

US:IT

University Services:
Information Technology

State of IT

2015



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State of IT 2015

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State of IT 2015

Information Technology (IT) - refers to *anything related to computing technology, such as networking, hardware, software, the Internet, or the people that work with these technologies. Many [organizations] now have IT departments for managing the computers, networks, and other technical areas of their businesses*¹.

Campus-based Feedback Interviewees	
Presidents	6
CBOs	4
Deans	6
Faculty BOT Reps	6
Provosts/CAOs or Associates	5
VP for Student Services	1
VC for Finance	1
Faculty	59
Faculty Leaders	7
USM CTCL	1
Library Dean	1
Library Director	1
Students	161
Provost Staff	13
Exec Director	1
Total	273

This definition sets the backdrop for this State of IT Report prepared by the University Services: Information Technology organization (US:IT). IT in the UMS runs full spectrum of devices and services, including instructional technology tools, learning management systems, software applications, smart boards and media devices and much more.

The report was requested by the Chancellor and Board of Trustees to determine the current state and effectiveness of IT in support of the University of Maine System (UMS) mission.

The Report was informed by the expertise of dozens of US:IT leaders and staff and the feedback of over 270 faculty, students and administrative staff. The data and information presented here is an un-varnished look at the current state of information technology.

Recommendations are included to set the future course for US:IT as it aims to better align its services with the mission of One University. There are many areas identified where we can do better by adding strategic resources and investing in needed technology.

The impact on students has been our focus in developing the conclusions and recommendations in this report. The question, “what would the impact be on a day in the life of a student” was key to interpreting the findings and setting priorities going forward.

Special thanks go to the Board of Trustees’ Faculty representatives for their candor and advocacy for IT in and around the classroom. They, and indeed all faculty and students, deserve the very best services, support and technology we can offer. Additionally, I thank the US:IT staff. They give their best each and every day, and I thank them for their accomplishments, commitment and skill.

Dick Thompson, Chief Information Officer

¹ Definition taken from TechTerm.com

Overview - Information Technology University of Maine System

Introduction

The University of Maine System and the campus information technology organization has gone through a number of transformations over the last 13 years. Prior to 2003, Information Technology (IT) was a highly centralized and delivered mainframe technologies to a decentralized organization. In the years between 1988 through 2003, the shift from mainframe to PC/Mac client specific workstations was meteoric. UMS-wide central IT focused on large administration systems including student, human resources, and financial systems, networks; and on large academic systems such as Blackboard. Campus services consisted of direct desktop support, file and print services, classroom equipment including video, and many other campus determined needs.

In 2003, the single UMS-wide IT Organization split into two organizations; “network/data center” and Administrative but it was clear that this approach was unsustainable. A Chief Information Officer position was hired and the two UMS IT organizations were re-combined. Despite efforts to create collaboration and efficiency across the now seven campus IT organizations and UMS IT, the results were unsuccessful.

In May of 2012, UMS Central IT reformed the organization from a “PeopleSoft implementation” organization to a more flexible and agile service center supporting a broader set of IT services more fully. A project management office was formed in order to insure more projects were on time and delivered successfully.

Today, to meet our customer needs, IT requires a massive retooling. Our students are “digital natives” and come to campus or sit at home with their 4 or 5 devices expecting blinding fast connections to participate in numerous modes of learning and research, communicate with faculty and collaborate with peers. Faculty expect virtual classrooms where they can walk in, connect their laptop and project life size versions of themselves, graphs and power points to students anywhere. Students expect to pull up one transcript despite multiple campus course completion. None of this will be possible until we address the recommendations outlined below.

I. Success of Administrative Review

Today, US:IT is a single organization, committed to serving students and faculty and to ensuring the success of each campus. Organized using a collaborative team approach to service delivery, 164 staff work to serve each campus every day.

Over time, Information Technology (IT) has grown organically within campus-based organizations since the late 1980’s. Two major systems were implemented at the system level: (1) BlackBoard learning management system and (2) MaineStreet, the student management, financials and human resources system from PeopleSoft. During this period, IT operated in silos directed at the campus level by the campus IT Director or lead, and centrally, by the system office CIO.

Investments during that time were funded and approved at the campus level. For at least the last eight years, replacement and update of infrastructure did not keep up with advances in technology in the classroom or at other areas of the campus. Some campuses were more proactive than others, but all were forced to limit IT funding to operational essentials to address budget challenges.

In 2012, the Board and Chancellor commissioned Administrative Reviews with the goals of reducing costs, and achieving efficiencies within several administrative functions, leading off with IT. The expectation was for IT to identify annual savings of \$3.2 million by 2016. The Chief Information Officer led this effort and proposed a unification of the organization, creating a single, dynamic and forward thinking team designed to meet the IT needs of all campuses and the Central Office.

US: IT transformed to a true unified organization in 2013 with staff being re-aligned into key strategic areas: Infrastructure, Enterprise Systems, End User Technology, Classroom Technology, and Campus Services. The IT leaders and staff met the challenge. This was accomplished through a series of steps to establish and streamline the operation with no upfront investment.

The Information Technology Review process achieved its targeted savings:

Year	Actual New Savings	Cumulative Total	Position Reduction	Cumulative Total
FY2014	\$1,002,464	\$1,002,464	4	4
FY2015	\$981,536	\$1,984,000	18	22
FY2016	\$1,274,000	\$3,258,000	0	22

Note: Two thirds of the position reductions were from leader and supervisor positions, with few reductions in the support and services staff, except the telecommunications infrastructure group.

(See Appendix I for additional detail on the history and current state of US:IT)

As a result of this first system-wide Administrative Review implementation, staff buy-in and hard work, and creation of a centralized service structure, US:IT has continued to evolve. It remains committed to improving services, adopting new technologies and serving as a trusted partner strategically aligned and supported by investments to meet the goals of its customers. Some examples include:

- Team Based Service Delivery – developing responsiveness, capacity, appropriately redundant staff skills
- Accessibility Committee – focused on creating positive and meaningful access to IT for everyone
- Consolidated Data Center – a safe and secure unit, with redundant sites, under single management

- Cooperative Procurement –
 - System wide licensing of common products
 - Standardized end user devices where possible
- Stable operation of existing enterprise systems – systems operate when expected with little interruption.
- Information Security – a proactive and responsive team monitoring the constant threats against data and systems
- Capital Investment Plan – recognizing and planning for proper investment in our assets
- External Collaborations – to support research, economic development and resource sharing.

As a single organization, US:IT is committed to serve students, faculty and to supporting the success of each campus. US:IT supports classrooms, provides infrastructure capacity and supports to the university community at large. This includes distance technology as an integral baseline of IT services, in the way anticipated by the Academic Transformation (formerly APRIP) and Unified Online initiatives.

The mission of US:IT is simply this: To deliver seamless, high-quality and effective information technology infrastructure and services that matter to students, faculty and administrative users.

The structure is now in place to maximize needed investments to meet the priorities identified by the Chancellor and Board of Trustees.

II. Feedback from US:IT customers and advisors

The most important role of US:IT is to meet the needs of the community using the services provided. Regular feedback mechanisms are in place and occasional surveys, such as TechQual, have been used to gain input. Feedback data shows US:IT generally is performing to the minimum expectations, with specific examples of failures or problems that were not resolved in a timely way. US:IT expanded the feedback outreach for this Report and interviewed a wide range of people one on one and in group settings. The conversations were excellent and provided a deeper understanding of customer needs. The five major themes of the findings follow:

- Support for those served
 - Centralized support center needs to be improved
 - Lack of skills at support levels
 - Slow response
 - Greater support for academics
 - Learning management systems
 - Online Course development
 - Video production Support

- Classroom Technology
 - Out of date
 - Lack of common infrastructure room to room
 - Does not work reliably
 - Modernize, match pedagogical approach
 - Video conferencing is too complex
 - Scheduling system is an impediment
- WI-FI Access
 - Lack of access
 - Much too slow and level of service limited
 - Cannot connect at key times
 - Need more and better locations
- Communication
 - Communication from IT is limited or does not exist
 - Want more mobility applications to access systems
 - Planned and timely communication about changes needed
 - Engage faculty more in planning and design
- Training
 - New systems/tools installed with limited or no training
 - Training needed for faculty
 - IT staff are not always the best trainers
 - More about how to use Google Apps for Education

The **Educational Technology Advisory Group**, which consists of faculty and instructional support personnel from all of the campuses, contributed a statement of need for inclusion in this report which is reproduced below.

UMS IT is currently at a critical juncture. As the system moves toward a "One University" model that will depend heavily on technology and distance education to expand opportunities for access, IT is still regaining its balance after a major centralization and consolidation effort. These structural changes have left the System in better financial shape, but have also left many at the seven campuses confused, under-supported and, at times, angry.

At a time when technology is becoming more and more important in higher education, technology support at UMS is becoming more difficult to access. Resources that were previously local and familiar have been centralized to unknown areas, so end-users are frequently unsure who to contact for help. Calling the support line sometimes leads to a quick resolution, but other times it results in a whirlwind trip around the System, the call being forwarded from one campus to another, the user explaining the issue multiple times, until they either reach someone who can help or give up and walk across campus to try to find someone local who can. Seemingly simple tasks, like requesting software licenses can take weeks, if not months.

Educational technology is functional, but beginning to show its age in many classrooms. Students are entering university classrooms only to discover that they had better access to technology at their high school. Technological disparities among the campuses that were once seen as an inevitable result of seven campuses with seven sets of priorities are becoming less tolerable as we move toward centralized Information Technology Services and "One University."

It is impossible to identify a single cause for the issues IT is currently facing. Centralization necessarily moves some resources away from the campuses, so it has certainly contributed, but so have the cost-saving measures that have left campuses understaffed and overworked. Regardless of the cause, the expected impact of centralization and consolidation was not clearly communicated, leading many users to anticipate similar, or even improved levels of service despite the funding cuts, but certainly not the deterioration in services that has occurred in some areas.

With these issues in mind, the Educational Technology Advisory Committee offers the following suggestions:

- *Clearly define the goals and priorities for IT not just for the coming year, but 3 to 5 years down the road.*
- *Improve the customer service experience. This will require better tracking of the experience of customers (e.g. post event surveys), but this data will highlight strengths and weaknesses and provide a metric for measuring the impact of future IT changes.*
- *Clarify and better communicate processes and policies (e.g. how to enable adoption of technology across campuses and how to identify local needs).*
- *Remember that it is not enough to invest in new hardware and software. Skilled, professional staff are essential not only to maintain the equipment, but also to support the end user.*

III. Challenges

The issues identified by US:IT customers are accurate. In response to the feedback and observations of our customers and advisors and in support of the analysis and expertise of our staff, US:IT offers an assessment of challenges and recommendations to meet those challenges.

