PENNSTATE
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Information Technology Services

Strategic Plan 2015–19

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Executive Summary

Penn State Information Technology (IT) comprises more than sixty units spanning campuses, colleges, and departments across the University. Information Technology Services (ITS), the University's centrally supported IT unit, represents approximately one-third of Penn State's more than $250 million IT enterprise.

The ITS Strategic Plan (2015–19) is a culmination of a yearlong series of discussions and planning efforts undertaken by the twenty-four member ITS strategic planning team and includes input and information solicited from staff throughout ITS, members of the Information Technology Leadership Council (ITLC), and the University community at large.

Drawing upon broader IT planning efforts, the ITS Strategic Plan builds on connections that support the University's overall IT planning direction. The plan is organized around five goals: enable learning, support research and innovation, modernize enterprise systems and services, advance IT effectiveness, and foster a collaborative culture and community.

IT is increasingly interwoven with the daily functions and future successes of Penn State and its community of students, faculty, staff, and alumni—playing a part in nearly every aspect of the University. An ever-changing technology landscape gives Penn State the ability to constantly adapt and effectively deliver on its mission. The ever-changing landscape also challenges Penn IT and ITS to leverage the University's strategic investment in IT with a focus on efficiency and effectiveness.

The ITS Strategic Plan outlines strategies to maximize the value of Penn State's annual investment in technology. It also addresses opportunities and gaps in technology, processes, and organizational capacity and proposes multiyear initiatives to improve and expand support for research, teaching, and business operations.

Office of the Vice Provost for Information Technology

Connections to Penn State IT, ITS, and the ITS Strategic Plan

Information Technology Services (ITS) is Penn State's centrally supported Information Technology (IT) unit and is led by the Office of the Vice Provost for Information Technology, which also provides guidance and support to more than sixty individually managed IT units located within campuses, colleges, and administrative areas across the University.

In serving as budget executive for ITS, the vice provost's office, in conjunction with the ITS leadership team, coordinates the planning and operations of many of Penn State's largest and most widely used IT systems and services.

The following is a list of campuses, colleges, and administrative areas that comprise Penn State IT and represent the larger IT community:

Administrative Information Services

Applied Research Laboratory

Auxiliary and Business Services

Bursar

College of Agricultural Sciences

College of Arts and Architecture

College of Communications

College of Earth and Mineral Sciences

College of Education

College of Engineering

College of Health and Human Development

College of Information Sciences and Technology

College of the Liberal Arts

College of Nursing

Office of the Corporate Controller

Data Centers

Department of Computer Science and Engineering

Development and Alumni Relations

Dickinson School of Law

Eberly College of Science

Educational Equity

Graduate School

Human Resources

Identity Services

Intercollegiate Athletics

Internal Audit

IT Communications

IT Planning and Resources

ITS Financial Services

Outreach Technology Services

Penn State Abington

Penn State Altoona

Penn State Bookstore

Penn State Beaver

Penn State Berks

Penn State Brandywine

Penn State DuBois

Penn State Erie

Penn State Fayette

Penn State Great Valley

Penn State Greater Allegheny

Penn State Harrisburg

Penn State Hazleton

Penn State Lehigh Valley

Penn State Milton S. Hershey Medical Center

Penn State Mont Alto

Penn State New Kensington

Penn State Outreach

Penn State Schuylkill

Penn State Shenango

Penn State Wilkes-Barre

Penn State Worthington Scranton

Penn State York

Physical Plant

Office of the President

Schreyer Honors College

Security Operations and Services

Services and Solutions

Smeal College of Business

Sponsored Programs

Strategic Communications

Student Affairs

Student Aid

Teaching and Learning with Technology

Telecommunications and Networking Services

Undergraduate Education

University Budget Office

University Health Services

University Libraries

University Police and Public Safety

University Registrar

Office of the Vice President for Commonwealth Campuses

Office of the Vice Provost for IT

As the University's centrally supported IT unit, ITS plays a major role in supporting the vice provost's office and the broader IT presence at Penn State. This strategic plan serves as a roadmap for the following Penn State IT sub-units that comprise ITS:

» Administrative Information Services

» Identity Services

» IT Communications

» IT Planning and Resources

» ITS Financial Services

» ITS Human Resources

» Security Operations and Services

» Services and Solutions

» Teaching and Learning with Technology

» Telecommunications and Networking Services

Connecting ITS Strategic Plan Goals to IT Planning Directions

The goals outlined in the ITS strategic plan support the broader role and planning direction of Penn State IT, led by the vice provost's office and the IT Leadership Council (ITLC). These goals also emphasize the interdependent nature of IT functions throughout the University. The following are examples of how ITS strategic plan goals and IT planning directions align:

ITS STRATEGIC PLAN GOAL:

Enable Learning—ITS will collaborate with educational support units to research, assess, and support new pedagogical models and educational technologies, enabling growth in residential, online, and hybrid instruction.

IT PLANNING DIRECTION:

• Partner with the Office of Outreach and Online Education, Undergraduate Education, and the Digital Learning Committee to develop a diverse and representative instructional technology advisory council as part of effective IT governance across Penn State.

ITS STRATEGIC PLAN GOAL:

Support Research and Innovation—ITS will collaborate with research support units to develop innovative IT resources and services that enhance research capabilities, enable appropriate access to data, and maximize storage and processing potential.

IT PLANNING DIRECTION:

• Partner with the Office of the Vice President for Research, University Libraries, and Office of the Vice President for Commonwealth Campuses to understand and support discipline appropriate research needs.

ITS STRATEGIC PLAN GOAL:

Modernize Enterprise Systems and Services—Enable data-informed decision making to drive mission-aligned administrative solutions and support enterprise operations.

IT PLANNING DIRECTION:

• Ensure that all enterprise systems across Penn State have current disaster recovery and business continuity plans.

• Develop an enterprise systems advisory council to stage the replacement of critical enterprise systems and infrastructure.

