Self-Learning Management System for an Introduction to Communication and Media Studies (SYCOM)

Client Needs

The Institute for Mass Communication and Media Research (IPMZ, Institut für Publizistikwissenschaft und Medienforschung) is a research and education center of the Philosophy Department at the University of Zurich (www.ipmz.unizh.ch). As part of its mission, IPMZ offers several courses in media studies, whose content is naturally rich in multimedia (images, sound, and video). Writing textbooks and preparing courses is a difficult intellectual endeavor as it is; authoring multimedia-rich courses for online delivery by professors whose expertise is clearly not in HTML and JavaScript presents even greater difficulty.

In addition, IPMZ wanted to ensure that its students could interact with the course content under various operating systems (Solaris, Linux, Mac, and Windows), and both on- and off-line. Over the last three years, more than 400 students at IPMZ took their media studies courses with the help of our product.

Actually, the people at IMPZ had only a vague idea about what type of software they needed. At first, they had plans to use Macromedia Director to package course content to run from a CD-ROM. Later on, recognizing the power and ubiquity of the Internet as an educational medium, they chose the more general on-line usage mode, but insisted on keeping the off-line (CD-ROM) usage mode.

Still, IPMZ didn't want a full-fledged off-the-shelf learning management system (LMS), such as WebCT or Blackboard (which, in addition to being fairly expensive, requires its own tech support team); they wanted something much lighter, cheaper, more accessible, and better suited to their needs: preparing and teaching multimedia-rich courses.

Product Overview and Benefits

SYCOM is a self-learning management system (self-LMS) -- a system for authoring and reading interactive electronic books -- which consists of two main parts: a teacher application for developing course content and a student application for interacting with the course content. IPMZ didn't feel a need for on-line student collaboration or storing course grades on a server -- features that are standard in a full-fledged LMS.

The teacher application is a desktop content-centric integrated editing environment with a built-in HTML editor. It lets the subject expert (the IPMZ professor) focus on the course content and structure and not on its presentation or encoding. The built-in simple HTML editor enables course authors to create HTML without having to know or write any HTML tags and provides them with a familiar GUI, similar to the interface of a typical word processor (such as MS Word) with preset paragraph styles, headings, bold, italic, lists, tables, drag-and-drop, Clipboard copy-and-paste, etc. In fact, recognizing the existence of legacy educational content and the ubiquity of MS Office, SYCOM supports both file importing and direct clipboard pasting from MS Word.

The student application runs inside a standard web browser and lets students interact with the course content: browse and read text, make personal notes, keep bookmarks, look up glossary terms, search the bibliography, view videos, listen to sound clips, do exercises, take self-examination quizzes, etc. Students can save course data locally and load it before the next session. They can access the course material either dynamically (on-line, from a web server) or statically (off-line, from a CD-ROM).

SYCOM has enriched the learning experience of more than 400 students at IPMZ over the last three years. Professors keep their courses engaging and up-to-date; students learn in a stimulating environment and at their own convenience. Despite its area-specific name, SYCOM is a general self-learning management system, which can be used for computer-based training in areas other than media studies.

Implementation Overview and Technical Details

SYCOM consists of an editor and a viewer for highly structured educational content. The system maintains and processes data about the course content and its structure, about the multimedia resources (audio, video, etc.) and their relation to the course units, and about the student interaction with the course. For simplicity and portability, SYCOM stores its data into self-documenting XML files. Course content is delivered to the student in a standard web browser via an XSL transformation to HTML (on-line usage mode) or via pre-packaged HTML with CSS (off-line usage mode).

The teacher application is a Windows 2000/XP desktop standalone application written in Visual Basic 6.0 (MS Office is the standard office suite at IPMZ, so the Microsoft-centrism is not a problem here) and sporting a simple and intuitive GUI. The HTML editor uses minimal text decoration to provide visual feedback for the structural and semantic styles (such as heading, definition, or exercise) present in the course text. In addition, the teacher can insert a resource in any place of the course content and edit its properties (such as author, title, date, and publisher) or even embed a whole third-party product, such as a quiz applet generated by Hot Potato.

Even though simple in concept, the presentation of interactive course content in a web browser under the serious hardware and software limitations imposed by our client turned into an implementation challenge. The online usage mode was no problem: our web application used JSP Servlets, XML, and XSLT to produce JavaScript-interactive content pages. In the off-line (server-less) usage mode, Java applets replaced JSP functionality, but that caused a problem on the old Mac OS (prior to Panther), which lacked support for LiveConnect. Thus a third, Mac OS off-line usage mode had to be implemented separately and the course content had to be converted to static HTML in this case. Technology summary: Visual Basic 6.0, Java, JSP, JavaScript, HTML/CSS, XML/XSLT.

Outsourcing Partners

This project was outsourced to Tetracom by IPH (Winterthur, Switzerland).

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