



UH-Downtown
Technology Road Map

A Long-Term Technology Plan

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Special thanks to initial planning partners (**Pat Ensor, Dr. Gail Evans, Dr. Robert Jarrett, Ivonne Montalbano, Said Fattouh, Ted Koubiar, and Eric Nathan**)

Information Technology Long Range Strategic Plan

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Information Technology Long Range Strategic Plan

Executive Summary

Changes in technology are taking place at an increasingly faster pace; and today's high tech facilities and services can quickly become obsolete if not evaluated regularly. Add to this the significant transformation of UH-Downtown during the past few years, and we have a perfect formula for our technology systems and services to drift out of step with university needs and to be ineffective at supporting and promoting key objectives.

During this past year, IT has been working with key individuals across the university to undertake a comprehensive review of current and future technology needs and issues facing UHD. In the process, a set of long-term strategies have been developed to serve as a roadmap for technology-related initiatives over the next three to five years. The group started by clearly defining the current state of technology at UH-Downtown through technical discussions, user interviews and surveys, and through working with the university community to determine how technological solutions and services can be best positioned to serve the overall goals of the university during the next three to five years.

While the process has produced a validation that UHD is providing appropriate and reliable technology to meet current goals and objectives, the group has identified a number of dynamics that will impact our environment as we strive to provide effective technology support in the future. The key drivers impacting the university's technological needs were identified as:

- **The changing demographics and characteristics of the student community and students' expectations based on their personal experiences with technology prior to arriving at UHD;**
- **The shifting nature of university funding sources, and the impact on capital acquisitions and human resources;**
- **The changing higher education market and overlapping of the traditional institutional "territories", along with the growth in presence of private education providers.**
- **The increased reliance on technology to reduce costs, enhance services, and improve student recruiting and retention.**
- **The recognition that most of our faculty, staff, and even our students have access to a significant amount of technology resources, including high-speed Internet access from home.**
- **Previous and planned growth in the size of the university, including academic programs, student body, and facilities.**
- **The university must develop a comprehensive plan for business continuity during emergencies.**

This report attempts to establish key technology strategies that will allow UH-Downtown to continue to meet current university technology needs effectively and also position the university to meet the challenges that we will be facing in the coming years.

Once approved by the university leadership, the goal will be to incorporate this long term technology plan in the unit planning process to serve as guiding principles for technology-related initiatives. We will ask that each top level executive require technology-initiative requests to be directly tied to strategies identified as priorities in this plan. We will also work with the university community and university leadership to ensure that this document continues to be updated regularly to reflect changes in university priorities and technology needs.

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Background

In our ongoing efforts to maintain state-of-art services and provide a vision for innovation through technology, IT regularly undertakes a review of technology status at UHD and facilitates a university-wide process to develop key strategies toward meeting the long term university goals and objectives. Critical to this process is an emphasis on seeking input from the entire UHD community and working with leadership to assure that the strategies identified reflect the needs and interests of the user community and are also aligned with the overall goals and objectives set by university leadership.

Group Structure and Goals

Starting in Summer 2005, I asked a group of IT management staff and UHD leaders to serve as a Steering Group for a Long Range IT Planning Initiative. Within this context, this leadership group was asked to facilitate a comprehensive review of our technology environment to help identify key strategies to enable UHD IT to continue to be well positioned as an empowering asset for the university. The group was organized to focus on four keys areas that I believe to be fundamental to our services. The key areas and their group leaders are:

- Enterprise Systems Management, Dr. Robert Jarrett and Erin Mayer
(Planning, development and implementation of Information Systems that support major institutional functions at UHD)
- Training and Support Services, Ivonne Montalbano and Said Fattouh
(Empowering our faculty, staff and students to take advantage of available technology at UHD, when appropriate, to achieve their goals and objectives)
- Technology Infrastructure , Pat Ensor and Ted Koubiar
(Creating a technology-enhanced environment within the UHD campus and externally that will allow delivery of services to our users in an efficient and effective manner)
- Distance Education Technology, Dr. Gail Evans and Eric Nathan
(Developing a Technology Plan to support UHD's efforts to deliver distance programs in the next three to five years)

The group leaders were asked to undertake an open and inclusive process to

Determine the current status relevant to their area of focus;
Develop a list of assumptions and guiding principles;
Gather input from the university community as a whole; and
Prepare a report identifying their findings.

