FY03 Innovations in Teaching with Technology Awards: 3rd Generation Audio Video Conferencing

What do you intend to do?
That the technology works has been demonstrated at conferences and is documented in non-educational applications at the Macromedia Showcase web site (see http://www.macromedia.com/software/flashcom/special/inspiration/). For specific educational applications is still relatively untested.

To the best of our knowledge, this project has not been developed before on our campus. It is based on new technologies released by Macromedia in mid-2002, Flash MX and the Flash MX Communications Server. As reported in the preliminary proposal, these capabilities have been demonstrated for instructional purposes at the http://www.flashsupport.com/ web site where Robert Reinhart used it to develop a web-based talkshow on the topic of Flash MX (see http://www.flashsupport.com/topic.asp?TOPIC_ID=277 for details).

More in keeping with our university mission, this approach was used by the British Open University to create a live webcast from the Matterhorn. They used "genuinely domestic-level" technologies to create a Webcast-without satellite or videophones-that would still enable anyone in the world to share the experience. In this applications, text chats and audio reports were transmitted and held live by a party climbing the Matterhorn and those following on the website (see http://cnm.open.ac.uk/projects/matterhorn/intro.htm)

Since submitting the application, we’ve learned that the University of Minnesota has purchased a Flash Communications server with a similar intention of supporting faculty who desire reaching off-campus students. This project, like ours, is still in the planning stage. At a meeting of the CIC Learning Technology group in November, four schools (Wisconsin, Minnesota, Ohio State and Iowa) agreed to work together in sharing expertise and information in undertaking projects in this arena.

How will it improve student learning?
Pre-written components of value to this instructional project include:

- **Audio and video** from multiple users
- **Cursor color coded** with user’s names for sharing applications
- “**Shared” SWF and text**, allows participants to review material already presented
- **RoomList** lets users create, join, and delete rooms used for chat, meetings, etc.
- **PeopleList** of currently logged-in users
- **Chat** via Text; a backup if audio/video communication is inconvenient
- **AVPresence** can be used for Panel discussions and Video phone
- **VideoPlayback** lets students control the playback of a buffered audio-video stream
- **VideoRecord** records camera and microphone output of the lecture for later review

In essence, more robust communication for remote students, a better sense of class identity and community and more learner-control of visual material making the student more active participants because:
• students at a remote site can communicate fully with class instructor with audio and video as well as text if desired
• the instructor the identity of those participating at remote sites (not true in the current ICN configuration)
• students at remote sites, or logging in late, have an opportunity to review online materials which have been presented (a feature that would sometimes be helpful to students in the face-to-face class as well)

Because of the innovative and research nature, the initial project would be targeted to a limited number of remote sites and users. We will test sites both on and off campus. The outcome will demonstrate the feasibility of increasing the number and location of remote sites beyond those official ICN classrooms. This is increasingly important as enrollment in this course climbs.

During the Fall 2002 semester, the Non-profits course total enrollment had 152 students, enrolled via 9 undergraduate and 8 graduate course listings. These represent the following different departments and colleges:

1. Business School
2. Health, Leisure and Sports Studies
3. Law School
4. Library Science
5. Museum Studies
6. Music
7. Nursing
8. Public Health
9. Social Work
10. Theatre
11. Urban and Regional Planning
12. Performing Arts
13. Religion

Of equal interest to enrollment numbers is the geographical distribution of students. The course originated at the Seaman Center for Engineering and was fed to other sites via the ICN.

<table>
<thead>
<tr>
<th>Location</th>
<th>enrollment</th>
<th>degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Council Bluffs</td>
<td>2</td>
<td>1 Undergrad / 1 Grad</td>
</tr>
<tr>
<td>Davenport</td>
<td>6</td>
<td>5 Undergrad / 1 Grad</td>
</tr>
<tr>
<td>Spencer</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Seaman Center</td>
<td>66</td>
<td>40 Undergrad / 26 Grad</td>
</tr>
<tr>
<td>Lindquist Center</td>
<td></td>
<td>Undergrad</td>
</tr>
<tr>
<td>Law Building</td>
<td>51</td>
<td>Grad</td>
</tr>
</tbody>
</table>
However, one of the sites, the Law Building, lacked 2 way audio and video. Here the students saw and heard the lectures but there was no direct ability for individual students to respond to the instructor. Comments and questions were funneled to course coordinator who in turn typed the questions into a Blackboard account read by a TA. Nor could the instructor see or hear students at the Law School site. The proposed project would reduce these barriers.