Oversight/Prioritization Process

Strategic planning, budgeting, investment and operations require oversight and uniform direction. The Chief Information Officer has oversight of these functions, but CIO decisions and direction can be ignored or dismissed at several levels within the UMS organization. The CIO needs the support of a strong advisory body to provide input, to guide and inform major decisions and to assure compliance with approved decisions.

The recently proposed University Services Advisory Council will include the individuals who would be able to define campus needs and ensure that agreed upon investment and services

are accepted and supported at the campuses. This Council is envisioned to provide the type of guidance needed.

Staffing and Support

Customers are demanding expansion of the service delivery, timeliness and level of support for all facets of IT. Existing resources are insufficient to support expanded hours of service coverage, shortened response times for service delivery, and assist with new technology evaluation and implementation.

The current staffing levels at US:IT were designed to support the organization as it existed in 2013. New systems have been added to operations, many more are in the planning or construction phases, and there is a long list of projects desired but not able to move forward due to resource constraints. IT staff are highly motivated to provide training and support to its customers but sufficient resources are not available to meet the growing need.

Over the past two years, US:IT has evolved in stages from a traditional, siloed and fairly rigid hierarchical structure to a more flexible and responsive team-based approach. US:IT is moving from a largely reactive, individual “quick-fix” response to a more strategic, customer-centric team based problem solving approach. Acting as one seamless organization, resources and assets are quickly and strategically deployable where needed. Our people are working smarter and better.

With this transition to a more customer and mission centric IT organization and with the increasing reliance on technology by all facets of the University, there exists a significant human resource gap. The current staffing level at US:IT is not adequate to provide the needed resources to operate, maintain, train and support the IT systems and provide quality services needed by students, faculty and administrators. The core challenges are:

- *Attracting and retaining skilled and experienced staff is a challenge due to **low salary levels and market competition** for IT professionals with experience.*
 - *22 vacancies occurred in the last 6 months due to retirement and staff moves to the private sector*
- *Consolidation of systems and acquisition of new systems has diverted staff from core operation, causing shortages and delays. Current planning for introduction of new applications does not include the people resources required to support the applications and train users after they go live.*
- *The shortage of skilled and experienced people is compounded by a similar shortage of business process experts within our customer departments to partner in system design and development*
- *Even the resources required to perform necessary upgrades and patches are no longer sufficient.*

The current System salary scale has not keep pace with the highly competitive market for IT professionals. The average annual increase for most IT positions nationally is well over 5%.

Anecdotal evidence indicates that many IT staff leave for 20 to 30% increases in pay for similar work.

The changes to US:IT and the reductions in staff, particularly at the leadership level, also negatively impact the work environment. The continued loyalty and hard work of current US:IT staff is critical to our success going forward. In addition US:IT needs a larger supply of well-qualified and well-trained service oriented staff to support the technology and service needs of Unified Online Learning and Academic Transformation initiatives.

Technology Upgrades and Advancements

Technology advancements over the last 5 years, coupled with the integration of mobile technology into every facet of the higher education environment has resulted in a serious deficit in the US:IT's ability to provide faculty and students with the tools and environment they need for a high quality experience.

This deficit has been exacerbated by limited and individualized campus investment in technology infrastructure, particularly in the wireless connectivity (Wi-Fi) and classroom environments. Many spaces are using technology designed and installed ten or more years ago – a time when smartphones and tablet devices did not exist. Even telecommunications cabling is below the standard required to provide the speeds, responsiveness and capacity expected by our students and faculty. Classrooms operate using standard definition projectors (for example) and without the wireless connectivity to use the latest in tablet and other mobile technology as designed.

Classroom deficits include:

- *Non-standard and **aging** classroom technology*
- *Limited Wi-Fi capacity*
- *Duplication of online learning platforms*
- *Overall industry challenges in developing technologies that provide equal access to person with disabilities*
- *Keeping up with the rate of innovation and the expectations of students and faculty for access to technology-based tools*
- *Training of faculty and support staff on the myriad of equipment in any classroom*

Enterprise Enhancements

MaineStreet modules were designed to keep separate the data from one campus to the next, complicating the student experience when working with multiple campuses. This design was intentional to avoid campuses having access to each other's data. An additional impact of this segregated data is inconsistency of collection and reporting due to differing approaches to financial aid records and other student information. Updates to core software and maintenance are delayed while staff attempt to multi-task daily requests for assistance. Work is frequently

delayed due to lack of analysts, developers and project managers. Outsourcing does ease the impact, but regardless of the technical solution (cloud based, software as a service or managed service) there is a need for US:IT staff to develop and maintain the interfaces and exchanges necessary for operation and data integrity.

Finally, this silo design does not support the Academic Transformation or Unified Online Learning initiatives. A greater online presence will rely heavily on the robustness of website services and integrated data systems. A redesign of the processes, data structure, and operational approach will require internal and external consulting, programming, training and ongoing support.

Academic Transformation

Classroom renovation including technology upgrades is crucial for implementation of program integration recommendations including multi-campus or multi-site course delivery. Program integration objectives must be factored into the determination of classroom upgrade priorities.

Program integration will not be effective until the student experience in interacting with all student services is seamless. The back office functions for student and faculty administrative systems and course delivery need to support multi-campus enrollment as easily as single campus and MaineStreet upgrades are needed to support this outcome.

Recommendations

US:IT is now strategically positioned to take action and manage investments to improve and modernize its services.

Recommendation 1.

- Proposal – Establish an advisory body to regularly review the strategic and operational plans of US:IT and to support the prioritization of initiatives to limit duplication and random investments outside of the planning process. For example, the University Services Advisory Council may be uniquely structured to serve this function.
- Challenge addressed – Need for advice and support of CIO actions.
- Estimated cost – From existing resources, limited to travel costs where necessary.
- Implementation – 6 weeks from approval, estimated date of implementation January, 2016.
- Outcomes: Streamlined project portfolio, strategic investments that are well coordinated, uniform, efficient and with faculty engagement.

Recommendation 2.

- Proposal – Complete a detailed analysis of positions, salaries and benefits for Information Technology positions within US:IT. The evaluation’s findings will assist in establishing compensation and benefits competitive in the Maine market and adjust inequities in existing staffing.
- Challenge addressed – Staffing and recruitment issues. Implementation of findings are expected to reduce attrition and aid recruitment, improving the performance of US:IT
- Implementation – prior to recruiting and hiring the majority of new staff.
- Estimated Cost – \$200,000
- Outcomes: Lower attrition will improve productivity and save retraining costs and lost time caused by staff turnover. Successful recruitment and hiring.

Recommendation 3.

- Proposal - Develop positions for nineteen (19) new technology professionals² and direct support staff to address the existing challenges to complete projects, manage enterprise systems, support campus training and assistance needs in the classroom, and address the network communications infrastructure. New projects and requests for service are delayed due to lack of staff resources. Nineteen new positions are required to address this deficiency and support direct services and systems used by those we serve. Input from faculty, students and administrators will guide the assignment of staff who will be located at the campuses to enhance response, improve readiness, resolve technical issues and train users.
 - Eight (8) support technicians for call center and campus services.
 - Eleven (11) technology professionals to support enterprise systems, network, and data center responsibilities and end user/classroom technologies.

² These new positions do not restore previously eliminated positions. The represent a different staffing portfolio better positioned to provide direct and indirect services/operations/support to our faculty and students.

Recommended Professional and Direct Support Staff Increases

Position Title	Count	Description
Campus Services/Technology Support Technicians	8	Staff to support current workload and expanded hours of coverage.
Classroom Technologists	3	Increased staff to support classrooms and media services.
Network and Infrastructure Engineers	3	Increased staff for network/data center/wireless support.
Systems Analysts/Database Analysts	3	Staff to support interfaces, database management, software management and maintenance.
Project Manager	1	To increase capacity to manage current portfolio of projects.
Programmer/Developer	1	To increase capacity for web, mobile and application development unmet needs.

- Challenge addressed – Need for support and technical staff to service day-to-day technology needs by extending the coverage in off-hour periods and establishing the capacity to train users. Includes staffing to support infrastructure investments recommended in this report.
- Estimated costs - \$1.5 million (includes salaries and benefit costs).
- Implementation – 8 to 12 weeks from approval and funding and following completion of staffing analysis. Estimated date of completion April 2016.

Recommendation 4.

- Proposal - Wireless Technology Connectivity Initiative to upgrade wireless service and associated cabling and equipment at all campuses to bring wireless capacity to gigabit speeds to support learning and living spaces.
- Challenge addressed – This project replaces outdated wireless and related equipment in and around learning and student environments, providing high-speed connectivity and improvements in the wiring infrastructure to support future advances and technologies.
- Estimated cost – \$24.8 million. See Infrastructure Investment Plan at page 16.
- Implementation duration – The majority of the work of this project would be outsourced with oversight by US:IT engineering staff. The project will require approximately three (3) years to complete, covering approximately 35 locations statewide. Detailed planning with input from faculty, students and administrators is crucial.
- Outcomes: Modern, very high-speed wireless with the capacity (minimum Gigabit at the

wireless endpoint) to support the number of students and faculty anticipated within a facility or area.

Recommendation 5.

- Proposal - Upgrade Classrooms for the Future – This initiative upgrades 350+ classrooms across all campuses with modern, high definition and smart technologies to create high efficiency teaching and learning environments. Uniform devices and systems will be installed with training and documentation to provide reliable operation by faculty and students. The classrooms will be designed using direct input from faculty with the intent to support multiple modalities, including support of integrated programs and unified online program delivery. (See Infrastructure Investment Plan on page 16.)
- Challenge addressed – Technology upgrades and advancements is one of two top priorities within the IT infrastructure area needing significant investment. Classrooms will be upgraded with state of the art equipment to provide a reliable, modern environment for teaching and learning.
- Estimated cost – \$17.2 million
- Implementation duration – The work of this project would be designed with input from faculty, instructional designers and facilities management staff, with the implementation functions outsourced and oversight provided by US:IT media services professionals. The project will require approximately three (3) years to complete, covering approximately 350+ classrooms located statewide. Detailed planning with engagement of administrators, faculty and students is crucial and will be a core component of the planning and evaluation process.
- Outcomes: Modern, high functioning learning environments with tele-presence technology where appropriate. All spaces designed to support the number of students and faculty anticipated within a facility or area and to support flexible modalities to meet faculty needs.



