University of Washington

Campus IT Costing Study

Final Report

March 29, 2012

Prepared by

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Executive Summary

Purpose of the Engagement

The University of Washington (UW) engaged WTC Consulting, Inc. (WTC) to identify the IT services provided by 47 academic and administrative units, the fully-loaded cost of each service, and possible cost savings[1] and service improvements.

Approach

Three teams were used to promote communication and engagement continuity: the Core Functional Group to provide feedback on findings and make recommendations to the Steering Group; the Steering Group to select the participating units, monitor progress, and make recommendations to the IT Costing Oversight Group; and the IT Costing Oversight Group to provide leadership and set direction and priorities. The engagement approach included the following steps:

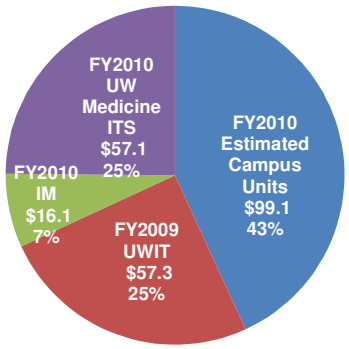
In steps 1 and 2, WTC interviewed IT directors or managers in each unit to document IT services, customers served, equipment and applications, and costs including detailed allocation of staff time.

In steps 3 and 4, the 47 units were organized into six groups based on size and their classification as an academic or administrative unit. Costs were documented based on 120 building blocks, and then summarized into 24 categories to make the review more manageable. Examples of these 24 categories are server management, application support, network, and end-user devices.

Findings and Recommendations

IT groups in the 47 units spent $44.59 million in FY 2010. These 47 units represent about 45% of the faculty and staff served by distributed IT across campus. The estimated FY 2010 extrapolated expenditure for all campus units is $99.1 million. The proportion of this cost as part of the campus whole is illustrated in Exhibit I.

Exhibit I
Annual IT Costs
Academic and Administrative Units
as Portion of Total Campus IT



229.6 Million Annual Costs
1.1 Billion Five-Year Steady-State Estimated Costs

Notes: Costs do not include major capital projects or utilities. UW Med ITS costs do not include some distributed IT in the medical centers. UW Med ITS FY11 and FY12 costs will be higher because some of these distributed systems are now within UW Med ITS. Campus Units include School of Medicine.

Based on an extrapolated five-year costs of $495 million for all campus units, WTC projects a five-year cost savings for all campus units of $79 million through improvements in 1) servers and storage, 2) end-user devices, and 3) shadow administrative systems. Additionally, WTC believes important service improvements can be realized in 1) learning management and 2) email and calendaring.

WTC recommends UW make fundamental changes in IT management practices, and promote cost savings and service improvements through a strategy based on *incentives, consolidation, and sharing*. WTC also recommends UW adopt a new approach to IT governance to create a comprehensive strategy for IT that supports the individual needs in campus units while allowing the entire organization to better manage and receive the greatest value from its significant IT investment. Key to this governance process is sponsorship at the most senior academic and administrative levels.

[1] The potential cost savings identified in this report are defined as an opportunity for reducing the specific cost of the services studied, across the institution. It does not necessarily follow that units will see a reduction in expenses related to IT support, and they may see a shift in expenses from personnel to service costs, or could see an increase in expenses if resources were redeployed to other higher-value IT services. Also, some savings such as reduced utility costs associated with reducing the number of servers would not normally be reflected in campus unit budgets. However, whether cost savings flow to the unit's budget or not, the savings are real and do allow for the more efficient use of strategic IT resources in aggregate across the institution.

1 Purpose of the Work

University of Washington (UW) engaged WTC Consulting, Inc. (WTC) to document the IT services provided by a selected group of academic and administrative units identifying costs of providing services, service overlaps, service gaps, and potential cost and service improvements.

2 Engagement Teams

Following are the engagement teams participating in the engagement process.

2.1 Core Functional Group

The Core Functional Group participated in development of planning assumptions, provided feedback regarding findings throughout the process, and reviewed and provided feedback on recommendations to the Steering Group. The following individuals were members of the Core Functional Group.

- Scott Barker, IT Director, Information School
- Betsy Bradsby, Director of Cost Accounting & Analysis, Finance and Facilities
- Richard Coffey, IT Director, Physics Department
- Chris Cunnington, Department Administrator, Computer Science & Engineering
- Tim Hunt, IT Director, School of Social Work
- Kole Kantner, IT Director, Evans School of Public Affairs
- Kevin Loranger, Software Engineer, Mathematics
- Linda Nelson, College of Arts and Sciences, Project Lead
- Barb Prentiss, IT Director, School of Medicine & Director of Finance & Administration, Pathology
- Mark Rector, Director of Computing, School of Art
- Marnae M. Schmidt, Director of Finance & Business, School of Law
- Catherine Taft, Director of Finance & Administration, School of Nursing

2.2 Steering Group

The Steering Group provided direction on selection of the campus units participating in the study, reviewed and assisted with campus communications, provided feedback on planning assumptions and the engagement approach, and provided recommendations to the IT Costing Oversight Group. The following individuals were members of the Steering

Group.

- Sue Camber, Financial Management, Steering Group Lead
- Linda Nelson, College of Arts and Sciences, Project Lead
- Susan Astley, Center on Human Development and Disability
- Harry Bruce, The Information School
- David Eaton, Office of Research
- Jim Fine, UW Medicine ITS
- Eric Godfrey, Student Life
- Jim Jiambalvo, Foster School of Business
- Ruth Mahan, UW Medicine
- Matt O'Donnell, College of Engineering
- Gary Quarfoth, Office of Planning and Budgeting
- Marla Salmon, School of Nursing
- Pat Spakes, University of Washington, Tacoma
- Kelli Trosvig, UW Information Technology, Ex-officio
- Sara Gomez, Office of Information Management, Ex-officio

2.3 IT Costing Oversight Group

The IT Costing Oversight Group provided leadership and direction on business objectives and priorities during the engagement. The following individuals were members of the IT Costing Oversight Group.

- Tom Baillie, School of Pharmacy
- Jim Fine, UW Medicine ITS
- Paul Jenny, Office of the Provost
- Ed Lazowska, Computer Science & Engineering
- David Lovell/J. W. Harrington/Susan Astley, Faculty Senate
- V'Ella Warren, Finance and Facilities
- Ann Anderson, Financial Management, Ex-officio
- Sue Camber, Financial Management, Ex-officio
- Kelli Trosvig, UW Information Technology, Ex-officio

2.4 WTC Engagement Team

- Ann-Marie Lancaster, Engagement Manager
- Dean Oyama, Consultant
- Janet Womack, Consultant
- Ginny Schroeder, Practice Director
- Phillip Beidelman, President

3 Approach

3.1 WTC initiated the engagement by working with UW to establish the engagement teams. Next WTC worked with the engagement teams to develop a set of planning assumptions that formalized the understanding of the engagement scope. These planning assumptions addressed 1) expected outcomes, 2) campus units participating in the costing study, and 3) service profile elements. Following are the service profile elements identified during this process:

- Service description.
- Key service features or characteristics.
- Customer groups and programs served.
- In-house applications and tools supported.
- Third-party applications and tools supported.
- Third-party service providers.
- Service delivery challenges.
- Planned service changes and goals.
- Costs.