ITS STRATEGIC PLAN GOAL:

• *Advance IT Effectiveness*—Deliver high-quality, customer-focused IT services that scale to meet diverse needs through consistent, collaborative, and efficient practices and progressive IT staff development.

IT PLANNING DIRECTION:

• Provide central data center services to facilitate more cost-effective, secure, and sustainable server environment.

• Increase adoption of shared service desk and service management across IT.

• Facilitate the identification and approval of IT core services through a new core services advisory council as part of effective IT governance across Penn State.

• Develop a board of executive decision makers for IT policy and investment.

• Reassess the IT environment through a comprehensive IT assessment in 2016–17.

ITS STRATEGIC PLAN GOAL:

- *Foster a Collaborative Culture and Community*—Ensure that the Values and Foundational Principles of ITS support a healthy community of diverse and supportive staff, making ITS a highly desired place to work and a widely sought unit for collaboration.

IT PLANNING DIRECTION:

- Leverage partnerships and collaborative projects across IT, Penn State, other institutions of higher education, and other IT-related organizations to ensure IT at Penn State remains relevant, strategic, and innovative.

- Ensure information technology goals and strategic plans align with and support those of the University in partnership with the IT Leadership Council.

ITS Strategic Plan

MISSION
ITS, as a partner, evolves and supports IT services that enable the advancement of world-class education with global impact.

VISION
ITS will be an innovative leader and trusted partner in the development and delivery of responsive IT services and support.

VALUES AND FOUNDATIONAL PRINCIPLES

» We will align ITS resources and plans with Penn State's Strategic Plan.

» We will put the core business of Penn State--teaching, research, and service--in the center of IT service design and delivery.

» We will strengthen our relationships with those providing IT services, recognizing and affirming that IT at Penn State is much larger than ITS.

» We are committed to sustainability of human, financial, and environmental resources.

» We are committed to a culture of teamwork, collaboration, openness, and transparency.

» We will actively develop and support our staff.

» We will encourage innovation.

» We will make our systems and services accessible.

» We will maximize value and cost efficiency of IT services through responsive service development driven by evaluations, assessments, analyses, and other measurements as appropriate.

» We will employ governance, collaboration, and flexible decision making to determine best-fit IT solutions.

» We will identify risks, invest wisely in security measures, and be consistent with policy and compliant with law.

We will actively seek to incorporate the following ITS Community Principles in all of our endeavors:

- » Integrity

- » Honesty

- » Accountability

- » Individual initiative

- » Responsible risk taking

- » A passion for customer service and technology

- » Diversity

- » Inclusiveness

- » Fairness

- » Respect

GOALS

1. Enable Learning:

Collaborate with educational support units to research, assess, and support new pedagogical models and educational technologies, enabling growth in residential, online, and hybrid instruction.

2. Support Research and Innovation:

Collaborate with research support units to develop innovative IT resources and services that enhance research capabilities, enable appropriate access to data, and maximize storage and processing potential.

3. Modernize Enterprise Systems and Services:

Enable data-informed decision making to drive mission-aligned administrative solutions and support enterprise operations.

4. Advance IT Effectiveness:

Deliver high-quality, customer-focused IT services that scale to meet diverse needs through consistent, collaborative, and efficient practices and progressive IT staff development.

5. Foster a Collaborative Culture and Community:

Ensure that the Values and Foundational Principles of ITS support a healthy community of diverse and supportive staff, making ITS a highly desired place to work and a widely sought unit for collaboration.

OVERARCHING STRATEGIES

These strategies apply to each of the five main goals and are key factors in implementing the strategic plan.

- » Accessibility
- » Benchmarking, Measurement, and Assessment
- » Communication
- » Engagement
- » Governance and Planning
- » Security and Privacy
- » Training

Accessibility at Penn State refers to the right and ability of people to access educational opportunities and perform work responsibilities. Penn State systems, tools, websites, and other technologies that support education must be accessible to people, regardless of their physical characteristics, geographic location, or socioeconomic status. In working toward achieving strategic goals, ITS will not only comply with Federal laws and regulations that address accessibility as it relates to people with disabilities, the unit will also provide leadership toward University-wide accessibility efforts.

Benchmarking, Measurement, and Assessment strategies form the foundation of data-driven decision making. Each goal will incorporate methods for benchmarking metrics across other IT organizations in higher education, establishing baseline data for the goal, partnering with other entities to gather data to measure progress.

Communication plans will be developed and implemented in conjunction with projects and strategies associated with each goal. Communication will be ongoing among team members, between ITS and ITLC, across colleges, campuses, administrative units and departments, and beyond Penn State as appropriate.

Engagement with organizations both internal and external to Penn State will play an important role in moving forward. Individuals, teams, and departments will explore and form mutually beneficial partnerships and collaborative initiatives.

Governance and Planning are essential to identifying and prioritizing ITS and IT initiatives and should be applied as they relate to each goal. Establishing governance and planning strategies will help to identify necessary services, determine the most important work, and prioritize efforts and assignment of resources.

Security and Privacy are critical for ensuring appropriate levels of data confidentiality, integrity, and availability as well as the reasonable protection of identities and personal information. Processes and procedures that integrate security, privacy, and compliance with legal and regulatory requirements will be adopted as they relate to each goal. This includes all phases of system and service development and procurement, as well as working with University business units to ensure that the security measures taken by third party service providers processing or storing Penn State data are consistent with Penn State's requirements.

Training will be developed for tools, systems, and initiatives as needed to reach each goal. Training will be customized per goal or strategy and may be internal to ITS or focus on helping users and developers of specific tools and services.

Enable Learning

ITS will collaborate with educational support units to research, assess, and support new pedagogical models and educational technologies, enabling growth in residential, online, and hybrid instruction.

Technology is integral to twenty-first-century instruction and is a vital component to most courses and programs. ITS supports the University's mission to advance teaching and learning by focusing on technology tools and programs specific to education, such as Penn State's course management system, instructional design, and online course support.