Recommendation 6.

- Proposal – Upgrade and modernize MaineStreet to support One University concept, including program integration goals, unified online learning, student services, Human Resources initiatives and the unified budget plan. This necessary modernization requires consulting assistance and engagement of administrative leaders to evaluate business processes and to develop a new design for data collection and management.

- Challenge addressed – Removing the current silos designed to segregate campus data that prevent ease of access for students, faculty and others resulting in greater robustness of web services and integrated data systems. This is an important outcome as highlighted by the Academic Transformation working groups and the Unified Online Initiative. Common data definition, uniform numbering and naming conventions and break down of artificial barriers between campuses will be primary goals.
- Estimated cost – \$1.5 to \$2 million
- Implementation duration – The work of this project would be designed with input from administrative and academic professionals, leaders, faculty and students. Implementation functions will be outsourced with oversight by US:IT project managers and business representatives. The project will require approximately two (2) years to complete. Detailed planning is crucial and will be a core component project development and return on investment analysis.
- Outcomes: High functioning MaineStreet System designed to remove barriers and to support students throughout their engagement at the UMS.

Other recommendations to be considered going forward:

Recommendation 7.

Invest in online training solutions such as Lynda.com and other resources to augment staffing proposed in Recommendation 2.

Recommendation 8.

Fully fund the Advanced Computing Group which now operates on grants and fee for service. This is critical to support the Universities' research agenda. In addition, add a position to seek grant funding to support cyber infrastructure investments for research as well as to assist researchers as they address cyber infrastructure and data management requirements in proposals for grants.

Recommendation 9.

Replace existing 25 year old telephone systems at the remaining 4 campuses (USM, UMF, UMPI, UMM) with IP-based telephones creating a single University-wide phone system.

These recommendations take aggressive action to improve the student and faculty experience through thoughtful design in and around the classroom to support academic modalities now and into the future. The Information Technology Capital Plan, first presented in 2014, addresses a planned approach to modernization and improvements of the remaining recommendations along with new requests that will inevitably develop from the University

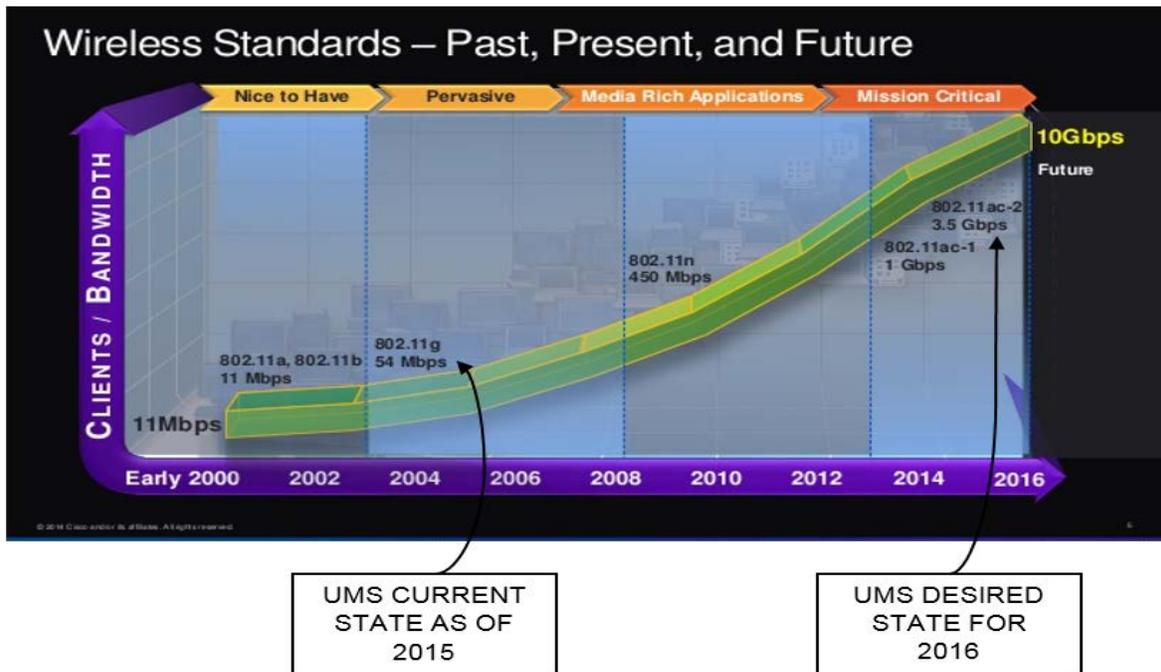
community. The CIO, with the support of the US:IT team, will continuously update a plan to achieve the changing outcomes of a dynamic, thriving institution.

Infrastructure Investment Plan

As a result of far reaching technological advancements over the last 5 years, coupled with the integration of mobile technology into every facet of the higher education environment, US:IT services and infrastructure improvements have failed to keep pace with necessary investments. In fact, we are losing ground.

This Infrastructure Investment Plan has been developed to make substantial progress towards erasing our support and technology deficits and maximizing services to students and faculty. There are two key elements:

1. Wireless Technology Connectivity Improvements
\$24.8 million project
2. Upgraded Classrooms for the Future
\$17.2 million project



Wireless Technology Connectivity Initiative

This is a high priority first investment to significantly upgrade wireless technology where students live, study and learn on campus and especially in classroom and study environments. An investment of **\$24,793,945** in infrastructure to support wireless technology accomplishes the following:

- Robust gigabit capacity at the wireless router. This provides much greater capacity and speed with expected responsiveness.
- Greater capacity to support larger numbers of simultaneous users
- Upgraded wiring to Category 6, which will support the latest standards and higher speeds and capacities with increased reliability
 - While it is a wireless initiative, the infrastructure improvements also will increase the capacity at wired jacks within the upgraded areas.
- Quality performance to support student and faculty use of wireless tools in the classroom that are or will be needed in the future
- Measureable positive impact at all campuses, University College Centers and Cooperative Extension locations.

This estimated cost was developed by evaluating the entire wireless footprint supported today by US:IT Network Maine. The initial estimate below covers the investment necessary to upgrade all spaces within the network to accommodate increased density and wireless expansion across all spaces. This includes administrative and other spaces beyond just learning and living spaces. The breakdown by location follows:

Location	ISP/OSP*	Network switches	Wireless APs	Total
UMaine	\$2,900,000	\$1,000,000	\$1,610,115	\$5,510,115
UMA-A	\$200,000	\$224,000	\$65,780	\$489,780
UMA-B	\$350,000	\$120,000	\$55,315	\$525,315
UMFK	\$500,000	\$216,000	\$74,750	\$790,750
UMM	\$600,000	\$192,000	\$86,710	\$878,710
UMPI	\$750,000	\$240,000	\$109,135	\$1,099,135
UMF	\$2,250,000	\$624,000	\$246,675	\$3,120,675
USM-G**	\$3,900,000	\$1,072,000	\$611,455	\$5,583,455
USM-P	\$3,600,000	\$872,000	\$206,310	\$4,678,310
USM-LAC	\$450,000	\$112,000	\$16,445	\$578,445
DMC	\$550,000	\$144,000	\$43,355	\$737,355
Centers	\$0	\$152,000	\$29,900	\$181,900
Totals	\$16,050,000	\$4,968,000	\$3,155,945	\$24,173,945
Wireless Controllers, Client On-boarding Solution, Test Equipment				\$620,000
Total deployment capital costs				\$24,793,945

Upgrade Classrooms for the Future Initiative

In order to improve the classroom experience for students across the campuses, US:IT proposes overall improvements in classroom technology systems in conjunction with internal renovations of those classroom and learning spaces. The proposal for this second project represents the cost estimates of typical upgrades and capability expansion based on size, configuration and projected use. While some classrooms will need minor improvements to technology, others will need a complete overhaul to address issues ranging from improper viewing angles, unmet ADA (Accessibility) requirements, lack of sound amplification/integration and a general lack of investment to meet current classroom technology requirements, practices and regulations. The very first step in this project will be a detailed evaluation of classrooms at all campuses *with engagement of faculty, students and Facilities Management to plan actual changes and improvements.*

An estimated investment of **\$17,214,500** in infrastructure to improve classroom technology accomplishes the following:

- Standardizes the classroom technology in all classrooms where technology is needed
- Allows faculty to easily move between classrooms and ultimately even between campuses if desired. This does not mean one size must fit all.
- Standardizes classroom technology resulting in responsive first level support through a unified service desk, the UTSC.
- Improves reliability and performance for students and faculty using all modalities.
- Offers proactive maintenance, remote management and limited remote assistance to provide real time response to needs or problems.
- This estimate includes partnership with Facilities Management to address other non-IT needs while rooms are upgraded.

Standard installations across the campuses will dramatically improve the classroom experience that is central to the work of One University and its campuses.

The summary of costs (below) is an estimate for needed improvements in the classroom environment. The reality is many rooms will need very little upgrade while others will require a complete overhaul. The detailed classroom inventory, to be completed this fall, will identify and prioritize both facilities and technology gaps. The high level process will include these steps:

- Detailed classroom inventory
- Engage faculty, instructional designers, Educational Technology Advisory Committee, and technology experts to:
 - Determine and anticipate pedagogical needs
 - Research options and best practices
 - Advise on priority
 - Evaluate prototypes

- Prioritize investments against available resources/timeline
- Procurement processes
- Project implementation.

An initial estimate is that 35%³ of the 581 existing rooms require no investment due to recent upgrades or the rooms do not require new technology. Applying this reduction to the calculations below reduces the total request to \$17,214,500.

Some wireless investment and the associated gains in both wireless and improved wired connectivity will be necessary to accommodate the updated classrooms. The budget estimates do not include those additional costs in anticipation of the Wireless project moving forward simultaneously.

