

Cockrell School of Engineering

Vision Plan for Information Technology

2008-2009

<http://www.engr.utexas.edu/computing/vision/>

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Summary of Cockrell School of Engineering ITAC funding requests for AY 2008/2009

Project Title	Description	Requested Funding
<ul style="list-style-type: none"> ▪ Virtual LRC (aka virtual student labs) 	<p>Student computer labs, aka Learning Resource Centers (LRCs), have been a mainstay of Engineering computing facilities since the early 1980s in the days of the Quest grants. Currently we run about 600 CPUs in our LRCs, but the physical constraints of these facilities are not able to meet the 24x7 demands of our nomadic students. Leveraging our expertise in desktop and server virtualization, we will develop a “Virtual LRC” and begin a transformation of both teaching and general-use computer labs for campus.</p> <p>These cyber-resources will make institutionally licensed software available to students without physical or time-constrained barriers. Virtual computing sessions will be available on-demand configured with the software tools the student needs from anywhere on the Internet.</p> <p>The initial configuration plan would support 200 sessions (160 single-processor and 40 dual-processor) for a three year period, adding roughly 30% more capacity to our lab infrastructure, but the model will be easily scalable to meet anticipated increasing demand from within Engineering and the campus at large.</p> <p>This joint project between Engineering, ITS and other campus partners will build the campus infrastructure for this service.</p>	<p style="text-align: right;">\$252,000</p> <p style="text-align: center;">Primarily for virtual machine infrastructure</p>

Project Title	Description	Requested Funding
<ul style="list-style-type: none"> ▪ SOAR 	<p>Synergy Of Academic Resources – SOAR</p> <p>Conduct a comprehensive survey, facilitated by consultants with expertise in University IT, of academic biased IT services across campus with cost and value assignments so that these assessments can inform future IT investments and reduce resource dilutions and help improve the quality of offered IT services.</p> <p>We also anticipate identifying numerous “last mile” initiatives, where good efforts have languished and with a little rejuvenation could service the campus community quite well.</p> <p>Both student and faculty “universes” will be addressed from the classroom to student labs, study spaces, collaborative spaces as well as course administration tools and TA/Grader facilitations.</p> <p>These objectives will be tightly coupled with TechDean Strategic Directions for the academic year</p> <ul style="list-style-type: none"> • Identify Management Coordination • Custom Development Coordination • Classroom Support Enhancements • Service Desk integration • Student Lab Infrastructure <p>As well as key Quality and Cost pursuits in selected service areas.</p> <p>Several TechDeans and representatives from DIIA and ITS will participate in this endeavor.</p>	<p style="text-align: right;">\$150,000</p> <p style="text-align: center;">Primarily for contracted labor resources</p>
<ul style="list-style-type: none"> ▪ On-Demand Collaboration tools 	<p>Barrier-free ad hoc desktop collaboration tools are needed to facilitate collaboration between students and to facilitate interaction between students and faculty outside of the classroom. This project will evaluate various tools and develop best practice scenarios and documentation/training for consumption by students and faculty.</p> <p>Simultaneous document creation, annotation and revision capabilities would be a centerpiece of this service framework. It is anticipated that much of the needed framework is in place, but that some middle-ware and awareness of the tools are needed to make the capabilities easily consumable. Shared data spaces, annotation tools and ideally voice-over-IP (VoIP) are envisioned coming together as a consummate collaborative tool for use across campus.</p>	<p style="text-align: right;">\$12,000</p>
<ul style="list-style-type: none"> ▪ LINUX Best Practices 	<p>The arbitrarily eclectic collection of LINUX around campus may have some merit, but it also exposes the University to liability if not properly stewarded. We propose developing and promoting a spectrum of system administration and security best practices regardless of the flavor of LINUX and offering enterprise-class resources for a select few distributions of LINUX.</p> <p>This endeavor would be pursued in partnership with ITS and the ISO for documentation, training, system certifications and inspections that would nurture a more mature, viable and reliable set of needed LINUX services for campus.</p>	<p style="text-align: right;">\$80,000</p>
<ul style="list-style-type: none"> ▪ Automated Classroom Video and Podcasting 	<p>The College of Communication joint proposal is endorsed (cost reflected here is direct Engineer benefit only, not campus infrastructure components)</p>	<p style="text-align: right;">\$7,000</p>

Increasingly critical operational imperatives – recurring funding in nature		
▪ Network Funding	Adequate network funding remains a priority of IT funding, and will remain so until consistent funding is identified. (please reference appendix 1)	\$450,000 per year
Total:		\$951,000

OVERVIEW OF CURRENT IT PROGRAMS AND INFRASTRUCTURE

Vision/Mission/Goals of Unit

Engineering continues on its diligent **vision** to foster world-class learning through the innovative and appropriate integration of technology into the curriculum.