OBJECTIVES

During the next five years, ITS will continue to respond to the changing landscape in online learning and lead efforts to explore and implement effective technologies to meet the needs of current and future generations of students. To further these efforts, ITS will attain the following objectives:

» Increase initiatives in learning outcomes assessment.
> *Strategic Performance Indicators*
> • Number of college and campus initiatives supported by ITS
> • Number of new initiatives created by ITS and adopted by colleges and campuses
> • Implementation of a predictive learning analytics platform
> • Replacement of ANGEL with new learning management system

» Scale instructional resources to facilitate improvement in student success.
> *Strategic Performance Indicators*
> • Number of World Campus and other online and hybrid courses
> • Number of new ITS-supported learning spaces
> • Number of new and enhanced technology classrooms

» Pilot innovative learning technologies through collaboration with colleges and campuses.
> *Strategic Performance Indicators*
> • Number of technologies used by colleges and campuses that ITS supports
> • Number of ITS-supported innovative technology pilots
> • Number of courses, faculty, and students using technologies that ITS has launched and/or supports

STRATEGIES

To attain these objectives, ITS will apply the following strategies:

» *Collaborate with educational support units to gather and analyze faculty and instructor needs across disciplines.*

To address the rising demand for online education and to help the University reach a broad range of diverse students, ITS will partner with the Digital Learning Committee, the Office of Undergraduate Education, and the Office of Outreach and Online Education to explore and support efforts to increase the number of online and hybrid courses offered through the World Campus and through individual colleges and campuses.

» *Cultivate collaborative relationships with faculty to research learning technologies.*

ITS will collaborate with researchers across the University to explore specific aspects of learning technologies by providing access to emerging technologies, platform data, and staff expertise. This research will directly lead to outcomes—such as publications, grant applications, and conference presentations—that are valuable to faculty. ITS will put the results of this research into practice through faculty partners, faculty development efforts, and communication channels. These collaborations and resulting data will play a larger role in efforts to support stakeholders (e.g., students, faculty, learning designers, advisers, and administrators) in the learning ecosystem.

» *Establish an effective learning analytics (predictive) platform.*

ITS will leverage analytics to identify and create opportunities to adopt new learning technologies that meet the needs of current and future students. Capturing and analyzing data in this way will not only help to assess the effectiveness of educational technologies and innovations, but will also support individual learning needs.

» *Identify and encourage the use of new learning technologies.*

ITS will provide training and support to faculty and instructors on educational technologies and will research new learning spaces and establish an experimental pedagogical commons for prototyping, testing, and assessing outcomes.

» *Increase support for faculty, researchers, and students to access the technologies unique to their disciplines or degree programs.*

ITS will seek to reduce the cost and improve effectiveness of instructional materials by increasing support, assessing needs, and identifying opportunities for faculty and students in these areas. To that end, ITS will increase the level of instructional design support, training, and other faculty development opportunities and, in doing so, foster exploration of innovative uses of technology to enhance teaching, learning, and research.

» *Replace ANGEL with a robust and scalable learning management system.*

The current learning management system, ANGEL, will be replaced with a more robust system that scales to meet the varying needs of diverse user groups and accommodates the growing use of multiple mobile devices. Adopting a more usable, scalable, and efficient system will position the University to increase its impact and reach in world-class education by supporting the growth of online and hybrid courses and

accommodating a broader and more diverse learner base. The new system will incorporate and integrate an array of education technologies and instructional resources to support current and future teaching and learning needs, enhancing student retention and success.

» *Develop and implement an assessment strategy to identify new educational technologies and determine their effectiveness.*

ITS will take a systematic approach to assessing the efficacy of education technologies to determine which technologies to invest in and which technologies to discontinue. Identifying the most effective learning technologies will help to prioritize both human and financial resources. In developing and implementing a strategy for evaluating technology and sharing results, ITS encourages research and supports faculty efforts to measure learning outcomes and improve student success.

» *Facilitate the formation and growth of diverse communities of practice around digital learning technologies to increase access to and quality of instruction.*

ITS will contribute to increasing the quality of instruction and access to resources for instruction through collaboration with colleges, campuses, units, and departments across Penn State. By fostering communities of practice as they relate to instructional design, research, learning analytics, learning materials, and other areas with regard to research and educational technologies, ITS will facilitate progressive discussion and work to increase the impact of technology in education.

These strategies promote ethical behavior, integrity, diversity, and sustainability in the following ways:

» Communities of practice will support and promote legal and ethical uses of digital media, including adherence to copyright laws.

» Leveraging learning analytics may provide opportunities to reach out to students who are struggling and provide support and assistance.

» Educational technologies such as Turnitin help to identify instances of plagiarism and promote academic integrity.

» Ethical uses of analytics and research data will be communicated and shared.

» Accommodating multiple mobile devices makes access to education more widely available.

» Attention to accessibility features allows people with different physical abilities to fully participate.

Support Research and Innovation

ITS will collaborate with research support units to develop innovative IT resources and services that enhance research capabilities, enable appropriate access to data, and maximize storage and processing potential.

Information technology is a fundamental component of research, which continues to grow more data intensive across disciplines. ITS supports Penn State's position as a leading research university by providing and enabling technologies that help faculty, graduate students, and undergraduate students complete research in their respective fields. To better serve the research community, ITS will work with the Office of the Vice President for Research and unit IT directors to understand needs and provide services and support that will foster innovation and facilitate research success.

