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The McCombs School of Business

Information Technology Vision Plan

Academic Year 2002/2003

November, 2001

The University of Texas at Austin

Austin, Texas

Table of Contents

1. Executive Summary

This vision plan establishes the strategic goals for information technology improvements for the McCombs School of Business for Academic Year 2002/2003 and beyond. In view of recent history, changes in computer technologies have been so rapid that a strategy extending more than a year is certain to be obsolete before it can be brought to a level of quality necessary for production use. The anticipated technical operational framework over the

next few years can be envisioned in general terms, thus, this document is intended to serve the McCombs Business School as a planning framework to align our information technology with our administrative, teaching and research needs.

As a general statement of policy, we will adopt the most relevant business-related hardware and software technology for the McCombs Business as it becomes commercially available and meets our pre-deployment – quality of service needs. We will accomplish this through strategic alignments with a set of premier corporate information technology partners and judicious use of ITAC fees, the business school's information technology fees, course fees, multimedia fees, state allocated funds, grants, and donations derived from selected industry and government entities.

Our past technology program to

- convert our school LAN to 100 MB switched Ethernet and
- to rapidly deploy high performance Windows 2000 Enterprise Servers has positioned the business school very favorably for the coming migration to even higher bandwidth networking.

The full conversion of the McCombs Business School to 100 MB switched Ethernet will be completed in 2001 as the task of rewiring faculty/staff offices and classrooms in our CBA building is completed as part of the University renovation schedule. Our rapid deployment of Windows 2000 has also positioned us to play a leadership role in IT tools. This networking upgrade and Windows 2000 infrastructure will enable us to soon implement a "smart card" authorization scheme in order to provide one-stop authentication for all campus technology services.

2. Business School Vision, Goals, Objectives and Progress

Overarching View

The operational reliability, as well as its' defense and our enterprise information architectures and mission-critical operations have clearly impacted our thinking, assumptions and operational planning relative to and following recent national events.

We now need to question and re-frame our assumptions for both our operational and strategic information technology planning in our professional / academic environments. One great strength of our educational system includes the right of free speech, easy access to information technology, multi-media content and our global information resources inherent in the Internet. In these unique educational settings, the Internet continues to serve us well in providing email and web access for those desiring currency and ease-of-access to quickly

evolving news stories. We all must agree that faculty, staff, and students at our nation's universities and colleges are inherently involved in information and sense-making in our collective thoughts about our responses to events such as the September 11th's terror attacks.

It becomes quite clear that, while we will say that the world changed on September 11th, perhaps it is our assumptions, our knowledge of the world and our sense of the world, but not the world itself, that changed on that terrible day.

The McCombs Business School, as an academic and professional learning institution, as a catalyst in generating, framing, analyzing, and transferring human knowledge and business insight, will necessarily have an impact on how we view the perceived and actual changes in this new setting.

During the days immediately following the attacks, our faculty, staff, and students made very intensive use of both the web and e-mail to learn about friends, places, and institutions familiar to us all. The baseline capacity of our present networks, servers, and infrastructures became quickly saturated. Coincident with these events, we experienced several malicious viral attacks and at least one platform penetration attempt. In a very real sense, our open college and university systems and infrastructures were turned against us.

We propose questioning our assumptions and rethinking how we can better protect our IT systems in this relatively open - accessible environment. Accordingly, we solicit constructive professional staff, student, and faculty input into this our McCombs Business School - Vision Plan and Plan of Record for Academic Year 2002-2003.

