2.4 Developing Rich Collaboration Tools

Major Issue: An increasing number of collaboration technologies exist which facilitates communication, coordination, and shared content authoring for individuals working in a partnership. Collaborating through these technologies is poised to be a way of life across academia. No consistent approach exists for developing a common collection of collaboration tools across campus—if employed, a consistent approach would improve all aspects of the space including, but not limited to, cost models, support models, ubiquitous access, and robust, scalable solutions.

CU-Boulder needs to progress the adoption and development of functionally rich collaboration tools in four specific areas. 1) The campus community needs one, or more, “shared canvas” tools. 2) The campus community needs one, or more, content and media repository tools. 3) Enhancing communication using video and videoconferencing by embracing greater standardization, support, and deployment of video technologies. 4) Adopting a unified communications.

A. Background/Rationale

Shared Canvas Tools
Shared canvas tools, such as wikis and blogs, have been requested by academics, researchers, and administrative users on campus for a gamut of needs. Students, faculty, and staff rely upon external social networks, such as Facebook or LinkedIn, and external messaging and productivity tools, such as Gmail and GoogleApps, to fulfill needs unmet by CU-Boulder services. Many use cloud sources without consideration of security concerns about data, and many would like to have a campus option.

Content and Media Repository
Sharing content and media such as publications, images, audio, video, or large research data sets presents several technology problems. Solutions for sharing must accommodate broad audiences of both CU-Boulder specific and external users. As with the outsourcing of shared canvas solutions mentioned above, these localized solution may not address security, privacy, and intellectual property issues as completely as a campus solution would.

Video and Videoconferencing
A number of diverse videoconferencing facilities exist today on campus. Some are managed by departments with IT units, some built by a grant with no support structure behind it. Though many installations have occurred, CU-Boulder has not fully developed and supported a videoconferencing service model. Without a standard service model, the campus may see reduced overall value of these videoconferencing investments due to limitations in interoperability, difficulties in supporting more technologies than necessary, and an inability to aggregate equipment purchases in a way allowing for the negotiating of preferential pricing agreements with vendors.

The importance of videoconferencing will continue to rise as access to services becomes more prevalent and as needs for the services increase. Flagship 2030 identifies the development of East campus as a strategic effort that will extend for multiple years. There will be significant
needs around collaboration between Main and East campus, sharing data and virtual work spaces, and virtual transportation. Some researchers have very distinct needs for extremely high resolution communications when working with physical lab equipment or projects. Many different needs, with increasing importance over time, require attention.

Unified Communication

Unified Communications technologies attempt to combine all of the ways individuals communicate, initiate contact, leave and receive asynchronous messages, and communicate their availability and status information into a single, integrated suite of applications. These capabilities become possible through the deployment of a Unified Communications solution, though not all solutions encompass all areas. Each solution provides a unique collection of capabilities.

Unified Communication technologies integrate tightly with voice, voice messaging, electronic messaging, calendaring, and LDAP directories. Since all of these capabilities are offered as campus wide, enterprise services, achieving the majority of Unified Communication capabilities requires strategic investment in a campus wide solution. Individual colleges, schools, and departments have limited ability, and for some of the specific Unified Communication functionality, no ability, to provide these services on their own.

Relationship to Flagship 2030

The strategic plan recommendations for developing Rich Collaborative Tools (RCT) align with specific action items promoted in Flagship 2030. These include the following:

- Curriculum Enhancements
- Developing a New Research Model
- Investing in Our Staff
- Serving the State of Colorado
- Internationalize the Campus

B. Accomplishments to Date

- Reservable locations exist across campus that provide installations of videoconferencing.
- Campus, including ITS, has been researching desktop conferencing tools that can be used across campus, and tie in to the room based VTC (videoconferencing) systems.
- ITS has opened up the Learning Management System, CULearn, to CU Community uses - anyone can request shared canvas spaces and collaborate within them today.
- ITS and faculty collaborators are working on a next generation learning system, that will have sophisticated wikis, blogs, shared data space, federations and partner access, etc. This is in the works for campus rollout for Spring 2011.
- The new capital construction projects, which tend to outfit 100% of rooms with technology, are moving into a more standards-based direction around collaboration tools in the physical space - distance learning, lecture capture, videoconferencing.
- A central, “common good” Microsoft Exchange 2007 service is being deployed by ITS. Many Unified Communications technologies integrate with Microsoft Exchange.
- An iTunesU initiative and a YouTube EDU initiative are underway.