UHD Community Involvement and Information Gathering Process

Prior to the start of the group activities, I met with the President and each member of the President's Cabinet to explain our objectives and seek input and guidance in order to make sure that the entire process met with the overall goals of the university leadership. After incorporating input from the university leadership, each group developed its own methodology for gathering information and taking steps to foster input from staff, faculty, and students. The groups were able to gather a variety of input through open meetings, surveys, e-mail responses and formal and informal interviews. In addition, the entire steering group met with the Executive Council, Deans' Council and Faculty Senate to keep them updated on the project and solicit their input.

During the information gathering process, the groups communicated among each other and with the UHD community by posting their material to our *UHDCommunity* server which allows for open sharing of the information with other participants. Once the information gathering phase was concluded, each group prepared a report (Appendix A) outlining its findings and identifying key strategies relevant to its area of focus.

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Global Strategies

Although the groups' findings were diverse in many respects, there were several key issues that emerged as critical to each area of focus. They include **Business Continuity, Assessment, Security, Service Boundaries, and Centralized IT Services with Decentralized Functional Support**. Therefore, rather than address these issues individually in each section, the group made a commitment to deal with these items in a global manner.

Comprehensive Business Continuity Plan:

The need to develop a well defined and validated plan to conduct business in a time of major interruptions or disasters has been heightened by the events of the past year. Historically, IT Disaster Recovery has been an integral part of all technology based services. However, it is important for the university community as a whole to recognize that recovery plans for IT services alone will not be sufficient to bring services back on line in a time of major disaster or service interruption. The key to a successful disaster response is to have a comprehensive university operating plan to address all facets of the university's key services and establish specific actions and accountabilities for reinstating those services in the event of disaster or major interruption.

As required by State of Texas law (TAC 202), IT is currently coordinating a risk assessment process for services supported by information systems. Once completed, we will work with the university to put together a formal risk management plan based on the priorities determined by university leadership. It is our hope that the university will use the risk management plan as a foundation to develop a comprehensive business continuity plan for the university as a whole as soon as possible and take steps to test and be ready to implement that plan as needed.

Continuous and Formal Assessment:

As evidenced during the current SACS review process, the university must continue to take active steps to measure the effectiveness of its programs and services. Given the size of investment that is often involved in technology related programs, we believe that clear assessment methodology should be an integral part of all technology-based initiatives. The methodology should include clear and measurable objectives along with appropriate tools that can be used to determine a program's success.

Integrated Information Security:

Information fraud and privacy concerns are now a top priority of most IT organizations. Today's electronic data-rich environments, along with the emergence of more highly developed information pathways within organizations, present significant potential for fraudulent or accidental access to private and confidential data by unauthorized individuals. At best, the access could be embarrassing for the institution and damage its credibility. At worst, unauthorized access to data could be severely damaging to our community and could have significant financial implications for the university. As an ongoing part of their efforts, IT as well as all university units must remain aware of information security and privacy issues and take all steps necessary to minimize risk to the university community.

Expanding Service Boundaries:

Technological innovations have blurred the boundaries of services in a significant way, such that many UHD service providers are faced with responding to service requests well outside of our traditional geographical service area and/or normal operating hours. Providing support for electronic communication across the nation and indeed across the globe, handling business transactions by electronic means and on the web from anywhere at anytime, and accessing online course material from any Internet connection at anytime requires a significant rethinking of our strategies in building and delivering our future technology-based services. In addition, the university's growing interest in telecommuting further extends the need to provide remote technology support.

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Centralized IT Services with Decentralized Functional Support:

In order to maximize the use and effectiveness of scarce resources at UH-Downtown, to address UHS, State of Texas, and federal requirements and regulations, and also to continue to meet the unique needs of units across the university, UHD should continue to operate with a centralized IT services model while promoting functional support at the unit level. To successfully implement this model and ensure uniform standards and service reliability, it will be important for the unit based support services and personnel to be closely coordinated with the central IT service group.

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Summary Reports from the Working Groups

Enterprise Systems Summary Report:

Enterprise Systems are automated application systems that support the functions of multiple units and have (or have the potential to have) enterprise-wide impact. Examples of Enterprise Systems include the Banner Student Records System, the Blackboard Vista Course Management System, and Document Management and Workflow Systems. Enterprise Systems are often integrated with each other in order to provide real time information to various user constituencies.

UH-Downtown is becoming increasingly reliant on Enterprise Systems to address core operational functions; provide quality services in a more efficient, convenient, and scalable manner; enhance instructional support and delivery; support research; and facilitate assessment and compliance efforts. These systems offer great potential for enabling faculty and administrative success, and for providing quality service and support in spite of resource constraints. However, implementing and maintaining Enterprise Systems require significant investments of university resources and create challenges in terms of management and security of critical university information.

