



A Search for New Horizons



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ENTERPRISE WEB PORTAL

2005 COMPUTERWORLD HONORS CASE STUDY

EDUCATION & ACADEMIA

A UNIVERSITY WEB-PORTAL PROVIDES A SINGLE POINT OF ACCESS TO INFORMATION FOR STUDENTS, FACULTY, AND STAFF INCLUDING WEB MAIL, GRADES AND TUITION PAYMENTS, COURSE INFORMATION, AND MORE. PORTAL COMMUNITIES ARE DEVELOPED FOR GROUPS WITH COMMON INTERESTS. [20055371]

SUMMARY

The University of Pittsburgh's enterprise web portal provides a single point of access to information for students, faculty, and staff including web mail, grades and tuition payments, course information, and more. Portal communities are developed for groups with common interests.

APPLICATION

Well-known within the University of Pittsburgh community as "my.pitt.edu", the My University of Pittsburgh Web Portal provides students, faculty and staff with a wealth of web-based information from University and external sources in a unified view. Access is provided to a wide variety of University web-based and other services including the online course management system, grades and class schedules, web-based electronic mail, and an increasing number of other important University resources. In addition, the system provides access to current events information – both from within the University and information of local and national interest. The key to this system is its capability of providing single sign-on integration to University resources and a unified, user-friendly Web-based interface that can be accessed at any time from any location.

The Web portal was first released to students in August 2002 and proved to be an instant success. Faculty and staff were provided access in the following spring. New features and functionality are continually being added with access to certain features of University's new student administrative information system scheduled to be online in August 2005.

Although academic Web portal systems are not new, they have met with mixed success at other schools. The sheer number and heterogeneity of the online applications and resources available at most larger schools can prove to be a significant challenge to successful portal implementation. Where they exist, Web portals tend to be more limited in scope than My University of Pittsburgh.

A key to the portal's success is its integration with the University's Central Directory Service, which contains information about every individual affiliated with the University. Directory information provides the portal with the user's University affiliation information that the portal then uses to determine the communities to which the individual can access. Additional information such as program enrollment, faculty appointment, or staff department of employment information further refines that view, ensuring that each individual has access to the resources available within his or her school, department, academic area of interest, or in the case of faculty and staff, access to appropriate administrative applications that have been integrated with the portal environment. The core communities include those for students, faculty, and staff. Additional communities are found within these three along with communities that include members from any of these groups. The Technology community, for example, is available to all students, faculty, and staff. Web access to the University's IMAP enterprise electronic e-mail system is also available to everyone who can authenticate to the portal environment, providing client-free access to the service.

The portal can be completely customized to show each user only the information he or she wants to view in the manner selected. Users can organize content into pages and place that content in any order. Within each page, the user can pick and choose information sources of interest from the entire pool that is available to him or her. For example, a student might choose to display the student events calendar and place this on a page adjacent to University shuttle bus schedules. University news headlines can be displayed next to national news and weather. Any of these selections can be changed or rearranged at any time. Users can select different color schemes and take advantage of other easy-to-use features in order to personalize their views of available information.

The combination of successful integration of the portal with a variety of online campus systems ranging

from web-based student health resources to employee retirement plan information has, in conjunction with positive student, faculty, and staff response, provided a synergy that increases both usefulness and user adoption. The range of available services underscores the flexibility and adaptability of the service. This has led to an increasing number of user requests for access to other systems and services through the portal. As a result, individual University units have begun to request their own customized communities that provide the ability to collaborate on research and share schedules or information of specific interest to students and faculty within the department. Once created, the department or community sponsor is given control of the community. The sponsor grants access to individual users and determines the content that is available to community members.

BENEFITS

The portal's greatest strength is its ability to provide users with easy access to both needed information and information of interest. By integrating existing University systems into the portal, CSSD has been able to improve and simplify user interfaces while eliminating the burden of identifying and supporting client software applications.

Some examples of the major systems that have been integrated into the portal are: Web-based e-mail, the student administrative information system, CourseWeb online course management, employee retirement program information, student health information, and online tuition payment system. This integration has provided a great benefit to students, faculty and staff by dramatically changing the way they access University resources.

