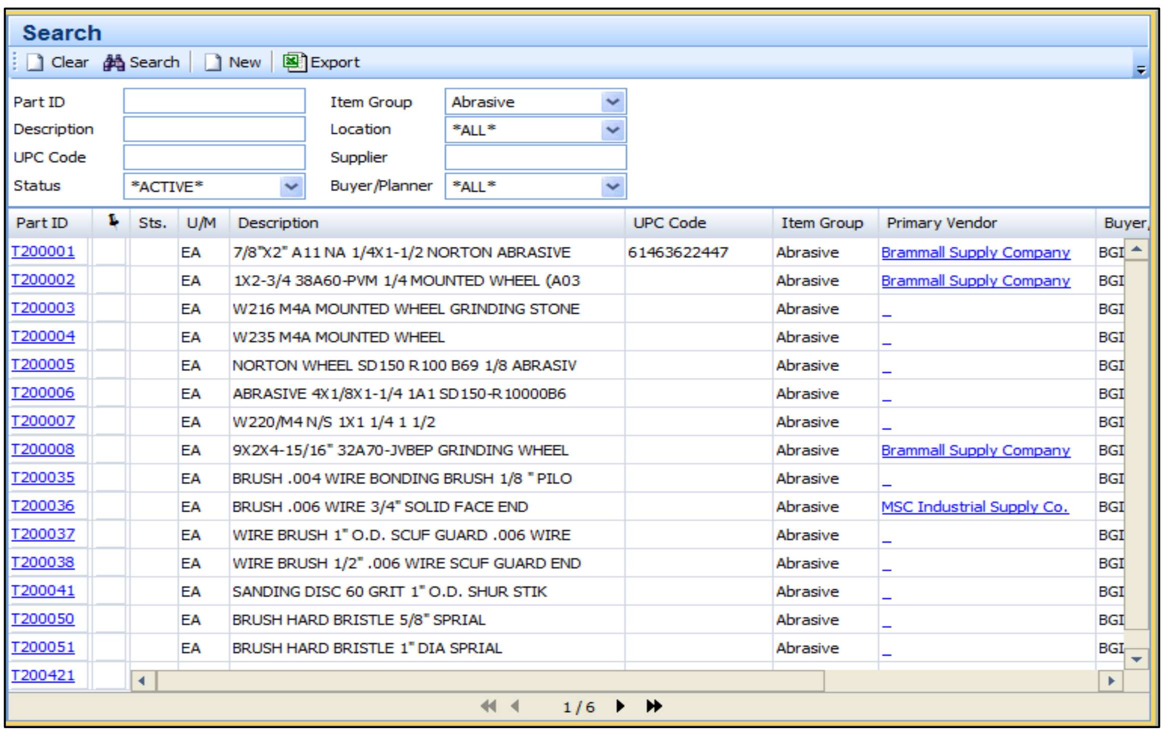
"The results are being optimized continuously to fit the user's intention," he says.

A Single Search Box

Many organizations offer employees multiple search options: one box for searching portal text, another for the address book, yet another for the knowledge management or product information system and another for people search. Despite these many offerings, the simplest approach for users (though at the same time the more difficult for portal designers) is to simply offer users a single search interface.

That's the approach FIGG Engineering Group is working toward. "Although we've made this entirely transparent to the user, there are separate searches for each of our different data types," says Ruffkess. "For instance, Projects and Project Components are searched from one page, while Contacts and Offices are searched from another page. The most common of these searches are available through one search field and a pull-down menu on every page."

The FIGG portal also gives users an all-in-one search, which essentially front-ends multiple search results and tries to show users the most relevant. Making this as full-featured as necessary, however, is a challenge. "We've created a consolidated search that incorporates many of these searches and ranks the results, but it doesn't allow any advanced searches or additional actions to be performed on the search results," says Ruffkess. "We're currently working on addressing this issue and creating a generic representation of all of our data, along with generic representations of all of the relationships, to build a much more comprehensive and advanced search that works across all of the different data types."



An example of an application search page on the Kadant Johnson portal.

Smart Search

Dell's portal search is moving in the direction of what Moorehead calls "smart search." The portal had two search boxes, one for content and one for people. Moorehead's team was working toward combining those two searches into a search that recognizes whether the search is for a keyword or for a person. "It will be intuitive," he says, "to know which is which."

In addition to adding smart search to the portal, Dell's portal team has integrated skills and competencies as keywords in the site's search, by pulling data from the company's HR database. With this additional data it is now possible to search by these criteria. "It pulls skills data from one system to another," says Moorehead. "It's pretty powerful to connect people rapidly."

Searching Everything at Goodwin Procter

Goodwin Procter uses the SharePoint search engine to index all content stored in SharePoint as well as various externally stored information. This kind of aggregation, while not the norm in portals across the board, adds a useful and comprehensive search layer that helps users find that needle in the corporate haystack, from a single search interface. Goodwin Proctor's SharePoint search scope includes all social data stored in the organization's wikis and blogs. Indexing this information is out-of-the-box functionality since SharePoint is the platform for the firm's social tools.

"We use content sources and search scopes to create isolated targeted searches to specific content," says Kawa. "For example every blog and wiki on our intranet contains a search scope box that allows you to search just that blog or wiki. This allows users to perform targeted searches within certain content. The content is returned in an overall general search as well.

The organization also uses SharePoint to index its expertise database. This database provides an experience search for attorneys at the firm. Data that is factored into the experience search includes industries worked in, type of legal service work, who they have worked with, and what practice areas they belong to. The search also factors into the ranking the number of hours an attorney has worked on a specific case.

The firm also has an external knowledge base called the Knowledge Tree. This knowledge base is integrated into the firm's portal but is a stand-alone custom application used for knowledge management purposes of providing substantive legal knowledge and precedent for re-use and training. The SharePoint search engine indexes this external data and provides it both ranked with SharePoint data as well as providing its own scope for more targeted searches within the Knowledge Tree.

Deciding What to Exclude

Deciding what to exclude from search can be almost as important as what to include. When portal teams evaluate search products they often forget how important it is to have good filtering ability

"When selecting a search engine, it's imperative that it provides filtering capabilities," say UC Irvine's Sadovsky. "By default, search engines crawl all the links on the page, and we needed to 'filter out' certain links and disallow crawling. With regular HTML pages, it's possible to use a robots.txt file for that purpose, but a portal does not have folders per se."

Vertex found that its portal search was actually a little bit too good at crawling the company's portal, as did Piper Jaffray.

"It turns up a lot of neat stuff that you didn't know was out there," says Vertex's Karsch. "We are finding that it finds out of date stuff. It's almost too good. It finds everything!"

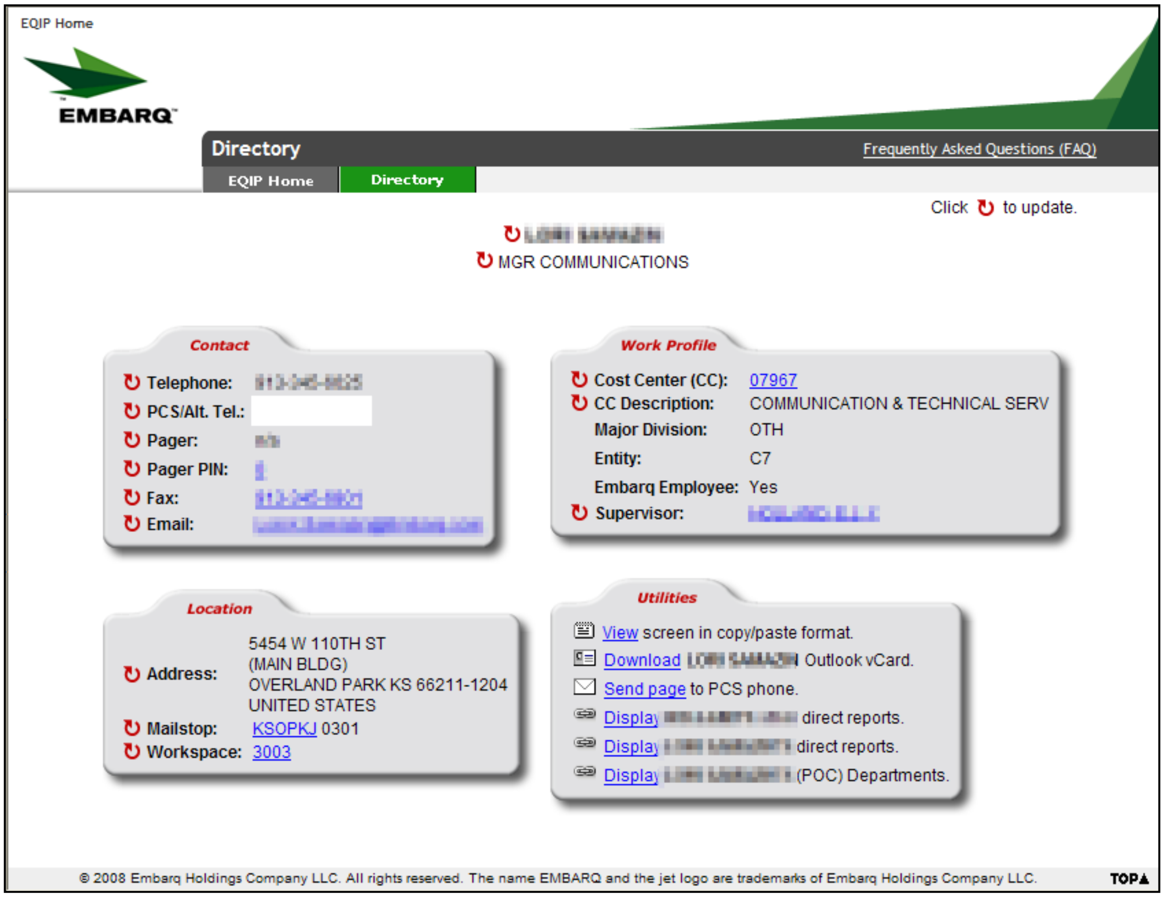
Piper Jaffray found SharePoint's search capabilities to be "very robust," says Swanson. In fact, too robust. The search results returned far more information than they knew would be helpful to the site's users. "We want to scale it back … really narrow the search so people will find what they are looking for," says Swanson.

The ability to filter what gets searched seems like it should be a fundamental feature of a search tool, yet the complexity of many portal platforms makes this common request difficult to execute without additional help. Faced with the burden of this unforeseen additional work the team has to choose: apply tech resources to this (and possibly away from other work) or hire outside consultants to do the customization. The upside to bringing in consultants is the customization work can be done quickly. The downside, of course, is that inside teams forfeit the institutional learning that comes with doing the work themselves.

Applying the filtering functionality has proven to be much more work than the team at Piper Jaffray expected. "The complexity of SharePoint has been a huge learning curve," says Swanson. "Because of this, we decided to outsource the filtering and customization of search to a Microsoft partner so our internal resources could stay focused on the overall implementation."

Ultimately Users Decide

Though a single search box is ideal, the bottom line is that search tools must meet user preferences in order to be effective. For example, EMBARQ tried to migrate to a single portal search tool, but quickly found that this search tool was not meeting the users' needs for finding people in the ways they wanted. "We initially thought that the new portal search would replace our old custom phone directory application," says EMBARQ'S Hammond. "But there was employee uproar! So now we have two people searches; the new portal search is more basic, whereas the old one allows for navigating the org chart — up, down and sideways."



EMBARQ's custom search application has vCard and also the capability to navigate an employee's org chart in all directions.

Enterprise Search vs. Portal Search

With each passing year the line between the contents of the portal and the *rest* of the enterprise information blurs and with it blurs the distinction of what should be searchable from the portal search interface. Many companies are inching toward enterprise-wide search capabilities with the goal of using the portal as the front door to this information. It's one thing to aim for this type of over-arching search frontier and another thing to actually achieve it.

"We don't have an enterprise search currently, although that is ideally what we'd like to have as an end goal: all of our organizations' web assets leveraging a common and universal search engine," says Stathakos. "The portal can only search within its own domain but in our redesign we'd like to explore the possibility of having search all of our current web assets throughout our various domains/networks.

People Search

While general-purpose search engines are de rigueur on the internet, they may not be ideal for very task-specific searching of an intranet portal. For example, "our reps just want to be able to type in a code, such as a billing code, and find out what it means," notes Eisenberg.

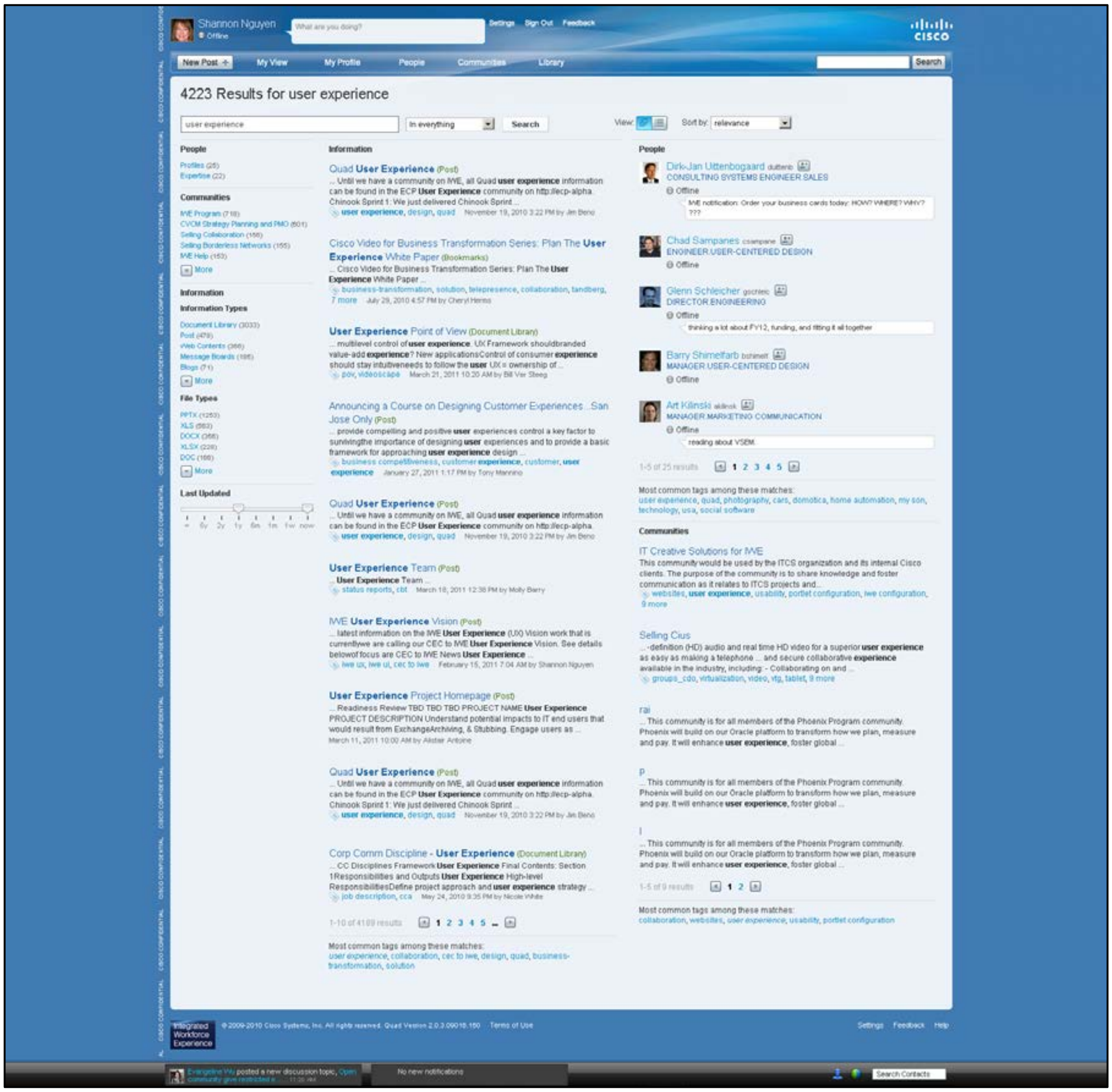
Another great example is people search. Finding other employees is often one of the most-used features on any intranet. In fact, it's so popular that some companies feature "people search" box on the homepage to help users find each other more quickly.

On the HarperCollins portal, "we now have a little search box in which last name search and 'go' appears," notes Zigo. "It was an extra click to have to go into the phone book page, so it's a time-saver when people use the phone book directory so much."

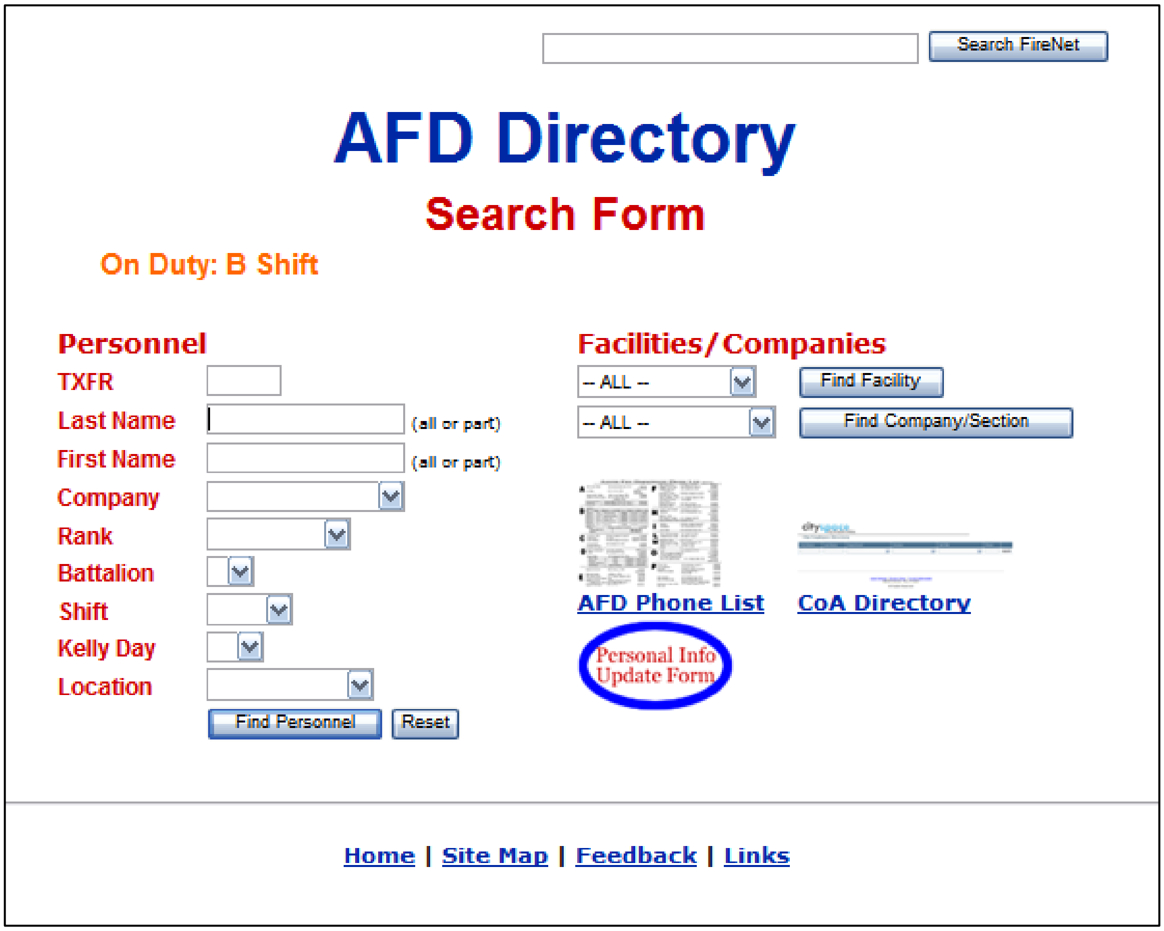
Cisco's people search directory is one of the most frequently used applications within the company with approximately one million people searches per week. "Cisco employees rely most often on Directory's speed and availability to find the people they need to contact along with some basic information about those people," says Ikegami, "a task at which Directory excels."

Finding experts is often a high value search task at many companies. These searches are useful when an employee needs to find an expert in a field within the company who lies outside of his or her personal network. This is especially true at Cisco where approximately 70,000 expertise queries are conducted each quarter. "And that number is rising steadily," says Ikegami.

And as the company implements its social networking platform, Quad, expertise searches will also continue to be a focus of how employees find each other. But this will expand beyond finding users based on expertise tags, to finding their contributions to documents, posts, and participation in communities around specific fields of expertise. "Quad leverages related expertise information to provide users with a more complete view of the level of existing expertise in the enterprise and all relevant experts," says Ikegami.



Search results and related filters are available to narrow the search results on the Cisco portal.



The department search page for the City of Austin Fire Department online directory.

