

Report of the Information Technology Task Force

University of Northern Iowa

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Members

Belle Cowden

Michael Hager

Mark Jastorff

Shashi Kaparthy

Marty Mark

Marilyn Mercado

Steve Moon

Rick Seeley

Jenn Suchan

Ramanathan Sugumaran

Eugene Wallingford, *chair*

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Executive Summary

President Allen created the Information Technology Task Force to evaluate the current state of information technology (IT) at UNI and to “provide recommendations that when enacted will position the University to support our strategic goals with a comprehensive, coordinated and robust IT structure.” Toward that end, the task force collaborated with various campus organizations to collect data in three areas:

- the portfolio of IT services provided on campus
- campus satisfaction with the current portfolio
- the cost of providing those services

Analysis of this data shows that IT units across campus offer and support a wide array of services. Overall, the campus community is satisfied with the current portfolio of services, identifying only targeted areas of concern, and has a positive view of IT staff in both central and distributed IT units. IT expenses comprise at least 8.64% of UNI's general fund appropriation, with the top expense category being faculty and staff wages. Opportunities exist to reduce costs via improved coordination and, in select cases, standardization. The diverse offering of services and the major financial investments in IT across campus demonstrate that information technology is prevalent in all facets of the university and is critical to its mission and daily operations.

Based on comprehensive analysis of these findings, the task force offers the thirty-one recommendations, including:

- The University retain its hybrid model of centralized and distributed IT units, led by a chief information officer who reports to the president or sits on the cabinet and a Technology Council with representatives from across campus.
- The CIO work with the Technology Council to do strategic planning for IT across campus and to develop funding models for IT initiatives.
- The University make several key technology decisions with a sense of priority, including funding for network infrastructure, outsourcing email services, and developing long-term plans for communications and classroom technology.
- The University improve support for IT-intensive academic research.
- The University make several key changes in how IT expenditures are made, monitored, and recorded, with an eye on opportunities to lower costs, collaborate, and standardize where appropriate.
- The University form a committee of IT and business staff to study and modify business processes and practices, in order to provide more accurate and comprehensive expense data to support decision-making.

The key ingredients to improving the state of IT at UNI are improved communication, collaboration, and coordination among IT units and the university community.

1. Background

In April 2008, President Benjamin Allen created the Information Technology Task Force to evaluate the current state of information technology (IT) at UNI with respect to the needs of faculty, staff, and students. The task force's charge was to "provide recommendations that when enacted will position the University of Northern Iowa to support our strategic goals with a comprehensive, coordinated, and robust IT infrastructure". Toward this end, President Allen asked the task force to consider a broad array of issues related to IT, including the needs of users and the efficiency of the current structures for meeting these needs. See Appendix 1 for the full charge given to the task force.

One of the key IT issues identified in the charge is finding the right balance between central and distributed IT services. The university is inherently an information-based institution, so the provision and management of its IT services must be viewed as a part of, the university's core mission, not simply an adjunct service. This means that IT services will be an integral part of nearly every unit on campus. In order to provide these services most effectively and most efficiently, the university must strike a balance between centralized services that offer economies of scale and essential standards, and distributed services that meet diverse local needs and respond quickly to the changing needs of specific user groups.

The task force undertook three primary activities to collect data about the current state of IT at UNI:

- an inventory of the current portfolio of IT services provided across campus, conducted with the assistance of IT staff in all units
- a survey of satisfaction with the state of IT at UNI among all its constituencies: faculty, students, and staff, as well as university administrators and the IT staff and directors across campus
- an analysis of expenditures for IT services across campus, in terms both of the services being provided and of the organizations spending the money, conducted with the assistance of administrative staff in all units

To put this information into a larger context, the task force also conducted phone interviews of the chief information officers (CIOs) at three institutions: Iowa State University, the University of Toronto, and Truman State University. All three CIOs were hired in the last five years and have helped to lead planning and re-structuring efforts on their campuses.

The rest of this section gives some of the history of IT services at UNI, to provide local context for the task force's work. Sections 2 through 4 then present some of the task force's findings in the areas of UNI's current IT portfolio, satisfaction with this portfolio across campus, and the costs associated with providing these IT services. Finally, Section 5 outlines the task force's recommendations for maintaining and improving UNI's information technology services.

Recent History of IT at UNI

In the 1980s, two organizations provided primary IT services on campus: Academic Computing Services and Administrative Data Processing. In 1989, these units merged, creating an organization called Information Systems and Computing Services (ISCS) that reported to the Vice-President of Administration and Finance.

In 1996, ISCS was merged with the Educational Media and Telecommunications departments to form Information Technology Services (ITS), within the division of Academic Affairs. The director of ITS was given the position of Associate Vice-President for Information Technology Services. The new organization included an Administrative unit and four central IT departments: Educational Technology, Information Systems, Network Services, and User Services.

At the time ITS was created, President Robert Koob also created the Planning and Policy Committee on Information Technology (PPCIT) to advise the president and cabinet on strategic and policy issues related to IT. This committee consisted of representation from across the campus.

The 1990s also gave birth to distributed IT units in all colleges and divisions across campus. The centralization of departmental support in administrative divisions began in the late nineties: Advancement in 1997, Administration and Finance in 1998, and Student Affairs in 2000. In November 1998, the PPCIT and representatives from both central IT and the distributed IT units collaborated to develop the "Distributed Support Guidelines". While never receiving cabinet approval, this document has been the basis of support for campus technology for the past 10 years.

In 2006, the Associate Vice-President for ITS proposed a new membership for the PPCIT. At about the same time, President Koob left UNI, the new proposal was never acted on by the cabinet, and the PPCIT was effectively disbanded.

Student Computer Fee

In 1987, the university instituted a Student Computer Fee (SCF). Revenue from this fee was used to build several general-purpose computer labs, several of which are still in use, and to fund some campus-wide initiatives, such as electronic media in the Rod Library. After a few years, this fee was rolled into tuition.

The Student Computer Fee was re-created as a separate line in 1991. ITS administers this fund. It has been used to fund both central and college-level student computing initiatives. In 1992, guidelines for using the SCF were broadened to allow each of the five colleges and Rod Library to use SCF funds to pay a half-time technology specialist to support instructional needs. Over the years, the distribution of SCF funds has evolved and is now governed by the Student Computer Fee Guidelines, which are updated and approved by the cabinet every three years.

Acknowledgments

The IT Task Force recognizes the outstanding efforts of the many UNI staff who helped the task force collect and analyze the data used in this report. The IT staff in each unit spent considerable time building an inventory of IT equipment and services in their areas. Administrative staff in each unit spent considerable time reviewing spreadsheets of financial transactions of IT expenditures in their areas. Faculty, staff, and students took time to respond to detailed surveys about their use of IT. The task force thanks everyone who participated in this process. We offer special thanks to Karen Paulsen, Bruce Rieks, Kelly Flege, Diane Davison, Tori Stafford, Lisa Frush, Tonja Gerbracht, Melanie Abbas, and Jeanne Alcantara for assistance as we collected, analyzed, and summarized financial data.

2. Current Portfolio of IT Services

In Summer 2008, the task force created a spreadsheet outlining the full spectrum of hardware, software, and IT services provided at UNI. We distributed the spreadsheet to IT staff in all units of campus, who then conducted inventories of the assets and services managed in their areas. Responses from across campus show that:

- some common services are being offered by central IT,
- many area-specific services are being offered in one or more of the distributed IT units,
- there are opportunities for increased collaboration and coordination to reduce the cost of some services, and
- there are likely opportunities to centralize some commodity services to reduce the cost of replication.

This section describes some of the common trends identified by the task force in this data. Appendix 2 offers more details and outlines a few issues regarding the current portfolio of services that warrant further consideration.

Personnel

In fiscal year 2008, UNI employs 119.04 FTE of personnel who are designated by their units as working in information technology. Information Technology Services employees the largest cadre of IT personnel, 67.57 FTE:

- | | |
|--------------------------|-------|
| • Information Systems | 24.0 |
| • Network Services | 21.0 |
| • Educational Technology | 11.57 |
| • User Services | 6.0 |
| • Administration | 5.0 |

The rest of Academic Affairs accounts for another 28.9 FTE:

- | | |
|---|-----|
| • College of Business Administration | 5.0 |
| • College of Education | 7.0 |
| • College of Humanities & Fine Arts | 4.0 |
| • College of Natural Sciences | 3.0 |
| • College of Social & Behavioral Sciences | 2.0 |
| • Rod Library | 5.9 |
| • Continuing Education | 2.0 |

Other divisions employ the remaining 22.57 FTE:

- Administration & Finance 5.0
- Student Affairs 11.77
- Advancement 5.8

UNI also employs a significant number of students in IT support roles; the budgeted wages for student IT employees in fiscal year 2008 was \$497,271.

Hardware

Hardware on campus is a mixture of standard platforms and area- and application-specific equipment. See Appendix 2 for a table that lists the number of personal computers, servers, printers, scanners, and projectors in use during fiscal year 2008.

The vast majority of desktop and laptop computers are standard Dell machines, in large part due to recent contracts for campus purchasing. There are also a considerable number of Macintosh personal computers, in particular recent-model laptops. Macs are most common in several of the academic units, including Price Lab School and the Colleges of Humanities and Fine Arts, Natural Sciences, and Education. Of all the units, the College of Natural Sciences supports the widest range of platforms and models within platforms, including several Mac servers.

Area- and application-specific hardware includes infrastructure, both in ITS (for networks, enterprise applications, and educational technology) and Administration and Finance (for building security and auto pool). Rod Library and the College of Humanities and Fine Arts support a variety of printer and scanner models. The most noticeable trend is the advent of smart phone and PDA technology in several units. At this time, multiple brands are in use across campus.

Software

IT units support a blend of general-purpose software and discipline-specific software. Most software is available off-the-shelf, while some is hosted and some is developed as custom applications on campus.