Methodology

Our 1st process is to list, in ranked order, our fundamental requirements – each arrayed in a category (People – Processes – Tools – Measures). Relative to each of these requirements, we have three fundamental choices with each ongoing project:

1. Invest (Increase)
2. Sustain (Maintain)
3. Divest (Decrease).

For these enumerated projects – we are choosing Option 1. (Invest)

People

1. **IT/Media Professionalism Program** - to improve recruitment and retention of qualified IT professionals for our School. We want to do this with the following initiatives.
   a. **Maintain a planned 10-15% salary pool for our IT/Media staff** – This pool will be used to retain and reward top professional performers as well as to fund additional positions as needed.
   b. Offer high-quality, high-value training programs such as:

i. CERT (Computer Emergency Response Team) courses
ii. MCSD (Microsoft Certified Solutions Developer) and MCSE (Microsoft Certified Systems Engineer) intensive courses
iii. Security Skills Training – Incident Response and Security Scanner Technology courses
iv. Firewall and Virus Mitigation Training
v. Pre-Deployment Testing courses
vi. Incident Response and Infrastructure Monitoring Skills Enhancement courses

2. **IT/Media Work-life Balance –** We want to move to a 4/3-work week to help sustain balance in our most valuable resource – our professional staff.
3. **Outsource Critical Skills** – We will continue to explore and purchase outside consulting services to bridge gaps in our internal knowledge, skills, or availability needs.
4. **Provide Awareness Training** – We need to plan and execute a wider range of awareness training in "best-practices" for privacy, security and virus control for our faculty, staff, and students.

Processes

1. **IT Infrastructure Protection –** This program involves upgrades and monitoring mechanisms for networks/servers and content repositories.

    a. Microsoft Get-Secure – Stay Secure Program
    b. Digital Certificate X.509 Lists
    c. Incident Response Processes
    d. Defect/Incident Tracking
    e. MS Exchange Survivability
    f. Web Server Survivability

Tools

1. Infrastructure Improvement2. Web Calendar3. Windows XP/Office XP McCombs Domain Upgrade

Measures

1. 99.999999999 WEB Server- Email Availability (nine-nines)
2. Zero Production Penetrations against high-availability/high-trust servers
3. Two Town Hall Meetings per academic year

4. User Surveys with 80% of respondents (Highly Satisfied or better).
5. Highly satisfied IT Project evaluations

3. Facilities and Staffing – Infrastructure

The McCombs School of Business currently operates six student computer laboratories.

The Millennium Lab, our main general use facility, is comprised of 160 individual workstations, of which six workstations are dedicated to student team use. These workstations are 450 MHz/128MB RAM and 10GB hard drive units running on a 100MB switched Ethernet network. This lab also has network connections for 166 notebook computers. This Lab is open continuously from Sunday at 1pm until Friday at 5pm; it is also open on Saturday.

The Mod Labs, two modular classroom labs, are designed specifically for instructional use. These labs can be reserved for lectures, labs, presentations, and examinations. There are 40 seats in each lab with a removable partition so that the two rooms can be used independently or as one large 80-seat lab. When not reserved these labs are available for general student use. The computers in these labs are 400MHz/128MB RAM with 10 GB hard drives.

The Reliant Productivity Center is a technology-enhanced study area equipped with 250 100Mb switched Ethernet ports as well as electric power. This facility has been designed to not only be aesthetically appealing, but to also provide both individual workspaces and group areas for students to work on team projects. This Lab is open continuously from Sunday at 1pm until Friday at 5pm; it is also open on Saturday.

Of the other labs in the school, Classroom 2000 is a classroom lab dedicated to the graduate Information Management (IM) program and contains 48 100Mb switched Ethernet ports, and a PhD Lab which contains 8 workstations and is reserved for PhD students.

Our Multi-media group operates a multi-media lab consisting of 5 student video editing workstations, 4 multi media workstations, two with MPEG (Moving Picture Experts Group) encoders, 1 analog video editor, 3 scanning stations and 3 DVD burners.

Area	FTE
Executive Management and Strategic Planning	4.00
Administrative Support	7.00
Administrative Computing Support (Support Deans' use of student records)	8.00
Back office Application Development (Help	4.25

Desk; automated account and mailbox generation; lab management, accounting, and measurement software; etc.)	
Laboratory Operations	6.00
Network Operations	8.00
Technical Support	7.00
Database Support	5.00
Training	4.00
Multi-Media Lab	4.00
Multi-Media Checkout Counter	3.00
Multi-Media Engineering Staff	6.00

The Department emphasizes the importance of industry accepted certifications. The current staff includes:

