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Real World XML: Using Content Management Systems in Higher Education Course Catalogs

David **Cummings**

Abstract

CMS is revolutionizing the way higher education handle online content. So why are most universities still managing their course catalogs by hand? Join David Cummings for an in-depth look at how XML can improve a university beyond its website.

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1. Background

1.1. What is a Content Management System?

A Content Management System, or CMS, is a program designed to help develop and maintain shared information, primarily websites. They typically run on a modulated XML format separating content from design elements, thereby allowing numerous combinations with minimal work. CMS's are designed to allow multiple users to edit and publish shared information in a variety of formats.

XML's flexibility makes having a CMS a huge asset for large businesses and organizations, and universities in particular. Any time there is a huge amount of content to create, and a large, spread out staff responsible for managing it, a CMS becomes a tool not just for updating a website, but for communication and collaboration between staff.

Because of the success universities are having with using a CMS to manage online content, many are beginning to ask why the same principles could not be applied to other areas in which mass collaboration is needed.

Our answer, of course, is that they can! And course catalog management is a great place to start.

2. University Course Catalogs: Process Overview

The development of a course catalog is a complex and often tedious operation involving staff and professors from all schools and departments.

2.1. Student Enrollment

The ultimate goal of a course catalog is to enable students to enroll in the classes of their choice. With hardcopy versions, students must work out potential schedules by hand, then submit first, second, and third choice lineups to be entered by their academic advisor, departmental secretary, or office of student records. It can be a daunting and frustrating task for all involved.

2.2. Organization of Content

To create an easily navigable course catalog, the key is organization. A university can be divided by schools, schools divided by departments, and then further divided by professors. Each professor may have multiple classes, which in turn will have multiple students.

It becomes more complicated when specific classes may count for credit in more than one department, or when certain classes must be closed off to students without the appropriate prerequisites.

2.3. Creation of Content

To create the content for a course catalog, the administrative office in charge (generally Student Records or Registrar) must rely on faculty and department chairs to submit their information in a timely fashion. It must all go through the proper approvals, and be edited to create a consistent style. In most cases, all course information must be collected, entered, and formatted by hand because it comes in from so many different sources and varying formats. Many institutions update their course catalog only once per year, due to the high level of labor intensity involved.

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2.4. Approvals Process

The course catalog is an official document put forth by the university, and must therefore adhere to the highest standards of accuracy and style. There are numerous approvals that must take place before anything is published.

Course proposals made by professors must first be approved by department heads, and then the dean of the appropriate school.

The office responsible for publications produces a polished, formatted, and edited version, generally using a word processing program such as Microsoft Word. This document must then be submitted to the registrar or other high-level official for sign-off prior to publication.

2.5. Publication

Nearly all universities publish their course catalog in two formats: online and printed form.

2.5.1. Online

Information is uploaded to the university website either in the form of static files, or via database or content management system. Depending on how course information is presented, students have varying levels of access – from simply viewing available courses, to actually registering for specific classes online.

Publishing the course catalog online is a task often left to the webmaster or web maintenance staff. Designers must create a layout style and import the content from the original Microsoft Word documents.

2.5.2. Print

The printed version of the course catalog is an important and necessary document that must be formatted carefully to ensure proper page presentation.

Layout designers must create a style format and import the content from the original Microsoft Word documents. Publishing software such as QuarkXPress or Adobe InDesign are used to create a camera-ready version of the course catalog to be printed and bound.

2.6. Student Enrollment

The ultimate goal of a course catalog is to enable students to enroll in the classes of their choice. With hardcopy versions, students must work out potential schedules by hand, then submit first, second, and third choice lineups to be entered by their academic advisor, departmental secretary, or office of student records. It can be a daunting and frustrating task for all involved.

3. Using a CMS to Manage a Course Catalog

The advantage of using a CMS for managing a university course catalog is the ability to have each faculty and staff member update and edit his or her own information. Because the content is centralized, it can be then automatically run through the approvals, design, and publications processes smoothly and without redundancy.

3.1. Content Organization

One of the key features of a CMS is its ability to keep content stored in an easy-to-find, orderly fashion.

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In the case of a course catalog, information can be stored in the CMS logically by school, department, professor, and class. By keeping these elements neatly organized, multiple users can easily find the information they need.

Using a CMS, design elements as well as content can be stored centrally. Because the two types of information are stored separately within the same system, they are both easily updated, with changes to style able to be made across the board.

In addition, a good CMS should have a user-friendly personalized interface for each user, and an easy to navigate infrastructure to ensure ease of use.

3.2. Workflow Management

One of the greatest blocks to productivity in creating the course catalog is in the area of workflow management. Information may be published without going through the proper approvals, approvals may slow the process down excessively, or drafts may get lost in the shuffle.

A CMS streamlines the workflow process by centralizing the content and specifying levels of access for each individual. Permissions can be assigned per faculty or staff member, so that each person has access only to the courses for which he or she is responsible - cutting down on confusion and avoiding "too many cooks" syndrome.