OBJECTIVES

During the next five years, ITS will provide and support accessible software, data centers, and data storage that will enhance research computing capabilities and enable successful research across disciplines. Partnerships with the associate vice president for Research, dean of University Libraries, the vice president for Commonwealth Campuses, and the research community will be formed and strengthened to facilitate access and use of basic and advanced research tools and resources. To further these efforts, ITS will attain the following objectives:

» Increase the number of buildings and campuses connected to the research data network at Penn State.
   Strategic Performance Indicators
   • Number of buildings connected to the research network
   • Number of campuses connected to the research network

» Develop a method to ensure that ITS is informed of cyberinfrastructure requirements on sponsored projects to aid in future data center, storage, and network capacity planning.
   Strategic Performance Indicator
   • Number of sponsored projects in which requirements are communicated to ITS

» Increase the number of faculty researchers participating in onboarding processes. Increase the number of faculty onboarding activities in which ITS participates
   Strategic Performance Indicators
   • Number of researcher onboarding sessions ITS participates in

STRATEGIES

To attain these objectives, ITS will apply the following strategies:

» *Collaboratively build a Penn State researcher onboarding process.*

ITS will collaborate with colleges, institutes, the Office of the Vice President for Research, departments, campuses, and University Libraries to develop onboarding processes.

» *Collaboratively build a requirements-gathering process for new sponsored projects.*

ITS will collaborate with the Office of the Vice President for Research and the Office of Sponsored Programs to develop a requirements-gathering process for future data center, storage, and network capacity planning.

» *Collaborate with the Office of the Vice President for Research to gather and analyze researcher needs across disciplines.*

ITS will form partnerships to gather information on the needs of researchers across Penn State through surveys, forums, working groups, focus groups, a governance committee, service reviews, and other means as appropriate to improve service design, development, and implementation for researchers. Communication between researchers, IT leaders, and research-focused ITS staff is a key factor in improving these services.

» *Identify points of contact for service coordination and communication.*

ITS will identify points of contact across disciplines within the research community to facilitate communication and coordination of research computing service design and development. These points of contact will guide ITS in the needs of the overall research community at Penn State, as well as in the needs specific to their respective disciplines. Communication between points of contact, IT leaders, and ITS staff will be ongoing to ensure that collaborative processes lead to the development and delivery of functional and agile products.

» *Provide federated collaboration tools to allow Penn State researchers to collaborate with colleagues from external institutions and organizations.*

ITS will incorporate national and international standards for identity management into collaborative tools and platforms.

These strategies promote ethical behavior, integrity, diversity, and sustainability in the following ways:

» ITS is creating an optimized research-data network, which will protect and secure research data as it is shared.

» Federated identity, allowing researchers to collaborate across institutions, will secure the identity of researchers accessing tools and systems.

Modernize Enterprise Systems and Practices

ITS will enable data-informed decision making to drive mission-aligned administrative solutions and support enterprise operations.

At Penn State, enterprise systems are information systems that capture institutional data, support the delivery of widely required or centrally provided shared services, and maintain compliance with internal and external regulations. Enterprise IT architecture is intended to align information technology and services with the business operations of the University, providing solutions that meet identified organizational objectives. Enterprise systems at Penn State include, but are not limited to, student information, human resource information management, development and alumni relations, finance, pre- and post-award research administration, business intelligence (analytics), and constituent relationship management.

For Penn State to remain competitive and on the cutting edge of teaching, research, and service, a robust and flexible IT infrastructure is crucial. Decentralized systems with distributed responsibility are inefficient and insufficient to accommodate the different types of users in academic and administrative settings. Many of Penn State's administrative systems are old, decentralized, and unable to support the diverse and complex needs of the University.

As a central support unit for Penn State, ITS will partner with business units to prioritize and plan the upgrades and replacement of these enterprise systems and services with more agile, well-designed, centralized solutions that deliver the right blend of services at optimal value and price.

OBJECTIVES

During the next five years, a number of outdated administrative support systems and business processes will require updates. Updating enterprise-wide student information, human resource information management, financial, and research support systems and business processes will streamline administrative services and make them more accessible to highly mobile, online constituents. Implementing more adaptable technology that supports integration will enable services that are more agile and responsive to the needs of students, faculty, and staff and facilitate greater access to data and services. New enterprise systems will feature advanced reporting and analytics tools to help model decisions, optimize the use of resources, and design predictive models that improve student success. To further these efforts, ITS will attain the following objectives:

» Develop architecture to be used by all enterprise systems and those that access enterprise data, and ensure that all new enterprise solutions comply with adopted University enterprise IT standards.
  Strategic Performance Indicators
  • Percentage of infrastructure that adheres to enterprise standards

» Meet the business requirements of the University for all enterprise-wide projects that ITS leads or for which ITS provides supporting technologies.
  Strategic Performance Indicators
  • Number of projects engaged
  • Number of projects completed on time, on budget, and within scope

» Establish a consistent institutional reporting architecture.
>   *Strategic Performance Indicators*
>   • Adoption rate of institutional reporting structure

» Decrease the number of systems duplicating functions of centrally supported enterprise systems (i.e., shadow systems).
>   *Strategic Performance Indicators*
>   • Number of systems across the University performing identical functions
>   • Listing of approved enterprise systems across the University

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STRATEGIES

To attain these objectives, ITS will apply the following strategies:

» *Improve relationships with business units across Penn State.*

By improving relationships with all partners involved in the selection of new enterprise solutions, ITS will be positioned to share specialized knowledge and diverse skills that will contribute to determining the best-fit solutions for Penn State. To this end, ITS will evaluate modernization requirements to gain an in-depth understanding and increase participation in strategic business decision making.

» *Implement consistent, efficient, and accessible enterprise administrative services by aligning with best practices in project and service management.*

ITS will leverage ongoing work in the IT Transformation Project and apply resulting outcomes to increase the effectiveness of enterprise administrative solutions. Following best practices in these areas will also contribute to improved usability of tools and services for the Penn State community.

» *Establish an enterprise IT architecture that addresses data governance, security, continuity, compliance, and modern interoperability (mobility).*

Working in conjunction with IT partners across Penn State, ITS will help to establish an enterprise IT architecture that addresses data governance, security, continuity, compliance, and modern interoperability in design and operations to maximize the value of enterprise data. At the same time, ITS will review and analyze opportunities to decrease duplicative (shadow) systems by evaluating the use of these systems, capturing requirements, and ensuring that new enterprise systems meet required business needs. Collaborative efforts in these areas will promote and support the smooth adoption of new or alternately sourced solutions across the University.

