

## **Next Generation Instructional Multimedia Architecture**

A Joint ITAC Proposal by

Joe TenBarge, Assistant Dean, College of Liberal Arts

Anh Selissen, Director – Systems, Information Technology Services

### **Summary**

The college of Liberal Arts and Instructional Technology Services requests \$62,367 in ITAC funding to design and prototype an open, extensible architecture for collaborative, technology enhanced, classroom instruction. The approach includes an innovative classroom multimedia architecture and a powerful collaboration suite – Adobe Acrobat Connect. The proposed design combines cameras and teaching equipment installed in each classroom with centralized, building-wide control, signal processing, and media handling. This approach will provide faculty with the standardized classroom technology equipment and interfaces that they have come to expect, while greatly reducing equipment and installation costs, easing support and maintenance, and reducing the difficulty and expense of adding future technologies.

### **Adobe Acrobat Connect**

Till recently, campus-wide deployment of audio and video conferencing, and lecture capture and delivery, have required a great deal of custom application development for controlling the processes of recording, editing, managing, and distributing the media content. In the past few years, a number of applications have been released that integrate a wide suite of features that make a campus-wide project more feasible. Adobe Acrobat Connect appears to be one of the strongest of these suites. Connect supports audio and video conferencing, lecture capture and distribution, distance learning, web based meetings, and presentations. It provides controls for recording digital audio and video in classrooms and meeting rooms, tools for editing and management of recorded content, an application server for controlled delivery of content, and an interface for users to find and access content.

The strength of Connect – and its particular advantage for UT – is its reliance on a central server for controlling, processing, and delivering content, and standard desktop computers as the local clients for all user access. Other than video cameras and microphones, no special hardware is required in the classroom or for either the teacher or student. Client software is Flash based and runs in a web browser. This makes Connect cross platform – or, rather, platform agnostic – and eliminates interoperability issues found with many other web conferencing and lecture capture platforms.

With several hundred classrooms and tens of thousands of users, a campus-level deployment of Connect – or any other comparable system – would be a large-scale project costing several million dollars with deployment spanning several years. We propose a pilot and testing project beginning in Spring 2009 and continuing through the 2009-10 academic year. Adobe has provided evaluation software which ITS has installed in a basic test environment. Liberal Arts has recently purchased the first of three proposed servers to host a prototype production system that will permit users to

experience the true performance of Connect, and discover both its strengths and weaknesses in our particular campus environment. In February 2008 Liberal Arts will advertise the system through its annual call for proposals for Instructional Technology Grants. Faculty will be invited to request assistance with using Connect in classes beginning Fall 2009. Funding will be available from Liberal Arts for content development when appropriate. A session on Connect will also be added to the Summer 2009 Liberal Arts Faculty Workshop. Trainers from Liberal Arts, ITS, DIIA, and Adobe will be on hand to assist both faculty and staff with planning the use of Connect during 2009-10.

Our goal will be to have preliminary results of our testing available by December 2009 for inclusion in the next Vision round. If results are encouraging, we anticipate submitting a follow-up proposal at that time.

In addition to Liberal Arts, the following have expressed to ITS their interest in participating in this prototype project:

Judy Ashcroft - Continuing Education  
Patrick Davis - Pharmacy  
Peter Fleming - Jackson School of Geosciences  
Ryan Baldwin - College of Education  
Mark McFarland - Libraries  
Charles Soto - Communication

### **Network Classroom Multimedia Architecture**

In 2000 Liberal Arts partnered with Natural Sciences and Fine Arts to begin a campus-level classroom technology project. Over the past 8 years other colleges have joined the effort and now nearly every classroom on campus has standard teaching technology. Throughout the project Liberal Arts has helped to lead the effort to standardize equipment and interfaces designs, and achieve economies in bulk purchasing and mass production that have made our results possible. We now propose to take this leadership in efficiency and productivity to the next level by introducing further economy through networked architecture.

In UT's current classroom designs, all switching, audio processing, and control electronics are installed in the classroom. Mass production and bulk purchasing efficiencies have reduced the cost of these classroom-based systems but there is a lot of redundancy and excess capacity inherent in the architecture.

We propose to adopt a new architecture that adheres to the principles of a local area network. Only the multimedia sources such as computer, document camera, video cameras, and microphones, as well as the projectors and control touch screens are actually installed in the classroom. The processing and control electronics will be installed in a central location in each building. There will be no bulky cabinet or equipment rack in the classroom but faculty will still have direct access to the equipment they actually care about, along with a touch screen with the familiar controls.

With much of the equipment centralized, support is simplified. Spare parts can be pre-mounted in the central equipment racks and many if not all components can be 'hot swappable', limiting or eliminating down time in the event of equipment failure. Much of the work of maintenance and testing can take place in the central equipment rooms, without disrupting classroom activities.

Cost will also be reduced. Eliminating the redundancy and excess capacity inherent in the room-based model will lower the amount of equipment required. Also, the centralized architecture reduces the number of equipment enclosures to be constructed and wired. And future additions and upgrades can be implemented globally as opposed to locally within each classroom.

The central equipment rooms will also be the ideal locations to house the servers and processing equipment required by future teaching technologies. Again, redundancy can be reduced – especially during testing and startup phases - and easy access to the audio and video signals, and processing and control equipment will ease installation and upgrades.

In Spring 2011, the Department of Anthropology will move into the top two floors of the new Student Activity Center. During the proceeding Summer (2010) Liberal Arts will install new multimedia systems in the following classrooms as part of the building construction process.

- 1 General Purpose Classroom
- 2 Department Classrooms
- 1 Computer Classroom
- 6 Classroom-labs (DNA, Dissection, Archeology, Physical Anthropology, Museum Studies, Linguistic Anthropology)
- 1 Departmental Conference/Seminar Rooms

This provides the ideal setting for a significant test of the new architecture. The timing is also ideal to test a more complete integration of Connect with our classroom multimedia. Most of the multimedia cost are included in the capital project budget. Additional resources needed in Summer 2010 – cameras and design work – are included below.

### **Budget**

#### Adobe Acrobat Connect

2 Dell servers	\$14,867
¼ FTE Systems Admin	\$16,250

#### Multimedia Architecture

Video Cameras and Hardware	\$15,000
¼ FTE Systems Designer	\$16,250

Total ITAC Request	\$62,367
--------------------	----------