Microsoft Web Enterprise Portal

Deploying Microsoft's Enterprise Intranet Portal
Using Microsoft Office SharePoint Portal Server
2003

White Paper

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Microsoft®

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EXECUTIVE SUMMARY

Situation

At Microsoft, people were spending too much time looking for the "right" information. This situation was further complicated by the fact that the best information often lived with individuals, either in their minds or on their hard drives. Furthermore, information was difficult to find on the intranet.

Solution

The Microsoft Knowledge Network Group (KNG) worked in conjunction with Microsoft IT to redesign the company's employee intranet portal using Microsoft SharePoint Portal Server 2003.

Benefits

- Increased efficiency and productivity for employees needing to find more contextually relevant information in less time
- More informed decisions resulting in more effective customer interaction, fewer lost opportunities, less rework and greater customer, partner and employee satisfaction
- Reduced costs of developing, deploying and managing an enterprise intranet portal solution

Products & Technologies

- Microsoft Office SharePoint Portal Server 2003
- Microsoft Windows Server 2003
- Windows SharePoint Services
- Microsoft SQL Server 2000
- Microsoft Office System 2003
- Microsoft internal tools for taxonomy management and Best Bets and URL cataloging processes

Driven by a commitment to fully deploy new versions of its products inside the company before making them generally available to its customers, Microsoft used pre-release versions of Microsoft® Office SharePoint™ Portal Server 2003 to significantly revamp Microsoft Web, its internal enterprise intranet portal solution.

The Microsoft Knowledge Network Group (KNG) worked in conjunction with the Microsoft information technology group (Microsoft IT) to redesign Microsoft Web, the company's enterprise intranet portal. The design was based on well-researched employee needs and business goals and implemented using the latest release of SharePoint Portal Server 2003.

The key areas of improvement in the Microsoft Web intranet portal included development of new capabilities for:

- Finding the "right" information
- Finding people and what they know
- Organizing the intranet

Thorough analysis of employee needs and feedback from the previous version of Microsoft Web identified a number of problem areas where improvement was needed. To address these issues, KNG created a plan to deliver four primary enhancements:

- An integrated intranet portal architecture
- An updated knowledge architecture based on shared standards and practices
- Shared Services, a set of centrally managed, highly scalable, core portal services designed to be re-used across multiple portal sites
- A new version of Microsoft Web, Microsoft's internal intranet portal solution

Rather than simply create a standalone enterprise portal, KNG worked in conjunction with Microsoft IT to deliver an intranet portal solution that significantly increased the productivity of Microsoft employees. The new version of Microsoft Web made it easier for employees to find information that is contextually relevant to the task they are working to complete. The enterprise intranet portal solution also made it easier to find people who were specialists in the type of knowledge being sought and to determine whether they were available to be contacted by telephone, instant messaging or e-mail.

A "best practice" for this project was the availability and management of a corporate taxonomy that helped to organize several related elements of the Microsoft intranet experience and make them consistent: keyword Best Bets, site creation and site registration, Site Directory organization, customized user profiles and personal sites.

The upgrade of Microsoft Web using SharePoint Portal Server 2003 provided a number of key business benefits:

- Increased efficiency and productivity for employees needing to find more contextually relevant information in less time
- More informed decisions resulting in more effective customer interaction, fewer lost opportunities, less rework and greater customer, partner and employee satisfaction
- Reduced costs of developing, deploying and managing an enterprise intranet portal solution

INTRODUCTION

Customers frequently ask Microsoft about the methods employed and lessons learned when its own products and technologies are deployed and used in the company.

This white paper documents the design, implementation and deployment of Microsoft Web 6.0, the sixth major release of Microsoft's internal intranet portal solution in the last 8 years. A screen image of the Microsoft Web home page appears in Figure 1. The white paper was written for enterprise, business and technical decision makers, IT architects and operations managers who are considering an upgrade of their intranet portal infrastructure or implementation of an intranet portal solution for the first time. It focuses on the needs of the intranet or enterprise portal owner who works in a large organization, employing thousands or hundreds of thousands of people.

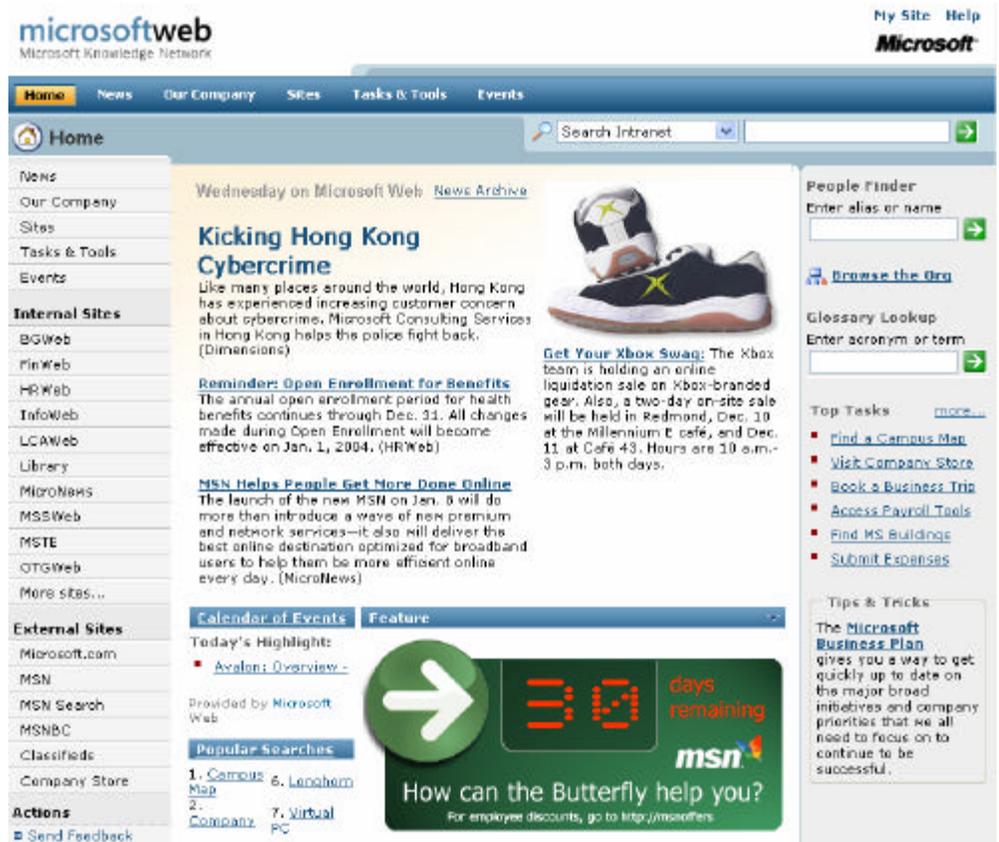**Figure 1. Microsoft Web Home Page**

Microsoft Web uses SharePoint Portal Server 2003 to address three kinds of problems experienced with previous versions of Microsoft Web:

1. Difficulty in finding and retrieving the "right" information

2. Challenges in locating people and understanding what they know

3. Inability to organize the intranet as a navigable space and create a comfortable sense of "place"

Microsoft Web is one part of Microsoft's world-wide intranet solution. Figure 2 illustrates the overall solution which includes the following additional components: Shared Services, centrally hosted collaboration platform and its sub components: Microsoft Windows® Server 2003, Microsoft SQL™ Server 2000, Windows SharePoint Services and SharePoint Portal Server 2003.
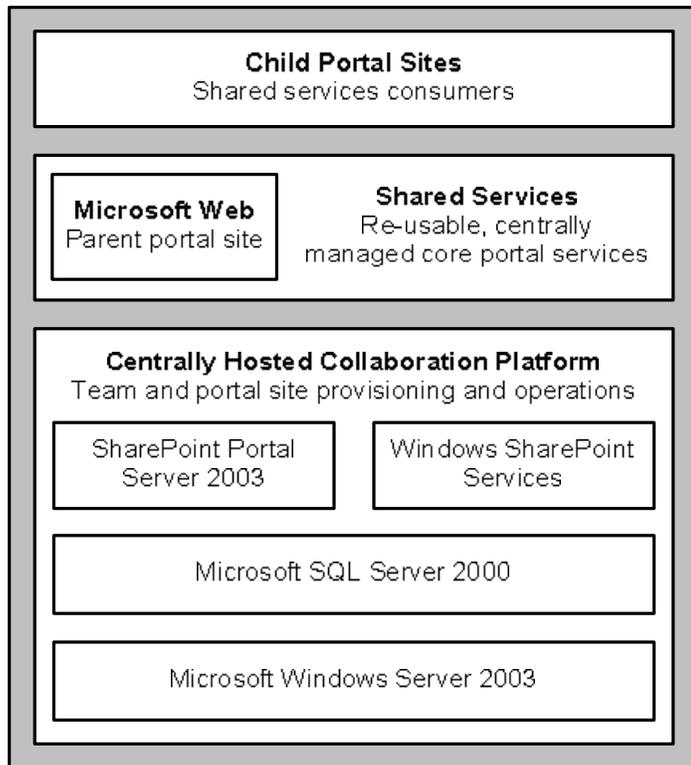
http://www.microsoft.com/technet/itshowcase, includes:

- Deploying SharePoint Products and Technologies for Enterprise Collaboration
- Team and Enterprise Collaboration Platform
- Deploying SharePoint Portal Server 2003 Shared Services at Microsoft

It is not necessary to read this series to understand this white paper. The reader is expected to have basic familiarity with SharePoint Products and Technologies. An overview of the key SharePoint Portal Server features used by Microsoft Web is provided in Appendix A.

