# Intranet Design Annual

# The 10 Best Intranets of 2003

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Nielsen Norman Group

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# Executive Summary

It is in the nature of awards that only a few winners can be singled out for praise, but this year's intranet design competition proved that excellence can now be found in many intranets. Every year it becomes harder to select the winners, and harder to be unable to acknowledge the many great designs that didn't quite make the top ten.

This is the first year in which several submissions had implemented many of the usability guidelines and best practices for intranet design that we've featured in our previous intranet design annuals and intranet usability test reports. We didn't start publishing these reports until late 2001; considering the turn-around time to redesign a big intranet, it's understandable that our previous recommendations have only now begun to impact real projects.

## THE WINNERS

The ten best intranets of 2003 are:

- Amadeus Global Travel Distribution, Spain
- ChevronTexaco
- Design Matters, Inc., a Web design agency
- FIGG Engineering Group, a consultancy specializing in bridges
- Fujitsu Siemens Computers, Germany
- Landor Associates, a brand strategy consultancy
- Mayo Clinic, a non-profit medical center
- North Tyneside College, U.K.
- United States Coast Guard
- Wachovia Corporation, the 5th largest US bank

We also awarded an honorable mention for excellent redesign of a previously winning intranet to silverorange of Canada, a 2001 winner.

Most of the winners are big organizations with tens of thousands of employees, though we don't have any 100,000+ companies like we did last year. Big companies can afford substantial investments in intranet usability since their ROI is enhanced when their many employees become more productive.

Still, good design doesn't always require big budgets. Our winners include three fairly small consulting companies, of which only one has the "unfair" advantage of being a Web design agency. Such knowledge-intensive companies benefit disproportionally from the increased communication and enhanced awareness that a well-designed intranet can bring.

North Tyneside College provides the ultimate proof that good intranets depend more on will, talent, clarity of mission, and commitment to usability than it does on having lavish funding. This winning intranet, which supports 300 staff and 15,000 students, was designed and developed by a single person — Adam Liptrot — who might be the true hero of this year's design competition.

Good intranets are found all over the world. The thirty winners for the years 2001-2003 are distributed as follows (for multinational organizations, we count the headquarters location as the country):

- United States: 57%
- Canada: 10%
- Europe: 27%, of which
  - Germany: 3%
  - Spain: 3%
  - Sweden: 7%
  - Switzerland: 7%
  - U.K.: 7%
- Australia: 7%

We've had several close runners-up from Asia and Latin America, but no winners yet.

## MERGERS CAN PRODUCE GOOD INTRANETS

Three of the ten winning intranets this year were the outcome of corporate mergers. Mergers are typically very stressful for the employees of both the acquired and acquiring organizations, so it might seem initially puzzling that good intranets could result. Four explanations come to mind:

- After a merger, it's obvious that something needs to be done to create a new, unified intranet. Thus, resources are often made available for a more-or-less clean-slate design that has the mandate to go beyond "business as usual" for the two previous intranets.
- A merging intranet can draw on the best features and ideas of both pre-merger intranets. In contrast, the average company intranet team only has its own design as inspiration. (The need to expose intranet designers to additional good designs is the main reason we publish the *Intranet Design Annuals*.)
- The newly merged organization will be in flux and have less established fiefs and ways that things must be done to satisfy entrenched political interests. Many of the most severe intranet usability problems stem from the intranet team's inability to overrule the narrow interests of individual departments.
- The CEO of the merged company typically establishes an explicit one-company program to create a single corporate culture and encourage all employees to commit to the new organization. This executive directive provides a mandate for the intranet team in its attempts to create an integrated and consistent user experience.

We obviously don't recommend that you go through the upheavals of a corporate merger simply to get a better intranet, but it's worth trying to find ways to get similar benefits within your existing organization.

Logistically speaking, mergers can require a fairly rushed "Day One" design that can be rolled out the minute the merger takes effect, bringing employees up to speed on the new company's identity and policies. It's often good to have a two-stage

strategy that explicitly recognizes the Day One intranet as an interim solution and leaves more time for the long-term intranet's user-centered design.

## WORKFLOW SUPPORT

Intranets are changing from being document repositories to being work support tools. Many of this year's winners had changed their information architecture (IA) from one determined by how documents are produced (usually the company's department structure) to one determined by users' tasks. But the work-support trend goes further than IA.

The client relationship management features on Landor's intranet are a good example of workflow support. The system tracks current projects and provides access to rich case history records and visual assets from past brand development. The system also tracks client correspondence, who works on what, and integrates with sales force applications to track potential future projects and wins and losses throughout the sales process.

Monitoring tools abound, letting intranet users keep track of important events at a glance. Examples range from Design Matters' green-yellow-red coding of project stages, to the Mayo Clinic's indicator of various facilities' bed availability, to the Coast Guard's indicator of current force protection conditions. The trend is to have the information come to the user as the task requires it, rather than have it sit somewhere waiting for users to track it down when they need it.

This trend is easy to describe, but hard to implement. To truly bring people what they need, when they need it, requires a deep understanding of their work. To deliver, intranet teams must analyze tasks much more extensively than usual. In the past, IA was the main concern of intranet design: it's not easy to develop a taxonomy for the millions of pages on a big intranet. While IA will remain an issue for intranet projects, the emphasis is likely to change to the more traditional human factors concerns of understanding work behavior, both on the individual level and on the workgroup and collaborative level. This change in design focus will drive an associated change in usability activities, with more use of methods like field studies.

Several projects explicitly set out to reduce the amount of email and supplant it in certain areas, such as attachment circulation. Email is a highly informal collaboration technology. Being unstructured has some advantages, but email usually turns into a big mess where nobody can find anything, especially later in a project. In contrast, many of this year's winning intranets have begun integrating explicit collaboration tools. Discussion groups are becoming common because they combine a degree of informality with permanence, searchability, and a bit of structure. Intranet discussion groups have a further advantage: they can be offered in the context of project areas or other targeted intranet sections.

## SELF-SERVICE CONTENT MANAGEMENT

Most of the winning intranets have recognized the importance of providing employees with simple tools for adding and maintaining content. Intranets live by content currency and contain large amounts of specialized information that originates in widely diverse departments and teams. The more people can take care of their own content creation, the more the content will be up-to-date.

Several winners built special wizards to support complex content management tasks, such as creating a new project's support area. In general, we're not great believers

in wizards as a user interface mechanism because they force a very restricted interaction style on users and reduce the interface's flexibility and power. For complex tasks that are performed infrequently, however, wizards have their place. One winner originally had a wizard that took up to an hour to complete. After recognizing that this was too tedious, the designer redesigned a significantly shorter wizard. If you use a wizard, it's best to provide features that let you modify the results later and tweak advanced areas.

Most winning intranets chose a more application-oriented approach to day-to-day content management, such as adding a news item or letting employees update their directory listing. Wizards would be overkill for such tasks.

Companies varied in the approval processes associated with the widespread publishing that self-service technology supports. Some companies required explicit approval by designated managers or review boards. Others restricted the most important capabilities to special "power users" who could then assign more localized update rights to other users in their group.

## ENFORCED OR GUIDED CONSISTENCY

Many winners ensured a unified look and feel and a consistent user interface by using a content management system (CMS) that generated all the pages from templates. Others created detailed user interface standards that departments must follow in designing their intranet areas.

Consistency is still a challenge for a big intranet, but year after year, we do see a trend toward more unified designs.

## TECHNOLOGY PLATFORM

The only conclusion here is that there is no conclusion. Each of the winners used different platforms to build their intranets, and most teams felt a need to heavily customize or write their own software add-ons. Intranet technology is clearly not mature yet.

Half the winners used some variant of Microsoft technology as a major platform component. This is the first year we've seen such widespread use of Microsoft, which traditionally was not considered robust enough for enterprise-wide solutions. Simultaneous with this growing Microsoft influence, however, we saw an opposing trend: some winning projects abandoned proprietary servers and platforms in favor of open-source tools — such as PHP and Apache — that provide added flexibility, lower cost, and perceived long-term stability relative to commercial products.

Several projects chose unified technology to support both their intranet and extranet, sometimes even adding the external website to the unified solution. Unification lets users update information once and have it reflected in multiple systems. Designers typically add filtering to ensure that internal information stays on the intranet, and only client-related information is published on a client's extranet site.

As intranets move from being a nicety (where users can look up vacation policy) to necessities (that run the business), reliability and uptime requirements increase. If you're preparing to bid a multi-multi-million dollar bridge contract, for example, you don't want to lose your access to the library of photos and engineering docs from past bridge-building projects. Furthermore, enhanced usability almost always leads

to substantially increased intranet use. Thus, any project to improve an intranet should include a serious technical effort to strengthen the underlying hardware and software, both of which should be tested under intensive loads.

## DESIGN PROCESS

On average, the winning projects spent twelve months on their intranet redesign. This is substantially faster than the two-year projects that dominated our earlier design annuals. Hopefully, this quicker turn-around indicates that intranets are becoming less of an ordeal to design.

Excluding projects resulting from mergers, the new intranet designs were launched an average of 35 months after the previous intranet designs. Thus, we basically see three years between major redesign projects, with the redesign itself taking one year. Obviously, the intranet teams are not idle during the intervening two years. All the winners used a continuous improvement strategy, with minor enhancements launched from time to time and a continued emphasis on converting hold-out department subsites to the standard corporate design.

The design projects' main usability methods were as follows:

| | |
|---|---|
| User testing of new design prototypes | 50% |
| Surveys (typically by email) | 40% |
| User testing of the old intranet | 30% |
| Heuristic evaluation (expert review) | 30% |
| Card sorting | 30% |
| Field studies | 20% |

The numbers add up to more than 100% because many teams combined multiple usability methods — a strategy we recommend.

The teams used several other methods to engage users in the design process. One winner employed participatory design and determined the final design by letting all employees vote for their favorite from among a set of alternatives. Another winner placed a prototype design on a staging server and invited twenty volunteers to try it out and provide feedback. Note that such feedback is more credible when people actually use a functional design, rather than simply view screens and comment on them.

Several winners took special care to include users from international locations in their usability activities. This was typically done through some kind of remote technology such as WebEx; only one team conducted actual site visits to offices in multiple countries. International considerations range from making sure that pages download fast enough in Amadeus' Nigerian office to selecting navigation labels. For example, the term "white pages" didn't make sense as an employee directory description for many of ChevronTexaco's employees outside the US.

## IMPROVEMENT METRICS

There continues to be a paucity of detailed usability metrics for intranets. Most teams focus on doing a good job, not on justifying their existence. Overall, intranet

use typically increased substantially after the winning redesigns, with growth rates between 47% and 1,500%.

More narrowly defined usage metrics increased dramatically as a result of usability improvements. For example, use of the Mayo Clinic's search engine grew by 700% after the team added better summaries to the results page. The Mayo intranet also made sending a pager message 20 seconds faster. Given how often paging is used at Mayo, this seemingly small savings added up to the equivalent of a full-time staff member in one location alone. Landor Associates decreased the time to collect and distribute sales wins, losses, and pursuit status from 30 days to 5 days, for a task performance gain of 500%.

Even though we'd like to see more ROI metrics, there is no doubt that good intranet design — as evidenced by this year's winners — can offer employees a much-improved user experience. Most intranets around the world are operating far beneath their potential. We thus believe that the intranet age is still to come in terms of seeing how work life will change once most companies invest in elegant and usable intranet designs.

## NEXT DESIGN ANNUAL (2005)

The next intranet design annual, selecting the best intranets from 2004, will be published in early 2005.

If you are interested in submitting your intranet for the award, please check the following URL in August 2004: www.nngroup.com/reports/intranet/2005

## Selection Criteria and Process

This year marks the third annual Nielsen Norman Group intranet usability competition, which is aimed at finding examples of intranets that are easy to use and that meet user needs. This year, we posted the call for submissions on www.useit.com in the winter of 2003. We received submissions from eighty-six organizations of different sizes and from various industries and countries. These submissions included: screenshots of the intranet, explicit descriptions of the intranet's design and how it works, notes about the design process (including usability methods employed), detailed information about users and potential users, and the intranet's goals.

To judge the entries, we used a four-step process: 1) initial design reviews and numeric rankings; 2) follow-up questions with the top thirty submissions (when necessary); 3) design sorting, followed by thorough design reviews to choose the top ten; and 4) follow-up interviews with the top ten.

### INITIAL DESIGN REVIEWS AND NUMERIC RANKINGS

Based on the initial submission information, the three judges (see *About the Authors*) conducted simple design reviews and whittled down the entries to the tier-one submissions.

In addition to written commentary, we rated each site numerically. We based these ratings on criteria typically viewed as key to intranet usability, including some criteria that emerged from submissions and trends in our previous contests.

We rated the following criteria in each submission on a 0 to 3 scale (with 3 being the best rating): main navigation on every page; consistent/easy navigation; consistent style across the intranet; no horizontal scrolling; reasonable vertical scrolling; good contrast between text and background; easy-to-read text; easy-to-read links; good use of graphics; right amount of text; right amount of links; clean design; consistently available search; good search design (ideally, a simple open field at the top of pages); personalization/catering to different offices or cultures; organization-related news; information about internal groups; employee directory or search; engaging homepage design; well-written text; content posting and editing capabilities; simple forms; support for the main corporate functions; pleasing aesthetics; encapsulation of the organization's spirit; and use of innovative/fun features.

### FOLLOW-UP QUESTIONS WITH TOP THIRTY (WHEN NECESSARY)

After collecting this extensive information from site designers, along with information about their users, goals, and internal usability evaluations, we thoroughly reviewed the intranet designs. We evaluated them based on usability, look and feel, and elegance. We also considered the target users, their tasks, and how well the site's applications might help them complete these tasks. We did not conduct usability evaluations with test participants. However, we do believe that intranet usability

studies are best conducted with users, and plan to involve them in another research study we are conducting.[1]

## DESIGN SORTING AND THOROUGH DESIGN REVIEW

Next, we reviewed the intranets and sorted the top thirty designs based on numeric ratings. We then conducted more thorough design reviews of the top twenty-five sites, and from this selected the ten best.

## FOLLOW-UP INTERVIEWS WITH TOP TEN

After choosing the top ten submissions, we asked the site designers many follow-up questions about the site, design decisions, their usability evaluation methods, and lessons learned. We then asked them more specific questions, some exclusive to their particular intranet and some more generic. For example, the more generic questions included:

- What was the business reason for setting up the intranet?
- What does it do and what kind of information does it contain?
- Whose idea was it and what goals did he or she want to achieve?
- What were the constraints, for example, on time, budget, and language?
- Describe the development process and usability findings.
- Who was involved in the project and what are their roles in the organization?

[1] The report about intranet usability is based on usability evaluations of fourteen different intranets. *Intranet Usability* (Coyne, Stover, Nielsen) includes guidelines about designing usable intranets, and is available for download at www.nngroup.com/reports/intranet/guidelines .

## Overview of the Winners

The top ten intranets come from five different countries: The United States produced seven winners, and Canada, England, Germany, and Spain had one winner each.[2]

The winning designs are from companies in various industries, including: banking, branding and design consulting, computers, construction engineering, education, energy, government, healthcare, and travel technology.

In terms of general attributes, no particular patterns contributed to an intranet's usability. Some sites used in-house designers, while others hired external designers, and company sizes varied from less than a hundred employees to more than 80,000. Some sites were relatively new, and others had been around for years.

All designers did, however, learn some valuable lessons from their experience developing their intranets; the *Lessons Learned* section at the end of each intranet's summary contains priceless insights.

Canada's silverorange won our Design Annual Award in 2001 for a previous design, and their submission this year was again impressive, earning a very honorable mention.

[2] Winners in our last two design annuals have come from the following countries: Australia, Canada, England, Norway, Sweden, Switzerland, and the United States.

## THE WINNERS (IN ALPHABETICAL ORDER)

| | |
|---|---|
| **Amadeus Global Travel Distribution** | With more than 5,000 employees around the world, an intranet can feel cold and disjointed. But this spirited design brings people closer by providing up-to-date news items about internal happenings. Simple and consistent navigation also helps people flawlessly access each of the content-rich pages. |
| **ChevronTexaco Corporation & Dimension Data Holdings** | All the effort required to create clear, thorough standards and guidelines, especially for a large intranet, is well worth it — as this intranet demonstrates. What could easily be a hodgepodge of disparate page designs is instead a simple, streamlined, and consistent website. This is especially important here, where the intranet's goal is to help promote a single, unified company after the merger of two large corporations. |
| **Design Matters, Inc.** | This intranet is proof that a design doesn't have to be boring to be efficient. In addition to thorough coverage of project information, news, and tasks, the designers injected amusing and unexpected details (such as rotating illustrations of employees on the homepage) to make visits fun. |
| **FIGG Engineering Group** | Designing bridges is the mainstay of this company and its intranet. Using another great intranet for inspiration, this intranet connects people via excellent contact management and informative project sections. This inclusive design benefits everyone, from the engineer to the marketing professional. |
| **Fujitsu Siemens Computers** | Who would imagine that such a quagmire of sites could result in something so cohesive and orderly? The designers of this intranet, that's who. Taking on the enormous task of making consistent more that 200 internal sites after the merger of two companies, the team used the intranet to help make news more accessible, and make processes and tasks easier for all employees. |
| **Landor Associates** | This team established creative and extremely thorough methods for capturing and editing client information. Through their highly integrated intranet and extranet, designers achieved even better service for customers and potential customers. This is merely the starting point for a design that facilitates magnificent communication with all employees. |
| **Mayo Clinic** | A decentralized intranet that gives freedom to designers around the company can still have a cohesive and consistent design. In this case, guidelines, templates, and a Web service bureau all help departments and groups create and maintain their sites so that users have a predictable, easy-to-use design. |
| **North Tyneside College** | Even a team of one can create an intranet that supports the needs and tasks of diverse users. This intranet enables communication between staff and students. The key is its simple design, which lets even the least-technical staff members post and manage their own content. |
| **United States Coast Guard** | The military succeeds in strategic planning not only for battles, but also for improving human performance. The Coast Guard's intranet design team established key strategies for its intranet portal system: 1) innovation, 2) collaboration, and 3) employee self-service. Working with tried and true methods helped the team design a near-perfect intranet for their users. |
| **Wachovia Corporation** | For this intranet, the team made a special effort to create good navigation. The hard work paid off, and users have several alternatives to help them understand where they are, where they are going, and where they have been. This is only one of many good design traits that enhance users' experience and productivity. |
| | |
| **silverorange** honorable mention for redesign | This team not only devised an excellent intranet once, winning our 2001 Intranet Design Annual, but has now created a very different but equally superb design. If you have a great design, don't change it just for the sake of change. But, as silverorange shows, if it is time to transform your intranet, going all out can really pay off. |

## COMMON THEMES AMONG THE WINNERS

Each of this year's winning intranets has a very different style and was designed for different people, needs, and organizations. However, many of these first-class intranets share common design elements.

### Clean design

In the past, it was common to see pages with far too much clutter, indistinguishable links and navigation, superfluous graphics, and even blinking and spinning elements. Not to mention more text than a user could read or process in an hour. This year's batch of winners features clean and simplified page design, with aesthetics aimed at enhancing the user experience.

### Workflow emphasis

In the mid-90's, the *workflow* buzzword was everywhere. Soon though, other buzzwords replaced it and workflow seemed to be forgotten. However, this year's intranets applied workflow in smart ways, helping organizations seamlessly route information to the right people at the right time.

### News

In previous years, intranets offered news, but it was typically limited to world headlines grabbed from local and national newspapers. In our intranet usability tests, however, we found that people didn't typically appreciate this kind of news,[3] and in fact said things like, "I have the New York Times for that." This year we saw a higher infiltration of more useful news on intranets, including 1) news about groups and employees, 2) corporate communications, and 3) industry news. Keeping people abreast of the company's internal happenings promotes communication and unity. And spoon-feeding employees information about competitors and the industry as a whole can only be great for business.

### Organizational approach

More and more intranet designers are taking a managerial approach to their work. Not only are they doing the expected project management work, but they are working on organizational issues with many different teams and people. Some designers are working to improve company problems that, at first glance, have nothing to do with the intranet, such as making a merger run smoothly, or improving employees' knowledge of their industry or corporate mission.

### Focus on intranet benefits

Negative economic times may have inspired this positive trend. Intranet developers are doing a much better job in noting and researching intranet improvements. More importantly, they are tracking how the intranet improves the company as a whole, including productivity (hours saved), money saved, Web server consolidation, knowledge sharing across Web teams, fewer errors in sales presentations, better inventory tracking — and the list goes on and on.

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[3] The only cases in which people did appreciate this kind of news was when they didn't have Web access while at work.

## Focus on content management

In the past, we've seen intranet teams struggling to find content, work with it, and keep it updated. The designers were always playing catch up with content. But the winners in this report considered content management in early design and planning stages, and thus processes, individuals, and technology all play important, carefully considered roles.

## Fun, team-building features

An intranet's killer app is basically whatever draws people in. Sure, getting them there is only the beginning, but it's a very important step toward helping people find and use the intranet's features. Fun features, like questions of the week, polls about industry factoids, and light CEO communications can get people to try the intranet.

## Accessibility

Past submissions to this contest hardly ever mentioned the word *accessibility*, and rarely considered it in the intranet designs. This year, however, designers seem to be edging their way forward, albeit slowly, in this important area. Among the improvements we saw were designs that use style sheets, relative font size, and good contrast between text and background.

## Other trends

Other common themes we saw in this year's winning designs include:

- Integrating intranets and extranets, and a tendency to use both to supplant aspects of email, such as file transfer
- Designing multiple technologies using the same technology platform and CMS, including websites and intranets, intranets and extranets, or all three
- Integrating intranets with real-time mobile notification, such as from the employee directory to a person's Short Messaging Service (SMS) or pager
- Explicitly aiming to reduce the amount of email or supplant it in certain areas (such as sending attachments)
- Extensive use of collaboration tools, discussion groups, and so on.
- Using the intranet to help create a new corporate culture for merged companies
- Using the intranet (especially the homepage) to promote company values and drive unity in merged companies and those without a strong central culture

The winning designs also reflected recommendations from past Nielsen Norman Group *Intranet Design Annual* reports and NNg's intranet usability guidelines.

# Amadeus Global Travel Distribution

**Using the Intranet:**

Amadeus Global Travel Distribution, headquartered in Madrid, Spain, is the leading global distribution system (GDS) and technology provider, serving the marketing, sales, and distribution needs of the world's travel and tourism industries. The company operates in over 200 markets around the world and has more than 5,000 employees.

**Intranet Team:**

Amadeus Web Communication (WebCom) works in conjunction with Amadeus Group Internal Communication (Corporate Human Resources)

**Members:**

Huibert Evekink, Chase McCarthy, and Eddie Ross, Opera management team; Elena Velázquez, team leader, design; Amelia Martinez Hockley, team leader, consultants.

## SUMMARY

With offices around the world, Amadeus Global Travel Distribution faces an increasingly common challenge: to provide an intranet that works well for a multitude of cultures and user tasks. Opera, the company's corporate intranet, overcomes this hurdle through excellent communication to employees, and simple, consistent navigation.

This intranet is content-rich, with an engaging homepage that's chock full of internal news items. Corporate Internal Communications manages the homepage content, and their objective is one we highly recommend: to distribute the most important company information from an internal point of view. Furthermore, they do this in a way that it doesn't inundate readers, keeps the corporate culture alive, and keeps employees abreast of the latest happenings. A small part of the homepage is even dedicated to the latest corporate press releases, so employees are well aware of the story being communicated to the public.

One huge problem we often see with intranets is that they lack information about the company's different offices, groups, and individuals. But Opera doesn't have this problem; in fact, it's a wonderful example of how to promote offices around the world.

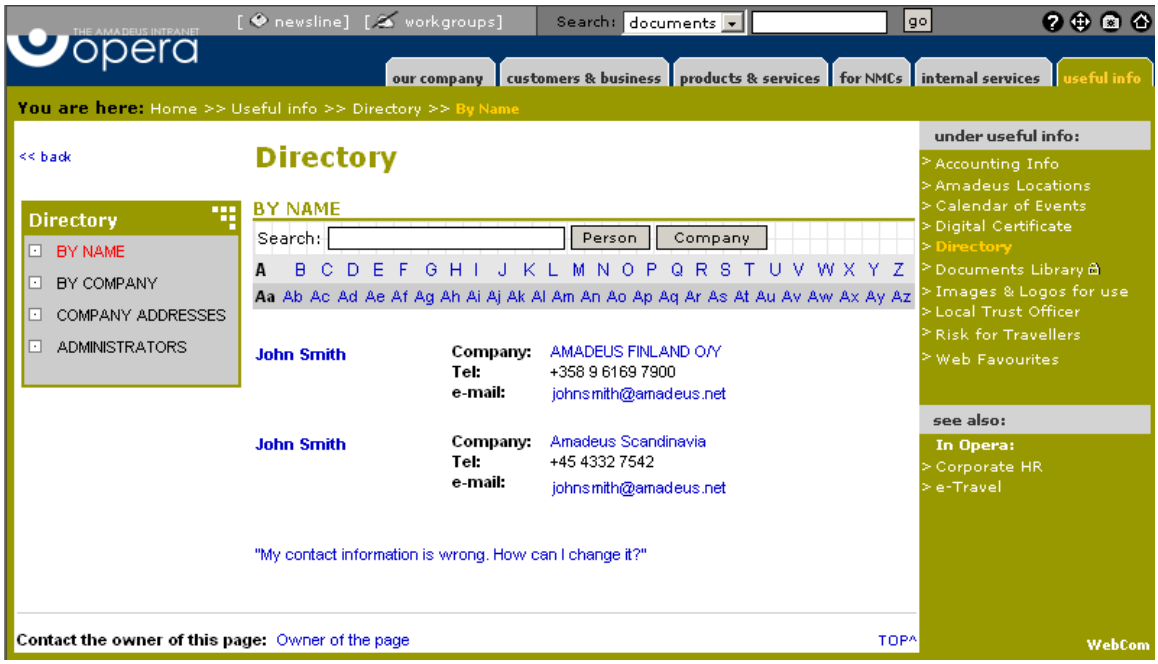

Pictured: The Amadeus intranet homepage. Opera offers users up-to-date news and a good-looking design.

The navigation is traditional, with tabs and a left-side vertical row of links. The tabs are gray when they are not selected, and change to various colors, like orange and green, when they are selected. The obvious color change and simple aesthetics of these tabs make it easy for users to tell which section of the site they're in. Clicking a tab opens a folder page, which lists all the section's content and concise descriptions for each area.


Pictured: A folder page, which lists all the section's content and concise descriptions for each area.

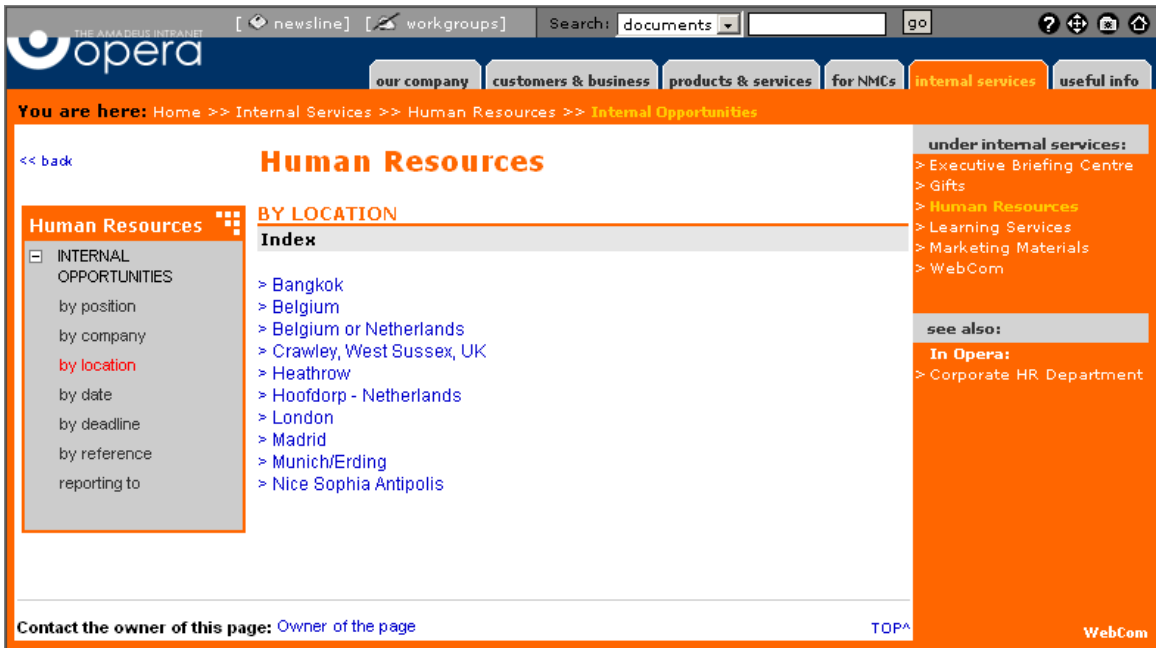
The employee directory, which designers anointed as Opera's killer app, gives contact information for all the company's offices and employees. The tool offers a traditional open field for searching; users can reach it via the search box on every page or the *Directory* link on the *Useful Info* page. The directory also offers enhanced features. For example, users can view name listings by the first letter or two. This can be a real time-saver when dealing with many possibilities.

With intranets, old or inaccurate listings are a common problem. Opera addresses this by letting users update their content through a clearly labeled link: *My contact information is wrong. How can I change it?*




Pictured: The Opera directory lets users search or browse alphabetical lists.

Amadeus realizes the importance of retaining employees, and uses the intranet to give them a first look at job openings. The company's job listings from around the world are posted in Opera's *Internal Services* section before being advertised outside the company. The navigation and organization make it easy for employees to search for jobs by relevant aspects such as location, position, and manager. Once they find their next dream job, employees can confidentially request information or even apply online.




Pictured: Opera gives employees a look at Amadeus job openings before they're advertised to the public.

## URL AND ACCESS

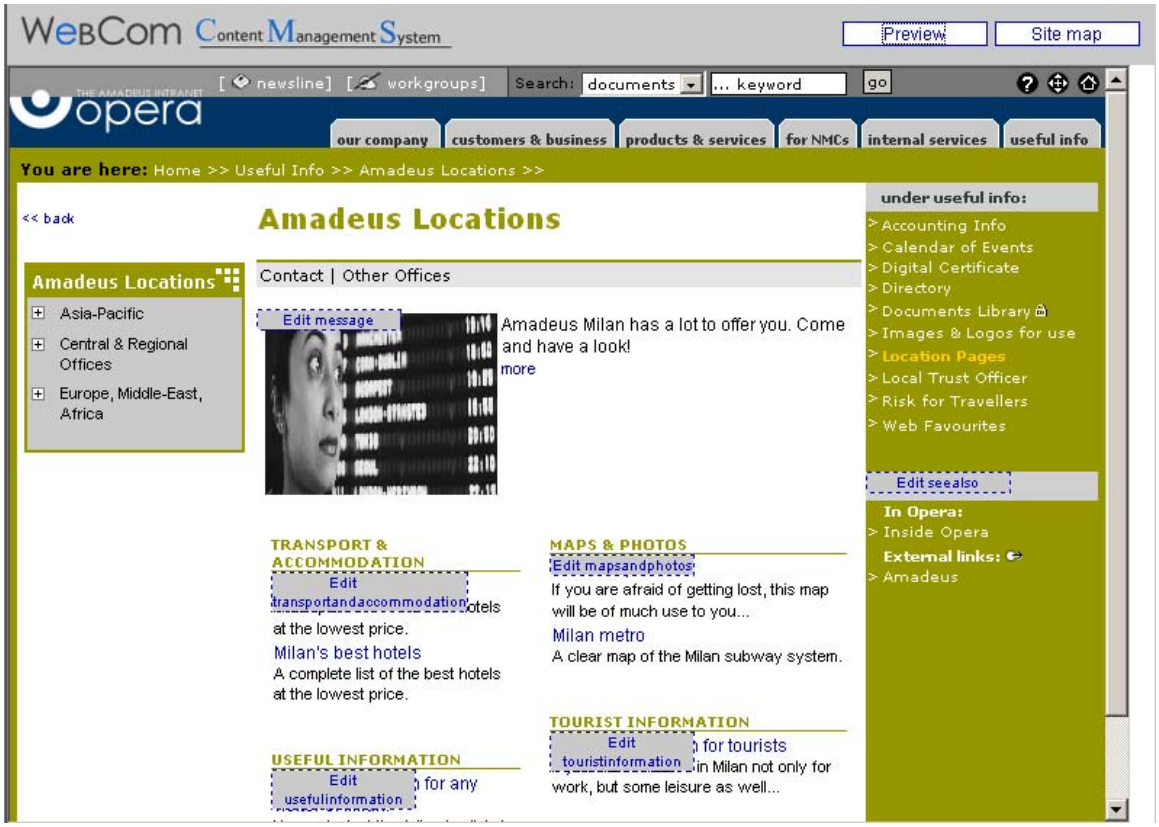
The URL for Opera is https://opera.amadeus.com. The site is bookmarked in the company's browsers, and users can also log on securely via the Internet. The team is working on adding a desktop link that would give users direct intranet access.

## CONTENT MANAGEMENT

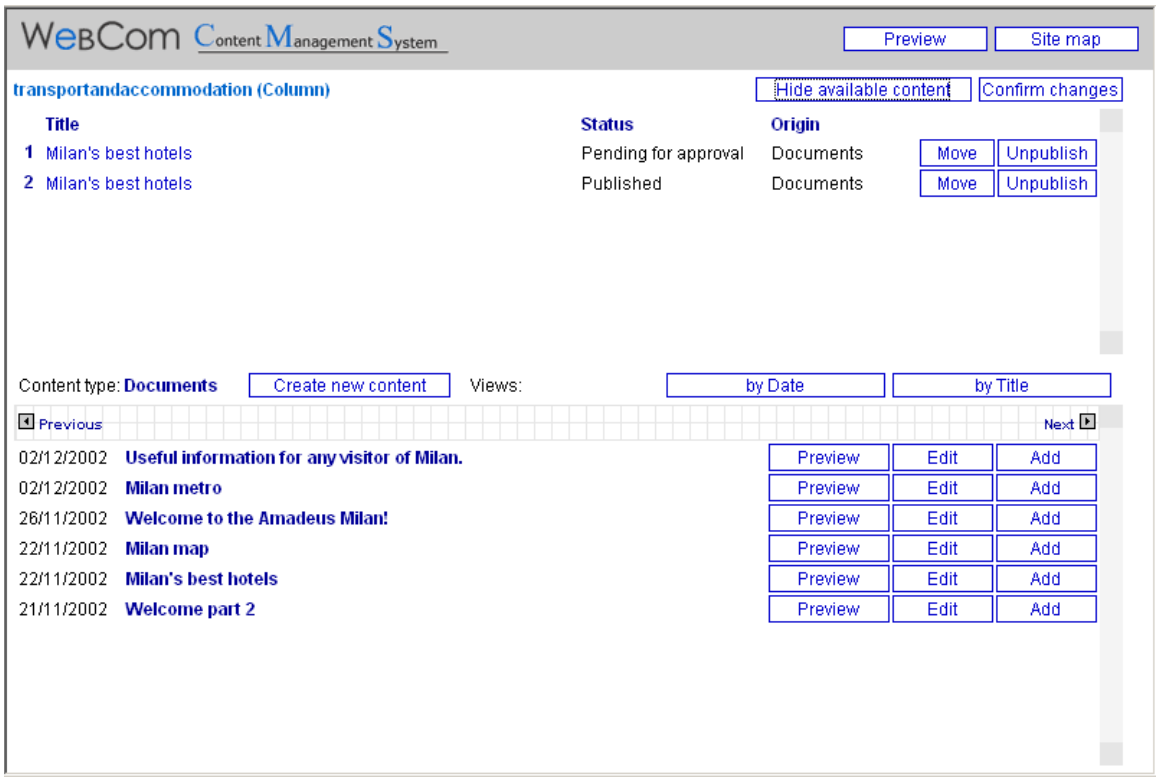
Amadeus developers built Opera's custom CMS in Java. It provides a fast and flexible interface for users in central offices, letting them publish content using several different in-house applications (chiefly Lotus Notes). Other offices also use the system through a Web interface.

"Communal" site areas, including the homepage and calendar, are owned by Corporate Internal Communication; section owners enter all other content.

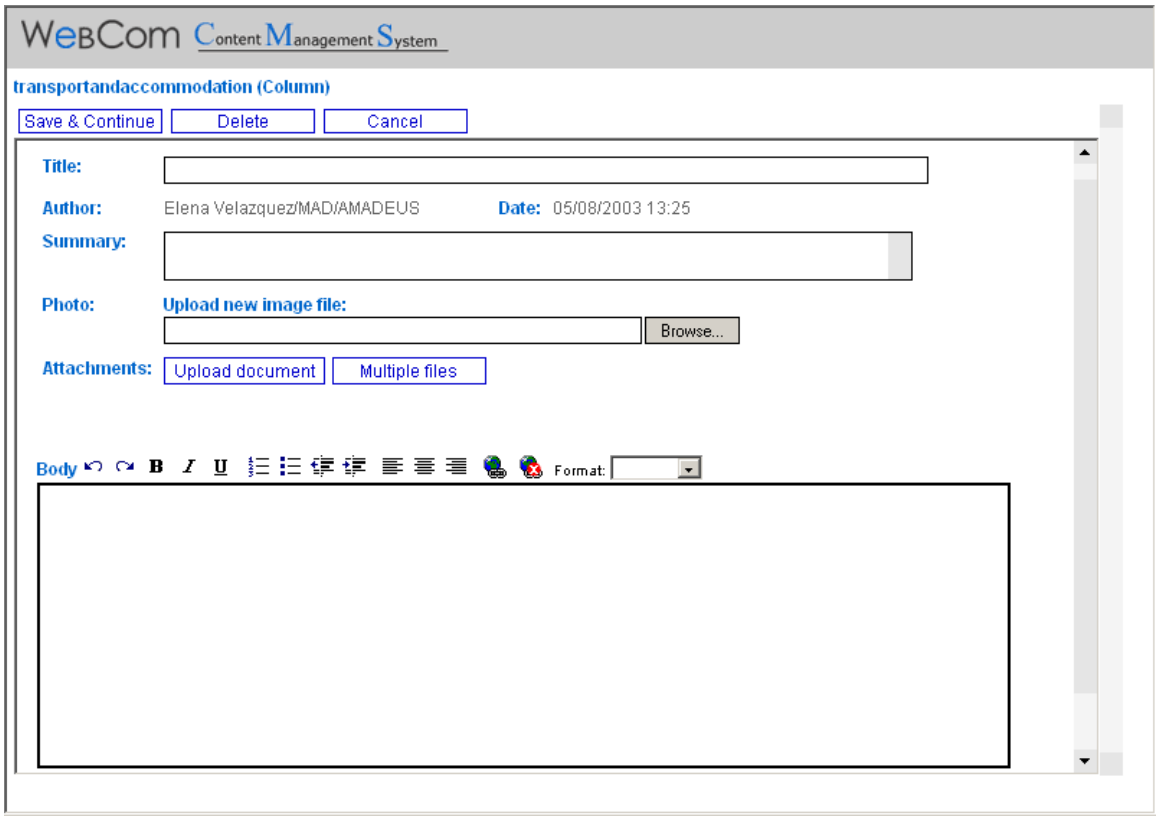
Using Java and XML lets Amadeus consistently connect to any type of database that supports Java interfaces.




Pictured: Local offices can publish and amend Opera content through the CMS's Web interface.




Pictured: Users can easily select content from one or more information sources.




Pictured: This form helps users create their own content online.

## GOALS AND CONSTRAINTS

1) Make available relevant, accurate, and up-to-date corporate and business information for quick and easy access, reducing email and information overload. 2) Bridge technology differences (SAP, Lotus Notes, and so on) between central offices and National Marketing Companies. 3) Become the portal to all Amadeus information, applications, and websites using consistent look-and-feel and navigation to achieve a unified user experience. 4) Support both the main central offices, and remote offices with low-bandwidth connections.

## BASIC INTRANET FEATURES

The Opera intranet design has many strengths, not least of which is rich content about internal groups and happenings. Basic features include: top-level navigation that's always visible, color-coded tab system, Web-standard iconography, online help, site map, directory, search, highlighting for active pages, breadcrumbs, cross-linking, content owners for every page, and feedback forms.

## USERS

Opera serves the central and regional offices of Amadeus, as well as its seventy National Marketing Companies around the world.

Opera users work in diverse areas, including product and software development, network support, business strategy, sales and marketing, and finance and administration.

The challenge with Opera is to make diverse content universally understandable for all users and make the technology behind it optimal for a global user community with different Web skills.

## USER TASKS

- Find company information, news, and press releases
- Locate contact and organizational information (people and offices)
- Access product documentation
- Locate business and event information
- Access customer contacts
- Download images, logos, and Web design guidelines
- Find employee shares programs
- Exchange best practices
- Locate internal services:
    a) Job applications
    b) Training material
    c) Marketing campaign development
    d) Website development
    e) Event organization
    f) Gift purchasing
    g) Team workspaces for online information exchange

## BACKGROUND

During the 1990s, Amadeus was using Lotus Notes for publishing and sharing corporate information in its central site, and the plan was to roll it out to everyone in the organization. With the advent of Web technology, however, the company realized there was a better, more flexible way forward. In 1998, it launched the first version of its Opera intranet, partly as a way to publish information from its central Notes databases to people outside the Notes environment.


Pictured: The old Opera homepage design. Users saw the design as old-fashioned and found the intranet hard to use.

The name "Opera" was officially launched in 1999. "We had the idea that we would rather create a brand than a name like 'Amadeus Knowledge Space,' as we thought it would be easier for all the different second-language speakers around the world who would need to remember it," says Eddie Ross, manager, Group Internal Communication. "So we were looking for something short, snappy, and easy to say in any language. We drew up a shortlist, and did some informal telephone research with users — although in those days we hardly had any!"

Opera was originally designed around the company's structure, rather than employee tasks, and users often had trouble finding the information they needed.

Another issue was speed. In addition to main offices in cities such as Madrid, Munich, and Nice, Amadeus has branch offices in countries like Nigeria and Kazakhstan, where some users found the graphics-heavy pages slow to download.

Eventually, the Web team responsible for dealing with disgruntled intranet users went to senior management and presented the case for a redesign. "It wasn't a top-down decision — it came from the people whose daily job it was to look after the intranet," explains Huibert Evekink, Opera manager.

At the end of 2000, management gave the go ahead and the WebCom team was assembled, with representatives from Corporate Marketing Communication and Internal Information Systems. In early 2001, the New Opera project began.

## DESIGN PROCESS AND USABILITY ACTIVITIES

The WebCom team's first action was to send out an email to the entire user base, linking to a Web-based questionnaire about their views on the existing Opera version. "People said they thought the content was useful, and the design was seen as okay," says Elena Velázquez, who led the design team.

Although the positive responses were taken as an endorsement of the intranet as a whole, the team didn't believe this reflected employees' true intranet use. They therefore decided to double-check the findings. They thus contracted an external Web consultancy, Icon Medialab, to carry out user testing.

"We didn't have much money to spend, but we decided to spend it on usability," recalls Evekink. "We felt it was important to use an outside supplier. We could have done a good job ourselves, but sometimes it's invaluable to have an outside opinion."

The team recruited twelve test participants, divided more or less equally between novices and experts. Most of them were from Amadeus's Madrid headquarters and surrounding local offices, but the team also enlisted some employees from other countries who were visiting the head office.

Team members gave the test users eight tasks: explore Opera, download a specific file, find their own contact details, change their contact information, get help, post a message, submit a job application, and view a product overview.

The usability test report was somewhat less positive than the survey. Users disliked the design, which they found old-fashioned, and they found the intranet hard to use. It concluded: "Opera is a labyrinth where information and the user get lost." The tests found that none of the users took the shortest route to information, but rather navigated by trial and error; no one could find product information, and users didn't understand the sections and content structure. Users were also indifferent to the design, and found the page colors unhelpful.

Having the usability report "made it much easier to explain to the rest of the organization that we had to start moving on redesigning the intranet," says Evekink. "*We* knew we had a problem, but having an external expert confirm it made it easier to defend our future actions."

Once they established the need to change the site structure, team members began working with groups of users to define Opera's new IA. In response to usability report comments, they made clarifying naming conventions the first area of work.

Each Opera section's owner helps decide the section's name, enters all section information via the CMS, and is ultimately responsible for what's published in their pages. Owners come from all Amadeus departments; they're appointed by their managers, and managing intranet content becomes part of their job objective. The team asked each owner to describe the information in his or her section. Team members then wrote these descriptions on cards, gave them to six users, and asked them to come up with names for each description. The results led to several changes to the existing naming conventions. "The owner always gave the section a name related to their department or project, but those weren't obvious to most users," Velázquez said. "People were saying, 'Oh, do you have this information on Opera? Where is it?'"

Using this test information, team members conducted another round of card sorting tests to help create a new content structure. They wrote new section names and

descriptions on cards and gave them to six new users, asking them to arrange the cards in blocks of similar information and name those sections.

Ross became head of Internal Communications at Amadeus in September 2001. His goal was to make the intranet "the center of our internal communications strategy," he says. "Almost the first thing I did was sit down with the WebCom team and talk about how we could achieve that." Ross worked to drum up enthusiasm for the new intranet project among the various departments that would be contributing content.

Around that same time, team members were ready to begin Opera's visual design. Based on the team's research, certain design elements had already made the wish list: a tabs system, a more limited, but clearer color palette to help users identify where they were on the site, and a design that would be easy to develop and maintain.

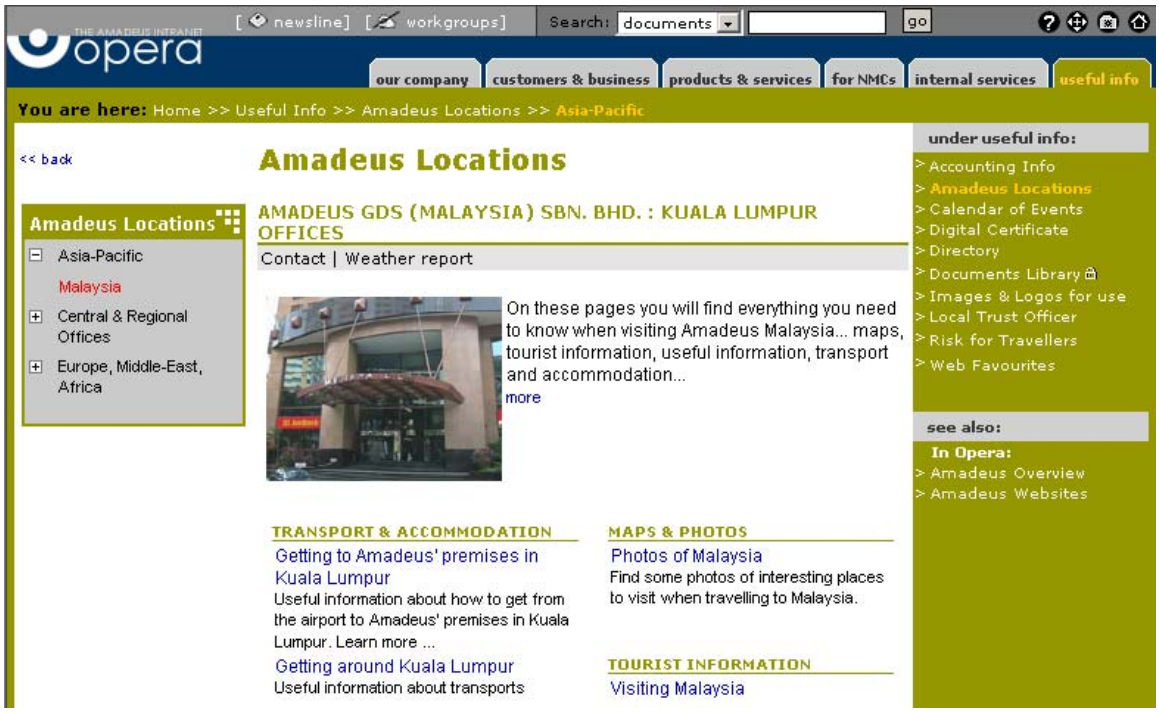
Velázquez and her design team produced three design mockups using Photoshop, and asked Icon Medialab for an independent opinion. Icon came back with a range of feedback, including: change the links to a standard blue (or white against a dark background); make naming consistent; ensure cohesiveness in page iconography; eliminate the reuse of links as graphics; make key navigation more visible; and have a simple search as the first search option. The report also suggested a change of color scheme. "We had the homepage in yellow, and they suggested that it didn't inspire confidence," Velázquez recalls.


Pictured: Products page of the old Amadeus intranet. In usability tests, users had trouble finding product information.

Based on this feedback, the team made a series of new designs. After a few iterations, everyone was happy with the visuals. They then began to migrate content across. At this stage, team members tested some content categories with small user groups, both to check their usability and to counter the objections of page owners who were unconvinced that the new structure was the right one.

One result of this round of testing was the introduction of Opera's *Location* pages. "The idea of the *Location* pages is to create a little shop window for each location, with a snapshot of the key people, hints on things to watch out for, and so on," Ross explains.

The team then asked five users to imagine that they were preparing a business trip to another office, and needed to find out how to get there and what the weather would be like, and also get a map of the area. They all said that they would expect to find this under *Useful Info* rather than under the office's section.




Pictured: The Amadeus *Locations* page was introduced as a result of user testing toward the end of the project. It includes basic visitor information about Amadeus offices: maps, weather information, and so on.

The team conducted ad hoc user interviews to evaluate the last minute changes, and officially launched the intranet in December 2002.

The intranet's basic design has not changed since then, though content has been added and the team is constantly listening to user feedback. The team conducted a survey specifically to evaluate the site's speed and structure. It yielded very positive results.

In August 2003 (after this report went to press) the team planned to carry out a more extensive intranet survey, replicating a survey done in October 2002 when the old Opera was still running. The results will provide an interesting measure of how far Opera has come since then.

## TIMELINE

- 1998: Pilot version of Opera launched, including a CMS prototype.
- 1999: Opera, version 1 is launched with minor design changes and much more content.
- Jan. 2001: Questionnaire sent out to users, followed by feedback and information gathering. Work starts on New Opera.
- Mar. 2001: Usability study on old intranet.
- July 2001: Labeling tests to determine user-friendly names for intranet sections.
- Aug. 2001: Card sorting to determine IA.
- Sept.-Oct. 2001: Design phase begins.
- Dec. 2001: Heuristic report.
- Feb. 2002: Final designs.
- June 2002: HTML templates and file structure definition.
- Jan.-July 2002: New technology definition, testing, and preparation.
- July-Nov. 2002: Migration.
- Nov.-Dec. 2002: Testing.
- Dec. 2002: New Opera goes live.

## RESULTS

Amadeus has, says Ross, achieved "genuine savings" in producing physical materials alone. Glossy publications such as product news, which used to be printed and distributed monthly and quarterly, are now online, leading to significant savings in print costs. Similarly, the online news service has eliminated the cost of printing, faxing, and mailing local and global press releases for distribution to international company offices.

Opera has also made it possible to do things that couldn't have been done before. For example, Opera facilitated the company's new share ownership program, through which employees can buy Amadeus shares every three months. "It would have been much more difficult to achieve without the intranet," Ross says.

Also, intranet-based tools that let staff members hold online meetings have saved on flight costs and made meetings more productive.

As another example, Opera's workgroups — business tools that let departments store and manage their information — have also saved a lot of time. "We once worked out that account managers saved around an hour a day in time spent looking for information," says Evekink. "Account managers are happier because they have more time to focus on sales and marketing. And we can see that the decisions they make are made faster and generally better, because they have access to a single source of information."

## LESSONS LEARNED

Insights from Huibert Evekink:

**Plan the migration.** "It's very important to plan a migration military-style, so you can cut over between the two systems without taking the intranet offline. We felt if we didn't do it right, the new Opera would start off with a bad taste in people's mouths."

**Support the content providers.** "We continuously try to train the owners to maintain high-quality content. We give them courses on writing for the Web, and explain how they should use and manipulate images."

**Don't hype the project in advance.** "We wanted to be able to show results first, so we would move from one win situation to another."

Insights from Elena Velázquez:

**Tell designers that less is more.** "It can be hard to explain to designers that they need to accept feedback, and that all design features need to have a usability justification. But eventually they'll learn to feel proud of taking things out!"

Insights from Eddie Ross:

**Present a united front.** "It's important that everyone involved in the intranet works together. When content owners come to us, we make a point of being a team."

# ChevronTexaco and Dimension Data Holdings

### Using the Intranet:

ChevronTexaco Corporation (NYSE: CVX), one of the world's largest integrated energy companies, is involved in every aspect of the energy industry, including oil and gas exploration and production; transportation; refining; retail marketing; chemicals manufacturing and sales; and power production. Active in more than 180 countries, ChevronTexaco employs about 53,000 people worldwide (excluding service station personnel and contractors). The merger between Chevron and Texaco on October 9, 2001, created ChevronTexaco Corporation, now headquartered in San Ramon, California.