AFD Directory

Search Results

On Duty: B Shift

Search again | Export to Excel

Name	TXFR	Rank	Company	Shift	Batt	Kelly	Work Phone	Work Cell	Pager	
[illegible] *	683	Capt	QNT17	B	4	16	[illegible]			
[illegible] *	684	Capt	AFR02	A	0	10	[illegible]	[illegible]	[illegible]	
[illegible] *	785	Hr Advisor	Support Svcs	N	0	N/A	[illegible]		[illegible]	
[illegible]	1075	FF	ENG37	C	4	11	[illegible]			
[illegible]	1798	FF	ENG15	A	5	18	[illegible]			
[illegible]	761	Spec	AFR06	C	0	13	[illegible]			
[illegible]	997	LT	ENG39	B	2	7	[illegible]			
[illegible]	1988	FF	ENG66	C	5	10	[illegible]			
[illegible]	1810	FF	ENG28	B	6	12	[illegible]			
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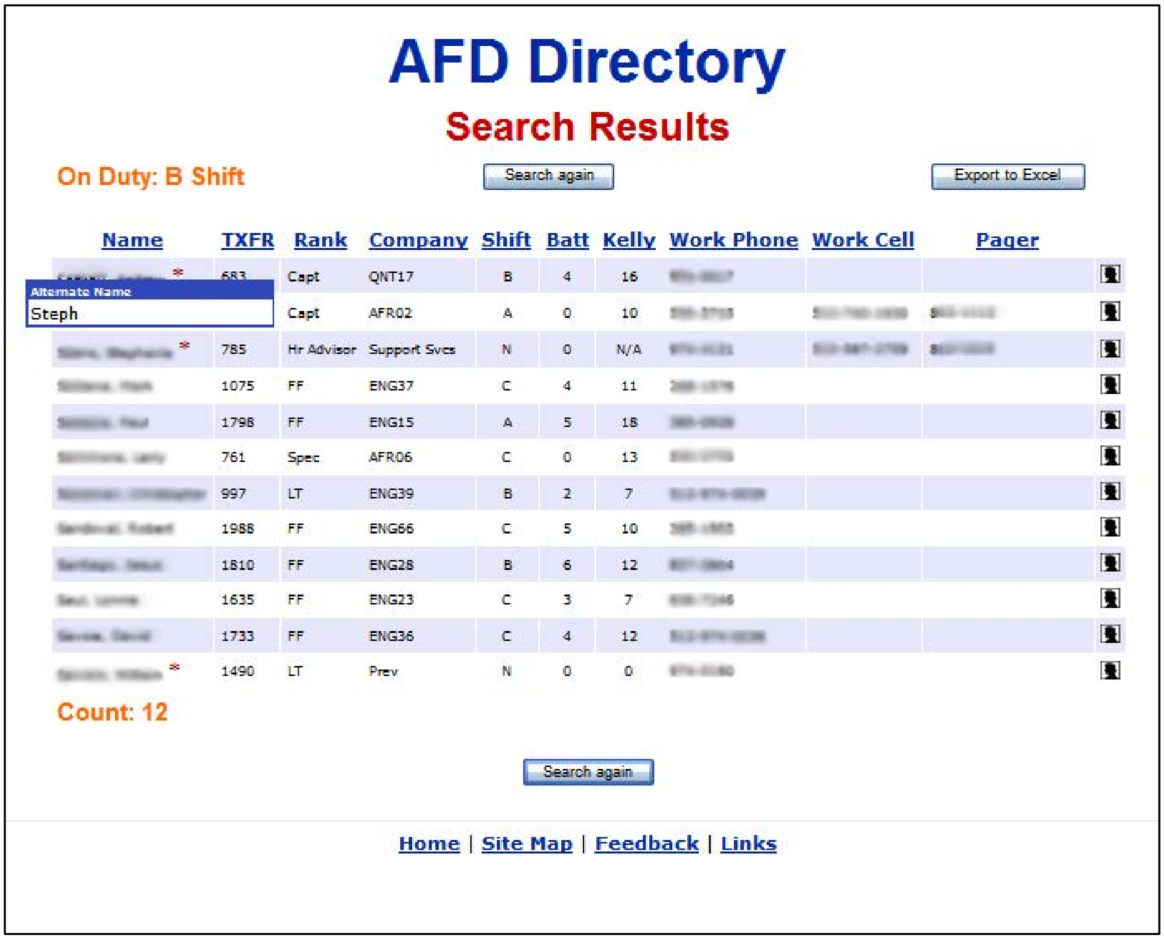
Count: 12

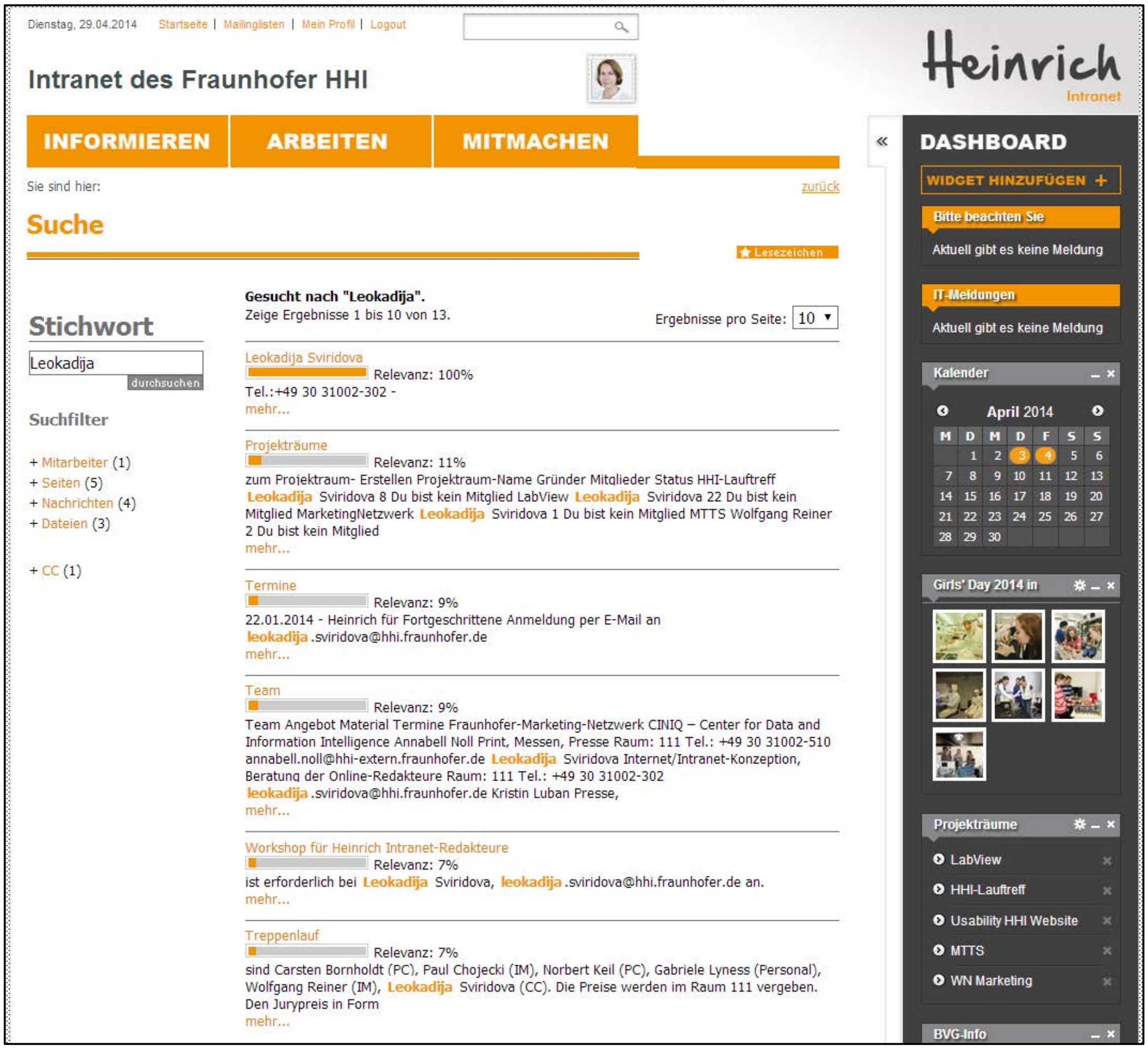
Search again

Home | Site Map | Feedback | Links

When searching the department directory on the City of Austin Fire Department intranet, this search results view shows an employee's photo (enlarged) as the cursor hovers over image icon in far right column of his record.



This view on the City of Austin Fire Department's intranet shows the alternate name box the as cursor hovers over an employee's name with red asterisk.



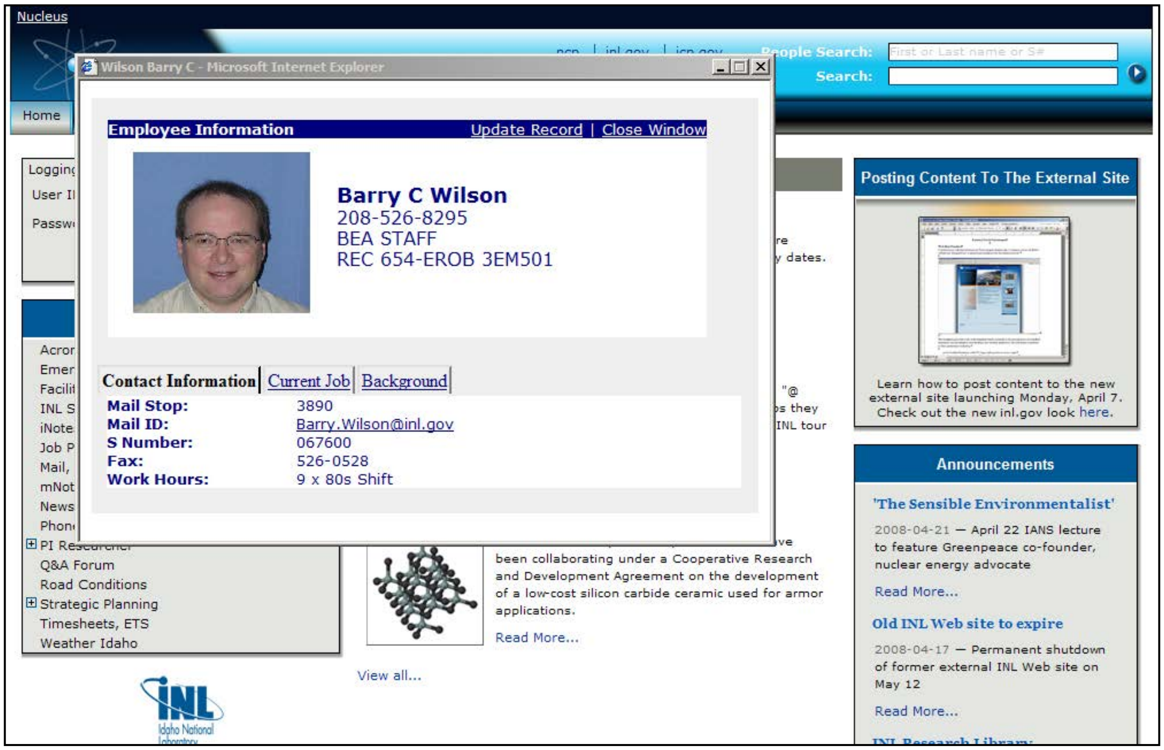
Search results from Fraunhofer HHI. This screenshot shows a search of staff directories by facility, department, name, extension number and keyword.

A web search of staff directories by facility, department, name, extension number and keyword search on the City of Olathe, Kansas intranet.

Supporting Job-Specific Tasks

Beyond site search and people search, many organizations also have implemented additional search capabilities for job-specific tasks. For example, Titlenet, the HarperCollins sub-site for title information, is a crucial application for HarperCollins employees. The search facility is available both through the sub-site and via a search box on the front page (see screenshot below). Search results are sorted by a number of key criteria, including ISBN, author, illustrator, age range, and subject category. Users can also customize this view by adding or removing columns to highlight what's important to them.

Idaho National Laboratory's people search where the searcher has entered a first name. As soon as he begins typing a first name, last name, or employee ID number, a drop-down list displays that match the criteria entered.



Idaho National Laboratory's People Search results page. An employee name has been selected. The employee's work location and contact information are displayed.

Improving Search One Step at a Time

The search functionality on the Carle Foundation's portal wasn't great before the re-design but the team knew they couldn't just throw out the baby with the bathwater. Improving the search functionality was going to have to play out one step at a time.

"On our old site, search was pitiful and something that employees hated," says Skinner. "Because Cweb (the old intranet) was a collection of links, there was no integrated search and for pages that offered search it wasn't effective. Either it returned too much or too little."

The first step in the transition was to apply a narrow parameter to what would be searched.

"For CLICK Phase 1, we knew we needed to implement search, but since the site is still half in SharePoint and links back to Cweb content we knew we had to narrowly define search at first and then build on it," says Skinner. "Global search on the page is limited to three areas — Directory (people search), News and Events. Users can also use advanced search to find all other items on CLICK — but only if it lives in SharePoint. If it lives on our old site, it won't be searchable until the content moves over."

At Carle people search is something that employees use frequently. "People search has smart search capabilities when searching on first name, but not on last name," says Skinner. "People can also search by title, but there are a lot of inconsistencies and abbreviations in the data that make the search sometimes ineffective."

"You can search by department," she says, "but SharePoint returns results in a weird way and it takes an additional step to sort by name. Also, again our data is inconsistent so if you are looking for the *Eye Department*, you can't type in 'optical', 'optometry', or other search terms and get the results you are looking for."

The team is trying to address this shortcoming but it takes time. "We will be modifying our search form on the homepage to have different fields for first name, last name and department," says Skinner. "We also are trying to have conversations internally about standardization of terms, but this is a slow process."

The portal offers advanced search but users don't make good use of it. The link is predominantly displayed at the top of every page and yet many employees have overlooked it and only use the search bar. This behavior is a good example of how people have become accustomed to the Google experience.

"We will need to continue to work on the user experience for this feature and continue to add functionality so it meets user expectations (which is comparable to Google!)," say Skinner.

Another enhancement that will have to wait its turn in the development queue relates to keywords and best bets. "There are still no priorities or keywords set up for search and we know will we need to create Best Bets and elevated corporate items. We also want to look at search logs over time and do something with the most searched terms."

While the Carle team works to add search enhancements over time they are learning the lesson that many teams learn early on in portal development: search takes time to implement and it takes a consistent commitment to keep it working at its best.

"Search is an area that we know needs ongoing maintenance, tweaking and oversight for it to meet our employee expectations," says Skinner. "We plan on implementing FAST search in the next year or so to help us."

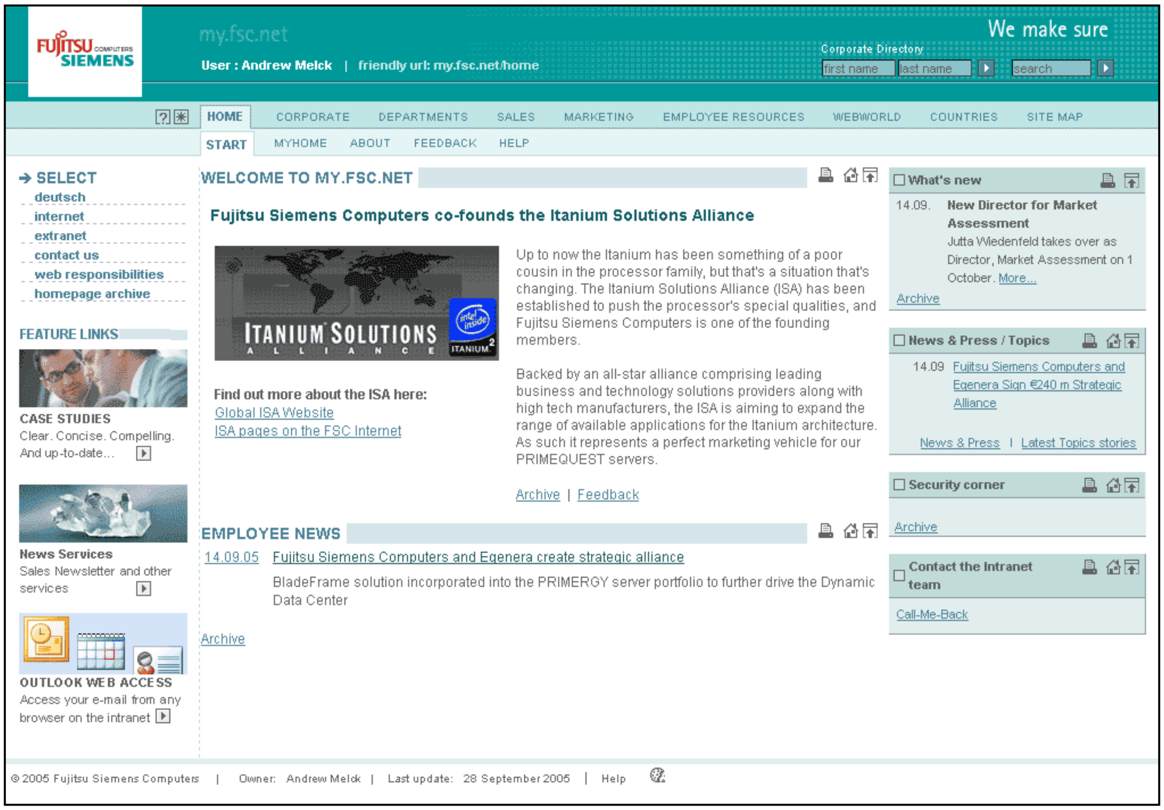
RELEVANCE

Users want search engines that return relevant results. In fact, users will often only look at the first page of search results, or even just click the first result, so it's crucial to list most-relevant hits — however they're defined — first.

The most common complaints about search engines are that they return too much information and that they are hard to fine-tune. Take HP Europe for example. The company was having problems implementing effective search with its Verity search engine. Verity was chosen because it supports multilingual search and was compatible with the company's technical platform. Multiple languages were important because the HP site supports over 25 of them, and presents many users with documents in their native language.

Given the portal's massive size, however, HP's Benaissa felt results were insufficiently focused. "The problem is getting relevant searches — a search that returns 1,500 documents is not much use to us," he says. "I want to be able to define the search engine logic, in order to fine-tune the way it finds and ranks hits. This may link back to the way documents are attributed in the first place. Hence the importance of getting 'content creation' people and 'content publishers' around the same table."

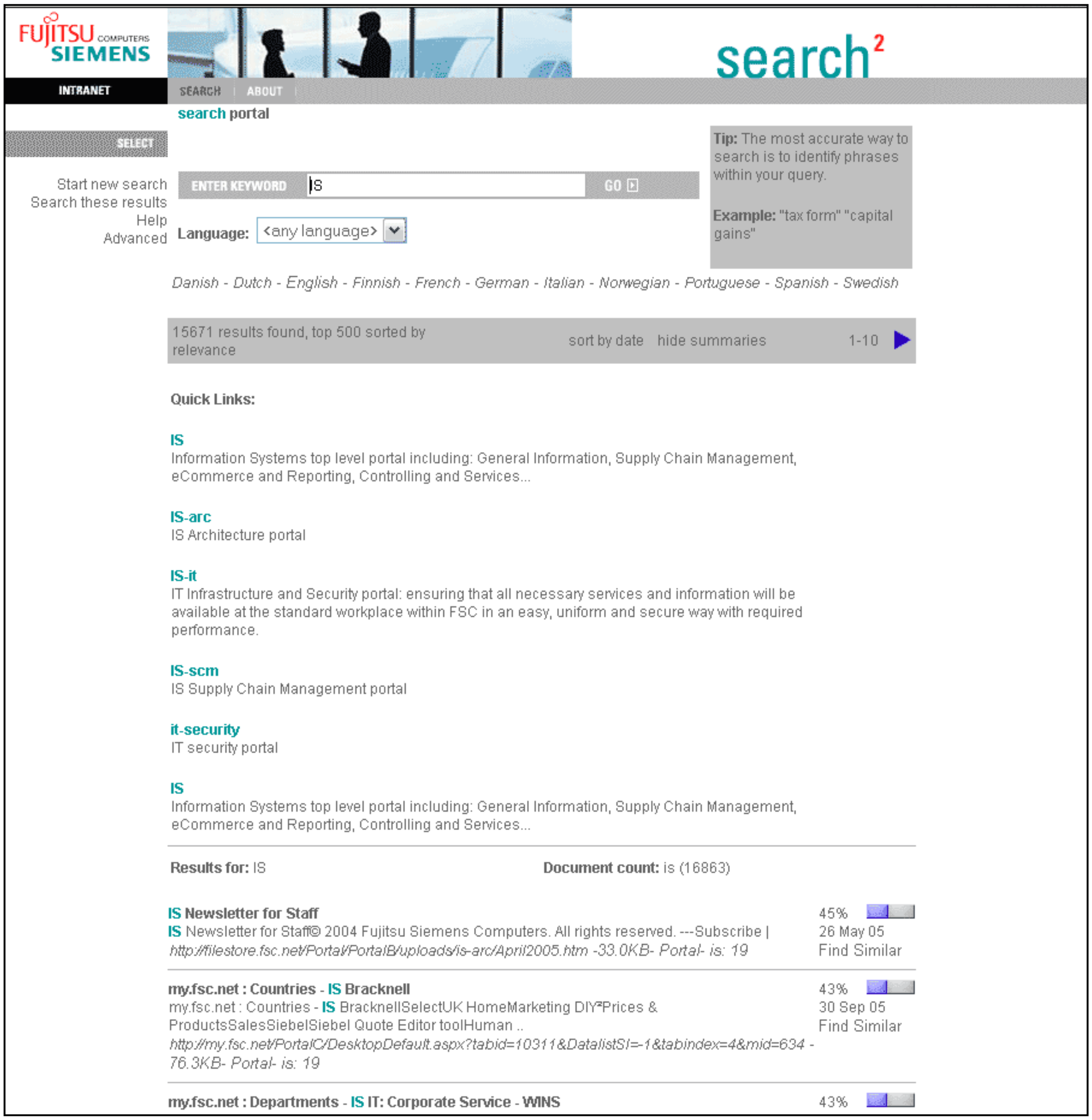
Fujitsu Siemens Computers had similar issues. The company used a Verity search engine to give employees universal intranet, extranet and internet search. "The search box is a standard feature on every page in the portal," says Melck.



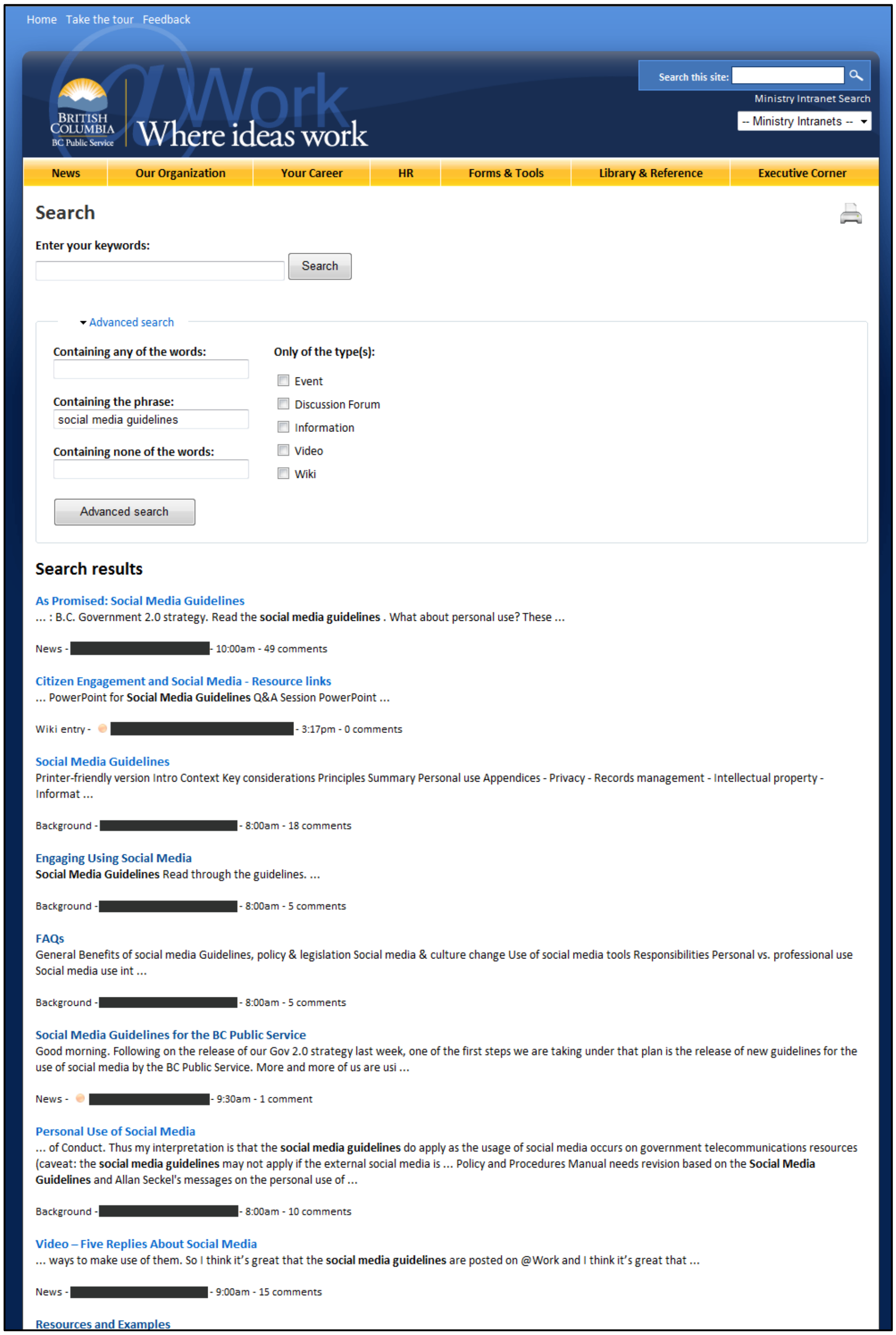
Like many portals, Fujitsu Siemens Computers offers a search box on every portal page, as well as two dedicated boxes (first/last name) for searching the employee directory.