Additional information on planning, deploying, testing and managing an intranet solution based on Microsoft SharePoint Products and Technologies can be found in the Microsoft Solution Accelerator for Intranets available at http://www.microsoft.com/downloads. The Solution Accelerator for Intranets is a collection of documents that present a prescriptive, tested and supported approach to designing, deploying, operating, and growing an effective intranet solution. For the development of an intranet solution based on SharePoint Products and Technologies, the Accelerator resources address issues that are not discussed in the

product documentation, such as service readiness planning, resource requirements and capacity planning. Also covered are topics such as monitoring, backup and restore processes, planning for growth and disaster recovery.

Although this paper provides recommendations based on Microsoft's experience as an early adopter, they are not intended to serve as a procedural guide. Each enterprise environment is unique. The plans and lessons described in this white paper need to be adapted to the specific needs and requirements of an organization.

SITUATION

Microsoft Web is the name of the internal Microsoft enterprise intranet portal. It is designed to provide employees with intranet access to corporate information and services. These include news, an events calendar, task-specific tools, business division and regional portals, as well as group portals such as the Retail Sales and Microsoft Business Solutions Framework portals. Ninety percent of Microsoft employees use Microsoft Web at least once per month. Half of the employees have configured their Web browser so that Microsoft Web is their home page.

More than 55,000 Microsoft employees and 20,000 other staff located in 400 offices world-wide access more than 75,000 Microsoft intranet sites on a regular basis. These sites include hundreds of business division and group portal sites and 50,000 team sites. Microsoft Web regularly indexes and provides full-text and keyword search services for more than three million. Total page views exceed 1.4 million per week.

Achieving Information Excellence

The Microsoft Knowledge Network Group multi-year goal is to help ensure Microsoft employees are able find the people and information required to do their jobs, trust the information they find is meaningful and relevant in the context of their work and it is retrievable in a consistent and useful form.

KNG's goals were developed in response to feedback from employee satisfaction surveys that focused on employee's Microsoft Web and the overall intranet experience. The following themes were evident in what employees had to say:

- The amount of information available on the corporate intranet was very large and diverse. But, it was difficult to determine which information was relevant based on the employee's knowledge, expertise and the context in which they performed a task. Employees could not trust that the information they found was reliable and that the knowledge they gained was credible.

- When required, it was difficult to use the intranet to determine who had relevant information, the nature of their specialized knowledge and their availability to be contacted by telephone, instant messaging or e-mail.

- There were many places in the Microsoft intranet to search for information including portal sites, team sites, file servers, applications and other information stores. There was also no consistent process for looking in those many places for information in a way that provided results with the reliability expected by employees. They needed to find similar, related and relevant information, regardless of where they started their search and the process they used to locate the information they required.

- It was a challenge for employees to determine when relevant new information was available or when the information they had already located subsequently changed.

The Microsoft Web team grouped these requirements into three objectives for focusing their subsequent design and implementation activities:

1. Improve the ability to find and retrieve the "right" information

2. Improve the ability to find people and what they know

3. Organize the intranet and create a sense of "place"

"The Microsoft Web portal and intranet strategy is based on the concept of the connected enterprise: seamlessly connecting organizational knowledge, ideas and expertise. Microsoft Web provides employees with the ability to easily connect with other individuals, teams, groups and the enterprise in a virtual way – without having to gather the company's information and knowledge into one physical site."

Mary Lee Kennedy, Director
Knowledge Network Group
Microsoft Corporation

Finding the "Right" Information

Employees who used previous versions of Microsoft Web found it difficult to find the right amount of current, relevant, and authoritative information in the diverse and fast changing environment of the Microsoft intranet. Four key problems related to finding the right information:

- It took too long to find the "right" information. This was often described in terms of taking too many mouse clicks to find useful information or not being able to find the right information after spending considerable effort searching and navigating the intranet.

- It was hard to locate information and knowledge that was relevant in the context of the immediate task for an employee to complete his or her work. For example, search results often included too much unrelated information to be useful.

- It was difficult for an employee to know when they could rely on information they found on the intranet. It was also difficult to ascertain whether that information was timely, accurate and complete.

- Employees found it difficult to know the best keyword choices to use for searching because of the large number of acronyms, technical terms, project code names and product names in regular use at Microsoft.

Employees felt that it was taking too long to find contextually relevant information for the task they were trying to complete. And in some cases, they were not able to find the information or knowledge they needed. This affected business in many ways: less effective customer presentations and proposals, lost opportunities, increased costs due rework or duplicated efforts. Finally, difficulties finding information on the Microsoft intranet affected customer, partner and employee satisfaction.

Employee satisfaction at Microsoft was driven to a great extent by employees' ability to find and use technical information about company products. While two-thirds of employees expected to use the Microsoft intranet to find technical product information, employees' satisfaction was low in this regard: only 9 percent of employees were "very satisfied" with 25 percent "dissatisfied" in their ability to find technical information.

The number of mouse clicks used to find information was often considered an indication of effort and a measure of time required to find information on the intranet. Employees were particularly sensitive to this factor when they sought information about everyday tasks, like locating a building on the Redmond, Washington corporate campus, or completing and submitting an expense report. Employees wanted and needed immediate access to these types of tools and information.

Queries and searches for information resulted in many different answers, but insufficient contextual data to determine the relevance or reliability of the information that was found.

Over the course of almost 30 years, Microsoft had used approximately 12,000 different product names, acronyms, technical terms and project code names. This made it difficult for employees, especially new employees, to understand the language used by their peers, to appreciate information published on the Microsoft intranet and to determine appropriate key words when searching for information.

When the usual sources and approaches for finding information had been exhausted, employees felt that it was important to locate specialists as sources for specific types of knowledge. This was difficult because, while some specialists were located on the same

team, more often than not, specialists resided on other teams, in other divisions, subsidiaries or locations in the corporation.

This characterized the second category of problem for employees using older versions of the Microsoft Web. It was difficult to find people and what they know.

Finding People and What They Know

While the large size of a company magnifies the challenge of finding the people with the best information and answers for completing a task, employees in small organizations can also find it equally challenging to quickly locate the right person among hundreds of employees.

Research analysts have found this to be true in many organizations. The Gartner, Inc. research note "The Knowledge Worker Investment Paradox", Regina Casonato and Kathy Harris, July 17, 2002, states:

- "In most enterprises, an employee will get 50 percent to 75 percent of his or her relevant information directly from other people."
- "More than 80 percent of the enterprise's digitized resources are not accessible to the enterprise as a whole because they reside in individual hard drives and in personal files."
- "The individual owns the key resource of the knowledge economy – tacit and explicit knowledge – and most of that knowledge is lost when he or she decides to leave the enterprise."

The Microsoft experience is similar. When employees have exhausted their usual sources of information, they want to be able to quickly locate other people with the specialized knowledge needed to complete their work. The search for information or knowledge typically begins with fellow team members and local teams. It then expands into less familiar parts of the organization. Regardless of the need, whether it is content for a partner presentation or detailed technical or licensing information for responding to a request-for-proposal, time is usually scarce. And people tend to get most of their information directly from other people.

The Microsoft intranet had not been an effective place for employees to find and contact people with specific information and knowledge. The Exchange address book and internal "Org Chart" tool did not highlight the type of knowledge an employee contributed to the organization, the nature of the presentations or white papers that they created or the e-mail distribution lists and communities in which they participate. The result was that there was no consistent and reliable way for an employee to find the people that were knowledgeable about and able to help with the task-at-hand.

Organizing the Intranet

The Microsoft intranet is a large, diverse and dynamic collection of portal and team collaboration sites, other Web sites, file servers and Exchange public folders. At Microsoft, control over content posted to the intranet is decentralized. Some groups have their own content creation and publishing standards while others do not. Ultimately, any and every Microsoft employee can be an author and publisher on the Microsoft intranet.

When a Microsoft employee used the previous version of Microsoft Web to retrieve information from a site, it was difficult to understand the purpose and context of the site and its information. Useful descriptive data was not readily available in terms of the identity of the organization that owned the site, site activity and currency of its information. It was difficult for an employee who was looking for information to determine the contents of a site, its primary

audience, subject focus and coverage of products and technology. All of these requirements represented a problem for Microsoft employees trying to decide where to look for information.

For employees creating new documents, it was difficult to organize, relate and save information on the intranet. They faced a bewildering number and range of storage sites including personal workstations, laptops, PDAs, file servers, team sites, portal sites, archives of personal e-mail and e-mail distribution lists, as well as Exchange public folders.