### Members:

Lori Coupard, Web team lead; Lyn Garrison, lead producer; Karen Young, managing editor; Renee Silveira, assistant editor; Jennifer Salem, developer; Antoinette Bishop, production coordinator.

### Design Team:

Dimension Data Holdings plc (LSE: DDT) is a leading global technology company. The group delivers solutions using its proprietary Application Network architectural framework and its expertise in networking, application integration, and managed services. Founded in 1983, the company had revenues of $2.1 billion in 2002 and operates in thirty-plus countries with over 8,000 employees.

Dimension Data's Brand & User Experience Group not only defines and leverages brand and market strategies, but also executes appropriate online techniques to achieve an optimal user experience. Key services include: brand identity, information architecture, usability research and testing, UI and graphic design, and front-end code development (D/HTML, ASP/JSP, and other "scripting" technologies).

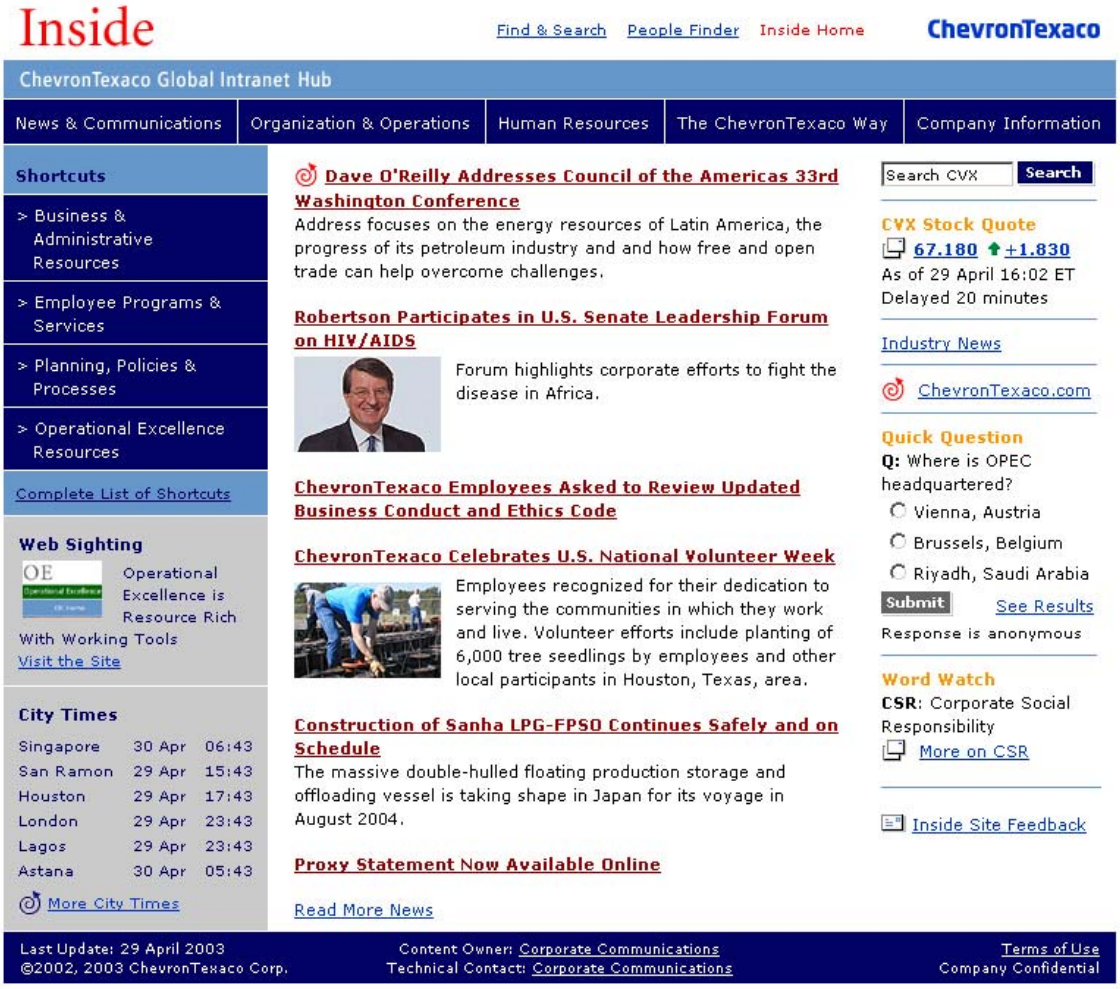
### Members:

Olivia Harting, creative producer; Glenn Snyder, lead information architect; Alex Costello, art director; Jenny Kolcun, art director.

## SUMMARY

Chevron and Texaco merged in 2001. *Inside*, the new global Intranet hub, was initially launched as *Day One*, aiming to promote the new company culture and identity and serve as the initial online gathering place for the integrated ChevronTexaco workforce worldwide.

Mergers often bring great synergies and benefits to a new corporation, but they also raise many questions about the new organizational structure and where employees fit into it. Mergers can often fail due to cultural integration issues. To support this type of integration, effective employee communications — with a focus on consistent, clear messaging — are critical. By providing a consistently branded, easy-to-use resource to deploy strategic messages and links to critical content across hundreds of intranet sites, the Inside site aims to align the workforce and thereby contribute to cultural integration goals.




Pictured: The homepage of Inside, ChevronTexaco's global intranet hub. The page is clean and engaging, and features pertinent global news and clear navigation, opening the door to the rest of the company's intranet.

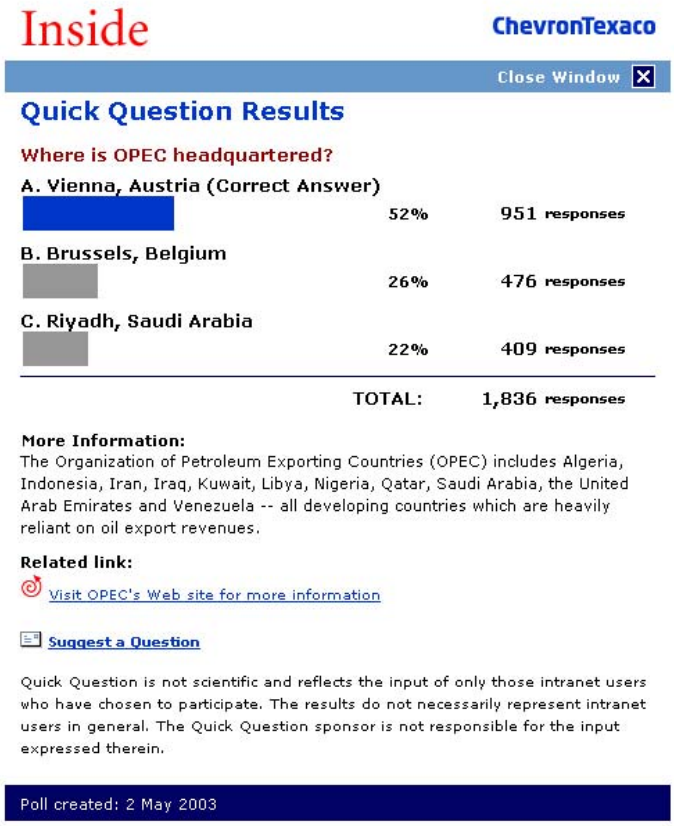
The center column of the Inside homepage features the most recent news stories, press releases, and other important corporate communications.

The left column includes shortcut navigation to important and frequently used intranet-based tools and resources. It also features the weekly *Web Sighting*, spotlighting internal sites whose content is relevant and timely for the global audience and, whenever possible, uses the company's intranet page layout standards. The *City Times* feature offers the time and date information for a few key headquarters locations around the world, emphasizing the company's global nature.

The right column features the "CVX" stock quote, which is updated every 20 minutes. There is also a link to a pop-up window with up-to-date market indices and competitor stock quotes. In addition to corporate news, Inside offers a link to relevant industry news, updated every hour.

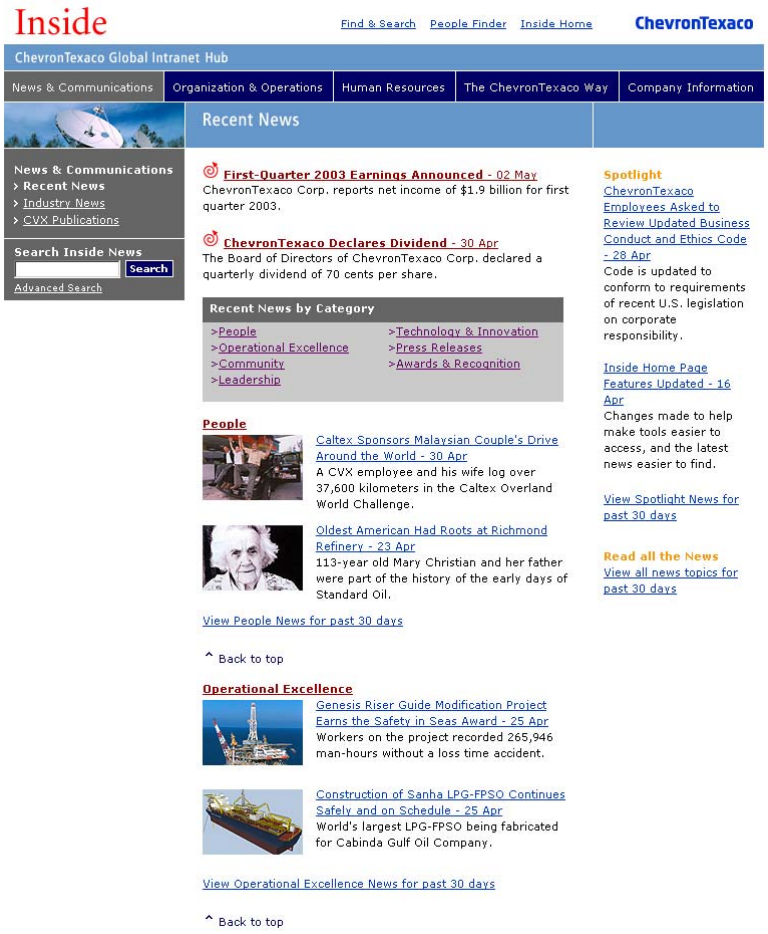
*Quick Question*, a popular interactive homepage feature, quizzes employees about company and industry-related facts and can serve as a quick polling device. Users can submit answers to this weekly quiz, and check the results page for the correct

answer and up-to-the-minute results of how other users responded. The results page also provides more information about the question's topic, including related links that steer interested users to other Internet or intranet areas to learn more — an engaging way to educate employees.



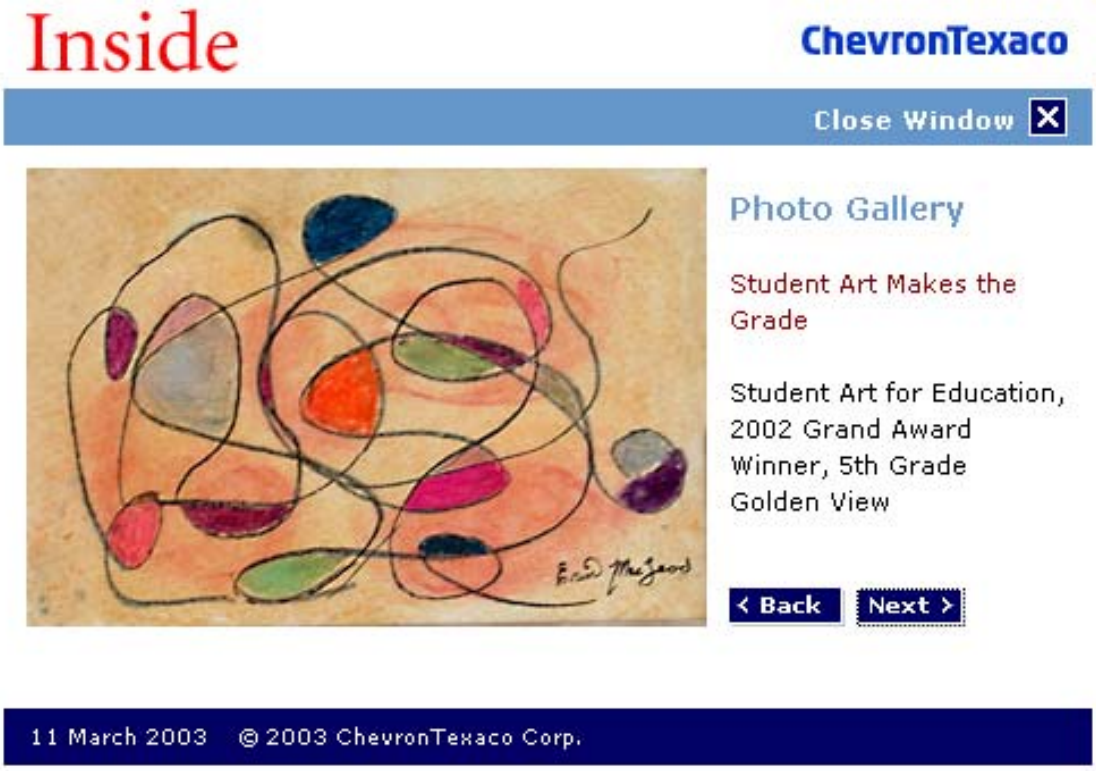

Pictured: The *Quick Question* results page displays answers to the weekly quiz or poll, and provides additional information and related company or industry links.

The primary navigation bar's *News & Communications* link takes users to a comprehensive news page. There, users can browse the most recent company headlines by category, view a specific category's news for the past thirty days, or search news stories with a simple or advanced search.



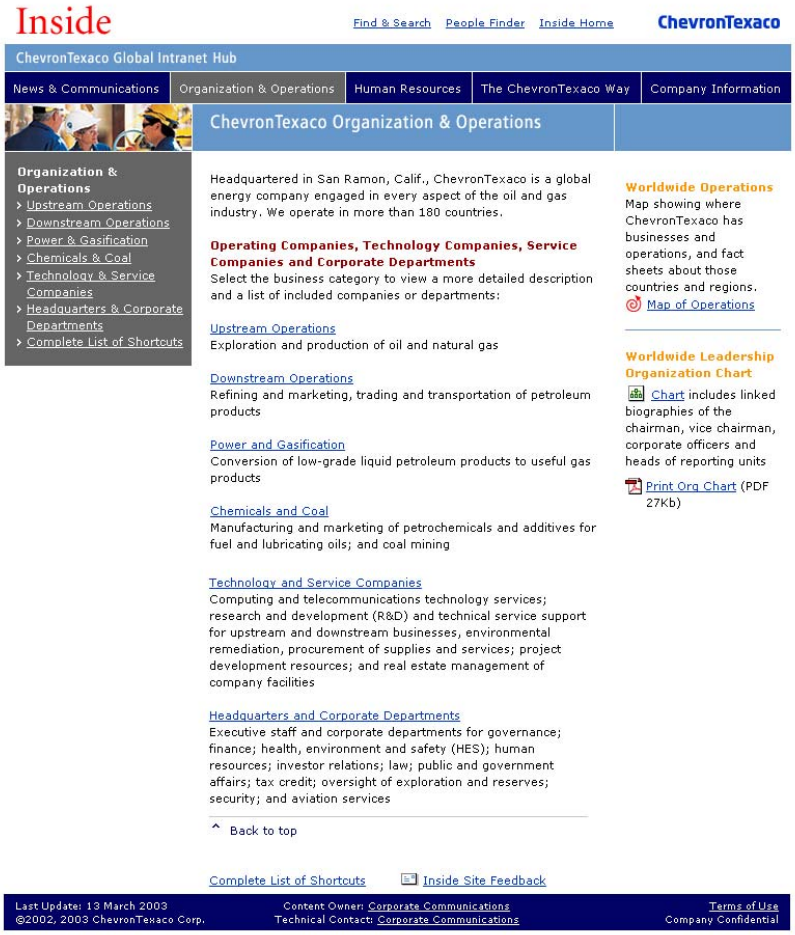

Pictured: The main page of the *News & Communication* section on ChevronTexaco's intranet.

Using content management gives Inside's editors innovative control over their news stories. Among other things, they can easily create a photo gallery for news stories with more than one associated image. This one-photo-at-a-time gallery presentation is particularly convenient for users with slower Internet connections. Rather than waiting for an image-rich article to load, users can instead open the gallery, where they can page though a slideshow at their leisure. The editors use templates to choose images and assign titles and captions.




Pictured: Authors and editors can associate photo galleries with news stories, using content management templates to add photos, titles, and captions. Users can scroll though the slideshow using the *Back* and *Next* buttons.

Inside's *Organization & Operations* section lets employees find information and site links for all ChevronTexaco's primary business units, as well information about the company's overall structure. Business units and corporate departments' links are annotated with succinct descriptions and, when available, include quick links to an organization chart.




Pictured: The *Organization & Operations* page includes contextual links to the company's different business units. Descriptions of each group help employees better understand the organization.

One of Inside's main goals is to bring the tenets of *The ChevronTexaco Way* to the forefront of employees' minds, and thus this section — which outlines the company's values — is a top-level category of the site. Through engaging real-life success stories and interviews with key leaders, *Living the ChevronTexaco Way* encompasses important topics such as vision, values, people, partnership, and performance. Also, employees can submit suggestions for stories, as well as download a PDF version of *The ChevronTexaco Way* brochure, available in eleven different languages.


Pictured: The *Living the ChevronTexaco Way* section illustrates the company's business philosophy with real examples and interviews with leaders.

The intranet's navigation and layout are intuitive and easy to use. Inside's design and navigation adhere to ChevronTexaco's *Intranet Page Layout Standards & Guidelines*. Sponsored by the corporation's Web Council, these standards were developed iteratively over several months of gathering requirements and soliciting feedback from numerous company-wide website owners. The resulting page layout standards were also usability tested. The guidelines specify that intranet pages use a two- or three-column grid layout. The layouts have a consistent format, including a standard header, footer, primary navigation, link treatment, and color palette.

## URL AND ACCESS

Inside appears as most employees' default browser homepage. Some business units override this setting and let employees go to the unit's homepage first, but the company's IT department estimates that approximately 72% of users go directly to Inside. On the company network, the URL is "inside.chevrontexaco.com." To access the intranet remotely, users log on to the ChevronTexaco network first. As part of the standard header, all intranet sites include an *Inside Home* link at the top of each page.

## CONTENT MANAGEMENT

Because Inside is ChevronTexaco's official corporate communications vehicle, a central editorial team produces most of the content and decides whether it is global and in keeping with the company's key strategic messages and values. ChevronTexaco employees are encouraged to submit content for Inside, but the editorial team considers all material before it appears on the site. The news section was built and is currently maintained using Microsoft Content Management Server 2001.

## TECHNOLOGY

Designers built the Inside pages using Microsoft Site Builder, Microsoft Visual Studio 6, and Macromedia HomeSite; they used Macromedia Dreamweaver and Adobe Photoshop for prototyping and Rational Rose for modeling.

The site uses Microsoft IIS as its Web server, Microsoft Content Management Server 2001 as its content management solution, Microsoft Visual SourceSafe for version control, and TeamTrack and Watchfire WebXM for bug tracking and quality assurance.

The site-wide and company news search engines are based on Inktomi.

## GOALS AND CONSTRAINTS

1) Promote a single-company culture. 2) Be the daily gathering place for all employees and contractors worldwide. 3) Provide easy access to business-specific (business unit or operating company) sites. 4) Let employees and contractors access the information they want and need to conduct daily business, while sharing key strategic information to increase alignment.

## BASIC INTRANET FEATURES

Above all, Inside offers excellent news capabilities, plus simple navigation and good process support. Basic features include: corporate communications (news stories, press releases, and letters from the chairman); stock quote and market analysis information; industry news provided by Factiva; shortcuts to the most frequently accessed business tools and resources; information about the organization's structure, history, and finances; links to all primary business unit and operating company sites; HR information; a section about living the company's values, including case studies and interviews with leaders; a news-specific search and homepage access to a global intranet search; and feedback mechanisms on every page.

## USERS

The ChevronTexaco global intranet supports 53,000 employees and tens of thousands of contractors in over 180 countries worldwide. Areas it supports include:

1) Upstream operations: exploration and production of oil and natural gas.
2) Downstream operations: refining, marketing, trading, and transporting petroleum products.
3) Power and gasification: converting low-grade liquid petroleum products into useful gas products.

4) Chemicals and coal: coal mining, and manufacturing and marketing petrochemicals and additives for fuel and lubricating oils.
5) Technology and service companies: including computing and telecommunications technology services.
6) Headquarters and corporate departments: the executive staff and departments for HR, governance, finance, health, environment and safety, investor relations, law, public and government affairs, tax credit, oversight of exploration and reserves, security, and aviation services.

## USER TASKS

- Browse or search across (~500) ChevronTexaco intranet sites
- Search company news
- Access printable news articles
- Search staff directory
- Access printable organization charts
- Locate a company office or facility
- Access shortcuts (tools and resources)
- Access relevant city times around the globe
- Take interactive quizzes
- Provide feedback, suggestions, and comments
- Access HR information (both global and regional)
- Search for jobs

## BACKGROUND

The Chevron–Texaco merger integrated three brands — Chevron, Texaco, and Caltex, Chevron and Texaco's joint venture company. This posed a unique challenge for the merger Web development team. The company called in Dimension Data, a technology services company, to help create Day One, an interim intranet site that would be available as of the first day of the new company's existence.

The merger required that certain tools and resources, such as HR information, be immediately available to all 53,000 employees in 180 countries. The interim site was primarily aimed at giving managers access to policies, forms, and online tools to perform key job responsibilities. But it was also intended to help employees understand company goals, priorities, and values, as well as where they fit into the new organizational structure. Finally, the site was to provide contextual paths into the legacy sites for Chevron, Texaco, and Caltex.


Pictured: The original homepage for the Day One site.

However, Day One was never intended to be much more than a brochure site about the new company. Understandably consumed with merger logistics, Chevron and Texaco had little time to engage in extensive usability work or to contemplate "day two" and beyond. And, while much effort was put into the site's information flow, it didn't provide what was needed to continue to support the new organization. "It was a pretty shallow site; it was developed primarily as a tool to deploy key messages from management rather than reflecting the day-to-day needs and interests of users," says Lori Coupard, Web team lead for ChevronTexaco's Public & Government Affairs (P&GA) department, which manages Inside.

Furthermore, the new company identity was created with print rather than Web design in mind. As a result, Dimension Data's design team had some challenges in giving Day One a look and feel that was consistent with the new identity and accessible and easy to read online, with layouts that Web authors could easily maintain. "It was important that the intranet reflected the new aesthetic of the company — and the Day One site did that almost to the detriment of usability," says Coupard.

Shortly after the merger, ChevronTexaco went back to Dimension Data to discuss a full-fledged intranet redesign that would provide a better user experience and offer content that better balanced user and management needs.

## DESIGN PROCESS AND USABILITY ACTIVITIES

One of the first tasks that Coupard faced when she was brought on to lead the new Web team was to help create a corporate intranet hub for ChevronTexaco with a flexible framework — something that would allow for more dynamic and timely content.

Coupard interviewed those team members who provided support or content for internal or external corporate websites. Her goal was to discover which of the existing processes and roles they perceived as working well, and which offered opportunities for improvement.

"It was very clear from those discussions that there were some frustrations with both the back-end processes and the site's user experience. I didn't feel we had enough information to alter the site yet," she recalls. "Corporate Communications was mainly composed of former Chevron employees, and the Day One site was a departure from what they were used to. It's not unusual for people to be uncomfortable with change, and we needed to tease out how many of the complaints were resistance to a new Intranet site and how many were based on real usability issues."

In February 2002, work began on what the Web team called the "Improve Inside's User Experience" project. The effort involved many types of research, including heuristic analysis, employee surveys, one-on-one user testing, and best practices benchmarking. Lyn Garrison was appointed ChevronTexaco's intranet lead producer and Olivia Harting from Dimension Data was named creative producer.

As a first step, three Dimension Data specialists in user interface and visual design carried out a three-day heuristic analysis of the Day One site. ChevronTexaco then conducted a user survey about the site with 3,000 randomly selected employees and contractors. The team sent the survey invitation to participants worldwide via email, to ensure that they also reached staff members who were not regular intranet visitors.

The survey itself was Web-based and consisted of thirty questions, both multiple choice and open-ended. "In hindsight, it was a longer survey than I would have liked, but the findings were certainly comprehensive," Garrison says. And, despite the length, the response rate was a gratifying 30% compared with the 6 to 9% ChevronTexaco typically expected for surveys conducted on their external corporate sites.

During March and April, the team carefully analyzed the heuristic and survey findings to unearth Day One's main usability concerns. They then used these as a basis for one-on-one usability testing, intending to probe known issues, identify new ones, and tease out employee suggestions for improvements. During May, they carried out usability testing with ten employee participants representing various business functions across worldwide locations. Interviews lasted 45-60 minutes, during which the team asked participants to carry out two types of exercises: exploratory (walk through the site as they would on a typical day) and directive (carry out specific site tasks, verbalizing their thoughts, likes, and dislikes along the way). They carried out nine of the tests remotely, via Microsoft NetMeeting, and one test in-person at ChevronTexaco's office in San Ramon, California, which gave them the opportunity to directly observe the user.

Several key findings emerged from the usability testing. One clear message was that users were finding the site, and especially the homepage, too news-focused, cluttered, and confusing. Overall, the homepage had too much text, and users had trouble deciding which news items were most important and most recent. As one user put it, "The one thing that I would change right now would be to have fewer news articles, or at least just headlines, and clean up the homepage." The homepage also lacked navigational aids to quickly get users to the items they wanted — that is, it lacked tools to help them do their job.

Some test participants said that some homepage fonts were too small and found the varying font sizes of news headlines confusing. The background colors also failed to help users determine information priority, and the white text headlines in the colored boxes often hindered legibility. Similarly, the primary navigation bar at the top of every page was a graphic, rather than HTML text, which created accessibility issues.

Clearly, the team needed to simplify the design, add more user-focused content, and clarify the information hierarchy.


Pictured: Day One's colored boxes didn't tell employees which information was most recent and most important. A month after the merger, the intranet team added images to the top news stories as an interim solution prior to the full redesign.

Two other major issues were naming and taxonomy. Clearly, not everyone in the company understood Day One's global navigation terms; this was especially true for

international locations. For example, one test user wondered what the term *Business Tools* meant: "I haven't got a clue [what to expect in *Business Tools*] but I would expect to find HR forms."

Some terms that worked well with US employees failed to resonate with international users. For example, the employee directory had originally been called *White Pages.* While this name was familiar to US users, it was meaningless to many of ChevronTexaco's overseas employees. Nor was *Business & Operations Gateway* intuitive; users were not sure what "gateway" implied and found the name "distracting."

The site's hierarchy of news information was problematic as well. For example, participants didn't really see the difference between the content of the homepage, the *News & Communications* landing page, *News & Features*, *Press Releases*, and, in some cases, *External News*. Typical comments were "[*News & Communications*] looks so much like the homepage; I'm not sure why it has its own separate area. I'm guessing a lot of this is on the homepage" and "I would have thought that I was already at *News & Features*, being on the homepage!"


Pictured: The old *News & Communications* landing page. Users didn't understand how it differed from the homepage and were confused by the section's many content categories.

Based on the usability testing results, the team made several sweeping recommendations. They proposed to redesign the homepage with less content (including fewer news articles), a more intuitive information hierarchy, a consistent font and color scheme, quick links, and descriptions of links and tools. They also recommended renaming and reorganizing several sub-pages.

The findings also justified restructuring the *News & Communications* section's news by category. "Previously, we'd been thinking as a publisher rather than a user," says Coupard. "It was salient to our intranet team whether a news item was a press release or an internal speech, but our readers were more interested in what the content was about, how recent it was, and what was most important. As such, we decided to move toward organizing the news archive by category first, then by date, and add photos to the top stories. Between the requests from users and best practice benchmarking findings, we were able to justify a move in that direction."

Drawing on the heuristic analysis and usability test results, the team started designing a new taxonomy and nomenclature for the site. From the usability tests, it was clear that they needed to make the content of various categories much more obvious. This included deciding on new, more descriptive top-level naming conventions.

In addition to reacting to the research findings, the team had its own agenda. One of the goals for Inside was to promote a single-company culture for the new organization, and the team wanted to re-architect Inside so that the corporate values were more prominent. "Research shows that 80% of mergers fail due to cultural integration issues, so company culture needed prominent real estate on the site," Coupard explains.

In the Day One site, *The ChevronTexaco Way* (the company's mission, vision, and values statement) was buried two or three levels down, and was simply an online version of the printed brochure. The team felt it did not do a good enough job of projecting the corporate culture. "We wanted to make people feel more engaged and proud to work for the company," says Glenn Snyder, lead information architect from Dimension Data.

On the redesigned site, *Living The ChevronTexaco Way* was elevated to one of the top navigation's five sections, and the section itself was given more human interest by focusing not on the brochure's verbiage, but rather on real examples of the company's values in action. The new section is nineteen pages, and each sub-section has *Leaders Speak*, a question-and-answer session with one of the company's top managers. An article on cost reduction, for instance, might give examples of how actual people are achieving cost reductions and how this is helping the company. Employees are encouraged to submit article suggestions.

While the Inside redesign was taking shape and content development was underway, another team — including some members of the Inside team — was finalizing its work on the new corporate intranet page layout standards. The Inside team would use these standards, and the accompanying guidelines, to apply the site's new look and feel.

Before the visual designs were ready, the Inside team conducted usability testing of the proposed structure. The team created functional prototypes in the form of clickable wireframes, and, as before, carried out testing in-person and via NetMeeting. The eight test participants were once again selected based on a test participant screener, offering a good sampling of the intended audience.

As a result of the testing, the team made some changes to the site's terminology. "For example, we had several possible names for the *Word Watch* in the homepage's lower right corner, including *Acronym of the Day*, *Jargon Watch*, and so on," Harting recalls. "We wanted to find the one that made the most sense to the most people."

The team also added several new features they wanted to test, such as *Quick Question*, *News by Email*, and *Recent News by Topic*. The features were well received in testing and were added to the site with minor modifications to increase usability: "Sometimes we found we needed to make the instructions a bit more clear, but otherwise, they were pretty straightforward to users," Harting says.

The team also modified site feedback forms based on usability testing results. Depending on where the user is in the site, they can opt into various feedback mechanisms. "We now pre-populate the drop-down field for the type of feedback users are sending, based on where they opted into the feedback," Harting explains. "So, if they come from the *Suggest a Quick Question* page or a news story, the email received will indicate that in the title."

During this time, the team also made decisions on issues that came up in past usability tests, such as those related to the primary navigation bar's DHTML drop-down menus. "Some people loved them and some people hated them," Coupard says. "The initial feedback from former Chevron employees in our department had been that they weren't comfortable using them, but when we spoke to test participants, the results were more positive; they liked having quick access to deeper levels of the site, but requested a few changes to make them more usable. The answer wasn't to get rid of them, but instead to tweak the functionality."

To gain wider acceptance for the drop-downs, the team had to work on the menu's reaction time. They changed the timing so that menus dropped down and collapsed up more quickly; the menus thus stayed around long enough for users to see them, but not so long as to obstruct access to other page content. The team also made sure to provide an alternate route to drop-down menu content for users accessing the site with screen reader software.

By early August, the Inside team had a draft of the corporate intranet standards and could finally begin work on the page designs. Because they'd laid so much groundwork, the design phase was comparatively quick and easy.

One of the *Intranet Page Layout Standards & Guidelines* project's goals was to create what Coupard calls a "family resemblance" between all internal ChevronTexaco sites, while giving designers the freedom to customize their site within a range of standard design options. Senior management's goal of having all company intranet sites conform to the guidelines by December of the following year proved a daunting challenge.

"One of the compelling elements of the business case for introducing a common look and feel was to save money by increasing user productivity and shortening site development time," says Coupard, who also served as a project manager for the *Intranet Page Layout Standards* project. "All that would be thrown out the window if we started forcing people to redesign their site to adopt a new interface overnight. So we compromised and said, if you're doing a new site or substantially reworking an existing one, it should conform. If not, we ask you to adopt the standards when you can. We focused on improvement rather than perfection."

By the end of September 2002, the Inside designs had been finalized, coinciding with the development of the CMS that Corporate Communications would use to publish news. The team populated the site with content, and added metadata to every page. On November 11, 2002, the redesigned Inside site was officially launched.


Pictured: The new homepage, launched in November 2002, was an improvement, but there were more enhancements to come. Management was concerned that the design gave more prominence to content that changed weekly (in the center) as opposed to daily (news stories, to the left). When asked, users weren't sure what the difference was between the content; as far as they were concerned, it was all just news. As more information was added over time, the popular shortcuts menus in the center of the page often slipped below the page fold.

Since the November re-launch, the site has undergone two iterations. In April 2003, major changes were made to the homepage: the team moved the shortcuts into the left navigation and above the fold, making them more noticeable, easier to access, and more consistent with the rest of the site, which has navigation at the top or left of each screen. The most important and recent news is added to the top of the page, with older stories cascading down the center and, as new information becomes available, "falling off" (becoming available via search in the *News & Communications* section).

The team also introduced the *Web Sighting* feature in response to requests from intranet site owners who wanted to promote their Web offerings. Previously, new site launches were highlighted in the center area and were often confused with news content. *Web Sighting* now lives in the left column and is changed weekly. This

feature offers greater visibility — and some incentive — to site owners who adopt the new corporate look and feel.


Pictured: The new *Corporate Public & Government Affairs* site shows how designers applied the intranet standards to a departmental intranet site. The corporation's standard intranet header includes the site name, global intranet links, and the ChevronTexaco "signature." Site footers must include standard content as well. Site designers can choose from an "approved" palette of primary and secondary colors, and also have a few options for primary and secondary navigation treatments. Fonts and link behaviors are consistent across the sites.

## TIMELINE

- Mar. 2001: Work begins on the interim Day One merger intranet.
- Oct. 2001: Chevron and Texaco merge, Day One intranet site launched.
- Feb. 2002: The "Improve Inside's User Experience" project begins.
- Feb.-Mar. 2002: Heuristic evaluation of Day One site, including user survey and usability testing.
- Mar. 2002: Interim enhancement of Day One homepage; images are added and DHTML drop-down functionality is fixed.
- Apr. 2002: Research findings and recommendations presented to management. Approval to continue granted.
- May 2002: Revised IA for new Inside site begins.
- July 2002: Usability testing for new Inside site's proposed IA.

- Aug. 2002: Corporate intranet standards released; Inside's design phase begins.
- Sept. 2002: Content management solution completed for news section.
- Oct. 2002: Content entry, testing, QA, management review.
- Nov. 2002: Full redesign (Inside 2.0) officially launched.
- Apr. 2003: Next iteration of the homepage launched; site enhancements continue on an iterative basis.

## RESULTS

With the Day One site redesign, average weekly visits to the Inside site have increased by about 47%. The ChevronTexaco team feels it has achieved several less tangible benefits as well.

First, easier access to information will save employees and contractors time, thus increasing productivity. In the old site, it took three clicks from the homepage to get to timesheets, job postings, and business card ordering, or two clicks to get to travel and four to get to training opportunities. Now, each of these routine tasks requires only a single click. The team can safely assume that, in the old scenario, each click increased attrition before people reached their goal. In the redesign, they wanted to increase the likelihood that users would find the basic information that they routinely sought by making it accessible in one click.

By increasing overall traffic and usability, the team believes that Inside is better able to accomplish management's communication goal: increase exposure to information that supports key strategic messages to help improve decision-making quality. "For example, operational excellence is one of ChevronTexaco's key strategic top-down messages and was also cited in the survey as something people wanted to learn more about via the Inside site," Harting explains. "We added operational excellence resource links in the left navigation shortcuts — and access to this content has substantially increased."

Overall, the team feels that the company is still realizing the intranet's value as a medium for communicating to employees worldwide. The team is monitoring progress as best as it can, by mining data from search logs and usage statistics, and reviewing survey findings to identify and improve users' access to key content by making it accessible from the homepage. The intranet team has attached catch codes to many of the homepage links so that it can track both content popularity and which paths people prefer to follow — even when those paths lead to other intranet sites. The team plans to conduct a follow-up user survey to provide before-and-after data and surface additional opportunities.

## LESSONS LEARNED

Insights from Lori Coupard:

**Don't just grease the squeaky wheels.** "It's imperative to go beyond the people speaking loudest and make sure you gather input that represents the whole user base."

**Content publishers are users, too.** "Ensure that whatever you build easily supports their communication goals and streamlines their publishing process. Your content providers are the critical link to the site's success."

**Become an expert on how employees are using your site. "**If management wants something pushed out at 3 p.m. Pacific Time, we can do that, but first we'll point out that people won't necessarily recheck the site for new information at that time; we've found that a once a day refresh is more than enough for most users."

**Advocate for the users by balancing management messages with what users want.** "It doesn't matter how important your key messages are if no one looks at them. Engaging, 'sticky' features and easy access to useful information will encourage people to regularly visit the site. It's important to remind management of the importance of this delicate balance."

# Design Matters, Inc.

**Using the Intranet:**

Design Matters, Inc. is an interactive agency that has designed and developed Web solutions since 1994. The company has designed, developed, and implemented data-driven intranets (and other controlled-access Web applications such as extranets, "leadership sites," and business-to-business sites). The company has pioneered implementations of content management solutions, personalized content delivery, online relationship management technology, e-catalogs, streaming media, recommendation engines, and portals for more than eight years. As a result, Design Matters was able to draw from deep and broad experience to build its own integrated intranet, extranet, and websites.

**Design Team:**

In-house

**Members:**

Tom Skelly and Marie Chen, visual interface designers; Tim Stuart, software engineer; Olivier Le Gouanvic, software engineer; Adrien Zamani, software engineer; Dmitriy Buslovich, Web developer; Robert Fornesi, project manager.

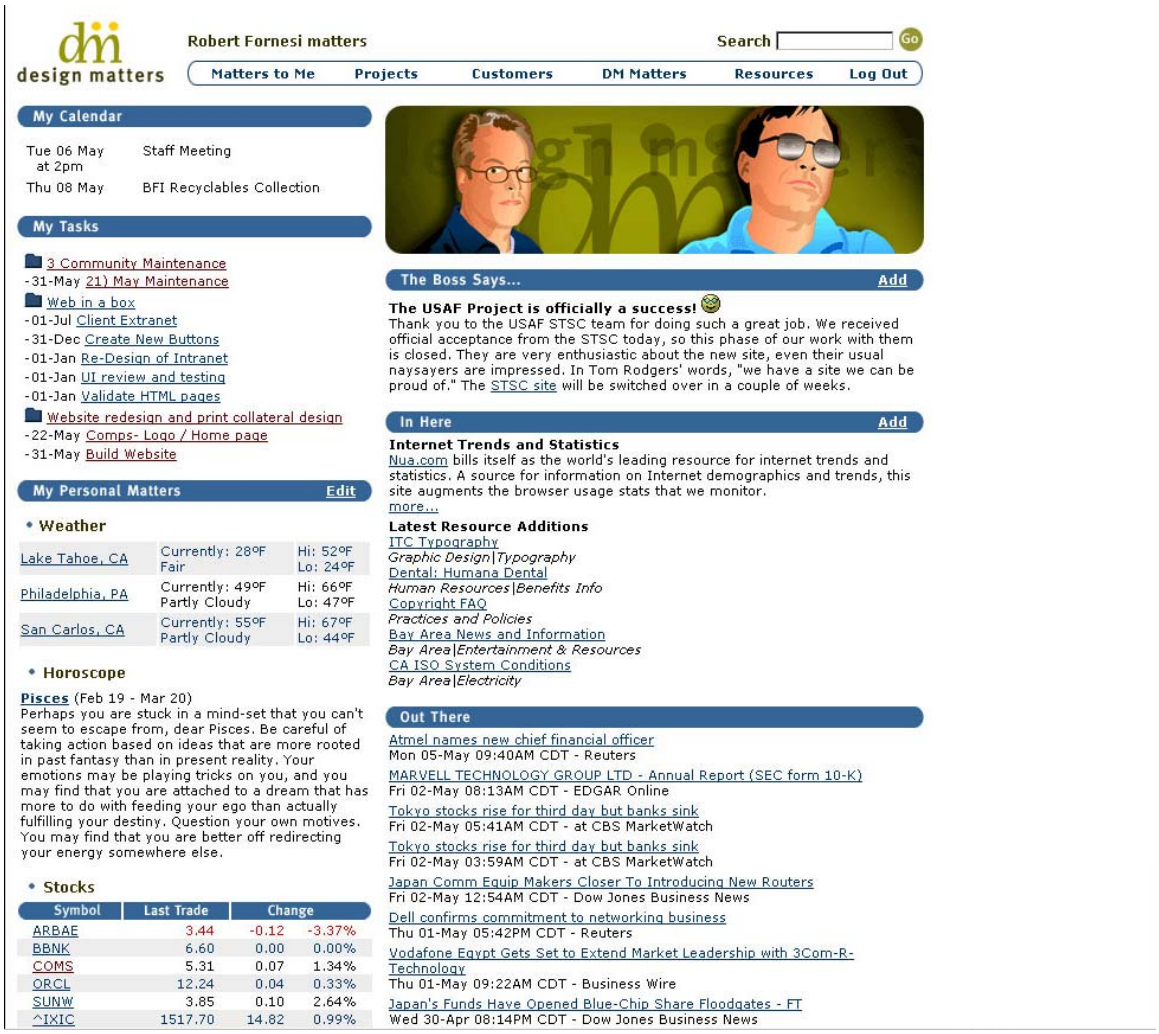
## SUMMARY

The Design Matters' intranet is proof that intranets can be both entertaining and efficient. This intranet homepage reveals the site's appealing, strong, professional, and yet carefree style. Users are first greeted by illustrations of actual employees, which rotate randomly. (How fun for employees to have an illustration of themselves.) News from the company partners typically changes weekly and is labeled *The Boss Says,* to match the intranet's blithe style. In this arena, the casual title is far better than something seen on more formal intranets, such as *CEO's Message*.

A clever play on words takes "matters" from the company name and injects it into titles, such as the witty *My Personal Matters*. And, when intranet users log in, the homepage shows their name followed by the word "matters," as if to say, "You, Joe Smith, are important."

In addition to the amusing morsels peppered throughout, the intranet streamlines employees' work by giving them the information they want and need in a neat package. The homepage presents a personalized overview of employees' projects, their exclusive tasks, and customer information. *My Calendar* and *My Tasks* are specific to the logged-in user, making it easy for employees to plan their day. Employees can review their tasks on the homepage or drill down into project-specific information.

The homepage dedicates significant space to company news and news in related industries. Again, the labeling, *In Here* and *Out There*, reinforces the overall style.




Pictured: The Design Matters intranet homepage reflects the company style while still communicating news and increasing employee efficiency.

On a more private level, users can customize their homepage's *My Personal Matters* section, selecting items such as stocks, horoscopes, and international weather, as well as personal bookmarks to restaurants, theatres, or other subjects of interest.


Pictured: Users can customize the *My Personal Matters* section on their homepage, adding items such as stocks, horoscopes, and international weather.

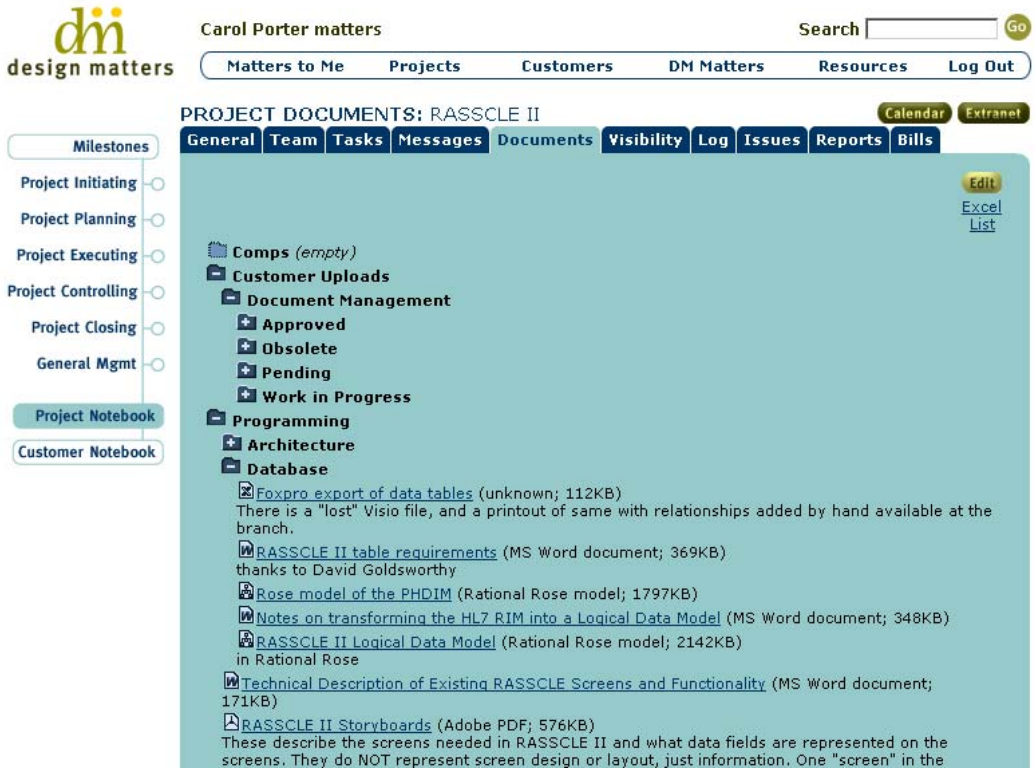
Each day, employees enter the time they spent on projects by selecting from a drop-down menu of their assigned tasks and projects. Each task is tracked, showing employees how many hours are left before and after they enter the day's time. Users can configure this page to indicate how many task entry boxes to show (two, three, or four). On the time card entry page, employee photos rotate randomly, which adds an amusing element to the often-dreaded necessity of time tracking. Time card entries aggregate to management reports and customer invoicing.

In addition to time tracking and project status, the intranet supports general HR features and functions. Employees can update personnel information, view benefits and vacation information, and search for forms, processes, or other information.

Some employees can publish information on the homepage, including professional tips, latest news, or personal information. All submitted content goes through a workflow and must be approved by a company partner before it's published. Employees can also publish tips in the intranet's *Resources* section. This area houses general guidelines for HTML, graphics, and programming, along with company information, presentations, collateral, and customer and industry information.

In addition to supporting employees' everyday tasks, the intranet also supports management-related tasks, tracking project information such as the team, deliverables, tasks, documents, and goals.

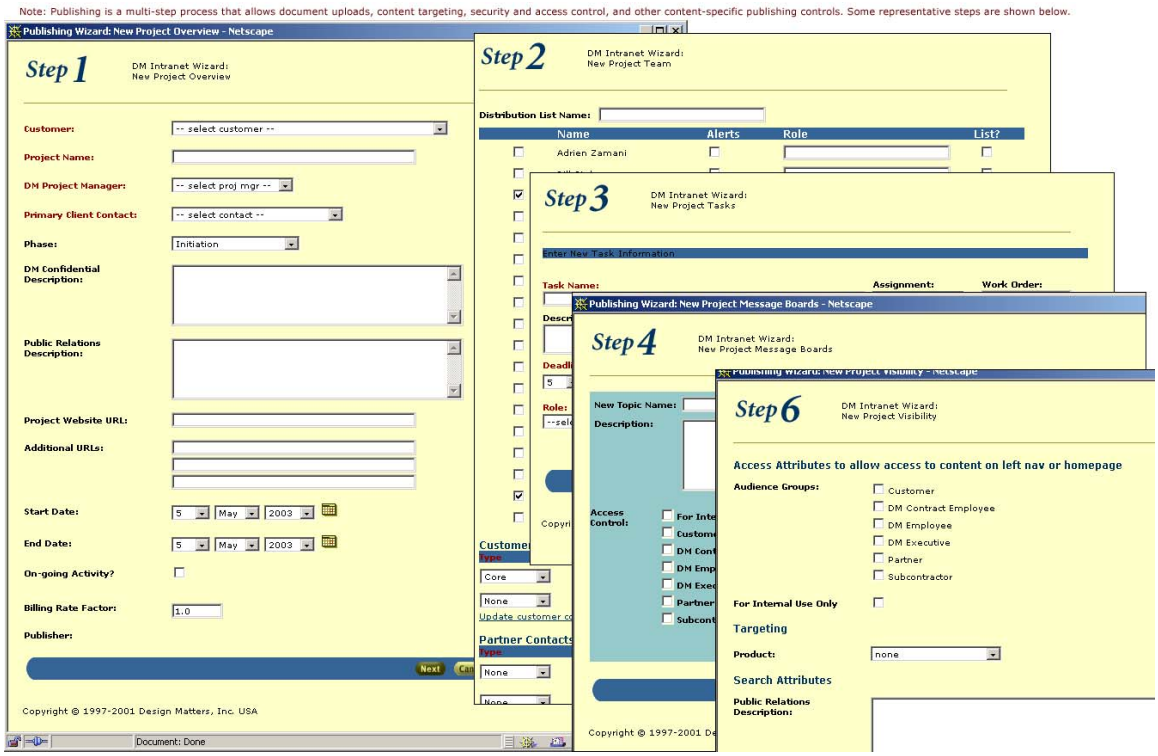
All documents published to a project are categorized and presented clearly, so it is easy to tell the status. These documents can also be linked to other projects and non-project categories in the knowledge base.



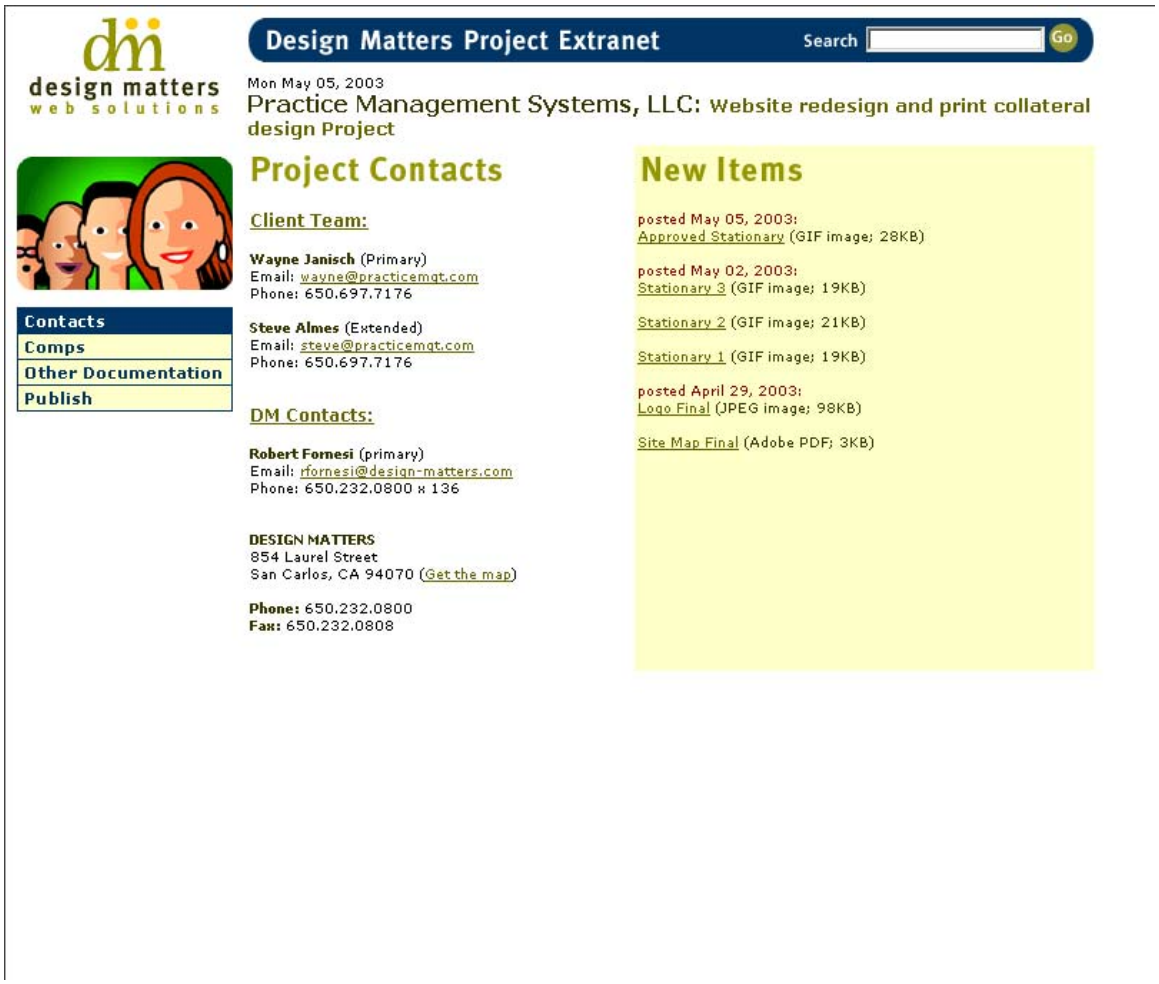

Pictured: An example of a project-level information page showing all of the documents published to this project.