Operating Systems. All fifteen units support the Windows operating systems, ranging from Windows XP to Vista. Only a few units support other OSs, including Mac OS X, Linux and other Unix implementations, and Novell. SQL Server and VMware are also widely used in different units.

Office Productivity. All fifteen units support Microsoft Office. All units also support Adobe products, either the full suite or select product lines. A few units still support less common tools, such as WordPerfect.

Security and Management Tools. All respondents have invested in various products to assist with the administration of security. Some standardization has taken place, but there appear to be opportunities to further coordinate purchases and share knowledge.

Hosted Software. Responses in this area indicate that there is no common definition of a "hosted application". Some units listed the software that they host for others, some listed products that other departments on campus host for them, and yet others listed third-party products that they subscribe to and access via the Internet. Follow-up conversation with various IT and business office staff also suggests that the compiled inventory in this section is not complete. The university subscribes to many third-party services that IT units are not aware of or do not actively support. This is an area for further study.

Custom Applications. Many IT units write custom applications for unit-specific needs. ITS-Information Systems, the Department of Residence, and the Divisions of Administration & Finance and Advancement have created the largest number of applications. Not surprisingly, there were few common applications across units.

Services Provided

Campus units provide IT services to a range of clients and customers that include faculty, staff, students, visiting professors, and campus visitors. Total client count in the units ranged from 41 to 47,000, reflecting of the scope of service provided. In this section, we describe some of the services offered and a few of the common and unique items we identified.

All fifteen units provide *consulting services and local process analysis* to determine software and hardware needs. Nine units reported a detailed description of the service they provide. The responses indicate that most of these units (seven of the nine) analyze needs by consulting with faculty and staff within their unit. In addition to consulting with staff in their units, ITS-User Services analyzes student needs and the Rod Library considers public user needs in their analyses.

All provide *IT help desk* services. Nine units reported a detailed description of the service provided. Help desk services include responses to telephone calls, email requests, web-based help forms, and meeting with users. Several units reported using

different tracking software for help desk support. The wide range of responses in this category indicates a need for further inquiry, to clarify the kinds of service provided and to consider opportunities for collaboration.

All units administer *servers* of various types. Network or IP-based print servers are common to all units. Most non-ITS units also host their own file servers and web servers (with server-side-processing capabilities). The set of server operating systems varies among units and includes Windows Server, Novell Netware, Linux, and Mac OS. Frequently mentioned web architectures include IIS/ASP, IIS/ColdFusion, Apache/PHP/MySQL. Microsoft SQL Server is a common alternative in the distributed units to the central Oracle database server. Finally, several units have implemented or are planning to implement digital signage systems.

In the area of *user provisioning*, ITS provides many of the back-end services, such as Active Directory core services and Windows Server Update Services. Distributed units manage day-to-day operations like account management and desktop support.

Most units have centralized the *administration of application* software within their units. While not all responses specifically stated so, the implication is that users in most units do not have administrative privileges to install software.

Nine of the fifteen units currently offer *equipment checkout* as a service. Some of the equipment is unique to a single unit or a few units, while other equipment commonly checked out is common to most or all of the units. The current system of distributed equipment checkout evolved in recent years after ITS determined it was no longer able to maintain a central pool of equipment for use across campus. Under that centralized arrangement, a few units checked out equipment to meet specialized needs at the local level.

Thirteen or fourteen units reported that they provide services in these areas:

- planning and project management
- website development and maintenance
- computer lab management
- contingency planning, including disaster recovery

However, the units that did report having contingency plans in place did not provide enough detail for the task force to determine whether the plans are current or whether they are updated on a regular basis.

All fifteen IT staff leads report managing and supervising full-time and student employee. Thirteen of the fifteen units report having processes in place for inventory

and asset control. Where applicable, most units report having processes for desktop backups, desktop life cycle management, server life cycle management, peripherals life cycle management, and classroom technology management. The areas most likely not to have managed processes are desktop backups and server life cycle management.

Other Unit-Specific Services

Each unit was asked to identify any IT services it provides that were not part of a category in the spreadsheet. Not surprisingly, responses in this part of the inventory diverged widely. Some were judged by the task force to be part of an identified category, though using different terminology. Others were indeed unique to the units. The special services provided by ITS-IS and Rod Library were most different from those provided by other units, due to the purpose of these units.

A few themes emerging from this section include:

- support for mobile computing, broadly defined
- licensing and license management
- database creation, design, management, administration, and deletion services
- custom development of system interfaces

These areas are likely opportunities for greater collaboration, coordination, and perhaps standardization.

Summary

In nearly every area of the portfolio, the task force sees the trade-offs between centralized and distributed services. IT units across campus provide unique services to their areas. In some cases, they also provide similar services and support similar hardware and software. These redundancies benefit the units being served by developing local technical expertise that can focus on the needs of end users. However, without coordination among the units, there is a tendency to replicate even services that could be shared, or for which a common solution might satisfy several units.

3. Campus Satisfaction with Current Portfolio

In April 2008, the task force conducted an initial survey of the UNI community via MyUniverse, to gauge campus satisfaction with IT services at a general level and to identify key issues for further consideration. Responses to this survey indicated general satisfaction, while also indicating some issues of concern, such as email and wireless access.

In Fall 2008, the task force worked with Strategic Marketing Services (SMS) in the UNI College of Business Administration to conduct a more complete survey of campus satisfaction. We worked with SMS to develop six surveys aimed at specific subsets of the UNI community: faculty, staff, students, administrators, IT directors, and IT staff. SMS distributed the surveys, compiled the responses, anonymized them, and organized them for the task force. This section high-lights some of the salient observations made by the task force from this data. A more detailed review of the survey responses can be found in Appendix 3.

The breakdown by group of surveys sent and received is:

Group	Number sent	Number received
IT directors	9	7
administrators	34	30
IT tech staff	112	84
faculty	982	437
staff	1,097	563
students	13,070	1,032

In all, 2,153 people responded, with the response rate in each group exceeding the usual return rate expected by SMS. The task force interprets this to mean that all areas of campus consider information technology and IT services to be important.

The following three questions were asked on each of the groups' surveys:

- Which IT services and support are working well for your area?
- What IT-related difficulties do you encounter on a regular basis that makes your job difficult?
- What information technology improvements are needed on campus to better meet your needs?

Over 60% of the respondents in all groups replied that they were either *satisfied* or *very satisfied* with how IT services and support are working for their area. We interpret this to mean that the general direction of IT on campus is solid. Responses also indicated a positive view of IT staff on campus, both in central IT and in the other units.

All respondent groups identified areas of dissatisfaction. Some of the more prominent themes which appeared in multiple respondent groups were calendar, staffing levels, communication and collaboration, passwords, email, wireless, funding, hardware, and software. These issues and others adversely affect the ability to work, study, and conduct research and should therefore be addressed.

However, we note that several services and areas of support appear repeatedly throughout responses to several questions on the surveys. For example, several groups were satisfied with *email*, while at the same time these same groups and other groups mentioned that issues with email make their jobs more difficult. Other issues that appeared repeatedly in multiple groups' responses both as areas that are working well and as areas creating difficulty were:

- wireless network access
- support services
- support staff
- software availability and deployment
- classroom equipment
- calendar
- desktops
- printing

This phenomenon suggests that groups of respondents have varying levels of need, expectations, and satisfaction thresholds for different IT services. It also indicates that even areas with which many users are satisfied might well be improved.

In general, the task force found there were no surprises in the survey responses. This means that most of the key issues with IT services are reasonably well known to the campus as a whole and that there are no unexpected issues to be addressed. That said, the responses to the questions about difficulties and unmet needs, as well as some of the group-specific questions, should be carefully studied by a future group or by the IT leaders on campus. There are a number of specific items that should be considered for change and improvement.

4. Costs Associated with Current Portfolio

The task force has collected and analyzed IT expenditure data for fiscal years 2006, 2007 and 2008. The process of collecting and analyzing this data was not as straightforward as we had hoped. In particular, we believe that the expenditure data used for this analysis **understates** the actual expenditures, in some cases significantly. As a result, all of the numbers in this section should be considered lower bounds on the actual values. For a detailed description of the data collection process and some of the limitations of the data used, see Appendix 4.

As evidenced by the diverse offering of services and the major financial investments made, it is clear that information technology is prevalent in all facets of the university and is critical to UNI's mission and daily operations. Every unit on campus makes expenditures on IT, using all methods of procurement available to them.

As an institution, the University has experienced a steady increase in information technology spending. From fiscal year 2006 through 2008, there was a 16% overall increase in expenditures, comprising a 9% increase from fiscal year 2006 to fiscal year 2007 and a 7% increase from fiscal year 2007 to fiscal year 2008.

At the unit level, most organizations experienced an increase in IT spending, with the largest overall increase in the College of Natural Sciences (105%) and the smallest in VPAA Other (smaller units within Academic Affairs, such as Continuing Education) at 1%. The unit to report the largest decrease was the College of Social and Behavioral Sciences at -20%. While the President's Office and Job Cost System also report decreases, these are anomalies and should not be considered trends.

The total expenditures by unit and fiscal year are given in Table 4-1, on the next page.

Funding Sources

Information technology expenses are affiliated with the following funding sources:

- General Fund
- Self-support funds
- Student Computer Fee
- Grants
- Building projects (Job Cost)

Self-support funds include money collected for services provided. Examples include auxiliary operations, such as the Department of Residence, and charges for specific

services, such as telecommunication in ITS-Network Services, for media services in ITS-Educational Technology, and photocopying in Rod Library.