Similarly for employees looking for information, they were required to access each potential storage location and document one-by-one or use the previous SharePoint Portal Server 2001 search service which indexed a relatively small number of Microsoft intranet sites.

The Microsoft intranet lacked an organized sense of "place" that enabled employees to "see the whole intranet" and navigate it with ease. Employees looking for information expected to find good quality results: similar, related and relevant information. They also expected to find familiar points of reference, search tools and navigation features, regardless of their point of entry for searching the intranet. Employees wanted a common set of permanent intranet features that made it easy to navigate the intranet, search for information and produce desired results on a consistent and reliable basis.

The challenge was to provide employees with an effective design for easy navigation and search capability on the Microsoft intranet.

Project Team Members

The development of Microsoft Web was lead by the Microsoft Knowledge Network Group (KNG) who worked in close collaboration with and support from the Microsoft information technology group and the SharePoint Portal Server product group.

Knowledge Network Group

The mission of the Knowledge Network Group is to help employees work more efficiently and effectively by providing them with the means for easy access, exchange and use of relevant information and knowledge. They are responsible for Microsoft's knowledge architecture and intranet architecture.

To this end, KNG uses a three-prong strategy for "Information Excellence" involving architecture, prescriptive guidance and leadership. Their work is focused on ensuring employees can find the right information, find people and what they know, and find their way around the intranet. Their goal is to enable a seamless experience for employees who are looking for information and knowledge on the intranet.

KNG leads by example through documentation and training in best practices, taxonomy and search services, thought leadership in personal workspaces, portals, content integration and delivery, and information retrieval and discovery. KNG is responsible for maintaining a corporate taxonomy and manages it on a collaborative basis through sponsorship of the Microsoft Knowledge Network Taxonomy Board.

Prescriptive guidance encompasses KNG's three priorities: Finding the Right Information; Finding People and What They Know; and Organizing the Intranet. This involves development of shared standards, guidelines and real-world solutions using products such as SharePoint Portal Server 2003.

Microsoft Information Technology Group

Microsoft IT is responsible for driving global operations and delivering information technology services to the entire Microsoft organization. This entails directing all activities related to running and maintaining Microsoft information systems world-wide: technology infrastructure, corporate and marketing information systems including production, distribution, and other key internal systems. Microsoft IT works to provide a world-class utility and excellence in business operations through leadership in the design and integration of the company's strategies, processes and architecture.

Microsoft IT provides a full range of services including server and end-user support, telecommunications management, network operations and information security. This role includes managing connectivity for more than 300,000 personal computers worldwide. Microsoft IT ensures that over 54,000 employees, 20,000 contractors and vendors in more than 400 Microsoft locations are able to access corporate network services and resources twenty four hours a day, seven days a week from around the world.

Because the primary business of Microsoft is software design, IT has a second mission that is unique among global providers. In addition to running the IT utility for Microsoft, Microsoft IT is an early adopter of the company's technologies responsible for testing and deploying Microsoft products such as SharePoint Products and Technologies, Windows Server 2003, and Exchange Server 2003, before release to customers. This process is known in Microsoft as "eating our own dog food."

Project Team Roles and Resources

The core members of the team that implemented and deployed Microsoft Web 6.0 included:

- One manager, for the whole team, who had budget responsibility
- One lead program manager who reported to the manager and held responsibility for the program management and development teams and for their coordination
- Three program managers with individual responsibility for each of (i) search, (ii) people, audiences, user profiles, and taxonomy, and (iii) personal sites and custom Web Parts
- A small development team consisting of five full-time employees and outside talent with a budget of $100,000 US for work outsourced over a 3 month period.

Additional Partners and Stakeholders

Other stakeholders in the design, development and operation of Microsoft Web included:

- Managers responsible for strategic and fiscal results
- Process owners responsible for efficient and effective delivery of business results
- Information providers including employees who produce content that is in turn consumed by others
- Information workers who both consume information to complete their objectives and produce information as a byproduct of their work
- Microsoft product groups that design and develop enterprise communications and collaboration software products

Centrally Hosted Collaboration Platform

To meet Microsoft requirements, Microsoft IT created a collaboration platform for portal and team sites based on Windows Server 2003, Windows SharePoint Services and SharePoint

Portal Server 2003. The platform was made available to every network user authenticated with Active Directory® directory service to enable the rapid creation of team collaboration sites and with adequate business justifications, new portal sites.

KNG and Microsoft IT designed the platform with three types of server configurations: a team site server farm, a portal site server farm, and a third server farm configuration that hosted the Microsoft Web portal site and provided Shared Services to the other portal sites. The portal site farm provided front-end servers for SharePoint Portal Server 2003 portal sites. For data storage, the portal and team site farms each hosted their own a storage area network (SAN). One Shared Services farm was hosted in the Redmond, Washington corporate data center and provided a set of centrally managed, highly scalable, core portal services designed to be re-used across multiple portal sites and multiple-server server farms. Two additional Shared Services farms were deployed in remote data centers: one in each of the European and Asian-Pacific regions.

Figure 3 shows a logical representation of the centrally hosted collaboration platform. The architecture was designed to support hundreds of division and group portals and tens of thousands of team sites organized in a hierarchy. Personal sites are hosted in the Redmond Shared Services farm. Team sites are hosted by an appropriate regional server farm.
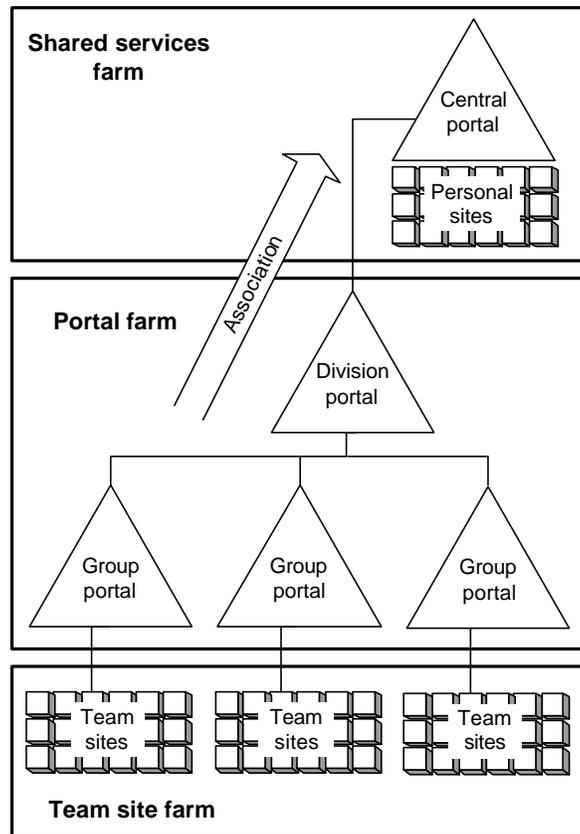

Figure 3. Centrally Hosted Collaboration Platform Design

The detailed design, implementation and deployment of the platform by Microsoft IT is described in the IT Showcase white paper "Deploying SharePoint Products and Technologies for Enterprise Collaboration" available at http://www.microsoft.com/technet/itshowcase.

SOLUTION

Rather than implementing a standalone, central portal for its employees, KNG used SharePoint Portal Server 2003 to create an intranet portal solution that integrated Microsoft's several hundred portal sites and tens of thousands of team sites into a single knowledge network. Creating the new release of Microsoft Web involved the design, development and integration of several key elements:

- Updated knowledge architecture
- An integrated intranet portal architecture
- Shared Services, a set of re-usable, centrally managed core portal services
- A new version of Microsoft Web portal site

The redesign and upgrade of the Microsoft Web began with the gathering of requirements and needs analysis using data from employee satisfaction surveys. Rather than move immediately from requirements analysis into design and implementation, KNG looked for opportunities to develop common standards and practices that could be shared and leveraged across other Microsoft portal sites. The result was an updated knowledge architecture and a new integrated intranet portal architecture.

The design, implementation and deployment of the Shared Services platform is detailed in a separate IT Showcase white paper "Deploying SharePoint Portal Server 2003 Shared Services at Microsoft" available at http://www.microsoft.com/technet/itshowcase.

The Microsoft Web portal site was designed and implemented using SharePoint Portal Server 2003 and Shared Services and deployed on top of the centrally hosted collaboration platform.

Shared Standards and Practices

The need for shared standards and practices was driven by the realization that a truly effective intranet portal solution wasn't a standalone effort, but one that integrates the central portal with the vast amounts of information and knowledge already available on the Microsoft intranet. With this perspective, further requirements were identified:

- An intranet portal architecture was needed that would integrate and organize hundreds of business divisions, product groups, and regional portals, along with tens of thousands of team sites and several tens of thousands of personal sites. The architecture needed to create a cohesive information network that supported efficient navigation and efficient searching.

- A shared knowledge architecture was required that provided a controlled taxonomy of search terms that could be easily managed and re-used by other applications. Two of the best examples are the product names and geographic name taxonomies. They are widely used by many applications including Microsoft Web and Microsoft.com, the Microsoft public Web site.

- A common set of tools and Shared Services was needed for integrating functions like keyword searching, content change notifications, audience-based content targeting and user profiles into other Microsoft portal sites. Two examples of Microsoft portal sites that use Shared Services are the Retail Sales and Microsoft Business Solutions Framework portals.