Project managers can view reports showing a project's current progress, notes from project employees, and time remaining. To help busy managers see status at a glance, tasks are color-coded green, yellow, or red (plus blue for completed tasks).

For better client communication, project work is captured and made viewable to customers on their own private and searchable extranets. There are also views for Design Matters employees only. These include more message boards, and more restricted views for the customer's extended team members.




Pictured: An example of some steps involved in adding a new project.




Pictured: The customer's view of a specific project's homepage. Customers can also view message boards for their projects.

Like the successful Google site, this intranet does a terrific job of supporting central tasks and also injects the fun factor, which makes using it even more pleasurable.

## URL AND ACCESS

The URL for the intranet is www.design-matters.com/dm. Within the company, people can choose which URL to have as their default browser page.

## CONTENT MANAGEMENT

Design Matters uses Vignette 5.5. Users who have permission to publish get dynamically generated *Add* buttons in their particular publishing areas. A few users are authorized to publish to the live site without review. All other content is sent to the publishing desk, which sends pending-content notifications to authorized individuals, letting them know that content is queued and awaiting approval.

For employees publishing program tips in the *Resources* section, for example, they see a *publish* icon wherever they are authorized to publish tips (following the standard approval process). The *Resource* section's five most recent entries are

displayed on the homepage's *In Here* section under the *Latest Resource Additions* section.

## TECHNOLOGY

The DM intranet runs on Sun servers, with Oracle 8 as the primary server. The application was partly written in TCO TcL (Vignette's programming language), with newer code written in Java (which Vignette recently began supporting).

## GOALS AND CONSTRAINTS

1) Make time tracking more engaging so that employees are motivated to use it. 2) Improve customer and employee communications. 3) Guide employees through standard project management practices. 4) Automatically generate customer extranets for each new project. 5) Provide training materials for each company job category. 6) Provide interactive tools to assist employees and customers. 7) Support multiple platforms and browsers via LDAP integration. 8) Make the intranet fully searchable, and provide the ability to publish once to multiple category references. 9) Design for performance on a slow connection, but keep it interesting. 10) Improve management reporting. 11) Create a demonstration of the company's capabilities. 12) Create a central knowledge bank that captures the knowledge that creates the company's value. 13) Give customers better visibility of their projects via an extranet that's published using the same database engine as the intranet.

## BASIC INTRANET FEATURES

The company's basic intranet features include: a single publishing source for the company's Internet (public website), intranet, and extranet that lets the publisher target content visibility, access control, and content expiration; personalized pages, including a homepage with generic portal features (such as customer and industry information and news, horoscopes, personal favorites, and stock tracking); the ability for all users to publish content, based on roles and authorizations; standardized company information, including processes, marketing materials, and project archives; discipline-specific subsites for graphic and user interface designers, software engineers, Web developers, project managers, and sales and marketing professionals; automatically generated customer extranets, with controlled customer publishing and features to assist in account management (such as customer-access reports); personnel information, vacation tracking, and time tracking; interactive capabilities, including survey and poll generator (with results measurement), message boards, and weblogs; project management and tracking (Project Management Institute compliant); document and knowledge management; reporting, accounting, and billing; alerts, calendars, and meeting scheduling; search facilities; role-based administration; security; and access control.

## USERS

DM employees include graphic designers, user interface designers, software engineers, Web developers, project managers, administrative personnel, and management. Access for the company's customers is restricted to customer-specific and project-specific information on the extranet. The company's partners also have access to the intranet and extranet, restricted according to its particular relationship with DM. The general public has access to the website only; the exception to this is sales prospects, who can be granted very limited access to preview internal facilities.

## USER TASKS

### Project Managers

- Create and edit customer and project information such as deliverables, tasks, team, and goals.
- Access reports showing current progress of projects, notes from project employees, and time and hours remaining.

### Employees

- Enter time spent on projects each day, selecting from a drop-down menu of projects and tasks.
- Publish professional tips, the latest news, or personal information to the homepage.
- Publish program tips in the intranet's *Resources* section.

### Accounts Receivable

- Manage outstanding tasks and projects.
- Generate bills.
- Track payments.

### Customer teams

- Core team members publish content, and indicate whether content is private or accessible to extended team members.

## BACKGROUND

DM has had a homegrown Web-based application to track projects and customers for billing purposes since 1996. Originally built in ColdFusion, it was basically a project management system that let staff members enter tasks, hours, and descriptions and view company project listings. In 1998, the company moved the application to a Sun/Oracle/Vignette platform, and two years later added a basic homepage.

However, this "quick and dirty" application did not scale, and did not let employees capture and share other information, such as job-related knowledge, standard processes, and company materials.

By 2001, DM was like the classic case of the cobbler's child who didn't have shoes. Although its own intranet was still rudimentary, the firm had built many complex intranet projects for clients, and gained a wealth of knowledge about how to do it right. "We had learned from their mistakes, and we felt that now we needed to build this thing right for ourselves," explains Carol Porter, a DM partner.

So, DM finally decided to scrap its old system and build a new intranet that would centralize knowledge capture and improve time tracking by providing a more engaging tracking application. After an intensive six-month development effort, its current intranet was born.

## DESIGN PROCESS AND USABILITY ACTIVITIES

DM is a small company, so it was feasible to involve the entire workforce in the intranet design process. Over a few months, the firm held four meetings followed by

lots of emails to create a list of functions and information that people thought would add value. Anyone in the firm could attend these meetings, though they weren't obliged to.

As designers collected content ideas, they categorized them according to subject. "We had one giant sheet of paper for each category, each a different color, and we stuck colored post-it notes representing different items on to those," Porter recalls.

Soon after the discussions began, DM's designers started to build prototypes for people to look at. "As a small shop, we just start prototyping and iterating pretty much straight away," says Porter. The designers came up with several alternative versions, then short-listed six.

The final design, chosen by a workforce vote, incorporated the best features from several different prototypes. It wasn't Porter's first choice — "I didn't really like it, but I was outvoted!" — but she democratically went along with the decision. She did, however, request an alternative "skin" that let users choose between a jazzy and a more subdued look and feel.

The skins apply to all pages, except for some administrative functions that users don't see. On the time card page, users can also choose from multiple layouts.

DM's designers have since come up with several other intranet skins, but have yet to implement them.


Pictured: One of the two alternative "skins" that DM intranet users can choose between. The site is designed so that the look and feel can be easily changed.

DM's intranet and extranet have the same general design. The extranet, however, caters to clients with varying technological skill, and thus doesn't have the drop-down menus that the DM staff voted to include on the intranet. "Our staff are all Web-savvy, and they saw drop-downs as a quick way to go around the site," Porter explains.

Because the site's extranet caters to external users, it was very thoroughly tested to work with a range of different browsers and over different quality connections.

In June 2001, the intranet was launched and got a positive response from DM employees. "The feedback was great — people liked getting the personalized stocks and horoscopes on the homepage, and they also liked the tasks and color-coded priorities," Porter says.

This year, DM launched a new version with minor modifications. For example, the task and calendar displays were previously on a tab and appeared only when clicked; they're now permanently visible on the homepage. "Most employees have only a limited number of tasks, so they wanted them to be more visible," Porter says. "But I hate it — I have a lot of tasks!"

## TIMELINE

- 1996: DM launches a custom-built Web-based application for project tracking and customer billing.
- Early 1998: The intranet moves to a Sun/Oracle/Vignette platform.
- 1999: Launch of secure customer extranet tied into project tracking.
- 2000: Homepage added.
- June 2001: New DM intranet launched; new designs run in parallel.
- 2003: DM moves to a single design.

## RESULTS

"Now, when a customer asks us why something took so long or cost this much, we have easy access to the data," says Porter. "The intranet lets us easily see why people did something and when. Plus, we now have a great knowledge base, and that's the value of our company. To me, it's a great measure."

## LESSONS LEARNED

Insights from Carol Porter:

**Keep your options open.** "With hindsight, we probably wouldn't have used any vendor-specific platform to build the intranet — we would have used PHP or some other open technology, for future portability."

**Make a splash.** "It's critical to have a communicated, orchestrated launch for your intranet. It's the best way to get user buy-in to the project, and it's the only way you'll ever be able to measure the results."

**Stay lean and fit.** "People tend to want to put more and more graphics and Java applets into their intranets. Don't do things just because you can — think about speed and the guy in Asia accessing the intranet over a dialup line."

# FIGG Engineering Group

**Using the Intranet:**

FIGG Engineering Group is a family of engineering firms specializing in design, construction engineering, and innovative financing services for bridges. Headquartered in Tallahassee, Florida, the firm is recognized as the industry leader in the design of concrete segmental bridges. FIGG has offices in Colorado, Minnesota, Pennsylvania, and Texas.

**Design Team:**

In-house designer

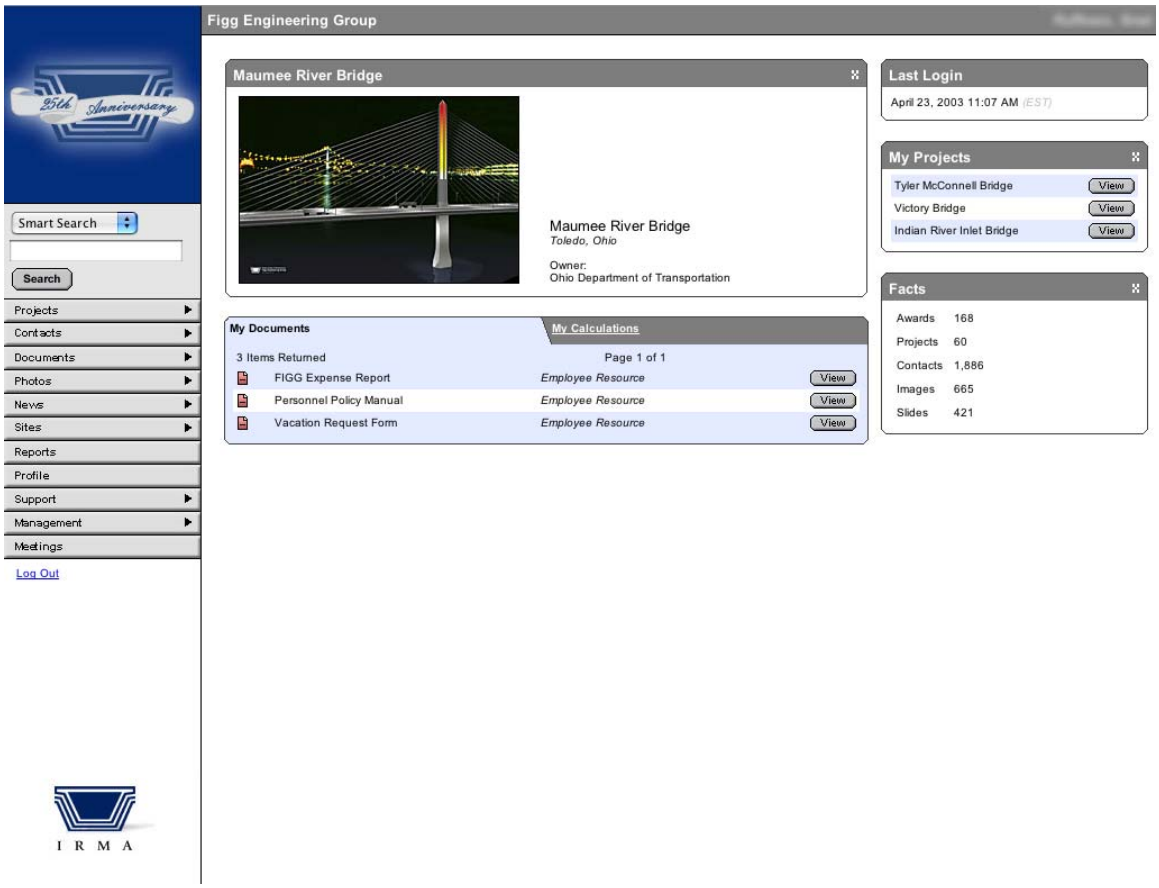
**Member:**

Brad A. Ruffkess

## SUMMARY

Like a ship's captain, the FIGG team christened their intranet with a woman's name, IRMA, which stands for Information Resource Management Assistant. The intranet is welcoming to employees, with a no-frills look and helpful features. The homepage is uncluttered, and has effective headings and obvious navigation.

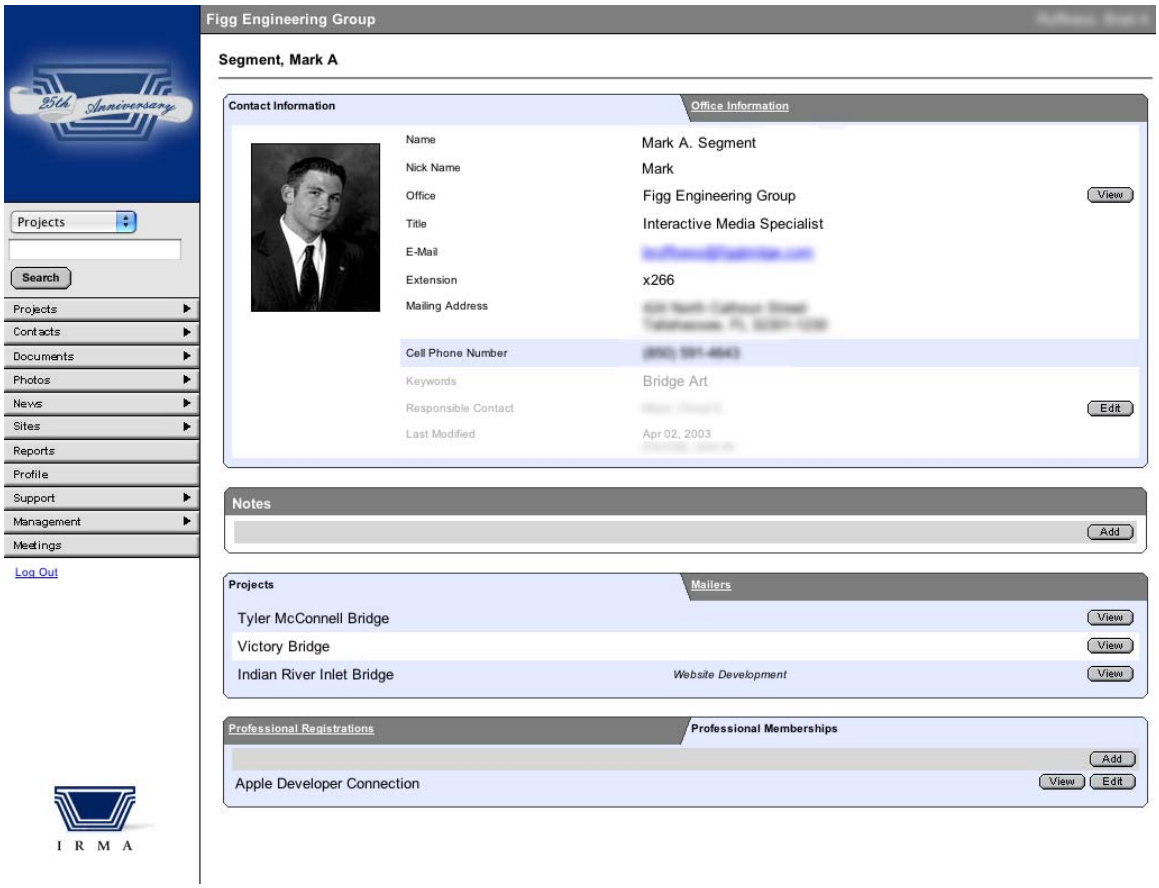
Employees can customize their homepage, displaying commonly used projects, documents, and calculations.




Pictured: The elegant FIGG homepage lets users customize it to display items they're interested in, such as *My Projects, My Documents,* and *My Calculations.*

At any organization, completing a successful project can involve many different people with different jobs and domain knowledge. Designing a bridge is an incredible undertaking that engages several groups within the company; finding the right person in the right place can be crucial. With employees in offices around the US, FIGG's employee directory is a very useful resource. The company's original design ideas make it even more valuable.

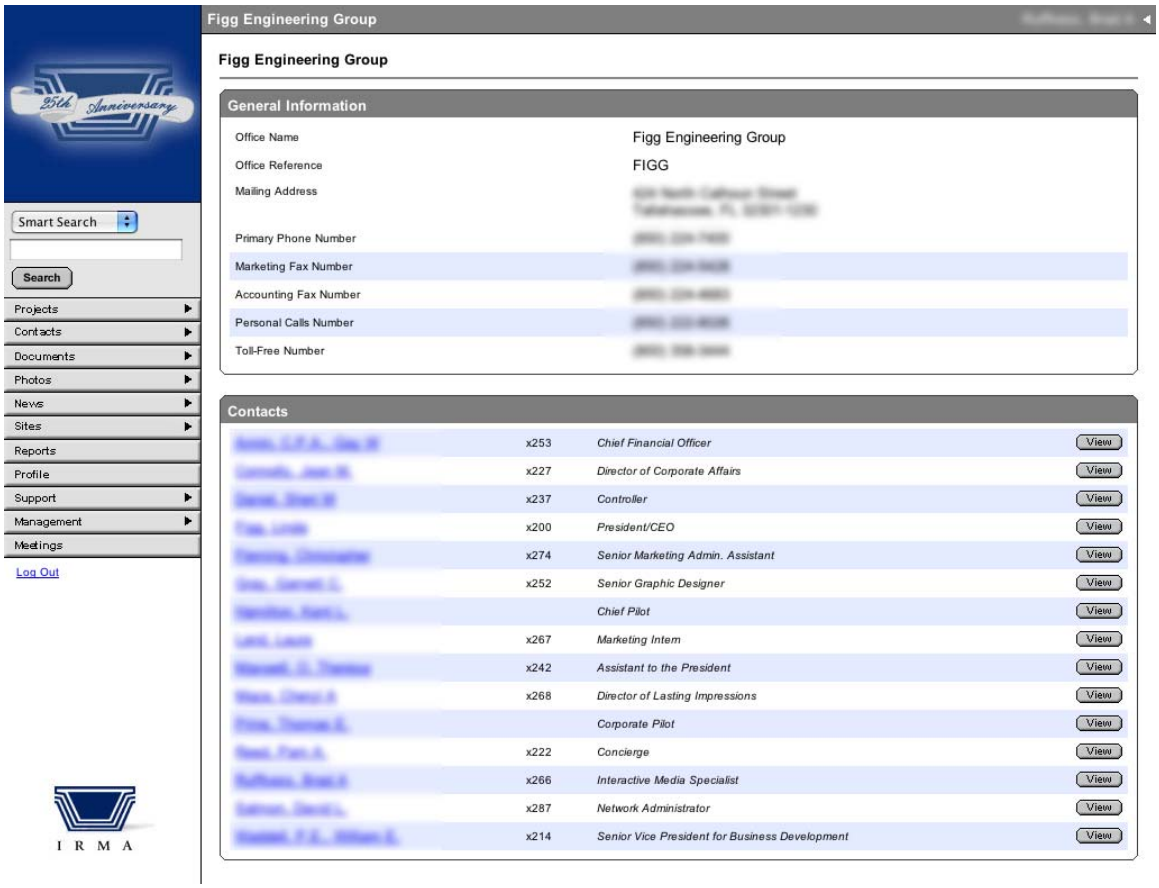
FIGG's individual contact pages are particularly well done. The pages include all the basic employee contact information: name, phone, mobile phone, and location. A picture of the person adds a human element, and can help others match the name with the face at meetings. *Keywords*, which employees add to their own contact information, can help other employees know their affinities, as can information they provide in the *Notes* section. The page also includes a list of projects the person has worked on, which is a wonderful resource for anyone looking for background. Finally, the page lists the person's professional affiliations.




Pictured: An individual contact page includes basic employee contact information, such as name, phone, mobile phone, and location, plus a picture of the person.

Employees can also search for contact information by office, which is great if they're looking for a person in a specific location. The office pages list the office name, main phone number, mailing address, and the names of its employees, along with a link to more information about them. Each office maintains its own contact information and

dynamically generates a list of associated projects that the office's staff has worked on.

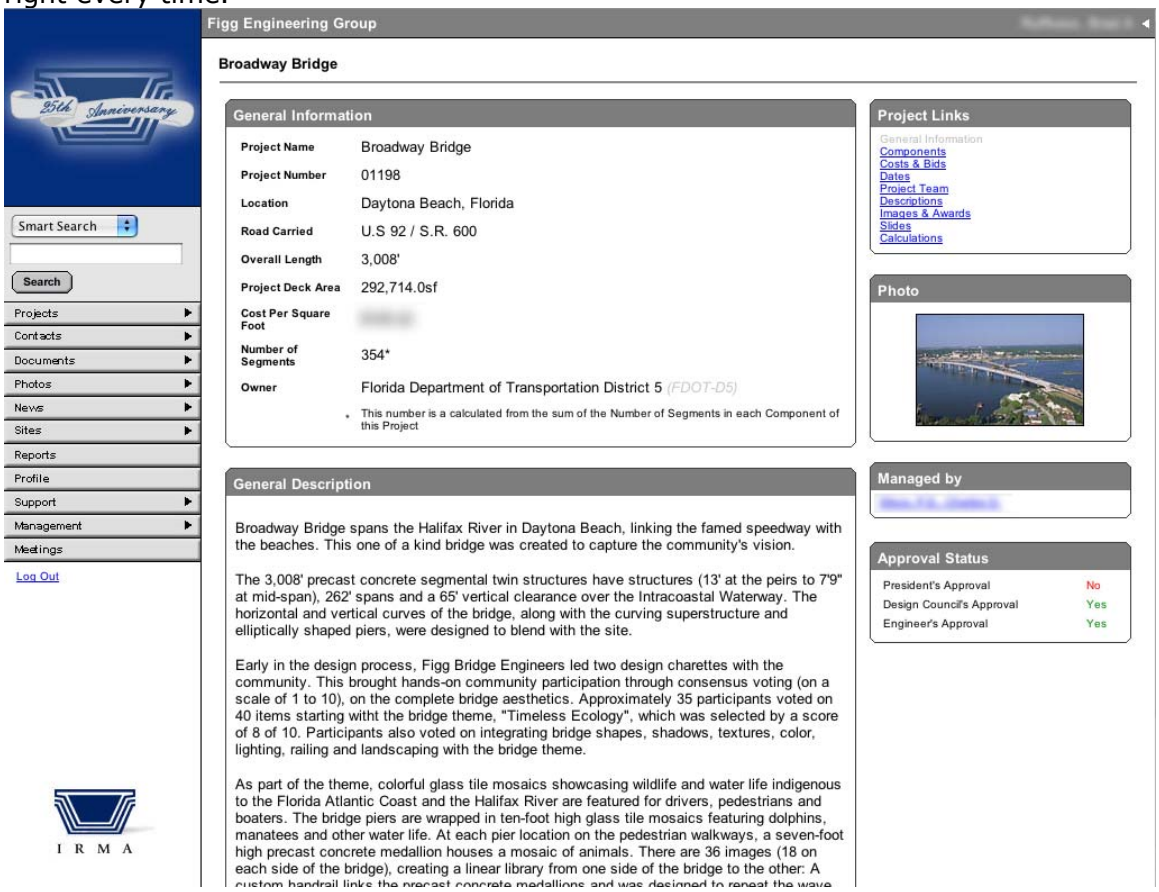



Pictured: The FIGG intranet's office pages list the office name, main phone number, and mailing address, along with the names of employees and information about them.

Each project has its own intranet area, where everything employees might want to know is at their fingertips. The main project page gives a project snapshot, including the bridge's size, cost per square foot, location, owner, and so on. The general project description is short, yet gives the background and a clear idea of the project and its subject. In the *Project Links* section, there are links to areas such as costs and bids, project team, and calculations. The section also includes the project manager's name and the approval status list (posted information must be approved through a three-tiered process that includes the engineer, Design Council, and company president). This approval process helps ensure the accuracy of the information FIGG team members find on the intranet. Users can retrieve project information in highly customizable reports that help them analyze information for use in future projects, proposals, and marketing materials.

Additionally, the intranet designers integrated a bit of PR and marketing by adding links to images, awards, and slides. Collecting all this information and making it available can be invaluable to a marketing team, helping them get complex facts

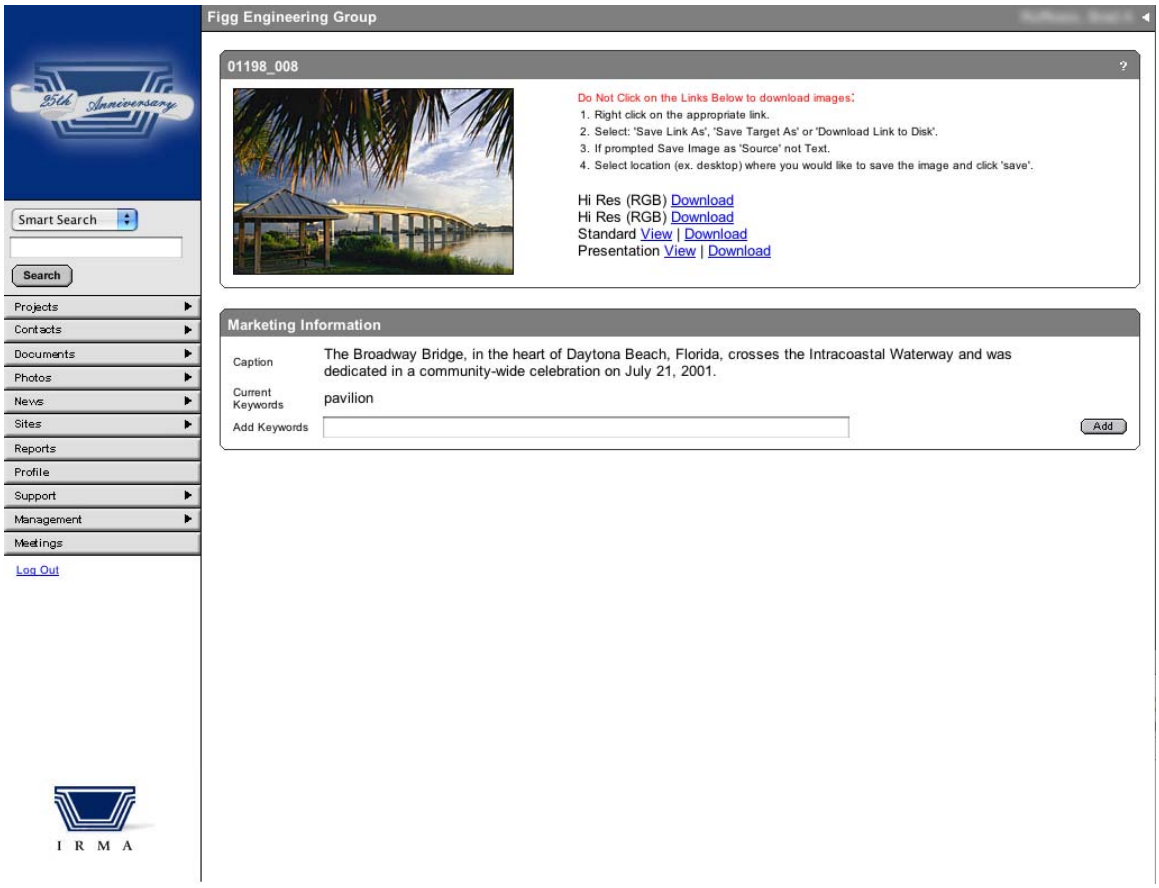
right every time.



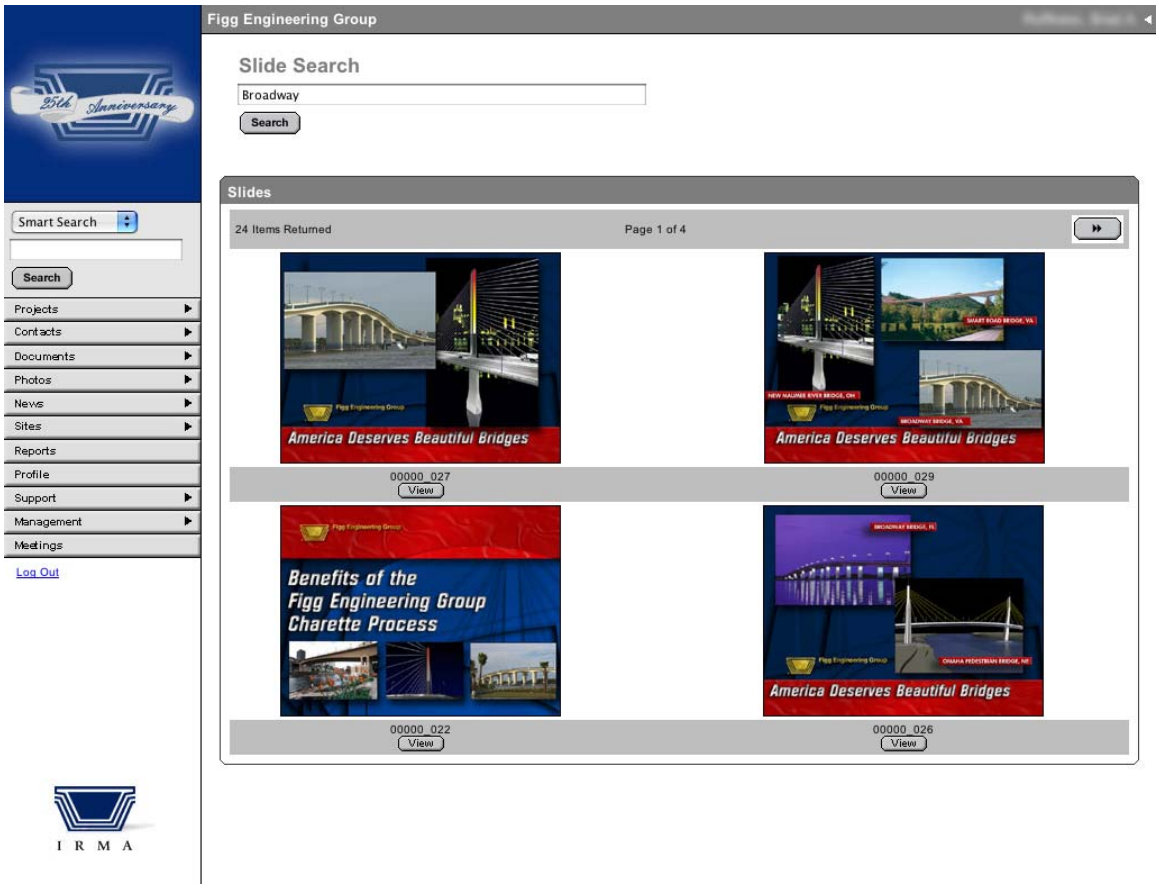

Pictured: A project page on the FIGG intranet shows all the important stats and a picture of the bridge. These pages are very helpful to marketing teams.

Other features help streamline FIGG processes. For example, the *Drop-Box* provides functionality similar to an FTP site with a Web-based interface. Some consultants and customers can access *Drop-Box* sections through a secure, separate portal that prohibits unlimited access to IRMA's available content. Employees can bookmark documents for easy reference, and a comprehensive browser helps engineers locate previous calculations and calculation templates.

For FIGG employees, simply talking about a world-class bridge is impressive. But for potential clients, it's much more striking to actually see a picture of a magnificent bridge that's 3,000 feet long. Knowing this, the intranet designers created a space that houses high-quality, downloadable images and slides. Thus, without interrupting the team's marketing department, employees can find high-quality slides or photos and import them into their presentations. The photos come in four file formats, which help provide images at the correct resolution and color space for most applications. Step-by-step instructions lead users through the process of downloading images.




Pictured: The FIGG intranet offers high-quality photos that users can easily download into presentation files. The photos are available in four different file formats.




Pictured: The FIGG intranet offers high-quality slides that users can easily download into presentation files.

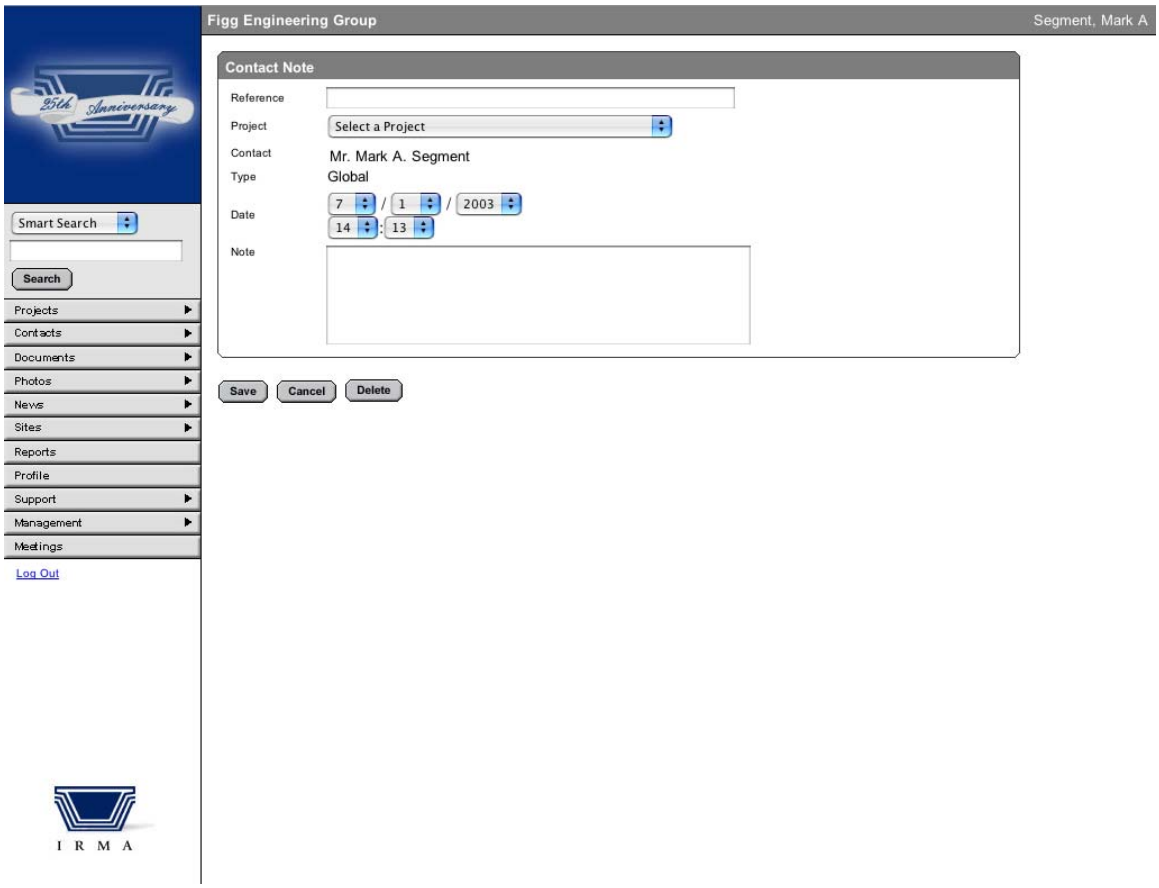
Every page on IRMA provides a search box that lets users search the site. They can also search for content by type in the drop-down menu.

## URL AND ACCESS

Users access IRMA through a publicly available URL.

## CONTENT MANAGEMENT

The marketing department uses predefined templates to add new presentation material. To enter news items, the marketing staff uses a Javascript text editor. Anyone in the firm can enter contact notes using a simple editing page.




Pictured: The contact-note editing page lets users add and update contact notes.

## TECHNOLOGY

FIGG used Adobe Photoshop to build design mockups and Adobe GoLive for interactive prototyping. The live intranet was built using Apple's WebObjects.

## GOALS AND CONSTRAINTS

1) Provide a common system to organize FIGG's information into a consistent and easily retrievable format. 2) Help the entire FIGG team with marketing, communication, and efficiency.

## BASIC INTRANET FEATURES

IRMA is a centralized source for the information developed and collected throughout FIGG's twenty-five years of award-winning bridge experience. Basic features include: project information and reports, contacts, photos, presentation materials, employee resources, company library, CMS for public sites, and interactive meeting portal.

## USERS

Intranet users at FIGG include people in administration, marketing, and accounting, and engineers and CADD technicians.

## USER TASKS

- Create marketing presentations (pull technical information and pictures, such as photos of bridges they have designed, into a PowerPoint template)
- Enter, edit, and find company contacts
- Enter and edit customer contacts and create mailing lists
- Look up technical project information
- Log and address IT support incidents
- Schedule and host meetings
- Publish news

## BACKGROUND

FIGG's business depends on successfully competing for very large projects, and it invests heavily in producing highly professional sales presentations to prospective clients. These presentations involve pulling together multiple resources from within the firm, including photography, technical specifications, and information on past projects.

Until last year, however, the firm had no centralized source for the information developed and collected in its twenty-five years of bridge-building experience. Most information was held in spreadsheets and word-processing documents on individual computers throughout the firm, and each new presentation involved much time-consuming phoning round and hunting down material.

The initiative behind IRMA came from FIGG's New Business Development Council, which initially saw it simply as a way of sharing marketing information. In 2000, however, the firm realized that a more complex intranet could be useful for other departments and for sharing firm-wide information.

## DESIGN PROCESS AND USABILITY ACTIVITIES

In January 2002, Brad Ruffkess, FIGG's interactive media specialist, worked with project managers to develop ideas for expanding the site to hold project information, company contacts, and images.

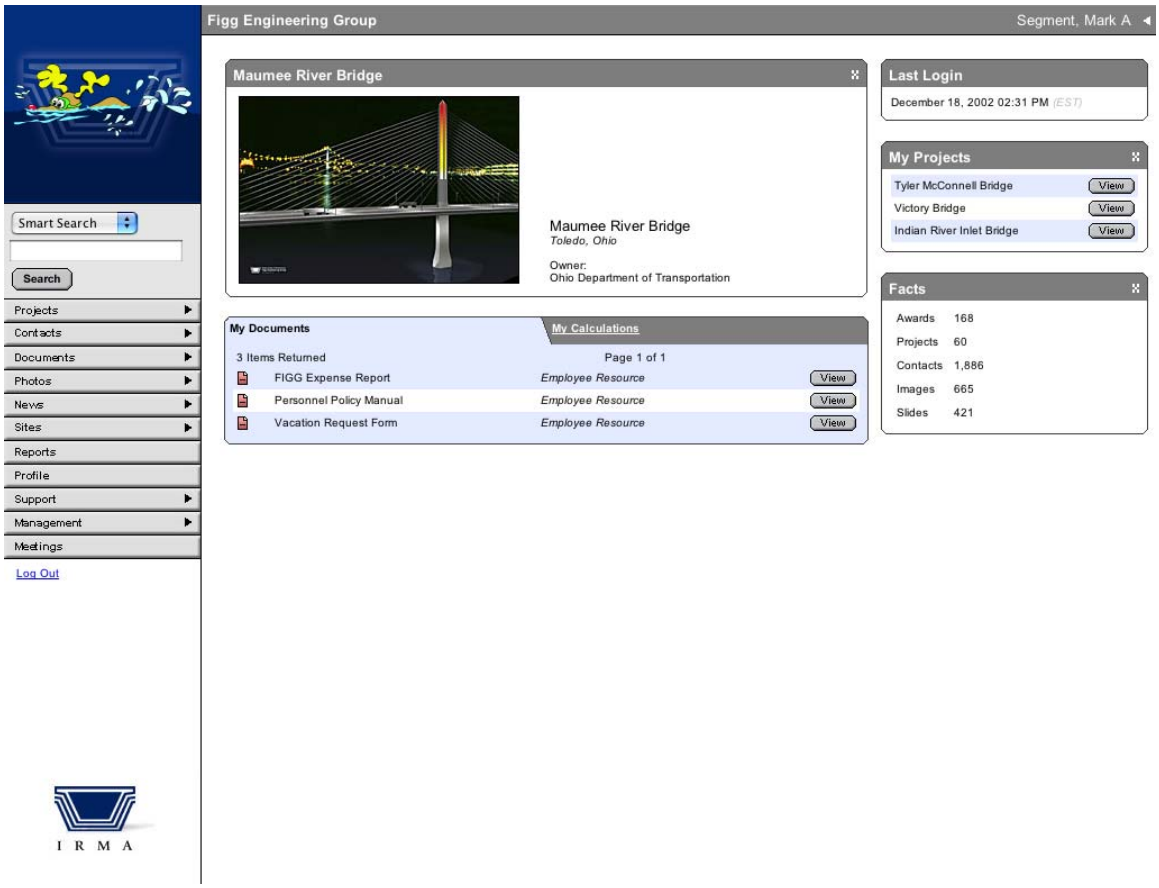
Ruffkess got ideas for the site's structure and design by researching other sites with a similar amount of content and features, and then decided what worked and what didn't. Many of the sites he looked at were too fussy for FIGG's requirements: "We didn't want clutter; the site has been designed so that you don't see information until you want to use it," he says.

For example, though it's possible to carry out a scoped search, advanced search options are concealed behind a drop-down and the default is a simple site search.

In August, Ruffkess presented an initial intranet concept to the New Business Development Council. The design featured conventional horizontal navigation, but this was jettisoned as Ruffkess continued work on the site.

One of Ruffkess's inspirations was the silverorange intranet, winner of Nielsen Norman Group's 2001 Intranet Design Annual. A fairly small service company, silverorange uses its intranet for project information and customer communication. Like the silverorange intranet, IRMA has strong left-hand navigation and no horizontal navigation. "We decided that horizontal navigation didn't give us enough flexibility," Ruffkess explains. "As the site grew, the options could have exceeded the width of the screen; it's one thing to scroll vertically, but quite another to have to scroll vertically *and* horizontally."

IRMA also echoes the silverorange site's simple, restful color scheme, jazzed up with bright photographic images. Eye-catching images of bridges FIGG has worked on are displayed randomly on the homepage to create added interest. Ruffkess also used a design idea from the Google site, varying the image in the top left-hand corner from time to time to reflect external events.[4] On St. Patrick's Day the image turns green, and in the run-up to Christmas 2002 it featured a seasonal reindeer.




Pictured: A seasonal reindeer takes a swim, adding interest to FIGG's homepage in December 2002.

The homepage usually contains little besides links to the basic information employees need to do their jobs. It occasionally includes news items, but as a small, closely connected firm, news travels fast and communicating firm-wide news

[4] For more information on celebrating and recognizing holidays and special occasions in online design, please see our separate report on this topic: www.nngroup.com/reports/holidays

typically occurs in team meetings. When the firm wins new design projects or a major design award, a team meeting and celebration are often quickly scheduled.

The intranet's design began taking shape toward the end of 2002, with user feedback coming mainly from the project managers who were working with Ruffkess to enter the first projects into the system. As new functionality was added, Ruffkess also carried out user testing with four of the local admin staff, holding one-on-one interviews to discover their views on how easy the system was to use and get recommendations about how he could further improve it.

One of the features that Ruffkess changed as a result of user feedback was the contact database. Originally, users could only enter one contact phone number, which staff members found too restrictive. It's now possible to store unlimited numbers. Ruffkess also added a feature to override the default FIGG mailing address for staff members who worked mainly from home or a client site.


Pictured: An old contact page design allowed only one phone number per person. Users found this too restrictive.

(Page 60 shows IRMA's current contact page, which has multiple phone numbers for each user.)

Another major modification Ruffkess made was to streamline the wizard that let project managers add new projects to the site. This wizard walked managers through the process of entering information associated with their project, but didn't actually add the project until the manager had entered every possible project detail. "It was really tedious — it took about an hour!" Ruffkess recalls.

Users found the wizard too time consuming. It's now shorter, and an administrator sets up projects by entering minimum information, such as the project's name and number. Project managers can then enter more detailed project information at their leisure.

Security was also a concern, since FIGG works on some major government projects. The site is protected by secure login facilities, and personalization features ensure that only authorized staff can access certain information; customer contacts, for example, are only visible to members of the New Business Development Council.

Since IRMA went live in August 2002, there have been gradual changes, but no major new releases. "Mostly we go through a rapid development cycle for new releases, then just deploy them," Ruffkess says. Changes to project functionality are approved at the monthly meeting of FIGG's Design Council, made up of senior engineers representing each office within the firm. One recent new feature is the mailing list manager, which generates address lists for marketing mailings from the contact database.

## TIMELINE

- Aug. 2001: Initial concept for intranet presented.
- Nov. 2001 to Aug. 2002: IRMA development.
- Aug. 2002: IRMA launched.
- Sept. 2002 (ongoing): Data migration and integration into daily workflow, and constant minor improvements.
- May 2003: Contacts rewritten to focus more on information associated with the person than on the office. Additional mailing list functionality incorporated.

## RESULTS

IRMA's existence has sped up the previously tedious, labor-intensive process of creating presentations for prospective clients. "We're a service company, and all time is money," says Ruffkess. "It could easily take three people from sales, marketing, and design a couple of days to put a presentation together. Now, our sales executives can quickly pull presentation templates off the site, and drag prebuilt slides into presentations to create a professional-looking result with minimal involvement from our small marketing department."

Though its original purpose was merely to make it easier to create presentations, IRMA also lets FIGG make better use of its information resources. Since launching IRMA, the firm has standardized the way it gathers project information, and makes it available to everyone in a consistent, easy-to-use format. It's now much easier to analyze information for use in future projects, proposals, and marketing materials.

The intranet is also helping FIGG hold down licensing costs. "We use a lot of technical specifications from organizations like the Department of Transportation that we have to distribute around the firm, and to buy site licenses and distribute them via IRMA is much cheaper," Ruffkess points out. "It also minimizes our risk, because we can make sure that only the most recent copy is held on the network."

## LESSONS LEARNED

Insights from Brad Ruffkess:

**Don’t neglect documentation.** “The intranet was developed at breakneck speed, and some of the documentation steps got left out. With hindsight, it would have been much easier to write it as I went along.... now there are some great features that won't get used properly until the documentation gets written!”

**Be a good listener.** “Someone isn't going to go through the effort of telling you something about the intranet just for the sake of telling you. Listen to what people have to say.”

# Fujitsu Siemens Computers

**Using the Intranet:**

Fujitsu Siemens Computers serves large corporations, small- to medium-sized businesses and consumers across Europe, the Middle East, and Africa. The company leverages the strength of its parent companies Fujitsu Limited and Siemens AG to offer a range of computer technology and IT infrastructure solutions. The company offers products for enterprise customers, Unix-based servers, mainframes and enterprise storage solutions, mobile computing, and PCs and workstations for businesses.

**Design Team:**

Domino Systems in conjunction with Fujitsu Siemens Computers Information Systems and Corporate Communications

**Members:**

Steve Wright, head designer, Domino Systems; Charles Rodgers, director, Web systems, FSC; David Cook, manager, IS Web team FSC; Claudia Feldmann, head of Internal Communications, FSC; Andrew Melck, corporate intranet editor, Internal Communications, FSC; Chris Walter, German intranet editor, Internal Communications, FSC; Lene Christiansen, MarCom, FSC.

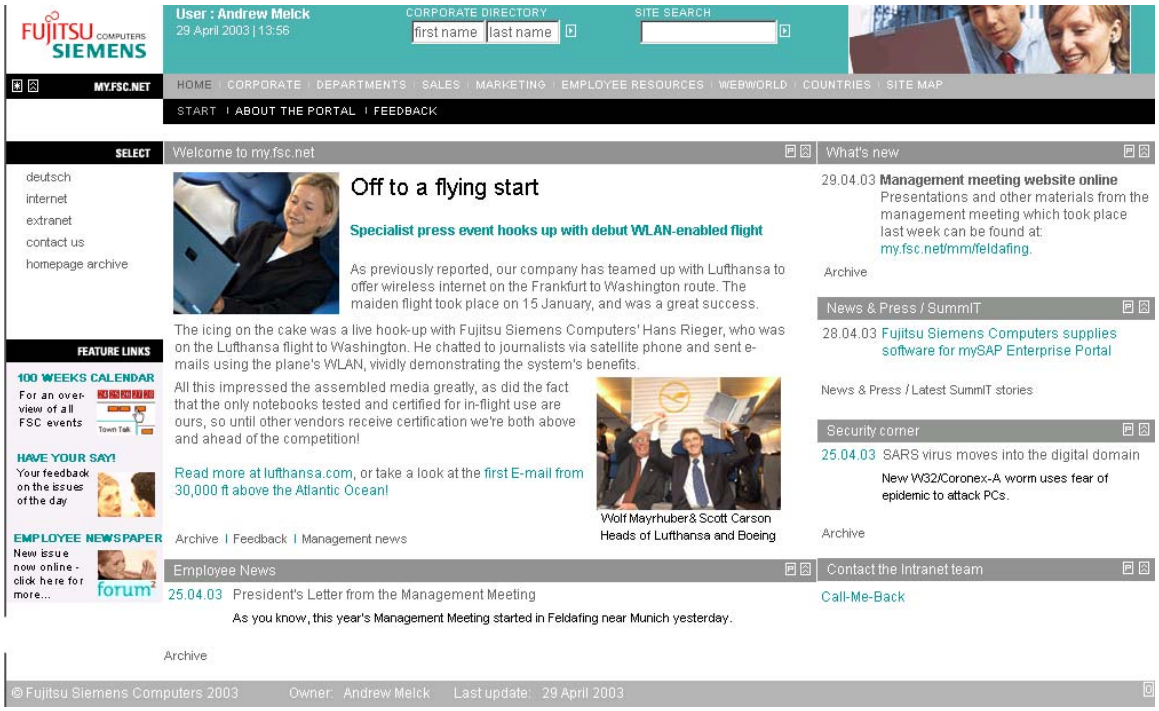
## SUMMARY

Much more than just a portal, my.fsc.net is a marvel that saved employees from the previous substandard offerings. After Fujitsu Limited's European computer operations merged with Siemens AG's computing division, there were more than 200 separately managed internal sites created mostly by people with little or no usability or design experience. Employees had to make the best of using these often horrendous designs. This environment was not only confusing, it was an ideal breeding ground for worms and viruses.

The my.fsc.net portal changed all this, integrating the sites into one consistent system. To do this well, the team approached the redesign as a set of processes, creating applications that could be reused in several areas. This minimized the number of different components.

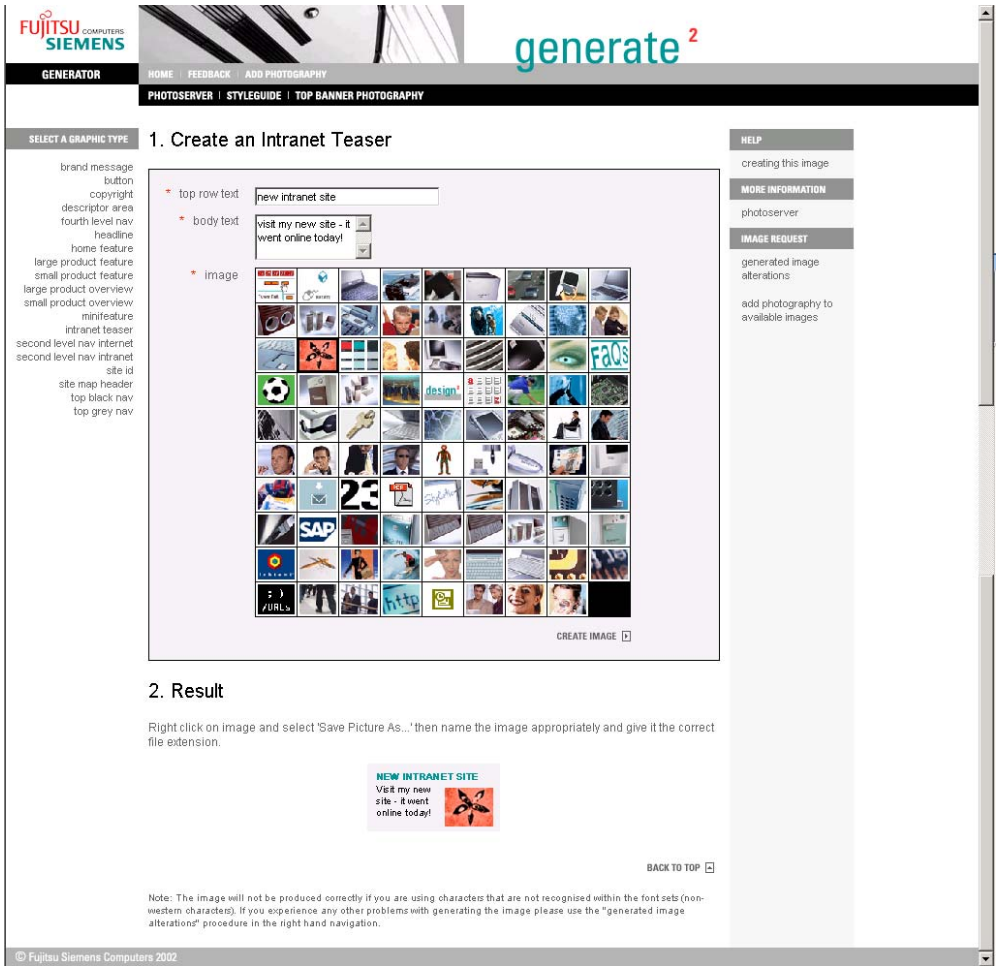
The team also reworked the navigational elements, creating a simple horizontal menu and segmented pages.