Behind the scenes, the search engine indexes document titles, meta tags, and content. Initially, however, there were challenges getting access to all of the places in the organization where information is stored. "The fact that we had so many servers holding content meant that it was hard to index and search these 'submarines,'" says Melck. "Subsequent server consolidation helped eliminate this problem but with so many data stores opened up, there was then a problem with delivering too much information." This illustrates just how delicate the balance is in fine-tuning search. It's easy to filter too much and just as easy to open the floodgates. The real challenge is finding the happy medium in between.

"Today our main challenge is the fact that the portal search cannot be limited to a single sub-site, which in many cases results in users being offered too many results," he says. The company hopes to address this in a future portal redesign.



The Fujitsu Siemens Computers portal initially lists search results by relevance. Yet the amount of information indexed by the search engine, and employees' inability to limit what gets searched in the site, can make getting relevant results difficult.



This is the main search page on the BC Public Service portal. It can be used for simple keyword searches or the advanced search allows filtering, of search terms as well as the type of content to be included in search results. Results are ranked first by keyword relevance, then post date, number of views and number of comments.

Keyword vs. Full-Text

How do organizations decide between keyword and full-text search?

Keyword search relies on the semantic acumen of either the person who classifies the keywords in a document or automated technology.

Full-text search, on the other hand, doesn't rely on human indexers or machine keyword programs. And most users, having experienced full-text search engines such as Google, vow to never go back.

Despite the popularity of full-text searching, in some task-specific situations, keyword search can be more effective.

CSFS has experience with both types of search — at the same time no less. The CSFS portal was created by merging two pre-existing intranets. And at times the merger was less than seamless.

"When we merged the two intranets, we merged the two search engines too, so you can imagine what happened," notes Bojan Blecic. One engine is an Inktomi crawler, which crawls content and indexes it. The second is a very basic keyword search engine, which relies on content providers entering five or six keywords when they post new documents to the portal. Currently, when users click the *search* button, a query is sent to both engines and the results page shows two sets of results, one from each engine.

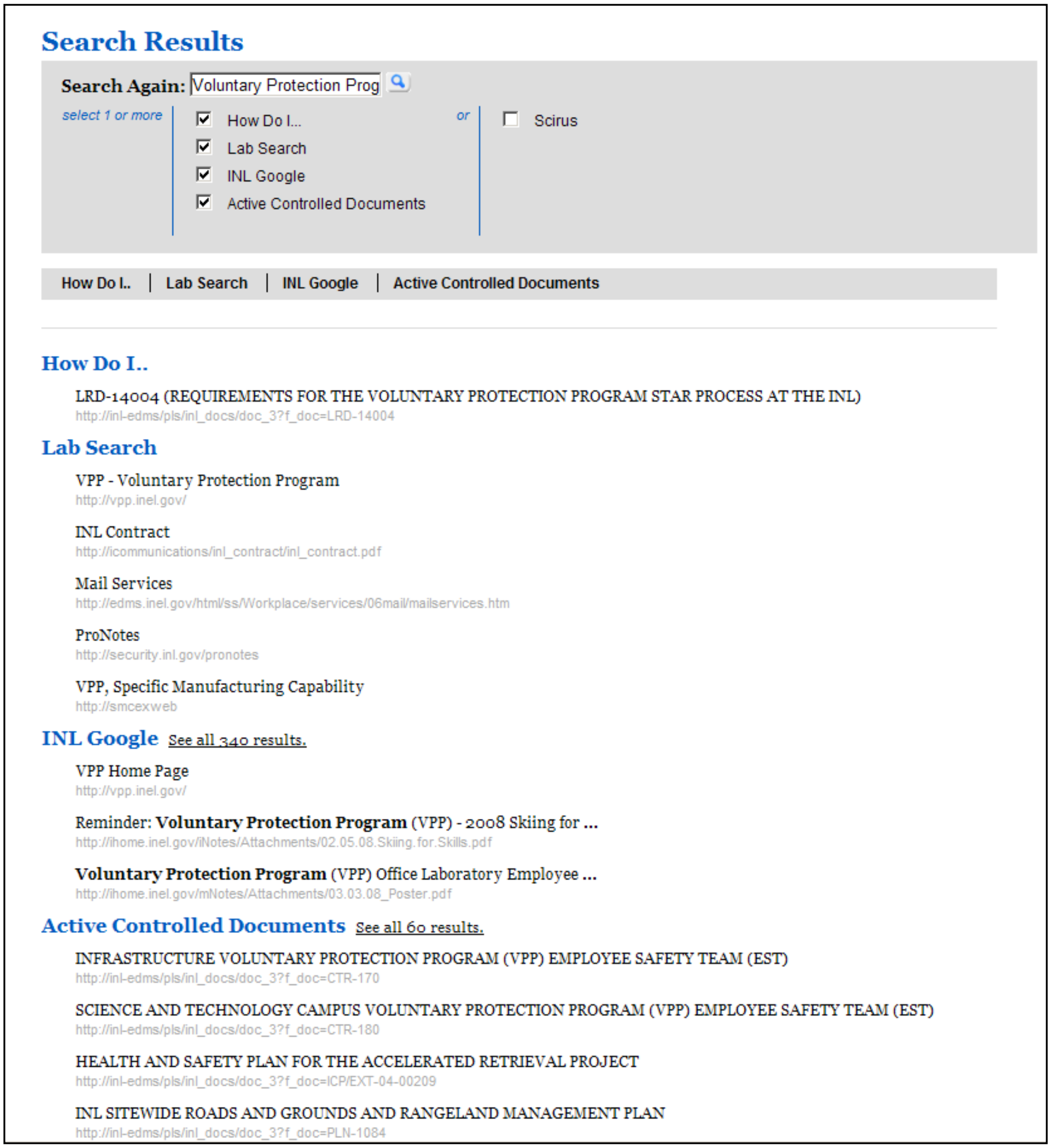
Despite no real data, Blecic's personal impression is that keyword search is more effective — for one simple reason.

"We speak banking slang here, and the keyword system knows the slang," he says.

Keyword Search at Idaho National Laboratory

Idaho National Laboratory uses keyword search on a federated search engine that utilizes the index from its document management system and its internally deployed Google search engine. "Through the use of manually entered keywords and other metadata, the search locates the most appropriate content to meet the search result entered," says INL's Chapman. "The results of the search are grouped by exact hits first, processes and procedures that describe how to perform work second, and everything else subsequently."

Even with human-generated keyword capability, the lab still struggles with adapting search for different audiences. "The lab is comprised primarily of two different audiences," she says, "folks that support the business, and researchers/scientists. They have very different needs. It's hard to know how to meet the needs of both audiences utilizing a single search engine."



Idaho National Laboratory's search results page.

Improving Search at Transport Canada

When Transport Canada improved its portal it also took great care to improve the search experience. "Two major steps were taken in order to provide an excellent search experience for site visitors," explains Green. "First we changed the search technology. Then we changed the content and the way we tag it."

Both of these efforts paid off for users. "*myTC* Search is one of the site areas that we are especially proud of," she says. "Some of the first feedback we received from site visitors was that they can actually now find the information on the site!"

In the past Unified Search was used at Transport Canada and it was a struggle to index and to run properly on over 200,000 pages of the old intranet content. "Many of these pages were outdated, contained duplicated content, or simply did not link to the rest of the site,' says Green. "Consequently the search results were inconsistent and often not even related to original search query."

In phase one of the TC intranet redesign project, two Google Search Appliance (GSA) boxes were purchased and installed. The team implemented some basic rules for search ranking and excluded some unused site sections. Just these few initial steps made a huge difference, right away. "Even with old crappy content the search results improved right away. But this was just the beginning," she says.

Metadata was also critical to further improving search. During the intranet redesign content for the entire was rewritten. This gave the team the luxury of starting from scratch and along with that the opportunity to make a fresh start and do the right thing with the site content and tagging. TC's Communications group developed a guideline on how to write content for web and how to select good metadata.

"We developed the metadata tagging rules and identified mandatory and optional fields and defined list of terms, " says Green. "And we also developed a technical solution (metadata manager) that allows editors to tag page content quickly and efficiently, literally with a few clicks. Unlike with the previous version of the site, we kept the metadata list very simple:"

- Only three fields are mandatory: creator, keywords and description
- There are only a few auto-generated fields: title (based on page H1 tag), date created and modified
- Only a few optional fields, that are relevant for specialized content, such as modes of transportation or region

An important and possibly the biggest change though, is that the content tagging is now the responsibility of the content owners. "When content is written, it should also contain related metadata fields," says Green. "To enforce this process the Communication group developed a special content submission template that must be completed for each new page on the site. It has a section dedicated to metadata tagging."

Once intranet redesign was completed and the content was tagged properly, visitors to the site were finally able to see the real power of search! With properly tagged fields, the team was able to create rules for *News Feeds* and *See Also* sections. They also created *Did you mean?* and *We recommend* suggestions for search result.

These are all generated on the fly, based on content metadata.

The cumulative effect of these many changes is that search is perceived as more "Google-like" and users are much, much more satisfied with how well it works.

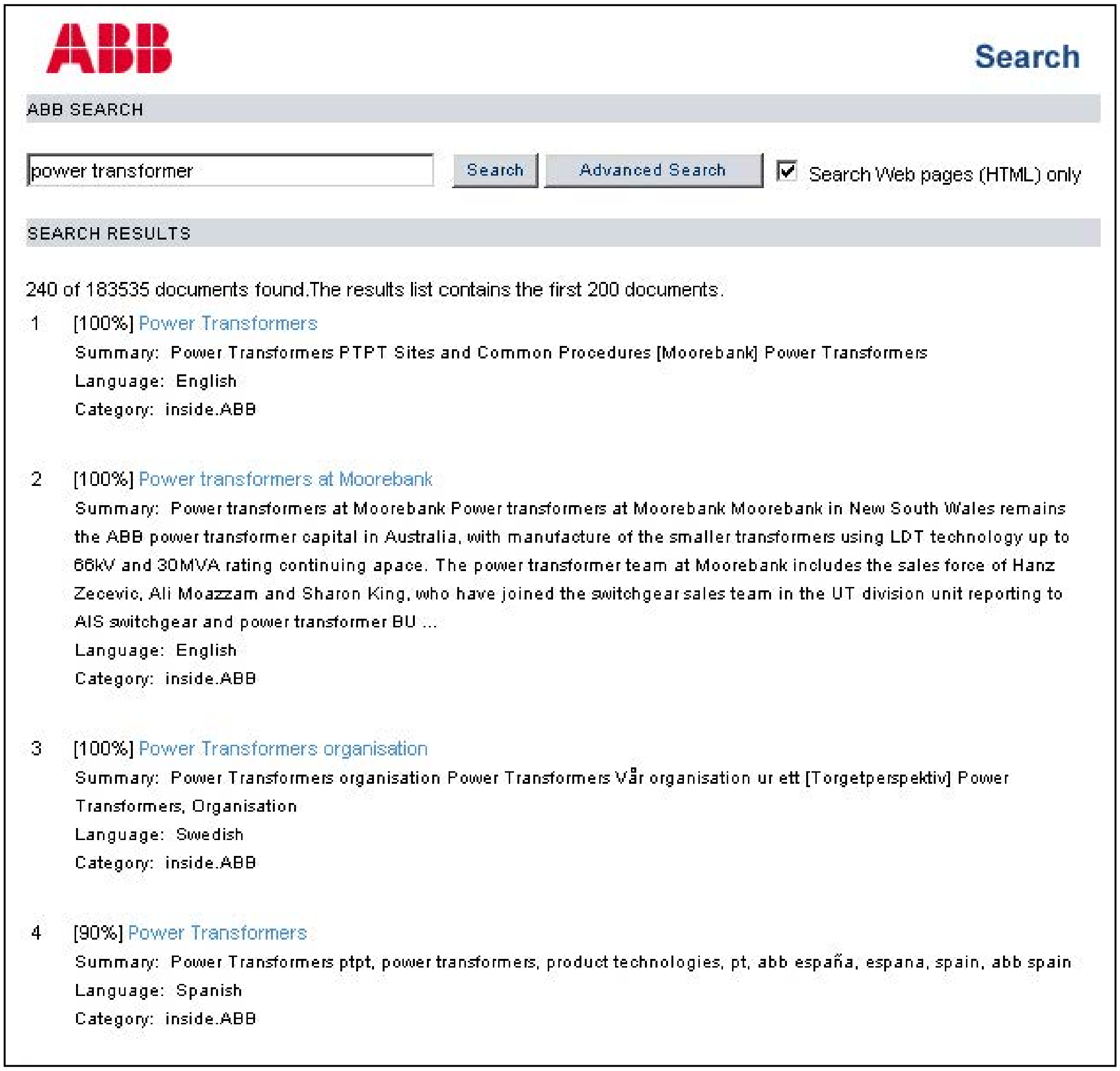
"A few intranet users mentioned that we do not need site navigation at all," says Green, "just one simple *search* button on the homepage, like you see it on Google."

The Transport Canada team has made great strides toward improving portal search but are not content to stop there. They continue to explore ways to continue to improve search results, specifically using microdata and through an advanced search in the organization's Document Center. Green explains:

- Microdata: "We are constantly looking for different ways to improve search results, and utilizing GSA to provide more features for site visitors. Specifically, we are currently investigating the power of microdata — the ability to nest metadata tags within individual sections of the same page. This would be a great addition to multimodal pages, pages that contain combined information that is coming from different groups and regions."
- Advanced search: "We are also in the process of implementing advanced search functionality within a specific section of the site called the Document Center. With properly tagged document listings, users can apply various filters to search for the documents, such as acts and regulations for Transportation of Dangerous Goods, or guides and manuals for Civil Aviation inspectors. All this can be done with proper tagging and the addition of new rules to GSA."

Simple vs. Advanced Search

Though it's good to offer a simple search as the default option, advanced search methods that enable users to reduce the number of results by selecting other parameters, such as which sub-sites to search, can be very helpful for finding information in large and complex sites.



ABB

Search

ABB SEARCH

power transformer

Search | Advanced Search | Search Web pages (HTML) only

SEARCH RESULTS

240 of 183535 documents found.The results list contains the first 200 documents.

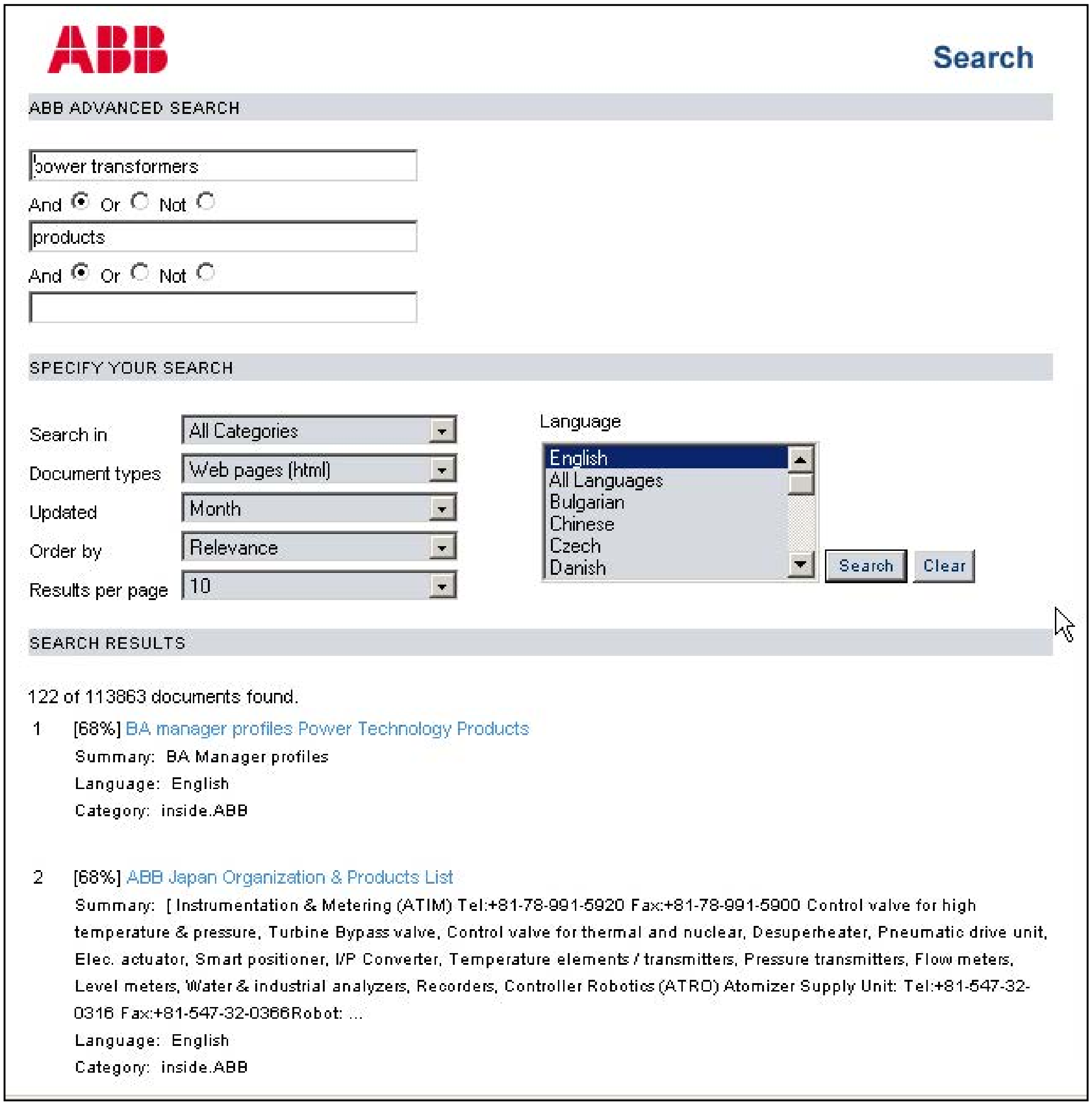
1 [100%] Power Transformers
Summary: Power Transformers PTPT Sites and Common Procedures [Moorebank] Power Transformers
Language: English
Category: inside.ABB

2 [100%] Power transformers at Moorebank
Summary: Power transformers at Moorebank Power transformers at Moorebank Moorebank in New South Wales remains the ABB power transformer capital in Australia, with manufacture of the smaller transformers using LDT technology up to 66kV and 30MVA rating continuing apace. The power transformer team at Moorebank includes the sales force of Hanz Zecevic, Ali Moazzam and Sharon King, who have joined the switchgear sales team in the UT division unit reporting to AIS switchgear and power transformer BU ...
Language: English
Category: inside.ABB

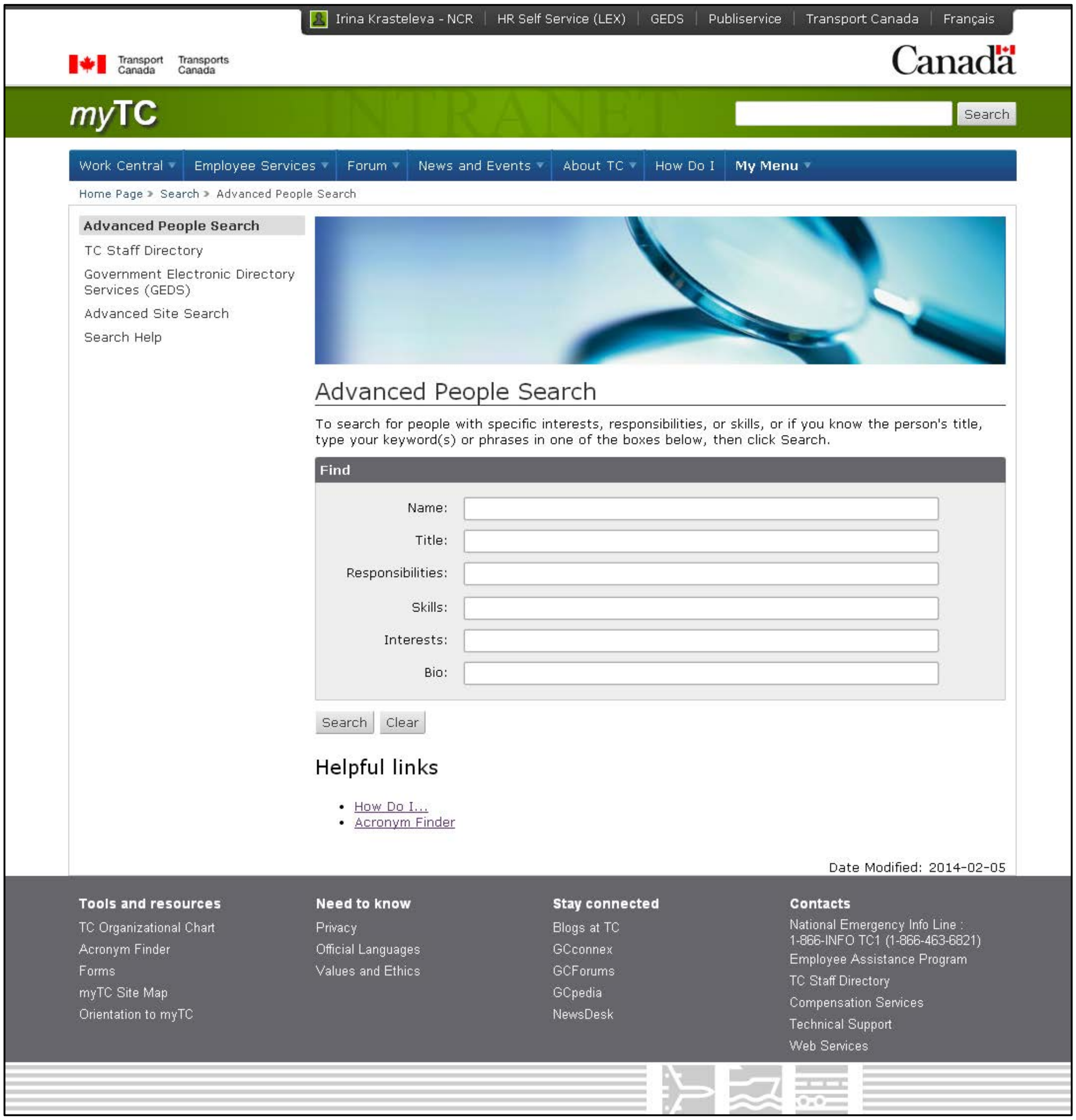
3 [100%] Power Transformers organisation
Summary: Power Transformers organisation Power Transformers Vår organisation ur ett [Torgetperspektiv] Power Transformers, Organisation
Language: Swedish
Category: inside.ABB

4 [90%] Power Transformers
Summary: Power Transformers ptpt, power transformers, product technologies, pt, abb españa, espana, spain, abb spain
Language: Spanish
Category: inside.ABB

A simple search for the term "power transformer" on the ABB portal returns 240 results.