» *Ensure that data confidentiality, integrity, and availability are fundamental considerations at all stages of enterprise IT system and software development and procurement.*

For all enterprise IT systems, reasonable protection of user privacy and compliance with legal and regulatory requirements must be determined to minimize risk while maximizing performance. ITS will adopt processes and procedures that ensure the integration of security, privacy, and compliance requirements in all phases of the development life cycle. ITS will work with Penn State Purchasing, the Risk Management Department, the Office of Internal Audit, the Office of General Counsel, and the Office of Ethics and Compliance, as appropriate, to ensure the security measures required of third party or cloud service providers processing or storing Penn State data are consistent with Penn State's requirements.

» *Develop a consistent and repeatable enterprise reporting process.*

ITS will encourage data-informed decision making by leveraging and expanding efforts to improve access to institutional data and building on the University's business intelligence strategy. Existing institutional reporting systems will be reviewed and analyzed, and ITS will work to integrate data from modernized systems while developing analytic and predictive modeling solutions targeted to business needs.

» *Develop staff training and communication plans.*

New knowledge and skills will be necessary, within ITS and across administrative units, to implement and manage revised engineering and architectural approaches, project and service management processes, data structures, and systems. ITS will seek input to create professional development plans and processes that will ease transitions and accelerate development of the knowledge and skills required.

These strategies promote ethical behavior, integrity, diversity, and sustainability in the following ways:

» The ethical use of enterprise data will be part of training and communication efforts.

» Better relationships improve understanding of regulatory compliance requirements (e.g., privacy, FERPA, HIPPA), promoting integrity with regard to the use of enterprise data.

» Involving Penn State Purchasing, the Risk Management Department, the Office of General Counsel, and the Office of Ethics and Compliance in the service development process will help mitigate future risk to University data.

» ITS is committed to protecting the privacy and security of data during all phases of storage and transit.

» When data on hosted systems is shared with Penn State customers, some form of verification, such as data sharing agreements, will be completed to ensure that the recipient has a legitimate business need for the data and will implement the appropriate levels of access as well as physical and network controls to protect the data.

» Verification information will be shared with stewards of the source data to develop a consistent practice and environment of trust and accountability throughout the data sharing process.

» ITS will assist units with developing repeatable processes and standardizing on data sources supporting the integrity of data used for reporting.

» All on-premise enterprise system infrastructure will be housed in secure, central Data Centers.

» An approved enterprise IT architecture will ensure that resources are used most effectively and efficiently when developing new enterprise systems.

Advance IT Effectiveness

ITS will deliver high-quality, customer-focused IT services that scale to meet diverse needs through consistent, collaborative, and efficient practices and progressive IT staff development.

While substantial cost savings have been facilitated by ITS through service centralization in software licensing, service provisioning, and equipment procurement, the current IT landscape at Penn State remains largely dispersed across campuses, colleges, and administrative units. To better serve the University's mission and drastically improve efficiency, the optimum balance of centralized and decentralized services must be investigated and adopted. As the central IT service unit for Penn State, ITS will continue efforts to reduce redundancy and improve the overall quality, efficiency, and consistency of enterprise IT systems and services begun as an initiative in "Priorities for Excellence: The Penn State 2009-13 Strategic Plan," the "IT Assessment," and the "IT Roadmap." The optimum mix of services will be responsive to local needs, effectively managed and maintained, and cost effective. To achieve these goals, ITS will partner with colleges, campuses, and administrative units to provide infrastructure and services that best address the needs of teaching, research, outreach, administrative functions, and the University as a whole.

OBJECTIVES

During the next five years, ITS will improve technology and service management processes and practices while reducing duplication of systems and services. ITS will partner with campuses, colleges, and administrative units to explore opportunities to centralize core services and improve the quality, efficiency, consistency, and cost effectiveness of technology systems and services. Success requires recruiting, retaining, and developing a workforce that has the skills and resources necessary to implement, manage, and support these systems and services. To further these efforts, ITS will attain the following objectives:

» Increase consolidation of service management and service desk functions across ITS, and support a subscriber model for all of IT.
   Strategic Performance Indicators
   • Consolidated IT service portfolio
   • Adoption of consolidated service management by ITS units
   • Number of service management modules enabled
   • Number of service management tools ITS runs

» House all on-premise ITS servers in the central Data Centers.
   Strategic Performance Indicators
   • Percentage of ITS units fully using Data Center services

» Increase the usage and adoption rate of ITS core services.
   Strategic Performance Indicators
   • Usage rates
   • Adoption rates

» Inventory skills in the ITS workforce, and institute procedures for continuous skill development.
  Strategic Performance Indicators
  • Inventory is up-to-date

» Create job profile and role-specific professional development curricula.
  Strategic Performance Indicators
  • Number of curricula developed

STRATEGIES

To attain these objectives, ITS will apply the following strategies:

» *Develop a shared understanding of business relationship management (BRM) and customer relationship management (CRM).*

A shared understanding of CRM and BRM will allow ITS to implement tools, policies, practices, and processes that meet the needs of students, faculty, and staff and effectively support the business of the University. Each service developed and/or managed by ITS should have a clearly defined customer base along with a CRM strategy that guides effective communication. These efforts will help to promote and maintain positive relationships with students, faculty, and staff by identifying needs and designing IT services that meet those needs. Annual surveys such as the Penn State IT Customer Satisfaction Survey April 2014 (See Appendix B.) and advisory councils such as the Student Technology Advisory Committee (STAC) will deliver critical customer feedback on services. (See Appendix C.) Desired outcomes of BRM and CRM will be greater efficiency and effectiveness, service standardization, improved quality, and cost reduction.