As for content, news items dominate the homepage, keeping employees apprised of internal happenings.




Pictured: FSC's English homepage, with user identification, corporate news, and security information.

Realizing the importance of keeping content fresh, the designers created a system that lowered common hurdles to content production. Users can create sites with nothing more that a standard browser. The designers centralized the intranet Web hosting, while at the same time devolving content production and management to the employees. On the homepage, for example, the *Feature Links* (known internally as "teasers") are produced using a simple generator tool. The form provides fields for the teaser's title and body text, and preloaded graphic images that users can choose from.




Pictured: The generator tool is easy to use and lets employees convey messages in a stylish and consistent way.

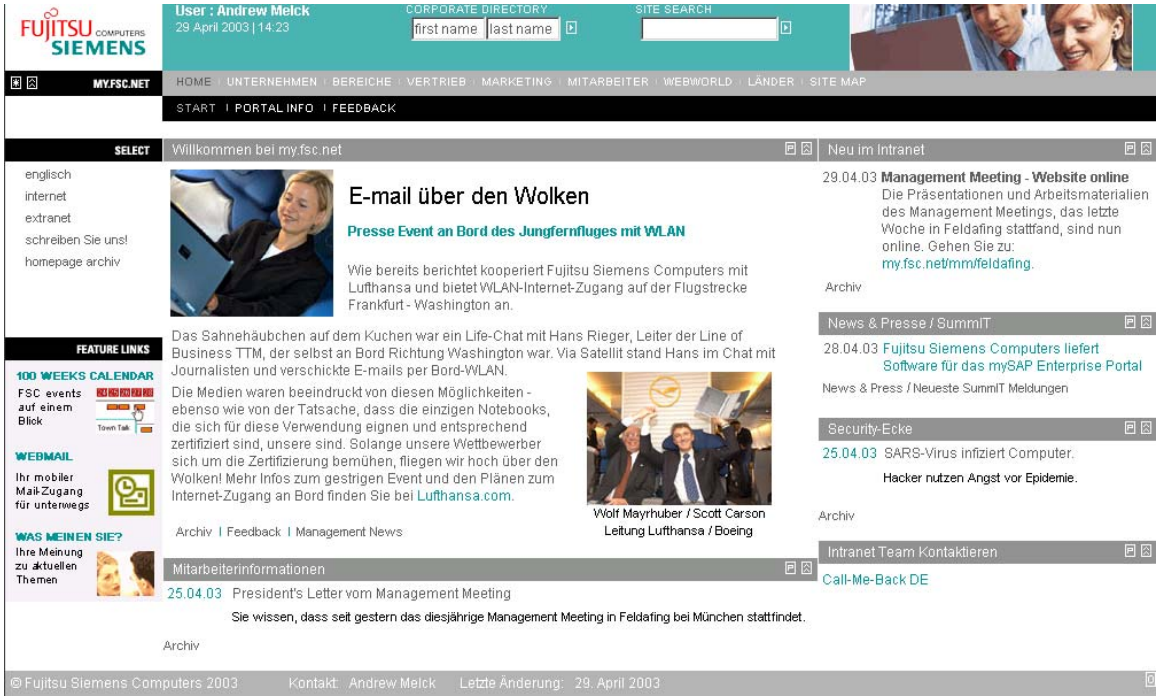
FSC's intranet supports single sign-in and user recognition, and all the benefits they entail. Users enter their passwords only once, eliminating time wasted on numerous password pages. Once logged in, the pages served up contain content appropriate to the user. For example, users get news relevant to their organization, and only users with editing rights see *Edit* buttons and links. Users can also put together a *myhomepage* and subscribe to modules. The logged-in user's name, displayed in the upper left of the homepage, verifies that users are logged in correctly. Finally, user identification saves users time and helps them avoid errors by automatically entering basic information in forms, such as name, email, and so on.

The intranet navigation supports the two most common languages spoken by FSC employees: English and German. The blue banner is always in English, which is FSC's corporate language. Unlike some translated intranets, the content on all pages is the same in both languages, saving employees from having to check between the English and German versions to stay current.

All top-level content — contained in the gray and black horizontal navigation bars — is available in both languages. Other pages are produced in whatever languages the target department or location wants to use. IS pages, for example, are only in English, while the Communications site is in both English and German. And, while

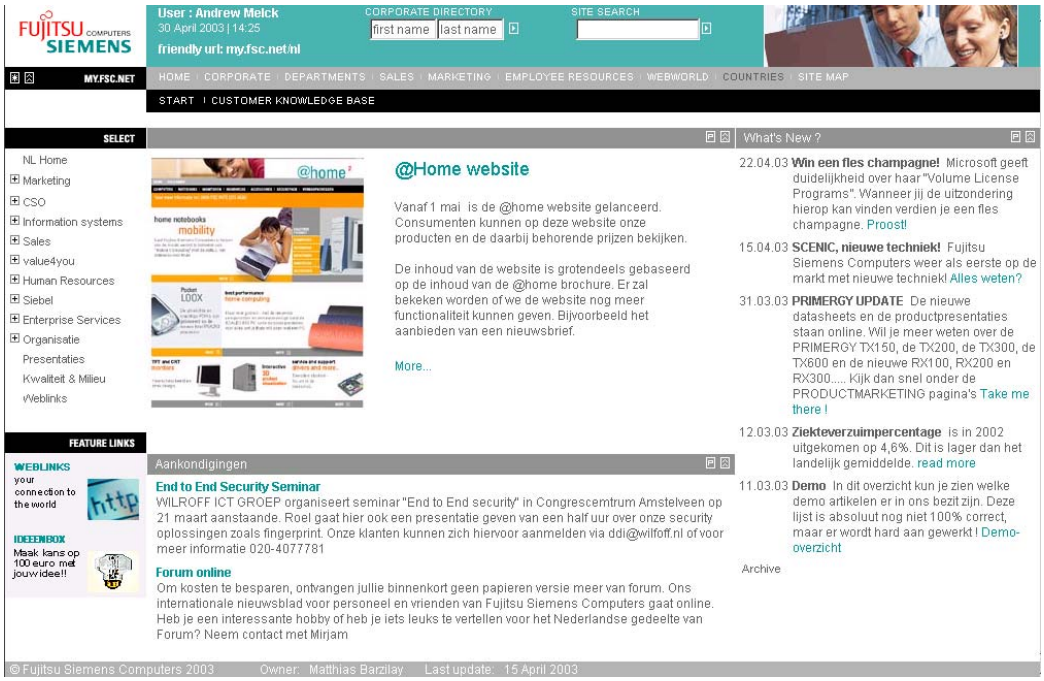
Belgium's official languages are French and Flemish, the Belgium office's intranet is in English to avoid having to keep everything updated in two languages.

As for the translation process, top-level pages are created by the Internal Communications team, which does its own translation. They also keep a list of translators to handle extra work and cover for people on leave.



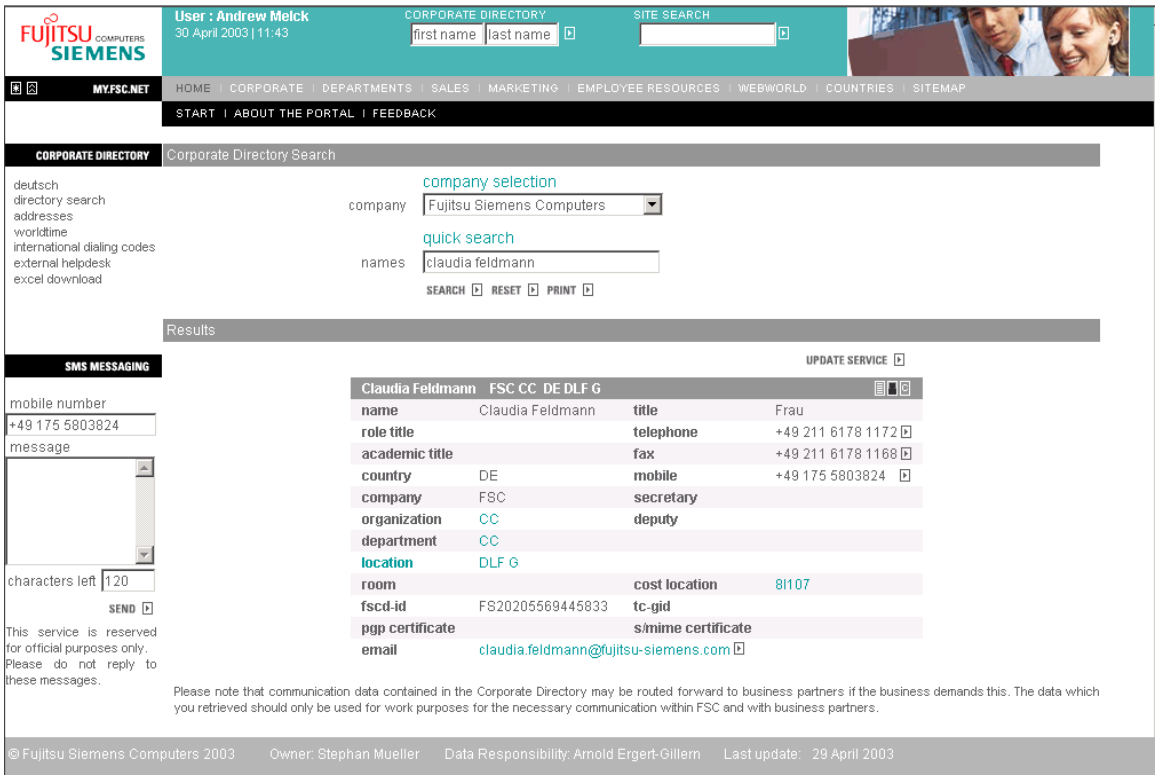

Pictured: The German version of FSC's homepage contains the same content as the English version.

In addition to English and German translations, FSC has intranet versions in Danish, Dutch, Polish, Spanish, and Swedish.




Pictured: FSC's Netherlands homepage shows that, alongside English and German, there's plenty of space for other languages.

The *Corporate Directory* is the intranet's most popular application. After the intranet redesign, overall site usage increased by five times in six months; the *Corporate Directory's* usage increase was even greater. This is not surprising, as the feature is appropriately labeled and very visible at the top of pages. Fields for *first name* and *last name* let users search by either. The thorough results pages offer detailed information, from phone numbers to cost centers. The intranet also supports integrated SMS messaging, automated CTI dialing, and faxing directly from its interface.




Pictured: Search results from the *Corporate Directory* offer information that's thorough and clear.

With robust features and streamlined navigation, FSC's intranet design is sophisticated and understated. When considering the obstacles this team had to overcome, it's an especially impressive rework.

## URL AND ACCESS

Fujitsu Siemens has a standard desktop, and the intranet is set as the browser's default. However, different employees will have different entry points; the UK sales organization, for example, enters via its own homepage. Employees with access to the company's VPN can also access the intranet externally.

The intranet team is working on producing more accessible URLs for the intranet pages. "The system we've got produces horrible, unreadable URLs. We use a series of redirects to put in friendly URLs for the main entry points, and we display them in the banner. In future, we plan to use URL rewrites to fix this problem," says Charles Rodgers, FSC's Web systems director. The Dutch employees' content page offers an example of a "friendly" URL: my.fsc.net/nl.

## CONTENT MANAGEMENT

Because all my.fsc.net's content goes live immediately — there is no staging area — FSC must be careful about who has the power to manage it. A few intranet administrators within the central intranet group create all content for the main pages. Individual groups within the company nominate "power users" to create sub-page content for their country or function.

Although only power users can build new pages, they can set up user groups and assign users the right to update content, upload documents, and produce news. "We're very careful about who becomes an administrator, and quite careful about power users, but below that, we can leave people to their own devices," says Rodgers. "They don't have to learn the whole system if they only want to upload an article, and they only get access to what they need to do."

Apart from three or four people on the intranet development team who have direct access to the SQL and filestore servers, all content is managed via a browser interface, including page creation, layout, and editing modules. Documents are uploaded using Webdav, a Web-based distributed authoring and versioning tool.

The FSC-developed Webdav completely controls the page design in terms of style sheet, layout, font size, and so on. Every page has an owner and a last update time at the bottom.

"The core team for the project needs to own all aspects of usability — including top-level navigation, and layout of the HTML — leaving the content authors free to focus on putting content in," says Andrew Melck, FSC's corporate intranet editor. "Taking away individual Web authoring tools such as FrontPage was a quick way to achieve design consistency — which in this case also includes consistency in terms of usability, of course. All the modules work in the same way, wherever you are in the system, and with a new release, relevant changes are propagated across all modules."

## TECHNOLOGY

my.fsc.net is based on the IBuySpy portal sample code released for .NET beta platform in 2001, heavily modified by the in-house Web team using C#. "We spent a long time looking at standard portal packages, and evaluated at least a dozen," recalls Melck. "In the end we decided against it, partly because of price, partly because we wanted more flexibility. We went live on the beta version of .Net and it's been extremely successful."

The site runs on clustered Windows 2000 servers and the hardware is, naturally, from FSC. Currently, the site has 120GB of storage.

## GOALS AND CONSTRAINTS

1) Bring the more than 200 internal websites together in a single portal with common functionality, navigation structure, and hosting. 2) Improve usability, security, and reliability. 3) Boost the company's image in the eyes of the employees. 4) Shape a real one-company feeling post-merger. 5) Adhere to corporate guidelines.

## BASIC INTRANET FEATURES

Except for a few applications, the whole intranet is now held in one system that supports user identification and single logon integrated to the desktop. Navigation remains consistent throughout, with a language choice of English or German where appropriate. While major applications for supply, logistics, manufacturing, payroll, and so on are run on other applications — such as SAP and Siebel — the intranet links to these and covers everything else, including: departmental, intelligence, and project websites; corporate directory; search; top-level news and management communication; and other applications.

## USERS

The intranet is available to all employees with PC access — about 5,100 people across Europe, Africa, and the Middle East. Of these, about 300 post content into the system.

## USER TASKS

Because of its modular construction, employees can put the intranet to whatever use they require. Some of the major tasks supported are:

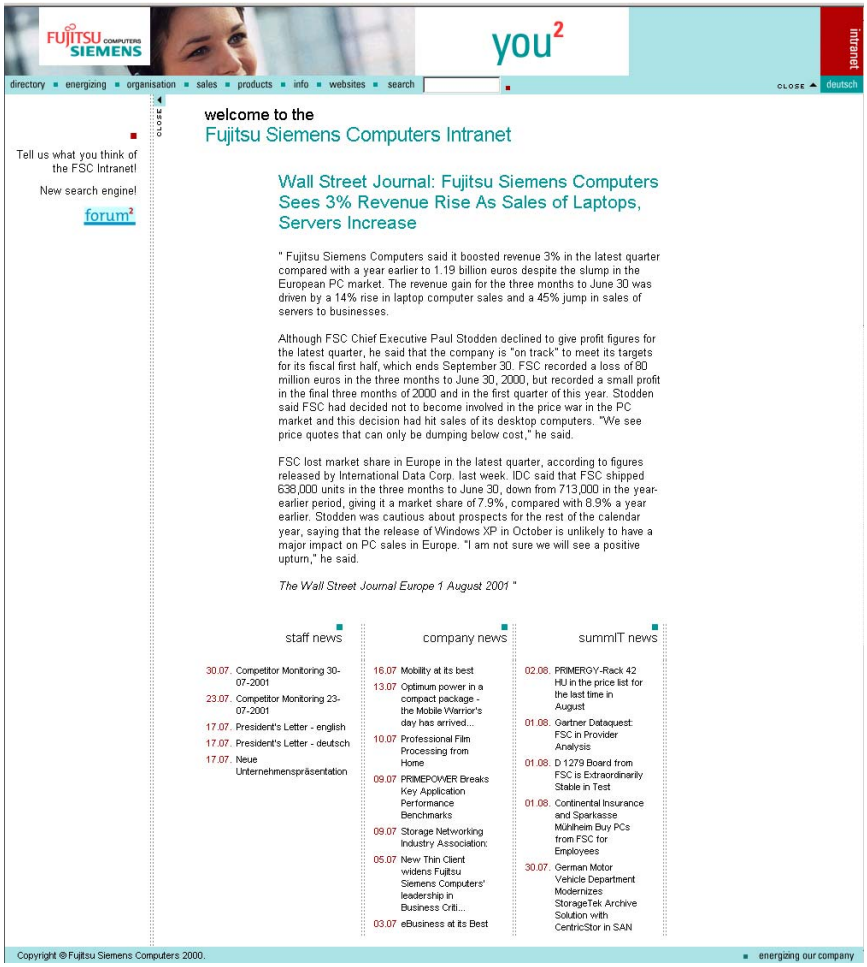
- Find people in the corporate directory
- Read news and bulletin boards
- Use project websites
- Use departmental websites
- Refer to organization charts
- Use file storage
- Access Web mail
- Read about events
- Conduct or participate in polling

## BACKGROUND

In the years prior to their merger, the individual Fujitsu and Siemens computer divisions had grown considerably due to mergers and acquisitions, resulting in a large collection of departmental intranets. When FSC launched the new single platform in September 2001, it had to migrate more than 230 separately managed sites, which were hosted on over twenty servers of various specifications (some of which were sitting under desks rather than in hosting centers).

These sites had come out of quite different corporate cultures, and been developed by people with little or no usability or design experience. "The result was not only confusing and contradictory functionality, but also an environment that was an ideal breeding ground for worms, viruses, and ridicule," says Melck.

In the eighteen months following the October 1999 Fujitsu–Siemens merger, FSC's main priority was to resolve the huge organizational issues involved in consolidating its operations. While it worked to clarify the new corporate structure, FSC created a temporary intranet, intranet.fsc.net, which basically consisted of a new front page, with links to the various organizational sites.




Pictured: FSC's interim portal site was basically a new front page with links to various organizational sites.

"The intranet reflects the state of your company in a way, and at that stage we hadn't sufficiently merged our internal systems to get our content across effectively. We ended up taking a poorly conceived intranet and making it look pretty," Melck says.

It wasn't until April 2001, when the dust from the merger had settled, that work began in earnest to bring internal websites together into a single portal with common functionality, navigation, and hosting. But time was short; senior management wanted the new portal up and running in six months.

## DESIGN PROCESS AND USABILITY ACTIVITIES

The IS and Corporate Communications departments worked hand in hand on the project, with IS driving the development and Corporate Communications liaising with the users. "On this project we really had absolute cooperation from the start," says Melck.

In April 2001, the team began contacting the owners of the company's 200 or so intranets, getting details of their sites and putting all the information into a giant spreadsheet.

The designers decided on the new corporate site's structure by reviewing the existing sites and basically picking the features they felt worked best. The new site was modeled on the two most widely used existing intranets, which served the Augsburg manufacturing site and the German sales team. In addition to having what the team considered to be the most effective designs, they were also the ones with the biggest existing user bases.

There was also a political reason for working with these two sites. "It was our experience that both of these areas had previously been left to their own devices, that little had been done to bring them into line, so we deliberately involved them from the off," Melck explains.

"A group of three or four of us brainstormed on how it should work, using MindManager [visual communication software] to help us," Melck says. "Our approach was very much to start off with an interface based on known best practice, and then let the site evolve through change requests. Extensive usability testing is such a necessity for a website — particularly an intranet where it's your employees' time at stake — that you need to build this feature into business processes on the running system." Melck also notes that in-house development was a key factor. "An external portal solution would require that we pass change requests on to another company, causing unnecessary delay."

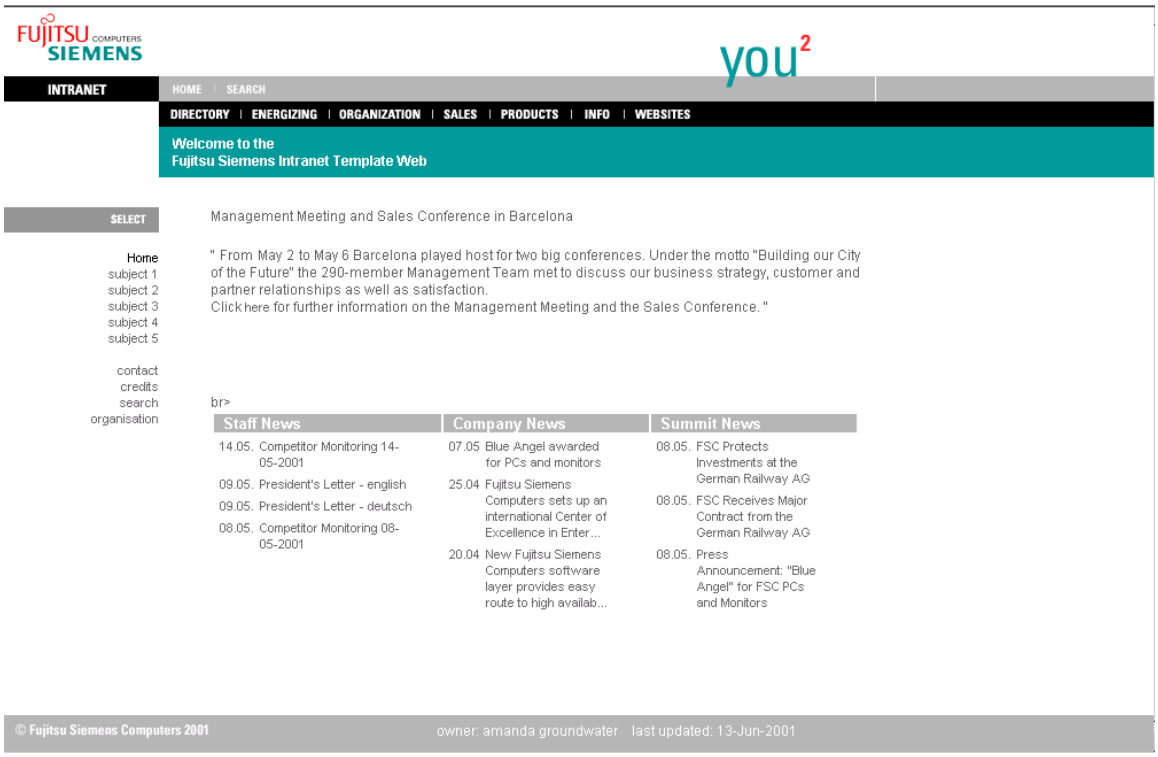
The team selected functionally driven navigation to give users a "one-company" feeling. However, because users' main entry points tended to be organizationally or location-driven, the designers had to carefully consider how these entry points would fit in the top-level navigation.

"For example, you can't navigate to many of the busy main entry points — typically location — from our two top-level navigation bars," says Melck. "This doesn't matter, since people have these entry points preloaded on their desktops, or will bookmark them. It's more important for them to find the high-importance information they may go looking for from the top-level navigation."

The team paid close attention to consistent navigation. The top two navigation levels are fixed throughout the intranet, and the second level varies according to the first navigation category that the user selected.

Rather than attempting to nail down every intranet layer, FSC's strategy has been to fix the structure of the top two or three layers, and let content owners make their own decisions about structure below that. "If someone wants a new portal, it hangs off one of the top forty-six pages," Rodgers explains. "Content owners have editing rights, and put in the page they want to link it to in the top navigation."

Meanwhile, FSC had given a bare-bones brief on the new intranet's visual design to an external design agency for elaboration.




Pictured: The initial in-house wireframe that formed the basis of the new intranet design.

"We wanted an intranet site that was different from but nevertheless a peer of the Internet site," Rodgers explains. "We asked them for something that was nice and simple, with no graphics in the menus. Some content owners felt the final screenshots were a bit dull, but we're aiming to make something that works for business-like reasons. People enjoy building their own websites, but sometimes you have to say sorry, we're running a business here."

Corporate Communications issued somewhat strict house style guidelines relating to issues such as the weight of font and color. The basic page design — a fixed three-column navigation and standard top banner — is enforced by the application itself.

The blue banner across the top of the page is fixed. It's also always in English, which FSC adopted as its corporate language, despite the fact that it has more than 4,500 German employees. The menu items in the gray horizontal navigation are also fixed, but are available in both English and German. The black horizontal bar varies according to context.

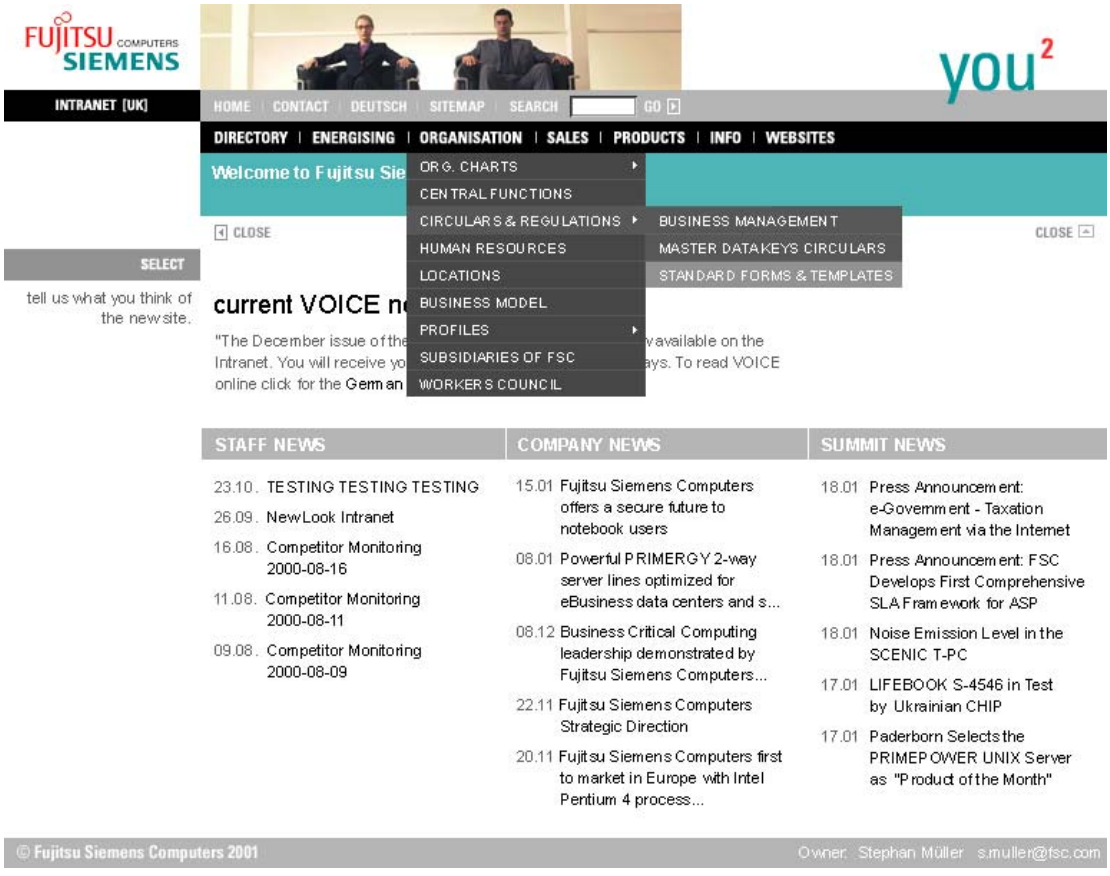
Faced with "horribly short" timelines and very little room to maneuver, the team did not feel it was viable to run extensive pre-launch user testing. Instead, they've repeatedly modified the site post-launch, in a series of small steps that the team views as a constant process of change management.

Initially, the design was reviewed only by Corporate Communications and the IS group. "We didn't let anyone else have a say at all," Rodgers says. "We felt that it was necessary to present it to people as a fait accompli."

The team did allocate a few weeks to testing the navigation, however, which they viewed as more crucial to successful system use. They put the intranet on a test

server and invited a group of about twenty-five users to try it. They assembled the user group partly from volunteers interested in the project and partly from people they selected to represent less tech-savvy users. "We wanted a good spread of Web literacy," Melck explains.

This initial user testing resulted in several changes. The most dramatic was the disappearance of drop-down menus. "We found people got incredibly annoyed with drop-downs. They kept inadvertently dropping down to the fourth level of the navigation, and they found it too fiddly," says Melck. "We wanted something business-like and stable and serious."

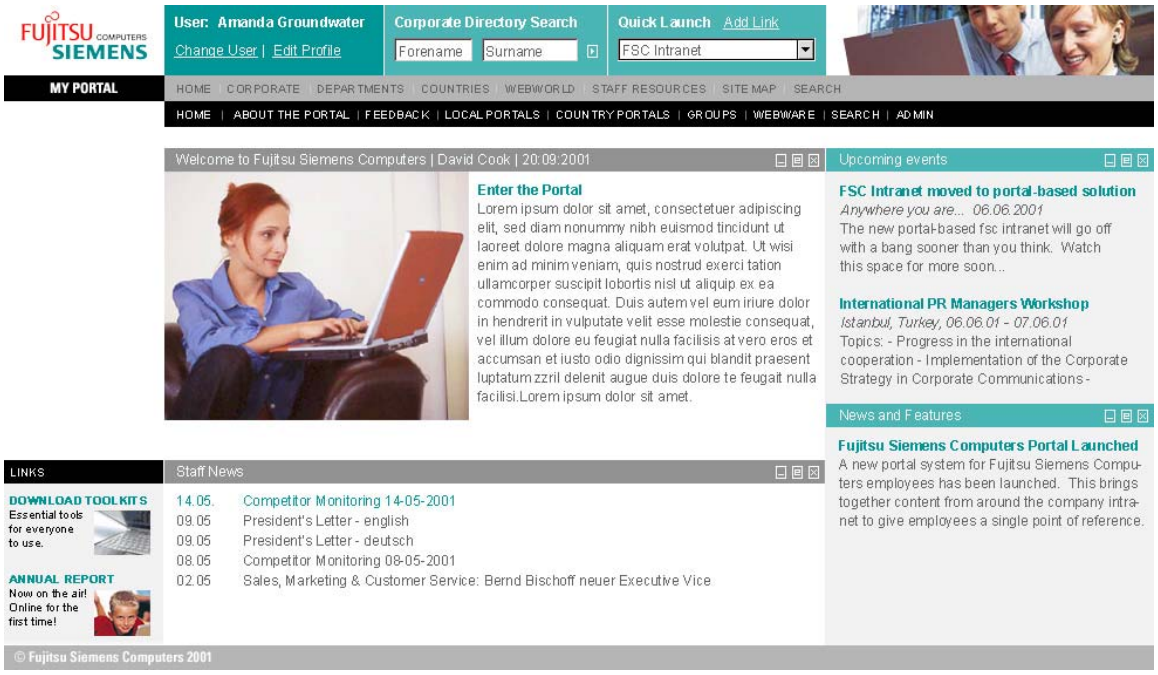



Pictured: An initial draft homepage design featuring a single search box and drop-down menus. The latter were removed as a result of user feedback.

The team also moved the *Corporate Directory*, which initially appeared in the left-hand navigation, to a more visible site in the top banner.


Pictured: An early design mockup with *Search* and *Corporate Directory* in the left-hand navigation, and text links for content owners.

The team changed the links that let content owners edit content to discreet icons on the right-hand side of some of the header bars. "We started with clickable words like 'edit,' but realized that they would soon clutter up the page," Rodgers explains.




Pictured: The final design created by FSC's design agency.

In late September, the site's initial version went live, and the team began trying to persuade various content owners to move their content across. In some cases, this proved easier than expected.

Initially, the team worried that some content owners might resent having their sites subsumed in the larger corporate project. "We thought they'd see us as coming and ruining their systems," Melck says. In fact, the opposite happened; many users "quickly saw the virtues of moving content across to a single corporate system" and became strong supporters of the corporate project.

In some cases, however, it was harder to persuade content owners to comply with the new structure. "We had quite a few battles with people who felt their department was so important it ought to feature in the top-level navigation," recalls Rodgers. "I used to agree with them and then blame Andrew. We did this good cop, bad cop routine…"

And if psychology failed, the team had the huge advantage of top management's backing for the corporate intranet. "The authority for the project came from the executive council, which the Chief Information Officer sits on, and having that level of influence is really important," says Rodgers. "It also helped that we had a centralized budget, whether people liked it or not; they couldn't choose to opt in or out."

Over time, the team found that users moved to the corporate system on their own, simply because it's a better option than their previous way of working.

Though the site was initially launched with very little user input, the team has since adopted an approach of continual improvement. "By adopting a flexible attitude and quick development cycle," says Melck, "usability can be constantly reviewed and improved."

User feedback comes via "call me back" buttons on various entry pages. The feedback goes to a central mailbox, and a staff member then passes all messages on to the appropriate person. "They know they get a response, which has been an important factor in keeping the feedback coming," says Melck. The intranet team has phone conferences every week or two, when user requests are reviewed.

User feedback has resulted in nearly 400 modifications, ranging from minor bug fixes and functionality changes to existing modules (making documents modules sort in reverse alphabetical and alphabetical order, for example) to major enhancements such as a forms module and subscription functionality.

Another post-launch change motivated by user feedback was to modify the form that lets users contribute information to the homepage's *What's New* section. "At first we had lots of mandatory fields, you had to say exactly when the event was happening, and there was no archive," says Melck. "Users found it too restrictive. Now you can put in as much — or as little — as you want." Not only has the team changed the process for updating that section, it's also changed the template used to create new modules. If the module contains dated information, it's now mandatory that users create an archive for it.

## TIMELINE

- Oct. 1999: Merger creates Fujitsu Siemens Computers.
- Oct. 2000: Interim intranet goes live, with new look but few real changes.

- Apr. 2001: Work begins on unified corporate intranet.
- May 2001: Executive Council approves intranet project and guarantees high-level support.
- June 2001: Agency begins design work.
- July 2001: Agency submits design; FSC rewrites brief so that intranet requirements (business-like simplicity, few graphics, usability) are better fulfilled.
- July-Aug. 2001: Users test the navigation; design team makes changes accordingly.
- Aug. 2001: Design finalized.
- Sept. 2001: Intranet goes live.
- Apr. 2002: Bulk of content migrated. Page hit-rate has increased fivefold, and users are increasingly satisfied with performance and functionality.

## RESULTS

The page view rate on my.fsc.net started at about 30,000 page impressions a week. It's now over 500,000 a week, and the site has acquired more users as critical mass within the organization grows.

Consolidating disparate sites into a unified intranet has improved usability, security, and reliability, and has boosted the company's image in employees' eyes. It's also been a decisive force in unifying the company post-merger.

"People have a better feeling that it's a one-company intranet and everyone is working for same company, and they like the fact that there's the same top-level navigation wherever you are — click on the logo and you're back on the homepage," Melck says.

A more tangible business result is that centralizing intranet development has resulted in more effective use of internal resources. "We've been able to close down hundreds of separate Web services and their associated hardware," says Melck.

Now, several related requirements from different departments might lead to the production of a single modular component — such as a table module or glossary — that serves them all.

Centralized Web development also means a better result for more areas of the company: "In the past, we'd get the impression that twenty people were doing the same thing independently. Since we've been collecting requirements and building centrally, we find it wasn't twenty people, it was more like a hundred, but the other eighty just didn't know how to build the thing."

Just as moving house often entails throwing out a lot of junk, "moving to a new system meant that people got rid of maybe 60-70% of their previous content, and we got much more relevant and up-to-date pages. Before, people used to take the same sad old content, paint it blue and say, 'Now the IS guys will go away.'"

## LESSONS LEARNED

Insights from Andrew Melck:

**Take it slowly, but respond quickly.** "One-off big-bang projects don't work for intranets — the system needs to be constantly refined against user requirements, many of which you simply don't know when you start. However, you need to be able to turn these around fast — otherwise users will lose interest in giving feedback."

**Work with your captive audience.** "With an intranet, you have a captive audience who repeatedly visit the site, so they're able to learn things about it. For power users, we use an "e" sign instead of an edit button, for example. This saves space, gives a cleaner look, and is quickly learned by most users."

**Follow the hits.** "When planning your navigation, look at the hits on your existing systems. Which is the most common entry point or page — is it buried away? If so, why?"

And from Charles Rodgers:

**Don't neglect testing.** "With hindsight, we would have tested the software harder before we launched. If the old intranet was offline for a while, no one noticed, but if the new one isn't available for a few minutes, suddenly it's the biggest disaster in the company! System availability is very important; 100% — not 99.9% — availability really is possible and affordable."

**No news is bad news.** "Make sure you have strong content turnover right from the start — preferably using people who've already proven themselves good at doing this and expanding their responsibility."

**Invest in people before technology.** "We wouldn't have spent more money on technology, but more people would have been great. Our development team was essentially two people and a work experience student. They're all very gifted people — but we wouldn't have minded another couple of them!"

# Landor Associates

**Using the Intranet:**

Landor Associates is a global brand strategy and design consultancy. Founded in 1941, Landor has more than twenty offices in sixteen countries. The company has created brands for organizations such as Frito-Lay, BP, Procter & Gamble, FedEx, NYSE, Microsoft, Delta Air Lines, France Telecom, and the Olympic Games in Atlanta, Nagano, and Salt Lake City. Landor is a division of Young & Rubicam, Inc, which is part of WPP — one of the world's leading global communications services groups.

**Design Team:**

In-house

**Members:**

Spencer Mains, chief technology officer and worldwide director, knowledge sharing; Rebecca Titcomb, senior designer; Matt Sherman, senior worldwide applications developer; Jesse Silver, worldwide applications developer; Jennifer Connor, worldwide knowledge-sharing specialist.

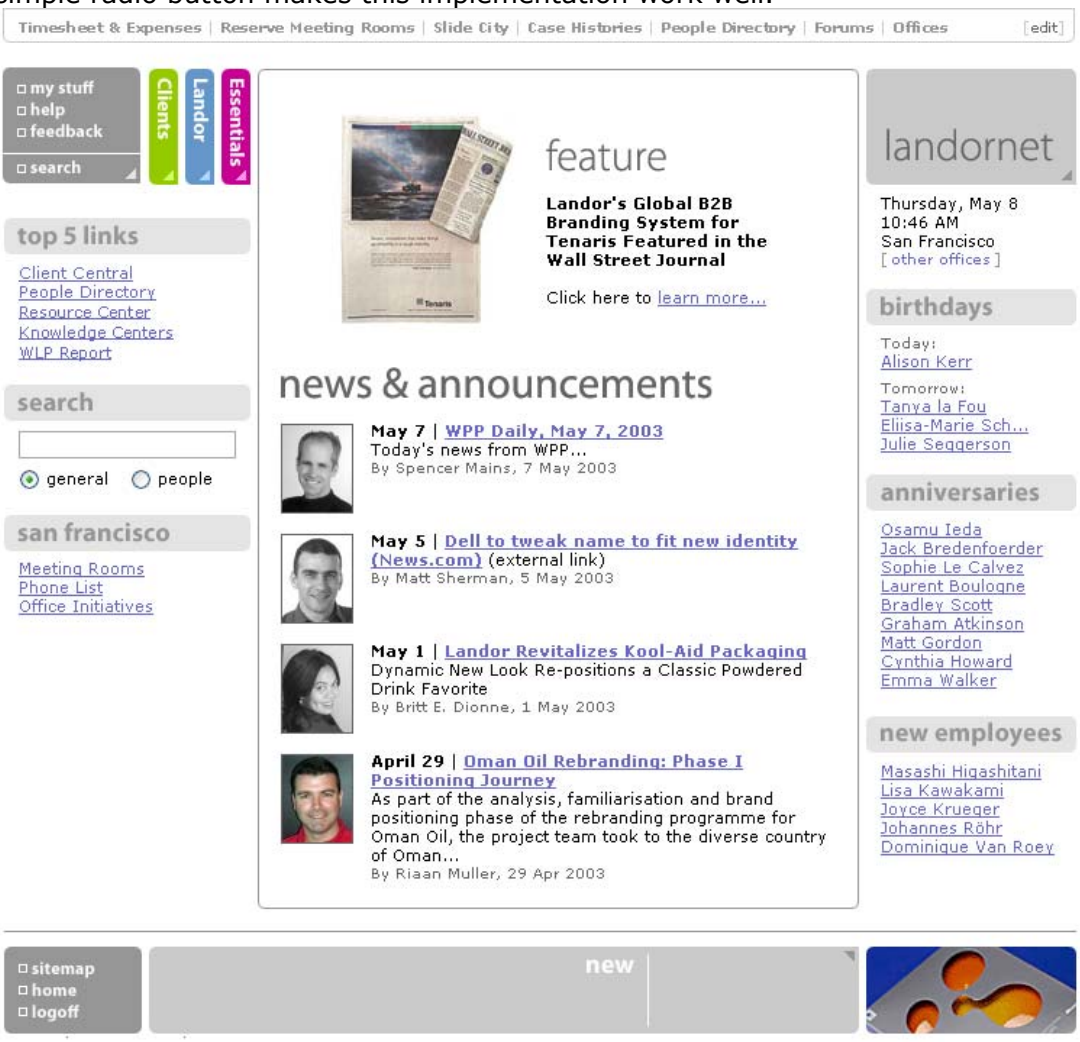
## SUMMARY

The Landor intranet, *landornet*, has an uncluttered and airy feel. These designers did not succumb to the temptation to pack the abundant white space.

On the homepage, the showcased area is *News and Announcements*, with content that caters to all offices, based on the user's login. For example, there are links for the local office's meeting rooms, phone list, and office initiatives. A status message in the upper right notes the selected office and shows the *Other offices* link. The homepage's main *Feature* is either global or local to an office. To ward off staleness, the feature is updated every week.

To promote employee contentment and unity, sections for *Birthdays* and *Anniversaries* appear on the right of the homepage. A list of *New Employees* is also available for anyone who wants to offer a friendly hello or welcome. Anyone on staff can publish news, URL links, or press releases on the intranet using a straightforward publishing system. Employees post news daily, with topics ranging from promotions to client launch announcements to holiday parties.

An open search field doubles as a site search and a people search. A visible and simple radio button makes this implementation work well.

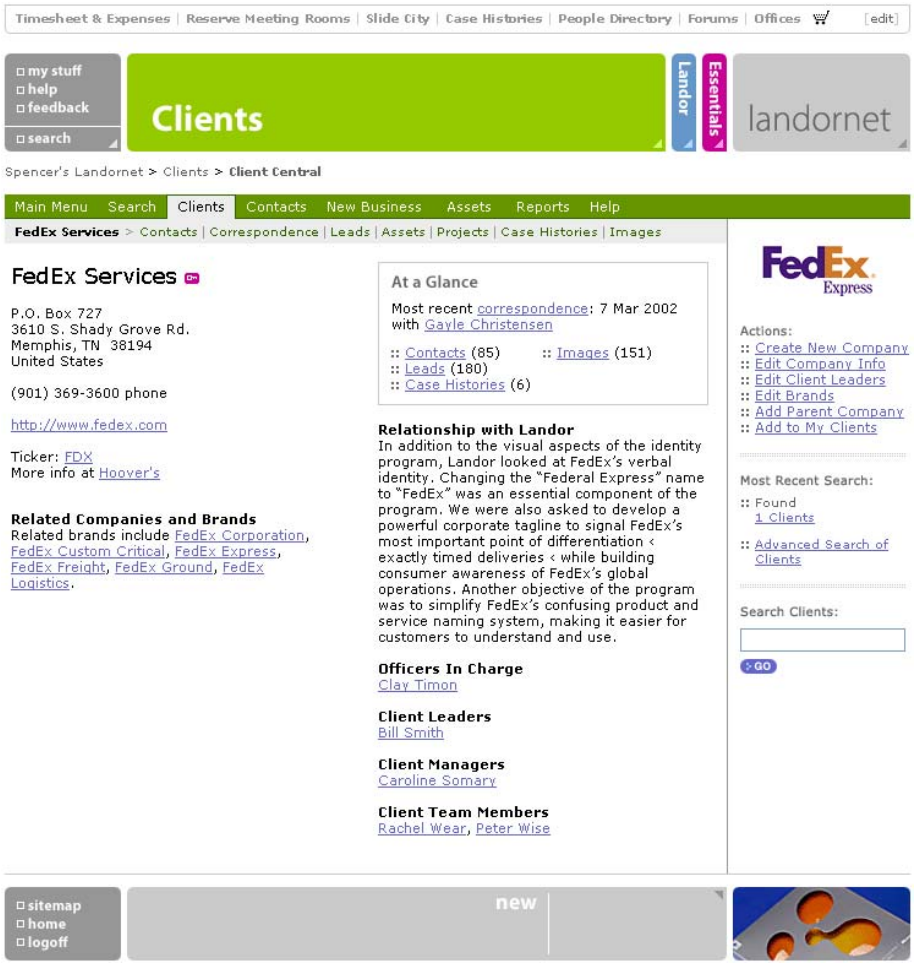



Pictured: The Landor intranet homepage. The page is airy, and offers personalization and good news coverage.

In a design consultancy such as this, many employees need access to client information. Thus, all offices have access to the *Client Relationship Management* environment. All of this environment's imaginative, yet well-organized features contribute to increased service for the client.

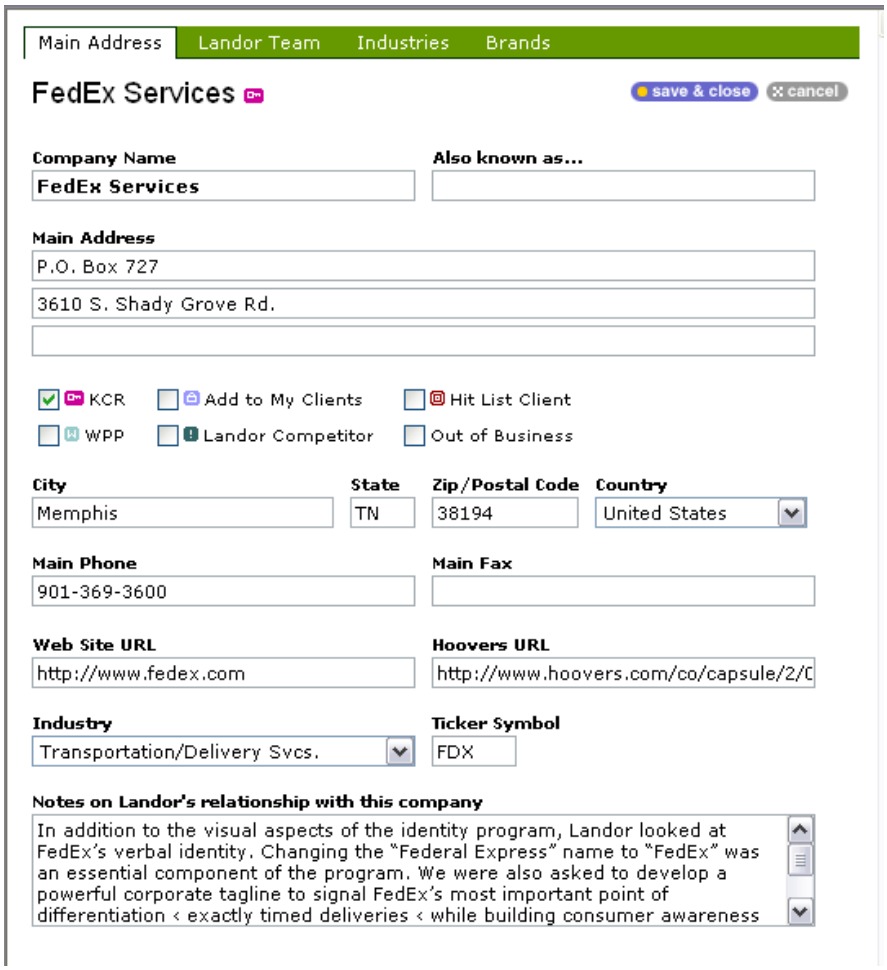
Pages provide a top line overview of each client, including: address, phone number, contacts, most recent correspondences, and general relationship information. Also, officers in charge are easy to find here.

Employees can access these pages by doing a simple search. Alternatively, by simply clicking the *Add to My Clients* link in the *Actions* area, users can add the pages as part of their *My Clients* organizer.



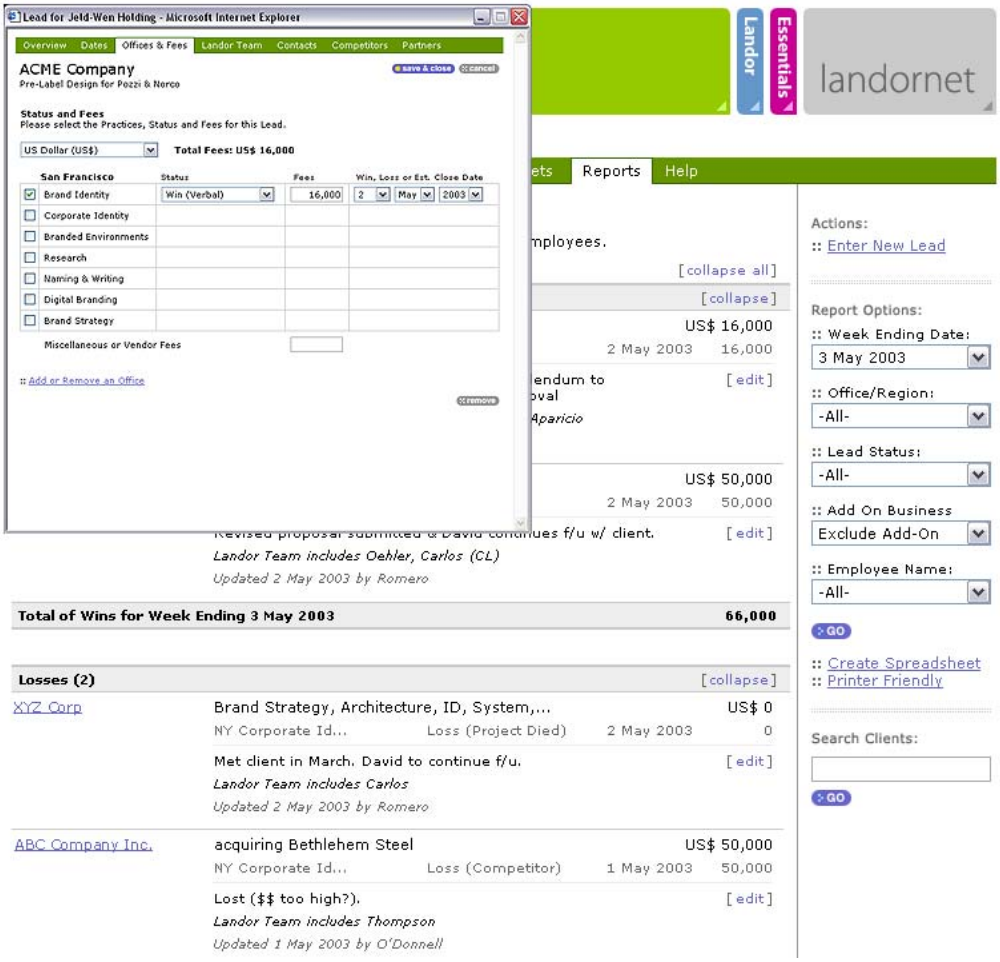

Pictured: A page in the *Client Relationship Management* environment. Pages provide a top line overview of each client.

Editing these pages is a snap: Employees with proper access simply click the *Edit Company Info* link on the right of the profile page to open a very simple form.