CISSP - 1
MCSE – Microsoft Certified Systems Engineer – Windows2000 Track - 8
MCSE – Microsoft Certified System Engineer – NT4.0 Track – 7
MCT – Microsoft Certified Trainer – 4
MCSD – Microsoft Certified Developer – 2
MCDBA – Microsoft Certified Database Administrator – 1
MOUS-AI – Microsoft Office User Specialist – Authorized Instructor – 1
Dell Corp Technician certifications – 5
CompTIA A+ certification – 2
CompTIA Linux+ certification – 1
CompTIA CTT – Certified Technical Trainer - 1

The student employees on staff include approximately fifty students that serve as computer lab proctors. Additionally, there are twelve students working in the SWAT (Students With Advanced Technology) shop where they help support the hardware and software on the 1000+ student notebooks in use throughout the school. There are 2 work-study students employed in the Multi-Media Lab and 4 students support the Multi-Media Support/Checkout system.

4. Proposed Projects for AY2001/2002

4.1. IT infrastructure Protection

4.1.1. Production Server Protection

Summary:

We intend to improve our overall enterprise security by leveraging Microsoft's recently announced programs; "Get Secure" and "Stay Secure". We will leverage our existing MS Premier Support Program and make use of these newly announced MS security tool kits. We will deploy two-stage push servers to ensure that security patches and updates are distributed to Student Notebooks, Student lab computers, Enterprise servers as well as Faculty and Staff computers in a timely and consistent

manner. Furthermore we will be purchasing additional anti-virus protection licenses for our Email gateway to match the existing growth in our user base. We will also be purchasing Anti-virus software to be placed directly on our MS Exchange Server to finally complete our anti-virus protection scheme.

Target Audience:

All of our customers, both internal and external to the college will benefit from this project.

Cost Analysis:

Item Description	Units	Cost Per Unit	Total Cost
Distribution Server	2	$8,000.00	$16,000.00
Anti-Virus Protection Software		$90,000.00	$90,000.00
Total:			**$106,000.00**

4.1.2. Smart Cards and X.509 Digital Certificates

Summary:

This Project will enable the business school to pilot test a public key infrastructure, (PKI), which not only meets the needs of the business school but is compatible with the ongoing smart card project within the UT Austin campus. Our focus will be to build the PKI support structure necessary for a customer base of approximately 10,000 users. Furthermore, various smart card readers should be tested to determine functionality and appropriateness for a target location. The Smart cards will be used to sign and encrypt e-mail as well as log into the business school Windows 2000 domain.

Target Audience:

Students will be the target audience of this project. They will receive valuable skills that they will take with them to their corporate jobs. Faculty will also benefit in that e-mail signed by the students will be certified as being sent from the student without being modified in transit.

Cost Analysis:

Item Description	Units	Cost Per Unit	Total Cost
Business School Root Server	1	$3,000.00	$3,000.00
Certificating Server	1	$3,500.00	$3,000.00
Certificate Request Server	1	$3,500.00	$3,000.00
Smart Card Enabled Keyboards	25	$129.00	$3,225.00
Smart Card Serial Readers	25	$49.00	$1,225.00

Smart Card USB Readers	25	$75.00	$1,875.00
Smart Card PC-Card Readers	25	$89.00	$2,225.00
Smart Cards	100	$14.00	$1,400.00
Total:			**$18,950.00**

4.1.3. Incident Response Processes

Summary:

In response to increasing numbers of malicious software attacks, we will be applying for membership to two non-profit organizations: Internet Security Alliance (ISA) and the Forum of Incident Response and Security Teams (FIRST). ISA provides information-sharing services for its members to improve the security and survivability of our Internet-connected systems. FIRST fosters cooperation and coordination in incident prevention and rapid reaction to incidents. As members of these organizations, we will be required to contribute expertise at conferences and symposium as well as participate in initial training to qualify.

Target Audience:

Having access to these organizations will increase awareness of network anomalies and the speed in which we can respond to them, thus ensuring that student, faculty and staff services and data is better protected from attack.