The final draft of the planning assumptions document accompanies this report.

3.2 The costing study was conducted in two rounds with 24 units participating in the first round and 23 units participating in the second round. During each round, WTC completed the following steps:

Step 1: WTC submitted a start letter to the participating units requesting existing documentation in the following areas:

- Organizational chart for the IT group.
- IT staff and their roles.
- IT services supported.
- Inventory of servers and applications supported.
- Inventory of end-user devices.
- Classroom and conference room technology.
- Instructional and research labs.
- Spaces housing servers, storage, other equipment.

Step 2: WTC conducted a series of interviews with each IT director or manager through a combination of on-site interviews and web conferences to complete each unit's service profile.

3.3 Throughout the engagement, WTC met with the engagement teams to present and discuss intermediate results.

3.4 After completing an initial draft of the our findings and recommendations, WTC conducted three 3-hour sessions to present and discuss these findings and recommendations with the following groups: 1) academic unit participants, 2) administrative unit participants, and 3) campus IT directors.

3.5 Finally, WTC met with the three engagement teams to present and discuss the final version of our findings and recommendations.

4 Campus IT Costing Study Participants

Forty-seven units participated in the costing study. For presentation of the results, the costing study participants were grouped in the following way:

4.1 Large Academic Department Participants

- Computer Science Engineering
- Earth and Space Sciences
- Electrical Engineering
- Genome Sciences
- Pathology
- Physics
- Primate Center
- Dean’s Office, School of Medicine

4.2 Medium-Size Academic Department Participants

- School of Art
- Dean's Office, College of Arts and Sciences
- Biostatistics
- Civil and Environmental Engineering
- Health Services
- Math
- Pediatrics

4.3 Small Academic Department Participants

- Economics/Sociology/Philosophy

- English
- Global Health
- Human Centered Design & Engineering
- Microbiology
- UWT Institute of Technology
- Rehabilitation Medicine

4.4 Large School and College Participants

- College of Built Environments
- Foster School of Business
- School of Nursing
- University Libraries - Seattle
- UW Bothell
- UW Tacoma and UWT Library

4.5 Medium-Size and Small School and College Participants

- College of Education
- Information School
- School of Dentistry
- School of Law
- School of Pharmacy
- School of Social Work
- School of Public Affairs

4.6 Large Administrative Unit Participants

- University Advancement
- Educational Outreach
- Housing and Food Services
- Human Resources

4.7 Medium-Size and Small Administrative Unit Participants

- Intercollegiate Athletics
- Environmental Health and Safety
- Facilities Services
- Student Fiscal Services
- Graduate School
- ORIS - Internal Operations
- Student Financial Aid

5 Examination of Costs

Throughout the study, costs were organized in the following three ways:

- Basic Product and Services (BPSE): Product or service needed to deliver a line of business. There are 120 BPSEs in this cost study.
- Line of Business (LOB): Service delivered to customers.
- Cost Category: Groupings of BPSEs used for cost analysis. There are 24 cost categories in this study.

The mapping of BPSEs to cost categories is defined in Attachment I. The cost categories are identified in Table I.

Table I
IT Costing Study Cost Categories

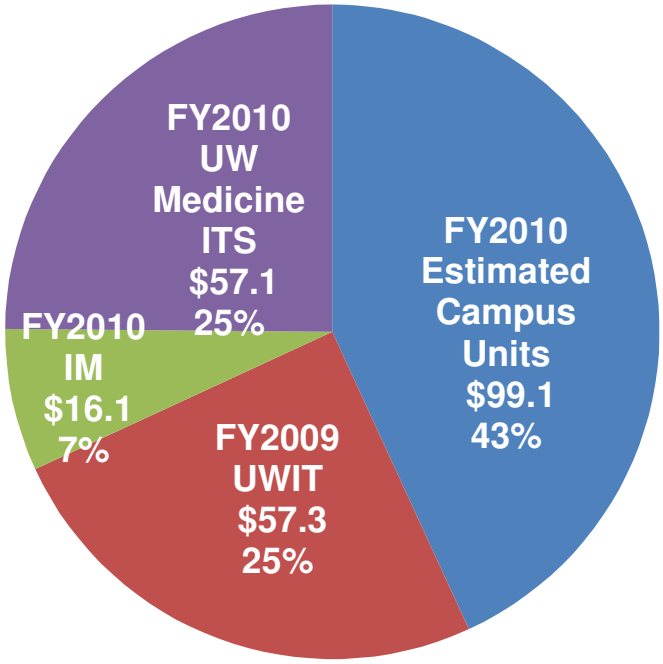
#	Category	#	Category	#	Category
01	Application Development	09	Email and Calendaring	17	Procurement and Asset Management
02	Application Support	10	End-User Devices	18	Project Management
03	Classrooms and Student Labs	11	Files and Storage	19	Research Facilities
04	Communications and Collaboration	12	Help Desk and Training	20	Research, Planning, and Development
05	Data Center	13	Interactive Media	21	Security
06	Data Management and Reporting	14	Network	22	Server Management
07	Directory Services and Access Management	15	Policies and Standards	23	Specialized Services
08	Educational Technology	16	Printing	24	Web Services

6 Summary of Costs

The 47 units participating in the costing study spent $44.59 million in FY 2010. Members of the engagement teams estimated that the faculty and staff in these 47 units represent approximately 45% of faculty and staff served by distributed IT across campus. Members of the engagement teams also agreed that it was reasonable to use this estimate for extrapolating expenditures in distributed IT across the campus. Based on this representation, the estimated FY 2010 extrapolated expenditure for all campus units is $99.1 million.

Exhibit I illustrates the total expenditure of academic and administrative units as a percentage of the total institutional cost for information technology identified in this costing study and previous WTC costing studies.

Exhibit I
Annual IT Costs
Academic and Administrative Units
as Portion of Total Campus IT



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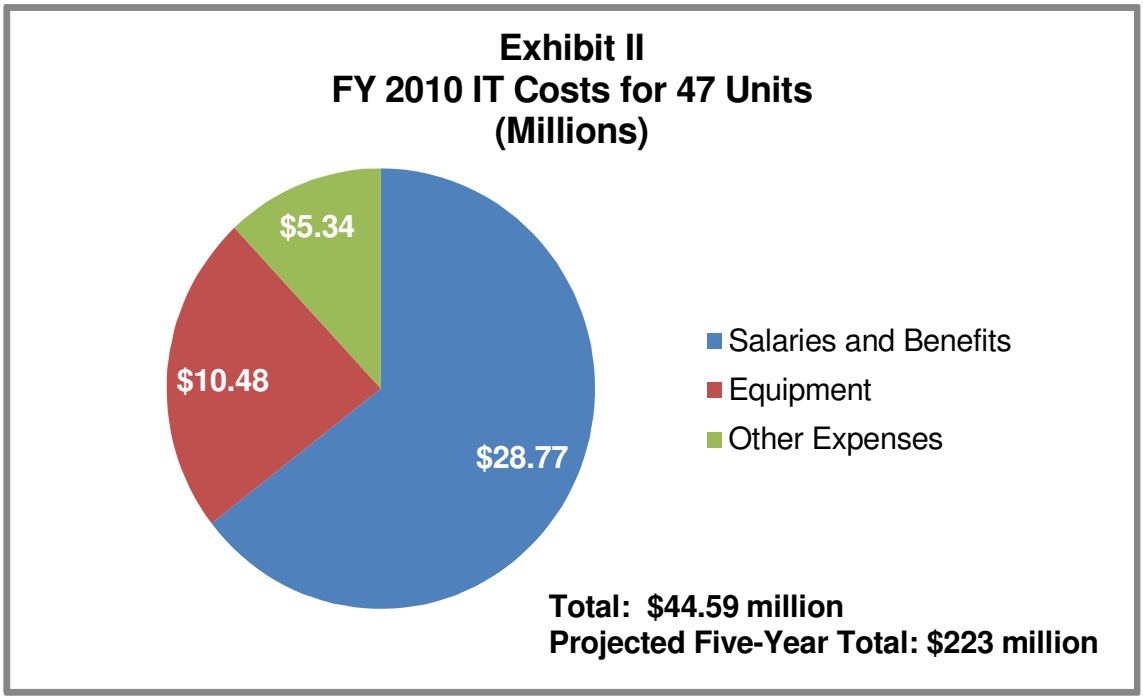
7 Potential for Cost Savings