Total Costs for AV if upgrading all 581 rooms

2015 Capital Investment – Classroom Initiative			
Location	Infrastructure	User Technologies	Total
UMaine	\$2,932,436	\$2,701,806	\$5,634,242
UMA-A/B/Centers	\$2,845,053	\$3,444,117	\$6,289,170
UMFK	\$544,757	\$455,361	\$1,000,118
UMM	\$354,922	\$352,544	\$707,466
UMPI	\$493,627	\$443,686	\$937,313
UMF	\$827,380	\$684,349	\$1,511,729
USM-P/G/LAC	\$2,511,879	\$2,179,790	\$4,691,669
USM-LAW	\$189,269	\$225,577	\$414,846
Totals	\$10,699,323	\$10,487,230	\$21,186,553
	Allowance for Facilities Improvements at 25%		\$5,296,638
	Total deployment capital costs		\$26,483,191

Implementation Strategy and Schedule

Immediately upon approval and funding, a project team will be assembled. Consulting, engineering and design services will be retained. Engagement with campus and administrative leadership, faculty and students will inform both the design and prioritization within project

³ The calculation of rooms that will not require upgrade is an estimate, based on a paper review of existing data on classroom spaces. The detailed inventory, coupled with faculty and instructional design feedback is needed to determine an accurate plan and prioritization.

resources. Design and planning will be staged by campus and the project(s) will require approximately 36 months to be completed.

Most work will be scheduled around academic needs and faculty schedules. Plans must limit the amount of time any one classroom or area is unavailable for services, winter and summer breaks being the most advantageous periods to gain access. If both projects move forward, each will have its own project team but will meet regularly to coordinate work.

Cost/Budget impact on each University

No investment strategy is complete without stating the implications of expenditures on operating budgets. The FY 16 budget was created by establishing a baseline for US:IT services and applying it proportionally to all campuses. The overall cost per FTE (student, faculty and staff) for the entire UMS is:

FY16 COST ALLOCATION Total for Unified IT			Faculty, Staff and Student FTE Count	Central IT Spend Per FTE	Peer Average
TOTALS	\$22,113,408	100%	26,131	\$846.25	\$1,050.57

This demonstrates that unified or central IT costs are currently well under the Educause average for peer institutions.

See Appendix IV for more detail on Cost/Budget.

Appendix I - History and Current State

The Information Technology organization has gone through a number of transformations over the last 13 years. Prior to 2003, Information Technology was a highly centralized organization delivering administrative and academic solutions through mainframe technologies to a decentralized organization. In the years between 1988 through 2003, the shift from mainframe to PC/Mac workstations was meteoric. Client/server based technologies became the norm, leading to more solutions delivered to the desktop and less through the mainframe. This was particularly true in academics. During this period, academic technology support moved to the campuses as more products were consumerized. UMS-wide central IT focused on large administration systems such as student, human resources, and financial systems, networks; and on large academic systems such as Blackboard. More support grew organically at the campus level for both academic and administrative computing needs. This consisted of direct desktop support, file and print services, classroom equipment including video, and many other needs that campuses considered to be unique to their location.

In 2003, the single UMS-wide IT Organization split into two organizations; “network/data center” and Administrative. By 2005, it was clear that this approach was unsustainable and a Chief Information Officer position was created. During the period 2005 through 2007, the two UMS IT organizations were re-combined and efforts to create collaboration and efficiency across the now seven campus IT organizations and UMS IT were attempted. None of these efforts were successful.

In May of 2012, UMS Central IT reformed the organization from a “PeopleSoft implementation” organization to a more flexible and agile service center, more fully supporting a broader set of IT services. A project management office was formed in order to insure more projects were on time and delivered with the intended outcomes. Four (4) positions were eliminated and five (5) were restructured to create savings and support the new alignment.

Overview of Administrative Review

At the same time, the Chancellor initiated an Administrative Review of IT in response to the Board of Trustees January 2012 Goals and Actions. The need to further reduce costs created the opportunity to look at IT across the University and reposition IT be more responsive to the emerging changes in the University of Maine System. The UMS already had the major functions of Wide Area Network and Enterprise administrative systems centralized. So new areas of service and achieving efficiencies were focused on exploration of campus-centric, distributed organizations.

On December 31, 2012, the IT Administrative Review’s focus was to “evaluate the information technology landscape and create a unified, strategic and efficient IT organization.” In January of 2014 an updated plan was presented to highlight details of the strategy and changes necessary to achieve the expectations anticipated in the Administrative Review.

Year One

US:IT was formed as the new unified information technology organization to provide infrastructure, services and expertise to the entire University of Maine System. Staff were re-assigned to this organization in July of 2013 and a number of management and supervisory positions were strategically eliminated to help achieve year one goals. During that time, several campuses also made direct adjustments to their IT expenditures, increasing the overall savings within IT.

Year Two

In July of 2014 (FY 15) US:IT was realigned to streamline operations, creating service delivery teams designed to provide highly skilled services to all of the University of Maine System. The IT organization transformed to a true system-wide organization with staff being re-aligned into key strategic areas in IT: Infrastructure, Enterprise Systems, End User Technology, Academic Technology, and Campus Services. A common support center was formed, and additional positions were eliminated to meet the savings goal. IT leaders were asked to take on additional roles. IT leadership of the smaller campuses (UMF, UMPI, UMM, and UMFK) was combined under a single IT Director. Remaining campus IT Directors were asked to take on additional leadership for End User Technology and Classroom Technology in addition to their campus leadership roles.

By reducing redundancy in these services, US:IT did its best to maintain capacity by leveraging expertise, and reducing the need to have many staff with generic skills juggling the same services. Very few staff were physically moved during this process. The progress and timeline was:

- Central IT Staff across all campuses and system office were unified into a single organization, reporting to the Chief Information Officer. July, 2013
- Services have been organized into a unified delivery team model providing UMS-wide services in the following areas: end-user technology, academic technology, enterprise technology, infrastructure, web services, and support services. July, 2014
- A unified service desk was established to centralize call center operations. August, 2014

Year Three

US:IT recognized the challenges to further cut IT costs to reach the FY 2016 goal, while attempting to maintain service level and quality. The difficulty of attempting to combine several existing solutions into one system and the lack of well-documented processes and inventories was evident. In late fall of 2014, US:IT 2.0 was launched to address these issues head on. US:IT

2.0 introduced a new form of capability building, changing from a model of only high level IT Directors forming the major decision-making governing body, to a model that leverages the talent within the organization by including representation from all levels. Three teams were created, focusing on strategy, portfolio management and operational excellence. The teams were tasked to develop communication processes together and to specifically establish a more process centered organization, building US:IT’s capabilities through the experiences and skills of the staff.

The actual savings for Information Technology appears in the table below.

Year	Actual New Savings	Cumulative Total	Position Reduction	Cumulative Total
FY2014	\$1,002,464	\$1,002,464	4	4
FY2015	\$981,536	\$1,984,000	18	22
FY2016	\$1,274,000	\$3,258,000	0	22

Information Technology requires constant analysis and reasonable adjustments to achieve increasing expectations. A further reduction in senior management at US:IT allowed the two existing Associate CIOs to manage the needs of six campuses while the Director of Information Technology at UMA continues to serve its distinct population.

US:IT 2.0

US:IT is now a single organization, committed to serve students, faculty and to supporting the success of each campus. US:IT is organized using a team collaboration approach to service delivery. It supports distance technology as an integral baseline of IT services, in the very way anticipated by the Academic Transformation (formerly APRIP) and Unified Online initiatives. There are 164 staff working towards these goals today.

The organizational changes over the last two years were designed to accomplish the workload as needed in 2013. The expansions in demand, and the tight budget climate since that time, have further impacted the performance of US:IT.

The savings anticipated in the Review were achieved, but several of the initiatives anticipated to achieve efficiencies have been delayed due to new priorities to support the ever-expanding demand of the campuses and administrators.

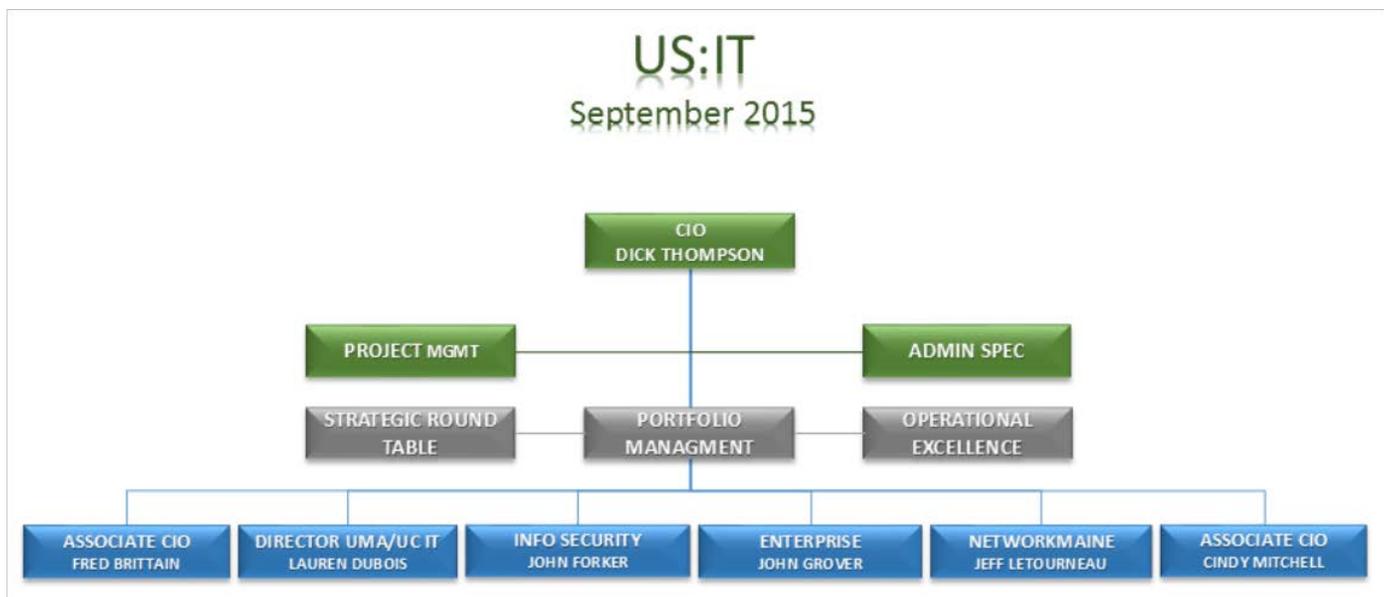
Interesting Growth of IT Statistics

1. In 2008 the number of internet devices had risen to 1 billion.
2. And 6 years later in 2014, the number had risen to 10 billion!
3. There are 5.9 billion searches on Google every day, 100 times more than in 2000.
4. The number of text messages sent every day is double the population of the planet.
5. 95% of all of the data in the world has been created in the last two years.