Cost Analysis:

Item Description	Units	Cost Per Unit	Total Cost
ISA Annual Membership	1	$6,500.00	$6.500.00
Initial Training and Travel Costs	3	$5,000.00	$15,000.00
FIRST Annual Membership	1	$1,000.00	$1,000.00
Initial Training and Travel Costs	3	$5,000.00	$15,000.00
Total:			**$37,500.00**

4.1.4. Defect/Incident Tracking

Summary:

We will deploy a web-based application to students that will enable us to track and efficiently focus our available resources in solving problems with our Common

Operating Environment, (COE), which includes all hardware and software installed in our student computer labs and on Student Notebooks purchased through the Student Notebook Computer initiative.

Target Audience:

While primarily focusing on the Student Population, Faculty and Staff which also use machines within the COE would make use of this reporting and tracking application as well.

Cost Analysis:

Item Description	Units	Cost Per Unit	Total Cost
Application Server	1	$5,000.00	$5,000.00
Software	1	$10,000.00	$10,000.00
Total:			**$15,000.00**

4.1.5. Infrastructure Survivability

Summary:

In this age of increasingly complex systems and servers the ability to adequately test proposed upgrades and changes is infinitely critical. We plan on creating a testing lab to help ensure that planned changes will not adversely affect our production environment. In case of hardware failure, these machines could be rushed into service to further decrease unanticipated down time. Furthermore, this lab could be made available to graduate and upper division students for hands on demonstrations and practicum's.

Target Audience:

Adequate testing of all changes and upgrades decreases the likely hood of downtime and loss of service to all our customers both internal and external to the college.

Cost Analysis:

Item Description	Units	Cost Per Unit	Total Cost
Computer Rack (including UPS and KVM Switches)	2	$6,000.00	$12,000.00
Installation of Additional Power	1	$4,000.00	$4,000.00
Rack mount servers	12	$8,000.00	$96,000.00
SAN Storage Unit	4	$25,000.00	$100,000.00
SAN Switching Units	4	$12,500.00	$50,000.00
10/100Mbit Network Switches	1	$3,000.00	$3,000.00

Tape Library w/ SAN Connections	1	$56,000.00	$56,000.00
Tapes	150	$100.00	$15,000.00
Total:			**$336,000.00**

4.2. Infrastructure Improvement

4.2.1. Home Drive Server Upgrade

Summary:

Due to increasing requests from the MBA students, the amount of disk space made available to each MBA Student should be increased from 200MB to 500MB. This will require additional storage to be added to the Home Drive server and the existing data will need to be reorganized.

Target Audience:

The Primary audience for this project is the Graduate Students.

Cost Analysis:

Item Description	Units	Cost Per Unit	Total Cost
Additional Hard Drives	40	$1,000.00	$40,000.00
SAN Controller Unit	1	$25,000.00	$25,000.00
Total:			**$65,000.00**

4.2.2. SAN Consolidation

Summary:

Currently we have 7 “SAN Islands”, (SAN Hardware not contained within a switched fabric); this limits us by making it difficult to optimize the storage space contained within each island. By consolidating these islands into a single SAN, we will be able to redistribute storage space to servers as needed, without downtime. As part of this project a disaster/recovery tape library and enough tapes for four complete backups will be included.

Target Audience:

The Primary audience is the Students of the McCombs School of Business.

Cost Analysis:

Item Description	Units	Cost Per Unit	Total Cost
Initial Dell Consulting fee	1	$12,000.00	$12,000.00
SAN Switching Unit	6	$12,5000.00	$75,000.00
SAN Storage Distribution Unit	2	$30,000.00	$60,000.00
SAN Controller Unit	1	$25,000.00	$25,000.00
SAN Storage Expansion Unit	2	$20,0000.00	$40,000.00
SAN Storage Backup Unit	1	$56,0000.00	$56,000.00
Disaster/Recovery Tapes	300	$100.00	$30,000.00
Dell Implementation Fee	1	$30,0000.00	$30,000.00
Total:			**$328,000.00**

4.2.3. Network Backbone Upgrade

Summary:

In order to accommodate new requirements being placed upon our network, such as streaming video in both uni- and multi-cast, as well as security monitoring, we will need to improve the overall backbone of our network. The first step will be to purchase a new building router that can handle the increased demands placed upon our network. The next step will be to raise the backbone speed from 100Mbit to 1Gbit. This will entail replacing the Cisco Switches that form the College backbone network.