Common assumptions across all four categories of RCTs
Because there are overlapping assumptions across all three categories of RCT, they are highlighted in this section before specific assumptions about each tool is discussed in its own section.

**Appropriate funding is needed for RCT; additional or new funding sources may need to be identified.**

As much as possible, Universal Design should be considered and should be a feature of any product/service acquired or developed for RCT. ITAG and/or other appropriate review committees should review any campus-wide systems purchased or developed for usability, effectiveness, and section 508 accessibility compliance.

The process for selecting specific RCT technologies should include collaboration and input from campus groups such as the Boulder Faculty Assembly (BFA), Chancellor’s Committee on Programmatic Access, and similar groups.

Sufficient support personnel and resources (ITS Tiered support system/5-Help) need to be provided for RCT systems.

As new tools and pedagogical techniques become more popular, new technological and human support systems will need to be developed to close the gap between the new and the existing tools.

**Specific Recommendations across all four categories of RCTs**

We will treat each of the four main categories of Rich Collaborative Tools in separate sections below. Common areas of concern for all four categories share the following recommendations:

1. Make sure the network infrastructure can handle the increased load of rich collaboration tools, e.g. bandwidth requirements, multi-cast requirements.
2. Develop some level of oversight for rich collaborative tools.

Surrounding issues include:
- Outsourcing tools to 3rd party vendors vs. localizing tools on campus.
- Develop redundant “back up” systems for each tool used.
- Use International Telecommunication Union definitions and other industry standard terms when writing about RCT.
- Keep an eye toward “emerging” technologies.
- All four RCT categories should account for potential emergency communication needs during implementation.
- Emphasize outreach efforts to campus affiliates prior to, during, and after any implementation.
- Reach out to different units on campus to assess their current usage and their needs surrounding the use of rich collaboration tools.
- Should address where any IP (Intellectual Property) protection plans should be reviewed and incorporated in the solutions.
- Develop governance model for this initiative.
- All four RCTs should be treated as enterprise strategies.

**Possible Risk across all four categories of RCTs**
Given the type of convergence, richness, and shared capabilities of the new tools adopted, educational technology support services and IT security teams will need to work more closely together to bring a wider-angled response to the heightened risks involved.

The adoption of more tools for collaboration also suggests the possibility of more hires at IT security.

Due to the very nature of RCTs, collaboration means students and researchers will share more data, so involvement from the Registrar’s Office and the CU Legal Department may be necessary in order to include all FERPA considerations in tool deployment. Since the collaboration involves university owned content, questions about where the content resides and how it can be accessed also need to be raised.

Given that the definition of RCT invariably includes an abundance of video, high-resolution still images, and audio, the risk that it is not ADA compliant is also very real. Section 508 adherence is a must, which means incorporating functional performance criteria in all technology choices; therefore, an abundance of audio and video can pose an economic risk as it may require expensive 3rd party transcription, a technology that will diminish in price over time but currently is a very expensive service.

Evaluation across all four categories of RCTs

- The evaluations for all implementations should be iterative and longitudinal. Data should be derived from all end users: faculty, staff and students.
- Evaluations should be quantitative and qualitative with focus groups as one option for eliciting more qualitative data.
- Faculty Course Questionnaires would be a good means of data collection.
- Pilot programs of any new tool should include a survey, but we could repeat the evaluation later on to have a longitudinal picture of the adoption process. This would enable us to capture the change of attitudes towards the technology and perhaps even why the change occurred.
- Periodically conduct future benefit/cost and investment analysis to justify and document benefits.