When using ABB's advanced search the number of search results is reduced by almost 50%.



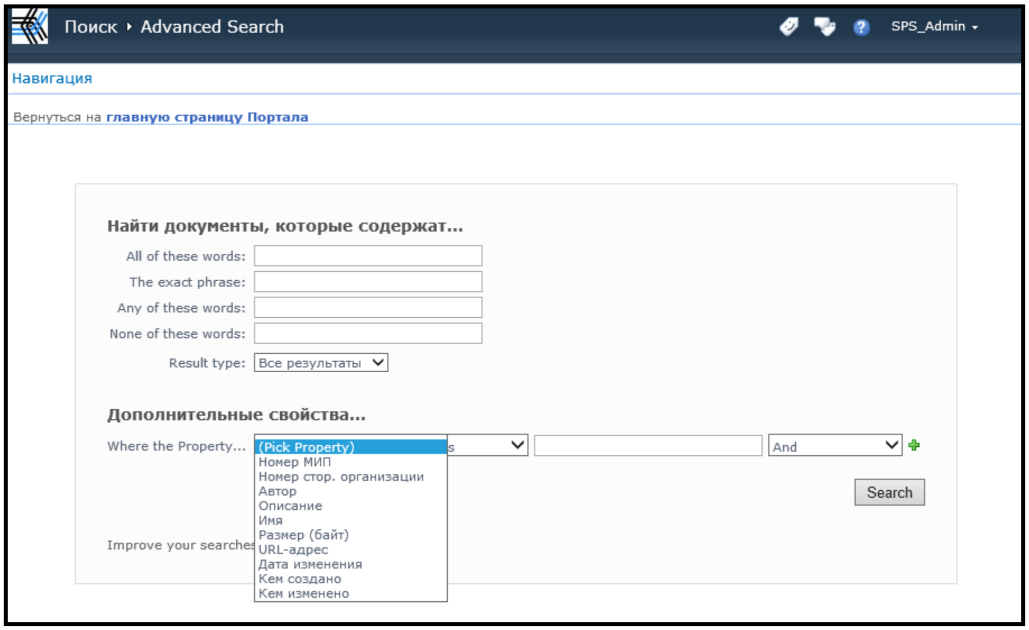
The advanced people search page on Canada's Department of Transport myTC portal allows employees to refine results according to criteria beyond an employee's contact information. The most relevant results appear at the top, giving higher importance to results from the user's region.

Adding Structure to Search

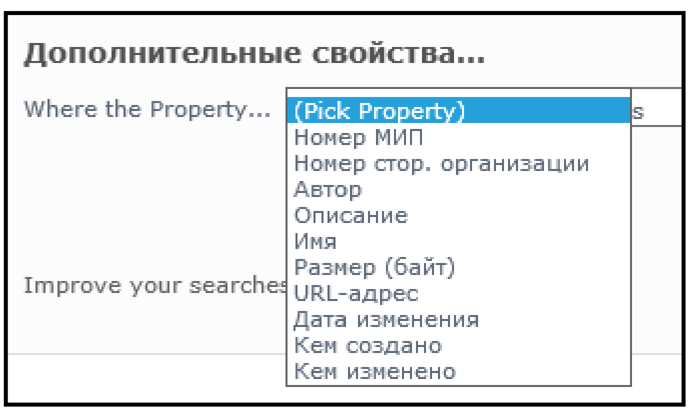
The Minskinzhproekt team found SharePoint's search lacking so they refined the process, giving more structure to what is being searched and how people refine search parameters.

"SharePoint allows user to search the portal site and sub-sites, as well as shared network hard drives," says Glushakov, "however the number of hits and the way to explore search results look like from the age of AltaVista — too many hits, no context (the most important missing feature), no clear concept of relevancy."

After experimenting with SharePoint 2010 search capabilities, the team decided to take a more structured, metadata driven approach, restraining default search to a local scope and providing crucial metadata fields for advanced search. The screens below show how this works.



The advanced search view on the Minskinzhproekt portal.



The advanced search view on the Minskinzhproekt portal, zoomed-in, showing such custom document search properties as incoming filing number, sender's filing number, etc.

Behind Every Good Search Result is Great Content

Like many corporate portals, the CFFB portal has a single search bar in the upper right hand corner that lets users search the entire intranet. It auto-suggests information based on the application in which the searcher is searching and searches across the organization's multiple information repositories. This is no easy feat and a common challenge many companies face. They have to either step up to the plate and really work on search so that it searches across various repositories and returns useful results or they put the burden on the user to figure out where something they are looking for actually lives. CFFB decided to put in the effort to make search really work.

Indexing multiple sources into an index wasn't easy to implement but the team built APIs at each of the endpoints (of each of the sources), allowing the search indexer to reach them. The search results page is a shareable permalink that displays all applications that match the result.

"The challenge," says Samantha H. Simpson, Product Director, CFFB, "is how to present all the content so the user finds what they need in one click."

That means finding a way to give users what they are searching for regardless of how they searched for it.

"We monitor analytics to see what the top search terms are and which terms have the most exits from the system," says Simpson. "Using this, we plan to create a suggested box. For example, if you search 'pay,' then we will suggest the compensation policy."

It also means tagging content pages with alternate terms so they are findable. The content management process behind this isn't easy (requiring a lot of manual upkeep) but the relevance of the results make it worth the effort.

"We use elastic search to prioritize content and do context based searches," says Stephanie Vineyard, Business Analyst, Scrum Master. "There are also analytics on what people are actually searching so we can see if there is a particular term that is popular. The manual part comes in play here. Even though we ask people to tag items and add additional information when they create them, an administrator can jump in and add particular keywords to items so it shows up in search for a popular search term," she says.

The content management aspect of search is an on-going, manual process for the team. "It involves a lot of conversations with people who create the content about how to best present their information," says Simpson. The process of keeping all this up-to-date has two parts. Simpson explains:

- A manual component: "We use MediaWiki as our CMS currently," she says. "We do add key words to the top section of pages, rename pages, and create dummy pages to redirect search results. This is not ideal for the best content management but it gives freedom of content creation and collaboration to all employees, not just a select few."
- A technology solution: "We present content by application to help people find the information they need — are they looking for the link to Wall Street Journal (in resource library), articles about CFPB in the Wall Street Journal (press clips), or how to access our WSJ account (wiki)? The separation by application helps the user make these distinctions and locate the correct information."

The technical tool (Lucene Elasticsearch) made the implementation relatively easy. Each application is its own repository with its own data. The search server is configured to index whichever data pieces we ask it to include. Both auto-suggest and search results separate the data by application. This makes it simpler technically but also helps the user discern the information.

“Basically what we did is create a standard programmatic way to add data to the search engine,” says CFFB’s Diego Lapiduz, Technical Lead, Developer. “It is a simple setup but very powerful. Anyone can create an application that once approved, can load resources to the search index. That way you can search from people to forms with one single interface.”

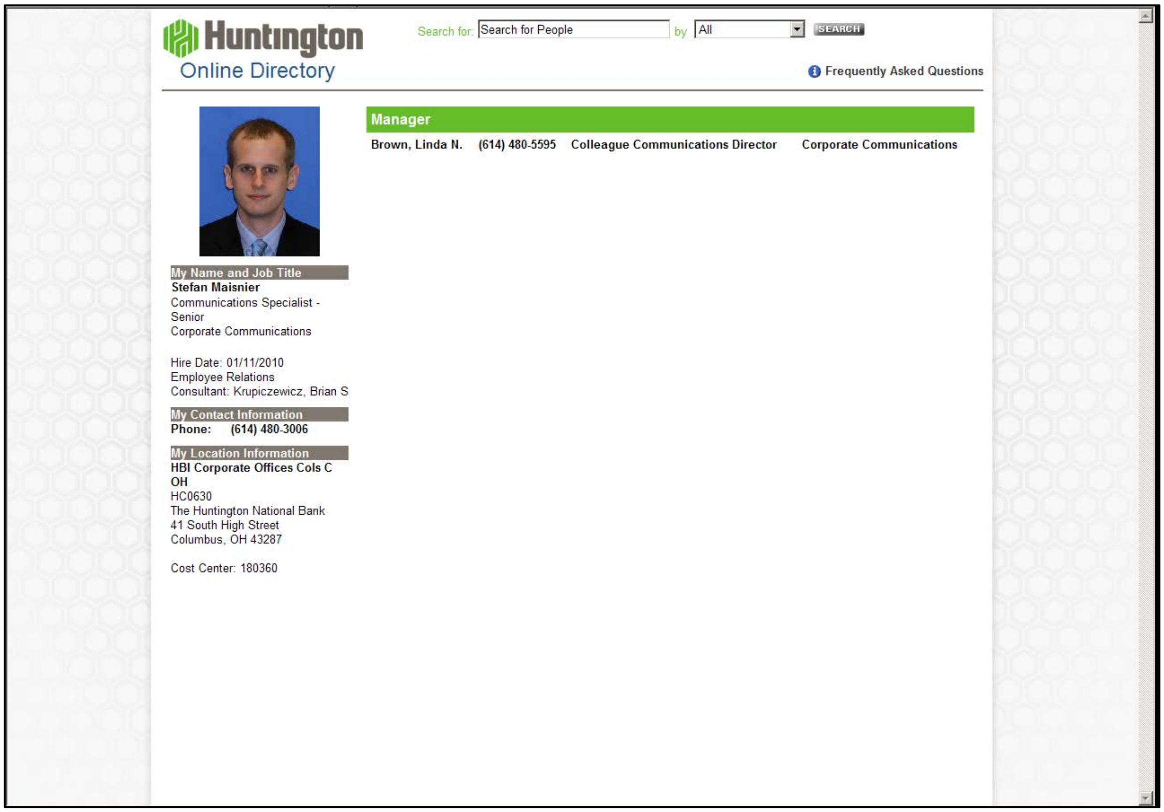
Another challenge is distinguishing similar titles that have different content. Also, too much content with an inconsistent voice causes inconsistent search results. “We are constantly improving our search by considering the time to display results, caching updates, and using a three character pause before the auto-suggest,” says Simpson.

The three-character pause was implemented because the server kept crashing. “We discovered it was sending a request with every character typed,” says Simpson. “Additionally, these requests weren’t valuable. If I’m typing “benefits”, I don’t need the auto-suggest to return results for “ben”, “bene”, and “benef.” I just want “benefits.”

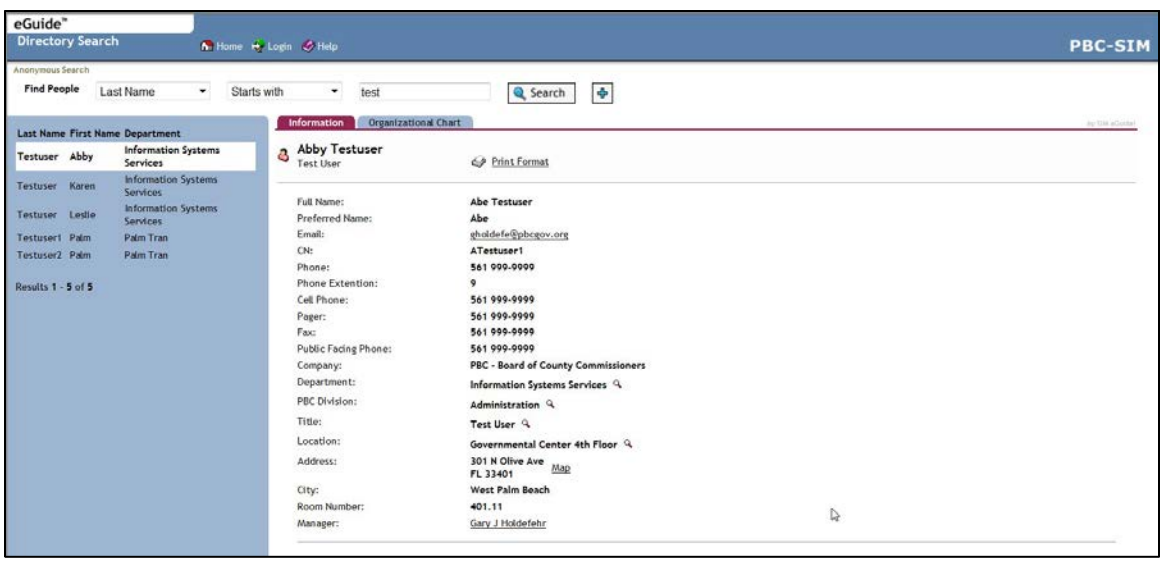
“Thus, we set a rule that there must be at least three characters and a pause of # to generate an auto-suggest request,” she says. “We picked three characters because one or two letters returned too many results to be meaningful.”

SHOWING SEARCH RESULTS

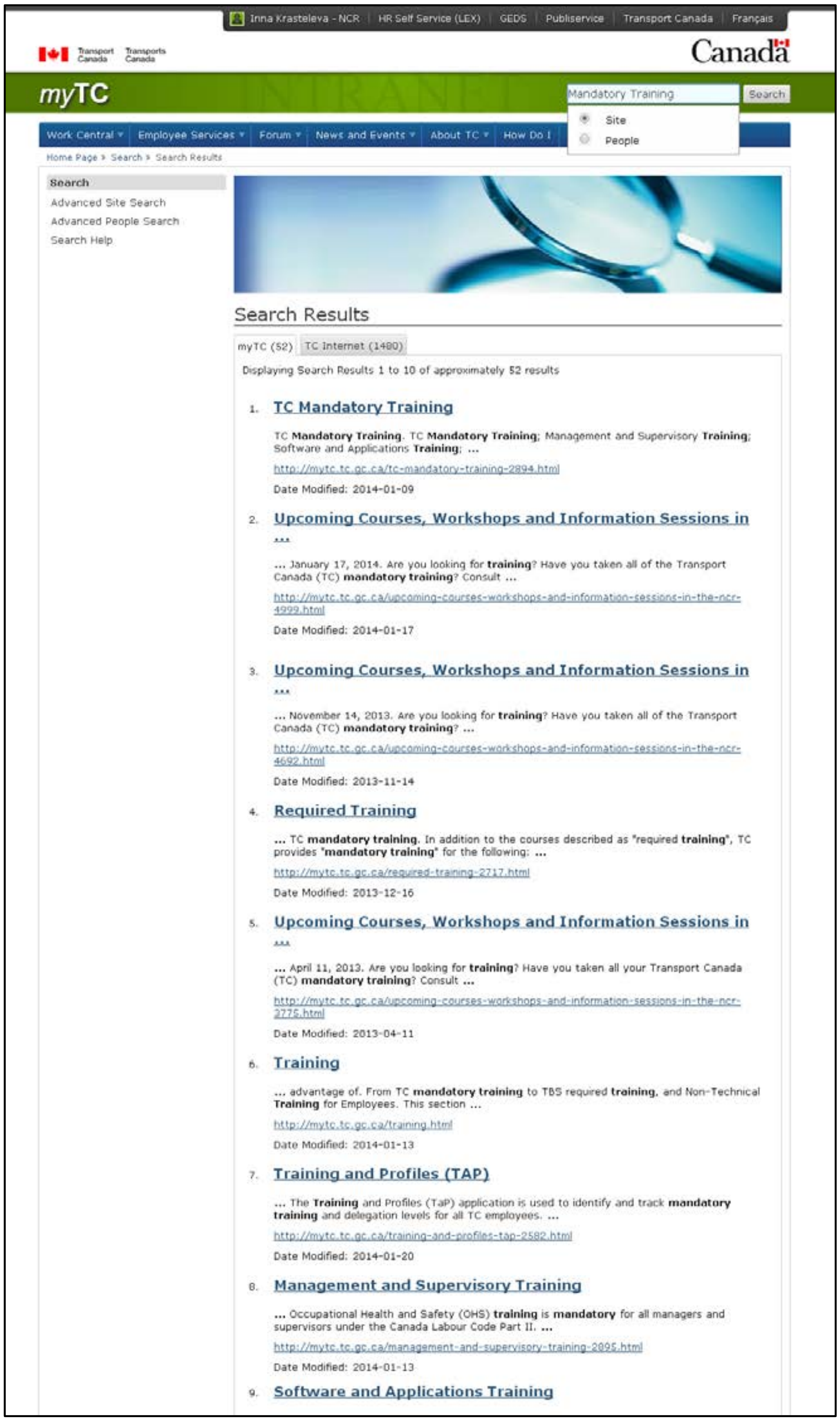
While portal teams try to achieve just the right mix of search filtering and adjust the settings on what and where to search, the rubber hits the road on one aspect of search: the way search results are presented. Users don’t care how many search engines there are in the background or which databases are accessed in the search. They just want the most relevant results at the top of the first results page. So a blended search results page is a universal requirement, regardless of the organization and regardless of the machinations that have to go on in the background to make search work.



A colleague search result page at Huntington Bank provides information and populates automatically via an HR database with the person's supervisor and any potential subordinates.



This is the search results page for the Palm Beach County's E-Guide employee directory.



On Canada’s Department of Transport portal a global search box is found in the top right-hand corner of every page. Employees can quickly search the intranet, internet, or employee directory, and they can also conduct an advanced search from a sub-page on the site. Search results will be displayed differently depending on the type of search executed.

Segmenting Results and Allowing Filtering

Though the single search results page can segment information based on source (if the source is relevant to the results), it's important to find a way to show it within a unified interface.

Cisco has tackled this challenge with its new Quad platform. With the new platform, the search function becomes the backbone to many of the out-of-box applications/portlets and remains one of the main vehicles for finding people, information and communities. "Unlike our other search interfaces," says Ikegami, "the Quad search breaks down the results into the three major categories so users can easily scan for the type of result they are looking for."

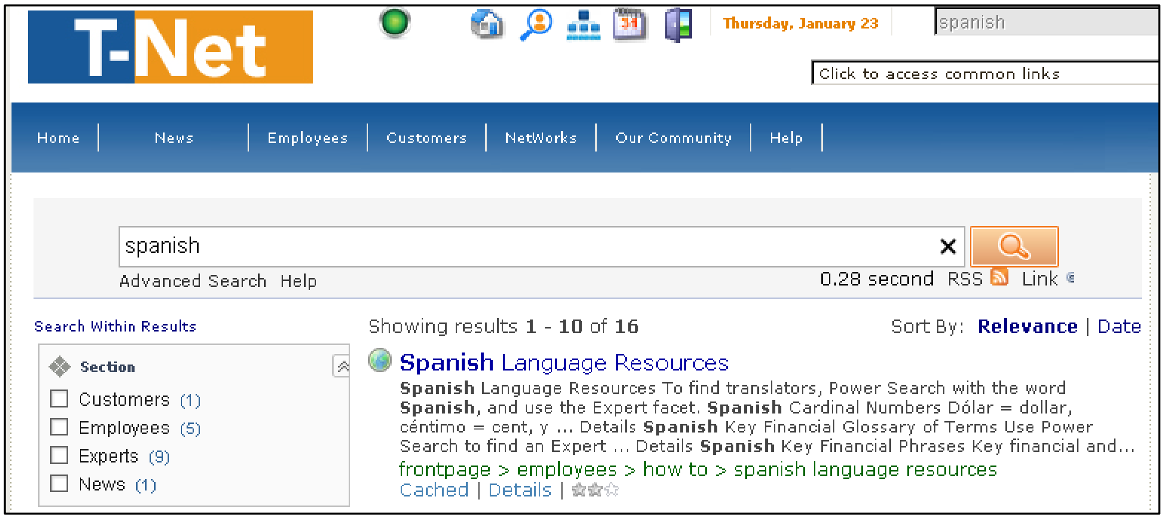
Along with identifying the types of results the users are seeing, another helpful tool to give users is the ability to filter.

"Our Quad search uses the same technology as our other enterprise search applications for our intranet and internet sites (CEC and Cisco.com)," says Ikegami. "The interface allows for filtering by context (within this community, my communities, or everything in Quad), result type (people, communities, information & file types and date), and domain (Quad, intranet, directory). The user may also view the common associated tags from within a result set in order to determine if they should expand/narrow their search by other keywords."

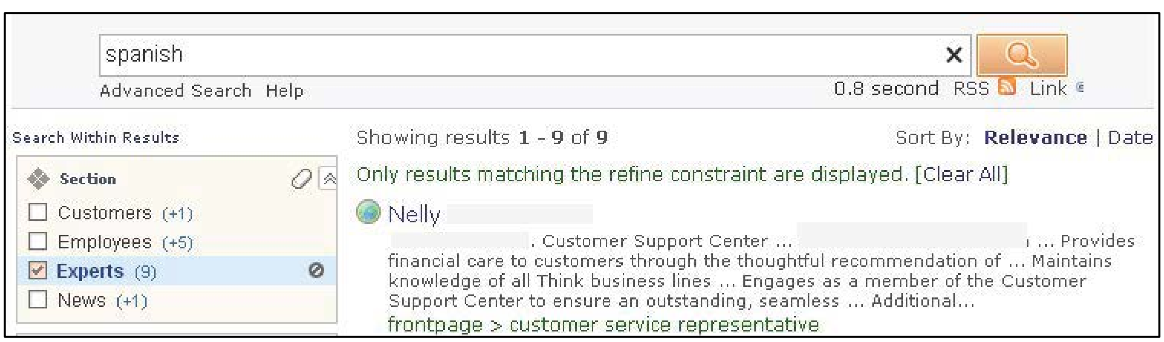
An example of search filters the Heinrich Intranet of Fraunhofer HHI uses to narrow down search results. Users can filter by co-workers, content sites, news, documents and departments.

Using Facets to Filter Search Results

Facets are a popular way to allow users to filter search results.



Facets can be created for different sources of information, different templates such as procedures, training, manuals, forms, etc., and for specifics about the business, such as loan officer numbers for Think Mutual Bank's bankers, or locations of its branches. Facets turn the search results into more of a database query feature and facets can be very powerful when there is a large quantity of results returned. A cached view under each result highlights the search terms on the page so users can preview the content link without losing their search results. Integrating the Coveo search solution with the Sitecore portal made Think Mutual's search a more powerful tool and drove the team to really architect its content with an eye toward optimizing search results.



Think Mutual Bank uses facets in its search results. In this case, "experts" is selected as a course in order to isolate people who can translate rather than return other content-related results such as a glossary of Spanish financial terms. The Coveo search engine allows creation of facets to make searching more efficient.