Target Audience:

The Primary audience for this improvement is the students which are requesting the ability to view recorded lectures via streaming video feeds. Faculty and Staff will also be able to make use of the increased throughput within the building.

Cost Analysis:

Item Description	Units	Cost Per Unit	Total Cost
Cisco 6500 Router	1	$68,000.00	$68,000.00
Backbone Switches	16	$10,000.00	$160,000.00
Total:			**$228,000.00**

4.2.4. Server Room Improvements

Summary:

In order to ensure that our production networks achieve the highest level of stability, we will need to make some configuration changes within our existing server room. These changes include constructing a wall to close off the actual server room from the general traffic flow.

Target Audience:

Since security of the servers starts with physical security, all of our customers will benefit from these changes.

Cost Analysis:

Item Description	Units	Cost Per Unit	Total Cost
Application Server	1	$5,000.00	$5,000.00
Software	1	$10,000.00	$10,000.00
Total:			**$15,000.00**

4.2.5. Creation of Separate Research Network

Summary:

The Notion of a "Production" network greatly conflicts with the need for more testing and experimentation inherent in a "Research" network. We plan on creating this separate network where many of the tight controls inherent in a Production Network can be relaxed. Researchers would be able to bring up their own test servers without having to worry that their actions would affect the operation of the Production Environment.

Target Audience:

This project comes at the direct request of PhD students, IM Track MBA Students and Upper Division MIS Students wanting to gain hands on experience with software and hardware configurations that are not supported on our Production Network.

Cost Analysis:

Item Description	Units	Cost Per Unit	Total Cost
DNS, DHCP and WINS Server	1	$5,000.00	$5,000.00
Gateway Server	1	$5,500.00	$5,500.00
Remote Communication Server	1	$5,000.00	$5,000.00

Network Distribution Switches	10	$3,000.00	$30,000.00
Total:			**$45,500.00**

4.2.6. Phase 2 – McCombs Community Calendar

Summary:

This project will entail upgrading access and functionality for the present McCombs community calendar (Mod 2)

Target Audience:

MBA and BBA audiences, as well as public, alumni, faculty, and staff.

Cost Analysis:

Item Description	Units	Cost Per Unit	Total Cost
		$0	$0
		$0	$0
Total:			**$0**

4.2.7. Windows 2000/OfficeXP Rollout

Summary:

In an effort to ensure that Business School Students are exposed to the stable corporate software, the Business School will include both MS Windows 2000 and MS OfficeXP as part of the new Common Operating Environment, (COE) for AY 2002/2003. This means that the student computer labs, the student notebooks purchased as part of the Notebook initiative as well as faculty and staff machines will be upgraded to the new COE software.

Target Audience:

The Primary audience is the Students, Faculty and Staff are secondary audiences for this software upgrade.

Cost Analysis:

Item Description	Units	Cost Per Unit	Total Cost

COE test computers	5	$2,000.00	$10,000.00
Total:			**$10,000.00**

4.2.8. Technology Orientation Sessions

Summary:

Approximately 1200 students entering the BBA program Fall Semester 2002 will attend summer orientation sessions to receive academic advising and attend events designed to familiarize the students with McCombs School of Business (MSB) resources. The incoming BBA students will also receive a technology session from MSB Computer Services Department designed to introduce the student to MSB network resources, their email account, and the business school labs. By offering these technology sessions, MSB Computer Services ensures that the incoming BBA students will understand the high quality of technical resources available to them at MSB.

Target Audience:

Freshmen, internal transfer and external transfer students entering the BBA program will gain greater technical competence and awareness of MSB technical resources.