Organization	FY06	FY07	FY08	% of overall IT FY08
Academic Affairs *	630,739	722,519	633,973	3.0%
Advancement	649,468	573,741	609,953	2.9%
College of Business Administration	812,548	965,194	976,242	4.6%
College of Education	989,548	1,026,529	1,116,312	5.2%
College of Humanities and Fine Arts	798,777	801,640	1,112,175	5.2%
College of Natural Sciences	434,711	1,026,379	890,729	4.2%
College of Social and Behavioral Sciences	627,408	610,186	502,518	2.4%
Information Technology Services	8,459,630	8,760,415	9,633,850	45.2%
President's Office	160,000	20,028	28,158	0.1%
Rod Library	1,509,498	1,976,702	1,938,922	9.1%
Student Affairs	2,170,877	2,293,330	2,579,664	12.1%
Administration and Finance	944,809	1,051,689	1,249,351	5.9%
Job Cost System (Facilities Projects)	129,518	120,977	34,315	0.2%
Total	\$18,317,531	\$19,949,329	\$21,306,161	100.0%

* Academic Affairs minus the colleges, Rod Library, and ITS.

TABLE 4-1. Total expenditures by unit and fiscal year

Within each fiscal year, the primary funding source has been the general fund, with self-support funds ranking second, student computer fee resources ranking third, grants

fourth, and job cost fifth. In fiscal year 2008, the general fund supported 63.9% of all expenditures. In the same year, self-support funds were responsible for 26.2%, student computer fee provided 8.0%, grants were responsible for 1.7% and the job cost system supported 0.2% of total spending. From fiscal year 2006 through fiscal year 2008, the funding source ranking has remained consistent with the distribution of IT expenditures changing only slightly within each category.

While the distribution of funding sources has remained fairly steady, the general fund, student computer fee and self-support fund categories have experienced an increase in the total amount spent, with the grants and job cost categories experiencing a decrease. From fiscal year 2006 to fiscal year 2008,

- general fund expenditures increased from \$11,517,616 to \$13,610,075,
- self-support funds expenditures increased from \$4,876,378 to \$5,591,556,
- student computer fee expenditures increased from \$1,366,957 to \$1,711,037,
- grants expenditures decreased from \$427,053 to \$359,179, and
- job cost funded expenditures decreased from \$129,518 to \$34,315.

It is common for renovation and building projects to include IT-related expenditures, such as telecommunications wiring closets, data centers, and IT office space. Typical equipment and components include cabling, conduit, cable tray, electronic doors and access, security devices, power metering devices, wireless access points, projectors, flat screen displays, environmental control, and UPS systems. Facilities Services' Job Cost System tracks these expenses as components of an overall project. While some IT-related items are easily identified within the system, many are not. The expenditures that we have identified within this system are only a portion of the overall IT-related project expenditures realized by the University. As a result, trends and analysis could not be performed to the extent necessary.

At the unit level, each organization is unique with regard to the extent to which each type of funding source is utilized. Many rely heavily on general fund and self-support funds, while others also receive student computer fee and grant funds.

Expenses by Category

Utilizing object codes to categorize spending, the top institutional IT expense categories for fiscal years 2006, 2007 and 2008 are given in Table 4-2, on the next page. As anticipated, the primary expense category for each fiscal year is faculty and staff wages, which include salaries, benefits, professional development expenses, and student employee wages. Annually, this category is responsible for 47% of all IT expenditures.

Total expenditures have increased from \$8,683,663 in fiscal year 2006 to \$9,978,128 in fiscal year 2008.

Fiscal Year	#1	#2	#3	#4
FY06	Faculty/Staff Wages	Equipment	Phone, Cell, Internet	Software
FY07	Faculty/Staff Wages	Equipment	Phone, Cell, Internet	Software
FY08	Faculty/Staff Wages	Equipment	Hardware/Software Maintenance	Phone, Cell, Internet

TABLE 4-2. Top expenditure categories by fiscal year

From fiscal year 2006 through fiscal year 2008, the number of IT staff (FTE) increased by 7.4%, with an FTE of 110.83 in fiscal year 2006 to 119.04 in fiscal year 2008. There has been a corresponding increase of 14.9% in budgeted salary and benefit expenditures, from \$8,683,663 in fiscal year 2006 to \$9,978,128 in fiscal year 2008. As anticipated, at the unit level, 60% of budgeted salaries and benefits are within ITS, with the distributed units combining to account for the remainder.

Budgeted student employee wages in fiscal year 2006 totaled \$613,693, decreasing by 24% in fiscal year 2007 to \$465,991. In fiscal year 2008, student wages increased slightly totaling \$497,271.

Overall, 56% of IT staff received professional development opportunities in fiscal year 2006, decreasing in fiscal year 2007 to 45% and increasing again in fiscal year 2008 to 57% of staff receiving training. The average investment in professional development, per FTE, was \$1004 in fiscal year 2006, decreasing to \$744 in fiscal year 2007 and increasing in fiscal year 2008 to \$1314. At the unit level, opportunities for training and development vary greatly; some organizations invest heavily, and others not at all.

For fiscal years 2006, 2007 and 2008, equipment purchases comprised 15% to 17% of all IT expenditures, increasing from \$2,788,233 in fiscal year 2006 to \$3,405,382 in fiscal year 2008. During the fiscal years under analysis, insurance funds were used to replace \$1,419,225 in equipment lost in the Gilchrist fire. These purchases have disrupted the equipment replacement cycles in Administration and Finance, Student Affairs, and Compliance and Equity, as well as a portion of ITS-managed devices. This alters trends in equipment purchases and so affects the task force's analysis.

While phone, cell and internet charges remain a primary expense category (9%-12% of total spending), expenses in this area have decreased slightly over the three-year period, from \$2,363,737 in fiscal year 2006 to \$2,115,362 in fiscal year 2008. Hardware and software maintenance has seen a steady increase from \$1,622,557 in fiscal year 2006 to \$2,442,352 in fiscal year 2008, and we anticipate that this trend will continue. Software expenses peaked in fiscal year 2007 at \$2,115,019, decreasing in fiscal year 2008 at \$2,111,245.

At the unit level, expense category rankings vary greatly. For example, in fiscal year 2008 the top ranking expense category in ITS is faculty and staff wages at 58.9% of the total expenditures, while in the Library the top ranking expense category is software and electronic resources, with 53% of its IT expenditures.

5. Recommendations

Information technology must play a central role in helping UNI to fulfill its mission. The IT task force offers the following recommendations for how IT at UNI can play this role effectively and efficiently. These recommendations are based on the task force's analysis of the current portfolio of IT services offered at UNI, campus satisfaction with the current portfolio, and the costs associated with this portfolio, as detailed in the preceding sections.

The first four categories of recommendations comprise Recommendations 1-15 and address the areas of IT Governance, Strategic Planning, Funding Model, and Technology. The task force views the recommendations in these categories as *essential* to establishing the direction of IT on campus. We encourage the university to act on all of these recommendations with a sense of priority and urgency.

The remainder of the task force's recommendations (#16-#31) involve issues of Academic Research, IT Expenditures, and Business Processes. The task force views these recommendations at a lower level of priority and urgency than those outlined in the first five categories. In each of these categories, the task force makes several recommendations, at varying levels of detail. Within these three categories, if there are more than two recommendations, we view the first two recommendations as taking precedence over the others in the same category.

The task force recommends that...

IT Governance

[1] ... UNI retain its hybrid model of central IT providing basic services and distributed IT units focusing on unit-specific needs.

This model is currently in effect. A hybrid model consists of:

- a central IT unit, which offers services that are essential to the whole campus in an effective and cost-efficient way, and
- multiple distributed IT units, which offer services unique to local users.

A central IT group can better provide general-purpose services common across campus and support campus-wide standardization. Distributed IT units can better provide discipline-specific services in their areas of expertise and respond quickly to the changing needs of specific users. In some cases, the hybrid model may result in what

appear to be unnecessary costs, which might be recovered through centralization. However, these costs are often an investment in something else we value, such as improved customer service or expertise needed to support area-specific needs.

[2] ... UNI hire a chief information officer to lead the university community in delivering high-quality, cost-effective information technology services to its stakeholders. The CIO should be charged with management of central ITS and leadership of IT efforts across campus.

The task force believes that it is essential for the CIO to have

- the *technical skills* necessary to provide effective leadership within ITS and to evaluate new technologies as they evolve.
- the *leadership skills* necessary to develop a campus-wide vision for IT, to build collaborative efforts to implement the vision, and to marshal a distributed campus-wide IT operation.

Strong leadership skills are essential in a hybrid model, which depends on collaboration and coordination across multiple units.

[3] ... the CIO have direct access to the President and the cabinet. Access to these leaders is crucial if the CIO is to ensure that IT issues, which cut across all units of the university and which frequently require resources from multiple units, receive due strategic consideration early in decision-making processes.

The best way to ensure that the CIO has essential access is to have the CIO either sit on the cabinet or report directly to the President. These days, IT is integral to every part of the university's academic and business enterprise. The task force finds that at least 6.9% of UNI's overall budget, and at least 8.64% of UNI's general fund appropriation, is spent on information technology. The breadth and scale of IT investment on campus means that the CIO should be involved in, or at least informed of, most of the strategic and process decisions made at the highest level. Without such involvement, resources will likely be wasted and opportunities missed.

At universities where the CIO neither sits on the cabinet nor reports directly to the President, the CIO typically reports to the Provost. This model can work, but only with other institutional processes that ensure the CIO participates regularly in strategic and funding discussions that have campus-wide implications.

[4] ... UNI establish a Technology Council, whose charge is to work with the CIO to oversee IT activities across the university.

The Technology Council makes it possible for UNI to retain its hybrid model of central IT services providing basic services and distributed IT units focusing on unit-specific needs, while providing the mechanism needed to improve communications, collaboration and unity across the institution.

The UNI Technology Council is charged to work with the CIO in these areas of responsibility:

- develop, implement, and monitor an IT strategic plan
- develop, implement, and monitor policies and procedures related to IT
- review, analyze, and prioritize IT projects across campus
- develop, implement, and monitor technical standards for IT across campus
- provide guidance and assistance with budgeting, funding, and procurement for IT activity on campus
- monitor the performance of tasks across central and distributed units, and help the CIO to actively manage the evolution between centralized and decentralized services

This group is different from previous campus-wide IT committees in that it is charged with actively participating in the development, implementation, and monitoring of information technology activities, projects, and directions. This group works with the CIO to lead IT on campus, not only react to others' initiatives.