Exhibit I above summarizes the IT costs incurred by units as a function of overall campus IT spending. The balance of this report focuses on 1) the results of studying the 47 units and 2) an extrapolation of potential cost savings for all campus units.

Exhibit II provides a summary of the FY2010 IT costs for the 47 academic and administrative units participating in the costing study.



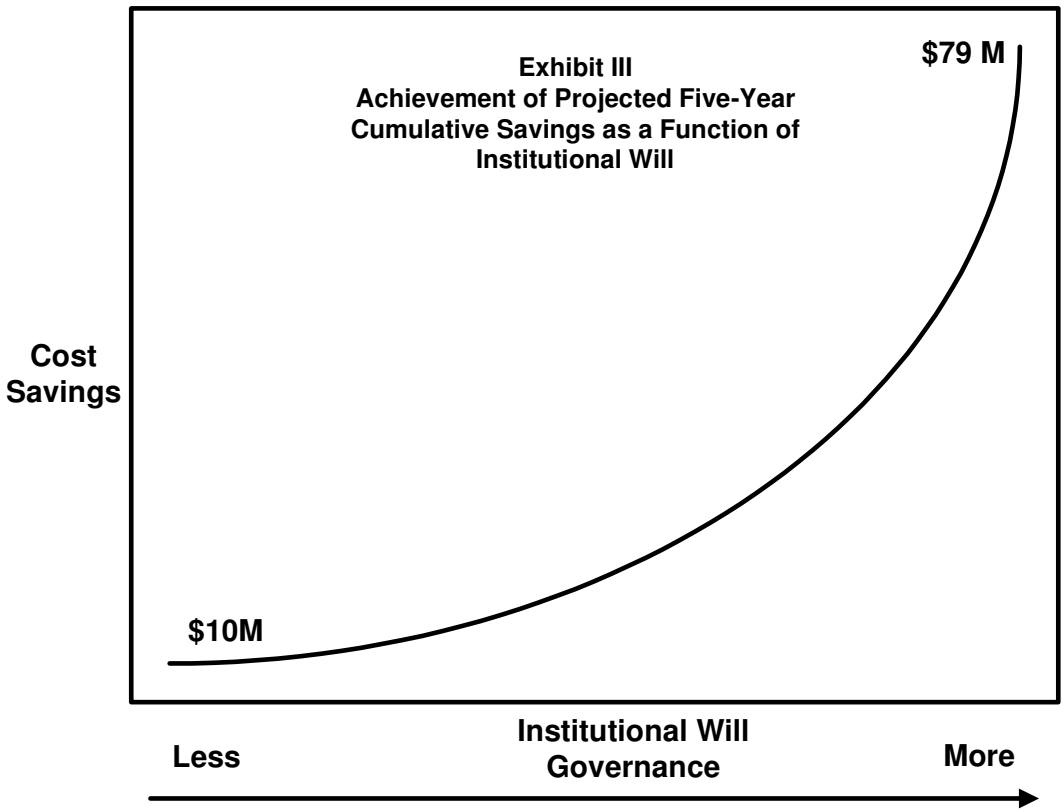
WTC identified three significant areas for cost reduction and two major areas for service improvements. The three areas for cost reduction are 1) servers and storage, 2) end-user devices, and 3) shadow administrative systems. The two areas for service improvements are 1) learning management and 2) email and calendaring.

The extent to which UW will realize cost savings and service improvements depends directly on the willingness of the institution to adopt substantial changes in IT management practices. Adoption of a fundamental change in governance of IT resources must be at the core of these new management practices and the institutional will to carry them out. We recommend the following strategy to

facilitate savings and improvements.

Incentives, Consolidation, Sharing

Based on an extrapolated five-year costs of $495 million for all campus units, WTC projects a potential cumulative five-year cost savings of $79 million for all academic and administrative units. Subsequent sections of this report detail the sources of our projected savings and Exhibit III illustrates the importance of exercising institutional will and governance to adopt new practices for achieving potential cost savings.



It is important to note that the maximum of potential cost savings identified in this report exist at the further reaches of the institutional will / governance continuum. UW will need to identify where on the continuum it finds the best combination of support for the individual and complex needs of the distributed units and simplification and perhaps central, shared or external alternatives for the more common commodity services.

In the following sections, we provide WTC findings and recommendations based on the review of the 47 units. Where applicable, we have classified the recommendations as "near term" or "long term." "Near term" refers to the next one to two years and "long term" refers to the next three to five years.

8 Servers and Storage

8.1 Findings

8.1.1
The units participating in the costing study support 2,155 individual physical servers.

8.1.2
These units also support 735 virtual servers.

8.1.3
Many of the 2,155 physical and 735 virtual servers in campus units support services offered by UW IT. The following servers are examples of this duplication.

8.1.3.1
Domain controllers (50 physical, 17 virtual).

8.1.3.2
File and storage servers (242 physical, 66 virtual).

8.1.3.3
Web servers (104 physical, 96 virtual).

8.1.3.4
Network services such as Domain Name System (DNS) and Dynamic Host Configuration Protocol (DHCP) (6 physical).

8.1.4
A summary of the server counts by cost category and location appears in Attachment II.

8.2 Costs and Potential Cost Savings

Among the 47 units, WTC estimates an annual cost basis of $3.8 million personnel and equipment costs for non-research related server and storage management. This estimate does not include utility costs. Table II illustrates the derivation of this cost basis.

Table II Cost Basis for Non-Research Server and Storage Management (Millions)			
Cost Category	**Gross Cost**	**Percent of Costs Applicable**	**Cost Basis**
Server Equipment	$3.5	30%	$1.1
Server Management – Staff Time	$1.5	70%	$1.1
Data Center – Staff Time	$0.8	80%	$0.6
Files and Storage – Staff Time	$0.8	100%	$0.8
Procurement/Asset Management – Staff Time	$0.9	10%	$0.1
Security - Staff time	$0.3	50%	$0.1
Total	**$7.8**		**$3.8**

Note: 100% of Files and Storage staff time is allocated to non-research costs because separate BPSEs address management of research facilities.