» *Develop and implement common sourcing plans and practices.*

ITS will develop and implement best practices and shared plans for acquiring the right blend of services and software for optimal value and price. Plans will address finding the best tools and services by balancing in-house and external resources, evaluating the benefits of buying versus building, taking sustainability considerations into account, and achieving security and compliance without hindering performance. ITS will provide expertise to assist with risk assessments of systems, services, and software, leading to intelligent spending and maximizing performance while minimizing risk involved in the purchase, development, and implementation of new services.

» *Develop mobility strategy for ITS.*

Penn State students, faculty, and staff expect mobile, online services that current ITS tools and services are not delivering. ITS will implement a strategy to accommodate the expanded use and access of tools and services by multiple mobile devices. Implementing a mobility strategy will increase operational productivity, create a more consistent experience for users, and facilitate work anywhere, at anytime. Mobile devices will be used widely as a primary platform for accessing electronic and physical services as well as demonstrating identity. Consistent support processes and policies will be established to accommodate the use of personally owned devices, referred to as BYOD. Wireless networks, mobile-friendly administrative and academic systems, mobile device-oriented support services, and improved awareness of mobile device security practices will be critical to a mobile device strategy.

» *Partner with other IT units to adopt and leverage the principles and practices from the IT Transformation Program (ITX).*

To meet Penn State's changing needs, IT must be both an infrastructure and a customer-focused service that supports and facilitates innovation, collaboration, and excellence. ITS will collaborate with IT units across Penn State to improve service management, beginning with the creation of a service portfolio and shared service catalog. New service management efforts will ensure that a customer base is defined for each service and that high-level metrics are available for analysis and to aid in decision making. Information on hosting services and support will be standardized, and service-level objectives and expectations will be clearly defined. In addition, life-cycle guidelines will exist for all services, and a portfolio management review will be available for use by executives and IT departments. The IT Transformation Program will enable IT units to provide services and partnerships at scale so Penn State students, faculty, and staff can get the maximum value from technology, ensuring that Penn State remains a leader in a changing higher education landscape. More information is available at http://sites.psu.edu/ittransformation/.

» *Develop a repeatable process to identify and maintain and an inventory of the business and IT skills of the ITS workforce.*

Ensuring staff have the required skills to be successful will be critical to ensuring ITS' strategic goals are met. A skills inventory allows staff to record their current skills, and experience level. This assessment empowers an organization to understand available talent, create a strategic view of future skills and competencies required, and develop staff to achieve desired outcomes.

These strategies promote ethical behavior, integrity, diversity, and sustainability in the following ways:

» ITS will ensure the integrity and sustainability of services and projects by following best practices in project and service management.

» ITS will be accessible and transparent about future work requests, priorities, and funding models.

» ITS adheres to Penn State purchasing policies and broader laws with regard to sourcing systems and services in efforts to comply with requirements and avoid conflicts of interest.

» Sourcing plans will be clearly understood and communicated to promote transparency and accountability.

» Efforts will be made to ensure adherence to laws and regulations with regard to current and future mobile services, and the process will be clearly communicated.

» ITS will act transparently and ethically in determining service charges and clearly communicate background for pricing models.

» Understanding the strengths and gaps in the skills of the workforce will help ITS to sustain a high-functioning and effective workforce.

» ITS-provided software licensing services discourage piracy and promote ethical use of software products.

Foster a Collaborative Culture and Community

Ensure that the Values and Foundational Principles of ITS support a healthy community of diverse and supportive staff, making ITS a highly desired place to work and a widely sought unit for collaboration.

The growth and success of Penn State's IT systems, services, and workforce rely on collaboration among ITS, academic and administrative units across Penn State, peer institutions, and other external organizations, such as the Committee on Institutional Collaboration (CIC), EDUCAUSE, and Internet2. Within ITS, a culture of collaboration sets the foundation for all aspects of diversity and sustainability, including the health, engagement, productivity, and retention of a strong workforce. These elements contribute to the sustained success not only of the unit but also of the University.

OBJECTIVES

During the next five years, ITS will strengthen existing partnerships and collaborate with other groups to improve IT services, implement consistent policies and effective management practices, and develop the ITS workforce. These partnerships will ensure that ITS processes and services are responsive to the needs of the research, instruction, and administrative communities. ITS will foster an environment to support strong organizational performance by exploring and implementing new approaches to career development, relationships with management, workplace climate, and overall employee satisfaction. These initiatives will help to facilitate a welcoming and inclusive climate where all persons feel valued as contributors to the success of initiatives and collaborative activities. To further these efforts, ITS will attain the following objectives:

> » Increase participation in University-sponsored or external wellness programs.
> >> *Strategic Performance Indicators*
> >> • Number of employees participating in University-sponsored wellness opportunities, such as Health Matters programs, gym memberships, and the Employee Assistance Program, per Climate and Diversity Survey results

> » Determine a measure to track workplace productivity.
> >> *Strategic Performance Indicators*
> >> • Number of projects successfully completed per stats from the project management office and service management office
> >> • Number of key performance indicators (KPI) met based on data from the project management office and service management office

» Increase workplace satisfaction and comfort.
> *Strategic Performance Indicators*
> • Number of employees reporting to be comfortable per Climate and Diversity Survey data
> • Number of satisfied employees per Climate and Diversity Survey data related to employee satisfaction (defined below).
> • Based on survey data, satisfaction is defined by the average level of agreement with the following statements:
>> I am proud to be a part of ITS.
>> ITS takes a genuine interest in the well-being of its employees.
>> I am recognized for my contributions to ITS.
>> I am given opportunities to develop professionally.

STRATEGIES

To attain these objectives, ITS will apply the following strategies:

» *Develop a program to expose ITS staff at all levels to the benefits of participating in collaborative opportunities and partnerships.*

Fostering a collaborative culture requires providing not only opportunities for staff engagement, but also a shared understanding of the meaning and benefits of collaboration. To that end, ITS will develop an integrated program, including professional development, incentives, communication, and engagement opportunities, to comprehensively address collaboration and partnering strategies for the future of ITS. This future involves moving toward customer-focused and business-driven services that inherently involve collaboration. Therefore, interested and qualified members of ITS should have the opportunity to participate in collaborative activities and projects—including through the IT Leadership Council (ITLC) and via partnerships with such organizations as the CIC and EDUCAUSE—that serve the goals of ITS and Penn State.