- Enhance the educational **experience** through student-centered learning
- Provide a supportive **environment** to nurture STUDENTS, faculty, and staff
- Foster a first-class learning **community** that reaches beyond the classroom

The consistent **mission** of Information Technology is to optimize the Cockrell School of Engineering by providing its people with information technology resources that are relevant, accessible, reliable, and useable through planning, collaboration and skills.

Goals are identified annually to further these values aligned with the needs of students, faculty and staff.

IT Programs (*IT programs requiring recurring funds for salaries, operations, etc.*)

It is important to note that Engineering has always remained true to the original intent of the Vision Plan funding and has annually strived to identify innovative projects that will advance IT use to support student learning. Engineering has never committed any Vision Plan funding to routine recurring operational overhead. Quite to the contrary, Engineering has typically required at least 100% matching for Vision Plan projects thus nominally at least doubling the impact/benefit of Vision Plan funding allocated to Engineering.

It is quite surprising and disappointing for Engineering to hear that the original intent of this funding needs to be explicitly reemphasized in a separate sub-category. Please consider the entirety of the Engineering Vision Plan to be in the original spirit of the intentions of the Vision Plan allocations.

Infrastructure (*overview of IT system – facilities, CPUs, servers, networking, security, IT equipped classrooms, etc.*)

Engineering's heritage of Learning Resource Centers, Studio Classrooms, laptop/tablet mobility carts, robust server infrastructure, Faculty Innovation Center, deployment of Multimedia Teaching Podiums (60+ classrooms), pervasive wireless infrastructure (150+ access points in 5 buildings) and Laptops for Learning Initiative (now entering its 12th year) depict the consistent efforts of Engineering to identify and address the practical roles of Information Technology to improve pedagogy.

Engineering has led the way in virtualizing server infrastructures and is leading the way in developing a broad-spectrum virtual desktop infrastructure.

Current and proposed funding sources for IT programs and infrastructure

Engineering leverages the ITAC allocations for visionary IT projects at typically greater than a 100% matching level. We have yet to commit any Vision Plan funding toward recurring expenses and we aspire to continue this commitment.

The primary sources of funding available to the Cockrell Scholl of Engineering to support the IT infrastructure and activities are through student fees. Currently we are in the midst of a transformation from a collection of fees (Instructional Resources fee, Instructional Technology fee, Information Technology fee, and Graduate LRC fee) toward a flat-rate tuition fee. Historically these sources of funding have been incrementally consumed by increases to operational obligations and rate increases have not kept pace with needed funding amounts. The recent series of budget-cuts and campus taxations are continuing to compound the financial challenges for academic IT endeavors just as services need to scale to meet broader and more pervasive needs.

Best Practices

- Generation 5 Classroom Multimedia Teaching Podiums with OnTouch intercom
 - o Our "Robo-Podiums" are height adjustable, movable and reduce barriers between students and faculty. If any problems do arise, the OnTouch intercom systems beckons help with the touch of a button – Service Desk personnel can then assist with remote controls for the room or field operatives can be rapidly dispatched as needed.
- Studio Classroom 2 reinvention with **Ardence** and **Softricity**
 - o The **Ardence** and **Softricity** technologies have offered us the opportunity to reinvent our student lab implementations providing cost-savings and flexibility for rapid CPU imaging and software deployment. A fall forum was held to promote and educate the campus regarding these technology underpinnings.
- Security enhancements, working with ITS
 - o **SafeBoot encrypted hard drives** – Engineering pioneered the ability to encrypt entire hard drives and this work paved the way for the campus standard.
 - o Similarly **IPSec** has secured the transport of information between servers and client CPUs.
- DyKnow and Tablet PCs
 - o Leveraging DIIA insights, the **DyKnow** project continues to gain traction as it brings interactive annotation into the classroom between faculty and students, leveraging the increasing, yet gradual, popularity of **Tablet PCs**.

USE OF PREVIOUS ACADEMIC YEAR ALLOCATIONS

The Information Technology Committee (ITC) once again took an aggressive posture to ensure that our Vision Plan allocation was used in projects that represented innovative applications of information technology in teaching or student services. The total available Vision Plan allocation was \$120,638, which was leveraged by matching funds of \$123,263 for a total impact of \$243,901 {see table that follows}.

The projects have a broad-spectrum approach from improving software licensing costs to implementing **voice-over-IP** in all sixty of our classrooms that can provide assistance to Professors as well as act as an **emergency broadcast system** to all classrooms.

Software licensing challenges are faced by all departments due to license costs and implementation overhead. Through improved metering and deployment options we hope to be able to negotiate better pricing with vendors and make applications more readily available to students school-wide.