Cost Analysis:

Item Description	Units	Cost Per Unit	Total Cost
3 Trainers	100 hours	$60/hour	$6,000.00
2 Student Helpers	200 hours	$10/hour	$2,000.00
Printing (Mail Out, Handouts)			$1,000.00
FAQ CD			$1,000.00
Total:			**$10,000.00**

4.2.9. IT Academy

Summary:

The IT Academy program allows academic institutions to deliver training on Microsoft networking and developer technologies to their student communities at a significant academic discount. The IT Academy helps full- and part-time students prepare for jobs that demand proficiency with Microsoft products and technologies.

Target Audience:

The IT Academy will benefit graduate and undergraduate business students preparing for careers in information technology administration and management. In addition, University Faculty and Staff are also eligible to receive the same training at the reduced academic rate.

Cost Analysis:

Item Description	Units	Cost Per Unit	Total Cost
Annual Membership	1	$5,000.00	$5,000.00
Training Lab Hardware Upgrade	17	$200.00	$3,400.00
Initial Training of Instructors	3	$5,000.00	$15,000.00
Total:			**$18,400.00**

5. Business School IT Funding Overview and Lifecycle

Constantly changing technologies as well as needs for course development have required continuous changes to our funding methods and sources. Opportunities provided by corporate alliances for grants and practicums have provided new software, hardware and cash for our facilities and new improvements, as well as budget windfalls to use on projects of lesser initial priority that still required funding. While we have made continuous adjustments to our vision plans and priorities, we have remained focused on the McCombs School of Business goal of constantly providing leading-edge technology for our community.

We have funded our expenditures with information technology and course fees, allocations from the Information Technology Advisory Committee (ITAC), and when necessary loans from UT System. We are continually looking for ways to modify our fee structure so that we will be able to meet the needs of our technology evolution. We are aggressively working to pay off past loans from the UT System so that these funds are available to use on IT Projects. However, it is becoming clear that we are rapidly approaching the point where we will need to freeze the level of student fees and acquire the necessary additional funds from other sources. Failure to acquire these necessary funds will leave us with no choice but to cut requirements for any increased services.

Appendix A. Total IT Expenses Report

2001-2002 ITAC BUDGET SUMMARY	
Revenues	
2001-2002 ITAC Allocation	
Base Allocation	$204,153.00
Special Project Allocations	$187,000.00
Revenue from Other Sources	$441,693.00
Carried Forward from 2000-2001	$14,402.00
Total Available	**$847,248.00**
Expenditures	
Salaries, Wages & Fringe	$433,469.00
Maintenance & Operations	$379,577.00
Capital Equipment	$20,000.00
Lease Payments	$0.00
Travel Associated with Staff Training	$7,300.00
Budget Adjustments	$0.00
Total Expended	**$840,346.00**
Carry forward to FY 2002-2003	**$6,902.00**

Appendix B. Business School Infrastructure – Networking Status

For the past six years, one of the Business School's driving goals has been to improve the network capacity to handle the rapidly increasing load on the infrastructure. To handle this rapidly increasing need for network bandwidth, which was exacerbated by the addition of 1,000 plus laptops from the MBA Laptop Initiative, an upgrade from a shared 10MB Ethernet to a faster 10/100MB switched Ethernet serving all student facilities was accomplished during 1998/1999. By late 2000, funding had been secured to rewire, with Category 5+ cabling, the faculty and staff offices in the CBA North wing. This allows many of the faculty and staff to fully take advantage of the backbone upgrades that took place during the last few years. During 2001 we have begun rolling out 802.11b Wireless networking to a few strategic areas that before now would have been cost prohibitive to network using traditional cabling. We do not plan to deploy any wireless in an end-to-end environment – for the next academic year.

Another major move was the implementation of a series of best practices within our server room. The first phase saw the consolidation and upgrade of many infrastructure servers. These older servers, many of which were workstations, were replaced with true enterprise level rack-optimized server class machines. These machines include redundant power-supplies, hot swappable hard drives and other fault tolerant features to ensure the maximum up-time possible. We are now poised to move into a phase which will focus on enterprise monitoring, security monitoring, advanced diagnostics and real-time alerts.