Delivering Search Results from Sources

Kaiser Permanente's search is behind the sign-on, adding another level of complexity to how they present portal search results. Only signed-in users can currently search the site, because the first release of the company's intranet is the HR component and most of the content is private information. The site has a single search box that delivers search results personalized to the end user.

If someone searches for "401(k)" for example, "Your results are from HR, from your benefits," says Garrett. "General process [results] are from the portal."

"We chose to put search behind sign-on (user must be signed on to search) for an HR-focused release," says Garrett. The site offers a single search box in the banner, which searches both content in the portal as well as content in the HR knowledge base.

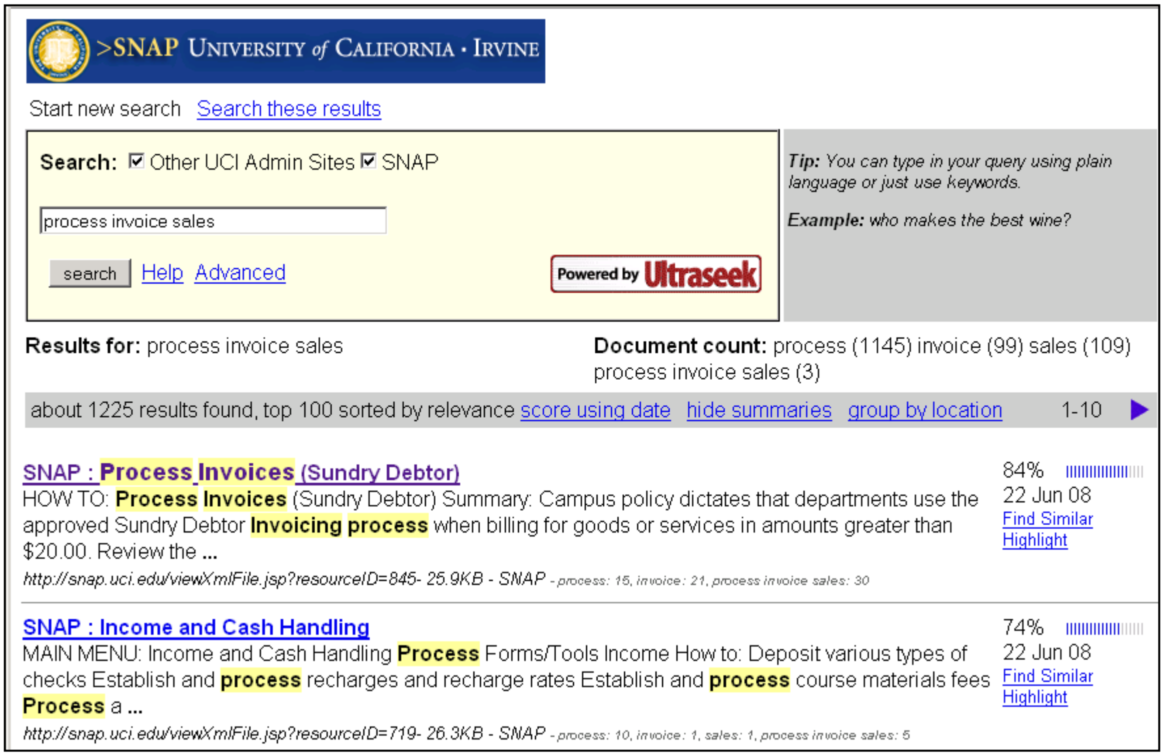
"From the user's perspective, they enter a single query in the search box, hit 'go' and get back a set of 'My Personalized HR results' (HR knowledge base) and a set of Regional HR results (portal/web content)," she says. "The results are visually separated, concatenated together on the page. In the background, the application sends two parallel search requests, one to Verity for portal/web content, and one to the HR knowledgebase for benefits/eligibility content, receives the results as XML, and formats them for display in Portal."

As companies plan for improved search, they often turn to more specialized search functionality — more than simple search. When we spoke to Kaiser Permanente's portal team, they were in the early phases of their portal project, but already looking toward the future. As they add more regions to the portal rollout and add more business units as "tenants" on the site, they say they will also be paying attention to how search will expand beyond its current capabilities. Garret says that someday they'd like to have support for more search, "using parametric indexing to expose levers so the user has the ability to manipulate [and] to adjust their search," she says. "For example managers need to see across regions. We want to expose things like region, as facets, not just add to query."

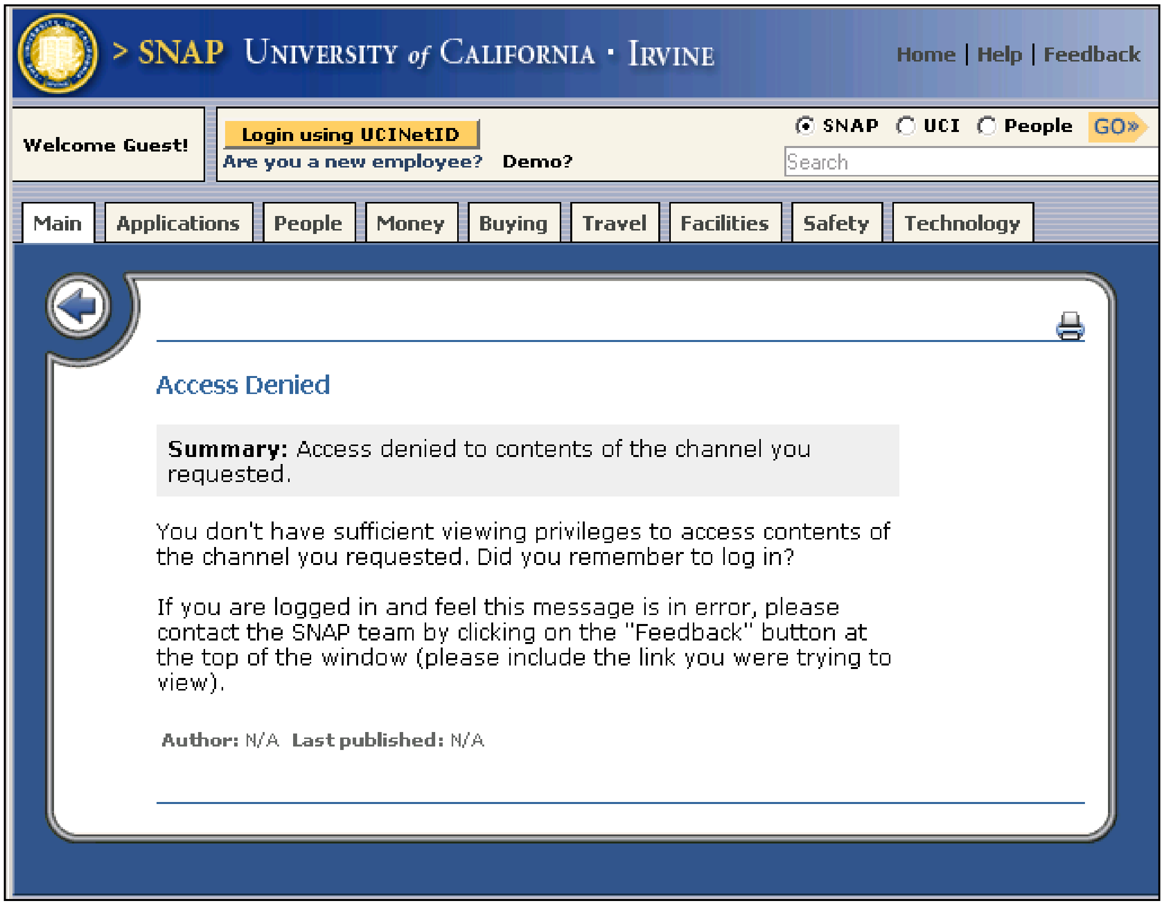
UC Irvine also had challenges when presenting restricted content in its search results. It indexes certain types of login-restricted content and displays just the summary, but that requires cooperation and coordination between the portal team, implementing search and the content authors. "We've told our content providers not to write confidential content in the summary for that reason," says Sadovsky. "We index all the content."

"We don't have a way to restrict the search results to whoever is logged in. We couldn't tie into single sign-on for results," she says. "So all the search results are public and [we] have to educate users that some of the documents can be restricted after you click. The summary is visible to all."

The only way to solve this: "Switch to a different search engine," she says.



A search results from UC Irvine's portal. The user has searched for "process invoice sales". The results display resources with page headings and a partial summary. If content is restricted and the searcher is not logged in he will see an *Access Denied* message.



On the UC Irvine portal if a user who is not logged in selects a search result that is restricted content, she will see an *Access Denied* message displayed.

IMPROVING SEARCH

There is no one-size-fits-all solution to improve search because so many factors determine the quality of the search results. But there are steps nearly every organization can do to improve search results.

- Monitor and adjust: UC Irvine's portal team tracks searches daily in order to see how well users are finding things. Not every portal team can make this kind of commitment, but some level of monitoring and adjustment can be more fruitful than relying solely on user feedback. User feedback, while helpful, can often be an outpouring of general frustration, such as this feedback received by Chapman at Idaho National Laboratory when the team was trying to improve its search results: "I can NEVER find what I'm looking for."

  User testing and research can be helpful in identifying user's search needs and frustrations, but monitoring hard data can also give portal teams critical information to make adjustments in search functionality.

  "We track searches a lot," says UC Irvine's Elson. We track queries and have developed synonym dictionaries and thesauri to help people get to the content and quick links."

Chevron Human Resources employs a very useful monitor to its search results. In addition to tracking top searches on keywords and such, they keep a close eye on those searches that yield zero results.

"We look at search reports showing top keywords, etc.," says Rosenstein. "One of the most helpful reports shows keywords that returned zero results. We use that to make sure our meta tags are appropriate. We also use the data from search when doing site redesigns, to show our content owners what content is most in demand by employees."

- Provide dedicated technical staff to search: "Despite the lack of a staff member dedicated solely to search engine optimization (SEO), we achieved marked improvement in results and customer satisfaction," explains Lingenfelter of NARA. "By removing old and outdated content as part of a content inventory, a smaller and more relevant set of content is being indexed. Instead of running searches against an index of more than 8,000 documents, users now search an index of approximately 4,000 documents. In addition to reducing the physical count, we applied filters within our current search engine to make newer and more active content score higher in search rankings. Lastly, managing content in a CMS, with required fields and standard metadata, results in pages that accurately reflect their actual content. This also allows us to use date scoring as part of the search algorithm, and that results in improved results for staff."
- Provide training: Training both content contributors and site users can improve the quality of the content and the findability of that content. "Training content providers to provide text particularly in headings/summary lines with keywords and/or synonyms can improve search results," says UC Irvine's Elson. UC Irvine took this approach to try to improve the search results of its restricted content, but this should be considered a best practice to apply across sites. Training content providers can result in improved search results in general.
- Make search more Google-like: Google has changed the way people search and because it is the de facto search tool on the web, it has become the standard against which other search tools are measured, even on intranets. "We used to joke that the new homepage should be just like the Google homepage page," says Steve Karsch of Vertex. "Then people would just find what they are looking for."

  He was joking, but the sentiment behind his words rings true. When users trust the tool, they will be more likely to use it. Vertex uses the Google mini appliance for its portal. "And because it works like Google, it's good," he says. "They are used to how Google works."
- Use best bets: Organizations that strive to return the most relevant results have to keep working at it, trying new techniques to try to stay one step ahead of what the user is looking for. OSUMC delivers "best bets" to contribute to search relevance.

"While we strive to provide the most relevant results as the top results displayed in the search," says Evans, "we utilize 'best bets', which display top results for specified key words or phrases, to provide top results for many of the keywords or phrases typically used by our user population."

The OSUMC team also reviews the reports generated by its search server to identify search trends and to identify potential issues and problems associated with common

Little Changes Make a Big Difference at CISCO

The Cisco team also applies various methods to continuously improve their search capabilities. The methods they use include the following:

- Study results: Review and analyze top queries and results
- Boost/block: Enable search administrators to raise the relevancy of highly important documents and sites or to block an incorrect result
- Use synonyms: Define synonyms for commonly searched terms
- Employ smart matches: Display of best bets in the interface, so users can get to common tools and sites quickly

The company has also implemented the following search governance activities:

- Training: They provide training and guidelines to content owners/publishers on the use of metadata, free form tags, titles, descriptions, etc. so these users are able to provide the right data in their content that the search engine can understand.
- Tuning/tweaking: They conduct ongoing relevancy tuning/tweaking which consists of a continuous analysis of data sets and making appropriate tweaks to the relevancy logic
- Performance monitoring: They use a Search Performance Indicator tool, which gives a quantitative method for tracking relevancy of search results

This level of commitment to continual improvement pays off beyond the investment they make. "With over one million content searches done every month on our intranet, even a minor improvement in relevancy translates to significant productivity gains," says Ikegami. "Search is an area that we continue to see opportunities for relevancy improvement and time savings. As with other items in Quad, any improvements we are able to provide through our own use will eventually make their way into the shipping product."

Think Mutual Bank Takes Search Seriously

Think Mutual Bank has committed both time and resources to making its search excellent and with that is the reality that good content is the key to good search results. Good content doesn't just happen. It requires upfront and ongoing vigilance. Some of that work falls on the shoulders of Intranet Managers. Stiller and Ryan outline the daily, weekly, monthly and annual practices on the task list:

Daily

- Support users with questions and needs (calls, drop ins, emails)
- Check inbox, resolve or make a plan for each request
- Create tools like polls, surveys, complex tables, etc., that require administrator support
- Check for Approvals waiting
- Send requests to content owners for review of new pages or revision of existing pages

Weekly

- Coordinate Content Owners and Content Editors
- Assist contributors with decisions regarding content and communications to ensure alignment with intranet strategy
- Enforce proper workflow for creation of content and ongoing management of references
- Use Administrative rights to correct issues as needed
- Run Profile Updater to bring over any Active Directory changes
- Review reports for search and determine key words to add to thesaurus and topics to enhance
- Quality check for broken links within Sitecore, to external sites
- Quality check items
- Check Media Library for items in the To Be Deleted folder
- Remove old drafts from workbox
- Review drafts for editors in NetWorks areas
- Clean out old items from NetWorks that are abandoned
- Optimize search index
- Review work that can be distributed to Executive Support Team
- Plan for work generated by changes, like new website, changes to department names and ownership, etc.
- Run Analytics Database Maintenance to keep 12 weeks of data
- Coordinate activities of Vendors, Technology Systems Administrators, Sitecore Administrators and Coveo Administrators (Intranet Managers have Administrative rights)

- Document issues in a log for discussion with the vendors and Technology Services Administrator
- Escalate urgent issues with the vendors and Technology Services Administrator

Monthly

- Look at key topics and identify enhancement opportunities
- Develop topic areas based on business needs
- Review feedback from users (survey, site, focus groups, user interviews) and identify opportunities for improvement
- Advocate for use and adoption via value-add content and functions for each group of users
- Request enhancements and changes to the site, and collaboratively plan and continue improvements through prioritized efforts with Technology Services Partner
- Run searches for key words indicating updates are needed
- Test search report words to see if "results found" items are found efficiently
- Research "no results" found topics
- Communicate with vendors to plan and continue improvements
- Ask NetWorks owners who are not active in their space for status, plans for use
- Check proper templates were used
- Look for duplicated items in Media Library
- Look for duplicated items in content (point to the owner's version and enhance that)
- Update Administrative documentation for the site as needed (enhance, correct, publish)
- Review analytics reports and identify issues, provide options for solving-Maintain vendor relationships
- Debug software issues with vendors

Quarterly

- Look for ways to optimize delivery of information
- Review and update proper workflow for creation of content and ongoing management of references
- Work with Sr. Management on direction and strategy for site content and search, integration with email, IM, iPhones, etc.
- Verify that guidelines are being followed by editors of News, Calendar, Our Community per best practices
- Direct consistent look/feel/layout on the site
- Train users through onboarding

- Re-train users in groups as needed
- Train contributors of content
- Bring new editors onboard
- Re-train editors as needed
- Set up security for new editors as needed
- Research and coordinate with Vendor Consultants as needed to provide technical solutions
- Refine use of analytics tools
- Prepare change control orders as needed

Annually

- Work with consultant to size, design, test and install updates and upgrades
- Budget from sponsor planned for licenses and professional services
- Chair Steering Committee
- Prepare priority list for improvements for Steering Committee review
- Contribute to projects using site to strategically integrate outputs into content (for example, Branch Procedures)
- Contribute to projects using site to create needed NetWorks spaces and draft content

Redesigning Search at OSUMC

When redesigning the portal it's important to take that as an opportunity to redesign search, both functionally and at the presentation layer. OSUMC found that search was in fact one of the driving factors behind the organization's most recent portal redesign project.

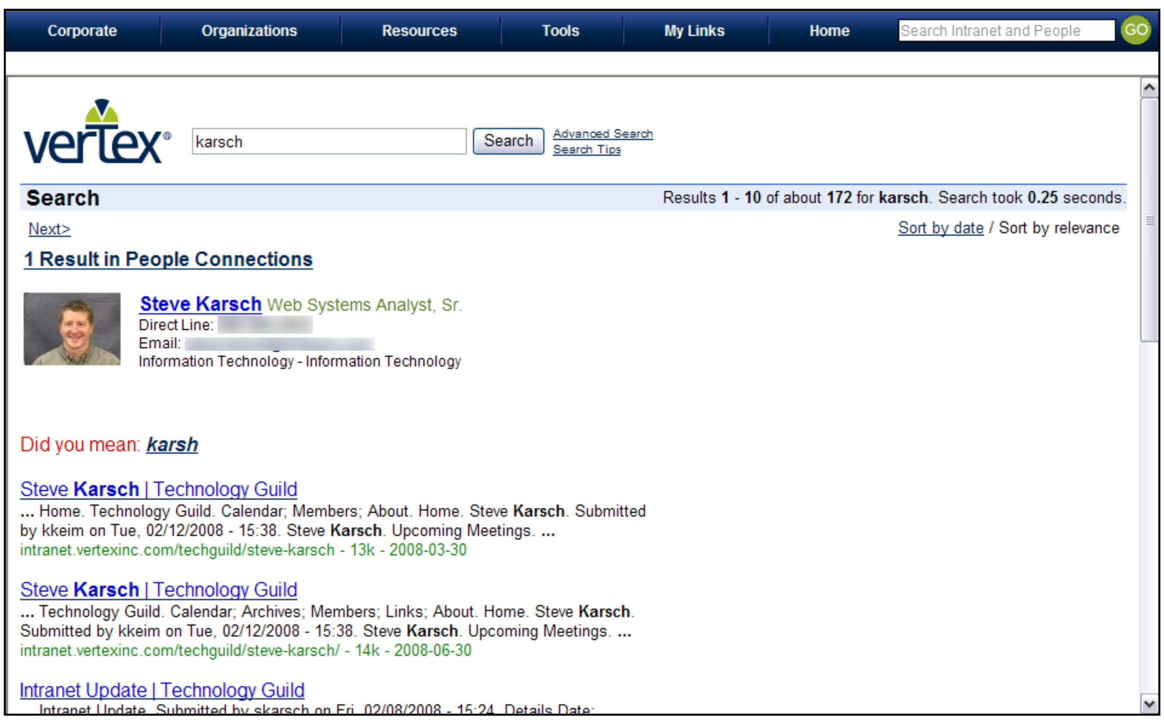
"One of the most consistent pieces of feedback we received in our audience research in preparation for our intranet redesign was that search was ineffective and frustrating," says Burns. "Search was one of the primary areas of focus in our redesign."

Here are some of the things they did to address the site's shortcomings:

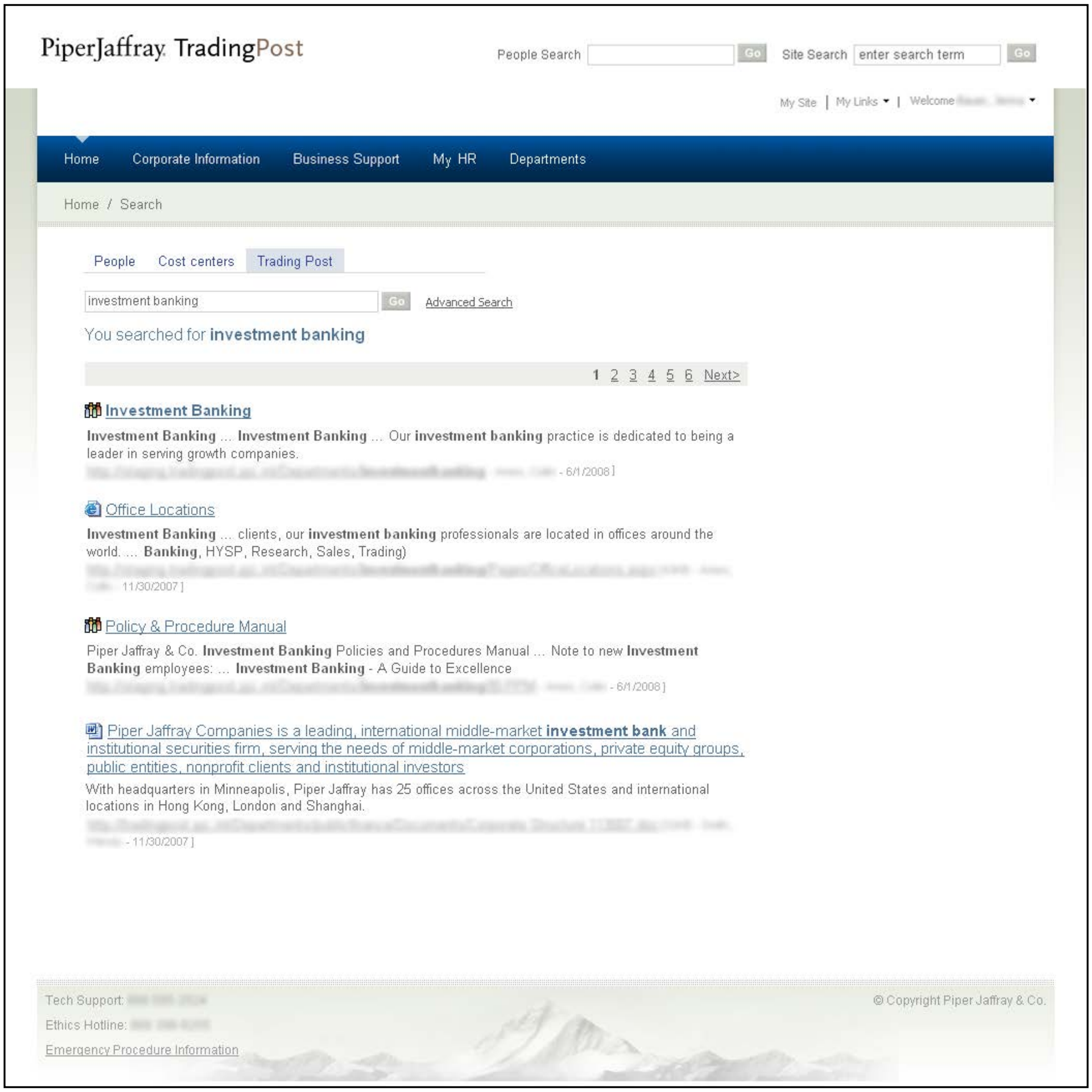
- Streamlined advanced filtering options. "We removed some of the advanced filtering options from the first page," says Burns, "Since our research showed they were very rarely used, making the search process much more streamlined for our users (we did keep a link to 'advanced' search).
- Refined display results. By removing extraneous text and seldom-used functionality the team refined the display of the results page. "We had to index quite a few of our institution's other websites and displayed the results in a single list, which diluted relevance of results and created confusion among users. For our redesign, we reduced the number of sites we are indexing (from 20+ to six), improving

relevance and greatly reducing the number of search results. We also added the ability to filter by site."