Council membership will consist of representatives from each major unit on campus, including, but not limited to:

- College of Business Administration
- College of Education
- College of Humanities and Fine Arts
- College of Natural Sciences
- College of Social and Behavioral Sciences
- Continuing Education
- Rod Library
- Information Technology Services, including all divisions
- Division of Advancement
- Division of Administration and Finance
- Division of Student Affairs, including the Department of Residence

We believe that council with a mixture of IT staff and administrators could be most effective in carrying out its charge. (A recent model for this council is the Coordinating Council for Disability Accommodations.) To ensure broad participation, the council might have a rotating membership, with IT staff from some units and administrators from others in one cycle, and then roles reversed in the next.

The benefits of the Technology Council as described include:

- emphasizing and valuing a collaborative and service-oriented approach to IT
- providing the mechanism by which a campus-wide IT strategic plan can be developed and implemented
- providing the means for all stakeholders to have the necessary input into the decision making process.
- providing a mechanism for University officials to receive the information necessary for making decisions related to technology, including the prioritization and funding of major technology initiatives
- ensuring that specific initiatives are aligned with institutional goals
- encouraging the sharing of best practices in all areas of IT
- developing standards for processes of common concern, such as contingency planning and disaster recovery
- establishing a standardized process by which proposals for IT policies, guidelines, projects and services are initiated, evaluated, and prioritized against appropriate criteria
- helping to improve business processes and promote efficiency
- establishing a process by which IT providers from across the University may evaluate the effectiveness of their services and structure their services to best meet educational and business needs
- providing consistency in the areas of compliance, policies, and procedures

In sum, the Technology Council provides a collaborative body that can define and monitor the hybrid model of central IT services and distributed IT units. It can work with the CIO to develop guidelines for which services are best provided centrally and which services are best provided by the distributed IT units, and then it can help define how the distributed support model works on campus.

[5] ... the CIO work with the Technology Council to design the governance and advisory structure for campus information technology, considering not only the council's charge, but also the issues of communication and user involvement.

An effective way to build a shared sense of responsibility for IT across campus is to include both service providers and user groups in creating the organizational structure of IT and the governance bodies that will monitor and guide service providers.

[6] ... Information Technology Services establish two new units within ITS, an Information Security Office and a Project Management Office.

These offices report directly to the CIO, giving them visibility and autonomy from other units.

The Information Security Office elevates awareness and management of IT security across the campus and provides the means to establish security standards, provide training and counsel, and actively monitor and mitigate security issues. We encourage forming an IT security group consisting of IT professionals across campus, to explore new policies and to share technical standards and techniques.

The Project Management Office establishes a team of trained, experienced project managers for major initiatives on campus. We believe that this office will pay dividends through the development of project expertise and increased operating efficiencies on future projects.

Strategic Planning

[7] ... one of the CIO's first tasks should be to lead a campus-wide process to develop an IT strategic plan.

Individual IT units, including central IT, can create strategic plans for their futures, or participate in the strategic plans of their parent units. But the most effective way to lead the IT enterprise across the entire campus is to develop a plan for IT that encompasses all of the IT units in UNI's hybrid model. An IT strategic plan for the campus will enable individual IT units to make local decisions that help the university achieve institution-wide goals and encourage collaboration on projects outside the scope of any unit.

Appendix 5 includes a list of suggested goals and performance metrics that might be a starting point in the discussion of an IT strategic plan.

[8] ... the CIO and UNI Technology Council work to ensure that IT projects and expenditures reflect University values and priorities.

All major expenditures and new IT projects should directly support the UNI strategic plan, the IT strategic plan, or the strategic plan of the department, college, or division.

Funding Model

[9] ... the CIO and Technology Council work with the President and Cabinet to examine the funding sources for IT on campus and then develop a funding model that provides stable support for essential services.

Many IT services require a stable, ongoing funding stream, including:

- infrastructure, including network
- new initiatives with campus-wide effect
- investments in future technologies

Identifying or creating a stable funding stream is especially difficult for several reasons. First, some services are best provided by a central unit such as ITS, but often funding must come from distributed units. Second, much IT spending on campus is done using one-time funds, including end-of-year resources. Third, over time the nature of some funding streams can change, requiring continual monitoring and reevaluation. Finally, it is essential to balance funding for central services with funding for unit-specific operations and projects.

[10]... the CIO and Technology Council conduct a strategic audit of revenue and expenses, identifying patterns that would enable more efficient and effective acquisition and use of resources.

IT expenditures make up more than 8.64% of UNI's general fund appropriations, and perhaps much more. In order to best use these resources, we need to understand better how they are currently being used and how they are funded. This includes human resources, which are UNI's most valuable IT assets. The task force's analysis of IT expenditures is a start, but it does not reach the level of detail needed to make many decisions.

Many of the task force's recommendation require funding. Some should be funded with new allocations, while others will need to be funded through strategic reallocation of existing resources. Some recommendations, such as a Project Management Office,

obviously require dedicated resources. But many of the others do, too, such as the documenting and maintaining of best practices. Decisions about funding these and other IT initiatives can be made effectively only in the presence of a detailed understanding of the revenue sources and expenditures.

Technology

[11] ... the university develop a long-term plan for its network infrastructure. This plan must include a stable funding model for installation, maintenance, and upgrade.

Network infrastructure includes both wired and wireless networks, as well as the cable plant that supports the wired network.

Students, faculty, and staff now view network services and universal coverage as essential, not optional, to the academic and administrative functions of the university. Providing these services requires an *active* plan, rather than the reactive model under which the university has been operating.

[12] ... ITS outsource its provision of email and calendar tools, both for students and for faculty and staff.

To implement this action, a focused committee should be formed to consider alternative service providers and service-level agreement issues in detail and to make specific recommendations by February 2010 in order to avoid significant investment in the next generation of software and hardware for these services. Outsourcing should proceed in two steps, with student services moving first. This will give the university time to ensure that legal and regulatory issues involved with faculty/staff email are addressed before those services are moved.

E-mail was a frequent issue raised by faculty, students, and staff in the task force's survey of satisfaction with IT services. These days, though, email is but one component of a suite of collaboration services that include calendars, document sharing, interactive web sites, and other technologies. Decisions made in outsourcing email should take into account this broader context of collaboration, as well as possible services such as lifelong email addresses for alumni.

[13] ... the CIO then work with the UNI Technology Council to develop an institutional master communications plan.

This plan should address voice technology, social networking, video conferencing, and all of the methods by which these technologies intersect. One element of this plan might be a more active coordination among units on the selection of cellular voice / data technology providers and negotiation of cellular voice / data technology contracts. Another element might be to coordinate how UNI staff are reimbursed for the use of personal cell phones (voice / data) for University business. This would improve the consistency of policy across campus and perhaps result in opportunities to reduce costs.

[14] ... the university promote the virtualization of IT servers across campus. Virtualization offers the rare combination of campus-wide savings, an increased level of service and reliability, and a more sustainable model of resource consumption.

A virtualization plan must include a stable funding model for start up, maintenance, and upgrade. One of the challenges facing such a plan is that many units on campus now purchase servers with one-time moneys such as end-of-year funds, whereas a virtual server operation requires a steady stream of funding.

[15] ... the university develop a long-term plan for its multimedia and interactive classrooms. This plan must include a stable funding model for installation, maintenance, and upgrade of classroom technology.

Students and faculty now view multimedia classroom technology as essential to the academic experience of many courses. Providing such technology requires a plan that addresses issues such as selecting suitable technologies, standardizing where appropriate, and providing ongoing maintenance. As a part of this, the university should make deliberate choices of the percentage of classrooms providing interactive technology, the level of technology provided in each, and the room utilization rate for each.

Academic Research

[16] ... the CIO develop and maintain a university-wide inventory of research-related IT services and share with all principal investigators, department heads, deans, and the Office of Sponsored Programs (OSP).

The availability of information about IT-intensive research infrastructure is essential to achieve a vigorous research environment at UNI. This includes items such as large storage devices, backup services, computing clusters and supercomputers, very high bandwidth network connections, specialized software, other cyber-infrastructure, and electronic library materials. This inventory will support collaboration among faculty, students, and researchers across UNI and between UNI and other institutions.

[17] ... the CIO and UNI Technology Council work with the OSP and the university community to develop a sustainable funding model for research-related IT projects and infrastructure.

There are two key issues to address. First, funding for most existing research-related IT is project-driven, from short-term grants, and does not provide a source of support for long-term maintenance after the project is completed. Second, granting agencies have a reasonable expectation that indirect costs charged against funded proposals pay for some or most of the basic infrastructure needed for research. In UNI's current model, most infrastructure is paid for by direct costs charged to grants or by UNI IT units out of their standing budgets.

IT Expenditures

[18] ... all significant purchases of hardware and software include provisions for the total cost of ownership.

Funding for technology initiatives often provide adequately for acquisition and start-up costs but often do not include plans for ongoing costs (including operations, upgrades, maintenance, and security patches), disaster recovery, and system replacement. These costs can create a financial burden in future years. A prominent example is the use of building renovation funds to create multimedia classrooms, which must then be maintained either by the associated college or by ITS-Educational Technology.

[19] ... that software purchases be coordinated by the Office of Business Operations, in order to minimize cost and maximize access.

Central Purchasing offers a central point for collecting a list of software titles as they are purchased or subscribed to. Tabulating and reporting software purchases to campus

offers a number of benefits, including bulk purchasing, a more disciplined purchase of site licenses, and the sharing of subscriptions to vendor-hosted systems and vendor-supported services.

This recommendation concerns sharing, not approval or oversight. To support this coordination, we recommend that a web-based application be developed to inventory and report all software owned on campus and all site licenses available for campus use.

