Video on Demand Technologies and Demonstrations

SUMMARY

We apply leading information processing and information delivery technologies to video on demand applications in education. Key commercially developed technologies include Oracle's Parallel Database Server, MPEG compression utilities, and ATM LAN/WAN networking technology.

PARTICIPANTS

Syracuse University (NPAC, Computer Engineering, Computer Science, School of Information Studies, Maxwell School of Citizenship and Public Affairs), Oracle, nCUBE, NYNEX, Digital, Maspar, IBM

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IMPACT

Video on demand technology will open a new channel of information transfer for educational institutions. Educational users will gain the capability to browse and query linked text and video databases and author video modules over the network. We expect this technology to greatly enhance availability of multimedia information to teachers and to add substantial value to the educational process.

DESCRIPTION

We will set up prototype databases for linked text and video with an initial focus on InfoMall information services and products that will support new educational initiatives. In the project, we will integrate several novel technologies, including data compression technology, parallel multimedia database server, and networking technology providing the delivery mechanism. Our primary field of interest is educational applications of the emerging Video−on−Demand (VOD) technology, but the technologies will have general applicability in business, entertainment and government applications.

We expect that our initial focus will be integration of the CNN Newsource and Newsroom video with ERIC. The Educational Resources Information Center (ERIC) is a federally funded national information system providing educators access to educational−related resources. The NYNET InfoMall video on demand technologies and demonstration expands the ERIC educational database to support video. We will initially use CNN Newsource, an approximately four hour daily summary of the national and international news, now available by cable and video tape format. This daily video summary is supplemented by a set of classroom discussion notes for use by the teachers. This text supplement is available over the Internet and is archived by ERIC. InfoVision will expand the educational application of CNN Newsource video by integrating it with the classroom supplement and storing both in a database. Teachers will be able to access this database over the network , and author educational modules of video and text material for classroom use. A second video information source is the Discovery Channel, which agrees in principle to provide 30 minute documentaries on educational topics for use in an ERIC educational video library.

A wide range of video source material is potentially available for use in the classroom. Important sources include CNN where we have potential agreement, other possible sources we are exploring are the Discovery Channel, Newton's Apple, and National Geographic. In addition, we propose to include video course modules prepared in conjunction with Newhouse and Maxwell, and HPCC (InfoSchool) courses offered through InfoMall in the mid−Hudson region. With our educational partners we will explore other sources of video such as Bettman film archives, the civil war series on PBS, classroom video (biology, physics, chemistry) lab experiments. We believe that addition of the relevant modules that can augment existing services will make VOD attractive to teachers and school administrators. Finally, we will consider making the outstanding Syracuse University audio archives, which exists in digital audio source, available via the media server as another related source of information.

Project implementation has two distinct phases. In Phase I, we will implement a Video−On−Demand server by integrating existing technologies. We will demonstrate an interactive video on demand

database accessible from NYNET, using initial databases from education (InfoSchool/University courses, CNN, askERIC) and InfoMall activities. Demonstration will be based on the infrastructure already gathered in NPAC. In Phase II, we will enhance server capabilities by implementation of a number of features supporting both more interactive user requirements (video browsing, context querying, database navigation) and better system support (protocols and scheduling mechanisms, video multiplexing). The task will be completed by demonstration of the enhanced technology.

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