

Convenience – Are You Providing It?

James B. Yucha
Director, Web Support Services
Associate Director, Academic Computing Services
Virginia Commonwealth University
901 Park Avenue
Richmond, VA 23284
(804) 828-2192
jyucha@vcu.edu

ABSTRACT

Gone are the days of trucking over to an Academic Computing Help Desk to obtain an account for sending/receiving email, creating web pages and doing numerical research. At Virginia Commonwealth University (VCU), we are focusing on web-based services for our students, faculty and staff. VCU is an urban, commuter-based university where most of its students come to campus to take a class or attend an event and then return to their off-campus homes.

During the past 5-10 years we have focused on supplying web-based services so that students do not have to unnecessarily come to campus. Several years ago our online parking sales eliminated the need to stand in line to buy semester parking decals. This service kicked off our e-commerce system, which now brings in nearly \$1 million each month.

In general, the University is looking for ways to provide services to its students, faculty and staff that are independent of time and location and are more cost and time effective. This presentation will outline our method for developing online services, show the services that are currently available and under development and discuss some of the lessons learned developing web-based applications.

Categories and Subject Descriptors

H.5 [Information Interfaces and Presentation]: User Interfaces – *User-centered design*, Group and Organization Interfaces – *Web-based interaction*, and Hypertext/Hypermedia – *Navigation*, *User issues*.

General Terms

Management, Measurement, Performance, Design, Reliability, Experimentation, Standardization.

Keywords

Usability, Convenience, Service, Web, Applications

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1. THE CHALLENGE: CONVENIENT SERVICES

At Virginia Commonwealth University (VCU), like many other public colleges and universities, we are being asked to provide higher quality and more convenient services with shrinking funding from the state government. We are being asked to provide services to our students, faculty and staff that are independent of time and location and are more cost and time effective.

In 1996, the department of Web Support Services (WSS) was created with the responsibility of supporting the VCU web. From its humble beginnings of one staff member, WSS has grown to nine people. Today, in addition to supporting and promoting web publishing and the use of web technologies, WSS collaborates with many VCU organizations in developing and supporting web-based applications.

Multiple departments spread throughout a campus or campuses provide services at all universities. To provide convenience, the initial focus of the web in the mid-90s was to create web-page links to the departments that provided these services. After users found their way to the correct web site, they had to navigate through the site in order to find the information. When users were looking for a service, such as registering for classes, the best they could hope for was a web page that described what they needed to do, such as going to that office, sending a fax or calling a particular telephone number. The early web in essence replaced a paper directory, which was usually more out of date than the web pages.

With the integration of computer programming and databases into the web through technologies such as CGI and java scripts, ASP and JSP, it became possible to provide services online and even in real time. Providing convenient services through the web could now be looked at in an entirely different way.

2. FROM CHAOS TO CONVENIENCE

With the maturity of the web it became possible to provide easy-to-use online services independent of time and location. The web could be used to create organization out of disorganization and to turn chaos into convenience. Of course, it is not easy. To turn a service into an online service, you have to work with the service provider to first understand the service fully and then often to help them to rethink their process. Many a conversation began with "That's the way we have always done it." Through many

conversations and much teamwork, productive and convenient applications are created.

Our first major application was the University Events Calendar. There was such chaos with dozens of departments each creating and publishing – and sometimes maintaining – their own calendars that a university events calendar was requested in the 1997 VCU Strategic Plan. The process used to develop this application became the model for many future applications. The Events Calendar was developed and later enhanced through input from University committees, meetings, discussions, and demonstrations. It took more than six months to determine the original calendar specifications and to develop the prototype. The Events Calendar has since been through two major revisions; each proceeded by input from committees, meetings, discussions, and demonstrations. Today serving as a single source for University-sponsored events, the Events Calendar supports more than 1,000 concurrent events that are entered and maintained by hundreds of event submitters. It has been incorporated into many departmental web sites, displaying their specific events ranging from dance performances and athletic events to career workshops and student organization meetings.

The Events Calendar, like most of our early applications, was developed using ASP technology. Initially applications were tied to Access databases but now all ASP applications are developed using an MS-SQL database. The move to SQL was predicated on the need to allow other applications, such as the Portal, to utilize the data. Today applications are developed using JSP, ASP/ASP.net, or Perl/CGI.

3. CURRENT APPLICATIONS

Web Support Services is presented with numerous opportunities to develop, acquire and support applications. It is a difficult challenge to choose which application will be acquired or developed in-house and then centrally supported. To be considered, an application must significantly improve customer service and meet one or more of the following criteria:

- 1) The application provides a unique or critical service;
- 2) The service affects a large portion of the University;
- 3) The application saves the University money or time by automating a labor-intensive process; or
- 4) If built for a specific department, the application must be partially or completely reusable for other departments or in other situations.

The goal of each custom application is to make it self-managed or customer-managed. If this goal is met, not only is the customer served by putting control in their hands, but also the ongoing support effort required of WSS is greatly reduced.

WSS now supports nearly 40 third-party and in-house applications. The following is a sample of five of the applications that have been developed.

3.1 Training

The VCU Training Web site was born out of the need to relieve the AT front desk staff from the laborious task of registering students for Information Technology classes. However, it was quickly realized that the process was also cumbersome for users

and a source of complaints and dissatisfaction. Today the training site provides a single interface to hundreds of courses offered by eight different departments at the University. The online database allows for registration, viewing the number of open slots in real time, full course description, online evaluation, and myTraining, which allows individuals to see all of the courses that they have taken.