US:IT 2.0 is our commitment to optimize the value we bring to our institutions by becoming a process-based, service-focused organization. This effort is focused on building capabilities within US:IT. This is a continuing effort to focus on our organization, succession planning, leadership development and capability building. This is about engaging the entire organization to make a difference.

Three teams: Operational Excellence, Portfolio Management, Strategic Round Table, are made up of IT staff from across the organization to develop processes and strategies which position US:IT to be responsive, accessible, reliable and aligned with institutional mission and goals.

Management Structure July 2015



This management structure is in place today. Total number of supervisory positions reduced from 52 to 38. Items shaded gray are not staff. They are capability building teams consisting of senior leaders and other IT staff participants.

Strategic Round Table (SRT)

The SRT produces well-aligned strategies ensuring US:IT is positioned to be a strong and trusted partner in advancing the goals of the institution. SRT maintains relationships, understands external trends in higher education, state and federal education arenas, and the information technology industry. SRT will strategically address challenges and leverage opportunities and actively assesses strategy through solicitation of feedback, and other metrics.

Portfolio Management (ITPM)

Portfolio Management creates a shared understanding of the portfolio through increased collaboration and enhanced communication for optimal decision making and awareness. Portfolio Management is a self-organized, evolving, process-driven, customer-focused structure to align with the business strategies and goals of the University of Maine System.

Operational Excellence (OpEx)

Operational Excellence guides the US:IT organization towards maximizing its meaningful impact on the University of Maine System through quality management. The team accomplishes this by promoting and supporting a commitment across US:IT to proactively establish, utilize, support, and monitor processes and outcomes, and to continuously improve the quality and performance of the US:IT organization.

Detail of current state

The foundation of US:IT is its infrastructure, enterprise level systems and services. High performing, well supported networks, data processing capacity and enterprise-class systems, result in efficient, stable operations. This foundation supports a variety of services performed by teams of talented IT staff within US:IT for the benefit of those served. A high level analysis follows:

Infrastructure (internal and external)

The Networkmaine team maintains the statewide network infrastructure and campus networks (wired and wireless) that provide the communications backbone of the University. Networkmaine serves the University, K-12 schools, libraries, other higher education institutions and research laboratories across the state.

Communications includes telephone services, computer Internet connectivity, video-conferencing and other telepresence technology platforms. Many campuses are reliant on aging or obsolete communications equipment, such as telephone switches, and lack modern networking infrastructure, such as cabling, to support upgrades and improvements. A significant amount of our equipment is so old that its manufacturers no longer support it.

In addition to networking, Networkmaine provides core-computing infrastructure, including data centers, data storage, backup servers (virtual and physical) and data center colocation services to all campuses and to MaineREN connectors⁴ such as College of the Atlantic and the Maine Maritime Academy. The server infrastructure includes approximately 800 virtual servers distributed between our primary data center at UMaine, the data center at USM Portland and legacy campus data centers.

Networkmaine supports research activities by operating the High Performance Computing environment at UMaine, providing private cloud services, data management services, outreach with the research community and grant writing.

Networkmaine also implements and operates information security systems necessary to support information security policies and initiatives, such as the operation of network firewalls required for PCI (credit card processing) compliance, network access control and remote secure VPN access for the operation and support of US:IT systems.

In summary, Networkmaine provides a wide array of services consumed directly by clients, and indirectly through the infrastructure they provide to support many other US:IT services. Networkmaine faces significant challenges from aging infrastructure, a majority of which has, or will soon, reach the end of its serviceable life.

Networkmaine Service Areas:

- Voice-Video-Data Networks
- Servers-Storage-Backup
- Cyber Security Operations
- Research Computing

Campus Networking	
Network components	6,000
WiFi access points	1,800
Ethernet ports	62,000
Unique Daily WiFi Devices	17,000
WiFi Access Points	
No longer supported	48%
Slow speed	50%
Current standards	< 5%
Communications	
Videoconference Rooms	160
Videoconference mobile users	550
hours of ITV and	
Statewide Network	
Optical Network Nodes (ME, NH, MA)	36
Leased circuits	800
<i>Vast Majority Of Equipment Requires Replacement in the next 2 years.</i>	

⁴ MaineREN is a multi-tiered, advanced network-services fabric serving and financially supported by the vast majority of research and education institutions in the state.

Successes include:

- NetworkMaine is the third largest network in the State of Maine, services all of our campuses, centers and other locations with high speed connectivity.
- Advanced Computing Group now available for researchers system wide
- Robust virtual server environment now available to users at all campuses, in a secure environment with back provisioning.

Challenges to this service area include:

Network Infrastructure

- Communications infrastructure aging rapidly. A significant amount of foundational network infrastructure is also old. Failures, incompatibility and especially obsolescence is due to no clear upgrade or reinvestment strategy.
 - Cabling
 - Significant levels of fiber optic and copper cable plants to and within buildings are well below current standards on campuses inhibiting the ability to provide modern services while requiring extra levels of support to maintain.
 - Communications equipment/services
 - Many campuses are reliant on aging or obsolete communications equipment, such as telephone switches, and lack modern networking infrastructure, inhibiting the ability to provide modern services while requiring extra levels of support to maintain.
 - Wireless (Wi-Fi) - All campuses need improvements and expansion. This is a quality and capacity issue and has a direct impact on student and faculty experiences.

Data Center/Computing Capacity

- Virtualized Server environment - This service must be expanded and resources allocated to move from stand-alone servers to a high capacity environment within the existing data centers.
- Advanced Computing Group - This is a research-based entity operated in UMaine by US:IT. It is underfunded, relying upon grants and service fees to exist. This is an important and valuable resource for UMS and its many partners. The asset deserves investment and support.
- Business continuity/Disaster Recovery - US:IT has two data centers and several cloud services. More planning and strategic alignment is necessary to be sure all essential services are covered by the infrastructure and plan.

Enterprise Systems and Applications

Enterprise Computing and Application Services (ECAS) group provides service and support for every academic and business area of the University through the software and systems it manages.

Through its services, ECAS provides a platform for virtual spaces where teaching and learning take place. ECAS services help departments standardize and automate business processes for efficiencies and quality improvement in serving their clients, and often form the backbone for providing off-site access to students for business interactions with the university, such as self-service registration, finance and student employment. These services empower customer service, compliance, institutional memory, and literally thousands of business processes without which the university would not be able to function.

As the University moves to an increasingly greater online presence for marketing and delivering education, ECAS services empower rich web presences through its website services. By supporting the UMS Portal, ECAS assists the University campuses in aggregating information and services in one web application to enhance service - especially self-service - for students and others. In this day and age, almost every idea or initiative for improving or expanding service to students, faculty, staff or the public relies upon a component of ECAS services for its success.

Some of the most critical services are:

- **MaineStreet**
 - Campus Solutions - The student information system.
 - Financials
 - Human Resources (HR)
 - Data Warehouse
- **TouchNet** - Cloud based system that enables electronic payments for many systems.
- **Scheduling** for classes and other room scheduling
- **Blackboard** - The system-wide learning management system.
- **Advance** - The unified advancement tool in gift and donor management.
- **ImageNow** - The unified document management system.
- **Google Apps for Education** - Cloud Based
 - Gmail
 - Google Drive - Secure Storage
 - Google Docs - Document Creation Tools
 - Google Hangout - Video and Text Communication Tool
 - Calendar - Sharable Calendar
- **UMS Portal**
- **Website administration**
- **Website design and development**

Applications Stats

Blackboard LMS (Fall 2015)

Courses taught	10,100
Enrollments	27,900
Pageviews/day	>250,000

Advancement

Gifts Records (annl)	21,499
Donor Records	146,654

Elec. Document Mgt.

Departments	27
Pages imaged	16,088,123

myCampus Portal and Web

myCampus visits	3,000,267
myCampus users	29,978
web site visits	26,287,819
websites in cloud	50
websites hosted here	20

Google Apps for Education

active users	195,000
emails	120,000,000
documents	3,500,000
hangouts	30,000

Other

Databases Administered	86
Systems Administered	600
Avg. daily MaineStreet logins	12,250

- Directory, Authentication, and Access services (including Single Sign-On)
- AIM Facilities Management - Known as Integrated Workplace Management System (IWMS)
- Panopto Lecture Capture - Cloud Based

The ECAS group focuses on software development, web development and hosting, system administration, database administration, and reporting. Areas work together to implement and care for systems and applications that support the services offered to the University, its students, employees, and departments.

Providing seamless and reliable service requires a close relationship between ECAS and other groups in US:IT, from Infrastructure Services who provide the computing hardware, data centers and networking required to host and provide access to Enterprise Applications to UTSC and Campus Services who work directly with individuals to make the best use of the services provided.

The ECAS group has been very busy absorbing applications developed and operated by former isolated campus IT units. This is bringing efficiencies through functional alignment and de-duplication of disparate solutions, but the raw resource demands to deliver the full suite of applications, as well as respond to the need for improvements, upgrades and new applications, far outstrips the group's resources. In addition to the consolidation of these new applications, systems and services, ECAS has continued to be responsive to implementation and enhancement requests related to services it has supported traditionally.

Successes include:

- *Expansion of document management services, and business process automation into new areas across the University.*
- *Forming governance groups where needed, such as for Advance the gift and donor management system.*
- *Consolidating and migrating previously self-hosted and redundant video streaming into the Cloud.*
- *Developing the myCampus portal system as a central internally-facing, locally-branded, information system.*
- *Transitioning from an under-performing Portal vendor with a proprietary system to a well-supported system.*
- *Standardizing web hosting technology to allow serving a broad array of needs across the system without duplicating tools or expertise, utilizing cloud web hosting to fill in capacity for special purpose and limited-duration web sites.*

Challenges in this area include

- *Attracting and retaining skilled and experienced staff has been a challenge due to salary levels and market competition for IT professionals with experience.*
- *Staff shortages as the result of the long term additional work required to consolidate and in some cases retire disparate legacy systems. In addition, planning for new applications seldom includes the addition of new staff needed to support the applications.*
- *Assisting academic and business areas to leverage the opportunities provided by the applications they use. Our shortage of skilled and experienced people is compounded by a similar shortage of business process experts within our customer departments to partner in system design and development*

- *The human resources necessary to benefit fully from these systems do not match investments in software and hardware. Resources to keep up with necessary upgrades and patches are no longer sufficient.*

Information Security

The Office of Information Security works collaboratively with individuals and departments to ensure the security of University information and information that the universities are entrusted to protect. Under the direction of the Chief Information Security Officer, the Office applies various processes and technologies to prevent, detect and respond to potentially harmful security activities. The office works with campus stakeholders and third parties to achieve regulatory and contractual compliance when transmitting, processing or storing various types of data and to effectively manage the risk associated with safeguarding information.