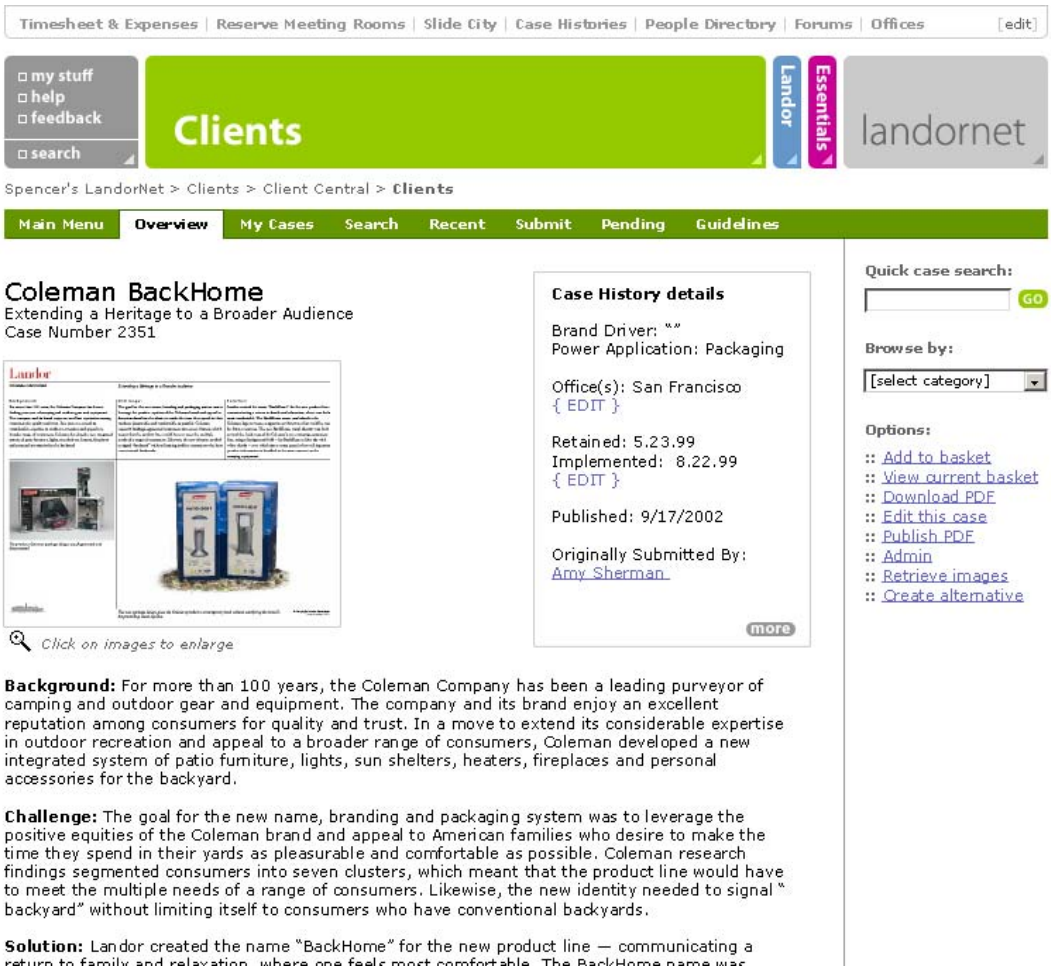

Pictured: The simple form to edit client information.

Customer reports are yet another way to track and consolidate customer information. These reports include information such as lead status, services won, and prices. When bidding for a job, having this information at your fingertips is especially priceless. It's also valuable for internal communication. In fact, all offices in North America and Europe participate in a weekly new business conference call and all participants use the customer reports as a reference during the call. Employees can download a pre-formatted report into MS Excel on the fly using a third-party application. Employees can search for reports in various ways, including by industry, status, office, or people.




Pictured: A typical customer report in the client database and an edit screen for one of the client records. Both pre- and post-sales staff use customer reports.

The more distant past is also a significant aspect of consulting work. Over its 60-year history, Landor has had numerous client engagements, and having an easy-to-use system to capture and share its intellectual property is critical. The intranet helps with this in several ways. Employees use the intranet to create and submit case histories, as well as to get them approved for publication. Users can create pre-formatted PDF documents on the fly using a third-party application and either download them to the desktop or attach them to an email. All active case histories are automatically published to the public website, making this the general content management interface for that process.




Pictured: A client case history page. The intranet provides an easy-to-use system to capture and share intellectual property from the company's numerous client engagements.

Landor's intranet and extranet are highly integrated. The extranet runs on the same platform, hardware, and database as the intranet. Both Landor staff and clients can upload and download certain items. Examples include client assets and employee biographies, which are stored in a single database table and can be written and edited from the extranet or intranet.


Pictured: A page on the extranet, which is highly integrated with the intranet. Items on this client assets page can be uploaded or downloaded either by Landor employees or clients.

The designers' approach to this intranet was to keep the design very simple, elegant, predictable, and consistent. They certainly accomplished this, creating a fast, straightforward method for publishing content and a way to capture large amounts of metadata. All of this makes the content rich, scaleable, and searchable. And the graceful design makes it pleasurable.

## URL AND ACCESS

Within Landor, the intranet is the browser default page; users enter their username and password to access their personalized homepage. Externally, users can log on to the site via a secure link protected by 40-bit encryption. The URL is landornet.com. "That URL was created on our first intranet, and it resonates with everyone in the company," says Spencer Mains, project leader and co-art director for landornet.

## CONTENT MANAGEMENT

Developed in-house using Microsoft ASP and MS SQL, Landor's CMS drives both the intranet and its client extranet. Users have several options for publishing content: They can upload media assets, including documents, image files, and movies; publish URLs; write articles, including press releases, news, announcements, and biographies; and enter data, including contacts, financial numbers, and job status.

All items published contain metadata to facilitate search. "For example, if someone publishes a presentation document, depending on the context, metadata attributes will automatically be captured," Mains explains. "These attributes would be date, time, publisher, office. The publisher has the option — we say obligation — to also indicate industry, people involved, client, and so on."

## TECHNOLOGY

Landor's intranet was written using Microsoft ASP. The team used ExcelWriter by SoftArtisans to produce Excel spreadsheet reports and PDFlib for generating PDF forms and collateral from the SQL database.

Microsoft SQL Server 2000 and Windows 2000 Advanced Server with SSL 44-bit encryption run landornet; its server hardware consists of three Dell PowerEdge servers and 250Gb of storage.

Catering to both Mac and PC users, landornet is standardized on Explorer for PCs and Macintosh, and will standardize on Safari for Macs in 2004.

## GOALS AND CONSTRAINTS

1) Make it incredibly easy for Landor employees and prospective clients to create, publish, find, and manage content. 2) Create a less complex and cluttered architecture. 3) Give the site a new look.

## BASIC INTRANET FEATURES

Basic features include: 45,000-50,000 client contacts and 300-400 company profiles that include real-time win, loss, and prospecting reports; worldwide directory of employees with headshots, bio's, skills, and contact information (images and bio's are easy to download and repurpose for presentations and proposals); more than 1,000 easily accessible client case histories published in multiple languages (all case histories can be converted to PDF on the fly for print or email attachment); searchable image and document asset library with thousands of beauty shots, templates, proposals, and presentations; self-publishing office and community forums, news, and information pages; 44-bit SSL encryption (the industry standard for Internet security) for access from home or on the road; the ability to upload any file type of any size; email integration for enhanced workflow and notification; and, for greater flexibility and ingenuity, landornet is custom built, hosted, and maintained by Landor.

## USERS

The intranet supports about 800 employees in more than twenty offices in sixteen countries. The wide range of job functions and disciplines includes: executive management, marketing and communications, new business development, project

management, and design and support services such as IT, HR, and finance. The extranet currently supports nearly 1,500 individual clients around the world.

## USER TASKS

- Use internal employee directory and external client contact management
- Create and manage content (such as case histories, news, press, bios, and awards), which is multilingual and integrated with public website
- Track and manage projects
- Track and archive media assets
- Report on global business activities (win, loss, pending, pursuits)
- Use online help guides and employee orientation materials
- Review comprehensive Human Resource Information and Tracking System (employee records)
- Read company and industry news
- Review corporate standards and guidelines

## BACKGROUND

Landor's first intranet was launched in September 1996, with the aim of making it easy for staff members to create and publish content. A major new version was released in 1998, following extensive work on the site IA and design. The latest version, which came out in January 2003, was intended to present a cleaner, fresher look. "The previous site had been up for about four years. It was getting tired, and we were getting feedback on the need to simplify the architecture," says Mains.

## DESIGN PROCESS AND USABILITY ACTIVITIES

Landor makes extensive use of the intranet's feedback channel to collect users' views about and requirements for the intranet. "All feedback is typically collected online," Mains says.

User feedback indicated that despite the company's IA exercise four years before, added material was once again making the site too complex.

"The old site had an abundance of categories where you could get information, but users found it too confusing," Mains explains. "The mistake we made was to build the architecture and then add on to it. After four years, it got so complicated that no one could understand where they should go."

To make matters worse, the search facility was inadequate. Created in-house, it was essentially a spider that followed all the links it could find and captured the pages into Microsoft SQL Server. Initially, the search produced reasonable results. But, as content grew, the overhead of the cataloguing process led to performance problems. "The results became inconsistent and generally unreliable, leading to confusion and disappointment," explains Mains.


Pictured: The old landornet homepage. The long list of links on the left-hand side pushed the entire page well below the fold, hiding important information such as employee birthdays.

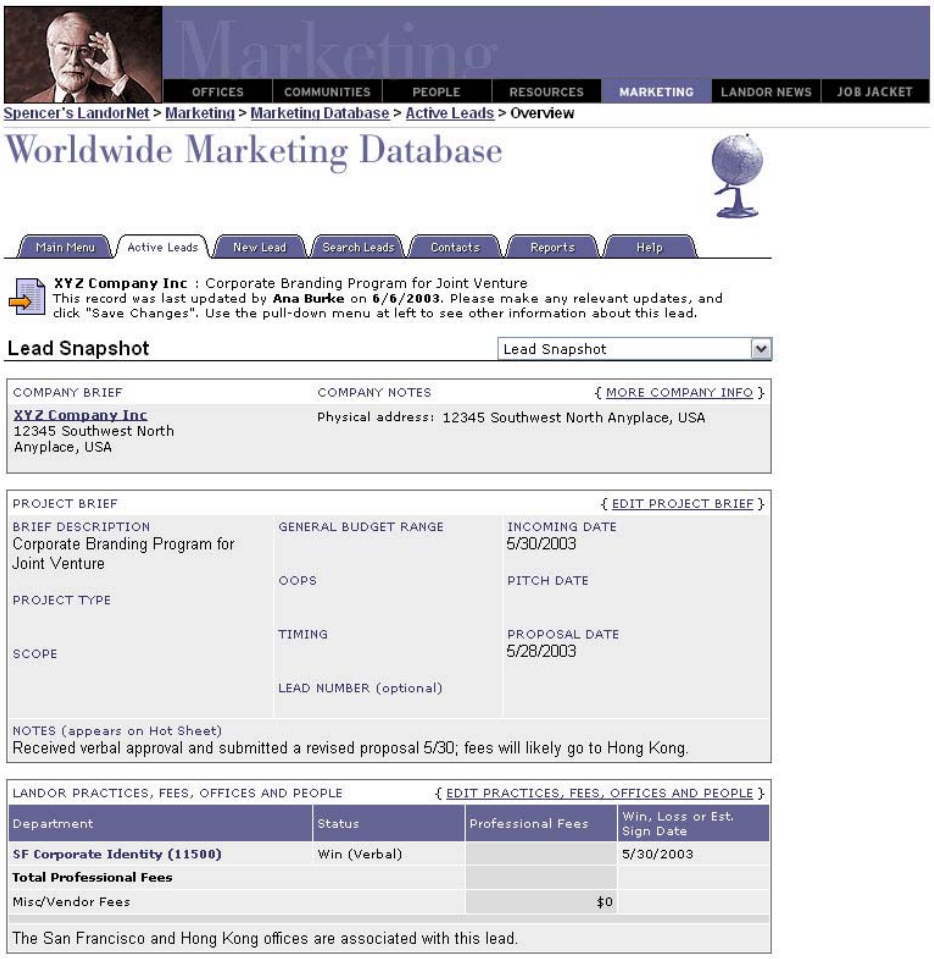
Design-wise, Landor's management felt the increasingly messy intranet did not reflect well on the company's core business of branding and design. "Because we're in the branding business, it's important for us to stay true to our own look and feel," Mains points out.

In the old intranet, each of the six different main sections was a different color so that users could instantly identify where they were on the site. This was a good idea in theory, but the logic of it started to break down as different company functions became increasing integrated.

"A lot of our data integrates several different departments; for example, the marketing and production teams may be in touch with the same people and keep the

same client contacts. Before, this same data was being held in different databases that even looked different."

The old site's "job jacket" application was used for projects with established clients (as opposed to housing pre-sales information about prospective clients), but a lot of the information it contained was duplicated in the marketing database. For the new intranet, Landor decided to integrate all the information into a single application called *Client Central.* However, this broke the logic of having a different color scheme for different departments.




Pictured: The client details in the old marketing database duplicated information used in the post-production environment, but the different interfaces caused confusion.

"People find it hard to understand that the interface is different from the data," Mains explains. "If they see one purple and one blue page for the same contact, they will refuse to believe it's the same information on two different pages. We realized we had to be much more consistent."

It was clear that Landor had to again address the site's IA. In June 2002, the company assembled a working group of ten people from the San Francisco office. The group represented all major company areas, including the digital design department, the naming department, and the HR and facilities groups.

"The most important thing was getting the right people," Mains says. "We wanted people who used the site and were interested in usability for its own sake. We're a small enough company that we could know who they were — we literally went through the directory. It's also important to have a good cross-section of disciplines, not just IT people."

The working group first spent three weeks thrashing out a new IA for the site, based on the members' experience of tasks within their group. "We've learned that having an understanding of common tasks in the company drives usability," Mains says. "We look at what people do today in terms of workflow and how they solve problems."

For example, much of the site's structure is based on folder metaphors, which is a familiar way of working for the company's employees. "We don't think it's our role to change that; we're here to make it more efficient. Intranets shouldn't be a new activity, they should support existing activity," Mains says.

During this time, the group carried out about five sessions of user testing using card sorting. Each session of testing lasted from two to three hours. "We got all the content on index cards, and tacked them up on giant boards," Mains says. "After the sessions were over, we left them there for a couple of weeks. We encouraged the group to stop by the room and mess around, think about things people would want."

The team also involved two landornet users from Europe via a series of conference calls. Landor used WebEx, a third-party online meeting technology, to facilitate this part of the process. "It was important during our conference calls that we controlled the meeting and that end users could see what we were talking about and referencing," says Mains.

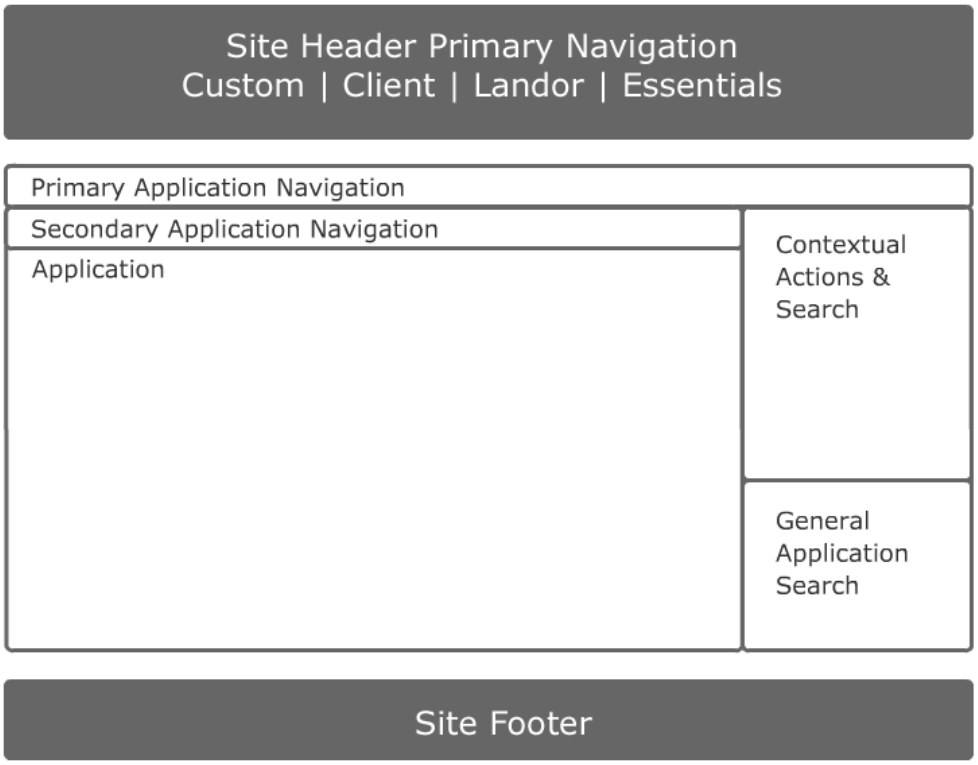
By July 2002, the working group had cut the top navigation's seven items down to three core areas that it felt would remain constant as the company grew. Those were:

- *Clients*: tools and information needed to help Landor staff work effectively with clients, such as slides, case histories, and the *Client Central* database.
- *Essentials*: items such as expense reports and timecards — as Mains puts it, "anything you need to get paid."
- *Landor*: internal Landor information such as applications and identity guidelines.

The nomenclature for these sections came about through a series of interviews and observations in different Landor offices, and — along with customization and search — they make up the site's primary navigation.

During trips to Landor's offices in New York, San Francisco, London, Hamburg, and Cincinnati, team members were also able to observe local users at work on the intranet and note their needs. In two of the offices — London and San Francisco — they carried out specific interviews with local users. "Both offices are main drivers of best knowledge sharing practices; also, London generally would represent the European region, while San Francisco tends to represent North American needs," Mains says.

The team based the secondary navigation on specific applications, each consisting of standard elements: primary and secondary navigation, contextual actions and search, and application-specific search.




Pictured: The ultra-simple page layout of landornet today.

Employees enter a login and password to enter the site, which is personalized according to their profile so that sensitive information — such as client fees — is accessible only to authorized users. "We can design the site to hide information items or even parts of items," Mains explains. "If someone doesn't have access to certain information, they just don't see it. We don't want to have locks on doors. If you have areas that people can see but can't get into, they start asking about getting into that area, and that's a productivity loss."

Users can also customize the site to some extent by choosing the bookmarks that, unusually, run across the very top of the page.

The intranet's simplified structure makes it easier to find information, and the improved search engine (also built in-house) takes advantage of the fact that all site data is structured. The search engine, which is simply a series of queries into database tables, is effective.

The new site is also a complete CMS, and manages a wider variety of content than either of the company's previous sites.

All of the new site's data is stored in Assets, an object-oriented data model designed in-house for flexibility and manageability. Everything from standard Web pages, to files and images, case histories, and discussion groups are driven by a common infrastructure. The search engine is now much faster and more accurate than anything they had developed before. It also lets the company create new asset types very quickly.

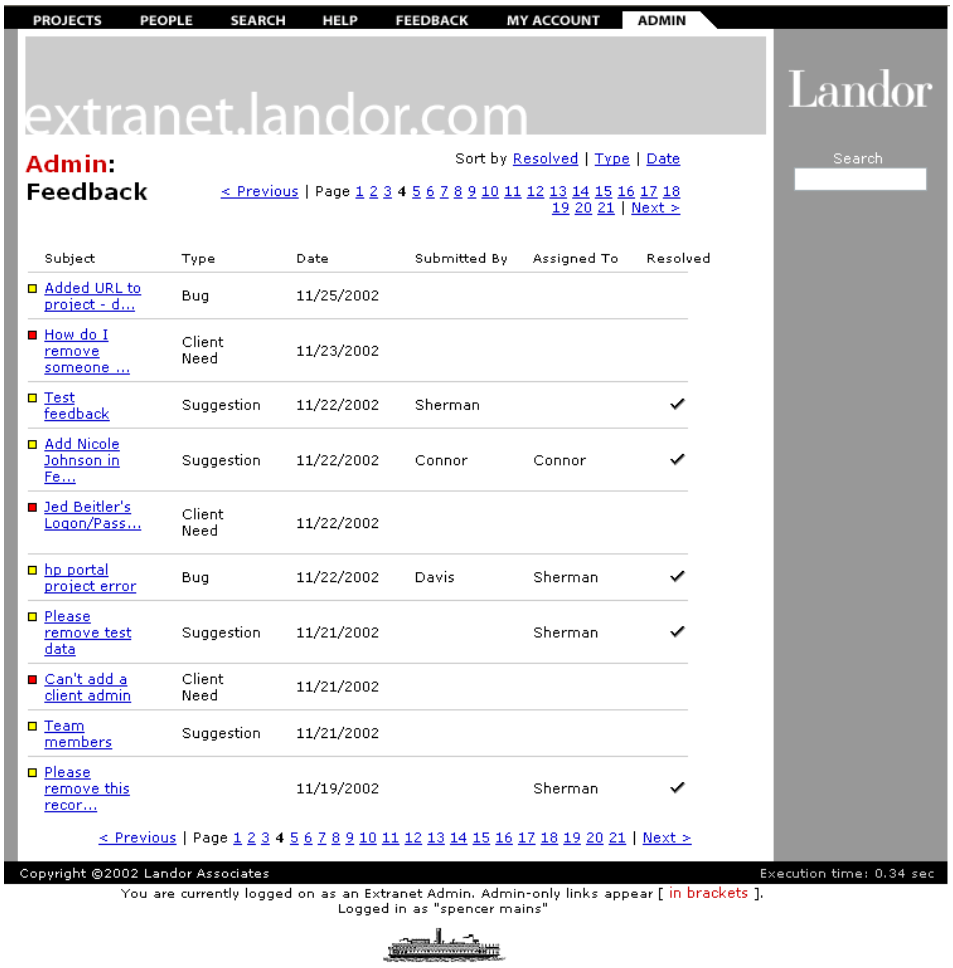
Landor's designer, Rebecca Titcomb, worked full-time to produce a series of site mockups in Photoshop. "We must have had 150 mockups," Mains recalls. "We had a series of concepts for the homepage, then the first and second levels."

Titcomb came up with four different visual treatments, one of which the working group immediately identified as the best. The design is "something that really embraces who we are as a company," Mains says.

The mockups were presented as finished artwork rather than sketchy designs, and Mains believes that this was very helpful both in getting user buy-in and facilitating the working version. "Having a design that looked like a final version, not just a mockup, went a long way to getting good collaboration," he says. "And implementation based on an actual design is just *so* fast — it was a no-brainer for our technical people, they just had to build the back end."

Users found the site easy to learn. "We haven't had to do much training because the site was already tested against a large group," Mains explains. "We used the right terminology, put things in predictable places, the site behaves predictably, and that's critical."

The site's feedback link is widely used, and users are encouraged to use it rather than the telephone. "We've educated them to use that exclusively, because then we know exactly where the feedback is coming from," Mains says. "People are encouraged to use it because we get back to them so quickly, literally within minutes usually — not necessarily to solve the issue immediately, but to tell them what we're doing about it or why we aren't doing something."




Pictured: The feedback management screen helps the intranet team keep on top of user feedback and requirements.

Landor is now using email to foster intranet use within the company. "We know that 100% of end users use email, but not 100% use the intranet, so we're trying to bring them together. People can subscribe to channels such as new business, airlines, and so on, and get news about them by email as a way of driving traffic back into the site," says Mains. "For example, they might get the name of a client in their chosen area, a description of the opportunity, and who's pitching the work. The email is HTML-enabled, so they can click through to the site to get an expanded view of the lead."

The intranet is also closely integrated with the Landor extranet, which was officially launched in June 2001 to provide a way to share media assets between Landor and its clients. The extranet and intranet are built on the same technical platform and are tightly integrated, reducing unnecessary redundancy and increasing information accuracy.

## TIMELINE

- June 1996: Work begins on first version of landornet.
- Sept. 1996: Formal launch of landornet.

- Jan. 1998: Revision of the site's IA and design begins.
- Mar. 1998: New IA and design implemented, introducing a task-based vs. organizational structure
- June 2002: Work begins on complete IA and design overhaul.
- Sept.-Nov. 2002: Database and application development.
- Nov. 2002: New IA and design released to a limited audience for usability validation and testing.
- Jan. 2003: Incremental functional, usability, and design changes based on user feedback; the intranet team holds design meetings weekly for two months to ensure proper implementation of changes.
- Apr. 2003: Latest version of landornet released.

## RESULTS

So far, Mains admits, Landor hasn't had the time or perceived business need to cost-justify its intranet project. It has, however, derived benefits that have clearly saved the company money and improved collaboration and customer service.

"For example, not long ago it took nearly a month for all offices to report their local office wins, losses, pending, and pursuit status into corporate headquarters using spreadsheets, emails, Word documents and so on. By the time the data was compiled and distributed, many collaboration opportunities would be lost. We created an application that streamlined the existing process, which has decreased the overall time spent collecting and distributing from around thirty days to five days — a 500% increase in overall time saved!"

## LESSONS LEARNED

Insights from Spencer Mains:

**Make education part of the deliverable**. "Training and induction is the single best way to communicate the intranet's value, ensure data integrity, and get critical feedback."

**Use common sense and keep it simple**. "If an application or solution can't be easily explained or understood, then it's probably too complicated or is not addressing a need."

**Respond to feedback immediately.** "Within minutes if possible. It doesn't matter if you don't have an immediate solution, but it does matter to the end user if you don't acknowledge the issue or need. By responding quickly, you build loyalty, good will, and trust."

**Email integration is key.** "Our entire user base uses email on a daily basis. Capture the content held in the intranet/extranet and push it to your audience through a subscription system or through other workflow solutions."

**Put a human face on it.** "Insist that everyone has his or her photo taken and made available in a people directory. It builds community and really warms and personalizes the site."

# Mayo Clinic

**Using the Intranet:**

Mayo Clinic is a non-profit academic medical center whose mission is to provide the best care to every patient every day through integrated clinical practice, education, and research. Specialists provide diagnosis and treatment in virtually every medical and surgical specialty, and are organized as a "group practice" so they can interact and support each other while remaining dedicated to patient welfare. To support that care and interaction, advanced programs in medical education and research promote higher standards of medical care, learning, and discovery.

**Design Team:**

In-house collaboration between Publishing and Media Technology Services (PMTS), Communications, and Section of Illustration and Design (SID). Additional support provided by the Human-Computer Interaction (HCI) team and Marketing.

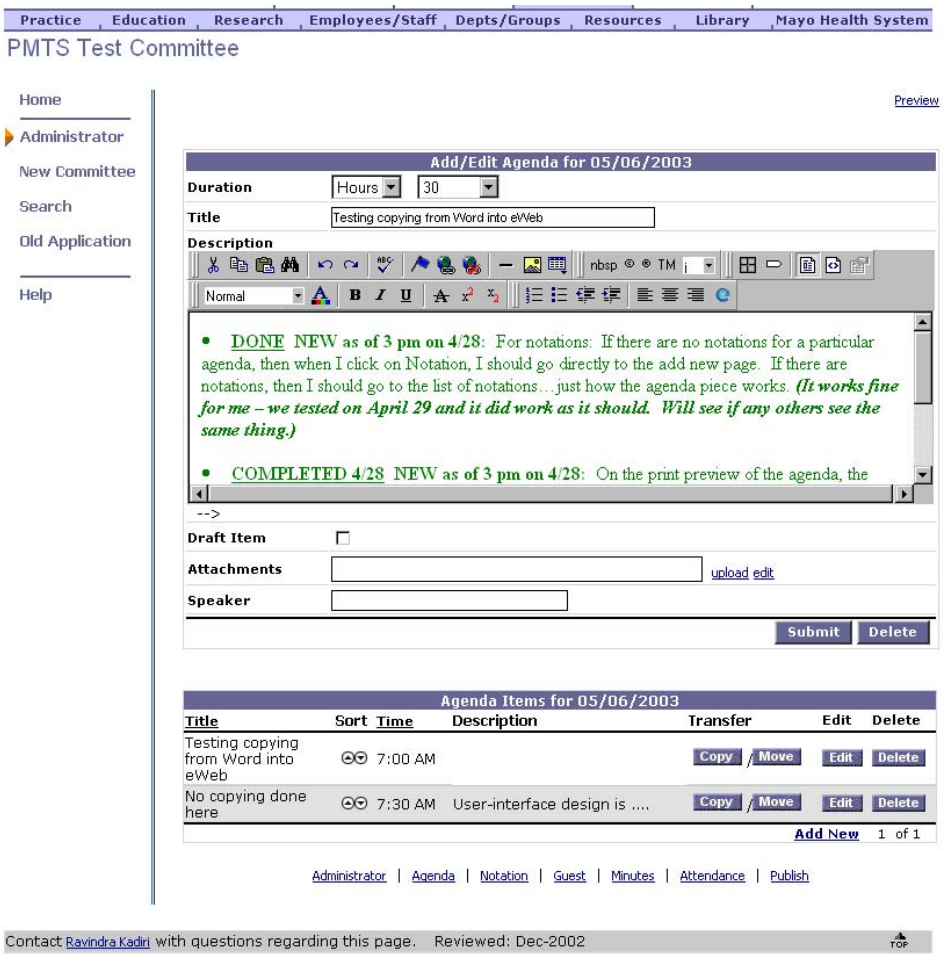
**Members:**

Julie Prigge, PMTS, systems analyst; Liz Daube, SID, Web art director; Tom Suther, HCI, senior analyst programmer; Judy Samson, communications specialist; Mike Woodcock, PMTS, systems analyst; Steve Sponsel, PMTS, section head.

## SUMMARY

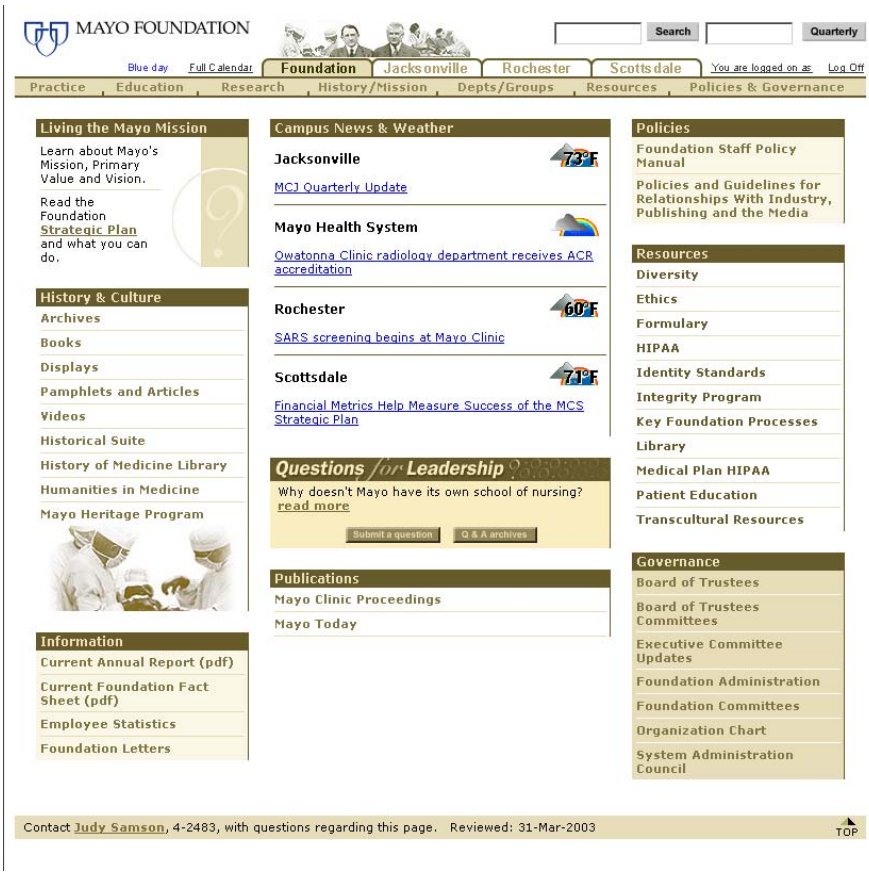
The design of the Mayo Clinic's MayoWeb intranet is predictable but not humdrum. It supports the patient care process in creative ways, from being a notification system for IT application outages to reporting hospital-bed availability.

As a physician-led organization, committees are the Mayo Clinic's fundamental decision-making bodies. Designers understood this process and created an intranet that supports it. The electronic committee management system lets staff create minutes and agendas, entering pertinent information such as title, description, duration, and status into a simple form. They can also add attachments, and view other items for that day.




Pictured: An electronic committee application page that lets users add agenda items.

Surgeons alternate between days seeing patients in the clinic and days performing surgery in the operating room. If surgeons are designated as *orange*, they're scheduled to operate on orange days; surgeons designated as *blue* are scheduled to operate on blue days. This blue/orange calendar designates day-to-day assignments for the year and has proven to be an effective way to manage busy clinical and surgical schedules. To keep all staff updated, the *Clinic* pages' navigation bar shows whether it's an orange or blue surgical day. The *Full Calendar* link leads to a PDF file of the surgical calendar. Also, short news blurbs for each location are displayed, as are links to many more human-resource, administrative, and cultural resources. The main navigation tabs and the secondary horizontal and vertical navigation bars are simple to decipher and use. Each page has both an intranet search and an employee directory, which is invaluable in a large organization.




Pictured: The Mayo Foundation homepage, which indicates whether it's an orange or blue surgical day and displays a surgical calendar link, navigation tabs, intranet search engine, online employee directory, and user log-on notification.

Each Mayo Clinic site has its own intranet tab. At a glance, employees can get news, safety, and resource information, and access other areas' portal pages. The status panel in the upper left has two sections. The first is devoted to each hospital's bed availability. With close to 2,000 licensed hospital beds (in Rochester, Minnesota) the clinic uses the intranet to help manage the patient flow. In the past, all of the physical buildings had lights in the ceilings, which indicated if the hospitals had enough patient beds. If the hospitals were nearing capacity, green lights would change to yellow. And if the beds were full, the lights would change to red. The status panel uses the same indicators. Clicking a status light or a designated hospital takes users to a Web application that describes the reason for the status change.

The status panel's second section shows the status of electronic systems that support the clinical practice. Mayo Integrated Clinical Systems (MICS) is a group of integrated medical systems, and at any given time they can all be operating normally (green), impaired (yellow), or unavailable (red). A blue dot indicates that a scheduled outage notice is available for review.

Using real-world metaphors on MayoWeb lets employees check conditions and status at a glance.


Pictured: The status panel in the upper left indicates bed availability and the application status of electronic medical record applications (RMH is Rochester Methodist Hospital; SMH is St. Mary's Hospital). Portal pages for other areas are also accessible from this page.

An online news application provides employees timely information about everything from parking to medical procedures. To meet all staff preferences, the organization disseminates the information in paper, Web, and email formats. All paper-based forms are also created in PDF format and available on the Web. Another method for disseminating news is through a newsletter application, which lets groups publish targeted periodicals simultaneously to the Web and in print.

MayoWeb also lets staff members have discussions online. Web-based forums are available for discussing medical, legal, and administrative concerns.


Pictured: *This Week at Mayo Clinic* electronic newsletter. The same database is used to create print version for rack distribution.

With many different types of users at the clinic, designers decided to create role-based portals for nurses, residents, supervisors, desk attendants, and others. As we've seen with other intranets, a role-based approach can be challenging because any particular job category can include many different roles. For example, a physician might have patient care, administrative, educator, and researcher roles, and must be able to switch between them quickly and seamlessly. In general, this role-based implementation is simple to work with because the obvious navigation and context helps users easily tell where they are and which role they are logged in as.

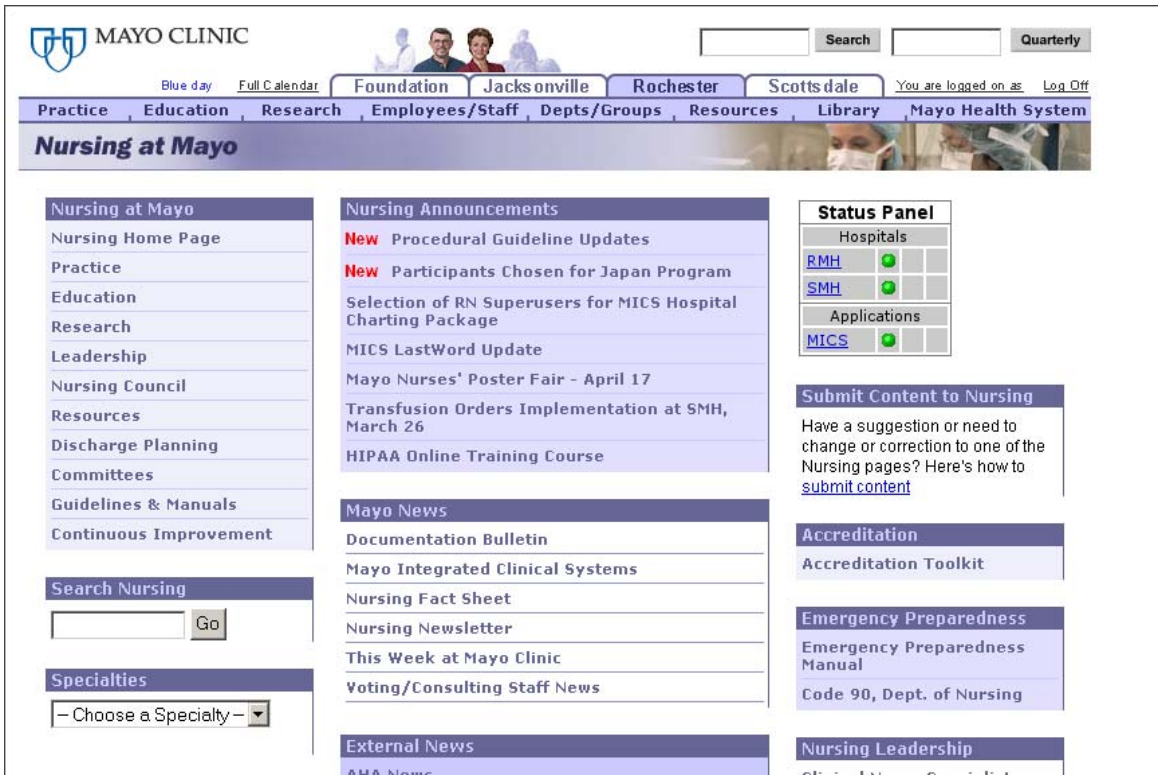
In the medical field, it's important that staff keep abreast of the latest research and procedures. MayoWeb aids in this area by providing *Education* pages that house everything from academic information to committee membership information and general career development.


Pictured: Educational tools and resources for students, instructors, and clinicians.

MayoWeb has no centralized restrictions or control aside from policing the use of the Mayo Clinic brand and logo. Web authors have a great deal of autonomy and can construct a website to their own specifications given the particular needs of their clinical, research, or educational area. Few limitations or rules exist regarding content, design, or functionality. What works in one department may not meet the needs of another. On other intranets, this type of decentralized model has often resulted in incoherent designs.

MayoWeb, however, maintains consistency because authors and developers are asked to follow minimum design and implementation guidelines. Authors are provided with and encouraged to use templates and page parts, such as local site search, feedback forms, and copyright notices. All pages have a basic three-column design with a row of tabs and another horizontal navigation menu. Designers' ability to change sections, colors, and headings is enough to satisfy different groups' needs. And, a security system lets authors and developers provide personalized or confidential information to users.


Pictured: A portal page created for scientists and researchers.




Pictured: The umbrella website for nurses. The drop-down list gives users access to pages for nursing specialties, such as anesthesia, orthopedics, and so on. The page includes the required common banner and footer, and a separate application dynamically generates links to top news stories.

In addition to having set templates and guidelines, the Web service bureau (part of Publishing and Media Technology Services) helps departments and groups create and maintain websites. It also helps employees with items they might not consider or have the skills to deal with, such as audience identification, content development and organization, workflow analysis, HTML coding, and how Web resources help contribute to overall patient care. The Web service bureau includes people from various disciplines, such as systems analysts, Web art designers, programmers, and HTML coders. Communication specialists, along with analysts from the HCI team, provide additional services to the Web team. End-user feedback is gathered with help from marketing, the HCI team's usability lab, and research methodologies such as contextual design.

MayoWeb also supports corporate functions through employee classified ads, cafeteria menus, employee manuals, job postings, and prescription refill systems, for example. Employees can also fill out time cards, request vacation, change taxable withholding amounts, re-direct pay checks, and view their training history through a Web-based HR application.

The intranet team researched the challenge of designing for a diverse user base with overlapping, but largely differing needs. The intranet they produced rises to this challenge.

## URL AND ACCESS

Access routes to MayoWeb vary throughout the organization. At the main Rochester site, around 90% of network browsers have the intranet set as their default page, though users come in via different homepages. Within the organization, the site's URL is *mayoweb*. For security reasons, external access is available only through a VPN.

## CONTENT MANAGEMENT

The publishing and media technology team supplies minimum design and implementation guidelines, and author templates to encourage a consistent look and feel. These guidelines are not mandatory, however, and the organization's 300 or so content contributors can create pages as they wish.

Currently, authors can choose their coding tool and put their content on the development server to preview it. A secured script then transfers the content to the "production" server after the author has been authenticated.

Mayo is evaluating third-party CMSs, but is conscious of the need to retain flexibility. "We have regulatory issues that require us to print out information, so even in the age of the paperless office, our designs have to be easily printable," explains Mike Woodcock, a PMTS systems analyst. "We don't want to buy into a CMS that doesn't give us the flexibility we need."

## TECHNOLOGY

MayoWeb runs on two Sun Ultra II servers with Solaris operating systems. Each server has software RAID and 106Gb of hard drive space, of which 41Gb has been used so far.

## GOALS AND CONSTRAINTS

1) Disseminate institutional knowledge and services to more than 41,000 allied health staff, physicians, and scientists worldwide. 2) Make the Web the first choice for finding organizational information. 3) Enhance job functions by providing operational, procedural, and contact information. 4) Provide personalized tools for completing tasks and organizing information. 5) Push relevant business knowledge to employees based on who they are, what they do, and where they work. 6) Provide anytime, anywhere access to designated portlets via an extranet.

## BASIC INTRANET FEATURES

MayoWeb offers communication and news capabilities. Basic features include: templates and guidelines to support consistent design; news sections to provide staff with timely information in paper, Web, or email formats; forums to support staff discussions of medical, legal, and administrative concerns; an electronic committee management system; department pages; a security system that lets authors and developers segment content for different groups; employee classified ads; cafeteria menus; employee manuals; job postings; prescription refills; and time cards.

## USERS

Users have varied backgrounds and jobs, including: physicians/scientists, allied health staff, clinical residents and research fellows, and students in graduate and health-specialty programs.

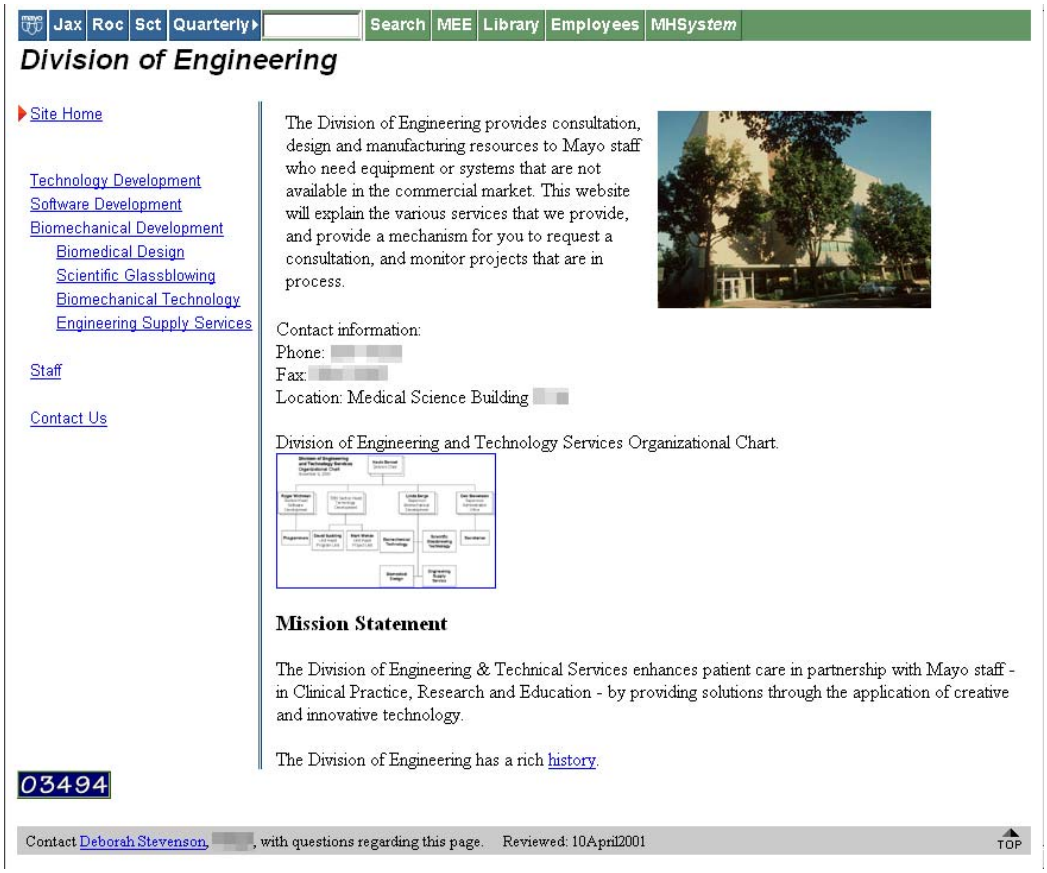
## USER TASKS

- Get bulletins and news
- Participate in committees and discussions/forums
- Fill in time cards, request vacation, and do other payroll-related tasks
- View cafeteria menus, job postings, and employee manuals

## BACKGROUND

Change happens slowly within the Mayo Foundation. The foundation is large and complex, and decisions made too hastily in one part of the organization can easily have an adverse effect on another. Any changes in technology must serve the needs of users who, in some cases, might be making life-or-death decisions on behalf of Mayo's patients.

In the 1990s, the Mayo Foundation built up a collection of independent departmental websites containing at least 150,000 pages. Its intranet was rudimentary — basically just a homepage featuring a long list of internal sites, and a standard top navigation bar that sites could use.



Pictured: The *Division of Engineering* page shows the top navigation introduced in 1996.

In 1999, the foundation saw the need to use the Web more effectively, and set up a Web team within the PMTS department. The team members soon realized that to make it easier for users to find reliable, up-to-date information, they'd have to create a meaningful structure for the intranet.

## DESIGN PROCESS AND USABILITY ACTIVITIES

In June 2000, Mayo's newly formed Web team pulled together a multidisciplinary committee, the Intranet Organization and Content Management Workgroup, to decide how to organize the intranet. This workgroup included nurses, physicians, researchers, educators, and administrative staff.

The workgroup defined the seven content categories that make up the secondary navigation level: practice, education, research, employees/staff, departments/groups, resources, and library. The workgroup also designed a new top-level navigation bar, which was tested in the Mayo usability lab in October 2000. There were ten participants, five with more than one year of Mayo service, and five who'd been there less than a year.

Participants found the information categories usable and they liked the new visual design. The color scheme, however, made some of the links hard to see, and as a result of the study, the designers came up with a modified version. Users also felt that the top navigation took up a lot of page space, so the designers built two versions of the top-level navigation bar: a larger navigation bar for the top-level pages and a smaller navigation bar for all subsequent pages.


Pictured: A proposed homepage design shown to users in 2000. Feedback indicated that the dark blue color made links hard to see, so the team modified the design.

"The biggest discovery was the fact that people have many names for the same thing," says Julie Prigge, a PMTS systems analyst. "As a result of this, we cross referenced many links from various categories and used terminology people were used to. For example, our helpdesk is referred to as *helpdesk*. However, the department responsible for that is Communications Technology Services. No one could find the helpdesk under that name. So we pulled out certain functions and listed those as well as the department that might be responsible for the service."

The workgroup also discovered that people tend not to spend much time navigating for information, preferring to go straight to the search facility. However, because the intranet pages were not tagged with metadata, the search results left a lot to be desired, and improved search was put high on the priority list.

The design included a dark blue bar across the top of the page and down the left side. The left side featured navigation items, but many participants missed these links because of the darkness and richness of the blue. After the study, the designers tamed down the intranet, but still kept the new visual theme. Again, they developed two versions of the top-level navigation bar: a larger bar for top-level pages and a smaller version for all subsequent pages. Real estate was a main concern with the larger navigation bar.


Pictured: The Mayo homepage from 2001, before the current intranet project began. The homepage is still just a list of links — albeit structured into categories.

Version 1 of MayoWeb was launched in January 2001, and had an area for feedback on the changes. This feedback resulted in several further changes. For example, users were very vocal about wanting a link to the Mayo Foundation library within the subnavigation. "The library is accessed by many groups at Mayo — researchers, physicians, students, residents and so on — and is a valuable resource," says Prigge. "When we took this away, we heard about it. These groups wanted quick access to this resource and didn't want to click several times to find it."

Meanwhile, the workgroup was discussing changes to the site's IA, including "chunking" information to create a more manageable structure and navigation, and improving the top menu bar. In July 2001, the workgroup published a report with recommendations for further intranet work, including work on portal pages, personalization, a better search engine, and page templates. At this stage, the workgroup disbanded and handed the intranet project over to the Web team.

For phase two of the portal project, the Web team ran focus groups, sent out email surveys, and carried out a usability study in the lab to test the intranet's chunked content categorization against the former alphabetical listings. Predictably, the study showed that participants were better able to work with the chunked format, since there were fewer choices in the list to deal with. Organizing the content was the next biggest challenge, and the usability study indicated that doing it properly would require careful thought.

"We found through user interviews, usability laboratory studies, and surveys that staff resort to the Web to accomplish a task," says Woodcock. "So task-oriented content like procedure manuals, links to applications, and medical reference information tended to bubble to the top pages of our sites, while mission statements and staff biographies and pictures became less prominent."

MayoWeb reflects the flat structure of the Mayo Foundation itself. Organization-wide resources are held in the main portal pages, which have a brown color scheme. Behind the portal pages, practice, education, and research each have their own subsites, and each needed a redesign to bring it into the new look and feel.

The design team tackled the practice subsite first. In designing the practice site's structure, the team found a conflict between the information users wanted to see and the messages management wanted to get across. "The leadership wanted initiatives such as quality of care and wise use of resources to be navigational items, but we felt those terms were too vague," says Lizabeth Daube, Web art director for SID.

Fourteen people tested the practice portal's prototype design. Participants represented a range of potential users, including residents, staff physicians, pharmacists, nurses, therapists, dietitians, unit and medical secretaries, and clinical assistants. "With all of these various specialties involved, we really learned a lot about how these types of employees function throughout the day, the resources they utilize, and how they use the Web," Prigge says.

In addition to the usability study, the team sent email questionnaires to staff physicians and held some face-to-face interviews. The Clinical Practice Committee also reviewed the prototypes and gave the Web team feedback.

The team's goal was to introduce a task-oriented structure that helped users more easily find what they needed from an increasingly long list of resources. However, they discovered that while users welcome major improvements in design and functionality, they also resist too much change too soon, fearing that it will prevent them from doing their jobs effectively. On the basis of user feedback, the team developed and introduced a task-based navigation model that users were happy with.

During phase two of MayoWeb's makeover, the Web team experimented with contextual design techniques to restructure its *Identity Standards* website, which is where users go for marketing and brand information. In addition to Mayo's HCI team, which works on various online projects, the foundation has about twenty-five people trained in contextual design, and they led the process.

"The goal for using contextual design was to better understand the various audiences the site was being developed for," Prigge explains. "Part of the discovery process uncovered various work processes that occur even before the website is accessed. This was very helpful in understanding not only the website's role, but Media Support Services' role. Our goal is to utilize this process more in the future because of the information it provides about our customers and how they do their work."

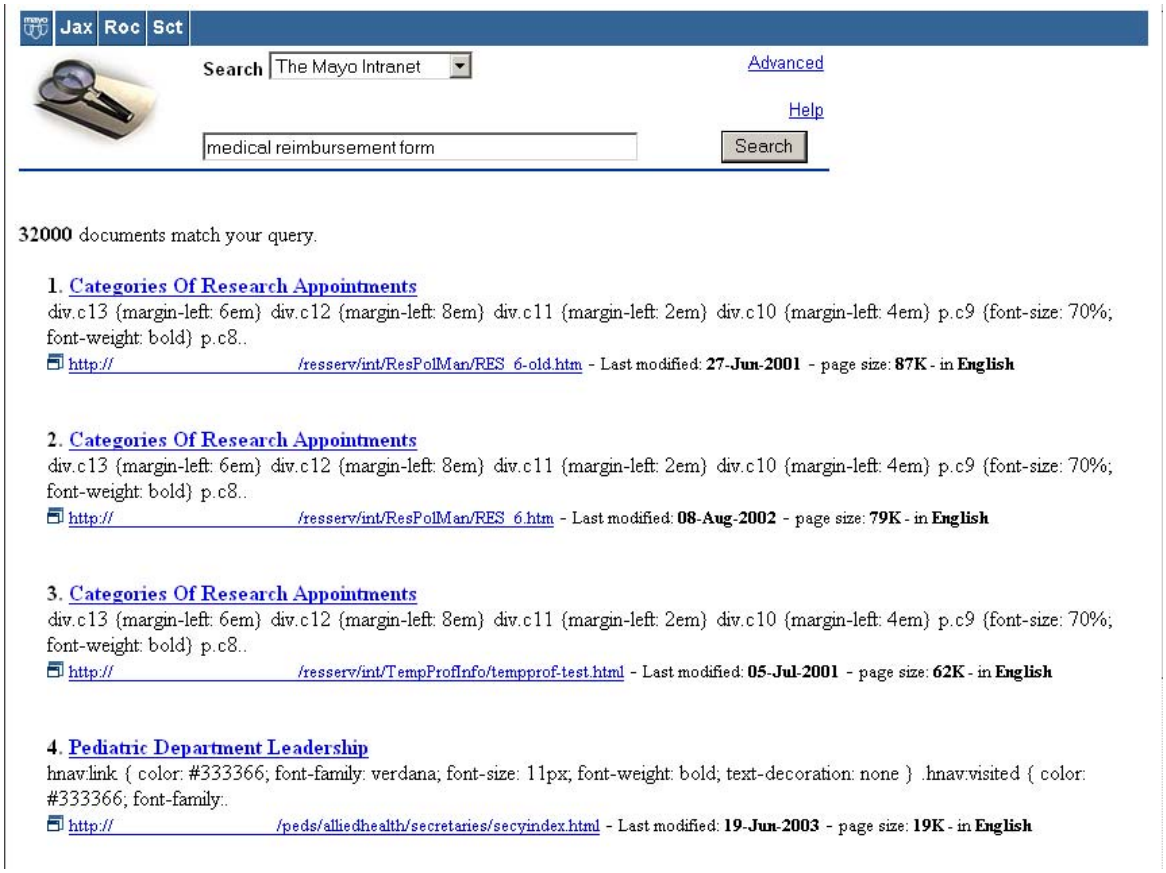
Another goal of phase two was to create templates that content creators could use to give the intranet a more unified look and feel. The Web team created two types of templates: one for the many static pages, and one for dynamic pages such as the *Quarterly Directory*, news publishing system, stationery request system, surgical schedules, absence calendar, online forms library, and meeting room reservation system. In both cases, the team accommodated Mayo's consensual, non-hierarchical

culture by including a degree of customization in the templates that lets authors create their own identity within the corporate look and feel.