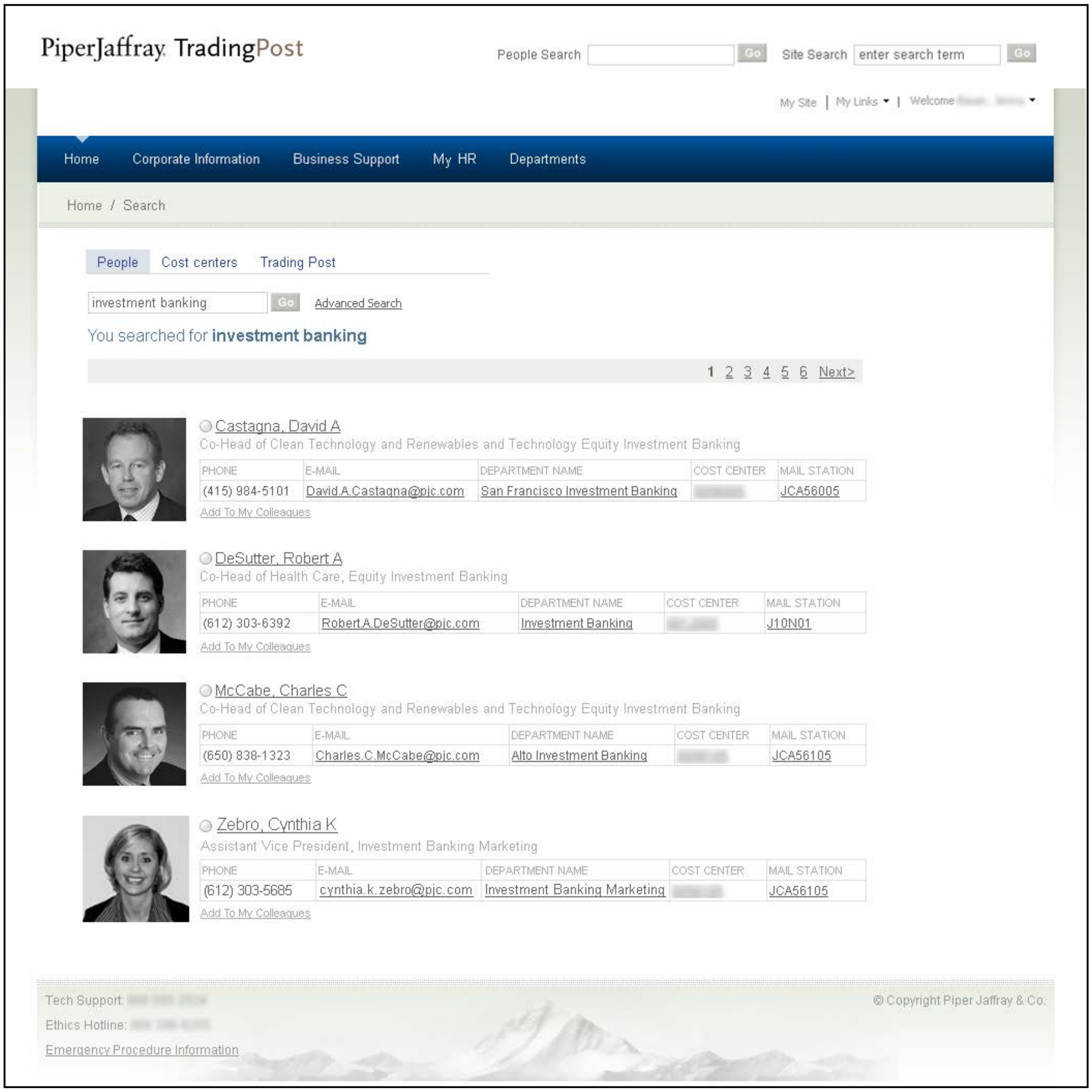
- Purged old files. "We conducted a review of files stored on our servers and removed files that were outdated," says Michael Burns, Web director, "which resulted in the removal of thousands of files from our search results. We also changed our code so expired events no longer showed in results."
- Added keywords. "We reviewed reports on the most common search terms and ensured that top results were keyword matched to and were the most relevant to the search terms," says Burns.
- Made accommodations for errors. "We increased the point size of the 'Did you mean' text for misspellings and also made the suggested term red, both helping users who spell a search term incorrectly," says Burns.
- Segmented results. "We utilize SharePoint Search Server 2010 as our corporate search engine," says Evans. "In addition to the Medical Center's intranet site (OneSource), various other sites are crawled and contained within our corporate search index. These sites include the Medical Center's external website, the College of Medicine internet site and the James Cancer Hospital internet site. Results from these sites appear in a different pane in the search results page, to differentiate them from results from OneSource (intranet site)."



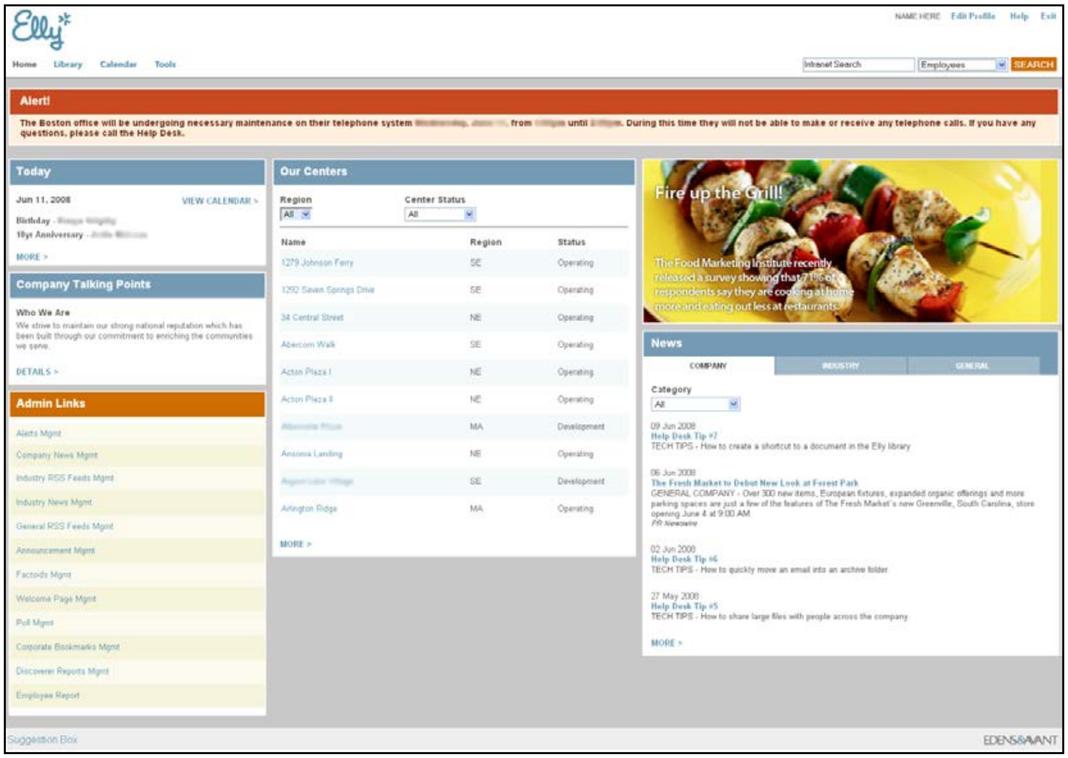
The Vertex portal uses the Google mini appliance so search results are in a format that is very familiar to users.



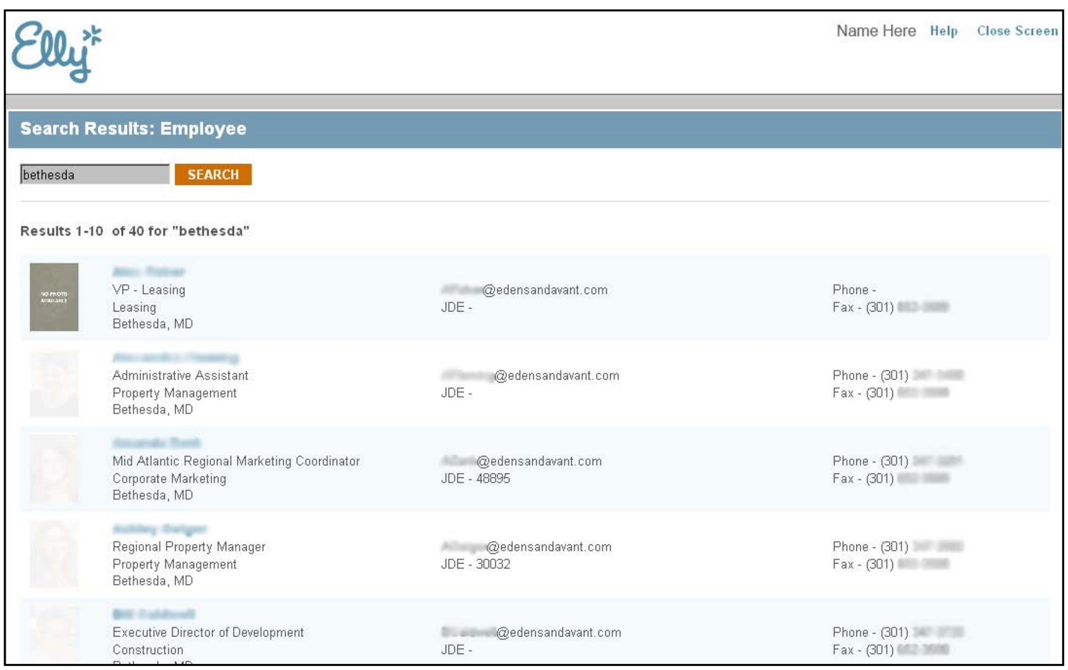
A search results page from Piper Jaffray's portal. The search results are divided across three tabs to help users differentiate between the organization's main information types: people, cost centers and the intranet as a whole.



Another search results page from Piper Jaffray's portal. This screenshot shows the people search view.

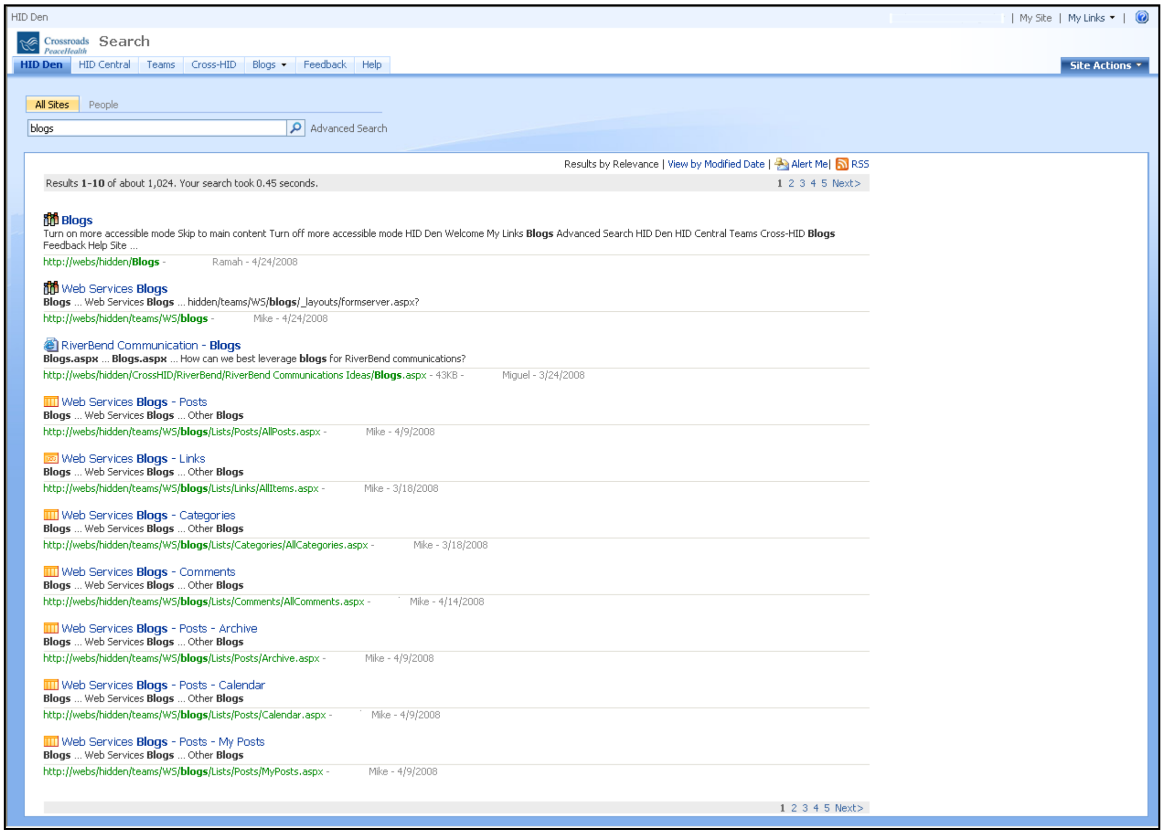


Edens & Avant homepage with search options displayed.

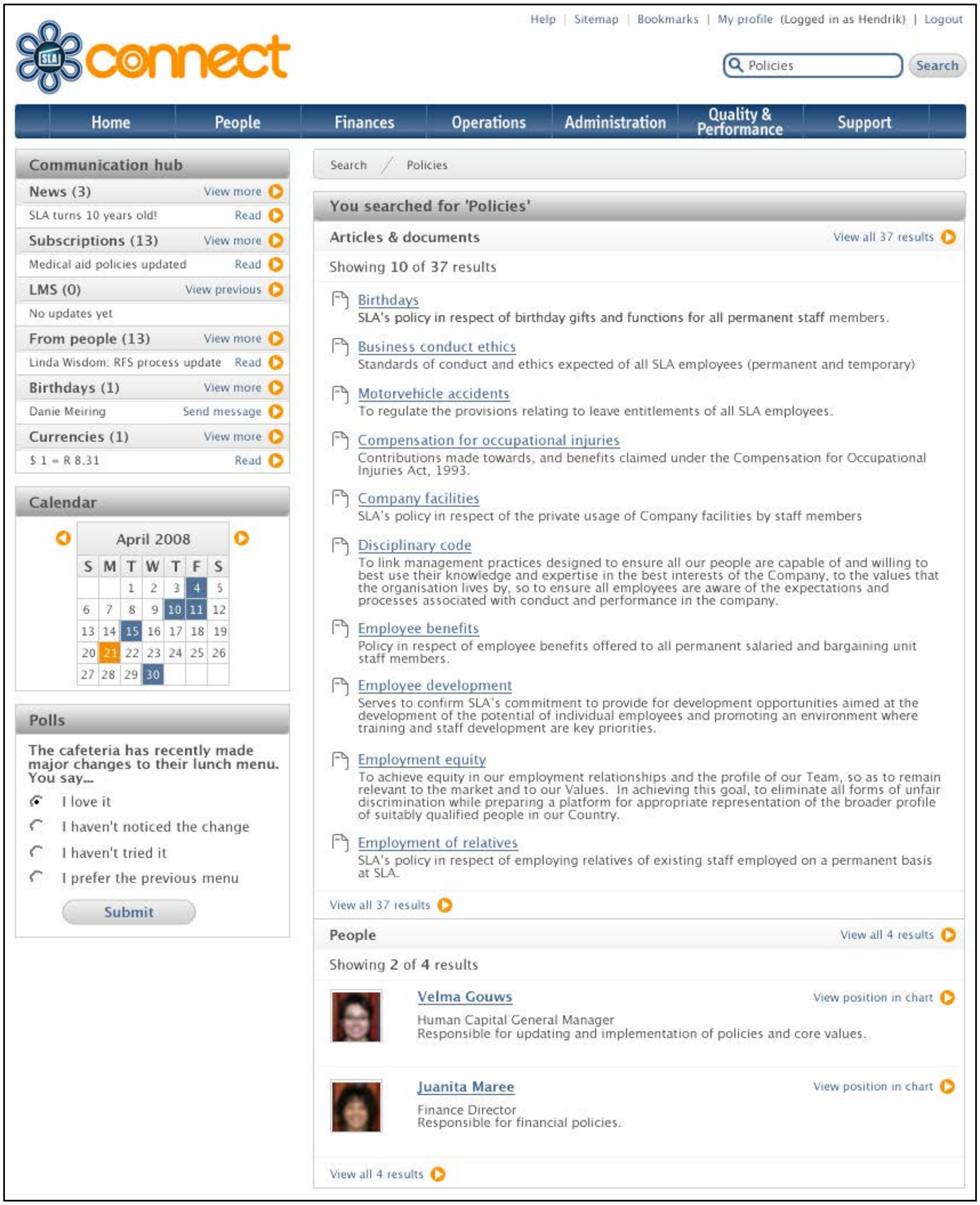


This is the Edens & Avant people search results page after a user has searched for the word "Bethesda". Employees can be searched for by name (first, last or both together), office location (city or state), email address, or phone number.

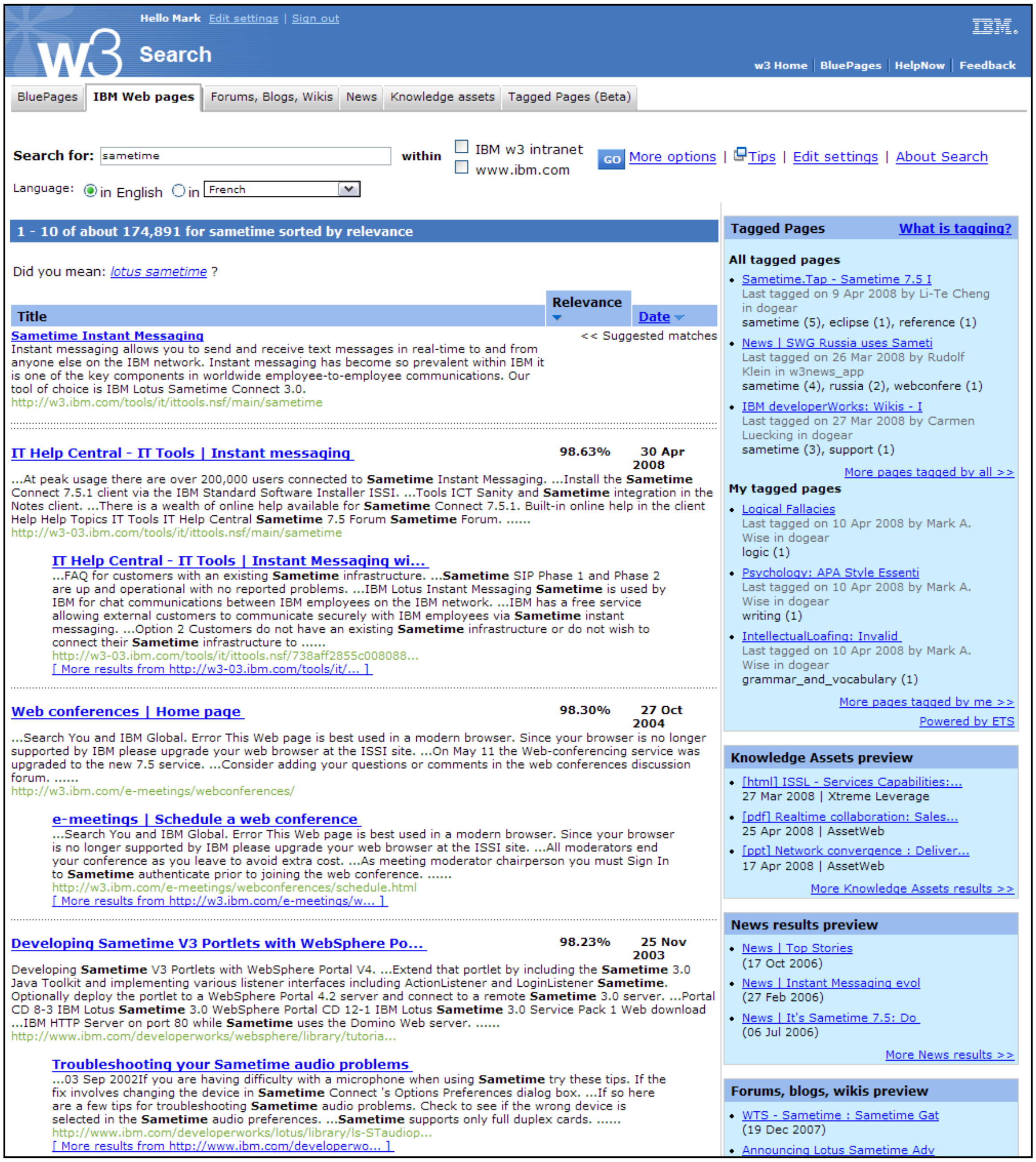
This is the site-wide search box for Northland Regional Council's portal (at the top right of the page). Users enter what they are looking for and click on the drop down box to narrow the fields and get a better/quicker result.



This screenshot shows how the search results look when searching for a specific term on the PeaceHealth intranet.