UHD has used its enterprise class student system (Banner) for the past 15 years. However, the recent increase in interest in the use of other enterprise systems emphasizes the importance of providing updated strategies and guidelines for the selection, implementation and use of enterprise class systems.

As a part of the University-wide Technology Planning initiative, the Enterprise Systems planning group has worked with the university community to establish a set of key strategies and planning recommendations related to the selection, development and implementation of Information Systems that support major institutional functions at UHD. They include the following:

Enterprise Systems Planning Strategies

- **Rely on rule-based, commercial applications versus in house development for major applications where possible.**
- **Utilize a formalized review and selection process for Enterprise Systems that incorporates an impact analysis and assessment of total cost of ownership (TCO).**
- **Clearly assign application ownership, responsibility, and accountability for all Enterprise Systems.** Procedures for ensuring information security and privacy standards should be defined for each application and implemented by application owners and information technology.
- **Deploy Enterprise Systems that are web enabled.**
- **Implement formal Change Management processes for new development and acquisitions.** This should include implementing requirements for impact analysis and approval by all application owners before major changes are put into operation.
- **Develop and implement a comprehensive and decentralized Data Reporting, Data Warehousing and Business Intelligence software strategy**
- **Continue to enhance the Banner Student Records System, including implementing new modules such as Banner Financial Aid, unless a final decision is made to transition to PeopleSoft within 12 months.**

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Summary Reports from the Working Groups

Enterprise Systems Summary Report (Continued):

Recommendations for Key Application Needs for UHD Enterprise Systems

1. Reporting and Assessment;
2. Web Launch Point for Users;
3. Student Self Service Application (e-services);
4. Financial Aid;
5. Collaborative Toolsets;
6. Workflow and Approval;
7. Unified Messaging.
8. Decision Support

The Overview of Other Key Issues section of the report identifies issues the group deemed important that are broader than the Enterprise Systems group's targeted area of focus. This section include several issues that are proposed as potential content for the overall Long Range Technology Planning report, as well as recommendations pertaining to the importance of maintaining a centralized IT structure at UHD, and an emphasis on the importance of communication across the university about planning involving information technology.

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Summary Reports from the Working Groups

Training and Support Services Summary Report:

The focus of the Training and Support Group was to determine the current state of UHD's training and support services, and to develop long-term technology strategies designed to empower faculty, staff and students to take advantage of available technology to achieve their goals and objectives. The group's efforts will facilitate the development of new processes, streamlined procedures, and assist with overall training and support endeavors of the university community.

The Training and Support Group worked with other university groups and held open forums and used data collected from a recent survey of UHD faculty, staff and students to discuss their current and future needs as they pertain to training and support. Our findings from these meetings and surveys as well as information which was provided by key training and support individuals, allowed our group to define current and future training and support needs.

Currently, The Training and Support Group was able to determine that faculty and staff technology training and support needs are addressed primarily through face-to-face short courses, online courses, online documentation and video demonstrations, and one-on-one assistance in the TTLC, in users' offices or over the phone.

As technology advances on a regular and consistent basis, there are more and more users (students, faculty and staff) who are already using the latest electronic gadgets and devices such as wireless-enabled laptops, PDAs, iPods, web-enabled cell phones and text messaging devices. We are seeing a change in characteristic of UHD users in terms of technology knowledge and usage. This change cannot be ignored, and it only emphasizes that UHD should take a serious look at the technology used and services provided and how they are offered to users.

Training and Support Services Planning Strategies:

- **Encourage professional development and training.**
- **Provide access to services (including support and training) from anywhere and at any time, including access from home or while traveling abroad.** Provide automated and intelligent system 24/7 that provides answers to commonly asked questions.
- **Implement *single sign-on* to reduce the number of accounts and passwords issued to users.**
- **Establish and enforce mandatory orientation or training programs including new employee orientation programs and regulatory training programs.**
- **Increase the percentage of first-time trouble call resolution by utilizing real-time or online troubleshooting tools.**
- **Provide helpdesk services for students.**
- **Facilitate ownership of technology devices by working with vendors to offer equipment and applications at discounted prices for UHD employees and students.**
- **Take advantage of new and widely used technologies such as text messaging to reach students and employees.**

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Summary Reports from the Working Groups

Training and Support Services Summary Report (Continued):

- Establish an automated system where users' data are backed up on regular basis on campus.
- Offer technology support and electronic communication email for alumni.
- Offer laptops with docking station options to users.
- Develop a comprehensive plan to support Work-At-Home programs.
- Make the UHD website more user-friendly and attractive to existing users and prospective students (easily find what you want).
- Collaborate with other campuses and universities and share best practices.
- Provide after-hours technology support for students, faculty and staff
- Expand online training programs and support service; utilize online training programs to support faculty and staff preparation for utilizing technology

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Summary Reports from the Working Groups

Technology Infrastructure Summary Report:

After an extensive review of current literature and surveys of UHD students, faculty, and staff, the Technology Infrastructure Planning Group cannot help but conclude that UHD lies on the brink of the need for major changes in its technical infrastructure. In the next 2 to 3 years, UHD can expect an explosion in the number and array of computing devices available among its population, as well as an imperative to make technology use pervasive in its operations and its instruction.