Intranet Portal Architecture

The centrally hosted collaboration platform addressed the needs of teams that needed a place to work together on small team projects as well as large multi-team projects involving hundreds of employees.
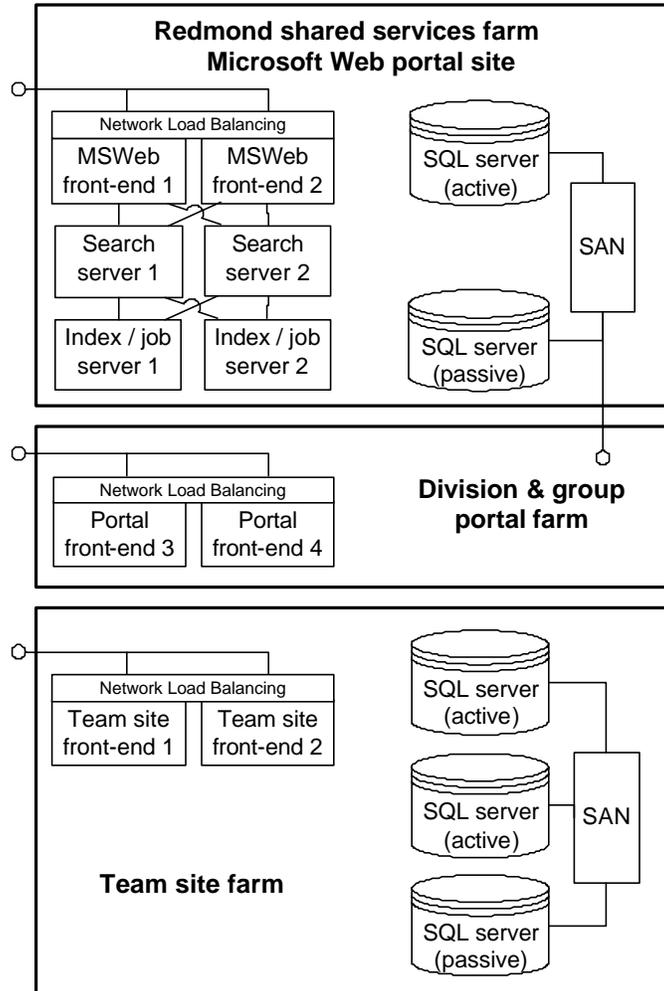

Figure 4. Microsoft Web and Shared Services Architecture

The centrally hosted collaboration platform was developed to host tens of thousands of Windows SharePoint team sites as well as hundreds of internal SharePoint Portal Server 2003 portal sites. Additional portal sites addressed the needs of individual business divisions, regional subsidiaries and product groups who wanted to maintain their own identities or had additional information storage requirements.

The Microsoft Web portal site was hosted on two 1.4 GHz dual-processor front-end servers with 4 GB of memory each. The search and index servers were 2.4 GHz dual-processor servers with 2 GB of memory and 200 GB and 100 GB of hard disk storage, respectively.

The SQL Server back-end database servers that provided database support for Microsoft Web as well as the division and group portal farm used 1.5 GHz quad-processor servers with

3.8 GB of memory and 200 GB hard disk space. They were connected to a storage area network (SAN) with a capacity of 3.6 TB.

All servers that comprised the platform were based on standard Microsoft data center server configurations and received hardware support, software maintenance, patching, monitoring, and backup services.

SharePoint Portal Server 2003 includes a feature for associating portals in a parent-child configuration. There is no effective limit on the depth of the hierarchy that can be created in an intranet with a large number of portal sites. In addition, SharePoint Portal Server includes the capability to associate team sites with parent portal sites. In the Microsoft Web portal, the Site Directory was used to group together related division and group portals and team sites by subject area. These capabilities helped organize the Microsoft Web intranet portal, division and group portals as well as team sites. They provided a directory that categorized by business division, region, product, community, intended audience and subject area (search scope). The directory was easy to navigate and "organized the intranet".

Further, SharePoint Portal Server 2003 search functions supported the creation of multiple search scopes for each portal. This enabled an employee in a regional subsidiary to begin searching for information using Microsoft Web and then progressively narrow the scope of their search as needed.

SharePoint Portal Server 2003 also provides the ability to assign links (URLs) as *Best Bets* for particular keywords and keyword synonyms. Best Bets are automatically included in a search when they are included in the search scope. They also appear at the top of the list with a gold star next to their title when they appear as part of search results.

When effectively organized and managed, Best Bets greatly increased the accuracy and relevancy of search results and the Site Directory significantly eased navigation of the intranet. These two features were coupled together using a common taxonomy. This made it quicker and easier for employees to find, locate and retrieve information, saving them time while increasing their productivity.

SharePoint Portal Server Search functions provided users with a seamless, integrated navigation ability and search experience not available using Windows SharePoint Services by itself.

Shared Knowledge Architecture

Early versions of Microsoft Web provided the ability to search for Best Bets by keyword, but didn't combine it with its full-text search capability. Initially, there was no formal or standard approach to organizing and managing categories for classifying portal, team, personal or other Web sites. No one had created a common set of categories to classify content such as Web site links, contact information, product specifications, presentations, and other Office documents. So, a common set of categories for classifying documents, Web sites and contact information was created to help employees organize and find information.

Initial efforts to create shared corporate vocabularies began in 1998. This was followed by custom development of additional tools for cataloging and managing Web site links as Best Bets for selected keywords. The set of Best Bet keywords were managed as part of the Microsoft corporate vocabulary. KNG also began to offer search services to other internal Microsoft portal sites at the same time.

> **Best Bets**
>
> Best Bets are hand selected results (URLs) identified as the best match for a particular keyword or group of keywords. If there is a match for the keyword being searched on in the Best Bets collection, the Best Bet is returned in search results ranked the highest score, and appears at the top of search results with a star icon next to it.

When KNG began providing "Search as a Service" to Microsoft Web and other internal portal sites, new questions emerged:

- How best to identify which content was appropriate for presentation on the central corporate portal?
- How would they improve the enterprise search and navigation process for users of the central portal as well as the business division and regional portals without large resource commitments?
- How could they help employees save time, improve their productivity and enhance the quality of their decision making?

The project team then made the following key decisions:

- Create a set of shared corporate vocabularies using a collaborative approach with representation from across the company.
- Develop an approach for creating and managing a set of task-relevant categories, subject areas and topics useful in organizing knowledge and information needed for every day tasks.
- Analyze queries and requests for information recorded in Web server logs, and library and help desk records to determine frequent questions and to formally catalog the document URLs for common answers as "Best Bets".
- Locate and index a larger proportion of Microsoft intranet sites.

The Microsoft Knowledge Network Group learned the following based on their experience designing and implementing Microsoft Web:

- Executive sponsorship is necessary in efforts to create an enterprise-wide taxonomy.
- Taxonomies require support in the form of database and other software tools. For simple vocabularies and thesauri, a spreadsheet may be sufficient for tracking and managing changes. But for more sophisticated taxonomy requirements, a third-party or in-house developed application may be necessary.
- Enterprise-wide taxonomies are best managed by a "taxonomy board" involving representatives from across the company who create and manage content.

Common Set of Shared Services

Based on the SharePoint Portal Server 2003 Shared Services architecture, KNG designed and deployed Shared Services, a set of centrally managed, highly scalable, core portal services designed to be re-used across multiple portal sites and portal server farms. Referred to as Search, Notifications, Audiences and Profiles at Microsoft, Shared Services provides a company-wide capacity for content indexing, full-text and Best Bets keyword searching, automated user notifications based on new or changing content in the intranet, audience specific targeting of content on portal pages as well as searchable user profiles and My Site personal sites. Shared Services were made available for use by site administrators who wanted the benefits of using a Shared Services environment.

Shared Services were deployed in parallel with the implementation and deployment of Microsoft Web, the showcase portal site for Shared Services. Shared Services provided a common and consistent experience for employees to search for information, subscribe to alerts, receive notifications and look for people with specialized information and knowledge.

Shared Services were adopted for use by administrators of more than 300 portal sites at Microsoft.

Shared Services provided an essential element in a platform upon which the Microsoft Web was built. Details of the design, implementation and deployment of the Shared Services platform are described in the IT Showcase companion white paper "Deploying SharePoint Portal Server 2003 Shared Services at Microsoft" available at http://www.microsoft.com/technet/itshowcase.

The New Version of Microsoft Web

Microsoft employees experience the Microsoft Web portal through what they see on the Microsoft Web home page and the information, tool and site links that appear on this page.

The Microsoft Web home page is the home page for a SharePoint Portal Server 2003 portal site. It is rendered as a SharePoint Web Part Page using ASP.NET technologies both for the page itself and for the individual elements of the page. Using ASP.NET enabled SharePoint portal and team sites to work with substantially increased performance, stability, and security made possible by using Windows Server 2003, SQL Server 2000 and the Microsoft .NET Framework.