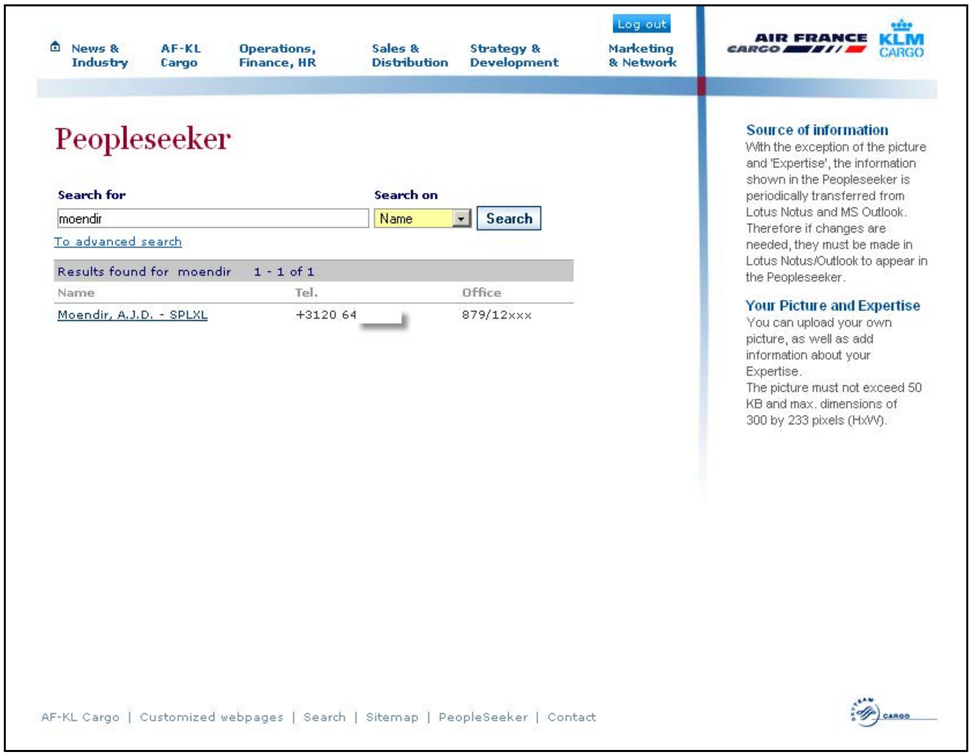


On this Strategic Logistical Alliance search results page the user has searched for "policies" in the search box. The top ten results are shown with the option to *view all*. People results are also displayed for individuals who match the keyword that was searched. The keyword is matched against answers to questions in employee profiles.

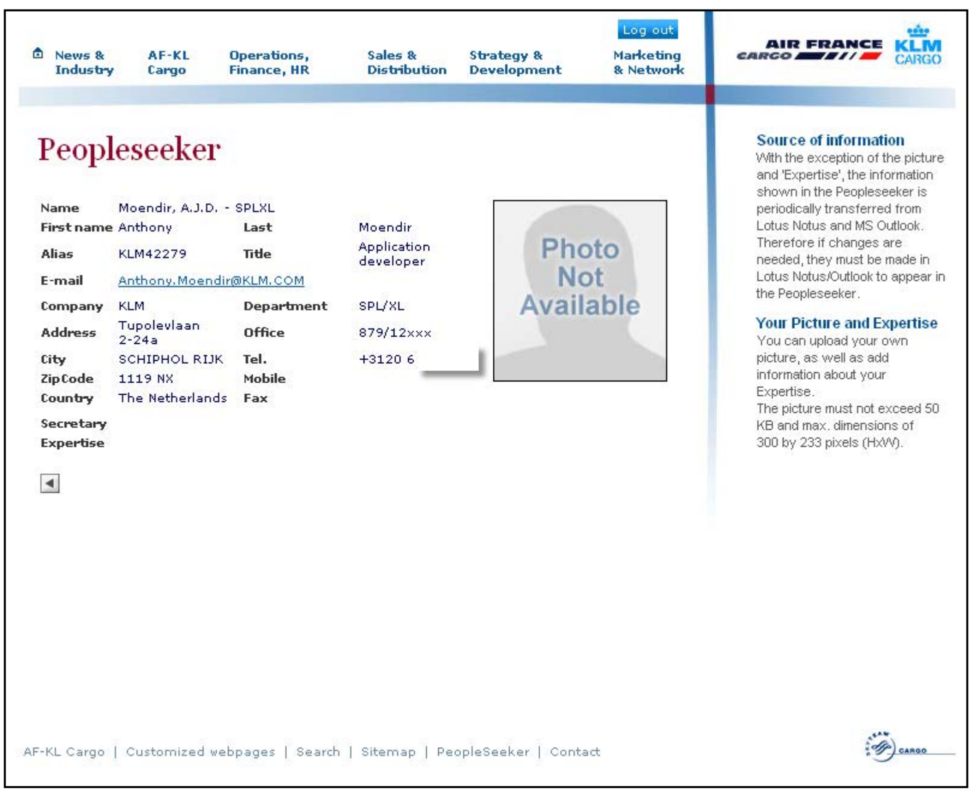


On this IBM search results page a user has searched on the term "sametime". The search results contain the results from the search engine as well as related, tagged results. It also shows experts who have this term in their directory listing.

An IBM search results page that is leveraging tagging, and displaying the results.



The Air France–KLM people search tool, *Peopleseeker*, contains info from Lotus Notes and Outlook and contains all information about the employees.



An Air France–KLM search results page

BEST PRACTICES

- Evaluate search functionality when evaluating portal platforms. When evaluating portal products, don't forget to put the included search engine through its paces. Evaluate based on both functional considerations and user experience criteria.
- Be more Google-like. Users have high expectations for search. They are familiar with powerful web search tools like Google and expect intranet search to be equally as powerful and easy to use.
- Simple search is not enough. Generic search isn't appropriate for every kind of lookup task. Consider adding specific search capabilities to support specialized tasks.
- Free text search should be the default. Users generally prefer free-text search.
- Keyword search is best for specific tasks. Keyword search sometimes better supports task-specific searches — as long as content providers are careful about entering the right keywords.
- Choose tools carefully. Choose a good search engine that has all the necessary features, especially filtering capability. That way, when it indexes content, it will index it in a way that is specific and appropriate for the data structures of the portal.
- Monitor and adjust. Once a search engine is up and running it's best to be vigilant about adjusting the settings to better suit how it's being used. Continue to monitor search results and adjust the search tool according to how users are using it.
- Train users. Provide training to content providers so they can better able to create content that delivers relevant search results to users.

Return On Investment

ROI IS STILL ELUSIVE

No portal project is complete without determining which outcomes will signal success. One of the first requirements of that process is to define the end game — what metrics will be used to determine a successful outcome. Some companies measure usage metrics on length of page views and user sessions. Some base their success on improved user satisfaction or increases in overall usage. There are probably as many possible approaches to measurement as there are types of portals. As the saying goes, there are many ways to skin the cat. Yet, despite this variety of approaches many organizations still struggle to pinpoint exactly how or if they will measure ROI. Our interviews reveal a disconnect between the "idea" of ROI and finding a way to make that idea actionable so what we present in this chapter are some examples of how a variety of organizations have grappled with the continuing challenge of determining ROI.

Making It Up as They Go Along

Despite good intentions, in practice it's often easier to express the benefits of the portal in terms of negatives — not wasting time trying to find crucial information about an employee or business group; not missing out on business opportunities through lack of information; not duplicating work already being done inside the organization — that are hard to quantify.

That is perhaps the reason why many organizations, even those with established and robust portals, still don't quite know how they will measure the ROI. When asked specifically if they are actively measuring ROI, many portal managers allude to vague sounding metrics like "happiness" or point to intangibles. Their responses are usually preceded by a guilty pause and lead to a flat-out admission that they just aren't doing it or haven't quite figured out how.

When asked about what metrics he's using to measure the university's ROI, Point Loma's Edmiston replies: "Nothing pre-defined. We are making it up as we go along. The main metric is usage: the tools and tracking the usage of those tools."

Even among the organizations that acknowledge ROI is a vital component of their site's success few have adopted exact, quantifiable metrics. Instead, the somewhat softer measurements of user engagement, improved access to information and user happiness are often cited as the things that will determine the portal's success.

This trend toward qualitative measures seems to be driven both by the difficulty of identifying ROI and also by the relative importance placed on the user experience.

"We haven't yet established ROI goals," says Mars Bioscience's Haines. "We struggle with that as a small company in general, but [as we have grown] the priority has changed. Now the company is more sensitive to costs."

She conjectures that if she were to set ROI goals for her company's portal, those measures would be a mix of quantitative (improving efficiency and productivity) and qualitative improvements in what she calls a "sense of community."

Once the site launches, she plans to send out frequent mini-surveys with incentives for employees to participate. "It's important to ask them [the users] questions. Our success requires us to ask those tough questions."

Setting Goals

The best way to measure success is to determine up front what and how success will be measured. Huntington Bank took this approach with its portal project.

"Through a set of business and user interviews at the very earliest stages of the project, we have defined success metrics that will be measured through the iterative design process and post launch on the new intranet," says Huntington's Greene.

"What are the site's biggest successes and why do you consider them successes?" he says. "We're looking for any examples of success — no matter how you define it. Some examples might include: increased usage or participation, more content, higher survey ratings, decreased support calls, better user feedback, more use of the site by executives or Corporate Communications for corporate messages, etc.?"

Determining success metrics at the outset means you'll know when and *if* you've succeeded.

"One of the things we decided early on was, before we start this project we need to know at what point we've succeeded," says City of New York's Marsha Kaunitz. "We want to be clear about our short-term goal. So we plan to speak to the Mayor's office and our Commissioner directly and ask what is it we'll have done that will make you say we've succeeded?"

Choosing an Approach

At Huntington Bank metrics matter. "Working at a bank ROI is always relevant," says Maisnier. "Our culture is one of numbers, so no matter how difficult it may be to accomplish we must defend and justify our costs and efforts with a defined ROI. Right now our major issue is getting the site to be accurately monitored in terms of page views and visitors, that alone will represent a huge change in terms of the data we have at our disposal to support the intranet as a business entity with tangible return on investment."

But that measure is a mix of usage tracking and checking in with the users.

"ROI should be measured by both tracking the use of the site through web analytics as well as colleague feedback," says Bartocci. "The ROI goals for the build/re-design are to increase traffic and engagement with the site. The expectation is that users will spend more time, in total, on the site yet will be accessing more information and completing more tasks in that time."

"From a self-serve perspective, there is ROI opportunity in decreased call-center time and overall support time," says Sandy Greene, principal design director at Intuitive Company. "ROI can also be measured on staff productivity. With the potential for knowledge share and self-service there should become a more independent, more informed and more efficient end user population."

Measuring trend lines rather than usage statistics is also another approach that seems to work. "We monitor statistics to follow the trends and see what is and isn't working," says Michelle Dozier, Digital Analytics Program Manager, of how NARA is tracking usage. "'Hard numbers' can be misleading so we depend on trends and will occasionally reference actual visits."

MEASURING INTANGIBLES

Most companies are not actually measuring true ROI at all. Instead they are measuring the progression of intangible improvements. "We do not measure ROI directly and there is no mandate," says Walch of Resource Data, Inc. "However, it is important that the features we implement support our philosophical goals — improve the employee experience, provide higher value to clients, or improve our internal efficiencies."

The type of approach by far the norm when it comes to justifying the cost of the portal program.

Better Access to Information

One widely reported goal for the portal teams interviewed for this report was "improved access to information," but improved communication is not something that often comes with hard numbers to illustrate its success.

Piper Jaffray counts improvements in information accessibility as meeting a key objective of the site. "Making information easy to find and easy to publish, we feel that is the ROI," says Swanson. "Making information easy to find and easy to publish will empower employees to be more effective at finding the information they need to complete their daily tasks."

Another important and equally squishy measure of ROI is a company's ability to get information out to its employees in a targeted and timely manner. One financial services company we interviewed gauges part of its site's success on just that. Success for us," says a company representative, "is to be able to reach a targeted audience. To be able to do that, that is huge."

"When we can go directly to a group and reach them immediately rather than cascading information or passing it along, that will be success," he says. "[Prior to the portal] our communication was not centralized. Now we are able to target a specific audience."

For many organizations, access to information is not merely a "nice-to-have." It can be critical to a company's operations and a portal can facilitate that information flow in ways that other means fail.

"We want to get at that information that is locked away in people's email boxes and get it on the homepage." says Steve Karsch of Vertex. "And if we can do that people will be more involved and engaged in what's going on in the company. Right now there are silos of information and no one knows what's going on."

"I think we talk a lot about employee engagement," he says. "When the company was 300 people, everyone knew what was going on. Now people are spread out and we feel more isolated than ever. People send around emails to five people on a project's status but other people probably need access to that information too. Now [with the portal] we will be able to search for the information that we need to know."

For some organizations these softer measures are enough to prove the portal's worth because the value placed on communication across the organization is high.

"How do we measure success?" says Build-A-Bear Workshop's Somogyi? "Through conversation more than anything. If I sit down with the director of operations at the end of the year and if the simple answer to the question: 'Can you find things easier' is 'yes' then the project is deemed a success. In some ways a project like this is hard to measure but we see the value in the portal regardless."

Productivity Improvements

In theory, better information access should have an impact on individual productivity. In practice, however, it can be difficult to demonstrate the increased productivity, and management is often skeptical. For example, Verizon computed that single sign-on to all applications via the portal could save $5 million a year just from saving employees' time. The project's business sponsors, however, didn't buy into this view.

In general, portal teams report that managers question the direct relationship between the time it takes to complete a task and overall productivity gains because several small time savings may not add up to one big one. "Saving half an hour here and there doesn't make you a penny unless you can find some way of making some other use of the time," says Eversheds' Kevin Doolan.

Unless the company is planning to lay people off, productivity improvements only save money if people can be redeployed into some other revenue-generating task. "Our knowledge management environment helps me find information faster, but that doesn't mean that I've saved 4.5 hours of my time," notes KPMG's Iain Simpson. "I'm still here, I'm still being paid, I'm just doing different things with my time."

Hence selling productivity may not be the best way to gain backing for a portal project. "Our view is that the benefits will be intangible benefits," says Simpson.

The portal team at SAB encountered the same challenge. It's hard to assign a value to improvements in productivity.

"Success or ROI is not measured in terms of a monetary value for this bespoke intranet," says Hawkins. "The reason is that it is difficult to assign a monetary value to an employee being more productive by finding information faster or being able to view other department's strategies for the year and 'borrowing' ideas from their strategies for his own department to use. Success is rather measured in terms of usage of the new intranet and how easy it is for new and current employees to access and collaborate on company documentation."

Transferring the Workload

Increases in productivity may not be the best measure of portal success but measuring a specific change in a work process can be a big win for an organization struggling to measure ROI. Point Loma Nazarene University's Group Query application is a great case in point.

Group Query addresses a simple but vital need in the university: the need to send out frequent targeted communication to groups across the university based on a defined set of criteria. Prior to the portal, this function was accomplished through a daisy chain of personnel from department administrators, to IT, back to administrators.

"IT people were having to do the work and send it to the department administrators," says Edmiston. "Now they do it themselves."

Since the portal, he says," We've seen a decrease in ticket logs for this type of work. We don't have one major gauge [of success], but comparison of usage of certain toolsets is a good indicator."

This transfer of the workload from a higher cost department to a lower cost employee has translated into cost savings for the university, but perhaps more important, it has translated into time savings for the IT department, whose programmers have been freed up to work on more projects.

The drop in IT requests for this simple query has given Edmiston hard numbers on one part of his portal's success. "These kinds of improvements have taken a load off the IT staff to focus on other projects," he says. "We have numbers to back up the work that we do. We have seen increased traffic in these areas as a direct result of the tools. This allows us to focus on one project vs. other."

Eliminating Duplication

Centralizing resources into a single portal helps eliminate duplicated resources, which leads to tangible savings in equipment, information generation, and billable services. In fact, reducing duplication is often the easiest way of calculating numbers that can be used to cost-justify a portal project. Furthermore, when a portal will allow paper-based tasks to be performed electronically, it's often possible to point to savings in print and distribution costs.

To sell the idea of the portal project, Sprint's portal team started by looking externally. "The hard numbers are the ones that convince management," says Bowen. "So before starting the project, we went out and benchmarked with some other large organizations. Then we drew a solid line around four or five of our biggest infrastructure sites, including HR, training, and our wireless business, and estimated that the portal would save us $15 million over 18 months, simply in terms of savings on hardware, software, and maintenance contracts."

Since Sprint's portal got funded, and went live in 2003, Backlund says Sprint managed to reach about $10 million of the projected $15 million in savings it had hoped for in the first few years. Even better, "thanks to careful management and redirection of intranet funds that were scattered across the company, we've done it with little additional cost." Note that projected savings often don't take into account advantages such as improvements in employee productivity, competing more effectively, and so on.

Often, ROI potential revolves around the intricacies of how every individual organization conducts business. For example, Andersen, one of the winners of the Nielsen Norman Group Design Annual 2001, estimates it saved several million dollars in external information costs simply by channeling all its information sources through its portal, Business Radar.

As mentioned, a portal can also help cut out duplication of internal resources. "The beauty of having a global application is that we can support global teams," says KPMG's Simpson. For example, "the people working on a particular client in Switzerland and the UK can share their own insights into the industry."

At Minskinzhproekt, for example sees the portal itself as its "killer app" in the most literal interpretation. "We can measure its success by the number of old applications killed and by the number of new applications rapidly created within the Portal," says Glushakov.

"For example," he says, "the previous electronic document management application had lots of really useful features, yet virtually nobody was using it since it involved local installation, had extended functionality and a complicated user interface that required extensive training. This application was sending out emails to all Chief Project Engineers/Architects to signal certain changes in a project status even though this particular project could be irrelevant for them at this stage. As a result, most of the recipients would never open these emails. Now the very same people have started to use *Portal* to get access to the same kind of information — using *pull on demand* rather than the simple *push* approach."

The ABB portal goes out of its way to ensure internal information and resources are visible to group companies, thereby avoiding duplication of effort between them. "We lose a lot of contracts and money by not being well-coordinated, says Helene Gunther Merg, part of the company's global web management department. "There have been cases where people in the company have brought in items from outside companies to sell to customers, because they weren't aware we made those items."

If a portal team can point to a few incidents like this, and note their potential cost to the organization, the business case for portal funding will obviously be easier to make.

Little Things Make a Big Difference

Sometimes measuring success is all about small changes that have a big impact. At Goodwin Procter measurable ROI wasn't a big factor in its portal design. However, little things such as success stories, usage reporting, and feedback from existing and new employees continues to be the measures of success.

"Upon rollout the feedback was highly positive," says Kawa. "The reports that users love the consistency or the fact that they can find something told us that we had a successful re-design effort. New hires coming on board and providing feedback that they had nothing like this at their old firm and that it has been a hugely valuable resource in acclimating them to the environment gives us the validation that we are receiving a return on our investment."

Ongoing surveys continue to inform where the Huntington portal is providing value and where it still needs improvement.

"Usage reporting from Web log files tells us which areas are used the most and which are used the least," he says. "Areas with minimal readership are re-evaluated and addressed."

Measuring Effectiveness

SAP's measure of ROI covers a range of things the organization does better because of the portal. Dobiéy says these include: "networking, virtual collaboration, effective meetings, sharing knowledge, getting fast answers to questions, serving our customers faster and better, ability to execute (self-service) processes, more transparency on who does what, discuss, exchange, feedback."

But despite this laundry list of effective outcomes, he boils ROI down to this: "In essence people do the same things they always did but they can do it faster. They are in control and they have a broader reach if they want."

"On top of this, the mall metaphor can be applied as well to ROI," says Dobiéy. "The intranet (the mall) as such only contributes to the overall revenue. It's the content area and business processes (the shops) that own their 'revenue', such as HR for employee self-services, sales with customer relationship management, consulting with communities of practice, general management with business intelligence and so on."

THINK MUTUAL BANK TAKES A MULTI-PRONGED APPROACH

Think Mutual Bank avoids a one-size-fits-all approach to measuring the portal's effectiveness. Instead it takes a multi-pronged approach, applying measure that are most relevant base on the groups that are served and using a variety of methods to gauge success.

"It is important to look at ROI in regard to groups that are benefiting in tangible ways," says Stiller. "For example, HR is getting fewer calls, and answering calls with reference to the page."

Because HR reps can reference a specific portal page when answering employee questions this is driving the overall call volume down so those same reps can shift their efforts toward a deeper layer of issues rather than being bogged down answering the same calls every day.

"Check with the helpdesk, the receptionist, the facilities people, etc., and see if their daily lives have been assisted because of the access to information that the intranet provides," she says. "Something as simple as maps of each floor that people can find can provide support to a new hire and the receptionist trying to assist them."

Ryan suggests that employee engagement surveys are another way to measure the impact. "Within six months of launch, without all of our content migrated, our intranet became the favorite means of communicating information to employees," she says. Feedback on this will be measured each year.

Another useful approach is to simply find ways to show how the portal has reduced the burden on its users.

"It is a hard thing to do quantitatively," says Stiller. "Think of ROI as the measure of taking trivial burdens of task completion off of everyone and allowing them to get to the work that they were hired to do. Issues like 'where is the correct form,' 'where is the meeting room,' and other time wasters are essentially eliminated by the ability to find the information you need when you need it."

She suggests portal teams gather statistics from the site and search analytics over time to identify what issues people are having trouble with or where they prefer to go. "If the search has a thesaurus like ours does, it is a wealth of information to see what searches had no results, and use that to tune the words included in your thesaurus," says Stiller. "The percent of successful searches will go up as well as search usage."

"We also use an inbox that is copied on all user feedback. We can see that the participation in making pages of the site better is constantly increasing. Projects that were talked about years ago can now be accomplished because we know that the effort will result in resources people can find and use easily."

"In addition," she says, "We structure our content to take advantage of the ability of the site to provide information to users to assist them in completing their work. If our users cannot find the content they need when they need it, then the value of that content drops to zero. That is why we selected Coveo for Sitecore. By structuring our Sitecore content to optimize Coveo features, our portal delivers the right content in the right context. It is by design that we maximize our ROI."

USER HAPPINESS EQUALS IMPROVED USAGE

You Can't Put a Price on Happiness

Though user happiness is a somewhat anecdotal measure, its importance cannot be underestimated in determining the overall success of a portal. Beyond the simple feeling of "happiness," user satisfaction can drive and determine much of the rest of the site's usage metrics. If users don't like a site (or are frustrated using it) they are much more likely to hold on to old (less efficient) ways of getting things done.

Kadant sees value is serving its "customers," (the site's users). "Being a small company we measure ROI not so much in terms of dollars but rather in "customer" satisfaction (customer being the users of our intranet portal)," says Leland. "And as a small company we have the luxury of being able to simply walk around and talk with our users and get their feedback on what's working for them and what's not. And whether they feel the intranet portal is helping them to do their job more efficiently."

"That's really our ROI," he says. "Does it help users do their job better, faster and more accurately?"

Though happiness and engagement are not clearly measurable goals, by getting users to engage with the portal, portal teams can gradually ease users into adopting new tools that ultimately lead to a reduction in measurable hard costs.

Point Loma Nazarene University is looking at user satisfaction with a long view. "[User happiness] is a means to an end," says Edmiston. "Portal adoption has been a big driver for us. We want more people to go and see it as a good source of information."

He says user adoption is a key factor in helping to establish the portal's credibility with its user base. Until the users accept the portal as a reliable (and positive) tool, it's harder to get them to buy into using it for more critical functions.

One example he cites is the goal of moving student billing completely online. "We send out 2,300 bills each semester," he says. "This takes manpower and there are hard costs associated with that. If we were to put billing right on the portal now we would lose people."

He says it's important to give users tools and applications, things that increase their satisfaction and feeling that the portal is valuable first, then ease the bigger changes.

"We push people to the portal by using enticing morsels like the café status functionality," he says. "And because of that they will go to the portal for more and more things and we can roll in some of these other pieces eventually."

Taking a gradual approach, he says, helps the users to build confidence in the portal. "Then we can start to see the savings: in hard costs."