Based on the calculated annual cost basis, there is a projected $19 million five-year cost basis for servers and storage. WTC projects that this $19 million could be reduced by 50% through consolidation and virtualization.

These servers and storage costs and projected cost savings do not include utility costs and potential reduction in utility costs through consolidation and virtualization. Based on the experience of other organizations and the existing distributed nature of the University's server footprint, WTC projects that UW could reduce energy consumption of server technology by 40-60% through virtualization and consolidation. However, there are many factors involved, and a more accurate estimate of savings will require deeper analysis of UW's specific environment.

8.3 Issues

8.3.1 Server and storage consolidation makes sense from an institutional perspective because of potential cost savings and benefits such as increased utilization and improved security and disaster recovery. However, given the current UW IT rate structure, campus units would incur additional costs if they

migrate to UW IT server and storage services.

8.3.2 The current rate structure discourages consolidation of server and storage services and sets the stage for unnecessary future costs and risks.

8.3.3 The utility costs associated with supporting the unit-based servers are currently hidden because there is no metering at the unit level. The lack of visibility into the true costs of operations causes decisions to be made for the wrong reasons and promotes inefficient use of data center investments and utility resources.

8.3.4 Activity-based budgeting will accelerate the need for visibility into true costs as campus units experience more pressure to reduce their utility and space costs.

8.3.5 Absence of an institutional policy on refresh cycles for server equipment promotes the use of older server equipment with higher utility usage, which is inconsistent with institutional green objectives, increases utility costs, uses more space than needed, and increases staff costs associated with supporting old technology.

8.3.6 The distributed nature of the server footprint exposes the institution to unnecessary security risks and complicates disaster recovery.

8.3.7 Potential benefits of on-campus and cloud consolidation will be limited by network capacity constraints in a few areas of the campus.

8.4 Recommendations - Near Term

8.4.1 Transition Active Directory services to UW IT. Many units have already made this transition. IT staff in many of the other units cited the lack of time to focus on making this transition as an issue. We recommend that UW IT establish a team focused on assisting units with this transition.

8.4.2 Migrate DNS and DHCP network services to UW IT. Most units have already completed this migration. We recommend that UW IT establish a team focused on assisting units with this migration.

8.4.3 Conduct a server and storage consolidation and virtualization pilot with a small group of campus units and UW IT.

8.5 Recommendations - Long Term

8.5.1 Develop an institutional strategy and direction for server and storage management reflecting both consolidation and virtualization. Table III gives examples of consolidation and/or virtualization potential based on the results of the costing study.

Table III
Server and Storage Consolidation and Virtualization Potential

#	Consolidation/Virtualization	Benefits
1	Consolidate file services to UW IT or within another unit (e.g., College).	• Reduces the number of physical servers requiring space and utility resources. • Reduces the amount of staff time in campus units spent on server and storage management giving them more time to focus on discipline-specific IT functions. • Migrates management of virtual server environments to dedicated teams with a high degree of expertise in managing virtual environments. • Improves security and disaster recovery. • Increases flexibility. It is takes less time to build a new virtual server than install and configure a new physical server. • Facilitates testing and integration of new environments.
2	Consolidate web hosting infrastructure to UW IT or within another unit (e.g., College).	
3	Migrate the approximately 300 virtual servers on unit hosts located in a UW IT data center to a UW IT host.	
4	Migrate the 721 locally hosted non-research servers to a designated data center. Whenever possible migrate to virtual servers.	
5	Evaluate 259 unit physical servers located in a UW IT data center for possible migration to virtual servers.	
6	Evaluate 1,165 research servers for possible consolidation and/or migration to a designated data center. Whenever possible migrate to existing UW IT services or virtual servers.	

8.5.2 As part of developing an institutional strategy and direction for server and storage management, confirm that the institution's strategic network plan adequately addresses access to centrally-located and/or cloud services.

8.5.3 Additionally, establish institutional policies addressing server requirements and server refresh requirements consistent with institutional green objectives.

8.6 Servers Supporting Research

Although servers supporting research were excluded from the potential cost saving calculations in this report for server and storage consolidation and virtualization, WTC recommends that consolidation should be considered for research servers supporting common services such as file services. Additionally, WTC recommends that researchers consider the other benefits to server consolidation and virtualization such as security, flexibility, business continuity, and disaster recovery.

9 End-User Devices

9.1 Findings

9.1.1 The 47 IT units participating in the costing study support 13,488 faculty and staff laptop and desktop systems.

9.1.2 These units also support 4,298 end-user devices in classrooms, in student labs, and for graduate students.

9.1.3 Refresh cycles for end-user systems vary from three to seven years among and within the units.

9.1.4 Two units support virtual desktops for students. In one unit, the virtual desktops are server based, that is, students access virtual desktops supported on a department server. In the other unit, virtual desktops are client based, that is, the department provides a virtual desktop environment that students load onto their personal systems.

9.1.5 Several units are piloting or plan to pilot virtual desktops either for student labs or for staff desktops.

9.1.6 UW IT offers a Virtual Desktop Access service (ViDA) that provides students 24/7 online access to a library of software applications from their personal computers.

9.2 Costs and Potential Cost Savings

Among the 47 units, WTC estimates an annual cost basis of $11.3 million for end-user devices and support including faculty, staff, graduate student, classroom, and student lab systems. Table IV illustrates the derivation of this cost basis.

Table IV
Cost Basis for End-User Devices
(Millions)

Category	Gross Cost Less Servers, Other Equip, and 50% Other Expenses	Percent of Costs Applicable	Cost Basis
Classrooms and Student Labs	$2.2	100%	$2.2
End-User Devices (Faculty and Staff)	$6.9	100%	$6.9
Procurement/Asset Management – Staff Time	$0.9	90%	$0.8
Project Management – Staff Time	$2.6	50%	$1.3
Security - Staff time	$0.3	50%	$0.1
Total	**$12.9**		**$11.3**

Based on the calculated annual cost basis, there is a projected $55 million five-year cost basis for end-user devices. WTC projects that this $55 million could be reduced through strategic integration of virtualization and the cloud along with a more consolidated support system for some groups of users. WTC projects that this type of strategic integration could result in a 15-25% cost savings over the next several years.

9.3 Issues

9.3.1
Virtual desktop services is likely to be a new area of duplication of efforts as IT staff in the campus units begin piloting and supporting these services.

9.3.2
There are no existing processes or mechanisms for campus units to coordinate their efforts to investigate virtual desktop options.

9.4 Recommendations - Short Term

9.4.1
Establish an interim process for campus units to communicate their interest in virtual desktops and coordinate pilots and

planning efforts.

9.4.2 Conduct a pilot with a small group of campus units using a virtual desktop infrastructure established and managed by UW IT.

9.5 Recommendation - Long Term

Develop an institutional strategy and direction for end-user device management that address role of virtualization, role of the cloud, and refresh cycles.

10 Shadow Administrative Systems

10.1 Findings

10.1.1 WTC identified annual costs of approximately $5 million within the 47 units supporting development and support of administrative applications and databases functioning in the absence of contemporary financial, human resource, and student systems.