B. Action Plan

Shared Canvas

Explicit Assumptions

Identification of currently existing resources would determine commonly used shared canvas technologies to inform the selection process for developing robust shared canvas tool sets. Strategic recommendations for infrastructure and robust shared canvas tool set must evolve from this effort for it to be of value.

Specific Recommendation
- Perform an in depth, campus wide assessment/audit of current shared canvas tools and resources.
- Select and implement one or more shared canvas tools as a “common good” enterprise service available to all CU-Boulder students, faculty and staff.
- Provide adequate infrastructure and scalability to support sustainable growth.
- Develop support and training for the shared canvas solution(s).

C. Long and Short Term Objectives/Timeline

Objectives:

Short term – Assess and plan for implementation and conduct a proof of concept.
Long term - Put in place the shared canvas tools to serve the community. Evaluate for effectiveness.

August/September 2010: Conduct assessment and plan implementation; report due in Fall 2010. The report should include specific recommendations including the evaluation for the implementation.

February/March 2011: A progress report detailing all accomplishments and commitments to date should be issued.

October 2011: Phase I completion date.

May 2012: Evaluation of Phase I.

January/May 2014: Overall project completed along with final evaluation.

Resource Allocation

CU-Boulder needs for RCT will likely require more than one tool. For each tool, there will be high expenditures and personnel resource commitments.

Three tools would require approximately $150,000 to $400,000 for the hardware and software infrastructure and 2-3 additional staff for implementing, maintaining, and supporting the tools. Exact figures depend upon the specific technologies selected.

Responsible Parties

ITS, Campus-wide Governance Group(s) ITC, CEC, etc. Organizational Unit Information Technology support personnel

Content and media repository tools

A. Explicit Assumptions

Identification of currently existing resources would determine commonly used content and media repository tools to inform the selection process for developing robust tool sets.
Strategic recommendations for infrastructure and robust content and media repository tool set must evolve from this effort for it to be of value.

There will be some repository tools that need to be local, but there may be some that can be cloud-based. The issue will be to create a set of criteria to determine which data is eligible for the cloud. By default, no data should be stored in the cloud without passing certain security requirements, especially FERPA regulations.

B. Specific Recommendation

Perform an in depth, campus-wide assessment/audit of current content and media repository tools and resources.

Select and implement one or more shared content and media management repository tools as a “common good” enterprise service available to all CU-Boulder students, faculty and staff. Provide adequate infrastructure and scalability to support sustainable growth. Develop support and training for the repository tool(s). This recommendation should be cross-referenced with content management recommendations from sections Offering Teaching and Learning Tools (1.3) and Developing Web Infrastructure Services (2.6).

C. Long and Short Term Objectives/Timeline

Objectives:
Short term – Assess and plan for implementation and conduct a proof of concept.
Long term - Put in place the content and media repository tools to serve the community. Evaluate for effectiveness.

August/September 2010: Conduct assessment and plan implementation; report due in Fall 2010. The report should include specific recommendations including the evaluation for the implementation.

February/March 2011: A progress report detailing all accomplishments and commitments to date should be issued.

Oct 2011: Phase I completion date.

May 2012: Evaluation of Phase I.

January/May 2014: Overall project completed along with final evaluation.

Resource Allocation:

CU-Boulder needs for content and media repositories will likely require more than one tool. For each tool, there will be high expenditures and personnel resource commitments. Two tools would require approximately $100,000 to $250,000 for the hardware and software infrastructure and 2-3 additional staff for implementing, maintaining, and supporting the tools. Exact figures depend upon the specific technologies selected and the total disk space required.

Responsible Parties:
Video and Videoconferencing

A. Explicit Assumptions

Identification of currently existing resources would determine commonly used video and videoconferencing technologies to inform the selection process for developing robust shared canvas tool sets.