Most of the Web Parts on the Microsoft Web home page are standard features included with SharePoint Portal Server 2003. In addition, a number of custom Web Parts were created using the Microsoft Visual Studio® .Net development system, ASP.NET and the SharePoint Products and Technologies Software Development Kit (SDK).

Table 1 lists the components that were used to customize the Microsoft Web intranet portal site. The list includes both the name of the component and the enabling technologies and services used in its implementation. Additional information is then provided about each of the key Microsoft Web features, its implementation and the problems addressed by each of them.

Table 1. Microsoft Web Intranet Portal Features

Microsoft Web Portal Feature	Enabling Technologies
Portal Home Page	SharePoint Portal Server Portal Areas SharePoint Web Part Page and Web Parts
Feature Stories	SharePoint Content Viewer Web Part
News, Targeted News and News Archive	SharePoint Portal Server Portal Areas Microsoft News Workbench (internal), Third Party News Feeds and In-House Editorial Staff
Sites	SharePoint Portal Sever Site Directory Self-Service Site Creation and Site Registration (customized to gather additional descriptive data) Microsoft Taxonomy Database (internal) Microsoft URL Harvester (Internal)

Microsoft Web Portal Feature	Enabling Technologies
Search and Advanced Search	SharePoint Portal Server Search and Keyword Best Bets
	SharePoint Portal Server Search Scopes and Source Groups
	Microsoft Taxonomy Database (internal)
	Microsoft URL Catalog Services (internal)
People Finder	SharePoint Portal Server Search
	SharePoint Portal Server User Profiles
	SharePoint Web Part (custom)
Browse the Org	SharePoint Portal Server Topic Areas
	SharePoint Web Part (custom)
Glossary Lookup	Microsoft Taxonomy Database and Web Service (internal)
	SharePoint Web Part (custom)
Top Tasks	SharePoint Listing Web Part
Tips & Tricks	SharePoint Web Part (custom)
Tasks & Tools	SharePoint Portal Server Topic Areas
Internal Sites and External Sites	SharePoint Content Editor Web Part
Calendar of Events	Customized SharePoint Calendar Web Part
Popular Searches	SharePoint Content Editor Web Part
	Microsoft Search Query IIS Web Log Analysis Tool (internal)
My Site and User Profiles	SharePoint Portal Server My Site personal sites
	Microsoft Active Directory and Microsoft "Feed Store" SQL Server Data Warehouse (internal)
	Microsoft Card Key Image Library (internal)

Finding the "Right" Information

Search and Search Scopes

Microsoft Web users make frequent use of the Search Web Part. The Search Web Part appears on every page in the new version of the portal site. This provides several benefits:

- Microsoft employees experienced a familiar and consistent search experience across Microsoft Web and other Shared Services sites
- Improvements in the organization of information and in search capabilities in one area of the intranet were immediately shared with all Shared Services sites

As a result, employees were more productive and more quickly began to trust the value and quality of information that appeared in their search results.

The Search Web Part offers users a field for entering search terms, but also provided a drop-down list of search scopes with which users could broaden or narrow the scope of their content search. The organization and selection of the search scopes was based on subject areas. This helped create a sense of "place" for employees using the intranet. They became

familiar with a common set of subject areas as part of their intranet experience. The current list of search scopes included: Intranet, This Portal, People, Microsoft Information, Industries, Internal Services, International, Products, Sales & Marketing, Competition, Partners, Technologies, Training, Library Catalog, Microsoft Images, Market Research, Distribution Lists and All Content.

This assisted employees by providing an alternate view or path for locating information. For example, search scopes were not chosen to mirror the corporate organization. Rather they were based on categories applicable to employees' everyday work. Users preferring an organization that mirrored the corporate hierarchy could navigate the intranet using the links that appeared on the Browse the Org Web Part.

Each search result had an Item Details link and a clickable icon next to the author's name for the item, enabling quick access by employees to both the item's descriptive data and the author's profile and personal site. The page of search results could be grouped by site, author name, dates and topic area.

Microsoft Web used SharePoint Portal Server's built-in support for creating and managing search scopes, source groups, search indices and content sources. Descriptions of the key SharePoint Portal Server Search features used by Microsoft Web can be found in Appendix A - SharePoint Portal Server 2003 Features Used by Microsoft Web.

Keyword Best Bets

SharePoint Portal Server 2003 includes support for creating and managing a hierarchy of keywords (including synonyms) and associated Best Bets.

In early versions of Microsoft Web where this support wasn't readily available, Microsoft developed an internal keyword and Best Bets management system called the URL Cataloging Service (UCS) that has remained part of the Microsoft Web intranet portal solution.

For each Best Bet, the UCS database maintained detailed information such as the Best Bet keywords, site title and description, URL, operational comments, contact e-mail address, last reviewed date and active status. Best Bets keywords were selected from the Microsoft taxonomy database to provide users with a consistent experience when exploring the Microsoft intranet.

KNG performed periodic analysis of the Web server logs for search queries to identify search terms frequently requested by employees. The team added the most requested terms to UCS as Best Bets keywords. In turn, one or two Best Bet URLs were assigned to each keyword. The number of Best Bet URLs was limited to increase the relevance of the search results returned when the search query included a Best Bets keyword.

When SharePoint Portal Server 2003 Search indexed a specific portal site, by default it also indexed all of the subsidiary or child portal sites associated with the parent site. As part of this process, SharePoint Portal Server 2003 automatically aggregated the Best Bets from child sites and associated them with the parent site. The end result was that all of the Best Bets from a parent site and the associated child portal sites were available to a user searching the top-most portal site.

Because the default function of SharePoint Portal Server involves searching Best Bets when a user submitted a search query, employees are provided with immediate links to the best known sources of information for the keywords they requested. This saved employees time

searching for information and provided them with consistent, reliable and contextually relevant responses to their search requests.

A custom developed service runs on a periodic basis to import data from the UCS into the Microsoft Web internal keyword and Best Bets database, intranet Site Directory and configuration of the content indexing services.

Top Tasks and Tasks and Tools

Microsoft employees wanted relevant information: accessible information of immediate value in the context of their everyday work. Surveys indicated that it was sometimes a challenge to find information pertaining to tasks such as locating an address for a building or maps of the Microsoft corporate campus. It was sometimes difficult to arrange a business trip or submit travel expense forms. Microsoft employees expected to find this kind of everyday information with one or two clicks of their mouse without having to type on a keyboard.

Top Tasks is a Web Part located on the Microsoft Web home page that lists the most common employee tasks and provides single-click access to a corresponding task-related Web page or site.

The Task and Tools link in the portal site's Navigation Bar connects to a hierarchical organization of topic areas that represent categories of frequently used tasks, information and tools. Information on the most common employee tasks can be found using three mouse clicks or less.

Both Top Tasks and Tasks and Tools help Microsoft employees work more productively by providing them with immediate and specific access to the intranet sites where they complete everyday tasks.

Glossary Lookup

Working for a software company, it is common for Microsoft employees to use a large number of company and industry specific terms. These were frequently used, but only familiar to employees in specific parts of the organization or during the life of a particular product or project. Over the course of almost 30 years, Microsoft had used approximately 12,000 product names, acronyms, technical terms and project code names. To enable employees to determine the meaning and use of these terms, the Microsoft Web portal included a Glossary Lookup function in a standard location on its home page.

Glossary Lookup was a custom Web Part that provided employees with access to the terms and definitions available in the corporate taxonomy database. For organizations with similar requirements for shared vocabulary, the page viewer Web Part can be used to create simple solution.

Publishing to the Microsoft Web Portal Home Page

A very small amount of content on the Microsoft intranet is created by people at its headquarters location. Most content is created by information providers whose primary responsibility is to create new information. Some of this content is produced by knowledge workers who publish documents or presentations as part of their everyday work. Information providers and knowledge workers were located throughout the organization and had varied roles in the company, such as development managers, technology and solutions consultants, sales and marketing professionals, etc.

For some categories of information, the responsibility for publishing belonged to a small number of centralized groups. Examples included responsibility for internal company news, company and industry events and the managing of 3rd party news feeds.

Published reports about external events and news had been a feature of the Microsoft Web portal since its earliest deployments in the mid-1990s and the publishing of these had been the responsibility of the Microsoft corporate Library. Originally developed to support the Microsoft corporate library Web site, the Microsoft internal News Workbench tool is used by editorial groups across the company to catalog daily news and events of interest to Microsoft employees. News sources included licensed third-party news feeds and the top-rated industry, business and technology related Web sites.

Called "Targeted News" services, the internal News Workbench application is used to capture information such as the news source, byline, title, Web page URL and content summary for the news item. In addition, the Workbench enabled specification of details such as the date, location, owner and source of the original publication, image links, publishing status and date for publishing reference to the article on the Microsoft intranet. Details can also include the level of confidentiality and copyright data.

News items captured in News Workbench can appear on the Microsoft Web home page or a variety of other locations such as Targeted News topic areas that are linked to the News items on the navigation bar of the portal home page. Employees can also subscribe to any of the Targeted News e-mail distribution lists so that the links can be automatically sent to them.

Finding People and What They Know

In SharePoint Portal Server 2003, a user is provided with a personal profile and, optionally, a My Site personal site that can be organized and searched in the same powerful way as any other Web site.