10.1.2 This $5 million is the cost for shadow systems supported by unit IT staff only and does not include costs associated with data entry and the costs related to databases and spreadsheets developed and maintained by the functional users. These other costs are likely to be significantly more than the $5 million.

10.1.3 Many units indicated that these systems would be unnecessary with the integration of a modern ERP system.

10.1.4 WTC projects that the $5 million in costs could be reduced by 60% with the integration of a modern ERP system. The integration of a modern ERP system would also reduce costs associated with duplicate data entry and functional users maintaining shadow databases and spreadsheets.

10.2 Issues

10.2.1 The absence of modern financial, human resource, and student systems has prompted units to develop in-house applications to augment the functionality of the existing legacy systems.

10.2.2 The lack of functionality in the legacy administrative systems

requires staff in campus units to spend significant amounts of time on labor-intensive tasks such as multiple data entry and managing data within Excel spreadsheets.

10.3 Recommendation - Near Term/Long Term

Continue, and possibly accelerate, institutional initiatives to replace legacy financial, human resources, and student systems.

11 Learning Management

11.1 Findings

11.1.1 Several of the 47 units either support a learning management system locally or use a vendor-hosted system. The learning management systems used are Blackboard and Moodle. Additionally, faculty in several units are participating in the Canvas pilot.

11.1.2 Faculty in many of the 47 units use the Catalyst tools supported by UW IT to build the online environments for their courses.

11.1.3 A few units develop and support their own online environments for their courses.

11.2 Potential Service Improvements

Integration of a common learning management system would significantly improve the learning environment for UW students. Additionally, use of a common learning management system will allow for integration of the learning management environment with the student system, library resources, and classroom technologies such as lecture capture and classroom response systems.

11.3 Recommendations - Short Term

11.3.1 Continue the existing pilot of the Canvas learning management system.

11.3.2 Continue assessment of faculty and student experiences with Canvas, Blackboard, and Moodle.

11.3.3 Choose a common learning management system and begin migration.

11.4 Recommendation - Long Term

Complete migration to a common learning management system.

12 Email and Calendaring

12.1 Findings

12.1.1 The following email systems are used by faculty and staff in the 47 campus units.

12.1.1.1 UW IT Exchange

12.1.1.2 Department Exchange
12.1.1.3 UW IT Deskmail

12.1.1.4 Google

12.1.1.5 MS Live

12.1.2 In some units, multiple email systems are in use.

12.1.3 Some units support separate calendaring systems.

12.1.4 UW IT is planning to launch Microsoft Exchange 365/ Exchange Online for faculty and staff when a contract is signed by both parties.

12.2 Potential Service Improvements

A common scheduling system would improve the productivity level of staff involved in scheduling meetings.

12.3 Recommendations

12.3.1 Continue efforts to launch Microsoft Exchange 365/ Exchange Online for faculty and staff.

12.3.2 Develop and implement a strategy to migrate faculty and staff to

Microsoft Exchange 365/ Exchange Online at least for calendaring purposes.

13 Governance

13.1 Findings

13.1.1 While UW-IT operates a number of institution-wide governance structures for UW wide resources, no comprehensive institutional governance structure exists inclusive of the campus units for developing holistic IT strategies, priorities and directions for the university.

13.1.2 Formal committees exist to address specific IT areas such as financial systems, student, data management, privacy and security and compliance.

13.1.3 There are formal structures for specific IT projects. These structures may vary based on the type of project and project sponsorship.

13.1.4 There is campus participation in some IT decisions on an informal or ad hoc basis such as UW IT presentations and discussions with the Campus IT Directors group and teams for specific efforts (e.g., costing studies and rate development).

13.1.5 Several of the campus units participating in the study have internal IT committees such as Physics, ESS, Student Life, School of Medicine.

13.2 Issues

13.2.1 The pace of change and the need to make decisions quickly to adapt and incorporate new capabilities requires a governance structure that is fundamentally different than the past. Cost savings, while important, is only one of many drivers for the IT governance; other drivers include pre-positioning, adopting and leveraging new technologies and the primary goal of making faculty, staff and students more efficient and effective. Significant sustainable improvements will not be possible until governance is addressed.

13.2.2 The absence of a comprehensive formal governance structure impedes developing institutional responses to controlling IT costs, improving IT services, responding to new requirements, and integrating new technologies.

13.2.3 A new governance approach is needed to create enterprise-wide delivery solutions and strategies in areas common to all or most of the enterprise, and to lessen the burden on campus units for support of standard IT products and services.

13.3 Recommendations - Near Term

13.3.1 Initiate an institution-level effort to establish a formal IT governance structure for developing IT strategies and setting institutional IT priorities and directions.

13.3.2 Design the IT governance structure to address key areas such as basic computing capability and resources, teaching and learning, student computing, research, administration, and infrastructure.

13.3.3 Establish formal IT governance that:

13.3.3.1 Has senior leadership endorsement.

13.3.3.2 Integrates with institutional funding processes.

13.3.3.3 Establishes who makes which decisions, who provides input and analyzes issues, who sets priorities, and who implements decisions.

13.3.3.4 Has clearly defined goals and objectives.

13.3.3.5 Has established processes to support participation and decision making.

13.3.3.6 Considers what has worked and what has not work in the past.

13.3.4 Establish a permanent Chief Information Officer position for the University. A key responsibility for the individual in this position should be institutional IT strategy and governance.

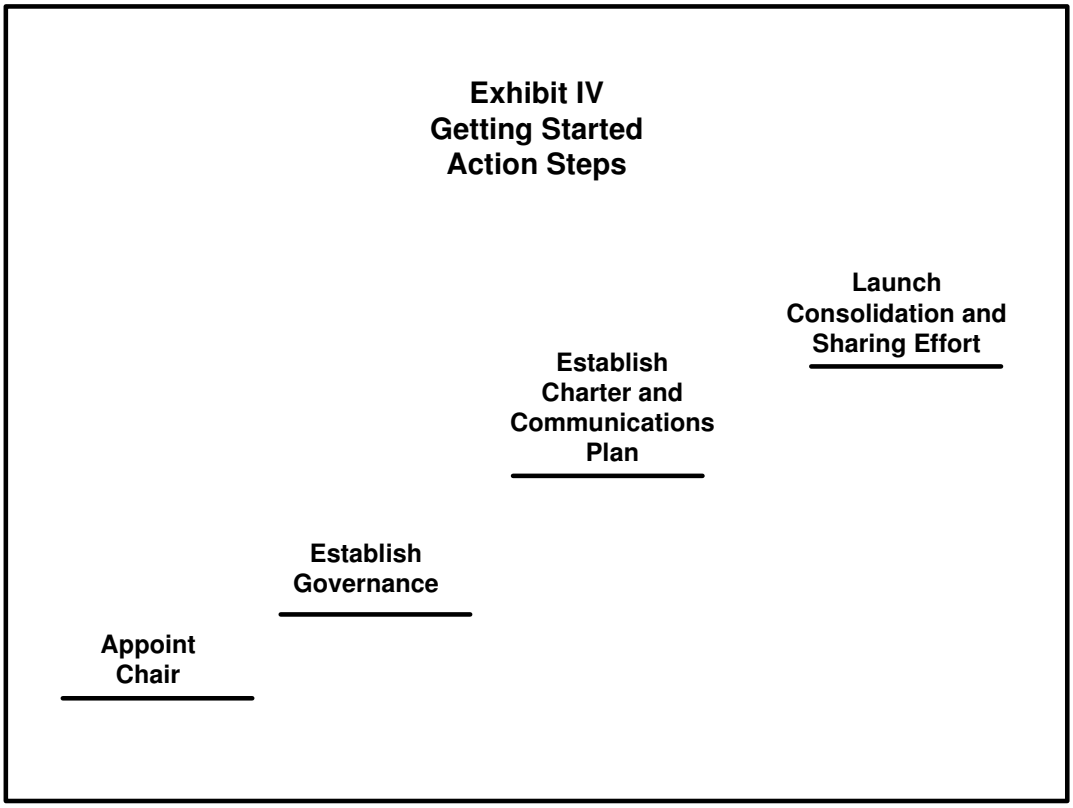
13.4 Recommendation - Long Term

Establish ongoing processes for evaluating and improving the effectiveness of the IT governance structure.