Strategic recommendations for infrastructure and robust shared canvas tool set must evolve from this effort for it to be of value.

B. Specific Recommendation

The campus should develop videoconferencing standards for software and hardware and the final choice should be based upon alignment with campus needs, reliability, cost, and ease-of-use.

- Interoperability needs to play a critical role in selecting videoconferencing standards.
- Once standards exist, CU-Boulder should work out deployment and training.
- The campus should invest in tools that connect multiple people “where they are” rather than investing in high-end, very costly “Telepresence” solutions.
- Nevertheless, the campus should remain informed about improvements in pricing for and use of “Telepresence” technology and prepare to deploy as it becomes a standard nationwide.
- The campus should consider a solution that features a combination of fixed and mobile devices.
- The campus should continue/expand CU-Boulder’s relationship with CU-Denver’s videoconferencing “bridge” facility and invite other CU campuses to participate in such facilities.
- The campus should consider investing in our own “MCU” or multipoint control unit.
- The campus needs to provide for video specific aspects of classroom (peer-to-peer and multi-point and multi-participant), interactive web-based conferencing and lecturing, and high-definition functionality in certain spaces on campus.

Long and Short Term Objectives/Timeline

Objectives:
Short term – Assess and plan for implementation and conduct a proof of concept.
Long term - Put in place the video and videoconferencing tools to serve the community.
Evaluate for effectiveness.

August/September 2010: Conduct assessment and plan implementation; report due in Fall 2010. The report should include specific recommendations including the evaluation for the implementation.

February/March 2011: a progress report detailing all accomplishments and commitments to date should be issued.
October 2011: Phase I completion date.

May 2012: Evaluation of Phase I.

January/May 2014: Overall project completed along with final evaluation.

C. Resource Allocation:

Videoconferencing technologies will require large investments in hardware and software infrastructure as well as personnel time for developing standards, implementing solutions, and training and supporting campus.

A needs analysis will determine how many of the VC rooms the campus should deploy. Each high quality conferencing center could be $150,000. The more security we build into the solution, the more money it will cost.

D. Responsible Parties:

ITS, Campus-wide Governance Group(s) ITC, CEC, etc. Organizational Unit Information Technology support personnel

Unified communications

A. Explicit Assumptions

Identification of currently existing resources would determine commonly used unified communications technologies to inform the selection process for developing robust shared canvas tool sets.

Strategic recommendations for infrastructure and robust unified communications tool set must evolve from this effort for it to be of value.

B. Specific recommendations

CU-Boulder needs to research and adopt a standard approach for a unified communications solution, negotiate licensing, and determine implementation, support, and training needs. When considering integrations with telephony versus messaging/calendaring, the campus must decide whether to emphasize enhanced call routing features or the integration of desktop productivity applications for computers.

The Unified Communications strategy must also consider and provide direction for Voice Over IP (VOIP) integration and implementations. Provide adequate infrastructure and scalability to support sustainable growth. Develop support and training for the Unified Communications solution.

C. Long and Short Term Objectives/Timeline

Objectives:
Short term – Assess and plan for implementation and conduct a proof of concept.
Long term - Put in place the unified communications tools to serve the community. Evaluate for effectiveness.

August/September 2010: Conduct assessment and plan implementation; report due in Fall 2010. The report should include specific recommendations including the evaluation for the implementation.

February/March 2011: A progress report detailing all accomplishments and commitments to date should be issued.

October 2011: Phase I completion date.

May 2012: Evaluation of Phase I.

January/May 2014: Overall project completed along with final evaluation.

D. Resource Allocation

Unified Communications will require a significant investment. Hardware and software solutions range from $100,000 to $500,000 and additional personnel would be required to implement and maintain the service.

E. Responsible Parties

ITS, Campus-wide Governance Group(s) ITC, CEC, etc. Organizational Unit Information Technology support personnel