In addition, for users of the Microsoft Office 2003, an icon appears to indicate when information is available about a person wherever that person's name appears in the portal site. Clicking the icon displays additional information about the location of the author including their e-mail address, telephone numbers, office and My Site personal site URL. It also indicates the availability of that individual to be contacted by telephone, instant messaging or e-mail.

User Profiles

The SharePoint Portal Server 2003 User Profiles feature made it easy for Microsoft employees to search and locate fellow employees based on detailed information such as their name, e-mail address and other factors, such as an employee's region and home organization. Fully customizable and searchable, user profiles provided the means for people to search for and locate others in the organization.

User profile data can be entered manually or imported from the Microsoft Active Directory and from other content sources. User profiles can be customized by including new properties and by mapping them to existing Active Directory properties or other information sources.

The information in an individual user profile provides the basis for generating a My Site personal site. Users view and update their own user profile from their personal site. For example, "About Me" is an updatable field that an employee can use to add a short biography and list of personal and professional interests to their profile. A personal site has both a personal and public view. The personal view contains information that can only be viewed by

the specific user. The public view of a user profile is visible to all other users when they click on a user's name in the portal. For example, when viewing search results, an employee can click the author name associated with a document to view the public user profile (or personal site) for the author.

In the Microsoft deployment of user profiles, three custom properties were added to the list of user profile properties: MS Region, MS Role and MS Organization. These properties made it easier and faster for employees to search for and locate people with a particular geographic region, role and organization, for example.

My Site Personal Sites

My Site personal sites provide an easily customized Web site for individual employees to save documents, to find and connect with other people, and to share their work.

In SharePoint Portal Server 2003, each user has a user profile created when their account is added to the portal site. When the My Site feature is enabled, a user's personal site is created the first time a user clicks on the My Site link on the portal home page. It is created on demand using information available in the individual's user profile.

An individual's personal site has a private view that contains information of interest only to that person. In the private view, a user organizes and accesses their documents, views and manages their alerts, links to interesting people and information, and views their e-mail inbox and calendar. When a person used Office 2003 to create a document workspace, it was created in their personal site.

An individual's personal site has a public view that contains information that the user wants to share with others. The public properties of the user profile are displayed on this page. In addition, the user can add a list of links to favorite Web sites. The public view automatically showed links to shared documents that had been recently used.

In addition to the custom fields added to the user profile, a user can add additional Web Parts from the Microsoft Web SharePoint Portal Server 2003 Web Part Gallery. The gallery includes the following additional in-house developed Web Parts:

- An End User License Agreement that engages individual employees to ensure they agreed to terms and conditions of use and behavior when using the Microsoft intranet.

- Microsoft Daily Newswire that displays headline summaries for the day's top technology news stories.

- Microsoft Targeted News provides industry news, displaying headline summaries of recent stories organized into the following categories: Enterprise Servers and Tools; Games; Interactive Online Markets; Mobility and Devices; Microsoft .Net; Productivity, Research and Development; Security; Services; Small Business Applications; and Microsoft Windows.

- MSNBC provides Web Parts for accessing business, entertainment, sports, technology, and stock market news.

- My Recent Documents displays a list of documents recently accessed by the user.

- Outlook Web Access Inbox and Tasks Web Parts provide access to a user's personal e-mail Inbox, calendar and other tasks.

- An Upload Picture Wizard that lets users access their picture from the corporate identification card photo library and upload it to their personal site.

- People Finder and Glossary Lookup Web Parts (described previously).
- Content Editor, Image, Page Viewer, Quick Links, Simple Form, Subscriptions & Alerts and XML built-in SharePoint 2003 Web Parts.
- The "Welcome to your My Site" Web Part appears as a link to a detailed guide for employees about how to further customize their site.

A key advantage of My Site personal sites is that each business unit does not have to create a separate personal workspace or Web site for each employee. In a SharePoint Portal Server Shared Services environment, each employee can have one default personal site.

Searching for People and the People Finder

A People Finder Web Part was custom-developed to provide a familiar location on the Microsoft Web portal home page for quickly finding people. This Web Part was developed with the Microsoft Visual Studio .Net, ASP.NET and SharePoint Portal Server Search. It has a single field for entering a search query. In response, the People Finder returns a list of people whose user profiles matched the search terms. Clicking on one of the results displays the public view of that person's My Site. If the search term is a person's name or e-mail address, any exact matches are displayed in the results as Best Bets.

Browse the Org

Browse the Org is a link that appears in a standard location on each portal page. Clicking the link connects the user to a full-screen SharePoint Portal Server portal area where the top of the Microsoft organization chart is displayed with a user profile summary and picture of key executives including Bill Gates, Steve Ballmer and their direct reports. Browse the Org enables users to see the leadership team and then click down through each level of the organization in a logical manner. Each page includes additional information about the individual and the organization to which he or she belongs. Clicking on an individual user profile, summary or picture links the user to the public view of that individual's personal site.

Browse the Org offers an organizational view of content of content found on the Microsoft intranet. For example, the feature is useful when someone wants to learn more about other parts of the company or locate the business manager responsible for Microsoft Office products. In this case the user can easily find the direct report of the chief executive officer, and the employee responsible for the Business Productivity division including Microsoft Office products.

Browse the Org reduces the time required to locate relevant information when the best known approach involves navigating the organization from the top down. The relevant information presented through Browse the Org has an advantage over traditional search methods because it presents information in an organizational context.

Privacy

Microsoft, like virtually all organizations with full-time, part-time, contract or volunteer staff, needs to ensure that information about individuals is used and displayed in an appropriate way. Personal information needs to be protected. This is of particular concern for Microsoft because it operates on a world-wide basis. Considerations need to include local customs and regulations regarding personal privacy and personal data. Based on this, polices were developed with respect to the nature of information shown in user profiles, My Site personal sites, and in search results and used to develop the specifications for those features.

This was an important consideration for the Microsoft Web team when they selected the type of personal data for inclusion in the user profiles and My Site features. The team received advice from the Microsoft human resources and legal departments, but also required that each employee agree to an intranet End User License Agreement.

Organizing the Intranet

Site Directory, Site Creation and Site Registration

Two ASP.NET forms are provided in SharePoint Portal Server 2003 to create and register new SharePoint sites or register existing Web sites in the Site Directory. The Knowledge Network Group customized these forms to gather additional descriptive data at the time a site is created or registered.

The additional information is used to categorize the site and place it in corresponding areas of the Site Directory. The additional site information included the site's division, geographic region, local language, product focus, intended audience, subject area and related external communities.

By using standard list of additional descriptive data fields when creating and registering a site, a more consistent navigation and search experience was provided for employees using the Site Directory.

"Up To" Links

The configuration information for each SharePoint Portal Server site and each Windows SharePoint team site includes the URL for the parent site to which the portal or team site is associated.

This URL appears as an "Up To" link on each page in a portal or team site. It enables a user to quickly and easily navigate up the hierarchy of the team and portal site. Using the intranet Site Directory, users browsed though the categories of portal and team sites or links directly to some other point in the Microsoft intranet.

To provide a navigation experience common for all My Site personal sites, the "Up To" link on an individual's personal site returns them to the central Microsoft Web portal instead of the regional parent portal to which their personal site was physically associated.

URL Link Harvesting

The SharePoint Portal Server Search function automatically crawls and indexes the portal site and subsidiary sites including team sites associated with the portal.

In addition, Microsoft Web integrated the site listings found on each portal site with the existing list of sites stored in Microsoft's URL cataloging service. To assist in this process, a URL "link harvester" was developed to scan the site listings in each portal and to promote them as new candidates for the UCS database. An editorial process was then used to review each new URL and a final determination was then made about suitability of a particular URL as a candidate for inclusion in: (i) one or more Site Directory topic areas; (ii) ongoing content indexing; and (iii) additional keyword tagging for Best Bets.

Breadcrumbs

Feedback about the Microsoft Web indicated that users often became lost as they browsed through different layers of a portal site. To alleviate this problem, the site template for the Microsoft Web portal pages was customized to include a breadcrumb trail immediately below

the main title for the page. This helped provide Microsoft employees a sense of place when visiting a particular area of the portal site.

Customized Help Files

The installed version of the SharePoint Portal Server 2003 and Windows SharePoint Services offers online help in the form of HTML pages. To add Microsoft Web portal-specific help pages is a straightforward matter of (i) authoring the new help files with the same styling and layout as the original help files; (ii) placing the pages in a separate, isolated folder on the SharePoint Portal Server; and (iii) linking the pages to the home page for existing SharePoint Portal Server help pages.

When the server is upgraded with future versions of SharePoint Portal Server or a service pack, it will be a simple maintenance operation to add the custom help files links to the online help home page.

Providing additional online help pages for the newly customized Microsoft Web features and by fully integrating them into the help home page promoted greater awareness and correct usage of the new features. This form of help also reduced the cost of help desk services required to support the new version of Microsoft Web.

