Towards the Collaborative University

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Abstract

This work describes the state of the central information Technology organization as it relates to collaboration services at the University of Florida that are provided by the Office of Academic Technology.

Key words: academic technology, collaboration, enterprise systems.

1 Introduction

Computer technologies are a driver of culture in business and education. Early uses of computers relied on large mainframe systems that were accompanied by hierarchical management structures. With the advent of the personal computer, in the 1980s, emerged the development of a highly decentralized culture in the use of IT resources. During the 1990’s, networked computers became the main driver in the use of technology. Computer users suddenly became a part of a community that required protocols, acceptable behavior codes and sharing of remote and local resources. By the turn of the century networking and nomadic computing became a reality. As developments in IT have done in the past, the ability to connect anytime anywhere transforms the way in which our business is conducted. Wireless devices with instant-on capabilities are currently available in the form of laptops, PDAs, sophisticated wireless phones, tablet PCs and converged devices that combine several of these functions. New uses of these devices are now emerging that provide alternate means to conduct teaching, from course reading materials on PDAs to handheld database access in field laboratories. User communities convene on-line in a variety of ways. It is apparent that IT is now bringing about changes not only in the way that we communicate, but more importantly in the way we collaborate.

2 Vision, Mission and Organization

We envision a university community that uses technology to improve educational outcomes, facilitate discovery and engage external clients. We envision a community where communication has moved beyond conversational and transactional interactions into collaborative systems. A community empowered by shared information and facilities that support and help manage group activities.

To position the institution to enhance the ability to use IT to realize the institutional mission, UF undertook a review of IT vision, mission, organization, policies and direction that resulted in an central internal reorganization of IT related resources and units. This was done through the appointment of an IT Review Committee (http://www.aa.ufl.edu/itr/). This resulted in the creation of a new model for information technology inspired by the paradigm of an information-enabled society. This new model is predicated on the notion that information technology is a tool in service to the larger UF mission. It describes an infrastructure that is service-oriented, efficient in its use of dwindling resources, and sufficiently flexible to meet the challenges and seize the opportunities that evolving technologies will always present.

Following this model, the Office of Information Technology (OIT) was created. This central unit was the first step in a comprehensive university-wide reorganization of IT resources and operations with a focus on the University’s missions of teaching, research, and service/extension. The OIT was charged with
forming an organization to address: 1) The creation of a new IT organization from existing organizations, 2) On-going strategic planning, 3) Strategic allocation of resources and budget guidance, 4) IT architecture planning and management, and 4) Performance measurement to assess benefits and outcomes.

Directed by a Vice Provost for Information Technology, OIT was divided into three administrative branches: 1) Office of Academic Technology, 2) Office of Computer and Networking Systems, and 3) Office of Data Infrastructure. To ensure broad representation and inclusion of stakeholders an advisory committee (Figure 1) structure was put in place.

Under this structure, the mission of the Office of Academic Technology is to support the University community in the use of technology to:

- Support faculty, staff and students to create better learning environments and improve educational outcomes.
- Support research computing to facilitate the discovery process and improve our researcher competitiveness and tools for research.
- Provide a suite of IT services and resources that enable the university community to engage external clients and friends.

3 Strategic Planning

One of the first actions of the new organization was the development of a strategic plan (http://www.it.ufl.edu/policies/strategicplan.html). Figure 2 shows the strategic alignment diagram that summarizes the planning efforts. The UF IT Strategic Plan identified five strategic directions related to: 1) Planning, administration and human resource, 2) teaching learning and research, 3) Services and support, 4) Infrastructure and 5) security and standards. Within these strategic directions specific action areas directly pointed to an improved infrastructure that allows the creation of collaborative environments.

4 Infrastructure Design and Deployment

To realize the vision of a collaborative community following the direction of the UF IT Strategic Plan the following improvements were made to IT systems.

4.1 Network Infrastructure:

In order to transport the increasing amount of data generated by collaboration systems, improvements were made to the network that include:

1) Florida Lambda Rail.

Improvements to the core network, investment in a statewide consortium of Universities for a fiber optic network, the Florida Lambda Rail (http://www.flrnet.org/) as well as participation on the national Lamda Rail Project (http://www.nlr.net). This next generation network is capable of supporting large-scale collaboration projects, especially for research.

2) High speed connections connections to off-campus units.