[20] ... the CIO work with the Office of Business Operations, ITS Administration, and other business organizations on campus to analyze annually each of the major IT expense categories, in order to identify opportunities to lower costs, standardize, and collaborate.

These categories (in recent years, Faculty / Staff Wages and Salaries and Equipment followed by Hardware and Software Maintenance, Phone / Cell / Internet, and Software) offer the greatest opportunities for saving and collaboration.

[21] ... within the next five years, Human Resources conduct an in-depth review of IT positions and responsibilities, in the context of services provided and market competitiveness. Thereafter, the CIO should request follow-up reviews periodically.

Such a review can help to validate salary equity and to identify optimal staffing levels necessary within each IT organization. We also encourage units to sustain the level of employment opportunities available to students whenever possible, even in tight budget times. These opportunities are an important part of the students' education and also helps to prepare potential future full-time staff.

[22] ... that every IT unit strive to provide opportunities for professional development and training to its IT staff members on an ongoing basis.

Technology changes quickly, and UNI must maintain an IT staff with current skills. Investment in staff is an enduring investment in university IT and helps to create a more stable workforce. In challenging budget times, we can consider cost-effective alternatives to traditional development and training (conferences, off-campus courses), such as teleconferences, on-line training courses, on-campus group training, and mentoring, coaching and sharing among UNI IT staff.

[23] ... the university review the student computer fee process, including how the funds are distributed to different units and the guidelines for how they can be used.

The distribution of funds should serve the institution's IT plan, and the guidelines for spending them should be flexible enough that units can address their greatest needs for student computing. Past use of the fee revenue has made some units "equipment rich and staff poor". The current guidelines create difficulties for some units (for example, free printing for students in labs supported by the fee.)

[24] ... the UNI Technology Council, in conjunction with Business Operations, collaborate to develop a document detailing best practices for determining whether to purchase a maintenance agreement.

The guidelines should identify criteria that organizations should use in determining when a maintenance agreements is necessary and should offer step-by-step guidance from the Office of Business Operations on how best to negotiate the agreements. In times of budget challenges, hardware replacement purchases are often delayed until well past vendor warranty expiration dates, resulting in an increase in spending in the maintenance. This makes careful planning for maintenance even more important.

[25] ... all existing hardware and software maintenance contracts be reviewed by IT organizations and Business Operations staff.

This review should be based on the inventory of equipment and the guidelines for maintenance agreement best practices. For critical systems with existing agreements, the review should consider potential renegotiation for volume discounts. For critical systems not covered by existing agreements, organizations should work with the UNI Technology Council to perform a risk assessment and then proceed accordingly. For systems that are important but not mission critical, we recommend that units partner to develop a parts depot from which replacement of common components can occur.

[26] ... the CIO work with the Office of Business Operations to maintain an inventory of IT hardware in use across campus.

A standing inventory can be used by IT units to standardize adoption where suitable, to coordinate purchases in other cases, and to share expertise in all cases. It should be possible to maintain this inventory through the existing process for the fixed assets

inventory maintained by Business Operations. The IT inventory could operate on a different timeline and would be primarily for the purpose of distributing information to the units, not reporting to an outside agency.

[27] ... the CIO work with the UNI Technology Council to conduct a campus-wide equipment standardization audit, identifying common vendors and configurations that would result in the ability to negotiate pricing and volume discounts with select vendors.

Standardization where appropriate offers benefits beyond potential cost savings: more effective collaboration across units, redundancy of support services, smoother integration of services when it is determined that they should be merged or consolidated, and recovery from disasters and other unexpected events.

[28] ... the CIO and UNI Technology Council seek and develop new ways to fund IT expenditures, including building projects, grants, and external revenue generation.

IT infrastructure, such as wiring closets, network switches, and wireless access points, are a legitimate part of building construction and renovation. Some units have brought in higher levels of IT funding via grants and, in conjunction with the OSP, could share their experiences. External revenue generating might include a computer repair center for personally-owned equipment, a computer supplies storefront for students, faculty, and staff, and enhanced resale of used equipment.

Business Process

[29] ... the CIO and UNI Technology Council form a committee of IT and business operations staff to study and modify business practices in order to provide accurate and comprehensive data.

The task force found it remarkably difficult to identify IT expenses apart from other campus operations. Improving business processes and system support will facilitate annual reviews of IT expenditure and increase the reliability of the data collected. See Appendix 4 for some specific suggestions regarding this recommendation.

[30] ... IT units partner with the Office of Business Operations to explore ways to improve the procurement process and to raise awareness of procurement regulations required of the University.

The goal is to balance two forces: the value of flexibility to the units in how and when they purchase equipment, and the value of reducing costs through coordination. See Appendix 4 for some specific options to consider.

[31] ... IT organizations, including the CIO and University Technology Council, collaborate more closely with the Office of Business Operations and adhere to UNI, Regents' and Auditor's procurement policies, procedure, expectations and best practices.

The university can improve data collection and reduce costs by further automating procurement processes, giving initial consideration to Oracle iProcurement, Document Imaging, and electronic forms routing.

Appendix 1. On the Task Force's Charge

President Allen's initial charge to the task force appears on the next page.

This report does not address every point in the charge. Among these are detailed recommendations for reorganizing campus IT providers to create synergies and for outsourcing services beyond email. The task force decided to submit its report now for two reasons. First, the study of existing IT services, satisfaction with IT services, and IT expenditures was complex enough to engage the task force for a full year. We think it is better to report now and allow the President and cabinet to begin working on our recommendations than to delay that process with more study. Second, we feel strongly that the new CIO and new Technology Council should take leadership over IT organization on campus and the prioritization and implementation of essential IT projects.

This report also does not address the issue of "IT compliance requirements with Federal and state laws, homeland security, and auditors". We did come into contact with compliance issues at various times in our study can report that our cursory consideration of IT compliance did not raise any red flags. However, these requirements involve not only information technology issues but also legal and financial standards. We recommend that the CIO monitor these issues closely and help to plan for satisfying these external constraints. We also suggest that any discussion of these IT compliance requirements should involve parties from across campus, including legal counsel and individuals involved with business process and user practices.

MEMO

Date: April 2, 2008

To: Eugene Wallingford, Belle Cowden, Michael Hager, Mark Jastorff, Shashi Kaparathi, Marty Mark, Marilyn Mercado, Steve Moon, Rick Seeley, Ramanathan Sugumaran, Jennifer Younie

From: Benjamin J. Allen, President *Benjamin J. Allen*

Re: Information Technology Task Force

Thank you for agreeing to serve on this task force to review a variety of issues associated with the provision of Information Technology (IT) services at the University of Northern Iowa. I am very pleased that Eugene Wallingford has agreed to serve as chair of the task force.

The charge of the committee is to evaluate the current state of IT in the context of IT needs of faculty, staff, and students. The process should be inclusive and collaborative, engaging key constituent groups as well as the broader campus community. The summary report and findings should provide recommendations that when enacted will position the University of Northern Iowa to support our strategic goals with a comprehensive, coordinated, and robust IT infrastructure.

During your review, I ask that you engage participants in an exploration of a number of issues, including:

- Identify any and all well-working components of the current IT system
- Determine and evaluate the value and efficacy of the current system
- Explain how the current system is used
- Identify any and all unmet needs
- Analyze and evaluate current funding streams and levels across the campus
- Investigate IT compliance requirements with Federal and state laws, homeland security, and auditors

The analysis of this input and best practices from other universities will provide insights on a number of issues, including:

- Which services should be offered centrally and which can be localized?
- Whether the current portfolio of services provided centrally should be realigned or expanded to better support the IT needs of campus?
- How the IT providers might be reorganized to create synergies that lead to improved services?
- Are there certain IT services that can be outsourced?
- What kind of process to use to prioritize and sequence future IT initiatives?
- What kind of metrics to use by which the efficacy of IT (in terms of delivery, cost, and impact) can be measured?

I ask that the task force provide me with its report of findings and recommendations by October 30, 2008.

Appendix 2. On the Current Portfolio of IT Services

Submitted along with this report are a collection of spreadsheets, one from each unit on campus, detailing an inventory of IT hardware, software, and services offered in each unit. These spreadsheets serve as a first step in defining a more complete picture of the portfolio of the assets and services offered across campus.

Table 2-1, on the next page, tallies the number of personal computers, servers, printers, scanners, and projectors in use in fiscal year 2008, as reported by IT staff. These numbers demonstrate the breadth and volume of hardware in use on campus and offer some insight into the scope of computing employed in daily operation of the university. They may also suggest opportunities for consolidation and cost savings.

One of the key issues in making a hybrid IT model successful, in terms of the services provided and the costs of providing them, is an effective distribution of services between central IT and the distributed IT units. UNI currently operates in a manner consistent with an Information Technology Support Guidelines document approved by the PPCIT in 1998, available at:

<http://www.uni.edu/its/admin/policies/guidelines.html>

We envision the Technology Council as the body charged with developing, monitoring, and revising guidelines such as these, and then monitoring the distribution of services between central and distributed IT.

In the course of collecting data about the IT portfolio on campus and discussing key issues, members of the task force identified a few possible suggestions for the management of IT services and products. In other cases, ideas were brought to the attention of the task force by others. They merit further consideration by a future group.

- Study current practices to determine whether and how processes for administering application software might be streamlined and made more consistent across campus. This includes research about new software, configuration and support for commercial packages, and the creation of custom software packages. Individual IT units may benefit from documenting and sharing knowledge and processes.
- Coordinate exploration of technologies such as Internet-based job postings, social networking, library collection management, and computer lab management.