Deploying and Releasing Microsoft Web

Deploying and releasing the new version of Microsoft Web to Microsoft employees followed a standard pattern. Internal testing by the Microsoft Web team was followed by beta testing by Microsoft employees. The URL for the previous version of Microsoft Web was http://msw and the URL for the new portal was http://msweb. The two portals continued to operate in parallel during the beta testing period. When beta testing of the new Microsoft Web was complete, the operation of Microsoft Web moved into a normal phase of production.

The project team observed that a significant number of employees mistyped the portal URL and used the new portal during its development and testing because the central portal is known by several different names including MSW, MSWeb and Microsoft Web. To minimize problems in this regard, a Web Part was added to the pre-release home page to explain the situation.

The new Microsoft Web central portal was launched and promoted separately from the My Site personal sites. Personal sites were originally launched as part of the centrally hosted collaboration platform. With very little promotion, the initial My Site launch resulted in approximately 15,000 employees visiting their new personal sites. The initial design of personal sites was refined based on initial feedback from users. A subsequent internal awareness campaign drove the number of personal sites to over 23,000.

Ninety days following the launch of the new Microsoft Web, employees were invited to participate in a world-wide survey that focused on their satisfaction with finding the right information; finding people and what they know; and how portal, team and personal sites help improve the organization of the Microsoft intranet. The data from this survey was then used to develop a new set of focus areas, an updated set of shared portal standards and practices, improvements in the deployment of Shared Services and revision of the Microsoft Web intranet portal.

CONCLUSIONS

The Microsoft Web team delivered a significantly improved intranet portal solution that increased the efficiency and productivity of Microsoft employees while reducing the cost of managing a large enterprise intranet portal solution. The team accomplished this by:

- Making it easier to find information that is relevant to the task the user is working to complete.

- When required, making it easier for employees to find people who are specialists in the type of knowledge being sought, making it easy for them to locate contact information and if necessary, make direct contact by telephone, instant messaging or e-mail.

Rather than simply creating a standalone enterprise employee portal, the Microsoft Knowledge Network Group team developed a set of shared portal standards, practices and services that could be leveraged across hundreds of internal portal sites on the Microsoft intranet. The integrated intranet portal architecture was based on SharePoint Products and Technologies. And it enabled users to easily access, search and navigate the many portal sites, tens of thousands of team sites and more than 23,000 My Site personal sites.

The use of a corporate taxonomy was viewed as a best practice for organizing several related elements of the Microsoft Web portal. Features included Best Bets, site creation and registration, intranet Site Directory, Glossary Lookup and customized user profile data. Significant benefits were derived from the ease in which the existing Microsoft taxonomy and tools were integrated with SharePoint Portal Server 2003 to create Microsoft Web 6.0.

Business Benefits

The business benefits of Microsoft's successful redesign and deployment of the new Microsoft Web enterprise intranet portal were significant:

- Increased employee efficiency and improved productivity as employees were able to find more contextually relevant information in less time.

- More informed decision-making and, as a result, the ability for employees to spend less time on a task, avoid duplicate efforts, and more quickly engage with customers and partners.

- Reduced costs for developing, deploying and managing an enterprise intranet portal solution.

Increased employee efficiency and improved productivity as employees were able to find more contextually relevant information in less time

The process for seeking contextually relevant information and knowledge through use of the Microsoft intranet was improved in the following ways:

- Search scopes and Advanced Search made it easy for employees to broaden or narrow the range of information they searched.

- Tasks and Tools topic areas allowed employees to save time finding work-related information, with an average of 3 mouse clicks.

- Additional descriptive information was collected during portal and team site creation so that users could find related sites in the Site Directory.

- Browse the Org provided a recognizable top-down, hierarchical view of the organization.

- People Finder provided a quick and easy means for employees to find people, locate their personal site and retrieve related organizational and contact information.
- Taxonomy-based approaches to URL catalog management and organizing the Site Directory for tens of thousands of sites provided employees with an efficient means and consistent experience when looking for sites related to a particular technology or topic.

Ability to make more informed decisions resulting in fewer lost opportunities, less rework and greater customer satisfaction

The ability to make more informed decisions resulted from:

- Greatly improved ability for employees to find and use technical information about Microsoft products and technologies.
- New features in the intranet that helped employees discover and consume external news about Microsoft and its businesses.
- Greater trust by employees in the information and knowledge found through the new portal because information was delivered along with indication of its currency, author and local context.

Reduced costs of developing, deploying and managing an enterprise-wide intranet portal solution

The cost of developing, deploying and managing an enterprise-wide intranet portal solution was reduced for the following reasons:

- Ninety percent of the functionality of Microsoft Web was delivered using existing features of SharePoint Portal Server 2003. Additional software development and configuration effort was required where KNG chose to extend SharePoint Portal Server's in-the-box capabilities. Using existing features had secondary benefits of (i) simplifying the upgrade process for future releases of SharePoint Portal Server and (ii) allowing development resources to be targeted at the higher value and customized features specific to the needs of the Microsoft intranet user.
- For those cases when custom developed Web Parts were implemented, costs were reasonable. The custom Popular Searches Web Part cost approximately $1,000 US for design, development, and testing.
- Development of the new intranet was made easier in terms of incorporating existing applications such as the Microsoft taxonomy and Best Bets management tools using .Net Web services.
- Using the Shared Services approach to implement and deploy common core portal services allowed costs to be amortized across hundreds of portals sites in the Microsoft intranet.
- SharePoint Portal Server 2003 offered significant value as a platform with existing support for many functions including: the amalgamation of large numbers of portal and team collaboration sites into an integrated intranet portal solution; the provision of alternative ways to organize and classify information in addition to full-text search such as portal areas, topic areas, Site Directory and Best Bets; the capacity to scale up and support tens or hundreds of thousands of intranet sites while supporting people as first class entities in the portal architecture including user profiles and personal sites with customized content; and a rendering engine for extensible Web pages and a range of standard Web Parts.

Lessons Learned

The lessons Microsoft learned over the course of this project fall into several categories. The first category is related to the way the project was defined and organized:

- View goals in terms of organizational opportunities and an integrated intranet solution. Don't just look at an isolated requirement for a standalone portal when needs can be observed in terms of multiple and diverse portals throughout the enterprise. Follow requirements gathering and analysis phases with efforts to develop a set of standards and practices appropriate for use throughout the organization.

- Develop internal partnerships early. Recognize the different types of partners who are necessary to ensure success at each stage of the project. Involve traditional information providers such as personnel from the corporate library or records management departments. Also consider additional stakeholders and participants, exercising balance in control when making decisions.

- Gather input, feedback and validation from users and other stakeholders as a regular part of the development cycle. Web-based survey tools such as those provided with Windows SharePoint Services are indispensable for employee feedback.

- Remain aware of general industry and technology trends as well as the relative position of your organization as an early adopter, mainstream or late-entry user of technology. Only implement technology that can be adequately supported by your organization and its partners.

- Site administrators are willing to provide additional descriptive information about their portals and team sites if they benefit from inclusion of this information in an organized Site Directory and for Best Bets searching.

Finding the "Right" Information

The following lessons are specific to the goal of "finding the right information". For the most part, this perspective was gathered by the Microsoft usability team from studies performed on pre-release versions of the intranet portal solution.

- A history of end-user surveys and formal usability testing contributes significantly to success in development of the next generation of Microsoft Web. This specifically relates to the portal home page design and the determination that features like the People Finder, Site Directory and Glossary Finder were desired by Microsoft intranet users.

- Dedicated resources are required to manage a corporate taxonomy and use it effectively in a large, dynamic environment like the Microsoft intranet. Using existing Microsoft products, it is easy to involve a people in the cataloging of new sites, managing Best Bets and supervising the Taxonomy Board for the benefit of everyone in the company.

Finding People and What They Know

- Based on direct experience with Microsoft Web, most employees will contact others for information by making direct contact; especially when they are known to be specialists in particular types of information or knowledge. SharePoint Portal Server 2003 support for creation of user profiles and personal sites made it easy for users to quickly search user profiles and locate other people and their information.

- The integration of My Site personal sites into the Microsoft intranet created a specific place on the intranet for people to store information and share their knowledge.

Previously isolated on an individual's personal hard drive, these valuable resources are now easy to find as part of the Microsoft knowledge network.

Organizing the Intranet

- Over time, Microsoft employees gained trust in the Site Directory as a comprehensive, categorized source of information about sites on the Microsoft intranet.

- More than originally expected, many groups requested their own SharePoint Portal Server portal sites rather than create a team site under one of the existing business division or regional portal sites. Microsoft is gathering new data to better understand which portal-specific features these groups require.

Summary

Microsoft used pre-release versions of Microsoft Office SharePoint Portal Server 2003 to significantly improve its employee-facing enterprise intranet portal. The process was driven by a commitment to fully deploy new versions of its products inside the company before making them generally available to its customers.

The Microsoft Knowledge Network Group worked in conjunction with the Microsoft information technology group and SharePoint Portal Server product group to redesign Microsoft Web, the company's enterprise intranet portal, based on well-researched employee needs, business goals and the latest release of Microsoft SharePoint Products and Technologies.