Much of MayoWeb is still developed in HTML, and the team has started to involve HTML coders in any discussions about new design and functionality. A new design that looks great on paper might be impossible for less-skilled page authors to work with. "Our HTML coders have insight into the capabilities of the authors they support, and are able to create templates that incorporate design, usability, and functionality," Woodcock says.

MayoWeb's previous search engine used AltaVista technology and had an expected lifespan of two to five years. It was also installed as a set-up-and-forget engine. As the institution moved more line-of-business applications and information on to the intranet, leaving the search engine to its own devices was no longer satisfactory.

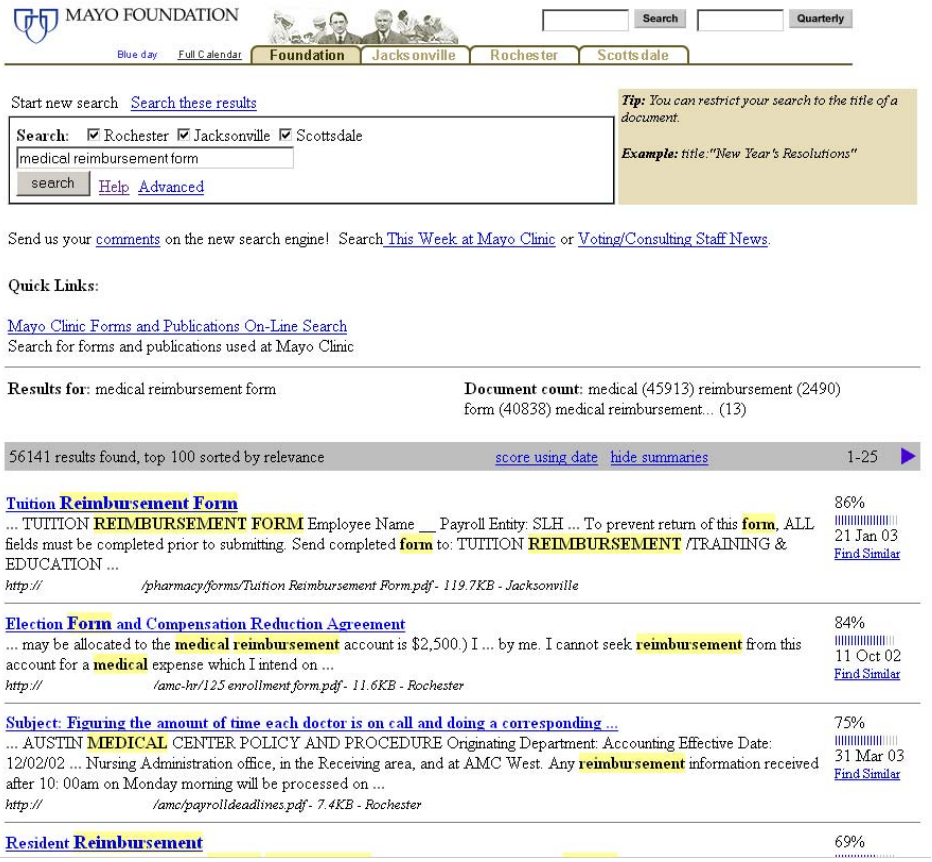
"Most intranet search engines were copies of popular Internet ones, and it took a while for the search community to recognize the particular needs of intranets," Woodcock explains. "We needed tools within the search engine for authors to submit and update their sites themselves, and to add suggested links after analyzing what was being searched. We also wanted an engine that could work within our intranet security model, and more granular control over what the search engine spider would index."




Pictured: A page of results returned by Mayo's previous search engine. The HTML and CSS code formed part of the page banner, and often appeared at the top of results because the spider picked it up as the page's first chunk of

"readable" content. The new search engine lets Mayo use <noindex> tags around specific page content.

In March 2002, Mayo introduced a new Ultraseek search engine based on word-frequency and link analysis, which offered better control over spidering, results presentation, and relevancy. Since then, the daily query average has climbed from 250 to more than 2,000. The team monitors search requests and, based on frequent queries, creates suggested links that appear above the results.




Pictured: The new search engine improved relevancy and encouraged more users to take advantage of the search facility.

However, introducing a universal site search has proved impossible. "Many Web-based applications — like our news applications — were not created with search engines in mind," Woodcock explains. "Result pages from a search returning those listings contained no meaningful information. We had to rework some of those applications so they provided their own search capability, and then we added links to those search pages on the institutional search engine. We then stopped attempting to spider the news application sites."

In the future, the team plans to explore automatic content classification, taxonomies, and "intelligent agents" that learn how individual users search and derive relevancy.

The latest MayoWeb was launched in late 2002, and acceptance of its design and navigation standards is growing within the organization. Early on, according to Steve Sponsel, PMTS section head, "the team had a huge uphill battle to establish a standard top nav, but now the standard top navigation bar is now almost universally

used. It has even been adopted by subsites like *Research*, which have retained their own style for other aspects of the page."

The new version caught on quickly, according to Sponsel. "The payback for page authors of following the guidelines is high enough, in terms of increased usability, to establish why people should use them."

The team is now working on new HTML template files that will address different page- and site-layout requirements, let them introduce new page authoring tools, and reflect new usability standards.

"Moving towards task-oriented websites meant that we had to display content and Web applications for both individuals and departments," Woodcock explains. "Our traditional work unit templates will still accommodate organizational units, collaborative work groups, and special project teams. We have also created an umbrella template based on the work unit template that is meant to provide access to multiple work units. The umbrella template is intended to be more text-oriented than a work unit page, yet not as link-rich as a portal page."


Pictured: Mayo's proposed new umbrella template for work units.

Alison Andrews, an HCI specialist at Mayo, helped design the new templates after paper prototyping with users. Her goal was to feature important content at the highest level, yet still let users easily access the core information below. To meet this challenge, she had to list buried items and align them with the site's bigger picture.

The new templates are optimized for Dreamweaver and Macromedia's Contribute, but also let advanced authors code in any text editor. If this template-driven

process passes usability and technical testing, it will become Mayo's recommended authoring platform.

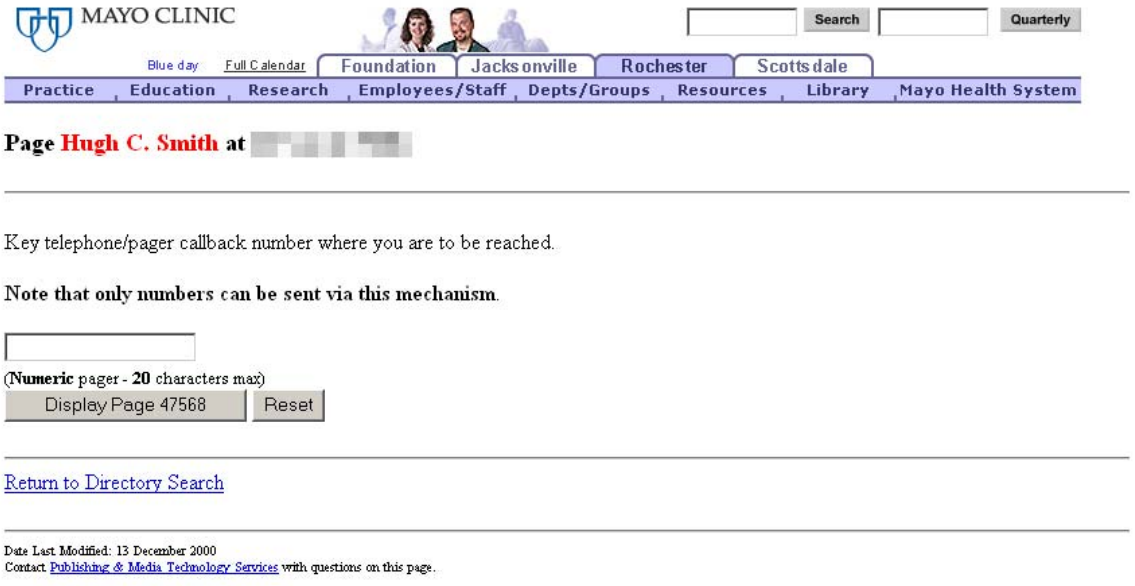
## TIMELINE

- June 2000: Mayo's Intranet Organization and Content Management Subcommittee formed; work on MayoWeb begins.
- Jan. 2001: Phase 1 launch of MayoWeb.
- June 2001: The Intranet Organization and Content Management Workgroup issues next step recommendations.
- Mar. 2002: New search engine introduced.
- Oct.-Dec. 2002: Rollout of current MayoWeb version, with updated navigation bar and portal pages.

## RESULTS

Over 70% of Mayo's cost base comes from people rather than supplies or capital, and MayoWeb's goal is to help those people use their time more cost-effectively.

Sending pager messages via the intranet is just one example of how it met this goal. Users in Rochester alone send about 1,500 pager messages a day, and the team calculated that it's about 20 seconds faster to send a message online. The time savings add up to eight hours a day — the equivalent of a full-time staff member.




Pictured: The online pager application, which is helping Mayo achieve significant time savings.

As another example, the online telephone and pager application allowed for smaller press runs of the bound directory. Currently, Mayo prints 100,000 copies of a 600-page directory each year. The success of the electronic quarterly has made it possible to print 20,000 fewer copies per year, saving on printing costs.

## LESSONS LEARNED

Insights from Mike Woodcock:

**Do not move too fast with design changes**. "The Mayo Clinic intranet was created to support patient care, and while major improvements in design and functionality are welcome, they should not burden users with finding new content locations or figuring out how to use an application."

**Allow folks some self-expression.** "You need to incorporate some degree of customization into your templates so authors feel they can create an identity of their own, yet still fall under the overall corporate look and feel."

**Don't forget the content creators.** "Sometimes we've had to sacrifice design and usability considerations to accommodate the varying levels of expertise among our page authors."

**Put usability first.** "Create internal competitiveness for usability, rather than technology or appearance. Keep communicating the question "How does this page or site support patient care?"

**Practice what you preach.** "It's important to follow your own rules and guidelines. Nothing hinders acceptance of the institutional look, feel, or branding so much as the proponents not practicing it themselves."

And from Julie Prigge:

**There's no such thing as too much feedback.** "The more feedback you can get, the better. You will always learn something important from a usability study or from just simply asking questions of your users."

# North Tyneside College

**Using the Intranet:**

North Tyneside College is a Further Education College[5] in the northeastern UK, providing post-school education for students aged sixteen and over. The college offers a range of vocational and academic qualifications, from General Certification for Secondary Education[6] to the vocationally focused Foundation degrees,[7] and numerous full- and part-time courses in everything from clean room technology to floristry.

**Design Team:**

In-house developer

**Member:**

Adam Liptrot, Web developer

## SUMMARY

In college, the relationship between the professors, administrators, and students can be priceless — but it's not without its challenges. It can be difficult, for example, for teachers to dedicate time to each and every student, especially when it comes to administrative issues. For students attending nonresidential schools, making a trip to school for information can be time-consuming. Also, students who are cramming at 3:00 a.m. on papers due at 8:00 a.m. can't very well call the professor for help. North Tyneside College's intranet helps facilitate and expedite many important interactions between teacher and student (and it doesn't care what time it is).

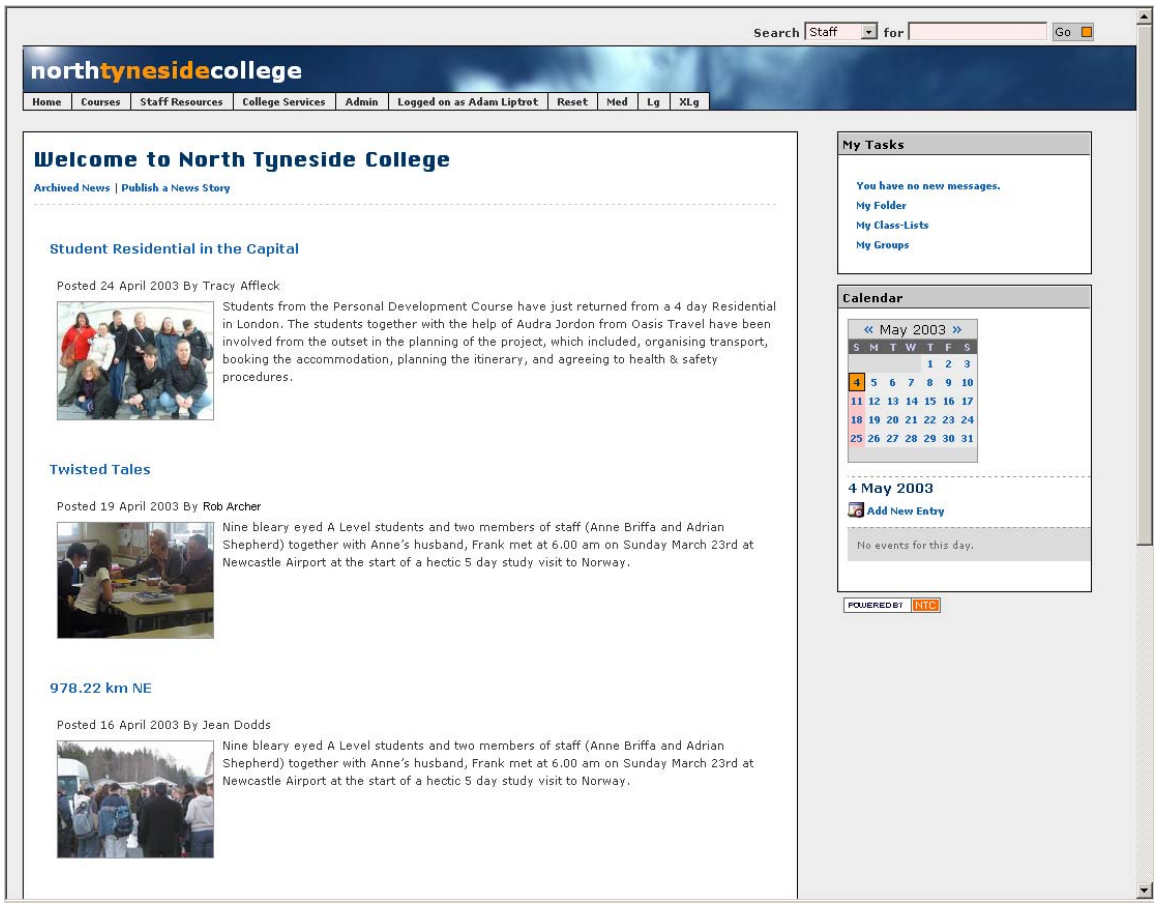
The intranet's login, integrated into the operating system, determines whether the user is a staff member or a student, and dictates which homepage the user will see. Staff and students are served up different homepages, making it easy for them to find information specific to them. Staff pages are further customized based on the user's job, with the links under *My Tasks* changing accordingly. HR staff members, for example, have an *Add new staff member* link that lets them add new staff to the online directory; library staff can maintain a list of useful external websites related to each school.

Staff members can post news stories on the staff homepage, indicating whether it should appear for the whole college or as staff-only news, which will not appear on the students' homepage. The staff calendar not only displays college-wide events, but also shows the user's personal dates and any items related to their courses.

[5] In the UK, Further Education Colleges provide post-school education for students aged sixteen and over, offering a range of both vocational and academic qualifications.

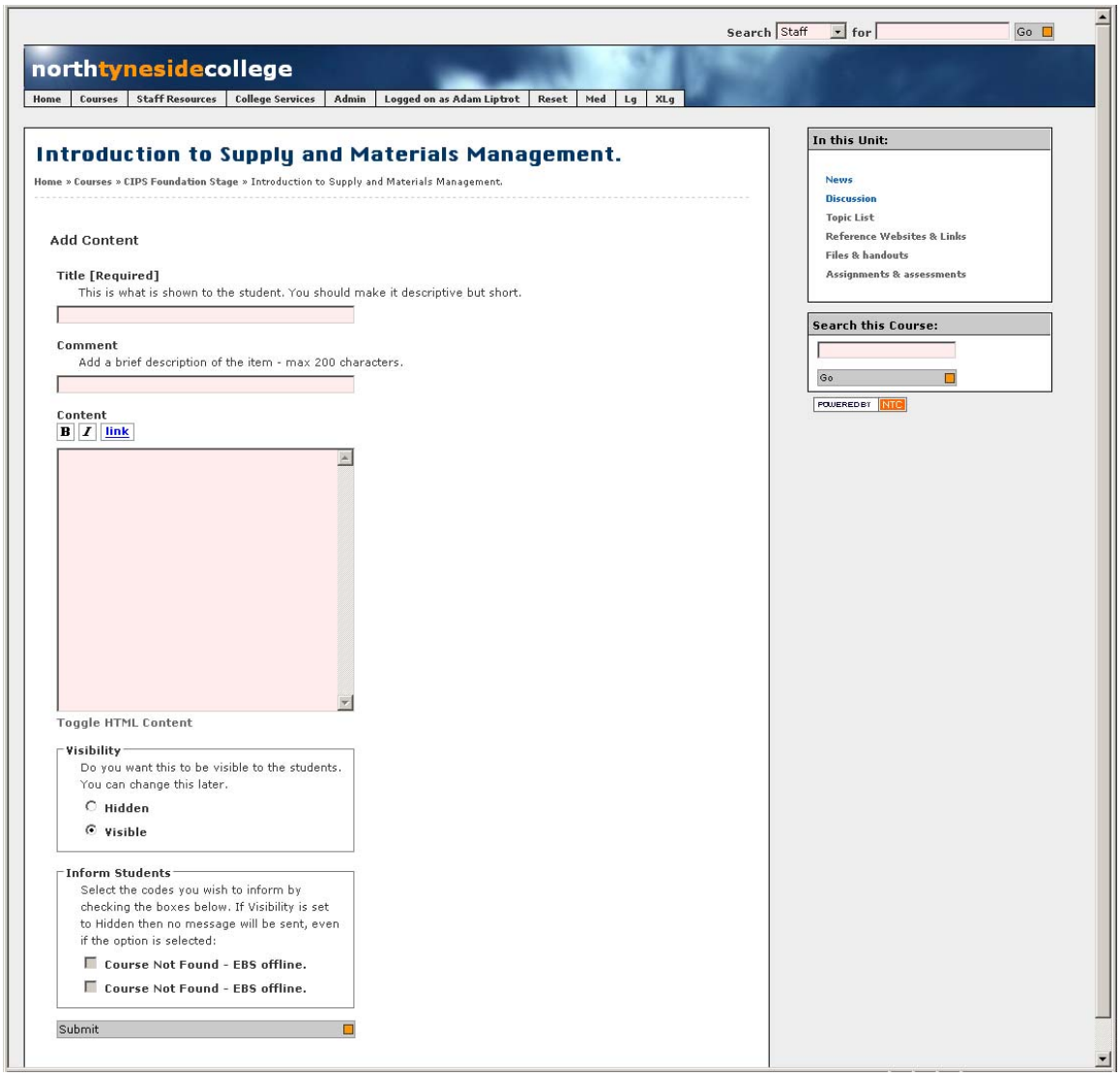
[6] General Certification for Secondary Education (GCSE) exams in the UK are basic-level qualifications in a range of subjects, usually taken at age fifteen or sixteen.

[7] Foundation degrees are a vocationally focused qualification, delivered in two years and designed to equip learners with vocational skills and knowledge.



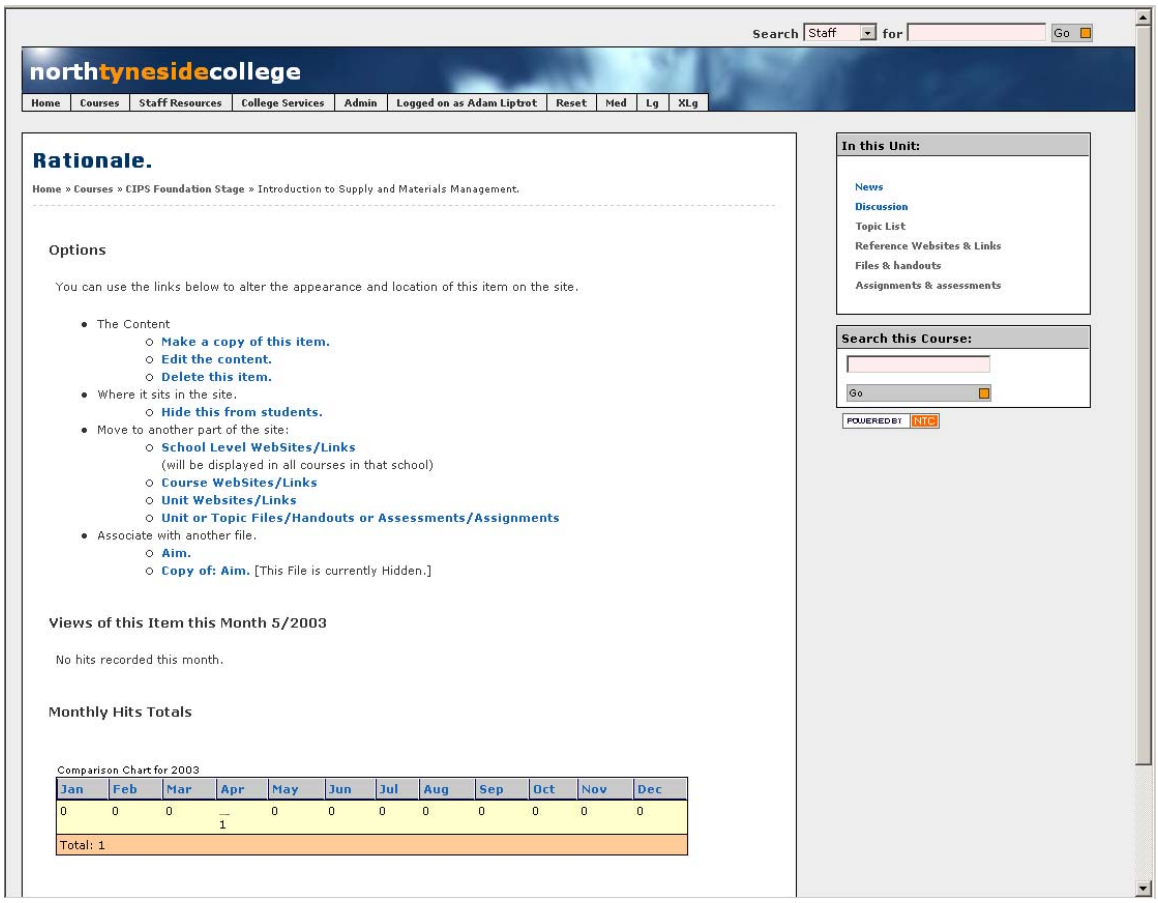

Pictured: The North Tyneside College intranet's staff homepage is different from the student homepage, and is customized according to the staff member's job.

A short form lets staff post text-only content for their courses. This form not only looks good, but the field labels are so simple that almost anyone can use them with ease. The word *Required* indicates required fields. The *Title* field is explained, clearly indicating where to put the content and what that content should be. The *max 200 characters* limit on the comment field helps prevent missteps. Similarly, in the *Visibility* section, the question *Do you want this to be visible to students?* is clear; the next sentence reveals that the user can opt to change this choice later. All of these little niceties in field label presentation make filling in the form seamless and easy. For HTML-savvy staff, the *Toggle HTML Content* link reveals an HTML entry section, where they can enter more personalized content.



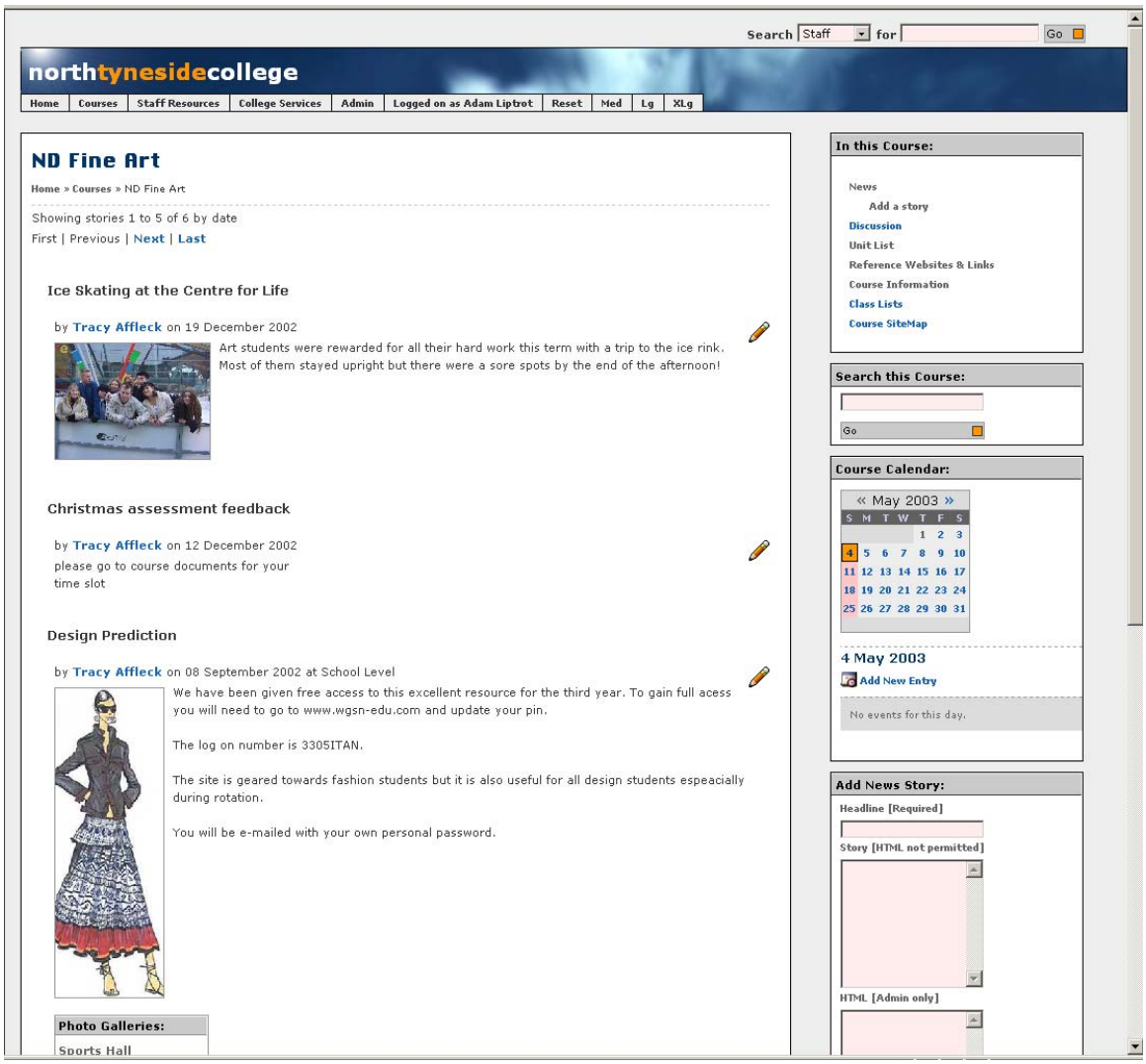

Pictured: A short and simple form lets staff members post intranet content. The clear prompts make it easy for even the least tech-savvy people to use it.

A single edit icon appears next to each file in the curriculum areas. Only the staff members who created a page can edit or delete it. When authorized staff members click the editing button, a straightforward page appears that lists all the actions they can take on an item, such as make a copy, delete, hide from students, move, and associate with another file. Presenting the items on a page like this is simple, and it lets designers easily incorporate more features in the future.



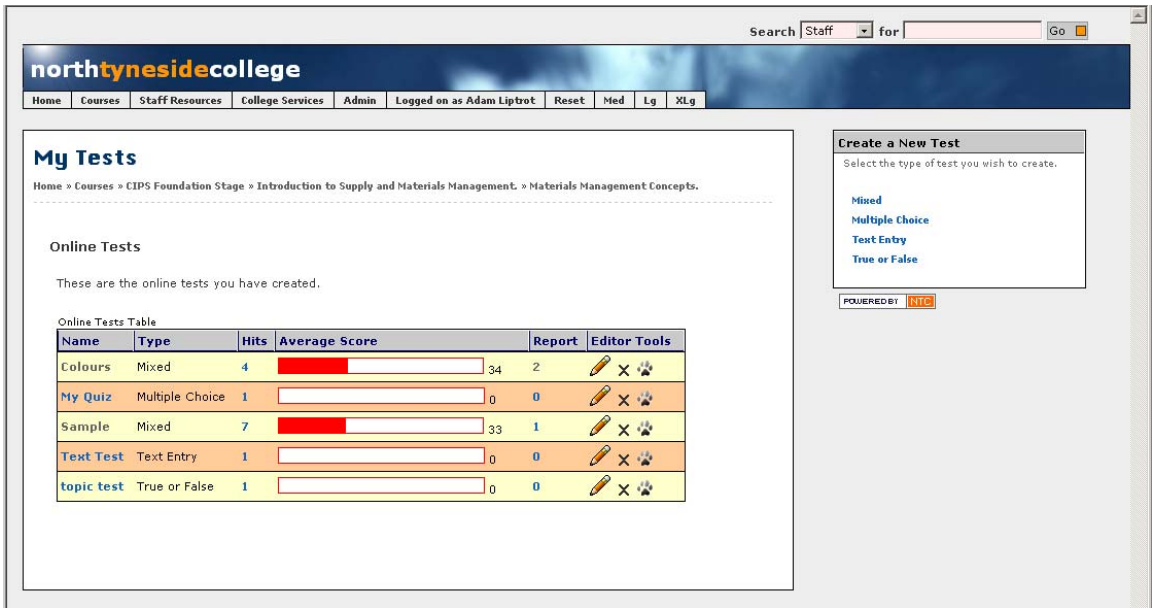

Pictured: Staff members can edit the content they created. The page clearly presents the options.

The course homepage is the first page students see when they access one of their courses. The page is uncomplicated, includes all the latest news, and lets students peruse the course's structure and units. The page also offers a course list, discussion forum, and a course calendar that displays pertinent dates.




Pictured: A student's course homepage includes important information about the class.

In the *My Tests* area, staff members can post tests via an online interface, and students can take the tests online. The staff can then view students' scores, and can break the scores down by questions so they can get an idea of the subject areas that students are having difficulty with. They can also create links to other tests. One of the many well-known benefits of working online instead of in print is that people can create material once and then use it many times — in this case, in as many courses as the instructors wish. Overall, this is a wonderful application that perfectly fits teachers' needs, and can even make taking exams less stressful for students.




Pictured: The intranet's *My Tests* area lets staff members create tests online and view scores after tests are taken.

Another nice feature on this intranet is that it's *self-cleaning*. Many intranets are not, leaving old data and broken links up past their prime. But on this intranet, if a staff member deletes a test or file, the intranet deletes all references to it across the courses.

The system's messaging interface is also particularly useful, letting staff and students communicate and even exchange files via the intranet. Because students don't receive college email addresses, the messaging system facilitates communication while eliminating the need for staff to keep track of student's external email addresses.

The intranet's *Guest Editor* level is an ingenious idea in terms of process and site maintenance; through it, IT students can assist staff with content development without having access to sensitive material. Thus, the work needed for the intranet gets done, students gain valuable experience, and the process does not jeopardize security or cause privacy issues. This feature is an excellent use of limited resources.

The college's intranet also links to some of the other college systems, such as student records and a scheduling system. The student records data gives staff immediate access to class lists, and the intranet lets staff members create groups of students from one or several courses. Thus, the staff can send messages to the whole group and create a discussion forum that only members of the group can view. Teachers can also notify students when new work appears in their course area.

The scheduling software is linked to the staff homepage, and takes staff members directly into their timetable for that week.

All in all, this intranet helps teachers and students have a productive and flexible experience, and facilitates fluid communication.

## URL AND ACCESS

Within the college, the intranet is the default homepage when staff and students open up their browser. The internal URL is simply http://intranet. To access the intranet from outside the college, users can enter http://intranet.ntyneside.ac.uk — but most of them choose to click the link on the college website.

## CONTENT MANAGEMENT

Each teaching staff member has a folder on the server where they can upload files, then create links to these files in their course area via an online interface. If all they need is to type in basic text, they can do this using an online form. (Pictured on page 124: The online form that lets staff members type in and upload basic text.)

Staff members can also copy, move, or edit anything they publish — essential for non-technical staff, who can easily make mistakes. Administrative staff members use a similar method to publish content to their office areas.

Non-course content is published in a similar way, but staff can move the content boxes around vertically and horizontally, giving them a great deal of control over how the page looks.

## TECHNOLOGY

The site is driven by ASP. Most coding is done directly in HTML, but Adam Liptrot, the college's Web developer, uses Dreamweaver MX for site maintenance and Fireworks 4 for image production.

## GOALS AND CONSTRAINTS

1) Provide a scaleable central repository for up-to-date learning extension material and information for staff. 2) Enable staff to independently publish information. 3) Encourage staff to feel ownership of the site. 4) Provide students and staff with a consistent look and feel throughout the site. 5) Provide external access to the intranet with a secure log on and password, so access is not limited to the campus PCs.

## BASIC INTRANET FEATURES

The intranet provides staff with methods for finding and publishing information on their own, without needing help from IT technicians. Each staff teacher has a folder on the server where they can upload files, create course area links, move the service areas' content boxes, and move or edit anything they publish; administrative staff have a similar publishing system. Other basic features include: an activity reports section that tracks file access, letting staff see if a file is being used and by whom; a staff calendar that lets individuals input personal information and access course calendars throughout the site; a staff messaging interface, which lets staff and students communicate via the intranet; direct links to the staff timetabling system; links to student records, which give staff members immediate access to class lists; search; staff and student profiles; discussion forums; and a news publishing system.

## USERS

The College has approximately 300 staff and 15,000 students. Many of the students are part-time and need a way to receive announcements, review lessons, and contact their tutors outside their normal lesson times.

## USER TASKS

- Find information about schedule, classes, assignments, and people
- Post information to other staff and students
- Communicate instantly with other staff and students

## BACKGROUND

For several years now, intranet technology has provided a way for North Tyneside College to deliver better service to its students. Since around 1996, in addition to in-person instruction, the college has posted learning extension materials on the intranet for students to access once their course is complete.

Until 2001, however, this intranet consisted of static pages of course information published in various formats by different college departments. The project had been taken on by one of the teachers, who posted material on the intranet in his spare time.

From the start, the college had wanted a more dynamic intranet. In addition to the main purpose of providing a repository for teaching materials, it wanted to provide staff with a central source of up-to-date information and enable them to upload their own content. A lack of resources, however, bottlenecked further site development.

TO HERE At start of 2001, Adam Liptrot was brought in as full-time Web developer. By that summer, the college launched a new, dynamic site and released a significant update to it the following year. New functionality has been added on a rolling basis, and this year Liptrot gave the site a new visual design. The intranet is now increasingly used by both administrative and teaching staff. Content includes nearly eighty online courses and about twenty-five service areas, from IT support to the examinations office.

## DESIGN PROCESS AND USABILITY ACTIVITIES

North Tyneside had to find a way of taking the site from its initial state (effectively a series of minisites produced by individual staff) to an integrated intranet with a common look and feel — using a development team of one.

After preliminary discussions about basic requirements, Liptrot decided that the best way forward was to produce an initial site design that would form the basis for user feedback. Since then, he's used a rolling process of user testing, feedback, and enhancement. "It's been an evolution rather than a big bang," he says.

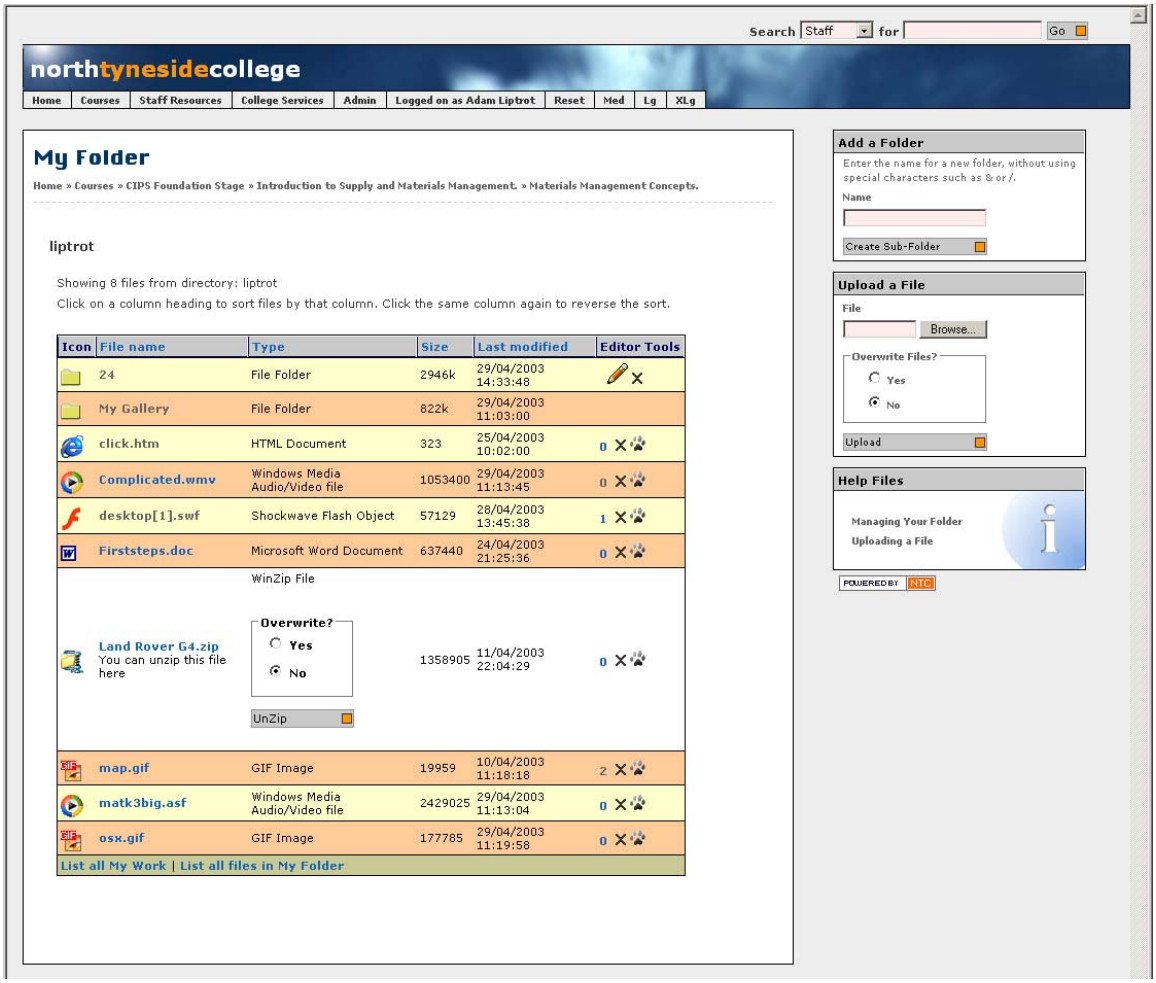
Liptrot initially launched a static site with a unified design that met one of the project goals: provide a consistent look and feel, freeing staff from the need to think about design issues.

"We felt staff should be able to focus on what they did best — delivering content — and let us worry about the look," says Liptrot.

Behind the slick new interface, the static page design quickly proved unequal to the staff's increasing demand to publish new content. Liptrot's next step was to implement a fully dynamic site that would let staff upload content as HTML files and easily link them into the course homepage; this version went live in June 2001.

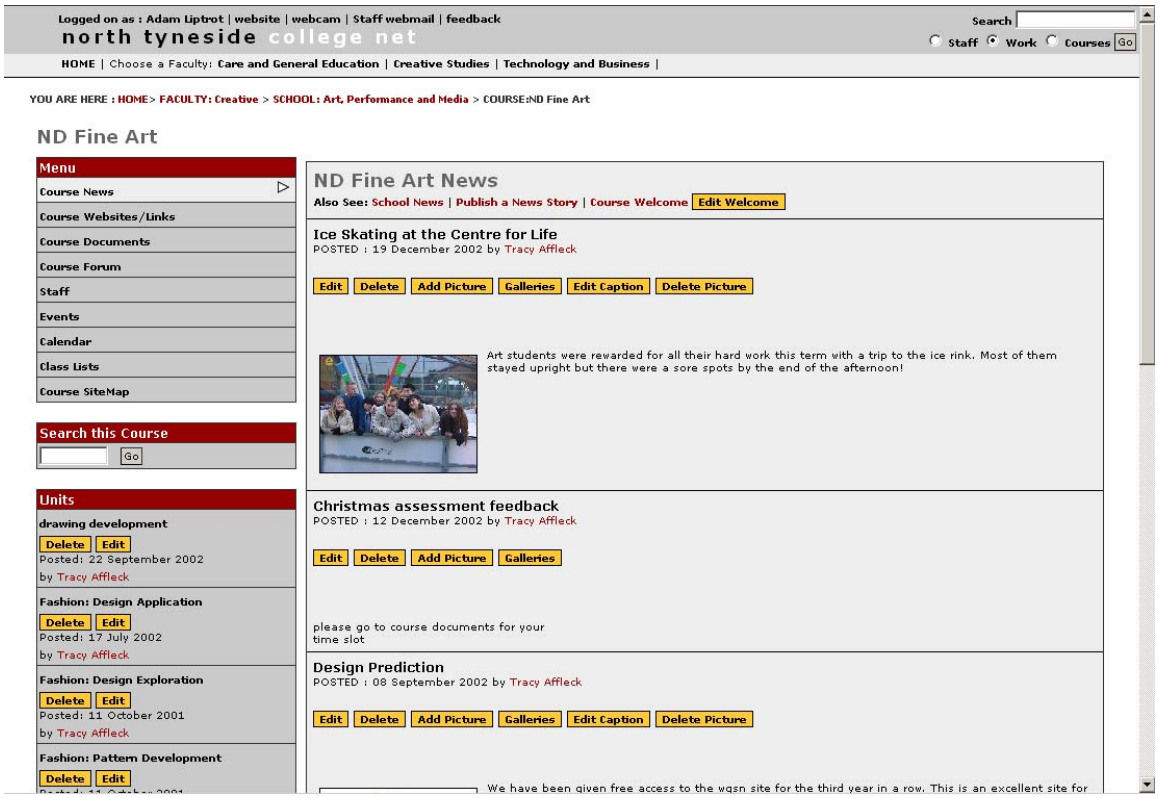
Several changes have been made over time as a result of user feedback.

For example, while watching staff during training sessions, Liptrot noticed that when they tried to upload a piece of work, people often clicked on the folder icon as if it were a live link, so he turned the icon into a link in the latest version.




Pictured: As a result of user feedback, the folder icons on this page are now clickable. Clicking on the paw prints lets staff build shortcuts to the same item from different work units.

During 2003, the site's second major version was launched. Liptrot removed the old top-layer navigation, which structured the site around faculties and departments, and restructured the navigation around tasks and courses. "The feedback from staff was that students didn't understand the old structure," says Liptrot. "They didn't know or care which department they were associated with, they just wanted to go to their own course."




Pictured: The old course homepage design. The site was structured based on departments rather than function, and the numerous editing buttons gave it a cluttered look.

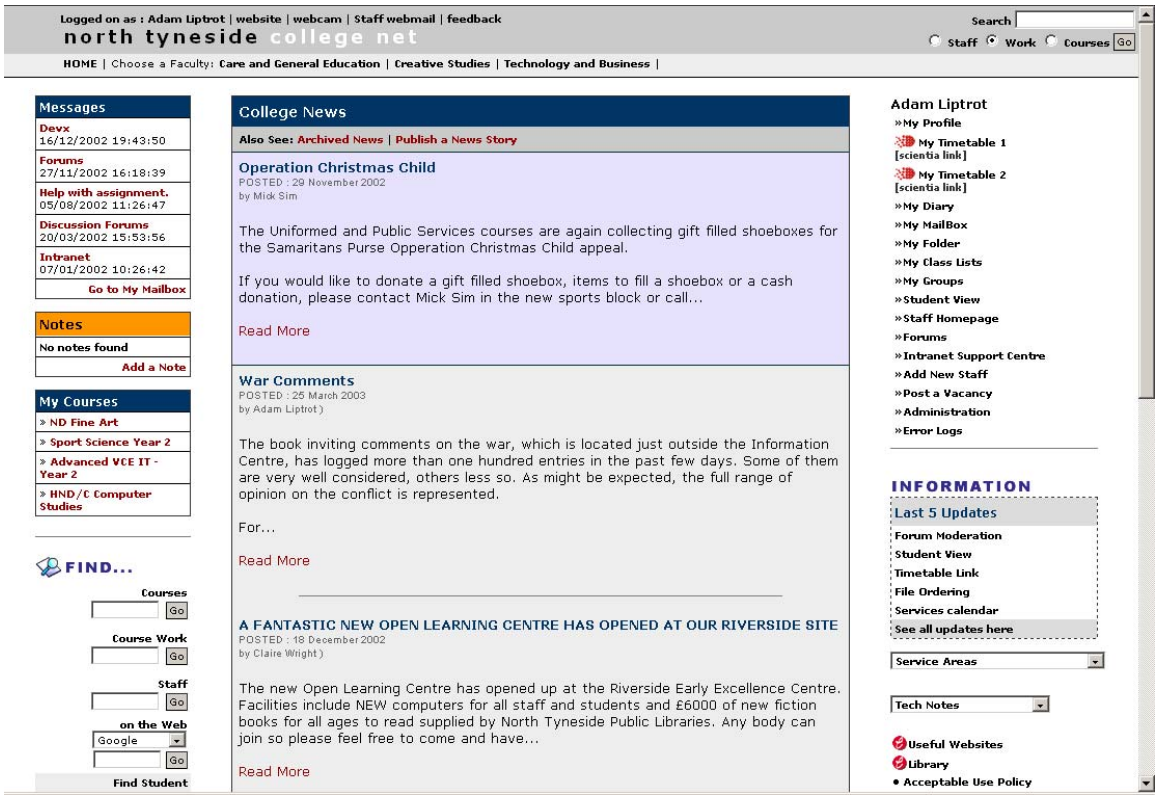
The site's growing number of features also meant that the pages were becoming cluttered. In the new version, Liptrot simplified the design, made popular features more prominent, and hid less-popular features in the site's lower layers. "Our rolling progress meant that features had been bolted on all over the site," says Liptrot. "With the redesign, we aimed to declutter the whole site and give users a much more relaxed view of the whole intranet."

With the departmental navigation removed from the top menu, much of the old left-hand navigation could be repositioned along the top of the screen. The secondary menu, now containing fewer items, was shifted to the screen's right-hand side. The staff consensus was that, because most users were right-handed, it was easier to use a right-hand menu, and that when reading from left to right, the new layout prioritized content over secondary navigation. From an accessibility point of view, when using a screen reader with the new layout, the content will appear before the secondary menu.

The course calendar — previously hidden in the course subpages' menu — was made more prominent and displayed on the homepage and on course pages.

Liptrot deemphasized other items. In the earlier design, staff saw a series of buttons next to any item they could edit. Although these buttons were hidden from students, they cluttered the staff's page view. In the new version, a small pencil icon indicates editing facilities; clicking on it brings up the full editing menu. (Pictured on page 126: The new course homepage. Clicking on the pencil icons — hidden from students — gives staff access to editing facilities.)

The search facility, which was originally located in the left-hand menu bar and consisted of different boxes for courses, course work, and staff, was consolidated into a single box and placed more prominently in the page's top right-hand corner. For several months, Liptrot ran the new search in parallel with the old format so that users could get used to the new location of this important feature.




Pictured: The old staff homepage. The old search (located in the left-hand menu bar) temporarily ran alongside the new search in the top right-hand corner.

The user feedback that drives the intranet changes comes mainly via a series of Web champions: members of the teaching staff who act as a liaison point between the intranet development and other staff in their area. These champions are responsible for testing the intranet among users they represent, identifying requirements, and offering feedback at the monthly intranet meeting.

A staff development committee was also established to work on ideas for the intranet and comment on proposed new features. One thing that's missing is student representation — though not for lack of trying.

"We've tried to talk to the students, and even set up a student development committee, but we didn't get any interest," Liptrot admits. "We've tried using email to get feedback and ask questions, but we got no joy from that. Short of bribing them, it's difficult to know what to do. But each term, there's a course-specific feedback group, and we've included some questions about the intranet in that."

The intranet's new visual design and its easy content creation and upload capabilities have proven a big hit with staff, and content is now growing rapidly. To cope with this increased demand, Liptrot recognizes the need for a more structured

development approach: "What we want to do now is slow down, and have termly releases rather than rolling development, to give us more control."

## TIMELINE

- Mid-1996 : Static intranet launched to publish course information.
- Jan. 2001: Adam Liptrot appointed to work full-time on building a new, dynamic intranet.
- Mar. 2001: Static site's redesign launched.
- June 2001: Version 1 of dynamic site launched.
- Sept. 2001: Version 2 of dynamic site launched.
- Jan. 2002: Liptrot begins gathering hit data on intranet content.
- 2003: Site is reskinned to give it a fresher look; no major functionality changes.

## RESULTS

North Tyneside sees intranet benefits mainly in providing better service to students and staff, which enables them to retain students more effectively by providing the technology that many of them have become accustomed to at school. Given this, the college has not tried to create hard and fast ROI metrics.

However, one tangible benefit of the intranet's new look is that the move from tables to a design based on cascading style sheets has decreased the average page weight to about 50% of the previous version (a 60kbyte page in the old site is now around 30kbyte). This should offer network cost savings and make site access faster over the Internet.

The North Tyneside site was intended for internal use only, but since the dynamic version was launched, they've sold it to several other colleges who expressed interest. North Tyneside is now packaging it as an external application.

"We never intended to sell it, but it has taken off remarkably," Liptrot says. "We used it to download content at various conferences and had phone calls afterwards from colleges saying 'can we buy your intranet?'" A trainer from the National Learning Network (a government-funded program designed to increase the uptake of information and learning technology by students over the age of sixteen in the UK) asked North Tyneside if he could use the system to showcase learning materials to other colleges, and he now acts as an evangelist for it around the country.

## LESSONS LEARNED

Insights from Adam Liptrot:

**Ensure scalability.** "Always make sure whatever you design can be scaled up, even if it seems like a minor feature."

**Get backing from the top.** "It's important to get senior management on board as soon as possible. Otherwise, you're just relying on the goodwill of content providers to help the project along, and progress will be blocked by people saying they haven't got time to contribute."

**Involve the users.** "If you can promote ownership of the intranet among the user base, that's half your battle won. Get staff to put in their own phone numbers."

# silverorange

**Using the Intranet:**

silverorange is a small team of Web developers who produce user-focused Web systems. The firm, located in eastern Canada, sells and leases intranets to various organizations.