Each professor can submit proposed courses and descriptions via the CMS. The CMS will automatically send content through to the next appropriate user, as well as send out an accompanying email reminder for content to be edited, approved, or published, as appropriate.

A possible workflow scenario would be: 1. Professor writes course description. 2. Department Chair approves or sends back for revisions. 3. Publishing Staff edit for style and clarity. 4. Registrar approves and publishes or sends back for revisions.

In this scenario, the jobs of web maintenance staff and print layout designer have been done ahead of time by creating the style sheets, which are automatically applied to the content. The process, therefore, is streamlined: with a simple click of a button, the Registrar or other high level approver can publish approved content for both the online version and the photo-ready print version.

In addition, any content edited using the CMS will be automatically tracked with metadata values such as the title, author, and time of update. Older drafts are stored in the CMS and kept readily available. Content can also be set to retire on a specified date if it will become obsolete.

3.3. Interactivity

A good CMS has almost unlimited interactive capacity. It just depends on what you want it to be able to do. For a course catalog, the primary goal is to make it easy for students to make informed choices about their class schedule.

With a CMS, it's easy to create a better interactive experience. Rather than having static text pages online, the course catalog can link seamlessly with both the individual departmental pages and the system used for online registration.

Students can search for classes by department, professor, course name or number, or days/times offered. Course descriptions can be automatically generated on webpages for individual departments or professors' personal pages, as well as the course catalog's central page. Students can be given the option to sort through class descriptions page by page, or look at an overview of a particular department or search selection.

An additional function could be established enabling students to 'shop' the online course catalog, add classes to a shortlist (similar to a 'shopping cart'), and proceed to the online registration area to sign up for selected classes.

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3.4. Updates Any Time

Because of the time and labor involved, many universities update and publish their course catalog only once per year. By drastically reducing the amount of work involved in producing a publishable version, it is feasible that, using a CMS, a course catalog could be produced every semester or quarter.

Even in the case that a university decides to continue producing only one printed copy per year, the online course catalog could be kept up to date easily by following the standard workflow procedures.

If departments are able to update their class offerings at any time, the crunch-time bottleneck of approvals can be reduced significantly. And because a good CMS is accessible from any standard web browser, emergency edits and approvals can be made regardless of proximity. If a professor is participating in a study abroad program when course descriptions are due, for example, there are no special procedures or requirements to get that information into the approvals process.

3.5. Compatibility

When attempting to collate content from multiple sources, compatibility becomes a major issue. Few, if any, universities are strictly PC-based. It is important, therefore, to select a CMS that has full compatibility with both Mac and PC.

3.6. Publishing Format

A good CMS will have multiple options for publishing content. Using the same information, you can publish to the web and export the data to Adobe InDesign or QuarkXPress for print publication, without the tedious task of formatting and reformatting the content.

4. Common Concerns

Purchasing a CMS is a big step forward in the life of a university or college, and can be a difficult decision to make. The following are answers to some of the most common concerns:

4.1. Is a CMS hard to set up?

It can be a simple or complex process, depending on how much you want to do with your new CMS. If you purchase a good CMS from a reputable company, you can expect to have excellent support staff to help you with the initial integration, and plenty of step-by-step instructions on getting started.

4.2. Will users adapt to the new system?

A good CMS is intuitive and user-friendly. There is generally a very low learning curve, and once users realize how easy and efficient the system is, they adapt quite readily.

4.3. Can I change the style or formatting?

Yes. Because content is separated from design elements, the style and format can be changed easily. You need only change the design in one area, and those changes are automatically replicated throughout.

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4.4. Will the resultant content be compliant for persons with disabilities?

Possibly. Make certain when purchasing a CMS that you select one that complies with ADA standards.

5. Conclusion

Managing a university course catalog has historically been a long and laborious process involving many content contributors, assembling staff, layout designers, and content approvers. A content management system is designed to streamline the workflow process and make the course catalog easy to create, maintain, and update. XML has the capacity to save countless work hours, eliminate redundancy, and minimize errors.

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Biography

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A business and technologist enthusiast, David has been involved in software companies for ten years including work as a software engineer for IBM. Through hard work and determination, David continues to guide Hannon Hill in an effort to provide powerful content management systems with an emphasis on personal service.

David has published articles on O'Reilly's XML.com and OnJava.com in addition to popular web development sites like SitePoint.com. He has given presentations at the Silicon Valley Web Guild, for Silicon Networks, and the I.C.C.A. David taught entrepreneurship courses at Duke and an Internet technologies course at the Duke Fuqua School of Business. As for programming languages, he has written code for commercial applications in Java, PHP, ASP, and Visual C++. He is involved in the Business Marketing Association and in the Technology Association of Georgia in the Content Management and Entrepreneurial Special Interest Groups. David is from Tallahassee, Florida and graduated from Duke University with a B.S. in Economics.

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