14 Recommended Getting Started Time Line

To maintain momentum, WTC recommends that UW respond quickly to the recommendations detailed in this report. Specifically, WTC recommends that UW take the action steps shown in Exhibit IV.

Exhibit IV
Getting Started
Action Steps



15 Presentation of Cost Details

The cost detail for each group of participants appears in an separate attachment as follows:

- Large Academic Departments - Attachment III
- Medium-Size Academic Departments - Attachment IV
- Small Academic Departments - Attachment V
- Large Schools and Colleges - Attachment VI
- Medium-Size and Small Schools and Colleges - Attachment VII
- Large Administrative Units - Attachment VIII
- Medium-Size and Small Administrative Units - Attachment IX

Within each attachment, there are several sections with cost detail. Following are descriptions of the cost detail information in each section.

15.1 Section A. Graphs showing the total annual IT costs by unit.

15.2 Section B: Graphs showing the total annual IT costs by unit for each of the 24 cost categories.

15.3 Section C: Summary of each unit's IT costs by Line of Business by Cost Category.

16 Recommended Unit-Level Strategies

The following recommendations address areas of potential cost savings applicable to many units participating in the study.

16.1 Leverage services provided by UW IT or collaborate with other units to consolidate commodity services and functions such as managing servers and storage, lecture capture, video streaming, and web hosting.

The cost categories that would be impacted 1) on average, account for 25% of unit IT costs, 2) as a group represent a potential range of cost savings between 20-40%, and 3) include the following cost categories:

05 - Data Center
07 - Directory Services and Access Management
08 - Educational Technology
09 - Email and Calendaring
11 - Files and Storage

13 - Interactive Media
17 - Procurement and Asset Management
18 - Project Management
21 - Security
22 - Server Management
24 - Web Services

Section D of the cost detail attachment has a table showing the cost in each of the above categories for each unit.

16.2 Implement structured end-user support processes and standards such as integration of remote management tools, restricting administrative rights for some groups of users, providing network storage for user files with backup and recovery, and developing user responsibility policies.

Additionally, consider consolidating some aspects of end-user support such as procurement and asset management, configuring and installing systems, and computer maintenance and repair for groups of units (e.g., units within a College).

The cost categories that would be impacted 1) on average account for 22% of unit IT costs, 2) as a group represent a potential range of cost savings between 10-25%, and 3) include the following cost categories:

10 - End-User Devices
12 - Help Desk and Training

Section D of the cost detail attachment has a table showing the cost in each of the above categories for each unit.

16.3 Use the UW e-procurement agreement for end-user systems.

The cost categories that would be impacted 1) on average account for 25% of unit IT costs, 2) represent a potential 10-20% cost savings in equipment costs, and 3) include the following cost categories:

03 - Classrooms and Student Labs
10 - End-User Devices
17 - Procurement and Asset Management

Section D of the cost detail attachment has a table showing the cost in each of the above categories for each unit.

16.4 Share personnel resources with other units for specialized services such as database management, managing collaboration environments such as SharePoint, and report development.

The cost categories that would be impacted 1) on average account for 10% of unit IT costs, 2) represent potential cost savings in personnel costs depending upon the level of sharing, and 3) include the following cost categories:

02 - Application Support
04 - Communication and Collaboration (e.g., collaboration spaces)
06 - Data Management and Reporting

Section D of the cost detail attachment has a table showing the cost in each of the above categories for each unit.

16.5 Examine in-house developed and supported applications to identify applications no longer needed or applications that can be replaced by acquiring services in another way.

The cost categories that would be impacted 1) on average account for 15% of unit IT costs, 2) represent potential cost savings in personnel costs depending upon the level of consolidation, and 3) include the following cost categories:

01 - Application Development
02 - Application Support

Section D of the cost detail attachment has a table showing the cost in each of the above categories for each unit.

Attachment I
BPSE Mapping to Cost Categories

Attachment I: Table I BPSE Mapping to Cost Category			
#	***Cost Category***	***BPSE Name***	***Description***
1	**Application Development**		
		Business Process Analysis	Gain understanding of business processes and analyze for efficiency and improvements. This is a precursor activity for application development.
		Application and Database Development	Design and develop applications.
		Developer Tools	Support tools for software development such as Windows Applications Development Deployment Tools and Version Control.
		Web Application Development Environments	Support and maintain web application development environments.
2	**Application Support**		
		Application Support	Support both in-house developed and third-party applications.
		Database Administration	Provide database administration support.
3	**Classrooms and Student Labs**		
		Desktop Virtualization	Design, build, support and maintain virtual desktop environments.
		Student Computer Lab - Classroom	Provide support for computer classrooms and specialized labs. Create and maintain images. Work with course instructors with selection, purchasing, and distribution of course software. Research, plan, and deploy equipment.
		Student Computer Lab - General	Support hardware, OS, and applications for systems in student computer labs. Create and maintain images. Hire, train, schedule, and supervise student employees. Research, plan, and deploy equipment. Monitor lab activities and assist students.

Attachment I: Table I BPSE Mapping to Cost Category			
#	**Cost Category**	**BPSE Name**	**Description**
		Classroom/Conference Room/Kiosk Technology Planning and Support	Plan and manage all the auditoria, classrooms and conference rooms, technology labs and specialized teaching and learning spaces. Maintain audio visual equipment in classrooms, conference rooms, and portable equipment.
		Audio/Visual Systems Design and Installation	Provide audio visual professional services for projects such as ad hoc consulting, design and build services, and project management and oversight services.
4	**Communications and Collaboration**		
		Unified Communications	Provide Unified Communications services.
		Teleconferencing	Provide teleconferencing services.
		Collaboration Spaces	Maintain shared spaces to support collaborative work (e.g., newsgroups, Wikis, SharePoint).
5	**Email and Calendaring**		
		Cloud-sourced Email	Manage and support Cloud-sourced email.
		Email and Calendaring	Support email and calendaring systems. Create and manage user accounts. Troubleshoot and resolve user email and calendaring problems.
		Mailing and Alias Lists	Support mailing list system. Create and maintain mailing lists
6	**Data Center**		
		Computer Operations - Monitoring and Support Services	Provide computer operations monitoring and support services such as host and application monitoring, emergency backup, and tape library.
		Tape Libraries	Provide tape library services including planning, resource management, operational support, disaster recovery, and business continuity.