**Design Team:**

In-house

**Members:**

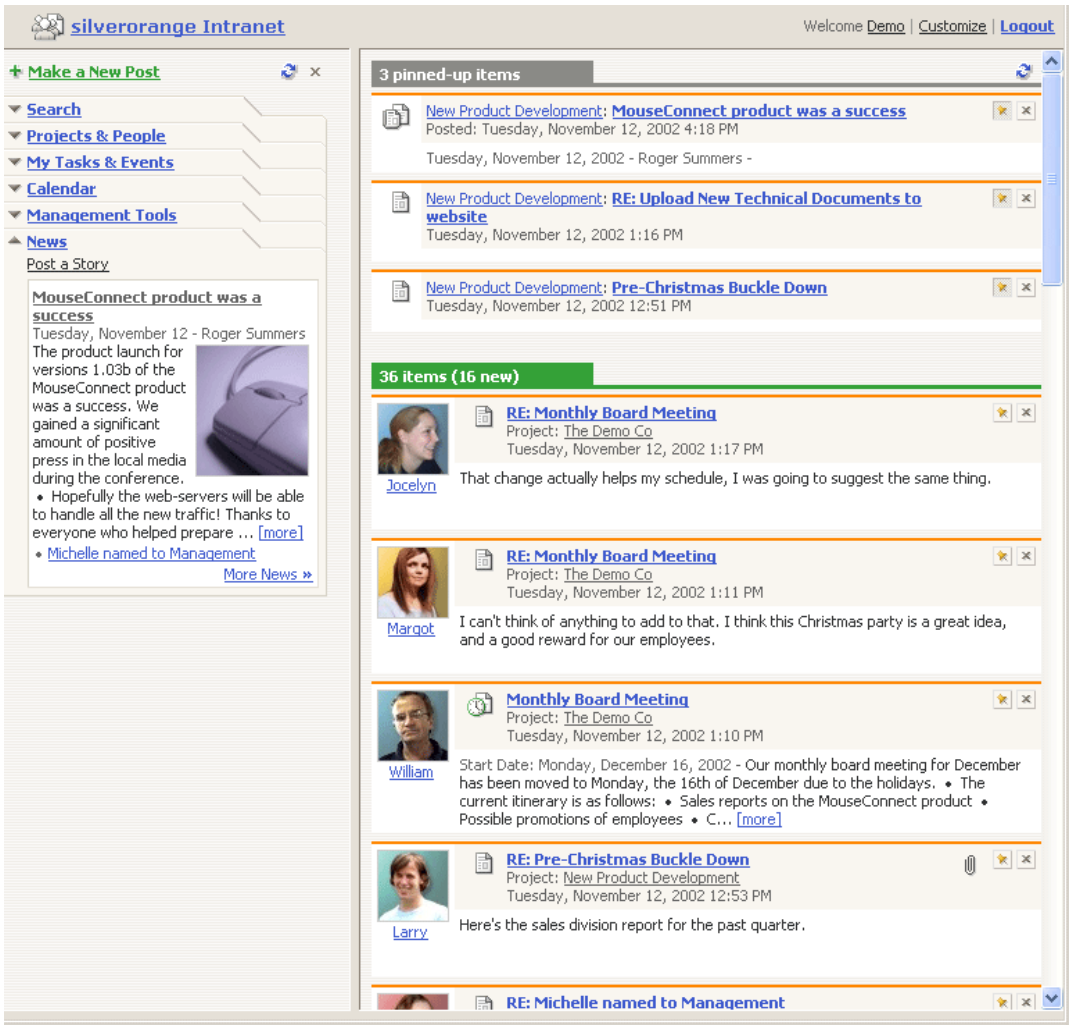
Nathan Fredrickson, technical director; Steven Garrity, creative director; Daniel Burka, lead designer; Dan James, CEO; Stephen DesRoches, Web developer; Isaac Grant, programmer; Nick Burka, programmer; Dave Peck, sys-admin/programmer; Mike Gauthier, programmer; Brad Pineau, programmer.

## SUMMARY

In our first design annual in 2001, we selected ten winners and from them, one best intranet — silverorange. Now, two years later, this same company has produced yet another excellent intranet, it's third version, that we feel deserves a very honorable mention among this report's winners.

So why change an already winning design? While the intranet's first two versions worked well for silverorange users, the company was branching out and selling to companies with employees who were not Web developers. They thus had to tailor the design to make sense for those people. Also, after the 2001 design annual was published, several large companies and government organizations expressed interest in the silverorange intranet. However, the previous versions did not scale well. The company decided to create a version that would work for not only ten people, but for hundreds or thousands of people. To do this, they basically revealed what individual users need to know, rather than cluttering workspaces with information and choices they don't need.

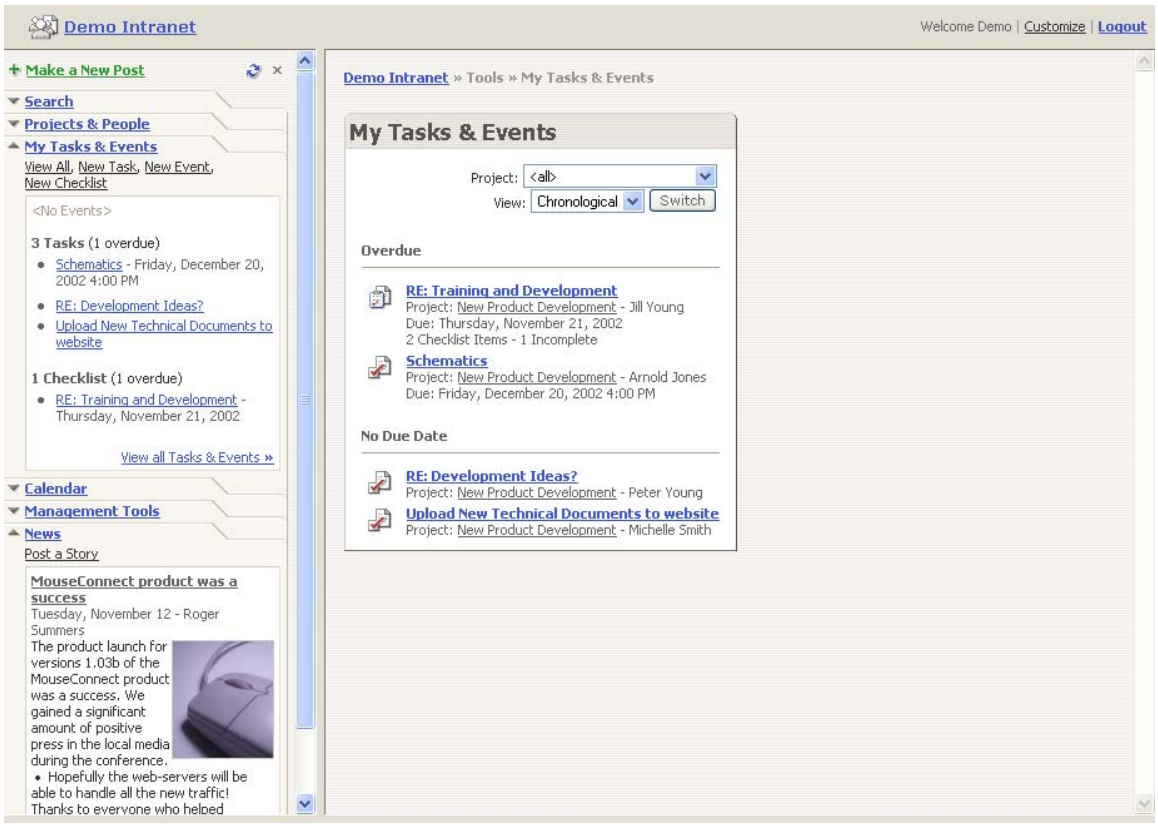
The homepage shows recent news items and the author's photo. Each user can configure the types of items displayed on the front page.




Pictured: The homepage shows recent items with the author's photo. Users can configure the types of items displayed on the front page.

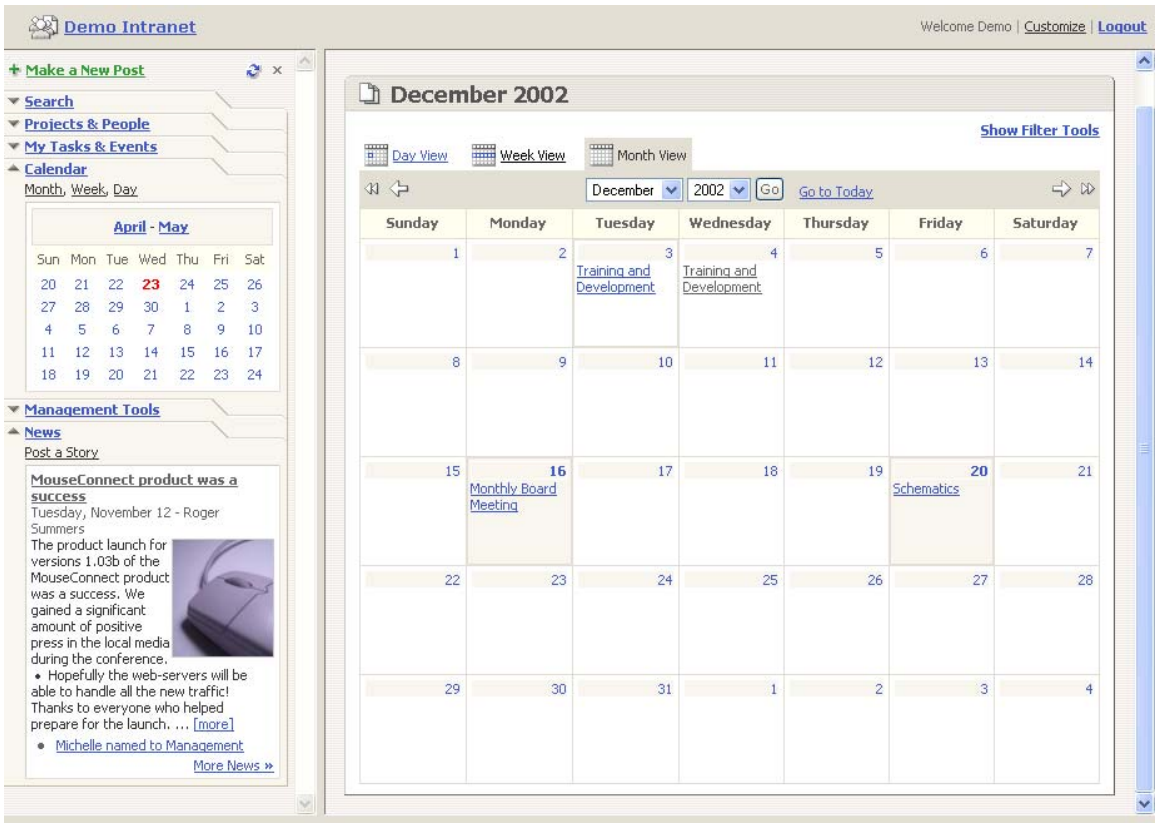
The silverorange Intranet consists of a set of tools and work areas called *Projects*. Each user is given access to particular projects, and users only see the projects to which they belong. This allows the same intranet to be used on various levels, including client communication and high-level management. For example, a user working on three client projects, two internal projects, and one management committee would see only the content pertinent to those particular projects and only see the users with which he or she shares common projects. All intranet functionality is controllable on a per-user basis, with a powerful set of fine-grained permissions on each component.

Users can also review the tasks, events, and checklists assigned specifically to them or, occasionally, their workgroup. The items are intelligently divided by date — *Overdue, Today, Yesterday, This Week, This Month,* and so on.



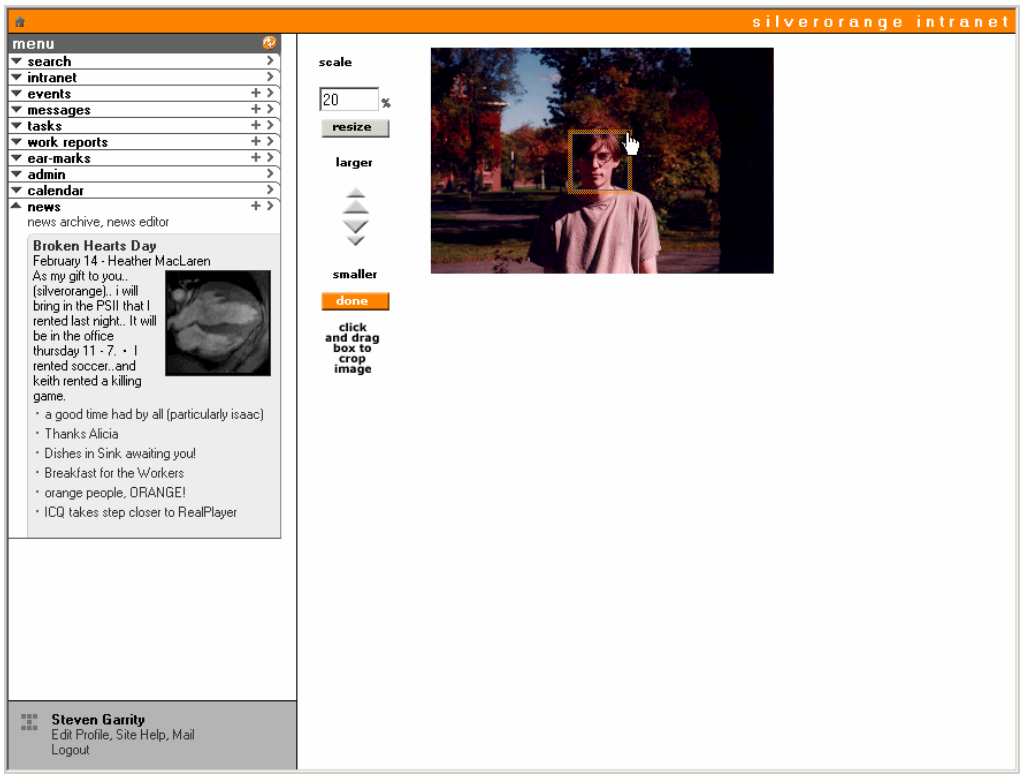

Pictured: A page with tasks, events, and checklists that are assigned specifically to a particular user.

Users can display the robust calendar by day, week, or month views so they can use it as a scheduling tool. In *Month View*, the filter tools to show only items of a certain type, from a certain project, or assigned to a particular person. Users might show tasks assigned only to them, for example.

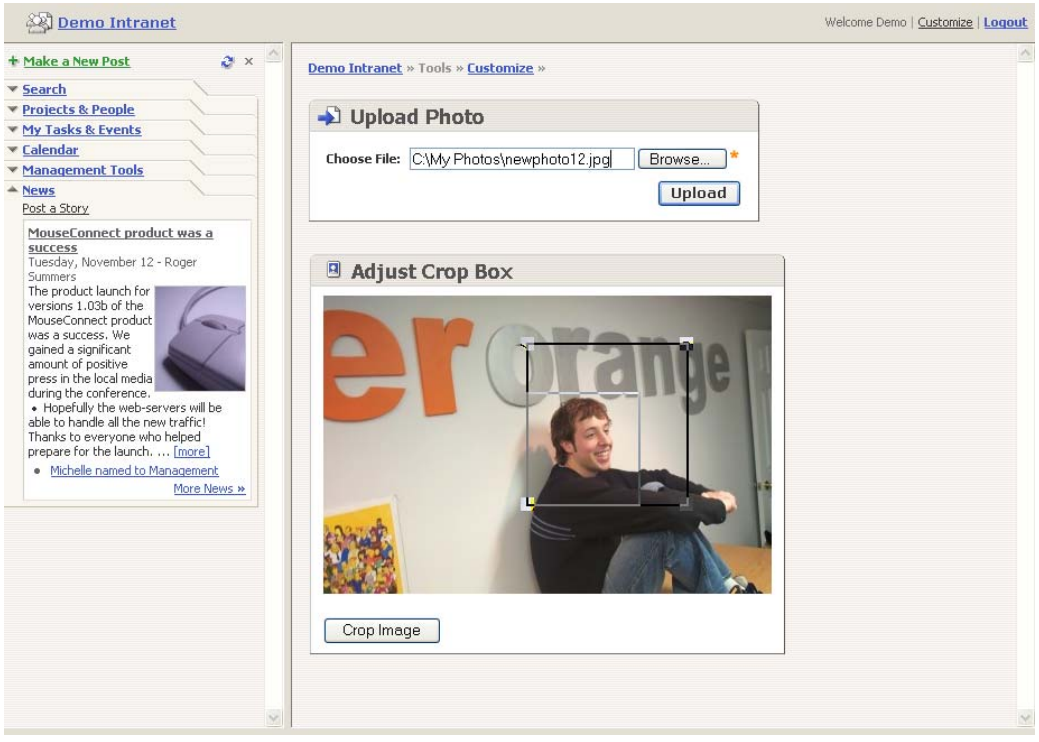



Pictured: The calendar in *Month View.* The filter tools to show only items of a certain type, from a certain project, or assigned to a particular person.

A feature that most caught our attention in 2001 was the ability to not only post photos to the intranet, but to crop or resize them there without additional tools. Users love this. This feature got a facelift in the new design.




Pictured: The previous winning design's tool that posts and crops pictures using the intranet.




Pictured: The current photo tool. Users can post, crop, and resize photos using the intranet, without other tools.

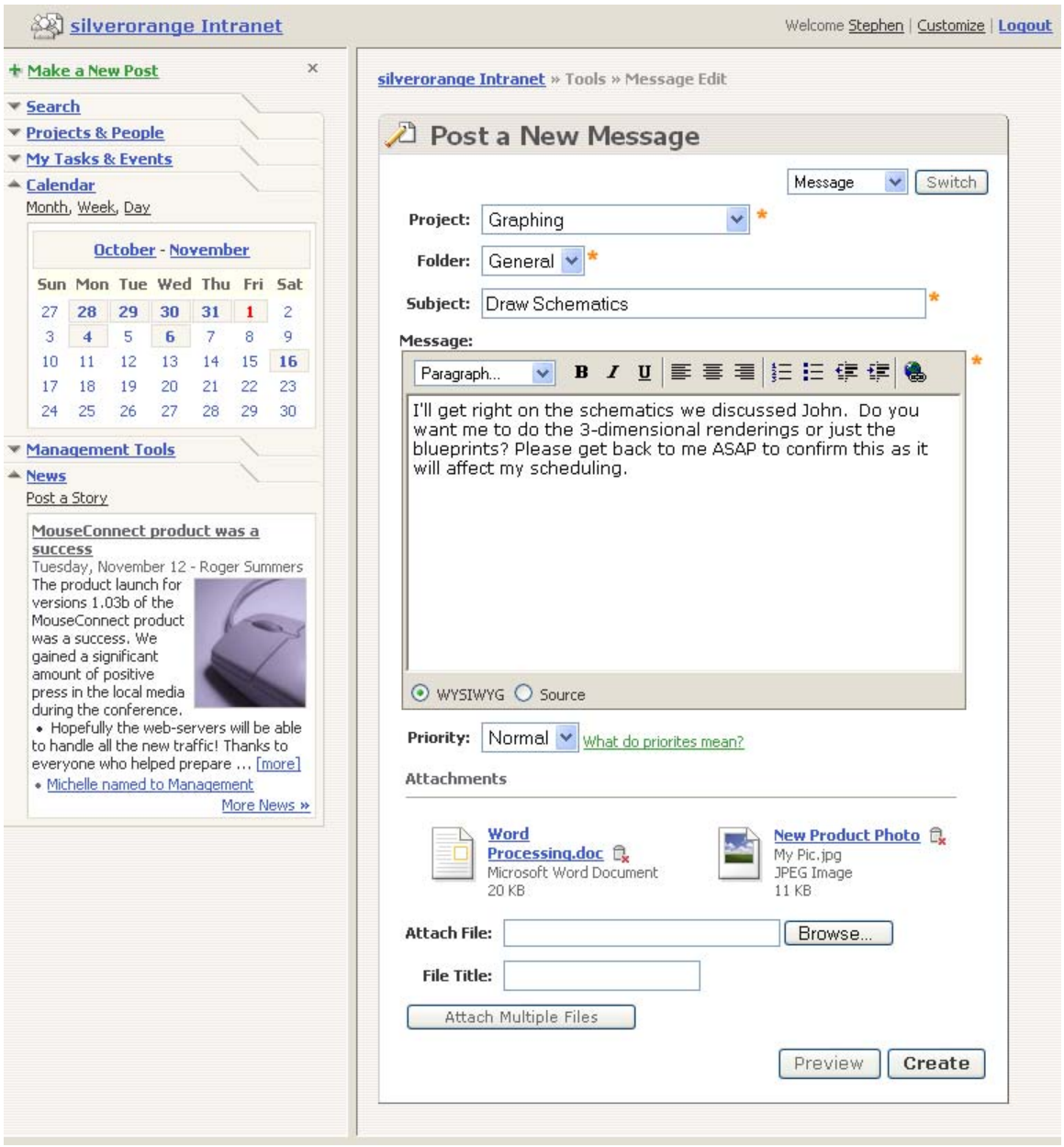
The new design's look has changed from the orange theme of 2001 to a more subdued one with blues and grays. The navigational elements, though also changed, are still very understandable, making use of tabs and obvious links. All in all, the new intranet design is an impressive revision that's worthy of the original.

## URL AND ACCESS

Users enter a simple domain (usually "intranet.companyname.com") to access the intranet from anywhere on the Web. The site also uses SSL encryption for security. URLs within the site have been kept as simple and clean as possible (for example: intranet.companyname.com/projects/projectname).

## CONTENT MANAGEMENT

Users of the silverorange intranet enter content through the Web browser. A visual text editor built into the intranet simplifies link creation and simple text formatting.




Pictured: The Web form that lets users post new content. All posts can have file attachments of any type.

In keeping with the email metaphor at the heart of this site, all intranet posts can have any type of file attachment. There's also a "file" item type, introduced at the request of a client, which works like a more traditional document library.

## TECHNOLOGY

Started as a mostly ColdFusion-based Web development shop, silverorange has since moved to PHP. "We felt we were pushing the limits of ColdFusion's capabilities," Steven explains. "PHP offered performance advantages, the advantages of open source, and support for object-oriented programming. This allowed us to do much more with our code base."

When it comes to selling its intranet to other companies, relying on an open-source platform gives silverorange a lot more flexibility. Previously, a customer would have to buy a copy of a Windows Server operating system and a ColdFusion server license, adding thousands to the intranet cost. With PHP freely available, clients can run in an Apache/Linux environment at much lower cost.

## GOALS AND CONSTRAINTS

1) Work well for the company — a small team of ten who rely *heavily* on the intranet to run the day-to-day business. 2) Work well for other companies like theirs. 3) Work well for larger organizations. After the 2001 NN/g intranet design annual, several large companies and government organizations expressed interest in the silverorange intranet. However, the previous versions did not scale well.

## BASIC INTRANET FEATURES

The silverorange intranet consists of a set of tools and work areas. Some tools and features include: Posting of items, including messages, tasks, events, checklists, work reports, files, and news (other custom item types are also available, including any special forms a company may use frequently); alerts and notifications, which users can customize; easy uploading and display of photos for use with user posts (a simple cropping and resizing tool is included so users can add appropriately sized photos without special software); user preferences; a fast-loading and standards-compliant interface; internationalization; and management tools.

## USERS

The team of ten consists of managers, Web designers and developers, and programmers.

## USER TASKS

- Read and post news
- Create and look up appointments
- Uses checklists and tasks lists
- Update or be updated on a specific project
- Have a discussion
- Communicate with clients

## BACKGROUND

The silverorange intranet grew out of the need for a better communication channel for the Web development firm's partners, employees, and clients.

It started life in October 1999 as a basic electronic discussion board system; in June 2000, it was launched as a full-blown intranet that let team members post messages, tasks, news items, and work reports; edit their user profiles; and record events in a group calendar.

Although it's based in Prince Edward Island, Canada, many of silverorange's clients are on the Canadian mainland or in the US. The intranet lets team members working at client sites stay in close touch with head office. Clients can also be given

remote access to parts of the site, which lets silverorange support them with the latest information on their project, despite a comparatively remote location.

Since we last profiled silverorange in the Intranet Design Annual 2001, the company has grown from six to ten employees, several of whom spend at least some of the year working from remote locations. Its client base has also grown, with new clients coming mostly from the US. Last but not least, since winning our intranet competition in 2001, the company has seen growing interest from external organizations wanting to use its intranet technology. All these factors have reinforced the importance of the intranet in silverorange's business and increased the need for a clean, highly usable design.

"We see our intranet more as a communications tool than a publishing tool," says Steven Garrity, creative director at silverorange. "It works more like a more powerful email system than like a traditional website. As a result, it was quite a natural extension for us to bring our external clients and users into our intranet. The structure and security of our intranet was designed with this in mind."

## DESIGN PROCESS AND USABILITY ACTIVITIES

In designing version three, silverorange aimed to combine smart planning and abstraction with real-world experience. Since the new intranet version was an upgrade, albeit a major one, the team could build on its experience with the previous version to inform the design.

"Knowing that we would eventually build a significant upgrade, we had compiled a running list of issues and ideas," Garrity explains. "Whenever a client complained about something, or we found ourselves having trouble with a particular task, we made a note of it. We actually had a discussion thread on version two of the intranet called 'Ideas for version three,' and anytime someone had an idea, or ran into an issue, it got posted there."

When the firm began work on version three in spring 2002, its first step was to review all these notes. Several issues emerged. In the previous version, for example, the functionality to manage users and their relationship to intranet projects was limited and not scalable. The new version addressed this.

When the most recent intranet was released, the user base mainly consisted of the silverorange team and close clients, who were used as the test group. Throughout development, the team carried out small ad hoc tests, trying different design ideas out on each other.

Because the new version retained many of the existing interface features, introducing clients to it was relatively painless. "The new intranet tested very well with our clients — smoothing over areas that were rough in the previous version," Garrity says.

## RESULTS

The redesigned intranet, with its clearer interface and more standard navigation, has opened up new commercial possibilities for silverorange, enabling it to easily sell or lease the intranet to other firms, thereby generating new revenue streams.

"There were enough rough edges in our previous version that having someone else manage a version of our intranet wasn't quite realistic; there were too many tricks

and hacks," says Garrity. "Our new version addresses these issues and is much more refined throughout."

## LESSONS LEARNED

Insights from Steven Garrity:

**Beware the over-ambitious redesign.** "Many great projects have grown organically, only to have an unrealistically ambitious redesign kill what made the project successful in the first place. We were careful to stay grounded through the development process."

**Make the transition gentle.** "Since the upgrade maintained many of the user-interface concepts of the previous version, we were able to switch our clients over to the new version without any training."

**Separate layout and design from functionality.** In addition to increasing flexibility and scalability for internal use, this "has allowed us to provide an implementation of our intranet to a client that did not use frames and had a visual brand that was completely distinct from ours."

# United States Coast Guard

### Using the Intranet:

The US Coast Guard is one of five branches of the US Armed Forces, and falls under the jurisdiction of the US Department of Homeland Security. The Coast Guard is the country's oldest continuous seagoing service with responsibilities including search and rescue (SAR), maritime law enforcement (MLE), aids to navigation (ATON), icebreaking, environmental protection, port security, and military readiness. The system will be accessible to all 80,000 CG employees, reserves, and CG auxiliary volunteers worldwide (military, civilian, and contractors).

### Design Team:

The CG Mission Advanced Collaboration Network, branded as CG Central, uses a COTS BroadVision portal framework. The Coast Guard team (including military, civilians, and contractors) designed custom features and integrated other data systems for personalized information delivery.

### Members:

CG Central's design is governed by the Configuration Control Board (CCB), whose permanent membership is made up of the following: LT Scott Masterson, Glenda Campbell, Richard Nesler, LT Dwayne Morris, and Claudia Isaacoff, tab managers; LT Tom Shelton, project officer; LCDR Janet Stevens, program manager; and LT Keith Rauch, Innovation Council representative. The Board's ad hoc membership includes: Steve Flowers, a performance technology representative; ETCM Richard Kramer, an enlisted workforce expert; Gabriel Paulson, Maintenance Logistic Command (Pacific) intranet design expert; Bruce L Miller, a USCG District thirteen support expert; and Deb Miller, a USCG remote support expert from Kodiak, Alaska (Electronic Support Unit). The functional area manager, Robin Nichols, leads the development team: Brian Hersh, Jeremy Hettenhouser, Monika Foster, Mike Lacey, Jason Smith, Curtis Dyer, David Crim, Duane Barb, and Frank Henderson.

## SUMMARY

The CG Central portal is designed to help project teams and individuals in the US Coast Guard inform and be informed — critical tasks for military personnel, especially in times like these, when the US homeland requires scrupulous protection.

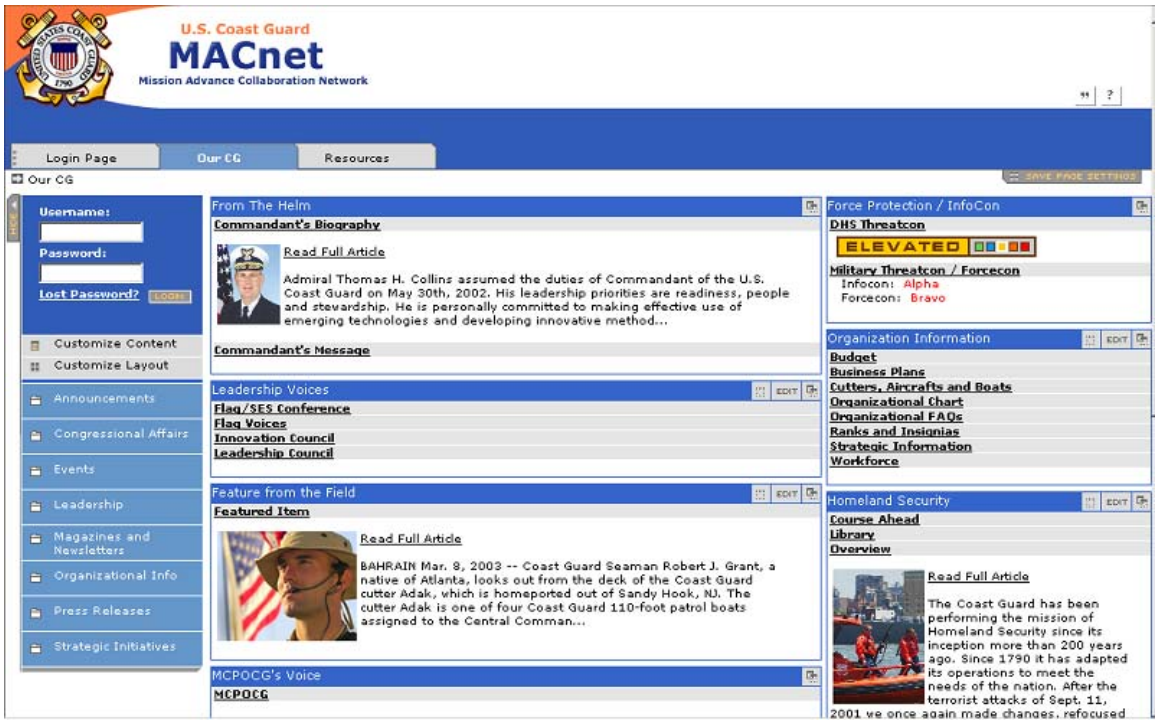
The aesthetics are attractive, but not fussy. The Coast Guard seal at the top shows the site's official nature. The blue and gray color scheme is reminiscent of water and creates a calm tone. Text is legible and photograph quality is quite good. Links are obvious, indicted by bold, underlined text.

The homepage keeps morale and spirits high with the *Features from the Field* area, which showcases various personnel and tells their individual stories, complete with high-quality photographs. On any intranet, demonstrating what people and teams are working on can be inspiring and educational.

The US military's hierarchical nature helps keep this colossal organization steaming ahead. On the homepage, a section cleverly named *From the Helm* includes the *Commandant's Biography,* a photo, and a link to *Commandant's Message*, and helps reinforce the command chain and remind people of the organization's strong leadership. *The Leadership Voices* also helps individuals work as a team with clear goals and missions.

Links under the *Organization Information* section deal with administrative and project areas.

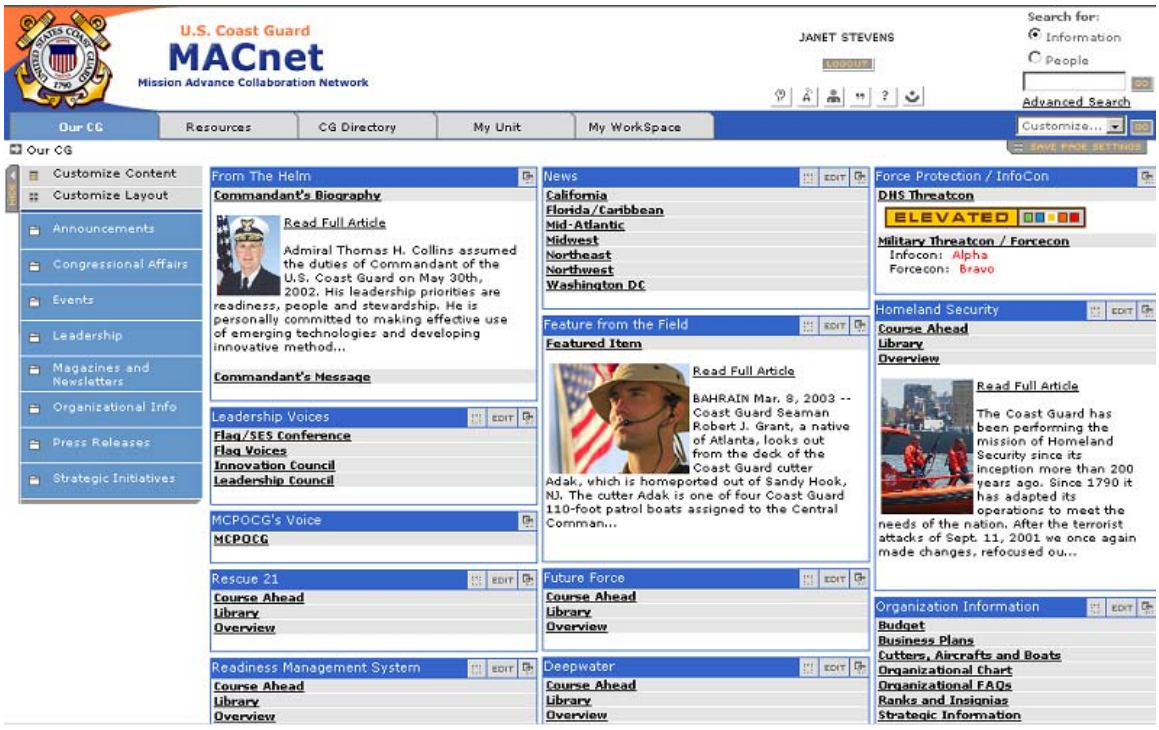
The *Force Protection/Infocon* section in the upper-right shows the threat level and specifically indicates to Coast Guard personnel how they must act and react.




Pictured: The United States Coast Guard Intranet homepage, before a user logs in. It shows everything from news to leadership and military threat level.

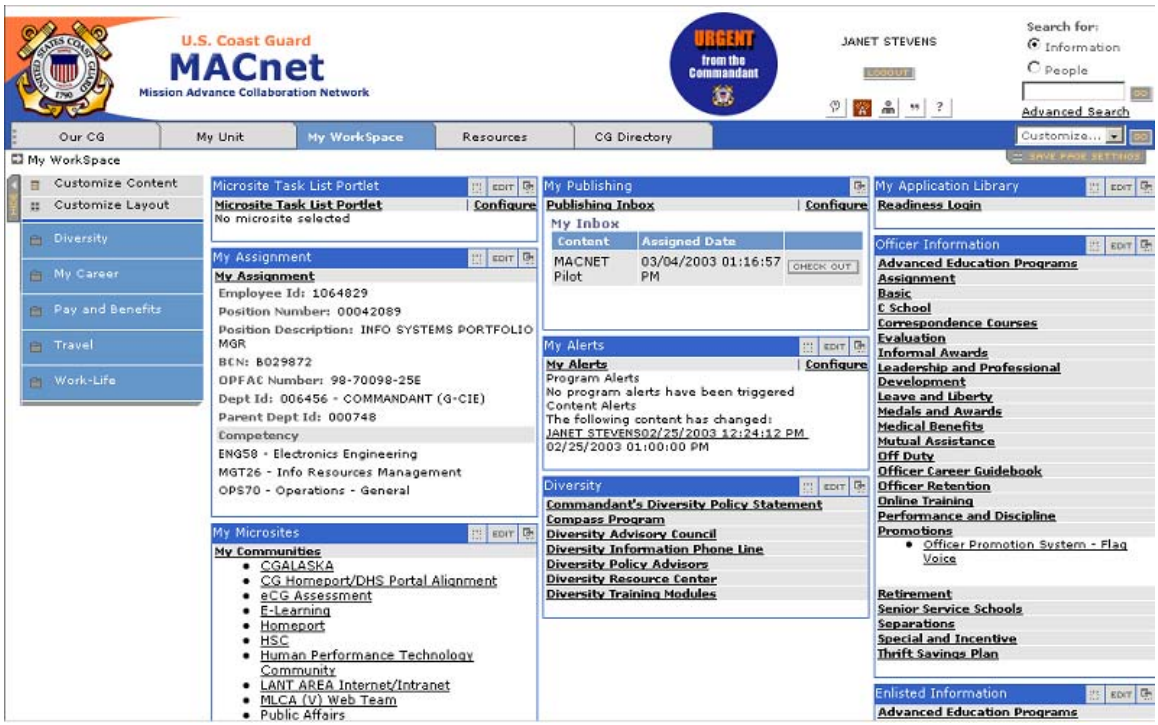
Using a knowledge-centric architecture gleaned from *A Way to KM Solutions* by Matthias Liebman, the team created several basic modules, including: *Communities*, *Teams, and Experts*; *Real-Time Collaboration*; *Data Analysis*; *Content Management*; and *Search*. Top-level navigation is sorted into five tabs: 1) *CG Directory* provides quick information for all units. 2) *My Workspace* provides information that directly affects the user, including special interests, career opportunities, and so on. 3) *Resources* gives users a library of information pertaining to their jobs and includes services, occupational groups, and directives. 4) *My Unit* gives all members of a specific unit information that specifically affects them. 5) *Our CG* includes new information about the Coast Guard and ongoing major projects.

The intranet delivers personalized and customizable features. Once logged in, users see a different page, which they can customize to show areas pertinent to them. Of course, for security purposes, the user's name shows in the top right corner, as does the *log out* button. The default tab is *Our CG*, which presents a broad overview of current events and other Coast Guard matters.



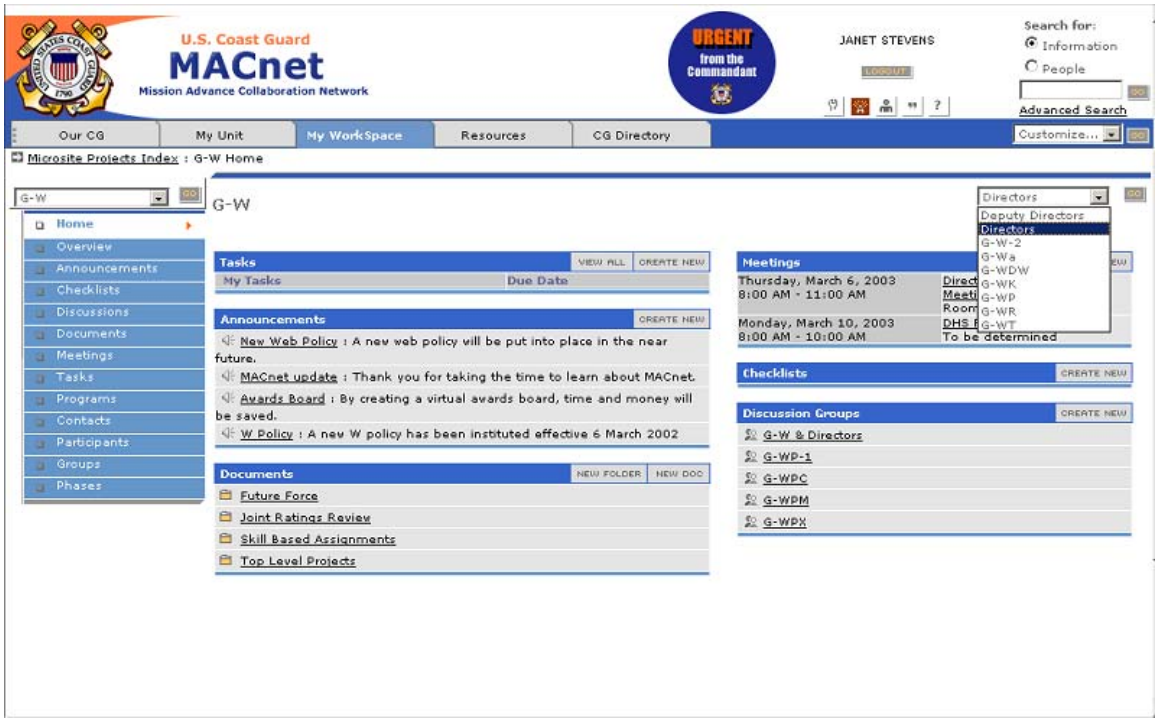

Pictured: A page that appears once a user logs in.

The *My Workspace* tab gives users information that pertains to their daily life. Assignments, alerts, and publishing are examples of areas important to individuals. CG Central pulls information from a personnel file to give users alerts and occupation-related information. Links to microsites also give users access to the information they need most. Groups and units use microsites for discussion forums, announcements, documents, checklists, and to conduct asynchronous online meetings.



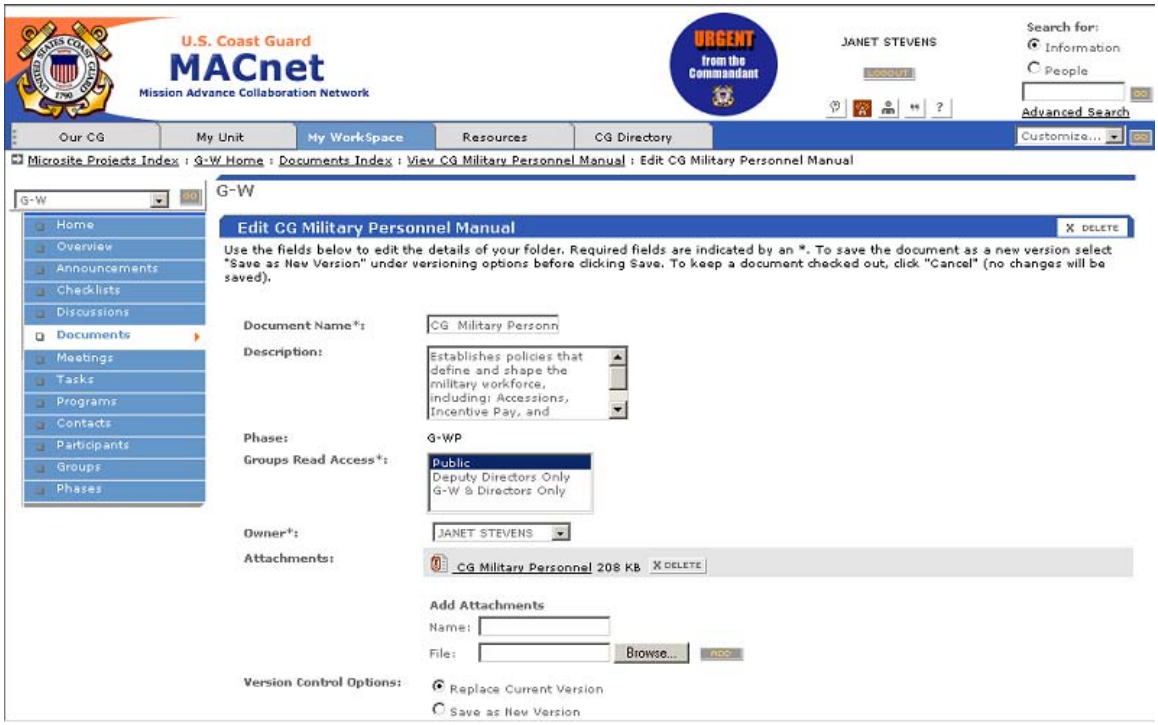

Pictured: The *My Workspace* tab gives users information pertaining to their daily lives.

Other group collaboration features include delivering announcements, setting tasks, and uploading documents. With the addition of the collaboration groups, the need for meetings and travel may be significantly reduced.



Pictured: A microsite on the US Coast Guard intranet. Groups and units use microsites for discussion forms, announcements, documents, checklists, and to conduct online meetings.

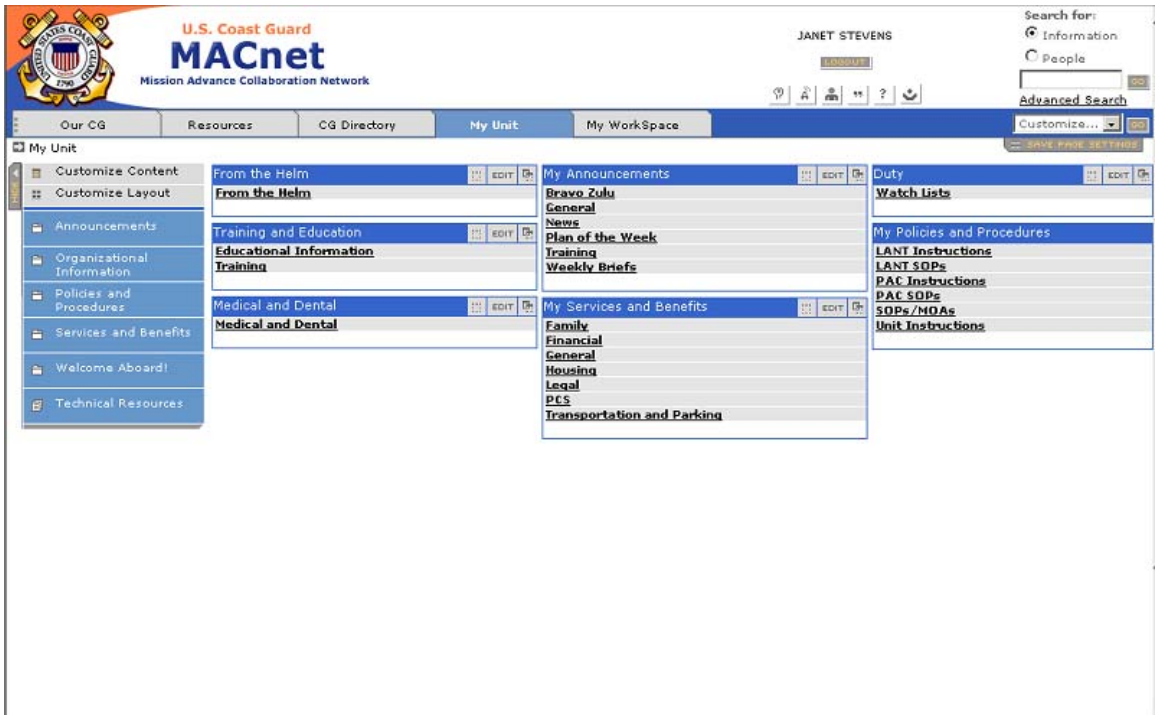
To post information on the intranet, personnel can use a very simple form with a few clearly labeled fields.




Pictured: The form to publish information in the portal.

The *CG Directory* tab breaks down the departments into an easy to search glossy. Each unit has its local services, plan of the week, local announcements, directions to the unit, and unit procedures to help give the user precise and up-to-date information.

The *My Unit* tab gives users departmental information, services and benefits, and duties pertaining to their position.




Pictured: The *My Unit* tab gives users departmental information, services and benefits, and duties pertaining to their position.

The CG Central pilot project has been very successful thus far. The Coast Guard plans to extend it from the current 1,000 users to 40,000 users within a year, so many more people will benefit from this comprehensive and practical intranet.

## URL AND ACCESS

To access CG Central, users enter mycg.uscg.mil. For security reasons, users must connect or dial in remotely through a VPN.

## CONTENT MANAGEMENT

The US Coast Guard chose the BroadVision portal product because it offered content management integrated with personalization and open standards.

## TECHNOLOGY

CG Central is written in Java and currently runs on Oracle 9i and a Windows 2000 server. The US Coast Guard plans to migrate it to an Apache server running under Solaris. The Coast Guard currently uses BroadVision's FastSearch technology to search the portal site only, but is introducing Google for whole-site search.

## GOALS AND CONSTRAINTS

1) "Dramatically improve" a Coast Guard employee's access to critical information, as well as improve their ability to process transactions themselves, to collaborate, and to learn. 2) Institutionalize content, and collaborative and knowledge-management processes. 3) Link and align IT initiatives. 4) Enhance interoperability. 5) Communicate value. 6) Capitalize workforce talents using innovative tools. 7)

Provide a consistent, efficient framework and mechanism to manage content, including content posting and use, and measure how effectively the content supports mission performance.

## BASIC INTRANET FEATURES

The intranet offers great personalization and workflows. Basic features include: role-based access to the Coast Guard Readiness Management System; forums for communities, with threaded discussion, secure chat, meetings and announcements management, and shared folders and documents; press release publishing; people search; project team document sharing and discussion forums; and Web content management with simple workflow.

## USERS

About 40,000 users access key US Coast Guard information using the Coast Guard's portal. This includes all active-duty military enlisted personnel and officers, plus about 6,000 civilians.

## USER TASKS

- Access all essential Coast Guard information including: authoritative doctrine, policies, and procedures (such as marine safety inspections, law enforcement boardings, and fisheries patrols); mission essential applications for reporting performance; the Readiness Management System; and current content such as news, leadership messages, and strategic initiative updates.
- Receive alerts for subscription-based content.
- Search for information.
- Search for people, including advanced and sensitive searches such as:
    a) Users can easily search for Coast Guard personnel by location and title, such as an emergency medical tech in Kodiak, Alaska; a qualified Law Enforcement Boarding Officer in Boston; or a First Class Boatswain's Mate.
    b) HR managers can use search for staffing assignments, easily searching for a pilot, engineer, or female member to augment a promotion board's composition, for example, or for other specialists and operators to quickly build teams in local areas. Such HR tasks used to require custom scripts, and a few days would pass before programmers could respond; now the tasks take minutes at most, seconds at best.

## BACKGROUND

The 4,000 or so units that make up the US Coast Guard are dispersed around the US, including Hawaii and Alaska, and on ships at sea in the nation’s coastal waters. In the early 1990s, many of these units began developing their own intranets, which were loosely connected on a wide-area network. “We had a decentralized WAN in which there were a number of Web servers coughing up content in an unstructured way, depending on what individual Web masters came up with,” says Lieutenant Tom Shelton, project officer.

In 2000, the Coast Guard installed the AltaVista search engine to give users a way to search information on the WAN. The search engine revealed a wealth of information resources that were not being deployed as effectively as they could be. This sowed the seeds of the CG Central project, which is currently in a pilot phase.

"First of all, it's all about helping CG people to do more of what the nation really needs CG people to be doing," explains Shelton. "For example, we have people whose main job is to save lives, some who protect the nation, others who check navigational aids, and still others who enforce our laws. But we are a little service, and so most of us do it all. And often, we have to make sure that the engines on our rescue boats are working, report the number illegal immigrants picked up or drug runners arrested, and then program our intranet websites with the latest news, results, tools, guidance, or policies. People want to put that information online, but after 9/11, we can't afford to have a person who should be fixing an engine going to Dreamweaver classes. CG Central will help make that happen."

Another CG Central goal is to help people find content reliably and authoritatively. This was a constant problem in the old, decentralized system. For example, the personnel manual is the definitive source of information on all matters relating to HR management for military members — their time off, pay, benefits, and promotions. Many sites linked to the manual, but each time the manual was revised or moved, the links were broken. To get around this problem, some sites resorted to republishing the manuals, but then users couldn't be sure which version was most current and thus correct.

The Coast Guard also wants CG Central to provide tools that let people work virtually. Unlike its bigger Department of Defense brothers, the Coast Guard consists mostly of small, geographically dispersed units. Its people need to work closely together across units, states or countries, and time zones, but its collaboration capabilities are somewhat limited. With online collaboration tools, the Coast Guard could help its people share insights and best practices, and get work done faster with less expense. "Even though we are still in a pilot phase, the field overwhelmingly reports that collaboration is CG Central's home-run capability," says Shelton.

Awareness of the need for a portal system was emerging around 2000, but development of CG Central has been intimately linked to the Coast Guard's funding process and the federal government's budget cycle. Thus, work did not begin in earnest until mid-2002. "We never knew until the last minute whether we would get the money to complete the pilot project," explains Lieutenant Commander Janet Stevens, manager of the portal program. "CG Central has been accomplished with rounds of funding from different offices and sponsors."

Before the development proper got underway, the team built a series of increasingly detailed demos and prototypes to drum up project support within the service. In November 2000, the team released a "quick and dirty" demo of a basic, functioning portal system at a senior leadership conference, followed by a further demo in May 2001. Finally, a strategic partnership between the Coast Guard Innovation Council and the Coast Guard CIO proved to be the project's missing link. The Council stepped in to fund the portal's first release.

In March 2002, the first round of funding arrived and the portal project got underway in earnest. In May 2002, an improved prototype was released at the Innovation Expo, an annual event where Coast Guard and Industry meet to highlight innovative practices and share knowledge affecting Coast Guard missions. By September 2002, Coast Guard's leadership was convinced of the portal's value.

## DESIGN PROCESS AND USABILITY ACTIVITIES

Proper project funding made it possible to hire a dedicated staff, and by May 2002 a full Web team was on board. The major issue they faced was how to present the Coast Guard's mass of information resources clearly and simply through the portal. To tackle this issue, they used a new approach: they would first develop a Coast Guard taxonomy, then design the portal site to effectively deliver personalized content.