Information Security serves University of Maine System faculty, researchers, staff, student workers as well as contractors and partners to protect information belonging to various constituents including current and former students and employees, parents, donors, and customers.

The Office currently consists of the Chief Information Security Officer and three analysts. Policy and processes are developed and updated in cooperation with stakeholders and various levels of training are developed and provided to ensure that end-users employ best practices. Analysts consult with functional areas and IT staff to ensure that appropriate systems and controls are employed to protect data. Regulatory compliance is assessed and monitored. Threats are evaluated from several sources including alerts reported by a 24/7 contractor that monitors University-owned intrusion detection systems (IDSs). Incidents are responded to and investigated both in-house with forensic tools or using contractor services as needed.

Employees receiving Infosecurity Training since inception in the past year	71% 39%
Number of systems under vulnerability management	862
Number of Third-party agreements vetted for security in 12 months	61
Number of HIPAA covered entities	7
Number of PCI merchant accounts	53

Successes include:

- *Alert system developed and maintained against outside threats*
- *Contract review, protecting data during vendor relationships and in cloud services*
- *Response plans in place to address issues*
- *Improvement of internal systems and controls*
- *Identification of key risk vectors and implementation of strategies in each area*
 - *PCI compliance, vulnerability management, threat detection, etc.*

Challenges in this area include:

- *Resource constraints both in operating budget and staffing.*
 - *Much of the shortfalls are in US:IT areas or security operations.*
 - *Need for two-factor authentication,*
 - *Higher capacity logging, and data loss prevention.*

- *Overall industry challenges in developing technologies that provide equal access to person with disabilities*
- *Keeping up with the rate of innovation and the expectations of students and faculty for access to technology-based tools*
- *Training of Faculty and support staff on the myriad of equipment in any classroom*

IT Leadership

Senior leaders within US:IT have been assigned the responsibility to represent US:IT to the campuses and assemble and manage resources for the Universities growing IT needs. Key tasks include:

- Align IT with campus mission and priorities
- Ensure appropriate service levels through robust communication
- Bring a commitment to service as the priority of US:IT culture
- Oversee IT projects crossing multiple IT functional area teams, budgets
- Advocacy and successful delivery of services to the campuses they represent.

This direct relationship and renewed focus on service began in May of 2015 and has had a positive impact on the fall semester.

Support Center and Campus Services

Campus Services is the unified service delivery team of technology staff operating the University Technology Support Center (UTSC) and responding to emergency and maintenance requests when needed. The UTSC help desk focuses on responding to and coordinating the response to “incidents”, which are unplanned interruptions in the availability or quality of a services, as well as taking “requests” for service such as scheduling a videoconference, or inquiring about the status of a Blackboard course request. The UTSC coordinates and collaborates with US:IT service delivery areas when needed.

A key service in connecting the calls that come to the UTSC with services needed in person is performed by Campus Services personnel. These staff are based at each campus and respond to desktop and other technology support issues for faculty and staff such as virus cleansing, software problems and hardware problems; provide support to classrooms for classroom technology issues; and respond in many ways on the campuses they serve. A seamless service stack from UTSC to delivery of service through Campus Services, Infrastructure, Enterprise, and other service teams is the vision for this area.

Successes in this service area include:

- *Formation of a single point of contact for all US:IT services incidents and requests.*
- *UTSC provides the foundation for gathering reliable intelligence on service quality and customer satisfaction, enabling focused, evidence-based and systematic improvements.*
- *Improvements to the call center system in summer of 2015 are paying off.*

- *Use of student labor is a win/win*
- *Hours of service expanded in 2014 to include some weekend and evening coverage*

Challenges in this category:

- *Staff resource limitations.*
- *Lack of enterprise-class customer service tools.*
- *Hours of operation are not sufficient according to some students, faculty and staff.*
- *Current culture used to calling direct to a favored staff provider of service.*
- *UTSC effectiveness is directly tied to the efficiency and standardization of the services it supports.*
- *Customer satisfaction is often driven by how quickly, and how many support staff you have to re-tell your story to, in getting your issue resolved. We still lack processes and tools to ensure smooth handoff to 2nd and 3rd tier support staff.*
- *Lack of maturity in the model creates delays as answers to client issues are sought.*
- *Lack of standardization on specific technology tools*
- *Standardizing tools is a significant challenge given the resource limitations*
- *Delivery of non-standard services*
 - *Too few staff resources to deploy to solve problems responsively*
 - *Lack of documentation*

The training team in US:IT, part of Campus Services is one FTE. The unit makes use of You-tube type delivery, some face-to-face and web-based trainings. This area is a very under resourced.

Successes include:

- *Looking to innovative delivery mechanisms such as Lynda.com could provide excellent training.*

Challenges include:

- *The challenges for delivering training include the wide variety of tools in use*
 - *Standardization and de-duplication is necessary*
 - *Trainees time availability and interest in advanced training*

Project Management and Consulting

The Project Management Office (PMO) is the service area that provides guidance to the UMS community throughout an IT project's life cycle; from the initial project request through to project completion. The PMO facilitates the intake and review of new IT initiatives, and strives to ensure that the right projects are delivered at the right time and with the right resources. The PMO applies project management principles and methodologies across all project activities, and works with project teams to deliver projects on time, on budget, and to satisfied customers.

Successes in this category include:

- *PMO has directly managed or supported the delivery of fifty-eight projects since 2012.*
 - *Twenty-nine of the projects are currently active, and twenty-nine are completed.*
- *The services the PMO delivers continue to mature, and the value of applying project management methodology throughout the project lifecycle is increasingly supported and adopted by project teams.*
- *The PMO has developed process around project initiation and business case analysis.*

Challenges in this category:

- *Lack of formally established project portfolio governance model that provides a framework for processing the intake, review, and prioritization of new IT initiatives*
- *Initiatives are often undertaken without insight into the resources (human and financial) necessary to ensure successful implementation, to protect and monitor the investments, and to provide ongoing support.*
- *Limited resources cause significant outsourcing at as much as 50% higher cost, increasing cost to deliver on existing and projected commitments.*

External Collaborations and Advocacy

University Services: Information Technology is an active participant in information technology in the public sector. Whether as an advocate for one to one computing, as a core member and designer of the Three Ring Binder middle mile fiber project, or as a catalyst for collaborative services, the value of the University to the public is extraordinary.

Networkmaine, a business unit within the University of Maine System, was established to be the external face of network services to the larger regional research and education community. As part of US:IT restructuring, the group responsible for “Networkmaine” is also responsible for UMS’ cyber infrastructure. Internally to the University, Networkmaine is responsible for the design, operation, and monitoring of the following:

- Network Connectivity
- Voice, Video, and Data Communications Services
- Data Center Facilities and Server Infrastructure

In addition, the Advanced Computing Group is part of Networkmaine. ACG provides High Performance Computing and Cloud Computing services to the research community, both internally and externally, and is focused on computing needs and requirements associated with securing nationally funded research; including retention and transfer of research data.

Externally, Networkmaine provides or supports the following major network related programs:

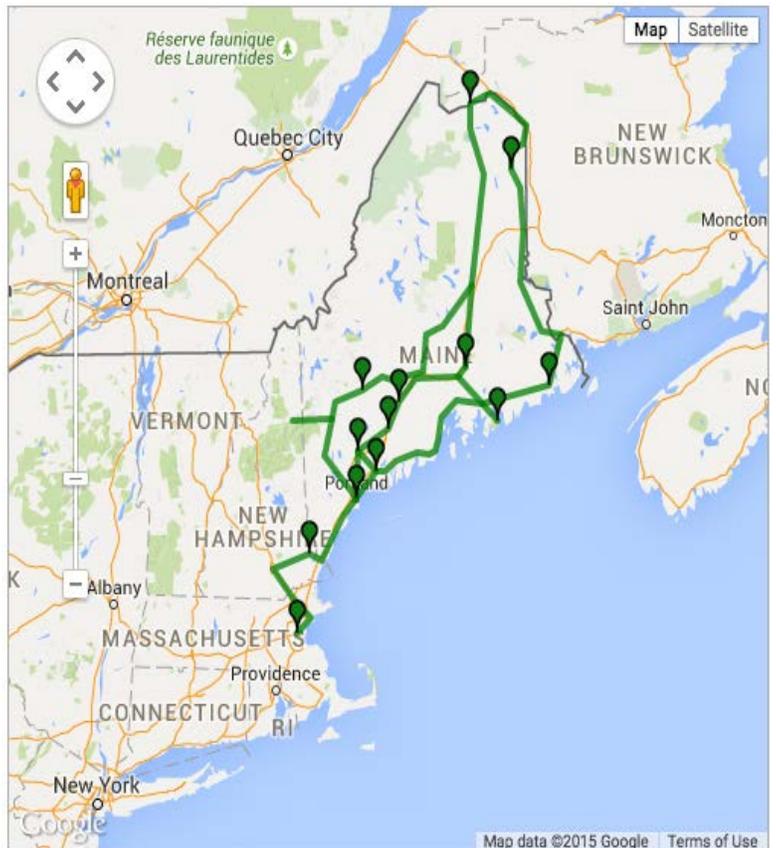
- MaineREN
- Maine School and Library Network (MSLN)
- MLTI (Maine Learning Technology Initiative) Wireless

MaineREN

MaineREN was created in 2007 by the University of Maine System, in partnership with The Jackson Laboratory and the University of New Hampshire, to create a Regional Optical Network (RON) that extends from Bar Harbor, ME to Cambridge, MA. The name MaineREN now refers to the portion of the RON that exists within the state of Maine.

The ultra-high speeds and advanced services typically associated with a research and education (R&E) RON are viewed as critical cyber infrastructure necessary to participate in, and be considered for, high-technology research. As the National Science Foundation has made the ability to demonstrate appropriate levels of cyber infrastructure a requirement for funding, MaineREN fulfills a crucial role in Maine's ability to attract and retain this high-technology research and provides our institutions the ability to collaborate with the national and international R&E community.

Following this initial phase various partnerships with the region's higher education and research institutions, (UNH, UVM, Dartmouth, URI, UDeI, MDI Bio Lab) and the private sector (Oxford Networks, Mid-Maine Communications, GWI, Maine Fiber Company) on various federal grants and funding opportunities resulted in being able to expand the RON not only to all UMS campuses but also throughout northern New England.