Attachment I: Table I BPSE Mapping to Cost Category			
#	**Cost Category**	**BPSE Name**	**Description**
		Data Center Management	Manage data center environment including power, cooling, heating, and humidity. Maintain UPS. Install systems. Manage security and access.
		Data Center Management for Remote Locations	Manage and maintain remote data center facilities including physical infrastructure maintenance, electrical upgrades, emergency repairs, and improvement projects.
		Communications Space Management	Manage and maintain communications rooms (e.g., MDF, IDF) including physical infrastructure maintenance, electrical upgrades, emergency repairs, and improvement projects.
		Business Continuity	Provide business continuity support and support for emergency operations.
		Disaster Recovery	Maintain disaster recovery sites and/or backup including disaster recovery planning.
7	**Data Management and Reporting**		
		Reporting	Develop custom reports for a variety of applications including the University's enterprise administrative systems.
		Business Intelligence	Provide ongoing data analysis and decision support services.
		Data Management Services	Provide management, consulting, and access control for business metadata managed at the college, school, or department level. Integrate college, school, and department data as well as external data
8	**Directory Services and Access Management**		
		Directory Services	Maintain Active Directory, LDAP, password change systems and other applications to support directory services. Set up and maintain user accounts.

Attachment I: Table I BPSE Mapping to Cost Category			
#	***Cost Category***	***BPSE Name***	***Description***
		Identity and Access Management	Manage unit identity management system or interface with UW identity management system. Provide access management services to systems and services.
9	**Educational Technology**		
		Distance Learning Systems	Support systems and devices for distance learning programs.
		Learning Management Systems	Manage and support learning management system.
		Technology and Teaching	Develop programs, activities, workshops and demonstrations designed to engage faculty and staff in the design development and integration of technology into their teaching.
		Technology and Student Learning	Work with various units on campus to develop, implement and improve student learning outcomes by preparing students for technology use. Design curriculum, deliver technical training/demonstrations, manage IT New Student Orientation sessions, IT core labs, registration sessions and online orientation courses.
		Teaching, Learning, and Technology Integration	Work with faculty on multiple aspects of integrating technology into teaching and learning including technology tools, online courses, instructional strategies, learning outcomes, and portfolio assessment.
10	**End-User Devices**		
		Backup Services - Desktops	Perform desktop backups, restore files, and store backup medium off site.
		Desktop/Laptop Management	Specify, procure, install, configure, and maintain desktop/laptop hardware, OS, and security.
		Computer Hardware Repair and Software Maintenance	Provide computer hardware repair and software maintenance services including warranty.

Attachment I: Table I BPSE Mapping to Cost Category			
#	**Cost Category**	**BPSE Name**	**Description**
		Desktop/Laptop Support for Faculty, Staff, Graduate Student Employees, Medical Residents Use BPSE 42 or BPSE 43,44,45, and 46	Provide application support, troubleshoot, and resolve problems on faculty, staff, graduate student assistant, and/or medical resident desktops and laptops.
		Desktop/Laptop Support-Individual Faculty	Provide application support, troubleshoot, and resolve problems on individual faculty desktops and laptops.
		Desktop/laptop Support - Administrator/Staff	Provide application support, troubleshoot, and resolve problems on individual administrator or staff desktops and laptops.
		Desktop/Laptop Support - Graduate Student Assistant	Provide application support, troubleshoot, and resolve problems on graduate student assistant desktops and laptops.
		Desktop/Laptop Support - Medical Residents	Provide application support, troubleshoot, and resolve problems on medical residents desktops and laptops.
		Desktop Conferencing	Configure desktop conferencing software and consult with users.
		Mobile Device Support	Provide support for faculty and staff mobile devices such as smart phones.
11	**Files and Storage**		
		Windows File Share	Maintain shared folders for groups on Windows systems.
		Macintosh File Share	Maintain shared folders for groups on Macintosh systems.
		High Performance Storage	Support and maintain high performance and/or high volume storage systems including planning, management, and operational support.
		Medium-Low Storage	Support and maintain low-medium performance storage systems including planning, management, and operational support.
		Unix File Share	Maintain shared folders for groups on Unix systems.

Attachment I: Table I BPSE Mapping to Cost Category			
#	***Cost Category***	***BPSE Name***	***Description***
12	**Help Desk and Training**		
		Help Desk	Receive, track, assign, and respond to help requests including walk-in clients. Consult with users. Hire, train, schedule, and supervise student employees. Maintain knowledge base.
		User Education and Documentation	Conduct seminars for users as well as one-on-one training for users. Develop documentation for users.
		Computer Classroom Training	Provide computer training for end users and system administration training.
13	**Interactive Media**		
		Presentation Capture and Distribution	Support recording and distribution of lectures and presentations including live video streaming.
		Video Production	Record, convert, and distribute video. Assist users with video production activities.
		Video Production Support	Provide video production support including webcasting, production, media distribution, and content management support.
		Technology Studios	Manage and support digital presentation and collaboration studios.
		Video Conferencing	Support video conferencing facilities including event consulting, testing, and operations. Assist users with using video conferencing equipment.
		Digital Signage	Support various modes of digital signage (e.g., information panels, video art).
14	**Network**		
		Mobile Communication Strategy and Infrastructure	Develop Wi-Fi strategies including establishing and developing industry partnerships and developing and implementing infrastructure to support mobile communications.
		Data Network Moves, Installs, and Changes	Process requests and provision data network installations, moves, and changes.

Attachment I: Table I BPSE Mapping to Cost Category			
#	**Cost Category**	**BPSE Name**	**Description**
		Network - Connectivity	Activate and deactivate ports and install patch cables. Troubleshoot and resolve connectivity problems.
		Network Security Systems	Develop and maintain IDS, IPS, firewall policies, and systems protecting networks, servers, and applications. Troubleshoot and resolve problems.
		Network Security Consulting	Provide network security consulting services to external customers.
		Network VPN Services	Provide VPN services and maintain VPN systems.
		Network DHCP Services	Provide DHCP services and maintain DHCP systems.
		Network DNS Services	Maintain and update DNS servers and software.
		Remote Access Service	Support remote access services (e.g., terminal servers) for specific labs, systems, and applications.
		Off-Campus Connectivity	Manage and maintain access to the campus IP network for sites that are not located on a UW campus.
		Commodity Internet	Manage connectivity to commercial Internet service providers at remote sites.
15	**Policies and Standards**		
		Accessibility Technology	Support facilities, systems, and software for faculty, staff, and students with special accessibility requirements. Address ADA compliance.
		IT Policy	Facilitate development, review, and updating of IT policies.
		IT Standards	Maintain architecture standards and guidelines including business, information, applications, and technology architectures.
		IT Governance	Facilitate and/or participate in unit IT governance activities as well as campus IT governance activities.