Team members also evaluated other government agencies' collaboration portal projects, and borrowed what they saw as their best features. "We liked how the State of California delivered its services in a federated portal; the Department of State had a neat collaboration capability and a clean interface; the US Navy integrated applications well," explains Stevens. "But the US Air Force had content that was similar to us, so we benchmarked with their taxonomy and their top-level layout. Instant messaging was added to CG Central based on the Air Force example."

The team viewed personalization as an important portal feature from the start, especially when it was combined with personnel system data. "Most of these people share computers, and they might only have a few minutes to come in and do what they need to do," Shelton points out. "We wanted them to not have to use a search engine to find what is important to them — we wanted the content to find them. But if they need it, we also wanted a search engine that works without a fuss." Using personalization, individuals get the information that's most relevant to them delivered according to their login. Their profiles are automatically updated every day, so when someone transfers from California to Washington DC, their policies, career info, and personalized unit information is updated within 24 hours.

Before the team could start building a taxonomy, they needed a good fix on the existing information. The problem was that very few pages had been properly tagged, making them inaccessible to the search engine. Analysis showed that only about 10% of pages had the required metatags, and 50% of them had serious tagging problems.

The team partnered with a Web expert from the Coast Guard's legal department to develop and deploy a Coast Guard spidering application, known internally as MetaValidator, that let the 850-plus part-time webmasters tag existing Web content with vital information that the design team needed. Its target was to insert metatags for more than 60,000 pages.

In the end, it succeeded in tagging about 40,000 pages and granting waivers for a few thousand others. "If content was not tagged or waived, it was scripted to be flagged and taken offline," Stevens says. "In other words, if the publishers had not reviewed the site's content in the past year, there was a good chance we were not best meeting the needs of the CG community."

The Coast Guard chose BroadVision software to develop the portal partly because it included an off-the-shelf collaboration package. From that package, the intranet team built a prototype collaboration workspace that included the ability to work on a shared document and provide "light" version control. The working group itself used the collaboration features to discuss and manage the project's progress.

At this stage, the team invested some of its precious resources in external consultants to help build the system's taxonomy.

"Depending on external consultants as heavily as we did in the beginning — that's a decision we won't make again," Stevens recalls. "We hired them because we thought they were smarter than us, actually, they were only smarter than us for a couple of weeks. It takes a lot of organizational knowledge to build what we need. They came with application deployment, plus business and commerce knowledge, but they never really adjusted and adapted to the needs of government. Coupled with their high turnover of consultants, it was a very expensive and frustrating experience."

"The taxonomy they came up with really had nothing to do with Coast Guard needs in Coast Guard language," Shelton adds. "Things like, what in the business world people know as HR, we call 'Worklife.'"

The experience did, however, show the intranet team that inside knowledge, not outside advice, was what the project needed. But it was hard to get people to think in terms of a taxonomy based around tasks rather than organizational structure. "We needed to change the paradigm — unfreeze them a bit," Stevens says.

So, in December 2002, the team embarked on a radical new approach: a joint application design (JAD) project involving the intranet team and Coast Guard representatives. This proved to be a big step forward.

The team set up a collaboration microsite, and assigned content managers for each of the prototype portal's tabs: *Our CG*, *My Unit*, *My Workspace*, *Resources*, and *CG Directory*. Each tab manager represented a particular community and would work with that community to define the section's content structure. The wider community helping to develop CG Central was about 200 strong.

From December 2002 to April 2003, the intranet team and tab managers met every two months for three-day sessions, and met virtually every few weeks as needed. The tab managers, sometimes accompanied by employee representatives, would return to either forum with new community feedback as the developers completed pilot improvements.

"Especially after each three-day session, our developers would go away and change things, and at the next meeting we'd show them onscreen what we'd done according to what was in the minutes, and ask them 'Was this what you wanted?'" Stevens explains. "It was a very structured approach. We had an agenda and everyone left with homework and people they had to talk to." The approach was a breakthrough in getting feedback from the user community: "Hundreds of things came out of these sessions."

Version one of the portal was frozen at the end of April, and the development team moved into a month of functional and integration testing.

After a few months of close collaboration with the extended portal team — consisting of about 200 users and key tab managers — the development team released, in phases, a working pilot to profiled and non-profiled users at the Coast Guard's 2003 Innovation Exposition. CG Central was "briefed to every admiral and executive in the Coast Guard — we extended our passion about the project and we got them all fired up. Just months before, we'd completed a marketing campaign to 'sell' it up the Coast Guard chain of command. Our lead supporters were the Chief Information Officer, the Chief of Staff, and the Commandant, the Coast Guard's CEO," says Stevens. "Now, we have very strong and clear backing from the admirals at the top of our organization, and with that behind us, we've been able to make policy changes

that are helping us to reach our goals — like centralized content repositories all managed under the CG Central system."

The portal got Coast Guard final go-ahead in early June 2003. Old sites are being migrated into the new portal gradually, a process that is likely to take a few years. As users are migrated, the team is collecting direct feedback from them as well as feedback that comes up through the chain of command.

## TIMELINE

- 2000: US Coast Guard leadership establishes the Coast Guard vision.
- Nov. 2000: A demo portal, including AltaVista search engine technology, is shown to the US Coast Guard leadership to introduce the need for an intranet portal to unify scattered information resources.
- May 2001: Another demo portal is introduced at the US Coast Guard's Innovation Exposition, demonstrating personalization and the content management capabilities of BroadVision's software.
- Mar. 2002: First round of funding arrives for the full-blown portal project.
- May 2002: Another portal demo at the USCG Innovation Exposition; the demo includes a taxonomy benchmarked with the Air Force, and BroadVision's improved portal framework with collaboration workspaces.
- Dec. 2002-Apr. 2003: Joint application development with user representatives.
- Apr. 2003: Development of CG Central Version 1 is frozen.
- May 2003: Testing phase/government acceptance.
- June 2003: CG Central Pilot goes live; users begin migrating to the new system.

## RESULTS

Since CG Central went live in June 2003, the Coast Guard has been gradually phasing users in and moving slowly toward a fully operational system. Of the Coast Guard's 40,000 staff, about 5,000 profiled and unprofiled users are currently using the system.

It's still early to assess the Coast Guard's goals of improving employee productivity through the portal. In the longer term, however, the team plans to measure how well the content provides mission support as part of its content management framework. "At this point, I know we have some extreme time savers, such as faster people search, faster information search, and fewer programming skills needed to publish information," says Stevens. "We will be working out a more realistic ROI based on user behaviors, customer feedback, shutting down of several servers and systems, and so on, and reporting our performance to the CG Readiness Management System to ensure our system meets the needs of users afloat and ashore."

## LESSONS LEARNED

Insights from Janet Stevens:

**Don't overreach yourself.** "Start small, promise small, and deliver valuable, usable segments. Make sure you have enough money to complete and deliver what is promised."

**Publicize the benefits.** "Project return on investment from small successes — the leadership of any organization wants this information upfront and early on."

**Make it worth users' while.** "Reward users for participation and quality outcomes."

**Don't turn to outside experts when you really need is internal knowledge.** "We hired consultants because we thought they were smarter than us. Actually, they were only smarter than us for a couple of weeks. They didn't have the organizational knowledge we needed."

# Wachovia Corporation

**Using the Intranet:**

First Union (founded in 1908 in Charlotte, N.C.) and Wachovia (founded in 1879 in Winston, N.C.) merged on Sept. 1, 2001 to create Wachovia Corporation. It is now the fifth largest bank holding company in the US based on assets of $364 billion as of June 30, 2003, and provides financial services to over nine million households and 900,000 businesses. The corporation has more than 80,000 employees serving customers throughout the East Coast and the nation.

**Design Team:**

In-house

**Members:**

Dale Bass, VP, intranet experience team lead; Jim Bates, AVP, graphic designer; Kathleen Cannon, officer, information architect; Robert Stribley, information architect.

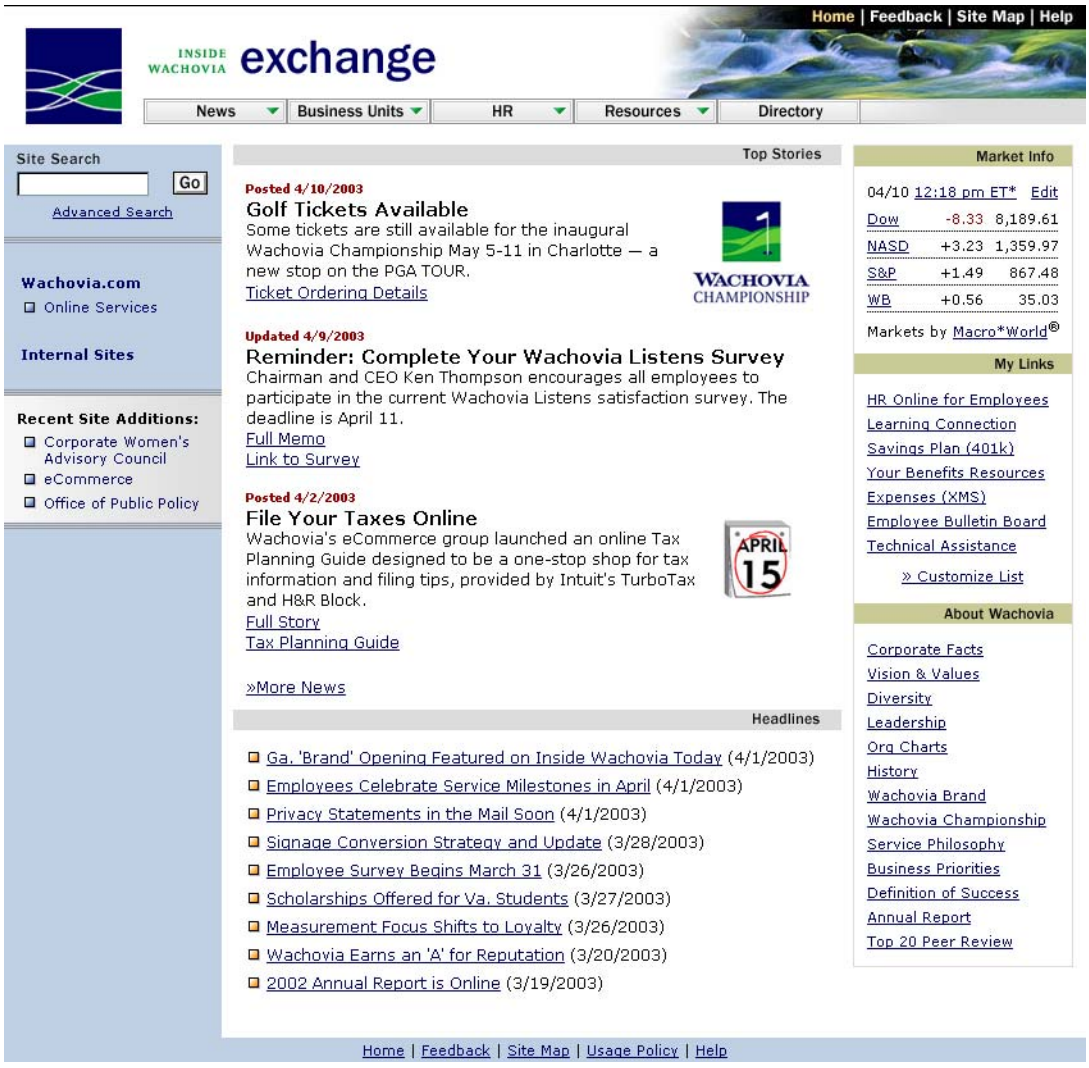
## SUMMARY

The Wachovia enterprise intranet site accurately represents a busy company: It buzzes with activity, but is not too cluttered or in any way annoying — a difficult balance to achieve.

The company named the intranet *Inside Wachovia Exchange* to coincide with its established internal branding. "Inside Wachovia" is the common descriptor for all avenues of corporate communication. For instance, *Inside Wachovia Today* is the employee television show, and *Inside Wachovia Times* is the corporate newspaper. Using such a well-known naming convention for the intranet helps reinforce the company's internal community and helps the intranet fit into the overall structure.

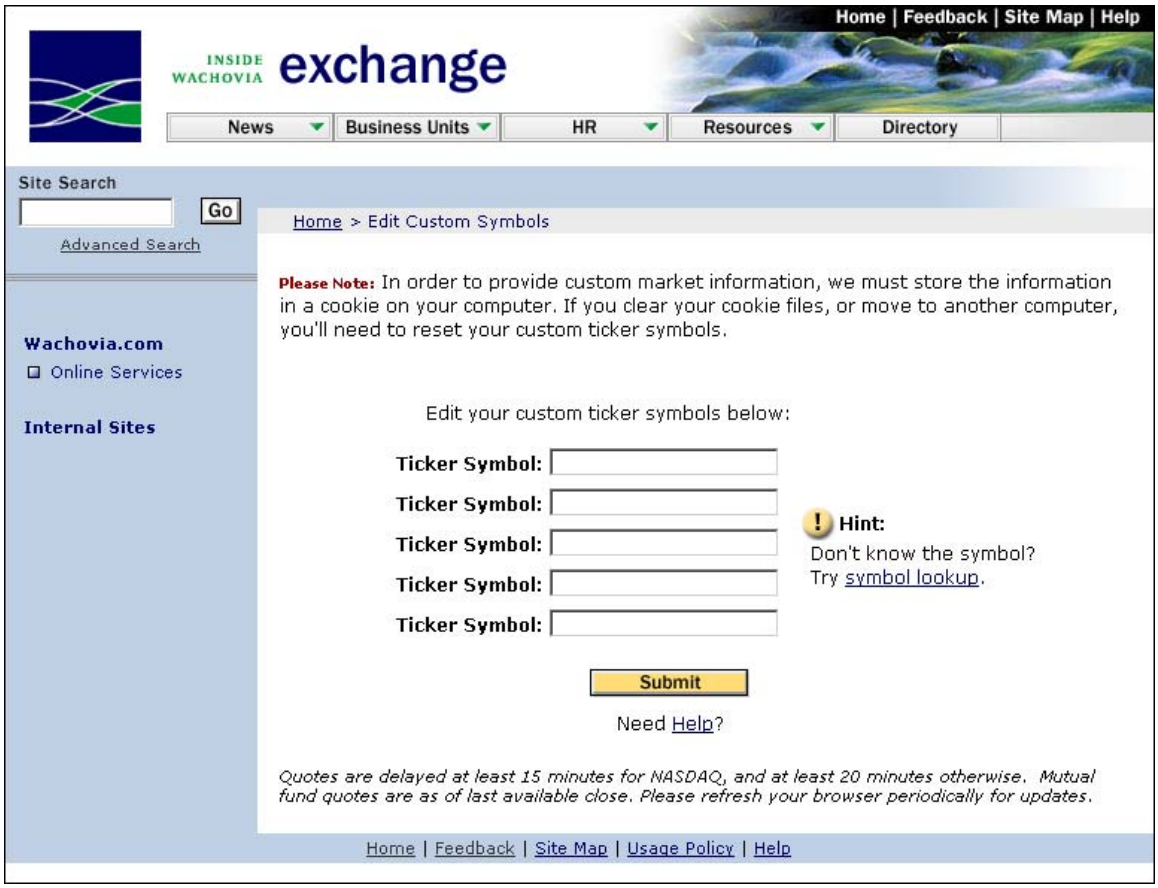
A few corporate news items, such as HR announcements, occupy center stage on the homepage; more corporate news appears in the *Headlines* section below it. For employees to stay interested in homepage news, items must change frequently, and these do. The Corporate Communications group updates them throughout the day — an excellent marriage between Wachovia's technology and news people.

The *About Wachovia* area contains links to other important corporate information.




Pictured: The homepage of Wachovia's intranet, Inside Wachovia Exchange. It presents a lot of information effectively, without being too cluttered.

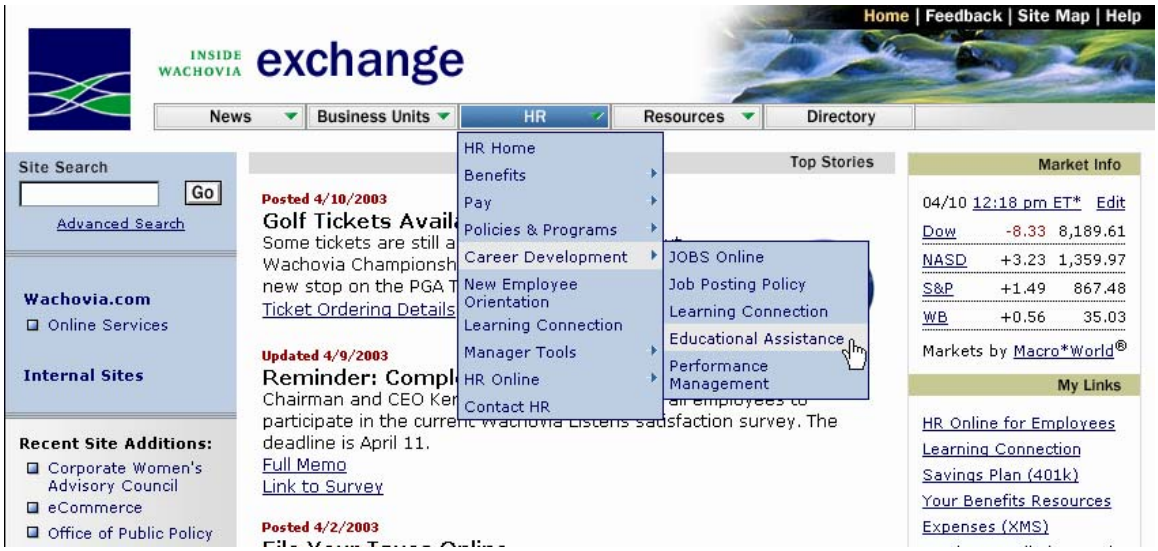
The *My Links* area defaults to a list of common intranet areas, but employees can change the links so that they can quickly navigate to their favorite locations. They can also use *My Links* as a favorites list of intranet or Internet sites. The *Market Info* area provides stock market information on the homepage's right side; users can personalize it by adding up to five stock or mutual funds that they'd like to track.



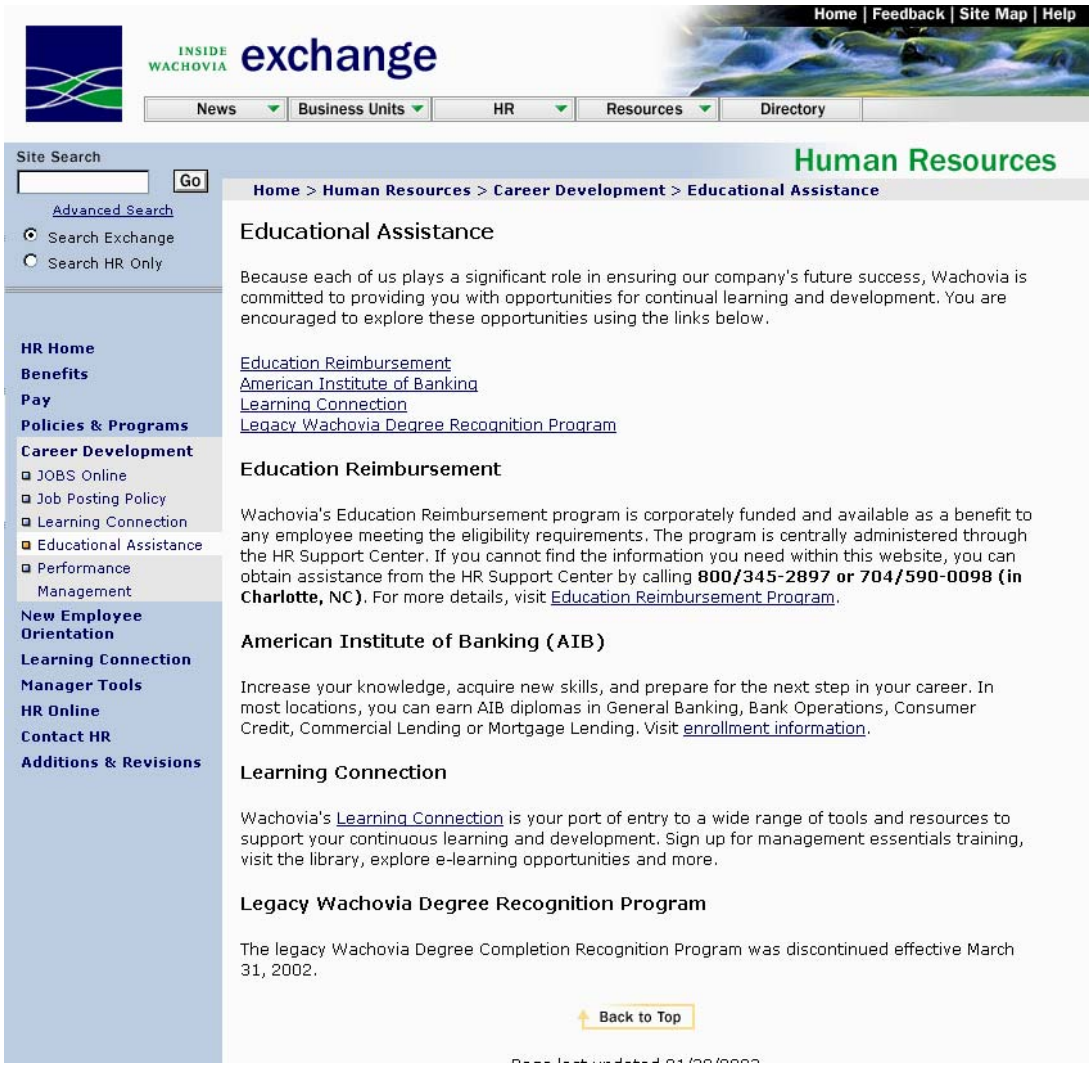

Pictured: A form that lets users enter up to five custom stock symbols to their *Market Info*. The form appears after users click the *Edit* link in the homepage's *Market Info* box.

The global navigation bar across the top of the page, divided into *News, Business Units, HR, Resources,* and *Directory,* is persistent across the site. The site search and topmost navigation elements, *Home, Feedback, Site Map, and Help* are also available on every page. Links to the public Wachovia.com site and online services, such as banking and brokerage, are available on the left.

On many intranets, it's easy for users to get lost once they delve deep into content pages and subsites. But designers used several visual cues to give content pages on this intranet clear navigation. The main section heading identifier appears in the upper right (in green text), reminding users of their general area location. More specifically, the left navigation highlights the user's current location, using color to demonstrate exactly where users are and what related items are available. Finally, clickable breadcrumbs appear at the top of pages, providing context, orientation, and an alternate navigation option.




Pictured: A menu display on the intranet; the next picture shows the result after it is clicked.



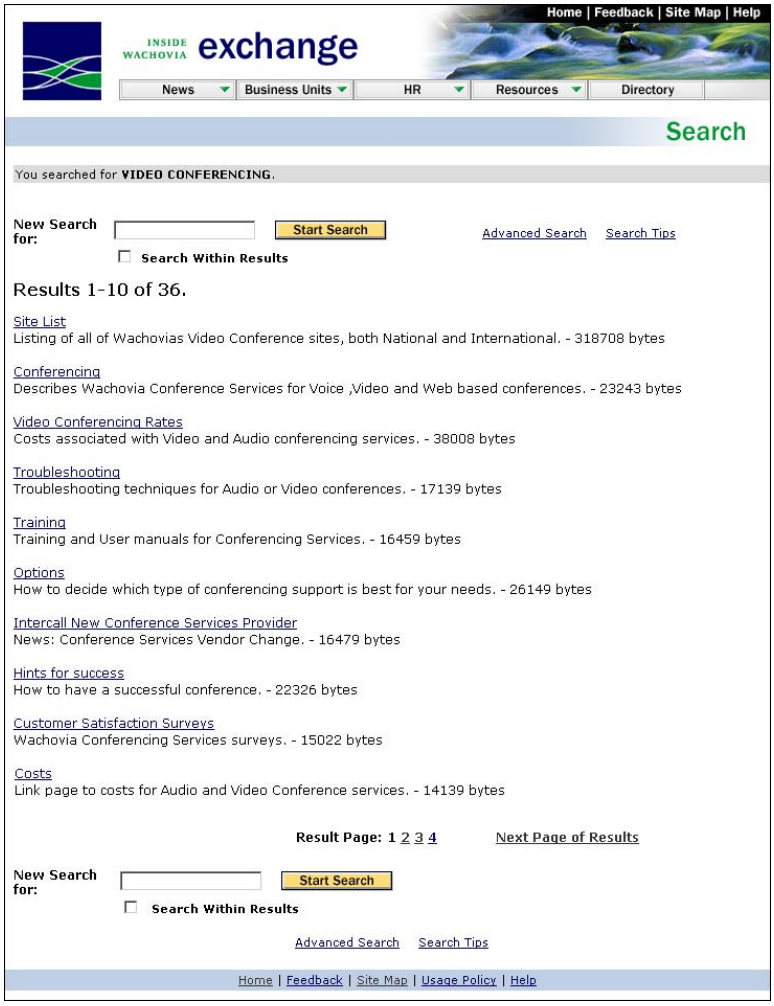

Pictured: A deeper page in the Wachovia site: *Educational Assistance*, which is located under *Career Development* in the *Human Resources* section. The green area identifier and breadcrumbs serve as clear guideposts to the user. In the left navigation, the gray background behind *Career Development* and its related elements visually groups them together. The yellow bullet and white cutout behind *Educational Assistance* reinforces the "you are here" message.

The team was obviously striving for consistency in navigation, and built in many user signposts. Also, an information architect is involved in creating and revising all of the intranet's global and local navigation.

Although it's unlikely that such a clear navigation model will fail users, some still prefer searching. The intranet offers a nice search feature. It defaults to querying the whole site, which is the method we've seen work best on other websites and intranets. But, by simply clicking a radio button, users can choose to search only the site's currently selected area. This is a nice feature for those who care to use it, and it doesn't confuse people who don't.

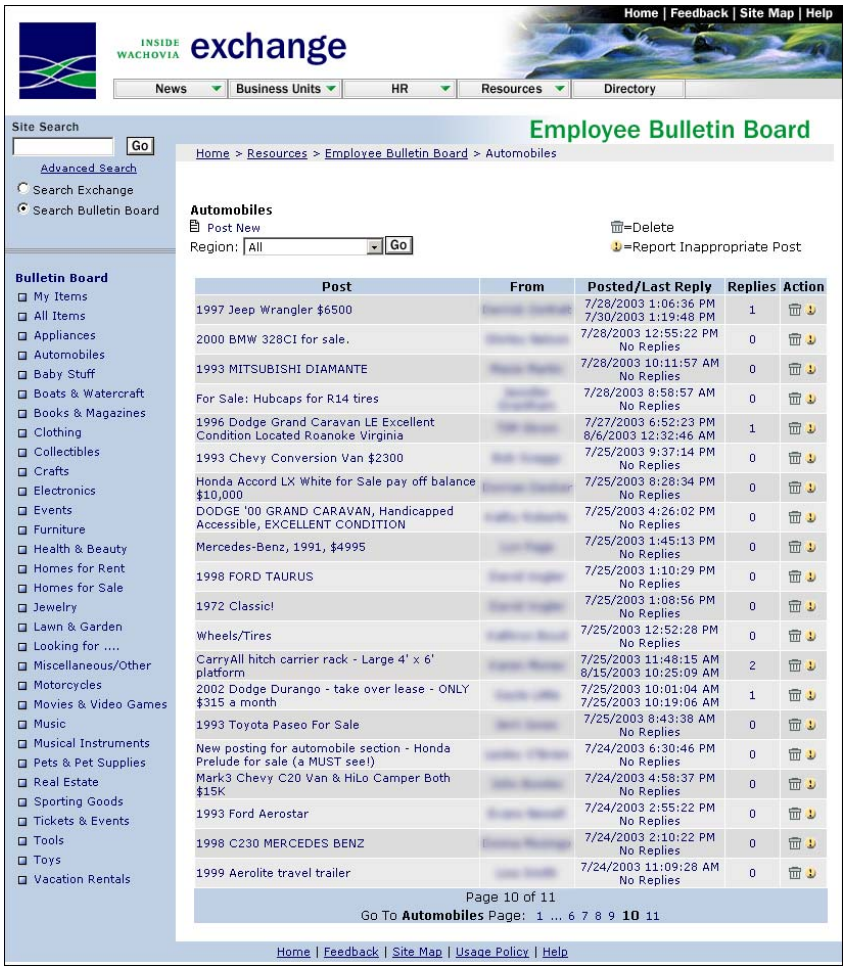
The search results are also well presented, with clear links and descriptive summaries. Authors are encouraged to create short, meaningful description

metadata to help users quickly choose the appropriate link. The search query is repeated, which is imperative in search results. The open search field is available to search again, and even offers the option to search within the results. Finally, an *Advanced Search* link offers more options, but doesn't hinder simple re-searching.




Pictured: An example search results page. In this case, a search for "video conferencing" returned thirty-six results. At the top of the page, the user is presented with a description of what she searched for, an entry box to start a new search (or narrow the existing results), links to *Advanced Search* and *Search Tips,* and a notification of how many returns were generated. The results on this page are all links to HTML pages, but if results link to a PDF or Word document, for example, the appropriate icons would appear to let users know what to expect when they click the links.

A popular feature on the Exchange site is the *Employee Bulletin Board*, where employees can buy and sell personal belongings, find housing or a roommate, and generally gather and share information. Items are searchable by category or seller location.




Pictured: The *Employee Bulletin Board* where employees can buy and sell personal belongings and generally gather and share information.

The Wachovia designers put a great deal of effort into areas that many designers tend to overlook. They created cascading style sheets, for example, and used percentages instead of points or pixels for fonts. Users who want to use the browser's custom text-size function will especially appreciate the latter. Also, the designers built the site so it would scale to fit the user's browser width, making maximum use of screen real estate and ensuring that pages print correctly.

The intranet also looks nice, with a simple grid and soothing color palette. All of these considerations make the employees at Wachovia appreciate their intranet experience.

## URL AND ACCESS

Users' access to Exchange depends on their legacy organization. Within the former Wachovia, there is a common desktop and Exchange is the default browser page. Former First Union employees currently have to key in the URL, exchange.wachovia.net, though the plan is to extend the common desktop to them over time. Because of Wachovia's tight security requirements, employees can only access the intranet externally if they have access to the company's VPN.

## CONTENT MANAGEMENT

Wachovia chose Microsoft Content Management Server 2001 to build the site and provide a distributed authoring environment that is easy for the average Microsoft Office user to learn.

## TECHNOLOGY

Wachovia used Visio to build its IA diagrams, schematics, and paper prototypes; Photoshop 7 for visual design mockups; and Dreamweaver MX to build the high-fidelity HTML prototypes. Its developers built the live system's templates in Microsoft's CMS2001.

## GOALS AND CONSTRAINTS

1) Provide Wachovia employees with a unified intranet experience to enhance productivity, employee effectiveness, and organizational efficiency. 2) Build a new intranet site that consolidates the current enterprise site with the legacy First Union and Wachovia sites. 3) Lay the groundwork for the next-generation enterprise intranet.

The team accomplished these goals by:

- Implementing a user-centered design approach
- Applying best practices in website usability
- Gathering feedback from employees, including regular one-on-one usability studies and detailed surveys
- Acting on that feedback to create a cycle of continuous improvement
- Sponsoring a consistent approach to authoring/publishing
- Applying standards across content and applications where appropriate

## BASIC INTRANET FEATURES

The site provides easy access to corporate news, business unit and HR information, commonly used online tools and applications, the employee directory, and search.

## USERS

With more than 80,000 company employees, an extremely wide range of users depend on the Wachovia intranet daily, from bank tellers accessing the latest HR information to senior executive VPs using the corporate directory.

## USER TASKS

There are hundreds of general and specialized intranet functions that employees use every day to do their jobs. The following is a small sampling of supported user tasks:

- Look up employee information in the corporate directory
- Get internal and external company news
- Find HR-related information and policies

- Review and edit personal information (address, work phone, and so on)
- Sign up for a training class and update your transcript
- Apply for a job
- Fill out expense reports and time sheets
- Make travel reservations
- Procure products and services
- Perform administrative tasks

## BACKGROUND

On September 1, 2001, two venerable US banks — First Union, founded in 1908, and Wachovia, founded in 1879 — merged to create Wachovia Corporation. The merged company provides financial services to over 9 million households and 900,000 businesses, and has more than 80,000 employees serving customers throughout the US.

Following the merger, Wachovia Corp had no fewer than three main enterprise intranet sites: WNFO, the legacy Wachovia site; Green.com, the legacy First Union site; and Connections, a temporary site created to communicate high-level strategy to the merged workforces. In addition, there were more than 500 team, departmental, and division sites, all with different designs and varying levels of production quality. The enterprise intranet team was formed to create a true enterprise intranet for the new company.

## DESIGN PROCESS AND USABILITY ACTIVITIES

In December 2001, the enterprise intranet team began working on several fronts to map out user requirements and structure for the new site. Information architects Kathleen Cannon and Robert Stribley carried out a content inventory and heuristic evaluations of the existing corporate sites.

From September to December 2001, the team also carried out a thorough user research project. The team first conducted a series of interviews with about thirty-five users throughout the organization to gauge their experiences with current intranets and their expectations for future intranet sites. Team members selected participants to represent a broad range of business units, job roles, and geographic locations across both legacy organizations.

The interviews each lasted about an hour, and took place in Winston-Salem and Charlotte, North Carolina. Questions covered a range of topics, including usage patterns, awareness and training, obstacles, usability concerns, IA, graphic design, and unmet user needs. The team then held telephone interviews with users from other locations.

Based on recommendations from legacy organization groups, the team also established a pool of about 300 users representing various business units and job roles. Team members contacted these users via email, gave them an overview of the project scope, and invited them to send questions or comments to a "wish list" email address. This elicited about forty responses.

The team also emailed all 300 users questionnaires designed to help identify differences in expectations, terminology, and mental models of the intranet in the two legacy organizations.

The team used information collected from the interviews, the "wish list" feedback, and completed questionnaires to support the development of an IA that was comprehensible and usable by employees of both legacy organizations.

By March 2002, the team was ready to build the new site structure and produce designs. Several different work tracks ran simultaneously.

Cannon and Stribley wrestled with the challenge of creating a new site structure that would retain the best features of the existing three corporate sites while enabling users to navigate quickly and easily through large amounts of information.

For example, users liked the *Work/Life* section in the old WNFO site; so one challenge was to figure out how to represent it in a more task-oriented structure (it now fits into the *Resources* section).

In addition to looking at user feedback information, Cannon and Stribley did a round of card sorting with ten users — then went away and pondered the results. "We'd lock ourselves in a room for a few days and just spend the time brainstorming," Cannon recalls. They held a second round of testing, again with ten users, using paper prototypes to validate the main section headings.

Meanwhile, work was progressing on the visual design. The team already had plenty of user feedback to build on. Dale Bass, VP, intranet experience team lead, had usability experience from working on the Wachovia Internet site, which proved helpful in the intranet project.

"We pretty much had an idea of what we were looking for, it was just a question of organizing it in the right way," he says. For example, users from both legacy organizations were expecting to see global navigation across the top and local navigation on the left. Also, the blue and green color scheme was a no-brainer, given that these colors were part of the new Wachovia brand.

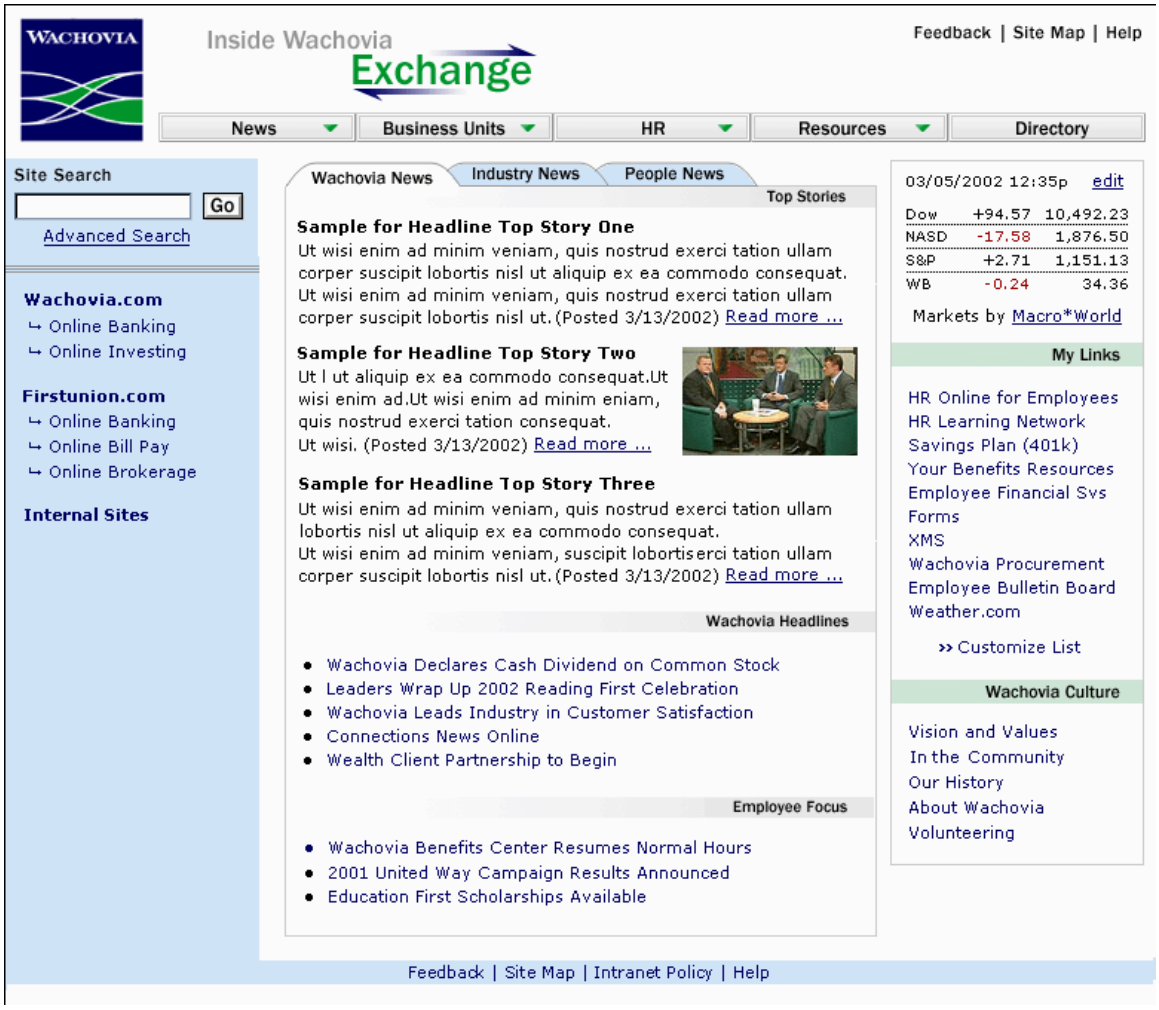
Users had said that the *Connections* homepage had too much text and that the font was too small; subsequent user tests showed that, however much the designers liked smaller fonts, users disliked them — so the font size had to increase. There was also significant demand for better search and a clearer structure.

Some users love drop-downs while others hate them, but Wachovia's user survey "showed that legacy Wachovia users really liked drop-downs — they made that point over and over again," Bass says. "They liked being able to quickly jump a couple of layers into the site."

The new site thus includes drop-downs, but — bearing usability caveats in mind — the team put special effort into making them easy to use. They built several tasks into the usability tests to ensure the drop-downs were fast enough, persisted long enough, were the right length, and didn't occupy too much screen space. They also limited drop-downs to two levels, rather than let them grow as they did on the old WNFO site.

Bass developed some alternative designs in Photoshop, which were then coded in HTML to create high-fidelity prototypes. The team showed these to the corporate leaders, then watched a group of ten test users in the Wachovia usability lab as they attempted a series of typical tasks.

Wachovia has two full-time usability engineers and a well-equipped usability lab, which it uses for several different Web projects. The lab consists of a testing room with a table and chairs for interviews and card sorting, and a desk with a computer, keyboard, mouse, and monitor. The observation room is behind a two-way mirror, and is equipped with two monitors that display what's happening on the lab's monitor.




Pictured: An early (March 2002) version of the proposed Inside Wachovia Exchange design.

The team made several changes to the prototype homepage shown above as a result of user feedback. Team members also modified the design treatment to match other internal communications channels.

Users had trouble finding the links to *Feedback*, *Site Map*, and *Help* in the upper right-hand corner. When testers pointed the area out to them, users said it was too "bland" and didn't draw their attention.

The tab effect for the different types of news in the center column (*Wachovia News*, *Industry News*, and *People News*) did not test well, so that area was redesigned as well.

Several users mentioned that they would prefer a richer, more vibrant design. The team thus made changes to the color palette, while paying close attention to the contrast between colored backgrounds and text. They converted screenshots of proposed designs to grayscale in Photoshop to ensure they maintained appropriate contrast.

Some users failed to spot the colored title separators in the right rail (*My Links* and *Wachovia Culture*), so the team changed the color from a light green to tan.

Finally, they changed the body copy to its current, size.

The new corporate site went live in July 2002, and the team is now working to improve it on an ongoing basis while bringing the many corporate subsites into the new look and feel. "We're probably about halfway through our migration efforts, and anticipate that 75-80% of the sites will have moved over by the end of the year," said Andy Jones, Director of Employee and Corporate Businesses.

Templates control a page's overall look and feel, and business units follow a style guide, but users do have some control over a page's content area.

The corporate intranet team continues to have quarterly intranet forums, where they meet with senior leaders of the bank's business areas and representatives of the author community.

## TIMELINE

- Sept. 2001-Dec. 2001: User research program.
- Jan. 2001: Heuristic evaluations and content inventory.
- Feb. 2002: Brainstorming sessions.
- Mar. 2002: Business partner interviews and creation of site maps and schematics.
- Mar.-Apr. 2002: Design phase and usability testing.
- July 2002: Site launched with enterprise-level functionality.

## RESULTS

Though Wachovia does not yet have solid estimates of savings from the intranet, the team is working on a methodology, and they hope to provide this information in the future.

"We see the intranet as a corporate asset that needs to be nurtured," says Jones. "Our expectation is that it will grow to be more of an employee portal, and we will need to further invest on an ongoing basis. If we can point to savings in hard dollars as well as soft dollars, then next time it will be an easier sell."

Because the project started from scratch, it is fairly easy to identify the size of the hardware, software, and labor investments. Working out the added value is more difficult; Jones estimates that the savings could well be on the order of several million dollars a year, and the team is hoping to prove that over time.

The team has identified several intranet attributes that it believes will deliver added value. By centralizing development, the company can dispense with certain developer skill sets in the business units. Improved search facilities mean faster access to information, which will improve operational efficiency and customer

service.  Getting the right information to the right employee at the right time should also reduce risk.

The team is tracking all these factors on a monthly basis and fine-tuning as time goes on.  "For example, where we've made assumptions around the value of better search, we'll fine-tune those on the basis of results," Jones says.

However, keeping track of these indicators is a time-consuming process and, of course, an added cost.  "It takes up a lot of time for three to four of us," Jones says. "We're trying to find ways of operationalizing the process and tagging all enhancements with an estimate of value as we go along."

## LESSONS LEARNED

Insights from Dale Bass:

**Don't forget the content authors.** "Pay as much attention to creating a good experience for authors using the CMS as you did to the user experience for the intranet as a whole."

**Identify the key people.** "There's no way we can meet with the hundreds of groups throughout the company, so we've identified one key person in that group who can be our liaison there, and work on building a rapport with them."

**Help build a sense of style.** "Take the time to document design decisions as you make them, and use that as a basis to create a formal style guide for authors.  Also, we've found it helpful to have the intranet style guide in a very visible location on the intranet, so authors can access it when needed."

## Recommendations for the Intranet Design Process

Understanding the lessons learned from these good intranets will help you to design a better intranet for your organization or your client's organization. There are also other, more process-related things you can do to improve intranet usability. Based on the above cases, the 2001 and 2002 cases, and our other experiences testing intranets, we offer here a few of the most important recommendations for designing a usable intranet. Note that these recommendations have changed very little since 2002.

### 1. CONDUCT MANY SIMPLE USABILITY EVALUATIONS ON DESIGN ITERATIONS — AND WATCH PEOPLE WORK

Several of the designers working on our winning intranets said that it's important to come up with something before attempting to get feedback. This has certainly worked for them, as the outcomes show. However, it's important to remember that you don't need a complete design to get feedback. You can test prototypes, paper mockups, and competitive sites (if you can find them). Alternatively, you can watch people using current systems, even if they are not an intranet per se, and determine the activities that are already well laid out.

As in past years, when we looked through this year's design submissions we again observed a lack of consistent usability processes, including regular usability testing, heuristic evaluations, and field studies. Even busy development teams with tight deadlines should take the time to watch people attempt basic tasks using the design. It does not take very long to do a quick test. We also encourage design teams to get a group of designers and developers together — even for just twenty minutes — and do a quick review of the site's design to discuss and agree on the top usability issues.

### 2. MEASURE ROI

Most of the intranets in this contest have made obvious strides and great usability improvements, and, no doubt, productivity and efficiency gains for the company. However, most do not formally or even informally measure any return on investment. Often this is not a priority because of tight schedules and the way organizations allocate money. For example, maybe the money to design and pay for maintaining the intranet is allocated to the IT VP, but the actual productivity gains are found in the HR department. Take the time to measure decreased task time and increased money savings across the organization. Make the gains known to the different departments and at higher levels, so even the most upper-level managers understand the importance of well-designed internal systems.[8]

### 3. CREATE USER PROFILES AND ANALYZE USER TASKS

One of the great benefits of designing a website or application for internal users versus external users is that you can easily find out who your users are, even if you work at a very large organization. Use this to your advantage. Find out about the people who will be using the intranet, their experience levels, tasks, what other tools

[8] If you are looking for help on ROI, see these publications: *Measuring Return on Investment*, Gilutz, Nielsen, www.nngroup.com/reports/roi; *Cost-Justifying Usability,* Bias & Mahew, ISBN 0120958104

are available and familiar to them, and how the intranet could streamline their work. Visit them and watch them do their jobs.

## 4. CONSIDER ACCESSIBILITY

Many companies employ people or will employ people who use assistive technology. Almost all of the submitted intranets suffered from accessibility issues for users with low vision, no vision, or motor skill challenges. The trends toward many graphics, tiny text, poor contrast, limited space between links and text, and small targets are a bit scary, as these are chief accessibility offenders. On the positive side, while many submissions do overuse graphics, many others use graphics sparingly, and when they do use them, they are well labeled for users with low vision or no vision.

## 5. ALLOW USERS TO ADD CONTENT

The most well-received intranets are those that have fresh information that people need and want. One way to keep information updated and interesting is to provide methods for employees to add and edit information. Also, letting users add content will make them feel some ownership toward the intranet. And, more good content providers will probably lead to more varied information on the intranet, inspiring more employees to return.

## Intranets Not Selected: Common Issues

The ten intranets featured in this report were selected from almost ninety submissions. The large number of submissions and high quality of many of the designs created a challenging selection process. As in past years, we found many more than ten good designs.

Although we won't name or show examples from intranets not in the top ten, the following are some of the major problems we saw across the submissions not included in this report. Unfortunately, several issues listed below are the same as those we saw in 2002.

### 1. THE ASSUMPTION THAT USABILITY TESTS MUST BE GRAND AND EXPENSIVE

Usability evaluation practices are still new to many teams and individuals. Still, it is surprising how many submissions noted that "there was no time" or "no budget" to do usability tests. This is a shame. Designers are either under too much pressure, uneducated, uninspired, or simply afraid to sit and watch even three or four co-workers doing a few tasks using the intranet.

### 2. INCONSISTENT DESIGN ACROSS THE INTRANET/WILDLY INCONSISTENT NAVIGATION

Inconsistent navigation and look and feel across the intranet was probably the most common flaw we saw. A common symptom resulting from this design problem is that users find it difficult to determine their location and context. This frequently affects how quickly they can accomplish intranet tasks.

In reading the history of some of the intranets, we noticed a common scenario: Different teams created intranets for their divisions, and at some point the company decided to link them all together via one main homepage. However, they never created a consistent design across the subsites, leaving employees to work with fragmented and disjointed intranet designs. Some of the more common reasons for creating such a design might include:

- Designers did not think of creating a common interface.
- Designers did not think a common interface was important.
- Designers cannot find the time or budget to redesign all of the subsites for consistency.
- Managers, vice presidents, or designers who created different subsites want to retain their own image (and brand and design) on the intranet.

Whatever the reason, if this sounds familiar, please reconsider your intranet design. All users will benefit from a consistent design across the entire site.

### 3. POOR USE OF PAGE REAL ESTATE

On many an intranet, pages were far too long, requiring much scrolling. Also, having too much text and information on one page is difficult for users to manage. Some pages were even too sparse, with hardly any information at all.

## 4. LACK OF NEWS, OR UNINSPIRING NEWS

News about the company can excite and even involve employees. Some intranets have no news sections. Others have a news section, but the news either does not change or changes but is always about HR announcements, for example. Old or tiresome news will bore employees and make them feel like there is nothing new happening at their company.

## 5. TOO MUCH MARKETING (OR ADVERTISEMENTS) FOR THE INTRANET

Nothing is more annoying than being presented with marketing hype or advertisements for the intranet, especially since the user is already using it. The intranet is meant to be a tool to help users get work done, get important and timely company information, and possibly inspire a team feeling across the company. It is also appropriate to post awards and other applicable information on the intranet. An intranet is not a good place for its designers to post information about themselves or to advertise the intranet. Explaining features is one thing; using the intranet for self-promotion is another. It's an obvious way to make employees feel unwelcome and send them away.

## About the Authors

The three authors were the reviewers, interviewers, and judges for the competition this report is based on, and they also wrote Nielsen Norman Group's 2001 and 2002 Intranet Design Annuals.[9]

**Kara Pernice** is the director of research at Nielsen Norman Group and heads the Boston office. Since joining NN/g, Coyne has led several intercontinental research studies and wrote associated reports about topics such as intranets, the Web and accessibility, senior citizens, public relations, and site maps. She has developed and taught numerous seminars about these topics and about a variety of usability methods, such as the product lifecycle, field studies, and usability testing. Additionally, Coyne has worked with clients in many industries including publishing, technology, e-commerce, government, music, and pharmaceuticals. Before joining NN/g, she established successful usability programs at Lotus Development; Iris Associates, an IBM subsidiary; and Interleaf. She managed the first usability program for Lotus Notes and the Domino server, and, after her team's work, *PC Magazine* wrote, "If this were summer camp, Lotus Notes would walk away with the Most Improved Camper award." Coyne chaired the Usability Professionals' Association conferences in 2000 and 2001, was presentations chair for UPA 1999, and was the conference advisor for UPA 2002. She is on the editorial review board for a new intranet magazine, *The Journal of Intranet Strategy and Management.* She has an MBA from Northeastern University and a BA from Simmons College.

**Candice Goodwin** has worked for twenty years as a journalist specializing in technology and how people use it at work. Based in London, she has contributed to a range of technical and business publications in the U.K., including the *Telegraph*, *New Scientist*, *Computing*, *Computer Weekly*, and *Accountancy*. She has a BA in psychology from Oxford University and an MSc in human–computer interaction from University College, London. Since earning her master's degree in 2001, she has combined writing with freelance usability and ergonomics consultancy.

**Dr. Jakob Nielsen** (www.useit.com) is a user advocate specializing in Web usability and a principal of Nielsen Norman Group, which he co-founded with Dr. Donald A. Norman, former Vice President of Apple Research. Until 1998, Dr. Nielsen was a Sun Microsystems Distinguished Engineer and led that company's Web usability efforts starting with the original design of SunWeb in early 1994. His previous affiliations include the IBM User Interface Institute, Bell Communications Research, and the Technical University of Denmark. Nielsen's recent book, *Designing Web Usability: The Practice of Simplicity,* has a quarter million copies in print in 22 languages. In its review, *Business Week* says that this book "should ... be read by any executive with responsibility for managing online operations." Nielsen's Alertbox column about Web usability has been published on the Internet since 1995 (www.useit.com/alertbox) and currently has about 200,000 readers. Nielsen has been called "the guru of Web page usability" (*The New York Times*), "the smartest person on the Web" (*ZDNet*), "knows more about what makes websites work than anyone else on the planet" (*Chicago Tribune*), and "the next best thing to a true time machine" (*USA Today*). He holds 71 U.S. patents, mainly on ways to make the Internet easier to use.

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[9] These reports are available for download at http://www.nngroup.com/reports/intranet/2001/ and http://www.nngroup.com/reports/intranet/2002/.

# Acknowledgements

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Finally, thanks to Keri Schreiner for copyediting this report.

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