Division	PC Servers	Apple Servers	Sun Servers	Linux Servers	Generic X64	IBM z800	PC Desktop	PC Laptop	Mac Desktop	Mac Laptop	Sun Stations	Total Computers	Total Servers	Total Servers and Computers	Printers	Scanners	Projectors	Large Displays LCD Plasma
CBA	8						312	24				336	8	344	118	25	25	4
ADV	15						100					100	15	115	50	3		
CHFA	4	4					370		260			630	8	638	366	23		
CNS	13	1	2				793	270	97	136		1296	16	1312	234	20		
COE	3	2					450	106	200	30		786	5	791	120	20		
Continuing Ed	1						41	3		2		46	1	47	13			
CSBS	10						403	65	7			475	10	485	191	18		
Price Lab	5	1					250	7	83	113		453	6	459	48	1		
Library	14		3				246	34				280	17	297	56	32	4	
Student Affairs	21						475					475	21	496	70	1		
VPAF	21						550		6	3		559	21	580	240	25		
ITS-NS	15		20		3	1	16	3	3	4	2	28	39	67	4			
ITS-US							525	2		6		533	0	533	18	8		
ITS-IS	31		13				67	2	1			70	44	114	5		1	
ITS-ET	8						18	97		8		123	8	131	8			
TOTALS	169	8	38	0	3	1	4616	613	657	302	2	6190	219	6409	1541	176	30	4

- Coordinate or consolidate efforts across campus in the areas of custom employee information databases, web site development, and web servers, including custom Sharepoint sites.
- Minimize costs of purchasing the following products through arrangements such as university-wide site licenses or bulk purchases.
 - SPSS
 - ArcView GIS
 - SAAS
 - Adobe Creative Suite
 - common security products
 - common administrative packages, such as Bad Copy Pro, Kill Disk Pro, Ghost, Active Undelete, Sassafras, and AdminStudio
- Coordinate efforts across campus in the areas of identity and credential management and virtual technologies.
- Catalog the technologies used to develop custom applications across campus and build a knowledge base.
- Find ways to share expertise for managing different kinds of hardware across campus, in order to meet the diverse needs of users without overwhelming the tech staff on campus.
- Coordinate efforts across campus in the areas of help desk ticketing and project management. Such coordination could include finding ways for support staff to share expertise and time, and using common software to monitor task lists and measure performance.
- Pay close attention to the availability of security patches when purchasing software and maintenance agreements for software. Some software vendors offer these patches at no extra charge, but others require software maintenance agreements be in place to obtain them. Additionally, some vendors cease to issue security patches when software products reach end-of-life or are no longer supported. As the number of software exploits continues to increase, IT staff must remain diligent in applying security patches to fend off attack and avoid the potential compromise of data.

Appendix 3. On Campus Satisfaction with Current Portfolio

Submitted along with this report are

- the survey forms used to gauge campus satisfaction, and
- the reports from Strategic Marketing Services (SMS) tabulating and summarizing the responses to the campus satisfaction surveys.

There is one form and one report for each group surveyed: faculty, students, staff, administrators, IT directors, and IT staff.

The reports from SMS contain a wealth of valuable information. The task force suggests that interested parties study these reports in detail for a sense of what is working well and what can be improved with regard to IT. This appendix provides a more complete summary of the data than that presented in Section 3 above.

Which IT services and support are working well for your area?

IT Directors

Responses were received from the directors of all four divisions of ITS and three directors from other areas: Advancement Division, Rod Library, and Student Affairs. One of the ITS directors responded that he/she is very satisfied with the current IT services while the other 3 responded as satisfied. All three of the non-ITS director responded that they are satisfied with the current IT Services.

The ITS directors reported infrastructure, learning management systems, grant acquisition, Oracle e-business suite, support, and user services as areas of satisfaction with current IT services and support. The non-ITS directors reported support (desktop and server) as well as security, software deployment, and stability of desktop applications as services and support working well in their areas.

IT Staff

Eighty-four respondents from information technology staff in all divisions across campus participated in the survey. ITS staff comprised 57% of the respondents and non-ITS staff comprised 43% of the respondents. A response of 'very satisfied' was noted by 20% of the ITS staff and by 17.6% of the non-ITS staff. Satisfied with the current services and supports was higher, with 52% from ITS staff and 55.9% from non-ITS information technology staff. A response of neutral was recorded for 18 % of the ITS staff and 17.6% of the non-ITS staff. Six percent of the ITS staff and 8.8 % of the non-ITS staff responded as unsatisfied with the current services and support. Four percent of

the ITS staff responded with a very unsatisfied response while none of the non-ITS respondents responded with very unsatisfied.

Computer systems and desktop and end-user support were reported most frequently, as well as highly competent and dedicated staff. Services indicated as working well by the IT staff include: networking; email; and server operation and maintenance.

Students

1,032 students responded to the survey, including all years from freshman through graduate students. The largest percentage of students responding were seniors comprising 33% of the students, followed by the juniors with 21.8%. 16.3% of the respondents were sophomores, 15.8% were graduate students, and 13.1% were freshman. In response to satisfaction with the current IT services and support the majority of students were either 'very satisfied' or 'satisfied'.

The following table depicts the reported results for each response by classification of student.

	Freshman	Sophomore	Junior	Senior	Graduate
Very Satisfied	14.8%	13.7%	15.1%	12.9%	17.8%
Satisfied	48.9%	66.7%	60.9%	65.1%	58.9%
Neutral	26.7%	12.5%	18.2%	16.7%	16.0%
Unsatisfied	4.4%	6.0%	5.8%	3.5%	4.9%
Very Unsatisfied	5.2%	1.2%		1.8%	2.5%

A common set of support and services identified as working well by all five classifications of students included computers and computer lab availability, Internet and Internet service, support staff, and wireless Internet. The sophomore respondents additionally reported printing and specifically free printing services as working well. The junior, senior, and graduate students also indicated printing and free printing services as well as WebCT, availability of software and programs, and password reset and password help as services working well.

Administrators

Responses were received from 15 academic administrators and 15 administrators in other units of campus. Two-thirds of the academic group and two-thirds of the other administrators said they were either very satisfied or satisfied with the IT services and support to which their areas currently have access. Neutral responses accounted for 26.7% and 20%, respectively, while 6.7% and 13.4%, respectively were either 'unsatisfied' or 'very unsatisfied'. The majority of satisfied responses centered around these topics: support staff, support services, in-house IT staff, email, web space, hosting, and support.

Staff

563 responses were received from staff in all divisions across campus. As would be expected, the majority of those responses came from Academic Affairs (41.9%), Administration & Finance (27.5%), and Student Affairs (24.2%). The P&S employee group made up 54.4% of the respondents with the remaining 45.6% coming from Merit employees.

72.3% of the respondents were either very satisfied or satisfied with the IT services and support currently available to them. The services receiving the most mention in this question are: calendar, desktop systems, email, internet, Memphis/Oracle, network, phone system, remote access, software, support services, staff, workshops, and training.

Faculty

437 responses were received from faculty. Of 52 respondents in CBA, 69.3% expressed satisfaction with current IT services. In COE, 66.4% of the 116 respondents expressed satisfaction. In CHFA, 89 faculty responded, with 49.4% satisfied. Of 94 respondents from CNS, 55.3% indicated satisfaction. In CSBS, 73.3% of the 71 respondents expressed satisfaction. Finally, 15 faculty from the Rod Library responded, with 80% indicating satisfaction with current services.

The services receiving the most mention by the faculty within CBA were classroom technology, support services/staff, desktop, and WebCT. Within COE the services with the most respondents were email, desktop, support services/staff, WebCT, and workshops/training. CHFA faculty most frequently mentioned satisfaction with classroom technology, email, desktop, support services/staff, and WebCT. CNS faculty most frequently mentioned satisfaction with email, internet, software, support services/staff, and WebCT. CSBS faculty most frequently mentioned satisfaction with classroom

technology, email, desktop, software, support services / staff, and WebCT. Finally, Rod Library faculty mentioned email, support services / staff, internet, and workshops / training.

Satisfaction with support services and support staff appeared prominently in responses of each of the 5 colleges and the Library. Satisfaction with email and WebCT appeared prominently in responses of 5 of the 6, and satisfaction with desktops appeared in 4 of the 6.

What IT-related difficulties do you encounter on a regular basis that make your job difficult?

IT Directors

The difficulties mentioned by ITS directors were calendar system reliability, effective IT resource management and allocation, lack of communication and teamwork, lack of departmental IT support for faculty, lack of funding, network operations, security, and support for mobile computing. The difficulties noted by the non-ITS directors were changes in remote subscription databases, lack of centralized standards; lack of time, and insufficient numbers of support staff.

IT Staff

The list of responses by information technology staff to this question were extensive; however, the most frequent responses by both the ITS staff and non-ITS staff included difficult communication and collaboration between ITS division and employees and insufficient staff to support demand. Additionally, ITS staff responded that usernames and passwords were difficulties encountered on a regular basis and non-ITS staff indicated lack of resources as an aspect of making their jobs difficult.

Students

Students in general responded that access to wireless Internet, passwords, and the Internet were difficulties they encountered on a regular basis. Additionally printing, software consistency and software issues, and email were indicated in response to this question.

Administrators

While there is a longer list of responses to this question the difficulties mentioned most frequently by administrators were email quota and support, ITS User services, passwords, frequency of change and multiple logins, software problems, and the calendar system.

Staff

The list of responses by staff to this question is quite extensive. The items mentioned most frequently were restrictive access privileges, passwords, the calendar system, desktop support, email, hardware, Memphis/Oracle, printing, server issues, software, support services, staff, and wireless access. It is interesting to note that items such as calendar, desktop, email, and support services/staff also appear on the list noted by staff as items which are working well for them.

Faculty

As in all cases, the CBA faculty listed a number of items where they have difficulties. The items repeated most frequently in this college were email, software, support services/staff, and network access from home. The COE faculty most frequently mentioned difficulties with restrictive access to administrative privileges, passwords, classroom equipment, outdated computers, email, lack of technology in classrooms, support services/staff, software, and wireless access. CHFA faculty most mentioned classroom technology, passwords, software, support services/staff, workshops and training, and wireless access.