» *Ensure clear expectations of job responsibilities and performance.*

Providing clear performance expectations can help employees attain higher levels of productivity and feel more satisfied with their resulting achievements. ITS will support the University's performance management process to create, communicate, and implement clearly defined job responsibilities and performance expectations for all staff, including those in management and leadership positions. By establishing clear expectations of job responsibilities as they relate to job categories and roles, and by promoting behavior that adheres to the ITS Values and Foundational Principles (found on page 8), ITS will seek to enhance productivity and job satisfaction, leading to greater performance and engagement within and external to the unit.

» *Facilitate the development of communities of practice across IT.*

ITS will reach out to members of the IT community to facilitate the formation of communities of practice to discuss common issues, communicate shared goals, share best practices, and make recommendations on future directions. Establishing shared goals in this way will reinforce the mindset of collaboration and help to move prioritized projects forward. Reaching out to the University-wide IT community will ensure inclusiveness while fostering a convergence of diverse knowledge and skill sets to encourage creativity and effectiveness.

These strategies promote ethical behavior, integrity, diversity, and sustainability in the following ways:

» Supervisors will ensure they have conversations with staff on incorporating ITS Values and Foundational Principles into performance management practices, Job Responsibility Worksheets (JRW), and Development Action Plans (DAP).

» Communities of practice promote diversity, shared resources, best practices, and accountability.

» The anti-bullying initiative directly promotes integrity and ethical behavior.

» Increasing employee wellness, comfort, and satisfaction promotes a sustainable workforce.

Core Council Follow-Up

IT STRATEGIC PLANNING

During the 2012–13 fiscal year, more than 125 faculty and staff members from across Penn State organized into seven domain teams as part of the first ever University IT strategic planning process led by the higher education management consultancy Goldstein and Associates. The domain teams were charged with developing a future vision, goals, and recommendations for the following seven domains:

» Enterprise systems

» IT services

» Instructional technology

» Research technology

» University services

» IT funding

» IT operational effectiveness

In total, the committees participated in more than fifty-two meetings throughout the fall 2012 and spring 2013 semesters. Several committees participated in additional subgroup meetings and full-group retreats for recommendation development.

Also in fall 2012, more than 750 faculty, staff, and students participated in open forums and focus groups to give input and ideas around future directions for IT at Penn State. Committee meeting agendas and notes are located on the Information Technology Strategic Planning wiki at: https://wikispaces.psu.edu/display/ITSTRAT/IT+Strategic+Planning

With the arrival of the new provost in July 2013, it was determined that the planning document should align with the provost's strategic planning philosophy. The current document, now titled the IT Roadmap, has not been disseminated widely, but many elements remain relevant and actionable. These elements are being incorporated into the current University strategic planning process.

GOVERNANCE FRAMEWORK

An IT governance framework was outlined in the IT Roadmap, recommending structure, authority, and accountability for IT decision making at Penn State. The structure consists of four domain-specific advisory councils accountable to an executive board. Led by the ITLC, additional cross-organizational groups complement the governance committees by focusing on operational coordination. Finally, project-specific governance structures provide leadership for University-wide efforts to deploy new technologies, processes, and practices.

IMPROVEMENT OPPORTUNITIES IDENTIFIED BY THE IT LEADERSHIP COUNCIL (ITLC)

In 2011, a comprehensive IT Assessment identified seven key opportunities for improving effectiveness of technology and balancing common and distributed IT services at Penn State. These initiatives appear below. (See Appendix D.)

> » Deploy a common email and calendar solution for faculty and staff.

> » Create a new University service to meet the shared needs for long-term data storage and archiving.

> » Expand the ITS server colocation and virtualization services in a manner that is cost competitive with units providing the service on their own. Commit first to increasing use of this service for administrative applications that require high availability and redundancy.

> » Extend the ITS computer lab management service to all campuses and colleges and begin to develop a similar solution to manage administrative desktops.

> » Reduce the cost of software purchases by extending the use of shared, server-based software licenses instead of licensing software for every individual computer.

> » Implement a common help desk system and knowledge base to improve the productivity of IT staff and the quality of user support services.

> » Make wireless networking at the University Park campus a common service to achieve greater network coverage and a more consistent experience for faculty, students, and staff as they move about campus.

The next IT Assessment, tentatively scheduled for 2016-17, will include a common expense framework through expanded IT Object Codes, providing a more detailed categorization of IT expenditures across Penn State.

ADDRESSING AGING ENTERPRISE SYSTEMS

ITS will engage with the Enterprise Project Management Office in supporting upgrades of current enterprise systems such as student information, human resources, and business systems. Additional information can be found through the Enterprise Project Management Office at http://www.fandb.psu.edu/enterprise-project-management-office/.

> » LionPATH, the new student information system project, kicked off on February 5, 2014. ITS has and will remain engaged throughout the project cycle by providing infrastructure and staff support. ITS is contributing to reporting and Data Warehouse, training and change management, technical, and steering efforts.

> » The new Human Resources Information System project has a three-phase plan as follows: current state assessment, future state design, and implementation. ITS continues to contribute subject matter expertise and staff resources to the project in these areas:

> > • Technology Team
> > • Change Technology Team with Subject Matter subteams on Talent, Portal, and Knowledge Base
> > • Case Management
> > • Additional Subject Matter Expertise

» ITS will contribute to the business systems project, including Integrated Business Information System (IBIS), as plans require for the future.

The current enterprise learning management system, ANGEL, will be replaced with a more robust system that scales to meet the varying needs of diverse user groups and accommodates the growing use of multiple mobile devices. The new system will incorporate and integrate an array of educational technologies and instructional resources to support current and future teaching and learning needs, enhancing student retention and success. ITS will pilot the new system during second summer session and fall semester 2014.