Here is a listing of some of the institutions that are connected through MaineREN.

- Bates College
- Bowdoin College
- Colby College
- College of the Atlantic
- The Jackson Laboratory
- Maine Maritime Academy
- The Maine Public Broadcasting Network
- Mount Desert Island Biological Laboratory
- Thomas College
- Unity College
- University of Maine
- University of Maine at Augusta
- University of Maine at Farmington
- University of Maine at Fort Kent
- University of Maine at Machias
- University of Maine at Presque Isle
- University of Southern Maine
- Maine School and Library Network (~900 K12 schools and public libraries)

MSLN

NetworkMaine was established in 2009 through a memorandum of understanding between the Maine State Library, Maine Department of Education, Maine Office of Information Technology and the University of Maine System with the goal of providing the public entities served with greater involvement in shaping the future of Maine's research and education network. NetworkMaine operates through a coordinating council that is comprised of representatives from each organization as well as 2 representatives from each community. The NetworkMaine Council currently has two technology directors from K12 schools and two librarians seated with one of the librarians serving as the Chair. The NetworkMaine Council sets the outcomes, delivery strategies, annual budget, and approves the annual reports and funding requests. It also defines its funding priorities, procurement strategies and sets the participation fees enacted in the 2014-2015 funding year in response to the shrinking funding available through the MTEAF.

Schools, schools districts, and libraries voluntarily elect to participate in the NetworkMaine consortium by signing participation agreements and letters of agency allowing the consortium to contract for services and file for E-Rate subsidies on their behalf. Employees of the University of Maine System carry out the day-to-day functions of NetworkMaine. Networkmaine's primary focus is the operation of Maine's research and education network with one of its most visible and important roles being ensuring that Maine's K12 schools and libraries have access to Internet connectivity at little or no direct cost through the MSLN project.

MLTI wireless

Networkmaine administers and provides operational support of the WiFi networks at the 250 middle and high schools that choose Apple's technology solution as part of the Maine Department of Education's Maine Learning Technology Initiative (MLTI). Networkmaine is provides this service under contract with Bell Techlogix, a subcontractor of Apple's.

US:IT - Advocacy to meet the mission of the University of Maine System

Gig.U

Drawing on America's rich history of research and entrepreneurship, 37 universities, including the University of Maine, and the communities that support them have come together to form Gig.U: The University CommunityNext Generation Innovation Project. Gig.U seeks to accelerate the deployment of ultra-high-speed networks and broadband services to member campuses and communities. Improvements to these networks drive economic growth and stimulate a new generation of innovations addressing critical needs such as health care and education.

Old Town – Orono Fiber Corporation

The University of Maine System is a member organization of the Old Town – Orono Fiber Corporation (OTO Fiber). OTO Fiber's goals are 1) to create a fiber optic network suitable over which symmetric gigabit Internet connectivity can be delivered, 2) to attract multiple Internet Service Providers (ISPs) to competitively offer services over this network, 3) to bolster existing businesses that can take advantage of this connectivity, 4) to attract and foster entrepreneurs, students, and recent graduates to create new businesses and enterprises that rely on high bandwidth connectivity and 5) to reach a level of utilization whereby the revenues cover the costs of upkeep AND expansion. The members of OTO Fiber are the City of Old Town, the Town of Orono, and the University of Maine System.

ConnectME Authority

The Chief Information Officer was appointed and recently reappointed by the Governor to serve on the Authority as a public member. The expansion of Broadband services, and especially the careful use of public money to expand coverage is in line with the University's tripartite mission of education, research and economic development, and public service.

The Authority is currently working on a strategic plan which will guide investment and funding opportunities over the next three years.

Rockport – Maine Media Workshop / College

Networkmaine partnered with the Maine Media Workshop/College and the Town of Rockport to leverage MMW/C desire to be connected to MaineREN to create the first municipally owned fiber network in Maine. Approximate 70 residences and business in the village of Rockport, along with MMW/C and Rockport Public Library, now have access to gigabit-level broadband services. The Town of Rockport owns the fiber optic infrastructure and leases it retail broadband services providers.

Information Protection Working Group

The Chief Information Security Officer was appointed this year by the Governor to serve on this working group as the University of Maine System representative. This working group was recently established to examine threats and vulnerabilities, develop cost effective defenses and practices, develop state-wide policy and procedures, and present recommendations to the Governor and Cabinet.

Appendix II Successes and Challenges

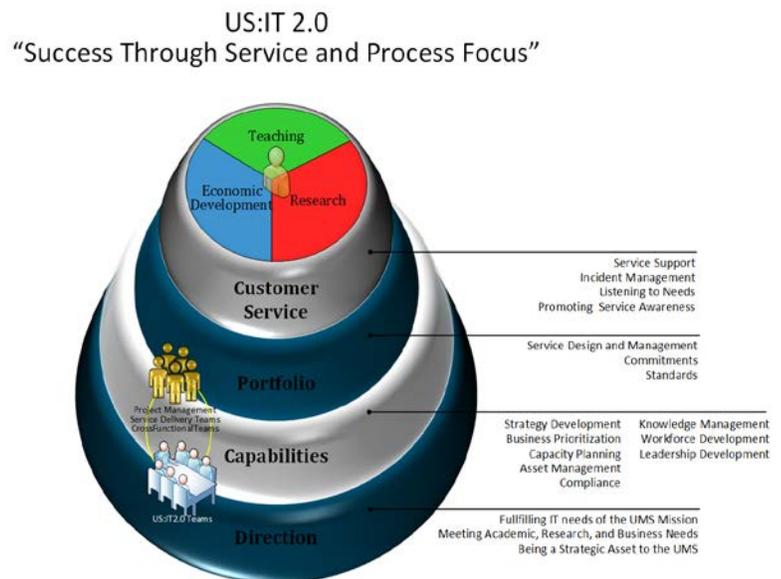
US:IT is a critical component of services to students, faculty and administrators. There are many moving parts to accomplish the day-to-day functions of a campus and the system. Before the normal workday begins, users are accessing IT services on-network or remotely, using one or more communication tools (email, chat rooms etc.), visiting a learning management system, administrative systems and using one or many other technology tools. All day long, they will be connected to the technology tools, or experience the technology in classrooms, libraries, even the laundry where machines can be monitored by a smartphone.

Our community will use services any time of the day or night from any location to accomplish their work. Our students, and especially distance students, experience is directly tied to the quality and effective operation of technology.

The information technology delivery system has been impacted by change, lack of investment over time, and need for a cohesive direction. The ongoing IT reorganization represents a significant organizational shift to address the challenges of the current environment. In addition to the prevalent successes and challenges listed within the service delivery areas, some overarching observations follow:

Organizational Successes:

- *Team-based Service Delivery* - This strategy has improved the semester preparedness and kickoff for the end user. It has also improved the way the work is done, creating agility and bringing competencies and strengths where needed.
- *Recent organizational changes* refocused staff to the campuses, the heart of where the work is accomplished, where education is delivered.
- *Increasing our utilization of “Google Apps for Education”*, a cloud-based, no-licensing-cost, system that provides innovative collaboration tools and a full suite of applications that end-users can access from any computer or mobile device, thereby empowering engagement from any location with Internet access.
- *Formation and continued development of a single point of contact for all US:IT services incidents and requests.* The single point of contact is deemed essential to making it easy for clients to reports problems, ask questions, etc., without having to navigate the complexities of an enterprise IT organization. The UTSC also provides the foundation for



gathering reliable intelligence on service quality and customer satisfaction, enabling focused, evidence-based and systematic improvements.

- *Accessibility improved* - The goal: make technology and technology supported services and information accessible to every student, employee and member of the public that access our services.
- *Support Center coverage expanded in 2014* - Additional support hours added from 5:00 to 8:00PM on class days, four hours Saturday and Sunday during the semester.
- *Licensing advantages* - System wide licensing of Microsoft, Adobe, common antivirus and other tools now available.
- *Despite all challenges, systems continue to provide needed services*

Organizational challenges:

- *Attracting and retaining skilled and experienced staff* - has been a challenge due to lower than market salary levels and competition for IT professionals with experience.
- *Staff shortages* - as the result of the long term additional work required to consolidate and in some cases retire disparate legacy systems. In addition, planning for new applications seldom includes the people needed to support the applications.
- *Investments in software and hardware* - are not matched by the human resources necessary to benefit fully from these systems. Resources to keep up with necessary upgrades and patches are no longer sufficient.
- *Hidden cost in labor* - Attention taken away from students and faculty, whenever a procurement or standards setting decision, made in light of promised savings, fails to take into account the total cost of ownership (TCO) and the cost to switch technologies or brands.
- *Providing support for deeper use of Google Apps for Education (GAE) tools.* GAE was originally envisioned as a possible replacement for Microsoft Office and we have learned that it cannot, as of yet, replace the ubiquitous Microsoft Office applications. GAE has also created challenges with disability accessibility and while Google is investing in improvements, the pace of change is slow.
- *Vast array of different physical systems currently deployed throughout the University.*
- *Volume of copyright compliance complaints the University receives from copyright holders.*
- *Incorporating legacy infrastructure and hardware* - residing outside US:IT's data centers in Orono and Portland. Many of the legacy services, previously delivered in silos at each campus, still rely upon distributed infrastructure. Incorporating those services and their dependent assets is a significant resource challenge.
- *Employee retention* - Staff turnover in the last six months has been extraordinary, an annualized rate of over 25%. Salaries, retirements and uncertainty due to change (internal to IT and external) are the primary causes.
- *Governance* - There is no formal governance process that can inform and commit to strategic direction or appropriate standardization across all campuses.