3.2 Account Management

The ability to create and manage your own computer accounts from a remote location is critical to VCU. In addition to our INOVA campus in Northern Virginia, more than 80% of our students live off campus. For several years students, faculty and staff have been able to create accounts via a web interface for email, web publishing, numerical research, and course management. Over the years features have been added such as the implementation of a password phrase so that people who have forgotten their password can create a new password online by correctly answering their previously entered phrase.

3.3 Leave

The need to automate routine office operations is one of the obvious areas when providing convenience services to faculty and staff. In Academic Technology, like many offices, employees work in various buildings on different campuses. The leave system was created to handle leave requests via the web. Employees are now able to request time off at any time of day and from any web-accessible location. Supervisors are able to approve requests at their convenience with immediate feedback to employees. Additional features that have been extremely helpful are 1) seeing who is out of the office at any particular time; 2) allowing a supervisor to enter a leave request on behalf of an employee, when necessary; and 3) allowing upper management to approve leave requests when a supervisor is on vacation.

3.4 Ecommerce

The impetus for VCU's ecommerce system came from the need to address the long lines that students had to stand in twice a year to purchase parking decals. Today, VCU students still line up twice a year, but now they do it in front of their personal computer in the lab, home or other favorite spot where they browse the Internet. The success of the sale of parking decals over the web led to additional Ecommerce applications ranging from French Film Festival ticket sales to medical school applications to tuition payments. In two years, VCU's Ecommerce system has grown to eight applications that have processed more than 35,000 transactions totaling more than \$21 million.

3.5 Accreditation

Reaccreditation is at the forefront of most university agendas. The process of collecting and processing all the data from hundreds of academic and administrative programs for reaccreditation with the myriad of accrediting agencies is a major effort. Now in its second (and soon to be third) version, WEAVEonline™ is an institutional-level management tool, allowing colleges and universities to automate the capture and analysis of information to support continuing improvement efforts in individual programs and services throughout the institution.

4. FUTURE APPLICATIONS

There are two issues that hinder the convenience of VCU's current web and online services. First and foremost is the formidable task of finding the information and various applications that are available. Second, but just as important, is authentication for each application.

In addition to creating additional and improving existing applications, WSS now has two new priorities:

1. Development of a complete and robust Portal for VCU's current and future students, faculty, staff, and alumni.
2. Full implementation of VCU's Electronic Identification, known as the VCU eID.

4.1 myVCU Portal

Just as the introduction of computer programming and database technologies into the early web provided an opportunity to redefine what is meant by "convenient services," the introduction of portal technology provides us with that opportunity again today. In September 2003, Academic Technology was awarded a \$1.1 million, five-year grant to develop a portal using the CampusEAI/ Oracle portal software. The initial focus of the myVCU Portal is current students with special emphasis on retention and community building. The schedule is to have a basic version of the portal available at the beginning of the Fall 2004 semester. The content for the portal is a collaborative effort from many units including Academic Technology, Administrative Information Technology, and VCU Libraries. The portal will become the convenience cornerstone serving as a single, customizable access point to all online services.

All of the previously created online services will be incorporated into the portal. With customization and personalization, the portal will bring a new level of convenience to our customers. For example, folks will be able to determine which events will display in their view of the University Events Calendar and to read their email or view their library record (books checked out, overdue fines, etc.) without having to log in again.

4.2 VCU eID

Presently, there are 19 different authentication schemes for accessing VCU's online applications. The schemes include using various lengths of one's Social Security Number or VCUCard (VCU Identification Card for student, faculty and staff) or using some other PIN. While the portal will be the primary access method for these applications, there is a tremendous need to move to a standardized authentication, so that one ID and password will work for most if not all applications.

VCU has implemented a Lightweight Directory Access Protocol (LDAP) directory based on Novell's eDirectory. Currently, five

applications are utilizing the LDAP ID, known as the VCU eID or VCU Electronic Identification and its associated password. The challenge is to implement the VCU eID authentication method across all new and existing applications and eventually move to Web Initial Sign-on.

5. LESSONS LEARNED

In eight years of existence, Academic Technology and Web Support Services have developed many applications. Some never saw the light of day (IBM Digital Library), some have since been replaced by commercial software (Off-Campus Housing), some have been modified and improved (Events Calendar), some have gone commercial (Web Course in a Box, WEAVEonline™) and some have run virtually untouched for more than five years (Faculty Vacancies). A number of lessons were learned in developing these web-based applications.

First, and foremost, involve your customers in the development, testing, deployment and evaluation of these applications. We have found that by involving the customers from beginning to end not only makes the application better, but also reduces the amount of modifications once the application goes live. Most folks learn more about what they need and what is possible once the creation process begins. Listening to your customer can never be over emphasized.

Second, no application will be perfect. There comes a time when you must move it to production. After running the application through your internal testing process and your external test group, one must be ready to put the application into production. No one can expect to create a perfect application or anticipate all the possibilities that your customers will pursue or encounter.

Third, develop applications that are either user-maintained or self-maintained. A couple of the most important factors when creating applications is to think about how the application will run day to day and what information the service provider will need from the application. Developing data maintenance tools, application monitoring tools and predetermined reports will give the service provider the information they will need to run their application and provide the necessary information to their management team.

Fourth, write to standards, whenever possible, when developing applications. This is important so that applications can either be moved to, or replicated in, other environments.

Fifth, evaluate each application on its own merit. By developing policies or working procedures for the creation of online web services, personal biases, both positive and negative, will be minimized when determining which applications to pursue.

Finally, know when it is time to improve or replace an application. This is only possible when there is a clear communication channel between the customers, the service providers and the development team.