Even more than in the past, UHD's technical infrastructure needs to be conceived of as a single organism with many parts. It must become significantly more robust, more extensive, and prepared to have many types of devices attached to it. And the idea of technical infrastructure (even if not the literal network itself) must be expanded to include the technical environment of UHD's students, faculty, and staff wherever they are conducting work related to UHD.

Technical Infrastructure Strategies

- **Provide a laptop option with the Desktop project.**
- **Enhance and expand high-quality and high-capacity wireless network able to support students in the classrooms.**
- **Evaluate services that would allow for using different types of personal electronic devices (cell phone, IPOD, PDA, Personal PS2, MP3 player, etc.) via wired and wireless university or public networks.**
- **Implement information Security best practices including all applicable compliance requirements.**
- **Facilitate student laptop ownership.**
- **Support high quality streaming video service (video on Internet).**
- **Establish an operating redundant data center to support UHD's critical technology functions during primary data center outages**
- **Establish an independent, redundant and high bandwidth Internet Service Provider.**
- **Establish a technology standard for all classrooms to include a computer, a presentation system, a document camera, and basic network and cable connectivity.**
- **Develop and maintain 100% percent coverage for wireless and mobile computing on campus.**
- **Increase automation in Security and A/V controls system.**
- **Define and validate infrastructure and security implications of telecommuting.**
- **Identify infrastructure support and service implications for users in a global environment.**

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Summary Reports from the Working Groups

Distance Education Summary Report:

Distance education at UHD includes all credit programs where instruction is delivered to students not physically present at the UHD downtown location. Students may take courses online, and/or at one or more of the three off-campus locations in the Houston Metropolitan area sometimes in addition to taking courses at the downtown campus. Instruction at the off-campus locations is delivered both face-to-face and via ITV.

UHD's mission is to provide access to higher education, and distance education provides another way for the university to meet its commitment by providing its commuter student body with the flexibility to take courses at one or more of four locations (including downtown) as well as online. This flexibility of access serves new student populations as well as current students by offering greater diversity of course delivery options and locations. Thus students have the potential to increase the number of courses they take each semester as well as the ability to maintain sustained enrollment to degree completion. Key to UHD's success in delivering education at a distance is technology.

The charge to the Distance Education Technology discussion group was to focus on the technology planning requirements to support UHD's efforts to deliver distance programs in the next three to five years. In preparing its report, members examined enrollment data to understand enrollment trends and to project growth. Members identified emerging technologies that might have unique applications to delivery of distance education. They identified strengths and weaknesses of the current program and took note of the UH System strategic plan. In the process, the group was challenged by the fact that key technology underpinning online delivery of courses, course management system software, has moved beyond the narrow province of supporting distance education to supporting all types of delivery of instruction at the university. Because many of the needs of distance students in terms of services and support are also needs of commuter students in general, the work of the discussion group overlapped the work of the other three groups. In its report and suggested strategies, the Distance Education Technology group has attempted to limit its focus to those technology needs uniquely related to the delivery of distance education.

Distance Education Technology Strategies

- **Develop innovative course scheduling/delivery methods such as use of hybrid and online courses.**
- **Expand inventory of online courses and programs including undergraduate and graduate online degrees.**
- **Develop alternative delivery capacity for new teaching centers and partner campuses.**
- **Expand program support and services for Northwest corridor.**
- **Evaluate ITV course delivery options and explore alternatives such as streaming video to desktop and PDA technology as these technologies become more widely adopted and available.**
- **Facilitate expansion of online learning opportunities through the successful implementation of Blackboard Vista and online instructional and collaborative tools.**
- **Identify infrastructure and support service needs to facilitate delivery of large online course sections.**

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Summary Reports from the Working Groups

Distance Education Summary Report (Continued):

- **Assess streaming audio (pod-casting) as a distance education delivery option.**
- **Maintain commitment to delivery of Distance Education programs focused on providing access to higher education for students consistent with the UHD's mission as a "public, urban university committed to providing quality academic programs that serve the needs of the multicultural population of Houston and surrounding communities. "**