User happiness is something that goes beyond merely *liking* the portal; it's a sense that the portal is useful and valuable.

Asking Users for Their Opinions

Listening to what users have to say about a portal can be just as useful as measuring their use. And the best way to find out of employees like the new portal is to ask. When portal teams open up the portal to feedback, users are usually forthcoming with their opinions, both good and bad. Duke Energy found this to be the case as they listened to solicited feedback from the company's portal launch.

"Our greatest successes are reflected in survey results and anecdotal feedback," says Brown. "One survey participant said, 'GREAT JOB so far! This last improvement has probably already saved me hours in productivity for not having to search as hard to find things.' Another said 'You have done a good job by maximizing the impact of a single picture or a few well-placed words and channel that vision into crisp, fresh, clean design. It's motivating to be on the portal now!!!'"

"Survey ratings indicated that 88% of employees believed the new portal was an improvement over the old," she says. "Comments and readership on the homepage are up, and with key stories like a recent merger announcement and the earthquake/tsunami crisis in Japan, employees are going to the portal quickly for more information."

A Gradual Process

LM Glasfiber's Rasmussen says the company will conduct annual surveys to gauge user satisfaction, but user happiness is not the only metric he's measuring. "If you wanted to build an intranet just to make people happy," he says. "It would be Facebook-like."

"If it is successful, it should be a daily tool and should help people out, but it's hard to define ROI," he says. "You only see the true value when it's gone. Take it away for two weeks and see what happens."

Building that "I can't live without it" feeling among users is a gradual process.

For a redesigned portal, increases in what Haynes calls the "satisfaction meter" can help reverse-justify the time and effort — and also illuminate usability problems designers missed.

For example, at Fujitsu Siemens Computers, following the move from an intranet to a portal, user surveys found that over 80% of employees with portal access rate the system as good or very good. Furthermore, use of the intranet/portal "has increased threefold since the portal went online," says Melck. While these aren't the solid metrics a chief financial officer might crave, given that most organizations accept an intranet or portal is a necessary business tool, demonstrating how the usefulness of that tool is improving does show a return on investment.

SUPPORTING BUSINESS GOALS AND BUSINESS CHANGE

Sometimes the business case for a portal can be based on positive revenue generation, as well as making savings through improved efficiency. Two of the UK organizations we talked to for this report — law firm Eversheds, and the Royal Institution of Chartered Surveyors (RICS) — wanted to use their portal to repurpose content. Through personalization, the content could be served to both an external, paying audience, as well as to internal users.

Here's an alternative way of looking at the return on investment: will the portal support key business objectives, which can be expressed in terms of measurable criteria? Think about increasing sales, decreasing the number of faulty goods returned to the factory, decreasing the time needed to answer customer queries, improved research collaboration, and so on.

For example, Eversheds has considered using its portal homepage to flag key business issues. This might include the time partners take to collect money clients owe — something with a direct impact on the bottom line. "We think the top third of the page view should be devoted to the big issues affecting the firm," Doolan says. "If we could use the portal to improve partners' performance on fee collection, say, that would pay for the project in itself." Some managers are even considering instituting a homepage "name and shame" section to goad partners into improving their debt-collecting habits.

Designing an information architecture for a portal can produce unforeseen results as well, including highlighting both the organizational structure and information flows within an organization. In some cases, this can lead to a re-evaluation of how different groups in the organization work together, or even challenge fundamental assumptions about what the business does, and how well it does it.

Toward a Common Source of Information

Erste Bank was not far enough along in its portal project when we interviewed the portal team to measure the project's success yet, but Hafner says he already sees several important ways the portal's success could be measured:

- Provide business support: Having the Group intranet in place as the common source of information across the Group makes the search for information easier and quicker — especially with international requests.
- Build company spirit: It is a tool to convey the company spirit to the employees — so that they will have the opportunity to experience on a daily basis that they are part of an international company.
- Make IA improvements: A big potential for success is in usability and IA improvements. Many of the old solutions use frames, open new windows, break the *back* button etc., so they are not easy to use for inexperienced users. And the menus (general and contextual) don't provide much information (where am I/where do I come from/where can I go). Improving that can save a lot in search times.

"We want to have the ability to react to all the business requirements that are out there," he says. "We have a lot of business divisions in several countries where people need to cooperate across borders. Right now they don't have a communications platform." If Erste Bank's portal helps contribute to this goal, he says, "We have done something good."

CALCULATING ROI AT NEW CENTURY FINANCIAL CORP.

At New Century Financial, Michelle Cullinan generates ROI to help sell her intranet projects. She says she used the Nielsen Norman Group's report on return on investment from usability in intranet projects as a starting point, taking many of the tasks in the report and translating them into the features her site actually has.[19] For example, "find information about an employee" equaled her phone book, and "find specific information: a stock price," she equates with the company's stock ticker.

The report lists the average time users needed to retrieve said information based on whether the design was bad, average, or good. Organizations can use such statistics to help demonstrate the return on any investments made to improve intranet design or usability.

The important thing, she says, is "I am not creating these numbers. In the intranet industry, the Nielsen Norman Group has set a standard for calculating usability; it doesn't make sense for me to go and run a usability test to generate the same numbers."

Here's an example of how she applies such numbers, say for creating a new online phone book. First, she says, find a source of information for the average time it takes to do certain tasks. (Let's say the source of time-on-task information says the time it takes a user to finish an employee directory information retrieval using a good, average, or bad design is respectively one, two, or three minutes.)

Then find out how many of the portal users are actually using the specific feature. For this, Cullinan uses web traffic reporting; her company has a subscription to WebSideStory. "You look in the web traffic reports for the first month the phone book is launched and see how many times the phone book was queried, and let's say it was 4,000 times," she says. So if a poorly designed phone book took a user three minutes to use, and if the average intranet phone book takes the user two minutes to use, we saved one minute. That's assuming a non-existent phone book equals "poorly designed," she notes. So take that minute saved, times the number of queries to the phone book. Then convert these minutes into hours, and obtain from human resources a blended hourly rate — a mixture of IT and non-IT employees' weighted hourly rate, which includes benefits. Finally, multiply hours times the hourly rate, to obtain ROI. That's the approach Cullinan uses to generate the potential ROI for creating or improving the design of a tool, feature or content.

Yet ROI isn't just a run-once exercise; it's about ensuring ongoing improvements. For example, New Century Financial calculated a projected ROI from adopting a CMS. "We'd track how that worked — how it took 12 hours to change one word before, then a year later, we showed that we got that down to an hour, and that saved approximately a million dollars in one year. So what do you do the next year? You need to keep enhancing the site to align it with the business. Give employees what they need to do their job."

For the CMS, Cullinan demonstrated the ongoing benefit of having business owners manage their own content. "We no longer go through development and QA to change

[19] NN/g's report, *Intranet Usability Guidelines*, presents results from user testing 42 intranets. These findings focus on the design guidelines derived from the research but also include information about the average amount of time it takes an employee to complete a task, based on whether they're dealing with a good, average, or bad design.

content. We actually use the business authors to administer content." Using that argument, financially she's justified her CMS contract, which renews annually.

MEASURING ROI AT CISCO

An Evolving Approach

Cisco's portal is a good case study in adopting an evolving ROI approach, both because it is a mature portal and because it has undergone significant change in recent years.

Like many other organizations, Cisco's team views increased usage as a sign of success. Since launching its social software platform, Quad, they have adopted a set of standard metrics, which include: tracking the number of Posts created, number of discussions, number of wikis created, number of members in the community spaces, number of blog posts created, etc. in Quad.

"We saw positive business impact of those systems in things like the reduction of publishing cost, timeliness of content, and reduced support cases due to self-service," says Aarti Mittal, Program Manager, CBT. "In addition, a number of individual 'success' stories were captured articulating the bottom line dollar impact of certain Web 2.0 implementations (for example, dollars saved by using TelePresence vs. travel.) Some success stories also articulated the intangible or qualitative values that were derived."

When the company set out to establish a social software platform it wanted to make a significant impact.

"One of our largest tangible goals was to develop a collaboration platform that could significantly and positively impact the daily operations of the company and transform our workforce experience," says Mittal. "We were also hearing from our customers that they were facing similar needs in terms of integrated collaboration capabilities. As the Quad product was being developed, we saw the opportunity for our customers to benefit from it as well and formed our Enterprise Collaboration Platform Business Unit (ECPBU)."

Mittal says that since Quad launched there has been a continued but stronger focus on measuring both the qualitative and quantitative benefits of the company's investment in the platform. One area of major focus is the impact on specific, critical business processes.

"By mapping the use of the platform to the before and after picture of a business process," she says, "we can assess the impact and then categorize it at the highest level as affecting speed, scale, flexibility and/or replication. We also capture the more direct quantitative effect on things like: time to market, reduced expenses, time savings, etc."

Demonstrable Improvements

A simple example that illustrates the improvements the system has provided for users is in the company's new application/portlet that provides employees with quick access to their paid time off (PTO) balance. In the company's ERP system employees were required to complete 14 steps in the company's ERP interface. Now, by completing a four-step process employees can submit their time off requests.

"Taking the average number of submissions, loaded labor rate, and the time to task savings we quantified the total productivity gains achieved through the simplification," says Lenz. "We expect to see additional gains after we integrate additional services, such as setting out of office notices, and proxies into the same 'taking time off' transaction."

Another successful example includes some specific metrics as seen by the use of the portal by a product development team which includes the time savings (an average of 55 minutes per day per user) and process acceleration (ability to accelerate minor release by 2–3 days) which is a 35% time reduction for each release.

"Our sales force were our very first adopters of the platform and have benefited the most from the task integration and single, unified interface," he says. "Applications/portlets were created to pull in the data and critical tasks that had resided in eight different stand alone applications the sales force was using. The portlets were streamlined to have a consistent interaction design and user interface, unlike the stand-alone apps, and then made available within Quad. The response has been extremely positive to this user-centric approach."

This has allowed the sales force to have all the data to do their day-to-day tasks accessible in one place saving time and expanding opportunities.

Other early adopters have enjoyed a reduction in email by as much as 38% by adopting an open information-sharing feature called Post. Essentially any employee can publish a Post and share it with nobody or a targeted recipient group. Posts are as open or as closed as the recipient list. That distribution list can be modified at any time as the content matures.

Because Cisco places a strong emphasis on the business process and cultural aspects of a such a large implementation, successes are also measured in qualitative terms by looking at user feedback regarding employee acceptance and adoption, user experience, productivity impacts felt, usage, etc.

"We capture and evaluate a number of various metrics to look at the qualitative aspects of adoption and usage," says Mittal. "For example, by looking at visits per employee, we are seeing adoption of Quad steadily increasing. In addition, we collect and review the number of Posts, discussions, and documents being uploaded to conclude that use of the platform's various capabilities are increasing and that overall usage is spread across most functions and theaters."

Adopting a Framework for Measurement

Cisco's metrics are measured using an internally developed framework intended to capture usage and trends in the organization's use of Quad. Key elements of the framework include:

- Availability: Metrics in this phase are focused on evaluating whether or not a capability is really available for business use. Examples of availability metrics include capability introduction, performance, upgrade, geographic access, and end of life.
- Awareness: This phase measures how successfully the organization has informed the available user base of this new capability — largely a result of an effective communications campaign.

- Application: This is the phase where users really begin experimenting with the technology in front of them. This includes measuring the effectiveness of training classes offered, number of people logging in to experiment and play around in the new environment.
- Adoption: This is where they begin to see viral adoption of a capability within the enterprise.
- Acceleration: Acceleration has been attained when business value of collaboration has transformed processes in such a way that a new baseline must be established.

"Based on the initial set of business value metrics that we have started gathering, we believe that the ability to quantitatively measure business value for our social software platform clearly exists," says Mittal. "However, this business value lies in the tangible application of the technology to specific business processes — as opposed to largely in the intangible, qualitative measures that we expect to see like accelerated alignment, deeper reach, etc. — all of huge value to an organization, but a lot more elusive when trying to quantify."

MAKE ROI BELIEVABLE

How effective is ROI for selling intranet and portal projects? "I remember hearing 10 years ago that intranets have the highest ROI of any project, but they're hard to sell, because the numbers get too good. So you just stick to the clear arguments for numbers and make conservative assumptions when calculating them," she says. Also, Cullinan is careful to use two types of ROI — hard, and soft — and articulate the differences to senior management. "If we couldn't easily follow the bouncing ball through all the steps, we'd just call it soft ROI."

Still, high numbers can be an ongoing problem. "When we had our original numbers in, many of our executives said, 'I don't know why, but this seems too high.' But we tried to do it so conservatively — lopping off the high numbers — and they could never say we did anything improperly, but it was just so high."

"After generating ROI figures, don't forget to get input from your accounting department," says Cullinan. "For example, there may be rules for how ROI is generated and disseminated — perhaps ROI must be amortized over three years.

"It's important that it goes with the disciplines of your business, so it's respected as true ROI," he says.

Unbelievable Cost Savings at Dell

While many organizations rely on softer metrics to gauge a portal's success the most compelling data comes from hard, quantitative results. This data can often translate directly into cost savings and improvements in efficiency for the organization. And though these types of metrics can deliver a bigger bang for the buck, they are more complicated to derive and measuring those returns can be a project unto itself.

Dell requires Morehead to measure portal ROI with hard metrics, using industry-leading tools to identify and measure the cost savings. Dell has a standard process improvement methodology known as "BPI," based on Six Sigma, which provides a company standard labor cost (per minute) average.

"Using transaction logs and other metrics to establish volume, and observational usability testing to measure efficiency gain per task, you can quickly project an overall productivity savings, particularly in a large global organization like Dell," says Moorehead.

In an odd twist, the problem he says is that the cost savings can be so large it appears unbelievable to executive sponsors.

"When presented with a $36 million projected *annual* productivity savings, one executive simply said 'that just can't be right.'" he says. "Show them the math and they are amazed, and very happy."

Time will tell if Moorehead's numbers are too good to be true or just true. Critics may still question how well employees will actually use the time saved, but that's true with any time saver, he says. "This necessitates other measures of ROI to show the full picture of value."

As Moorehead moves from the site's pilot phase to a full-scale rollout he plans to employ many kinds of testing to cost-justify the project. Even with such hard metrics at hand, he says he is going to use a mix of softer metrics along with the cost savings numbers. As for his usability methods, he likens his approach to a search plane looking for a ship at sea.

First he'll do a survey to identify hotspots, then focus groups, along the way use error log data, then as he gets closer to real usability problems, he'll turn to task-based usability tests using Morae, and so on.

Moorehead's approach shows that the best way to measure ROI is through a variety of methods, applying each as it makes sense along the way and putting the various methods together to form complete picture.

Ultimately there is no magic formula for ROI, but rather a delicate balance between both hard and soft measures. Gauging the success of a portal is often more than just statistics. It is an overall approach to determining how a particular portal succeeds and how it needs to keep being improved over time.

NO NEED TO JUSTIFY COST

While some companies devise ways to justify their portals and other struggle to find just the right mix of metrics, there is a noticeable trend toward backing off from an imperative toward measurement.

Duke Energy, for instance has not devised a measurement system for its portal (and my not move in that direction at all). "As we implement ideation components, we may have some measurable business value that would be particularly notable," says Brown, "However, our position is that an effective organization depends on strong communication and collaboration, and that social tools support our company's stated value of 'openness'. We also point out that no one has been asked to provide a ROI on the telephone or email."

The same goes for the City of Austin Fire Department. "We never really tried to measure ROI," says Gray. "We have to have the intranet; we are not required to justify or fight for our existence. Our overall goal is to optimize usefulness and usability for our users, which we track very intentionally with customer satisfaction surveys, feedback links, and occasional use of web stats like hit counters."

PUTTING DATA TO GOOD USE

What some companies fail to realize is that while ROI is difficult to measure and even harder to make relevant there is a world of things they can do with the information they are gathering on site use. The Chevron Human Resources team is using these statistics to gauge employee interest in topics and create programs around those spikes.

“I am trying to steer customers away from the idea of hits or even visits,” says Rosenstein, “and more toward looking at trends over time, spikes in interest and relative interest between topics.”

“I would like them to view the numbers as a window into what employees are interested in and help them understand how they can use that to create programs/identify issues that affect employees’ lives. So for example, if we notice that specific health topics in newsletters generate a lot of traffic, perhaps there needs to be more communication to employees about the benefit programs offered to help deal with that topic. So the ROI could be that HR delivers information that employees want or can take action from.”

Measuring Success

Key Results Area (KRA)	Quality	Productivity & Efficiency	Innovation & Strategic Growth	Service & Reputation	Workplace of Choice
Design Features					
Organized to include personalization features	✓	✓		✓	✓
Functionality					
Personalization of content by Roles	✓	✓	✓		✓
Improving current search		✓	✓		
Improving phone directories	✓	✓	✓	✓	
Form Repository (new functionality)		✓	✓		
Policy Repository (new functioinality)		✓	✓		
Greater connection with Leadership		✓	✓		✓
Measurements/ROI					
Easier to use system	✓	✓	✓		
Easier to understand viewership needs	✓		✓		
Display latest quality and safety messages	✓		✓		
Workplace of Choice					
Create open communication with all levels	✓	✓		✓	✓
Connect with items that build pride				✓	✓
Show diversity in people and in work				✓	✓
One University					
Links to the top university links are provided		✓			✓
Making the news & talking points available		✓			✓
Encouraging all to be ambassadors in community			✓	✓	✓

The OSUMC OneSource team measured success by tracking which key business results area they met with each new enhancement.

Use Whatever Data is Available

When pressed for measures most portal teams rebuff the idea that they must justify the cost of the portal investment but instead offer various ways that success, effectiveness and user satisfaction can instead serve as proxies for the site's return on investment.

The Carle Foundation offers a wide variety of possible things that can be tracked and used to gauge how successful a portal is at serving the user population. "Here are some of the areas that we will be measuring on our own," says Skinner:

Traffic:

- Number of registered users vs. unique logins per day
- Peak usage times
- How much traffic the site gets (number of page views)
- Visit duration
- Page views
- Number of daily unique visitors, top destinations, top browsers, etc.

Search:

- How many times users searched (“number of queries”)
- What were the most used search terms (“top queries”)
- Which queries have high failure rates (“failed queries”)
- Usage of Best Bets, suggestions and history

News:

- Readership, engagement, satisfaction, relevancy

MySites:

- # of MySites
- Profile photos updated
- Profile updates
- Status updates
- Keyword tags added
- “I Like it” tags added
- Notes added
- Colleagues added
- Files uploaded
- Average MySite quota used
- MySite users

Department Sites:

- Number of departments converted to CLICK
- Number of trained content owners and authors
- Participation in user group meetings
- Monthly number of postings for news, announcement and events

BEST PRACTICES

- Start with measureable goals. Before starting a portal project decide on a set of measurable goals against which the project will be measured.
- It's not all about the numbers. All ROI metrics don't have to be quantitative. Don't dismiss the softer, qualitative improvements such as better access to information and improvements in communication. These can have a direct impact on the organization in ways that can translate into quantifiable ROI. It just takes more creativity to find ways to present this data alongside along side hard numbers.
- Track user satisfaction. Softer metrics like increases in user satisfaction can payoff in hard metrics such as increases in user adoption. And user satisfaction can have intrinsic value across the organization.
- Results take time. When measuring ROI, take the long view. Improvements now can pay off incrementally over time. It's not just about immediate results.
- There is such a thing as too good to be true. When measuring ROI make sure the numbers are realistic. If they are too good to be true either back them up with detailed justifications or take another look and make sure the numbers really add up before presenting them to senior management.
- Productivity is only part of the picture. Managers are often skeptical of ROI numbers generated from productivity gains. Look instead to tangible savings, such as a reduction in spending on external information sources or reduced printing costs.
- Speak to your audience. Work with the accounting department to get ROI numbers into a format appropriate for the organization.
- Look at the value of content. Portals can sometimes generate revenue and pay for themselves by facilitating content repurposing.
- Check in with users. Gather feedback on how the portal is doing and act on user suggestions. User happiness translates to user acceptance and can create ROI.
- Track shifts as well as increases. Transferring the workload can result in measurable gains in productivity and reduction in labor costs. Find examples of how the portal has done this with existing systems.
- Be flexible. Be willing to experiment and evolve your approach to ROI over time.

About the Authors

Patty Caya (www.pattycaya.com) is a freelance journalist (writer and editor), and award-winning digital media producer. In her business writing, she specializes in topics relating to usability (including social media and mobile design), and the business and technology of the web. She has co-authored the Intranet Design Annuals for NN/g since 2008. She wrote and edited the report, *Mobile Intranets and Enterprise Apps* and the 1st and 2nd editions of *Social Features on Intranets: Case Studies of Enterprise 2.0.* She also authored both the 3rd and 4th editions of the report on intranet portals.

For more than a decade, Caya has split her time between journalism projects and web consulting. She is an experienced content strategist and interaction designer. She has consulted for many of Boston's top interactive agencies, leading web and intranet development projects as well as usability testing, research, and design initiatives. Her client roster spans a wide range of industries and includes leading national brands alongside mission-driven non-profits. She has a BFA from New York University's Tisch School of the Arts and has completed coursework in the User Experience Program at Bentley University.

Dr. Jakob Nielsen is a principal of Nielsen Norman Group. He is the founder of the "discount usability engineering" movement, which emphasizes fast and efficient methods for improving the quality of user interfaces. Nielsen, noted as "the world's leading expert on Web usability" by *U.S. News and World Report* and "the next best thing to a true time machine" by *USA Today*, is the author of the bestselling book *Designing Web Usability: The Practice of Simplicity* (2000), which has sold more than a quarter of a million copies in 22 languages. His other books include *Hypertext and Hypermedia* (1990), *Usability Engineering* (1993), *Usability Inspection Methods* (1994), *International User Interfaces* (1996), *Homepage Usability: 50 Websites Deconstructed* (2001), *Prioritizing Web Usability* (2006), *Eyetracking Web Usability* (2009), and *Mobile Usability* (2012). In 2013, Nielsen received the SIGCHI Lifetime Achievement Award for Human-Computer Interaction Practice. Nielsen's Alertbox column on web usability has been published on the internet since 1995 and currently has about 200,000 readers. From 1994 to 1998, Nielsen was a Sun Microsystems Distinguished Engineer. His previous affiliations include Bell Communications Research, the Technical University of Denmark, and the IBM User Interface Institute. He holds 79 US patents, mainly on ways of making the internet easier to use.

Acknowledgments

First, we would like to thank all the people who generously gave their time to share their experiences of portal development, and who in some cases also contributed screenshots.

In addition, there are many others who contributed but asked not to be named (and who are thus quoted anonymously in the report), and others who provided background comments for previous editions of this report in discussions at Nielsen Norman Group Usability Weeks in New York, London and Las Vegas.

Many thanks too to all the people at Nielsen Norman Group who helped with previous editions of this report, including 1st and 2nd Edition authors Candice Goodwin and Mathew Schwartz; Kara Pernice and Amy Schade, who offered invaluable advice and comments; and Luice Hwang and Susan Farrell, who provided excellent technical support.

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