The chief benefit of the portal to CSSD is in its reduction of user support costs. Because the World Wide Web is a familiar computing paradigm for most users, they can learn to navigate and customize the portal with minimal documentation or support. The decrease in overall support calls is difficult to quantify because the portal has preempted the introduction of new client software applications for new services, but the call tracking system clearly shows that there have been virtually no calls to the Help Desk for assistance in using the portal or the applications for which the portal serves as a front end. An unanticipated benefit of the portal has been the increase in awareness of previously underutilized computing applications and services. CSSD has generally found that lengthy adoption times are required for new services unless use of an application or service is required by a course or work activity, but utilization of resources including online computer account management, the central IMAP e-mail application, spam filtering service, and others have increased. Users have found the front ends for these applications on their own within the portal, where otherwise they would have needed to search for advertisements or other information containing the application's URL. Even worse is when it is necessary for users to identify the appropriate front end application and seek assistance with its installation and configuration.

The My University of Pittsburgh portal will become an even more valuable tool to University users as more of the existing systems and new outside services are provided to the users. Some of these upcoming systems include on-line payroll information, departmental calendars, the University Data Warehouse and similar applications.

IMPORTANCE

The My University of Pittsburgh Web portal was developed with the commercial Plumtree Web portal application suite. Microsoft Windows 2000 and SQL Server 2000 provide the underlying server operating system and database infrastructure. It is important to note, however, that the portal is tightly integrated with a number of key University infrastructure systems including the Central Directory Service which provides identity information and authentication services for all University users.

The portal utilizes modern, dynamic Web application technology to present data to users with an underlying Web and content server hardware infrastructure. The Web application is clustered and load balanced over several front-end servers, allowing the system to expand to meet user demand. The Web application relies on a second tier of servers for content in order to provide further clustered isolation and security. Once the portal has requested content from these second-tier servers, the requests are dispatched to the backend information systems using the appropriate protocol required by the backend system. The technology used to integrate with these heterogeneous systems includes Peoplesoft, Oracle, Exchange, IMAP, HTTP (returning both HTML and XML), SQL, LDAP, and straight TCP/IP sockets.

System and user configuration data for the portal is stored in a relational database and several XML files (and in certain cases, XML-formatted data stored in the database). The portal integrates with the University's existing user authentication services to authenticate users using standard LDAP calls. The portal technology has enabled the University to begin the transition from a scattered, heterogeneous central Web presence to a powerful, organization-wide information store.

ORIGINALITY

The University of Pittsburgh is one of the first higher educational institutions to implement a full-featured, enterprise-wide Web portal for its students, faculty, and staff, succeeding where other institutions encountered mixed success rates. The flexibility and extensibility of the Plum tree product and the capabilities of the underlying Microsoft Windows and SQL Server technologies were critical to the implementation and growth of the basic system. More importantly, the flexibility and support found within a commercial product reduced the need for extensive custom programming and the ability to quickly and successfully integrate the system with a wide range of new and legacy applications and services.

SUCCESS

User acceptance and utilization continues to increase as more students, faculty and staff discover the wide range of information available to them through My University of Pittsburgh. Currently over 21,000 individual users have logged in to the portal, for an average total of 560,000 log-in sessions per month. This figure represents approximately 50 percent of the University of Pittsburgh's user population. This is an outstanding adoption rate for the University user base over a short time period.

DIFFICULTY

The project team has encountered and resolved several obstacles while developing the portal. One obstacle to the project's success was the broad scope of systems that the portal would need to integrate. In addition to integrating with other Web sites, the portal also had to access other systems, such as IMAP e-mail, an LDAP directory, several different databases, and a mainframe. In order to integrate with these systems, the project team had to become familiar with the underlying applications and needed to learn technologies used to integrate these systems into the Portal, including Java, .NET, COM, and XML.

Promoting the portal as the primary interface for new University systems has been another obstacle encountered in this project; however, the portal team believes that its continued success will be achieved by constantly integrating new services into the system and using the portal as the primary interface to those services. Developers and administrators throughout the University have been initially skeptical to deliver their services through the portal; however, as more services are integrated, they have come to realize the power of the portal and the benefits of integrating their services.