The key areas of improvement in the Microsoft Web enterprise intranet portal included:

- Finding the "right" information
- Finding people and what they know
- Organizing the intranet

Rather than simply creating a standalone enterprise portal, the Microsoft Web team succeeded in delivering an intranet portal solution that significantly increased the productivity of Microsoft employees. The new version of Microsoft Web made it easier for employees to find information that is contextually relevant to the task they were working to complete. The enterprise intranet portal solution also made it easy for employees to find people who are specialists in the type of knowledge being sought as well determine their availability for contact by telephone, instant messaging or e-mail. Lastly, Microsoft was able to reduce the overall costs of managing and operating its enterprise intranet portal.

Achieving Information Excellence

"Employees are able to find the information, knowledge and people they need and don't have to worry about where they are located. SharePoint Portal Server 2003 provides these capabilities and enables us to go further. In the next release of Microsoft Web, we will be able to embed the virtually connected organization we have today into each person's personal and team workspaces. We will enable employees to connect to the information and knowledge they need from any place they choose do their work."

Mary Lee Kennedy, Director
Knowledge Network Group
Microsoft Corporation

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APPENDIX A –SHAREPOINT PORTAL SERVER 2003 FEATURES USED BY MICROSOFT WEB

Three major groups of Microsoft Office SharePoint Portal Server 2003 features were essential to the development and deployment of Microsoft Web:

- SharePoint Portal Server Search
- Keywords and Best Bets
- Portal Areas, Topic Areas and the Site Directory

SharePoint Portal Server Search

The latest release of Microsoft Web makes extensive use of the following SharePoint Portal Server search features:

- Content sources
- Content indices
- Source groups
- Search scopes

Content Sources

A content source is the starting point that SharePoint Portal Server 2003 uses to create a full-text and keyword index of information stored in a particular location. This content can be located on the same server, on another server in an intranet or on the Internet. SharePoint Portal Server includes these documents in an index, making the documents available to users for searching. Examples of content sources include Web sites, file servers, other SharePoint Portal Server computers, Windows SharePoint Services sites, and Lotus Notes databases.

SharePoint Portal Server can crawl or automatically monitor the following types of information sources:

- Exchange Server folder: Messages, discussions, and collaborative content in a Microsoft Exchange 2000 Server folder
- File share: The contents of a file share, such as \\myserver\shareddocs\ or file://myserver/shareddocs/
- Web page or site: Any Web content from a single page to an entire site including any SharePoint Portal Server site, or Windows SharePoint Services site with its HTML content, documents and lists
- Site Directory: A list of sites
- Lotus Notes database: Any Lotus Notes database where the index management server has been first configured with the Lotus Notes client and then the Lotus Notes protocol handler

The Site Directory provides is the easiest way to add content to a portal site and to make it available for indexing and searching. When users add a site to the Site Directory, they are provided the option of including its contents in search results. A search administrator can configure SharePoint Portal Server so that sites are automatically approved for indexing and searching or manage the approval for each site on a case-by-case. When approved, a site is

included in Site Directory and its contents are indexed and can appear in search results. Administrators can define additional sources for content that is not included in the Site Directory or that requires a special update schedule.

"This Portal" is considered a special type of content source. It is a system content source that cannot be deleted as it controls indexing of all of the content in a portal site.

Content Indices

A content index is a database that significantly increases the performance full-text and keyword searching of:

- Content stored in a portal site.
- Content stored outside a portal site such as public Web sites. This content is made available when the site is defined as a content source (as described above). This content can be located by its URL, whether it is on a different portal site on the same server or on another server, on your intranet or the Internet.
- Keyword properties associated with a document, such as title and author.

Source Groups

A source group is a list consisting of one or more content sources. Source groups are used to define the scope of a search for information or *search scope* (see below). Source groups can be created and managed using Shared Services. They can be assigned to a portal search scope in any combination, enabling easy definition of search scopes across portal boundaries. For example, if users of a marketing portal need to search content on a sales portal, a search scope can be created that consists of two source groups encompassing all data on both the marketing and sales portal.

Search Scopes

A search scope is a list of one or more content source groups. The search scopes available on a portal site provide a convenient way for users to focus their search for information and improve the relevancy of search results.

Search scopes appear to all users as a drop-down list next to the Search Web Part. Search scopes are typically limited to specific topics and source groups that are important and common enough to make them useful as a separate searchable scope.

Site administrators configure search scopes using the administration Web pages in SharePoint Portal Server 2003.

Keywords and Best Bets

Technically, the Best Bets feature is part of SharePoint Portal Server Search. Best Bets are described here to highlight its importance.

Best Bets are used to mark search results for a particular keyword so that they can be displayed more prominently in search results.

Administrators create Best Bet keywords for the important or most common search terms. In SharePoint Portal Server 2003, Best Bet keywords can be organized into a hierarchy. For example, the keyword "operating system" can contain the keywords "Windows 2000" and "Windows XP." Administrators add Best Bets for each keyword to identify items most relevant to that keyword.

Best Bets are not limited to documents or Web sites. People can also be defined as Best Bets. For example, a person can be identified as a Best Bet if they provide expertise on a specific subject in a particular area. This facilitates person-to-person communication and knowledge transfer in an organization.

When a user types a keyword or its synonym into a search box, the Best Bets with the highest relevance are shown in the search results. These keyword Best Bets appear at the top of the list of search results, identified by a gold star-shaped icon.

Keyword Control

SharePoint Portal Server 2003 allows keywords to be created at the portal level. Documents, personal sites and portal areas can be assigned as Best Bets for each keyword. For example, with a keyword such as "SharePoint", the IT portal administrator can assign a document with technical content as the Best Bet for that keyword. Then, when users search with that keyword using the IT division search scope, they receive the best technical content in their search results. Likewise, the Sales portal administrator can create a "SharePoint" keyword and assign documents to it as Best Bets that are suited to the needs of the Sales division. In each case, the search for a keyword returns all documents assigned to it as Best Bets. Bet Bets are configured on a portal site basis.

Refining Keywords

Keywords can be reorganized and adjusted over time based on users' needs. For example, the list of available keywords can be refined based on the most frequently searched keywords. The search query Web server logs can be analyzed to better understand the information users are seeking. For example, the ten most frequently searched keywords in each portal can be identified and used as the basis for assigning Best Bets.

Portal Areas, Topic Areas and the Site Directory

Portal Areas

Portal Areas in SharePoint Portal Server provide intuitive navigation for finding and browsing all types of content including documents, other employees and their sites. Information can be organized using portal areas to group content.

This allows users to quickly find and browse through information while understanding it in context. A document can appear in several different areas. Portal areas can include documents stored in SharePoint Portal Server and include links to information from additional content sources such as other intranet and Internet Web sites and file shares.

In SharePoint Portal Server, portal areas serve two purposes. First, they provide a navigational structure or map of the portal site and related content. The users' view of the portal site can be simply modified by adding, moving, or deleting areas. Second, portal areas provide a centralized structure for browsing information. Portal areas direct readers to the information they seek through an organized hierarchy of subjects. Portal areas also provide a flexible way to both identify and describe documents.

By default, content managers can approve or reject content requests, manage portal area settings, and add users to site groups for a portal area. In addition, a site administrator or content manager can target portal areas for viewing by one or more audiences.

SharePoint Portal Server includes three types of portal areas: topic areas, news areas and areas in the Site Directory.

Topic Areas

To make it easy for users to navigate, browse, and find information, the portal site content can be divided into topic areas. Topic areas help organize content –documents, people, Web Parts, lists or sites – into sets of related information regardless of its storage location or format. To organize all of the content in an area, the portal site administrator can assign a manager for the area. The manager can then maintain both the content that appears in that area and employee access to it.

Topic Areas enable users to quickly locate information by organizing content into logical groups. After defining the structure of a topic area, content such as documents, list items and people can be added to each topic and subtopic.

Site Directory

The Site Directory is a hierarchal collection of site areas that are used to create a hierarchical directory of other Web sites. The Site Directory provides a central location for viewing and accessing all Web sites associated with a specific portal. To organize and display the sites in a meaningful way, views can be created to sort, filter, and group the sites. For example, sites from just the Sales division can be found in a list filtered to of display only those sites that contain the value "Sales" in the Division property.

The Site Directory provides the easiest way to add content to the portal site for searching. When users add sites, they are given the option to index and search the contents of those sites. Members of the Administrator site group can set up the Site Directory to automatically approve sites for searching or require approval for each site. After approval, a site is added to the index and its contents appear in search results.

The Site Directory includes other features as well. By default, SharePoint Portal Server provides a list of recently viewed sites. Members of the Administrator site group can highlight sites by using the Spotlight Web feature. Portal users can choose the "Alert Me" feature to receive alerts when there are changes to the Site Directory.

News Areas

News areas are portal areas to which users can add news listings – information that is highlighted as important for portal site users. A news listing can either be text-based content or a link to an existing news item such as an article on a news service. News appears by default on the home page. Members of the Content Manager Group can modify the properties of the News area in order to vary the display of news listings as headlines, summaries or expanded views.

News areas and news listings can be organized into sub-areas and can also be targeted to specific audiences. When a news listing is targeted to a particular audience, it appears in a "News for You" section of an audience member's personal site.