- *Prioritization* - Currently, there is not a prioritization process in place to determine how to best use resources to execute proposed initiatives within the context of the goals of the institution.
- *Commodity Cloud Services*: There is a perception that inexpensive, easily procured cloud services do not consume IT resources. However, frequently IT resources are required to integrate the cloud service in a seamless way within the existing UMS technology portfolio. .
- *Direct Support at the campus level* - Users want to know they are reaching a campus located IT person and expect immediate response, including emergency response to their needs.
- *Staffing during off hours* - Current staff are responding ad-hoc to off hour emergency issues. Staff count does not support 24 x 7. Non-emergency needs are unattended until next business day.
- *Process orientation* - Information Technology support grew organically for 20 plus years, creating at least 8 autonomous organizations, each with processes at varying degrees of maturity. In many areas processes do not exist or are out of date. This must change to achieve the highest possible service and predictability.
- *Siloed System design* - The original implementation of MaineStreet included a design characteristic that separated key data, especially related to students, by campus. This must be redesigned to allow students of today and tomorrow the ability to move seamlessly across our integrated programs.
- *Customization* - The existing implementation of MaineStreet (UMS' name for the three Peoplesoft modules in use as the UMS ERP) is difficult to maintain and would require major business process redesign to move to the cloud or update more quickly.
- *Competing Products* - Campus and administrative leaders frequently choose new products independently, creating multiple systems for similar functions across the UMS. This is usually done to establish ownership, avoid delays by IT, achieve more functionality than existing systems, and to separate from other campuses for competitive reasons.
- ***Keeping up with the anticipated and continuous expansion of technology in the UMS***

Appendix III Detailed Student and Faculty Feedback

It is important to know how the services performed on behalf of campuses are received and if they meet the needs of users. Campus-based feedback includes information from direct visits with faculty, students, and administrators to determine what is working, how well, and what users of IT need or want, to empower their work in serving the missions of their institutions. IT leaders conducted these interviews and reviewed survey responses of prior surveys by US:IT, T4 and the Board of Trustee Faculty representatives.

The results were compiled and organized by significant themes and then descriptive detail. Underlined comments note what was identified as working well.

Training

- Insufficient Training
- IT staff tend to not be solid trainers
- Omitted in service rollout plan
- Lacking across all services
- Students commented faculty be better trained on Blackboard and classroom technology

Communication

- Lacking methods to efficiently communicate to/from IT
- IT doesn't communicate, or doesn't communicate so it is understood
- Should be planned, timely and consistent

Classrooms:

- Not all instructor stations are up to date
- Need consistency with the technology across classrooms
- Need different kinds of classrooms based on pedagogy
- Not all technology in every classroom is operational or current

Wi-Fi

- Availability and level of service, slow and not in all locations
- Better coverage for outside student spaces

Video Conferencing

- Complexity of room reservation and scheduling of the video session
- Make the distance feel seamless

Cloud Storage and Storage Challenges

- Accessible from any location/device
- Lack of storage and support for local dataset needs (research and teaching)
- Google Drive works great

University Technology Support Center (UTSC)

- Classroom support is slow/poor
- Tickets are not handled in a timely manner
- Can't resolve my issues
- Don't seem to have the skills
- Avoid the UTSC and call who they know
- Call routing was slow and ineffective
- Not well trained in serving distance students and staff
- There was positive feedback from students, faculty and staff at UMA
- Positive feedback regarding the recent change in call routing to skills-based routing

Mobility:

- Applications should work on mobile devices

Support and Additional Skills Needed

- Blackboard and Academic software
- Online instruction and course development
- Need for video production support: recording studio, high quality production to include in online classes.
- Need more online help tools, knowledge base
- Positive feedback for instructional design staff

Organizational Structure

- Positive comments about latest change in organizational structure, seeing signs of improvement

Available Services

- First Class has outrun its useful life.
- The new Self-registration tool for student devices is excellent
- Google Application suite is excellent, great for students and classrooms

Generalized

- IT staff are dedicated hard workers

Appendix IV Cost/Budget Approach and Impact

US:IT FY16 Budget

The Past

Historically, IT costs have been paid with SWS appropriation from SWS IT budgets or a myriad of allocations, chargebacks for specific services, fee for service, interdepartmental charges, and direct charges to campus departmental budgets. This complex funding model made coordinated management and improvements difficult. Many chargeback rates were not related to actual costs of service provision, rather designed to subsidize other expenses or needed investments.

FY16 Development Strategy

The FY16 University Services: The Information Technology Budget was created by identifying a baseline set of services and establishing the budgeted expenses to accomplish these services. The US:IT budget includes the personnel salary and benefits of staff transferred to US:IT. This budget also includes all the personnel costs & other IT costs that had historically been part of SWS and covered either by SWS appropriation or through allocation processes to the campuses.

In addition, FY15 campus central information technology budgets were re-established in US:IT for FY16 and managed by US:IT with oversight by campus financial staff to meet the needs of the campus. This includes purchase of certain IT equipment, software and other normal IT costs. US:IT will provide campuses specific information related to services charged directly to departments in FY15 that will now be included in base budget.

Other campus non-IT departmental budgets may contain budgets for information technology expenses but those budgets have not been included in the FY16 US:IT budget. These budgets represent an area where a campus may consider reductions to meet their budget targets.

FY16 IT Budgets

In FY16, US:IT has a unified budget of approximately \$22.2 million consisting of Unified Services (\$16.1M) and Campus Services & Specific Technology (\$6.1M). Each campus and Governance will be allocated a portion of the Unified Services budget based on a rolling 5-year average of student & employee FTEs. The allocated costs are below peer average costs based on the Educause Core Data Survey of participating higher education institutions (see chart below) with the exception of USM, whose Carnegie classification has the lowest cost per FTE of all classes.

Unified Services (Baseline Services)

The following services are representative of the services included in the baseline:

- US:IT Personnel
- MaineStreet (Campus Solutions, Financials, Human Resource)
- Blackboard
- Document Management
- Marketplace (Sciquest)
- Advancement
- Resource 25
- Admissions e-App
- Data Warehouse and Business Intelligence tool (Cognos)
- Discoverer
- Desktop/Laptop Support
- Database Platform and administration
- Gmail and Google Apps for Education
- Touchnet eCommerce Platform (except for Touchnet Ready Partners)
- ID Management and Authentication
- laptop/desktop support
- Ursus
- Information Security Office
- Personal File Services
- Network Access
- Telephone/Voice access, devices, management system
- Internet Service/Wide-area Network
- Video Conferencing
- MyCampus Campus Portal infrastructure, maintenance and operation

FY16 COST ALLOCATION BY CAMPUS			Faculty, Staff and Student FTE Count	Central IT Spend Per FTE	Peer Average
UM	\$8,903,404	40%	11,696	\$761.23	\$941
UMA	2,384,381	11%	3,045	\$783.05	\$1,129
UMF	1,895,443	9%	2,079	\$911.71	\$1,129
UMFK	754,703	3%	977	\$772.47	\$1,129
UMM	613,156	3%	590	\$1,039.25	\$1,129
UMPI	897,259	4%	949	\$945.48	\$1,129
USM	6,648,959	30%	6,795	\$978.51	\$768
GOV	16,103	0%	---	---	---
TOTALS	\$22,113,408	100%	26,131	\$846.25	\$1,050.57

Appendix V - A Day in the Life of a Student

In the future state of IT, students will check their phones for the class schedule for the day, look at the syllabi to make sure they are prepared, assure themselves they did in fact submit last night's assignments, and look at the campus calendar for events for athletic or club meetings they will attend. They will have spent the evening before in the quiet of their favorite study space logged into a virtual computer lab where they will have completed their engineering or virtual chemistry lab after working their shift at the hospital until midnight. They are thankful for that because the computer labs on campus are closed at 11 and with some of their classes online, they don't drive to campus every day. But off they go today with their Android tablets, iPhones laptops, and iPods to begin a day of classes on campuses. All of today's classes are hybrid classes, they have done their work and are prepared for the team-based work that will happen in one class, and for the quiz and discussions that will happen in another.

In the future state of IT, faculty confidently prepare for their day with the tools for teaching they need to best provide their learning goals for students. They know the wireless in the classroom will work for their collaboration groups and for their audience response system. They are using the projection tools and audio creatively in their lectures because the technology is robust and they can count on it. Later, a professor of English will visit the Faculty Support Center to record a lecture on the Canterbury Tales for her online class, and work with the library to make sure that the digital versions of Canterbury Tales are available for her students to use online. An electrical engineering professor will check in with instructional designers to determine how best to incorporate our online learning tools for lecture capture, course content and quizzes, linking existing record content, and a virtual lab into a course. The same professor will check in with IT to ask that a software needed for ECE 467 is loaded into electrical engineering's virtual computer lab.

In the future state of IT, a student and faculty member will collaborate with a faculty member and student at another institution on a research project. The two faculty members are co-principle investigators and involve their students in the research for the student's capstone projects. The faculty member from UMaine is also collaborating on a large GIS research project with faculty from Machias and Fort Kent drawing large data sets from resources across the globe to the Advanced Computing Group facilities for local research needs.

And when they start the next year, and the next year, they know these tools will be up to date, stable, and well supported because the investment in IT is sufficient to maintain a quality state of services for teaching and learning.

As US:IT looks to this future, developed from extensive feedback from the campuses, internal dialogue, and trends in both IT and higher education, a shift in direction is necessary. The need for an aligned high level approach was articulated by the US:IT's Strategic Round Table in their goal presented on June 30th: *Transform US:IT's identity from an asset-focused organization to a service-focused organization.* That goal contains a series of strategies to move US:IT, its services and values into a unit that is better aligned with the needs of the University.

When this shift is complete, and provided adequate resources are also made available, the outcomes will be apparent. You will see IT being more responsive to mission needs, more responsive to day-to-day requests and incidents, more strategic and capable of partnering with all disciplines, both academic and administrative, and considered a success story of unification within a previously balkanized group of institutions. IT will be able to bring forward a model of ongoing investment that is right-sized for the University and also ensures that one-time investments are supported appropriately, are useful and reliable, and have plans for ongoing maintenance to keep the UMS current. IT will be delivering the services that our constituents have determined are critical, useful, and innovative to support the missions of the campuses of the University of Maine System.

This shift to focus on high quality delivery of services requires an investment in infrastructure, support staff, training and communication. Infrastructure is critical to the success of not only traditional functions but also to support the demand to support distance and online modalities.

Most importantly, a new relationship between IT and the academic and student communities is essential and will exist. Strong oversight and partnership will set priorities and direction for continuous improvement of IT services.

We've still a long way to go and hopefully our efforts towards rebuilding ourselves will help us reach future goals in an efficient and purposeful manner.

Service Catalog	
Individual services	306
Direct-to-client services	214
US:IT internal (building blocks)	92
non-duplicative services	~150
Primarily delivered by	
“campus services” units	143
and % involving duplication	~80%

Notes on Service Duplication

“Duplication” means that a service is delivered in an unnecessarily unique manner to different groups of clients. Duplication resulted largely from the creation of US:IT. Savings realized from eliminating duplicate services should offset the cost of increased consumption of the standard service. The net effect will be an increase in reliability, quality and customer service for any given service. Savings will be in the form of reduced workload that can then be redirected into better supporting our standard solutions. However, significant initial investment is necessary in order to eliminate and standardize duplicate services.