Attachment I: Table I BPSE Mapping to Cost Category			
#	**Cost Category**	**BPSE Name**	**Description**
		Compliance	Make sure the campus is in compliance with HIPAA, FERPA, PCI, ADA, TEACH Act, IP (intellectual property), copyright laws, etc.
16	**Printing**		
		Document Services - Faculty and Staff	Support multi-functional systems used by faculty and staff for printing, scanning, copying, and faxing. Assist faculty and staff with using equipment.
		Printing Services - Students	Maintain printers used by students. Generate charges. Bill student accounts.
		Large Format Printing Services	Maintain large format printing equipment. Assist faculty and staff in using printing equipment.
17	**Procurement and Asset Management**		
		Equipment Procurement	Develop specifications based on needs of faculty and staff, consult with vendors, and create procurement documents.
		Equipment Decommissioning	Decommission IT equipment for either reuse and surplus. Sanitize hard drives.
		Asset Management	Track equipment assets including warranty information.
		Software Licensing and Distribution	Track software licenses for operating systems and applications including renewals. Provide software distribution services.
18	**Project Management**		
		Project Management	Provide dedicated effort planning, organizing, and managing projects.
		Project Quality Assurance	Perform activities related to quality assurance and change control related to information technology projects.
		Portfolio Management	Manage prioritization and tracking related to information technology projects.
19	**Research Facilities**		

Attachment I: Table I BPSE Mapping to Cost Category			
#	***Cost Category***	***BPSE Name***	***Description***
		Research Labs with Computers	Support hardware, OS, and applications for systems in research computer labs.
		Research Cluster	Maintain hardware, OS, and applications for computer clusters used primarily for research purposes.
		Research Facilities Support	Support research facilities such as specialized systems and remote sites..
20	**Research, Planning, and Development**		
		New Services Research and Development	Test new technologies, conduct pilots, and develop business models for new services.
		IT Strategic Planning	Develop IT strategic plans according to the Campus strategic plan, aligning the IT strategic plan with the strategic plans of Academic Affairs and various academic programs
		Plan and design technology infrastructure	Participate in the construction of many new buildings and major renovation of existing buildings, design the technology infrastructure; specify the standards of our campus network infrastructure.
21	**Security**		
		Security Policy, Audits, and Remediation	Participate in proactive and preventative activities related to system and network security.
		Security Incident Response and Forensics	Respond to network and system security incidents including forensics activities.
		Security Applications	Develop and maintain policies and applications for University level accesses. Participate in proactive, preventative activities related to applications access including University annual audits. Troubleshoot and resolve problems.
22	**Server Management**		

Attachment I: Table I BPSE Mapping to Cost Category			
#	**Cost Category**	**BPSE Name**	**Description**
		Server Management	Install servers. Apply patches and upgrades, monitor log files, configure host firewalls, and manage accounts on servers.
		Server Virtualization	Support and maintain virtual server environments.
		Managed Servers	Provide managed server services to external customers.
		Server Co-Location	Provide co-location services to external customers.
		Backup Services - Servers	Perform server backups, restore files, and store backup medium off site.
23	**Specialized Services**		
		Course Technology Infrastructure	Develop and support technology infrastructure used in technology-related courses.
		People and Office Directories	Manage and support unit directories.
		Special Events	Provide network, audio visual, and video recording support and other support activities for special events.
		Building Access Control	Manage and administer building access control including electronic locks, access cards, record keeping, and administration of security badges, security system, and CCTV/DVR.
		Ad Hoc Consulting	Perform work on an hourly or custom contract basis for external customers. This includes emergency or after-hours services and general consulting time.
		Specialized Consulting	Consult with faculty and staff to address IT requirements in their particular domain.
		Third-party Mediation	Work with third-party vendors to establish specialized services (e.g., cloud services) for individual faculty and staff or faculty and staff groups.
		Partner Relationships	Facilitate information technology partnerships and collaborative relationships..

Attachment I: Table I BPSE Mapping to Cost Category			
#	**Cost Category**	**BPSE Name**	**Description**
		Technology Mentoring	Assist with mentoring students in the development of the technical skills required to support technology services.
		Specialized Hardware Engineering	Design and building of custom hardware devices for instructional lab use.
		OS Planning	Off cycle and pre-release testing, including monitoring changes, trends, and new features prior to working on new release.
		OS Development/Integration	Create local release by integrating new upstream OS release with local mods, additions, and customizations.
		OS Maintenance	Integrate local and vendor updates into local distribution. Vet vendor updates prior to accepting.
		Specialized Windows/MS Facilities	Build, maintain and support specialized facilities that are based on Windows technology, such as Surface Computers.
		Hardware upgrades	Perform hardware upgrades, including new disks, CPUs, memory.
23	**Web Services**		
		Web Design	Design web sites including graphics, layout, navigation, and interfaces.
		Web Content Creation	Write copy for IT-related web sites.
		Web Content Management	Post content generated by others, assure communications and accessibility standards are followed, and manipulate provided images to suit the presentation environment.
		Usability Testing	Conduct site or interface testing where representative users are asked to perform a proscribed sequence tasks within a site or application. Can also be more informal interaction with users.

Attachment I: Table I BPSE Mapping to Cost Category			
#	***Cost Category***	***BPSE Name***	***Description***
		Web Mastering and Development	Implement designs, including HTML, CSS coding, and leverage commonly available cloud services tools such as Google Apps, Twitter, etc., site statistics, and search engine optimization.
		Web Services	Provide ongoing support, management, development, data access control, and customer support for web services including portals.
		Web Hosting and Development Services	Provide server, infrastructure, and customer support for basic web hosting for faculty, staff, students, departments, and courses.

Attachment II: Table I Server Summary by Cost Category								
Cost Category	UW Data Center			External Data Center		Locally Hosted		Total
	P	V Unit	V UW IT	P	V	P	V	
Application Development	6	15	2	1	15	18	27	**84**
Application Support	80	148	2	5	15	145	92	**487**
Classrooms and Student Labs	3	1	0	0	0	56	3	**63**
Communications and Collaboration	1	17	0	0	0	10	12	**40**
Data Center	0	0	0	0	0	0	0	**0**
Data Management and Reporting	0	0	0	0	0	0	0	**0**
Directory Services and Access Mgmt.	7	4	0	1	2	47	13	**74**
Educational Technology	7	15	1	0	0	1	8	**32**
Email and Calendaring	8	6	0	0	0	8	3	**25**
End-User Devices	3	2	0	0	0	14	5	**24**
Files and Storage	71	38	0	2	1	171	28	**311**
Help Desk and Training	0	1	0	0	0	3	1	**5**
Interactive Media	4	11	0	0	0	25	4	**44**
Network	11	4	0	0	0	46	13	**74**
Policies and Standards	0	0	0	0	0	0	0	**0**
Printing	1	6	0	1	0	14	14	**36**
Procurement and Asset Management	0	0	0	0	0	0	0	**0**
Project Management	0	0	0	0	0	0	0	**0**
Research Facilities	30	0	0	0	0	1165	59	**1254**
Research, Planning, and Development	0	0	0	0	0	0	0	**0**
Security	0	0	0	0	0	0	0	**0**
Server Management	7	14	0	0	0	26	19	**66**
Specialized Services	7	0	0	0	0	46	12	**65**
Web Services	13	44	5	0	1	91	52	**206**
Total –>	**259**	**326**	**10**	**10**	**34**	**1886**	**365**	**2890**

Note: Some application support servers may be supporting specialized services.
P - physical server, V - virtual server
V Unit - virtual server on Unit server, V UW IT - virtual server on UW IT server

Final attachments are detailed data files not available for publication.