CNS faculty listed email, software, support services/staff, passwords, and wireless access. CSBS faculty most frequently listed classroom technology, passwords, support services/staff, and wireless access. Finally, Rod Library faculty mentioned difficulties with email and printer malfunctions. The responses to this question are similar across colleges and the Library. Also, as with the staff responses, some items appeared to be working well for some faculty and to be causing difficulties for others.

What information technology improvements are needed on campus to better meet your needs?

IT Directors

Areas for improvement identified by ITS directors and non-ITS directors involved departmental and staff improvements and hardware and software improvements. ITS directors also noted a need for improvement in security.

IT Staff

The ITS staff most frequently noted as areas needing improvement better coordination and centralization of services, and easier and less frequent password changes. Non-ITS staff also indicated centralization and collaboration of services as areas of improvement in information technology on campus. Additionally a need for centralized data storage and centralization of servers and email were noted as needing improvement by this group.

Students

To better meet their needs students of all classifications most frequently mentioned wireless Internet service as an area of improvement. Newer and faster computers, longer password expiration periods, software consistency, printing, email, and computer lab availability were also indicated in the student responses as areas in which improvements could be made.

Administrators

This group of respondents most frequently listed the following improvements fewer logins, less password changes, a better student information system (SIS), instructional design for students, customer directed service/ more responsiveness to data needs, software for 3D animation, imaging and workflow management, more staffing, more efficient use of technology, and strategic plan for centralized and decentralized services.

Staff

The staff frequently noted as most needing improvements email, document imaging, Oracle, passwords, software, SIS, support services and staff, availability of training workshops, updates and upgrades, PDA support, and wireless access.

Faculty

CBA faculty most frequently mentioned improvements needed to support for research, media in all classrooms, email, support services/staff, and support for telecommuting. CHFA faculty mentioned the need for better and more labs for courses, centralized technical support, email, infrastructure, passwords, software, support services/staff, technology in all classrooms, wireless access, and workshops/training. The following items were mentioned by the COE faculty: access to current technology, updates and downloads without administrative rights, email, newer equipment, passwords, software, support services/staff, technology in all classrooms, WebCT, wireless access, and workshops and training. CNS faculty most often mentioned access to mainframe, MEMFIS, SIS, updates and downloads without administrative rights, email, software, server space, passwords, support services/staff, technology in all classrooms, and wireless access. The CSBS faculty suggested improvements to email, passwords, support services/staff, technology in all classrooms, workshops/training, software, and wireless access. Finally, Rod Library faculty mentioned email, support services/staff, and wireless access.

Group-Specific Questions

The following paragraphs share the results of the responses to a number of similar questions that were asked of the information technology staff and the directors.

The IT staff and the directors were asked to describe the process for prioritization of IT-related projects and initiatives. They responded that directors, department heads, and committees set priorities and that consideration for potential usefulness to faculty, staff and students is involved in the process. The ITS directors reported that the process involves observed and requested needs of individuals, budget allocations towards efforts, the strategic plan (which sets high-level priorities for three years), and the Programming Authorization Request (PAR) process, in which requests are initiated by a division and then prioritized in several ways. Non-ITS directors described a process involving evaluation of the impact on departmental, division and University goals; review of on-going commitment of time and resources (both human and financial) for the project; and evaluation of how the project affects students or services offered to students by divisional staff directly. Specific reference was made to the Rod Library IT and the Electronic Resources Committee constantly monitoring new developments and how they might apply to the study and research needs of the UNI community.

The second question that was posed to both the IT staff and the directors was about which IT services could be best provided by a central IT unit on campus. The lists

generated from this question were quite extensive. IT staff most frequently mentioned business and administration applications, and email. Ten respondents from the ITS staff (21%) responded that all services could be best provided centrally. Non-ITS staff listed network services and infrastructure as their predominant responses. ITS directors gave an extensive list, including network operations, document management and imaging, education and training, email services, and help desk assistance for general applications. Non-ITS directors indicated calendar and email as services best provided centrally.

Another question that was posed to both the IT staff and the directors was about which IT services could be best provided through outsourcing. The most frequent response by ITS staff was none. Both the ITS staff and the non-ITS staff identified email as a potential technology to outsource, and each specifically noted student email. IT directors listed a number of services, with only student email listed by multiple respondents. The list includes email, calendar, file sharing with Google applications, help for learning management system, network and active directory designing, and telecommunications.

The final question addressed to both the IT staff and IT directors was how the position of the Assistant Provost for Information Technology, which is currently vacant, should be structured to best serve the needs of the campus community. The most frequent response from both ITS and non-ITS staff was that the position should lead all campus IT-driven decisions and priorities. Further, the ITS staff indicated that the position should advocate for streamlined or centralized IT services and that the position should be at the cabinet-level. The ITS directors unanimously reported that the CIO position should report directly to the President. Three of the four ITS directors responded that the position should be a cabinet-level position and that the position should have a high level advisory group that reviews and prioritizes all campus IT projects. Finally, two of the four ITS directors noted that the CIO position should have authority over all IT initiatives on campus. Individual responses to this question from the non-ITS directors included a need for the person in the position being able to work with diverse user groups, a CIO position reporting directly to the President, and the need for the position to be filled with a strategic thinking leader as soon as possible.

Several specific questions were posed to the students in this survey regarding UNI email. The first question asked which email account they use for their primary email. A majority of undergraduate use their UNI email as their primary account, but only 48.8% of graduate student use UNI email as their primary account. A follow-up question asked why UNI email is not used. Students frequently mentioned ease of use for accounts from other providers, existence of a previously-established email account that

contains contacts and information, lack of a permanent UNI email address, insufficient quota for UNI email, a cumbersome login process to UNI email, and the reliability of UNI email. Many indicated forwarding their UNI email to an established account to avoid having two accounts to check daily. The final email-related question asked if they would value having a @uni . edu email address after graduation. 68.5% responded yes, with reasons that indicating that they would not have to switch contact information to a new account after graduation, their contacts would already know this address, it is more professional or respectable to have a creditable email address, and they want to stay informed and receive updates from UNI. Some like how the UNI email system works and would use a UNI email address to maintain contact with professors and other graduates. Those who responded no to this question gave reasons that included not needing it after graduation, preferring other account, planning to have an account provided through their employers, not wanting their email to be affiliated with UNI after graduation, and thinking that UNI address for alumni is deceptive or misleading.

The final question posed specifically to the students asked whether they would be willing to pay a higher student computer fee for a broader range of services. 40.5% responded yes, 12.7% responded no, and 46.8% responded maybe.

Administrators were asked what IT services could be best provided by a central IT unit. Answers varied across both. Items receiving multiple mention were email, multimedia classrooms, SIS, websites, purchasing of PCs, systems administration, and security. All of the items mentioned warrant consideration for centralization. This group was also asked what IT services could be best provided by outsourcing. Several suggestions were received, with student email being the most frequent. Some commented against outsourcing any services.

When asked whether they were satisfied that their areas' IT projects and priorities are being addressed, 46.1% of academic administrators and 54.5% of other administrators were satisfied; 46.2% and 27.3%, respectively, were neutral; and 7.7% and 18.2%, respectively, were unsatisfied. Additionally, 38.5% of the academic group and 54.5% of the others responded they do not have access to the necessary funding sources to adequately purchase, implement, and support their area's IT needs.

Administrators were asked for their view on how the Assistant Provost for Information Technology position should be structured to best serve the needs of the campus community. The responses are diverse and often in conflict with one another. These responses and those received in response to the question, "If you could make one change to improve information technology at UNI, what would that be?", should be

studied as the assistant provost position is filled and the organizational structure of IT is evaluated for restructuring.

Staff were asked how much they think their IT needs will change over the next two years. 20.2% responded their needs will change greatly, and 54.1% responded that their needs will change 'somewhat'. A number of reasons were given to explain why the IT needs will change greatly. Some of these responses echoed responses to the earlier questions related to difficulties and needs for improvement. Most all of the responses to this question were expected or routine; there were no surprises. The responses to what one change should be made need to improve IT should be studied closely. There seem to be some needs which could be addressed now with little cost or effort, thereby improving staff use of IT and staff satisfaction.

Faculty provided a variety of responses to why they believe the IT needs in their area will change greatly. Some of the responses related to IT changes that will affect course delivery and discipline-specific learning. This group also gave many responses to the question concerning one change to improve information technology, which should be studied as areas to be addressed.

Appendix 4. On Costs Associated with Current Portfolio

Submitted along with this report are a collection of spreadsheets, one for each unit on campus, detailing expenditures related to for the fiscal years 2006, 2007 and 2008. For a more complete picture of the cost of IT at UNI, refer to these spreadsheets.

The process of collecting and analyzing this data was not straightforward, given the complexity of the university, the distributed nature of IT, and the business processes used to record transactions. To put the task force's work into context, this appendix explains how the data was obtained, outlines some of the limitations placed on our analysis by the data, and suggests some ways in which the university could improve its business processes to make understanding the costs of IT more transparent.

This appendix closes with a few options to consider when examining the procurement process for IT equipment and services.

