IBM

University of Essen improves online learning with IBM Content Manager.

Overview

■ **Application**
Multimedia library to support instruction and research

■ **Business Benefits**
Enhanced quality of education; recruitment tool to attract new students; expansion to other universities, providing students with access to greater volume of digitized resources

■ **Software**
IBM DB2® Universal Database™ Enterprise-Extended Edition for AIX®; IBM Content Manager, V7.1; IBM Content Manager VideoCharger™; Tivoli® Storage Manager; IBM Tape Library

■ **Hardware**
IBM RS/6000® SP™

The University of Essen in Germany has become increasingly involved in utilizing video and other multimedia assets for e-learning purposes. IBM VideoCharger is an integral part of the infrastructure delivering this content to students.

The video camera and the close-up lens have revolutionized education. No longer do students have to strain their eyes to see a live demonstration of a surgical technique half a classroom away. Or wonder what the painting on a fuzzy slide presentation really looks like. But the quality of video education all depends on one crucial factor—how the video assets are stored and delivered to the viewer.

For the 24,000 students at the University of Essen, watching videos for their classes was once an unpleasant chore. They had 12,000 videotapes at their disposal, but viewing them meant waiting in line

at the library to check them out and then waiting for one of the library's few viewing stations to become available. Waits were even longer at exam time. And once students had their

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video, they'd have to fast-forward and rewind to repeat sections that were most important. The school's method of storing and delivering its video assets clearly was not making the grade.

Since the University already used IBM Content Manager to store a growing multimedia library consisting of lectures, book reviews, dissertations, articles and animation, only a small step of the imagination was needed to realize what a major benefit digitizing the videos would present. And IBM was again there to offer the most suitable technology: Content Manager to store digitized video and IBM Content Manager VideoCharger to stream it over the Internet or the school's intranet.

Today, students can search through and view videos from anywhere on or off campus. Conveniently, the system streams only those scenes of videos relevant to the student's search request. And the near-CD

Students at the University of Essen are learning surgical techniques through video on-demand, thanks to IBM VideoCharger.

quality of the video means those medical students don't lose any critical surgical details to fuzziness or wear. "Before we started developing this solution, students were being hindered," recalls Dr. Bruno Lix, director of the Computer Center at the University. "Now we feel we're enhancing their education. And we're even extending the system to other German universities so students can research the archives of multiple schools at once."

Multimedia search engine in a class by itself

The university's digitized multimedia library is called the Multimedia Teaching and Learning Server and is known by the German acronym MILESS. The university created a three-tiered architecture based on Java™ technology to make the content available to students. The top, user-facing tier is simple and Web browser-based. The bottom layer essentially archives large amounts of multimedia content using IBM Content Manager. The middle layer passes search requests from the top layer to the bottom, returning streams of video and other content.

"IBM Content Manager is one of the most advanced systems for storing and managing true multimedia content. We strongly rely on IBM Content Manager VideoCharger as an extraordinarily powerful streaming video solution and on IBM DB2 as a very scalable and reliable database."

–Dr. Bruno Lix, Director, Computer Center, University of Essen

"The search functionality we implemented based on Content Manager is especially powerful," says Dr. Lix. "You can search by subject, and request texts, animation, books, dissertations, videos—anything. Or you can search by asset for specific content, even if it's only a short segment in one of the videos. Using the text and image search engines of Content Manager will allow us to extend the search capabilities of MILESS to reach the entire range of our multimedia library, including videos."

IBM technology aces the test

When the University sought a robust database to manage all of its digitized content, it had multiple vendors from which to choose, including Oracle. Explains Dr. Lix, "IBM DB2 Universal Database Enterprise-Extended Edition for AIX came out on top because of its performance and smooth interoperability with Content Manager."

MILESS, the University of Essen's digital library application based on IBM Content Manager and IBM VideoCharger, is available to other German universities under an open source agreement.

The school customized its user interface for Content Manager Version 7.1. VideoCharger Server streams the multimedia to students and supports a wide range of media formats and players, including MPEG1 and MPEG2, .avi, .wav, QuickTime 3 and QuickTime 4, and MP3 files. The VideoCharger player is a free download for students. IBM Tape Library, combined with Tivoli Storage Manager, provides long-term storage, which can be streamed invisibly to the user.

Open source extends functionality

Thinking ahead, the University designed its middle application layer using Java technology, but in an open source environment, to encourage and accelerate enhancements. The planners sensed that by extending MILESS' functionality, they could exponentially increase its value to their students.

"We built the MILESS application so everybody can use it under the 'GNU General Public License,'" recounts Dr. Lix. "Their only obligation is they must give back to the community what they have developed in additional features." As a result, ten other universities have already joined with the University of Essen, adopting the MILESS application for their own environment and contributing to further development. And the ranks are growing. "This community is now really gaining momentum," says an excited Dr. Lix.

Sharing resources with other universities

The University also knew how powerful it would be to extend the multimedia library's assets beyond its own walls. So under a grant from the German National Science Foundation (DFG), the University of Essen will share its assets with the Friedrich Schiller University in Jena.

"That means," explains Dr. Lix, "that the content of both our video libraries should be usable in a transparent manner to all our students. Students don't notice whether the videos they find are coming from Jena or from Essen—they only know that they can take advantage of a large, diverse array of learning resources."

The communication between the two schools travels over the German Science Network, which connects essentially all of Germany's universities and scientific and research institutions.

Essen attracts, keeps good students

The IBM content management solution also fits perfectly with the University's recruiting strategy. "MILESS is one of the features University administrators talk about when they meet with prospective students," Dr. Lix says. "There's also a direct link to MILESS information right on the University's home page." He concludes, "IBM Content Manager is one of the most advanced systems for storing and managing true multimedia content. We strongly rely on IBM Content Manager VideoCharger as an extraordinarily powerful streaming video solution and on IBM DB2 as a very scalable and reliable database. With IBM behind us, we can continue to enrich our students' learning experience."
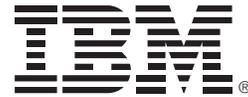
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For more information about the University of Essen's digital library, visit: *www.uni-essen.de*