The University of Florida has over 120 off-campus units that require the same level of service as central campus. This includes agricultural research and education centers, extension offices, hospitals, laboratories and clinics. Particularly for those locations in which distance education sessions are conducted requiring rich media transport, guaranteed quality of service is enabled (http://video.ifas.ufl.edu/Sites.htm).

3) Wireless connectivity.
4) Gigabit connection to the desktop where needed.

4.2 Video Transport Infrastructure and Services

In addition to basic transport infrastructure, a well coordinated approach was taken to provide centralized services for video, voice and data (Figure 3). The system incorporates: 1) live and stored streaming video, 2) satellite downlink and uplink, 3) point to point video transmission (MPEG-2), 4) videoconferencing (IP based and other legacy systems), 5) voice communication systems (analog and IP telephony) and 6) multilanguage television programming.

4.3 Core Services

To take advantage of the above infrastructure, services must be put in place that are aligned with the main activities related to teaching, research and extension. These services must be well integrated with current ways in which business is conducted and provide a step to higher levels of use, interaction and collaboration amongst the stakeholder community. New services that were deployed along this line are:

1) Course Management System.

The WebCT Vista Edition course management system (http://lss.at.ufl.edu/) was deployed. Over 30,000 students have accounts on this system, logging more than 65 man-years per semester term. This system allows fairly basic internal communications with native email and chat support. However, plugins can be build and added to the system to attach to it more sophisticated systems, such as video conferencing, whiteboards, file transfers and project management tools.

2) Video Services.

Video conferencing and streaming video have exploded since the services were introduced, particularly for distance education programs. Video conferencing is used heavily in extended classroom distance education as well as for meetings and conferences. Current facilities allow users to hold a video conference with up to 228 points. Uses of streaming video have diversified to include lectures, seminars, job candidate interviews, meetings, self help tutorials, and live tutoring. It is of interest to mention that there seems to be a strong preference by students to view lectures by streaming video in lieu of attending the live lecture. To ensure access to the services, public access video conferencing rooms were created in addition to providing by request videoconferencing equipment to any of 320 classrooms.

3) Services Under Review

Currently services typically used for collaboration include email, chat, web pages and file transfer. Under review to be centrally supported are wiki, blogs, rich media platforms. In addition full featured robust file transfer and storage is required. Finally, an enterprise level collaboration work platform suitable for the demands created by teaching research and extension is being explored.

5 Supporting Services

To ensure effective use of technology, a responsive competent support organization is needed. This includes two aspects:

1) Training

To realize a community of effective user’s user competence is most important and difficult to achieve. To address this need a series of courses related to collaboration technologies are heavily publicized and regularly offered. These offerings are dynamic and they evolve with as services and technology changes (http://www.citt.ufl.edu/training/).
2) Technical support.

To make efficient use of the resource and the stakeholder’s time, technical support is essential. This was achieved through a single point of contact Help Desk (http://helpdesk.ufl.edu/) using a two tear model. Unresolved support calls that are transferred to the unit that provides the service, such as Video and Collaboration Systems (www.video.ufl.edu), Learning Support Systems (http://lss.at.ufl.edu/), and Classroom Support (http://www.at.ufl.edu/classrooms/).

6 Closing remarks

The use of collaborative strategies for small group learning is a widely accepted practice. Environments were students can share insights and experiences play an important role in developing high order critical thinking skills. Creating this experience is particularly important for distance learners that are isolated without the social support systems found on campus or under circumstances where students cannot convene on location and time.

Email, list-servers and chat seem like obvious choices. However these tend to be disorganized and unmanageable and often do not result in an effective dialog between the participants. Technology platforms are quickly evolving beyond conversational and transactional interaction into collaborative systems that facilitate information sharing in an interactive way and provide resources to facilitate and manage group activities.

Wiki and Blogs empower groups to manage content and content organization with easy to use interfaces. Also, contemporary high quality multipoint conferencing and multicast networks integrate shared real-time video, presentations, whiteboards, and other software. These are rapidly leading to web-based collaboration platforms that result in new learning environments that approximate well a face-to-face experience.

These tools must lead to a seamless and productive idea exchange and information flow in the learning environment. In addition, they must embed the workteam interactions in such a way that collaboration takes place in the context of relevant data, resources and project management information.
Figure 1: Information Technology Advisory Structure

Figure 2: Information Technology Strategic Alignment Diagram
Figure 3: Architecture of Video, Voice and Data Transport Facilities (John Pankow, Engineer)