Data Collection Process

The data used in this analysis was drawn from the following sources:

- UNI Oracle Financial System
- Facilities Services Cost System
- US Bank Procurement Card Reports
- Gilchrist Fire Expenditures Recording System
- State of Iowa Travel Report

The task force took these steps in the process of collecting and analyzing data:

- defined which expenditures would be considered IT-related for the purposes of this report
- extracted detailed transaction data from the Oracle Financial System
- distributed the definitions and the data to procurement professionals in each unit, who then
 - reviewed the transactions manually, identifying those that were IT-related
 - validated IT staff member information, including FTE and salary/benefit data
 - provided student employment expenditures for their units
- reviewed manually all job cost transactions and custom reports (for example, conference/training registrations, Gilchrist fire expenditures, and State of Iowa Travel Report) and identified those that were IT-related
- compiled all data, organized it into meaningful categories, and analyzed the information

- worked individually with staff from Business Operations, Budget Development, Financial Accounting & Reporting, Human Resource Services, and ITS Administration to review findings and discuss potential improvements
- researched Gartner Group and Educause publications related to professional development expenditures
- proposed recommendations

Conditions and Limitations

Several task force decisions and organizational facts set the scope of the resulting analysis:

- *Actual and Budgeted Amounts:* FTEs and salary and fringe benefit data for IT staff reflect budgeted amounts, not actual expenditures. The IT Task Force decided it was essential that the intentions and needs of each IT organization be reflected in the report. All other figures reports are actual expenditures, not budgeted amounts.
- *Revenues:* The report focuses on expenditures and does not include revenue figures. As a result, these data do not provide a full accounting of internal and external chargebacks, particularly among IT units.
- *Organizational Changes.* Changes have occurred over the course of the three fiscal years studied that affect the report to varying degrees. For example, Academic Advising and the Academic Learning Center appear in fiscal year 2008 only. The Gallagher Bluedorn Performing Arts Center expenditures are reflected in the VPAF organization, though the department was previously affiliated with the College of Humanities & Fine Arts.
- *Funding and Reporting Structure.* Some organizations fund salaries and benefits for IT staff that report to ITS. In the task force report, these expenditures are associated with the funding organization, rather than ITS.
- *Oracle Financials (MEMFIS).*
 - ITS staff salaries and benefits are funded by Administration and Finance, yet appear in the ITS staffing section of the report. In fiscal year 2010, these funds will be transferred to ITS allowing expenditures to follow the organizational structure.
 - Oracle Financials operational costs have been transferred to ITS and appear as ITS expenditures.

- *Building Renovation.* IT-related building renovation activities are not included in the report. Examples include telecommunications wiring closets, consolidated data center expenses such as the Gilchrist data center, and IT office space. Typical project expenses include:
 - fiber optic, ethernet, and voice cabling
 - conduit
 - cable trays
 - electronic doors and access
 - security: cameras, monitoring equipment, recording devices
 - power metering system
 - wireless devices and access points
 - labor to install the technology
 - projectors and screens
 - environmental control technology
 - data center expenses such as UPS and generators

- *Gilchrist Fire.*
 - The university purchased equipment during the fiscal years under analysis to replace equipment lost in the Gilchrist fire. These purchases have disrupted the equipment replacement cycles in Administration & Finance, Student Affairs, Compliance & Equity and a portion of ITS managed devices and so have affected equipment purchase trends reported here.
 - The University job cost system reports that renovation and cleaning budgets paid ITS for various services. This appears as an expense in the Gilchrist fire report. However, it could also be considered revenue, as the insurance company paid ITS for these services. This is not reflected in the report.

- *Specialized Technologies and Infrastructure.* Various specialized technologies supported by IT staff do not appear in the report. These technologies may have been funded by gifts, may be part of a larger project, or may be defined as building infrastructure components. Examples include the UNI-Dome video board, full motion video uplink support for athletic events, building temperature controls, fire alarms, electronic key system, and surveillance cameras.

Improving Business Processes

In the course of collecting expenditure data, the task force encountered several difficulties that might be eliminated with changes in business processes and practices. The task force suggests that the committee including representatives from:

- Business Operations
- Financial Accounting and Reporting
- Budget Development
- ITS Administration
- UNI Technology Council
- representatives of the university clerical staff

might work together on this issue. This section offers some ideas for how that committee might approach the task.

First, the committee should develop a clear definition of what is considered an IT expense and a clear definition of what information is necessary for analyzing IT expenditures. While ambiguity will likely remain, such definitions could be used to help ensure that the necessary data are captured as part of modified business process.

These are some of the issues concerning concerning business processes that the task force identified or had brought to its attention. The task force suggests that the new committee consider them as possible paths to improvement:

- The establishment of IT accounts in each division and college. An 'Activity Code' has already been established, Info Tech Costs, but it is not being used across campus. This code would be part of the account string and facilitate pulling such costs from all divisions. As an example, many areas have an IT staff person as part of their regular departmental account. This change would move that person or persons and an S&S budget to this new account.
- The establishment of a centralized IT chargeback account. Such an account would be used to coordinate purchases of PCs, software, servers, and the like, and would charge these expenses back to the requesting department. This could be setup so this account would actually capture the majority of the big ticket items. Such an approach would obviously take some campus wide training and purchasing policy challenges but could be very effective.
- A complete review and update of the existing object codes and the potential establishment of new, unique object codes for larger IT expenditure categories.
- A review of purchasing item category code functionality and vendor listing reports for tracking IT related expenditures.
- Collaborate with US Bank to provide more detailed information on procurement card statements.

- Development of a new report that consolidates travel expenses and 61950 registration object code, providing a full accounting of professional development expenditures.
- Job Cost – A review of how project expenses are recorded, ensuring that IT related expenses can more easily be extracted from overall project costs.
- Review and suggest improvements for improving the method by which student employment expenses are managed and reported on.
- Offer business process suggestions on how to better ensure that expenses reside in the organization ultimately purchasing the product or service. For example, using Foundation funds, Quickbooks was purchased for Event Center Management. The expenditure doesn't reside with Administration and Finance, it appears with the Advancement organization.
- Recommend how best to record expenditures affiliated with major projects, ensuring that total project costs can be obtained without manually drawing from numerous sources (i.e., Oracle Financials, Student Information System, etc).
- Automate method by which IT related Gift-in-Kind/Tradeouts can be obtained. Advanced considered these gifts an expense as the University would have purchased the item had it not been donated.
- Uniformity in Processing Common/Standard Transactions. For example, organizations transfer Microsoft Campus Agreement funds to ITS in various methods (budget fund transfer, journal entries), making it very difficult to affiliate the expense with the actual purchasing department.
- Use of their procurement card whenever possible for making IT purchases. This eliminates many steps from the purchasing process (such as requisition, creation and submission of a purchase order, and receiving) and reduces the overall cost of procurement.
- Provide regularly offered training courses for University staff, including but not limited to the following:
 - the correct use of object codes and the importance of selection.
 - the use of new accounts or business processes developed by the committee
 - the importance of coding transactions accurately

Ideas for the Procurement Process

In the course of analyzing expenditures, the task force identified several possible ways that IT costs might be reduced in the course of procurement. We suggest that the CIO and Technology Council might want to revisit these as possible paths to improvement:

- bid process
- buying groups, including the K-12 technology consortium
- State and Regents contracts
- vendor master contracts
- purchasing master agreements with common vendors, such as:
 - Dell
 - Apple Computer
 - Iowa Business Machines
 - CDWG
 - Pratt Audio Visual
 - Advanced Systems
 - Best Buy
- cellular technology providers
- "standard volume" and "volume over time" agreements
- purchasing partnerships with Iowa State University and the University of Iowa
- reduction in the number of vendors by combining volume for better pricing
- identification and use of special educational pricing-based web sites, such as CDWG and Best Buy
- commodities purchasing opportunities, such as combining numerous orders for flash drives and external storage devices
- increased use of amortization accounts for the replacement of major systems, such as in video editing for Athletics, and backup devices
- identification of a purchasing agent on the Business Operations staff to specialize in making IT expenditures and identifying university-wide IT purchasing trends
- more detail provided in the area of internal chargeback transactions

Appendix 5. On Recommendations

The task force views its primary charge most broadly as helping to facilitate the use of information technology to enhance UNI's effectiveness and efficiency in fulfilling its mission. Here, we enumerate a few of the high-level goals that the task force sees for IT at UNI, along with several steps the university is now or should be taking in order to achieve these goals:

- facilitate the use of information technology to achieve the President's enrollment targets
 - implement the new student information system (SIS), to improve student recruitment and retention
- enhance the student experience at UNI
 - outsource and provide state-of-the-art email and collaboration tools
 - improve wired and wireless network coverage
 - support UNI's distance education goals through the use of technology
 - support e-learning solutions to complement existing classes and online classes
 - improve academic planning tools
 - support a digital library for complementing brick and mortar facilities
 - maintain ubiquitous access to computer systems and offer timely support
 - use technology to enhance the student experience 24/7 (on-campus, in residence halls, and off-campus)
- enhance the faculty experience at UNI
 - facilitate the use of technology in the classroom
 - facilitate the use of technology in the office and timely support
 - facilitate the use of technology to complement on-campus classes and impart small class advantages in large classes
 - improve faculty business processes, such as the curriculum process, academic program review process, and collaboration tools for committee work
 - improve research productivity
 - provide user-friendly full-text access to periodicals
 - support grant acquisition and administration
 - support technology-related research endeavors
- enhance administration's efficiency and effectiveness
 - strive towards a "paper-less digital" campus
 - drive business process improvement
 - provide user-friendly financial and other reporting and data-driven decision support tools

- provide assessment and evaluation tools and key performance indicators for all academic and non-academic units
- ensure prompt discovery and fixing of security flaws, confidentiality requirements, and legal compliance
- use technology to support UNI's commitment to community and economic development and outreach efforts
- develop a green IT infrastructure and support UNI's sustainability goals

Developing a complete framework of goals and action steps for IT at UNI is an essential part of the strategic planning process. Recommendation 7 above calls for the CIO and Technology Council to undertake strategic planning for IT among their first activities.

As part of developing a strategic plan, the CIO and Technology Council should identify metrics for accomplishing the plan's goals. Some key performance indicators for these goals might include:

- mean and maximum response time on service requests
- incidence of downtime and maximum downtime
- percentage of hardware replaced or upgraded each year
- various measures of user satisfaction
- number of accesses to electronic journals and other e-resources

Several of the task force's recommendations support a model of campus sustainability, including server virtualization and improvements to business process. As a part of future planning for IT, the following technologies warrant further consideration:

- consolidated data centers
- virtual desktop technology
- a campus-wide approach to energy-saving hibernation modes for desktops
- standard energy savings settings for printers and other office equipment
- remote access solutions that allow staff to work from off-campus
- use of e-books instead of traditionally printed texts
- document imaging, to reduce paper usage and centralize document storage
- technologies to support collaborative work both on campus and with external partners