Certainly based on the enrollments alone, this is a project with cross-disciplinary impact (13 colleges and departments). More appropriately, it can be thought of as “pan-disciplinary”. The technology and processes can allow any other department or unit in the university to readily develop web-based conferencing and information sites. Much as e-mail allows all departments to communicate more efficiently and effectively via drop and deposit text, the Flash MX Communications approach will allow the campus community to communicate, collaborate and educate more students in more places than exist today, for a nominal cost, via media rich elements.

*Design flexibility*

Commercial systems force a specific look and feel to web-based conferencing. This approach will allow us to develop customized web-based environments.

*Ubiquity*

The material to be delivered via the web requires the Flash Player within a web browser. In September 2002, NPD Research conducted a study to determine the percentage of Web browsers with Macromedia Flash preinstalled; results show that 97.8% browsers are Flash enabled. Newer versions of the plug-in that are developed are free and readily available.

*Commodity communications devices*

In cases where 2 way video is desired, the video can originate with a consumer level digital camcorder feeding directly into a computer. It does not require purchasing special hardware, thereby increasing the number of remote sites that can participate.

*Cost*

The cost of extending remote class sites via the technology proposed is less costly and more flexible than attempting to create additional class sites that are ICN compatible.

*Collaboration among service units*

We readily think of cross-discipline as a virtue among academic disciplines, but too often fail to acknowledge its importance in the infrastructure and service units. This proposal will allow people from ITS, Video Center, Continuing Education and academic units to collaborate.

**What resources will you need?**

<table>
<thead>
<tr>
<th></th>
<th>Dell inspiron 8200 laptop</th>
<th>Computer input processor</th>
<th>$2500</th>
<th>The Flash MX application will run on this at the point of origin</th>
</tr>
</thead>
</table>

https://its.uiowa.edu/support/article/101083
<table>
<thead>
<tr>
<th></th>
<th>Commodity</th>
<th>Video source</th>
<th>$1100</th>
<th>Capture the video for input into the compute. It may be possible to “patch in” to the ICN signal, but this introduces an element of unknown risk. Furthermore, in an attempt to use this project as a test for all campus classes, we need to test direct video to computer set-ups.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td><strong>iMic</strong></td>
<td>USB Audio input</td>
<td>$35</td>
<td>This device improves the quality of sound going into the computer.</td>
</tr>
<tr>
<td>4</td>
<td><strong>4 headsets with built-in boom mikes</strong></td>
<td>use by students in remote locations</td>
<td>$130</td>
<td>Isolated audio environments provide some people with a better ability to concentrate on audio and feel that they are online participants, plus the integrated boom mike is optimized for speech input.</td>
</tr>
<tr>
<td>5</td>
<td><strong>Multidirectional microphone for speech</strong></td>
<td>For capturing class discussion</td>
<td>$300</td>
<td>To capture the audio going into the computer (not needed on Macintoshes but apparently a limitation on Windows computers is the inability to grab the audio from DV in)</td>
</tr>
<tr>
<td>6</td>
<td><strong>MediaTemple Web Hosting 1 year</strong></td>
<td>Web hosting 1 year</td>
<td>$3600</td>
<td>Having Media Temple host the service allows us to focus on the design and pedagogical uses rather than having to purchase a new computer and absorb its associated cost of ownership and maintenance.</td>
</tr>
<tr>
<td>7</td>
<td><strong>assorted</strong></td>
<td>Books</td>
<td>$200</td>
<td>There are numerous books that are currently available that address the Flash Communications environment and new books are due to come out soon: Rich Media MX: Building Multi-User Systems with Macromedia MX Software</td>
</tr>
<tr>
<td>8</td>
<td><strong>Communications mx Server</strong></td>
<td>license Pro version</td>
<td>$4500</td>
<td>The Communications Server Professional Edition, offers the performance and scalability to meet needs for testing workgroup or enterprise-level applications (supporting up to 500 connections). The Personal Edition only supports 10 connections and is intended for individual use. It would not meet the needs of our applications.</td>
</tr>
<tr>
<td></td>
<td>total</td>
<td></td>
<td>$11,865.00</td>
<td></td>
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</table>

**Rough estimate of costs**