Several projects focus on **direct classroom improvements**, from further implementing dual-projection capabilities which also enable the increased use of DyKnow (a vision plan project from last year) to continuing to improve wireless connectivity in the classrooms. **Turnkey digital recording** and secure posting of classroom presentations was also be implemented this year.

Student labs are also continuing to see high demand in classic formats and leading-edge formats such as **Tablet PC mobility carts**. Funds were provided to several student labs this year, one new lab in order to increase capacity and two leading-edge labs to more effectively address the current needs of our students and faculty.

We are also pursuing a pilot **document management system** in order to make previous design projects and supplementary course materials available via the web since no campus resources appear to be adequate for this task. Easy scanning, posting, categorization, keyword searching, and ease of retrieval will all be hallmarks of this system, regardless of how implemented.

Unfortunately our efforts to effectively use Vision Plan funding are hindered by other campus funding dynamics. Engineering's Vision Plan allocation continues to plummet for unknown reasons.

Fiscal Year	Vision Plan Allocations
FY 03-04	\$281,920
FY 04-05	\$189,000
FY 05-06	\$170,000
FY 06-07	\$120,638
FY 07-08	\$87,784

This is especially unfortunate since the Cockrell School of Engineering makes innovative use of this funding and leverages it with matching funds. In addition, this reduction in funding comes at a time when funding should be greatly increased.

Engineering ITC Vision Plan Allocations for fiscal 06/07

Allocated Amount	Matching Amount	Project Total	Project Description w/key partner
\$ 6,538	\$ 6,538	\$ 13,076	ASE: Document Management System
\$ 5,000	\$ -	\$ 5,000	ASE: Dual projection capability
\$ 4,500	\$ 4,500	\$ 9,000	ASE: MTP upgrade for WRW410
\$ 10,500	\$ 10,625	\$ 21,125	CAEE: Software License Management Systems
\$ 26,000	\$ 60,100	\$ 86,100	ChE: Additional student lab space
\$ 7,500	\$ 7,500	\$ 15,000	ME: Classroom Connectivity
\$ 15,500	\$ 7,500	\$ 23,000	ME: Digital Recording (mobile unit w/FIC)
\$ 1,500	\$ 1,500	\$ 3,000	PGE: Classroom wireless
\$ 25,000	\$ 25,000	\$ 50,000	ECE: Tablets
\$ 18,600	\$ -	\$ 18,600	ITG: Classroom VoIP deployment
\$ 120,638	\$ 123,263	\$ 243,901	< Totals

NEEDS AND PROPOSED USE OF FUNDS

Infrastructure

- Adequate and sustainable **networking infrastructure** funding remains crucial and jeopardizes all other service offerings if not sufficiently addressed. Specific amounts are identified in **appendix 1**.

One-time Projects

- The **Virtual LRC project**, as described above, is imperative to meet our escalating needs to deliver software into the hands of our students.

Innovative Support of Student Learning

- The **Virtual LRC project**, as described above, is emphasized to meet our needs. This project will establish the cornerstone and scalable infrastructure for the campus at large.

"The best way to predict the future is to invent it."

Alan Kay

Appendices:

1 – Critical Network Infrastructure Lifecycle Funding needs

Adequate funding for the mission critical network infrastructure remains a crucial concern with the Cockrell School of Engineering. Historically, we found allocating a portion of the ITAC Vision funds leveraged with School funds necessary to maintain essential networking capability. To transcend this undesirable situation, the School has proposed a Network Lifecycle Model, integrated into our fee structure, to provide for sustained maintenance and necessary expansion of the network. The following table shows the proposed schedule.

Network Infrastructure Lifecycle Funding Budget Overview

Equipment (cost per year on 5 Year Lifecycle) **\$250,000**

Year	Areas Covered (proposed cycle)
Year 1	WRW, CPE-East
Year 2	ECJ, ETC
Year 3	ENS
Year 4	BME, futures/new technology
Year 5	CPE-West, wireless, all building upgrades

All years contain an amount that is non-building specific to cover software, training, tools and additional areas.

Salary (3 Full Time Employees - proposed)

Position	Salary	Annual Salary with Fringe Benefit
Senior LAN Administrator	57,500	73,600
Network and Security Administrator	57,500	73,600
Tech staff	40,000	51,200
Total	155,000	\$198,400

Total per year, nominally \$450,000

Adequate network bandwidth, connectivity and redundancy remain chronic networking issues. While some buildings cannot currently add a single additional connection to their existing infrastructure and struggle to identify funding for expansion, other buildings have a growing concern for single points of failure that could be disastrous for mission critical network infrastructures. All of these concerns converge to the necessity of having a consistent source of network funding as proposed in our lifecycle funding model.