With the projected development of an enterprise system advisory council as part of planned IT governance, enterprise system refresh plans will be solidified and communicated.

Diversity Planning

ITS promotes diversity at Penn State in two ways: by striving to provide a welcoming and inclusive climate within the unit and by providing IT support for units and departments across Penn State working to develop websites, tools, and systems that contribute to the overall diversity of the University. The ITS community understands the importance of diversity in the workplace, and a unit-wide focus on the topic is founded in senior leadership.

With the support and contributions of the vice provost and associate vice provost, ITS formed and sustains a large and organized Climate and Diversity Team, which has been operational for nearly ten years. This dedicated group of staff is comprised of representatives from all units within ITS, including representation from HR and senior leadership, and works with management groups, HR, and ITS leadership groups on all climate and diversity related projects.

By promoting shared understanding of diversity, contributing to efforts to diversify Penn State's student body, workforce, and leadership through recruitment, retention, and organizational change, and supporting University-wide efforts to create a welcoming campus climate, ITS aspires to attain and maintain diversity within the Penn State community.

DEVELOPING A SHARED AND INCLUSIVE UNDERSTANDING OF DIVERSITY

The goal within ITS is to provide a welcoming and inclusive climate in which all persons feel valued as contributors to the success of ITS, achieving a level of diversity that maximizes workforce potential. ITS holds all persons accountable for demonstrating respect, inclusiveness, and honesty, stressing the importance of appropriate behaviors in all workplace situations, regardless of individual backgrounds, perspectives, religions, race and ethnicity, age, and ability. To that end, ITS encourages employees and managers to attend training and skill-building sessions on a wide range of climate and diversity-related topics and offers coaching and discussions to actively address situations where inappropriate behavior has been reported.

Progress Made

» *Senior leaders stress the importance of diversity and support staff engagement.*

Foundational to the success of maintaining a welcoming climate that fosters diversity is support from senior leadership. Vice Provost for IT, Kevin Morooney, and Associate Vice Provost for IT, John Harwood, have encouraged participation in diversity-related activities and provided opportunities for staff development in this area. These leaders work with the Climate and Diversity Team to identify and address areas for improvement, as apparent in the following words taken from a presentation delivered by the vice provost for IT to all of ITS:

   • Where there is bullying, we will move to civility.
   • Where there is civility, we will move to understanding.
   • Where there is understanding, we will move to action.
   • Where there is action, we will move to performance.

» *ITS Values and Foundational Principles were developed.*

ITS proactively addresses climate and diversity issues through research, education, and awareness-raising activities. To those ends, the ITS Values and Foundational Principles (found on page 8) were

developed, and programming over the past three years has been designed to encourage members of ITS to care, serve, reach, and respect, not only each other, but also members of the greater Penn State community. These principles support overall IT effectiveness and promote excellent customer service, which is also a critical component of service management.

» *Programming on climate and diversity-related topics is ongoing.*

Relevant educational topics are identified through employee concerns, complaints, and issues reported to ITS Human Resources (HR) or members of the Climate and Diversity Team One-on-one coaching is provided to senior executives, managers, and staff to raise awareness, build skills, and take action around climate and diversity subjects.

» *A Climate and Diversity Survey is administered every three years.*

ITS seeks to address current and ongoing concerns, including gender inequality and bullying, and looks to the future to provide programming and professional development opportunities that will positively impact the unit. To that end, a Climate and Diversity Survey is sent to all ITS staff on a regular basis to assess the climate within the unit and identify areas for improvement.

Future Plans (2015–19)

» *Seek expertise to strengthen skills in teambuilding, communication, and leadership.*

ITS has identified areas within the unit that would benefit most from professional development in areas of teambuilding, communication, and leadership. ITS will explore options to improve skills in those areas and provide the most efficient and effective opportunities.

» Expand programming on climate and diversity-related topics.

ITS plans to expand climate and diversity professional development opportunities, offering personalized coaching services as necessary to foster a diverse, healthy, and high-functioning community. A healthy community is often a happy and productive one. Improving the climate within ITS through effective professional development options will address these areas of sustainability, helping to improve the health, happiness, and retention of a strong ITS workforce.

Signature Initiatives and Best Practices

» Coordinated efforts between ITS HR and the Climate and Diversity Team with regard to program development and handling of employee concerns

» Consistent application of HR policies and strategies that provide optimal experiences for ITS staff

Measures of Success and Strategic Indicators

» Tracking numbers and subject matter of employee complaints and concerns and analyzing data over time

» Analyzing ITS data from the Penn State Values & Culture Survey

» Gathering data from the ITS Climate and Diversity Survey

» Monitoring program attendance numbers and gathering feedback

» Compare ITS data with University-wide data

CREATING A WELCOMING CAMPUS CLIMATE

As a central support unit, ITS provides resources and support to projects across the University that are designed to create a welcoming campus climate and also offers internal programs and initiatives to promote a welcoming climate within ITS. It is estimated that the work accomplished by members of the Climate and Diversity Team is equivalent to the work of one full-time ITS employee.

Progress Made

» *ITS provides support for the Report Hate website.*

In support of University-wide initiatives, ITS provides IT support for the Report Hate website, a service of the Office of the Vice Provost for Educational Equity that provides students, staff, alumni, and guests with a web form to report acts of hate or intolerance that occur at Penn State.

» *Partnerships improve services for people with diverse needs.*

In collaboration with the Office of Disability Services, ITS has contracted with ClearCaptions, an FCC-certified provider of telecommunications relay services that enables captioning on Cisco IP telephones. ClearCaptions functions for telephones in the way closed captioning works for television. Individuals with hearing impairments will be able to see speech-to-text translation of a phone conversation on the Cisco telephone screen. Full rollout of this service, including the technical request process, knowledge base, website, and marketing materials, is expected in fall 2014.

In another collaborative effort, ITS contracted with Language Service Associates to provide a service that allows people at Penn State and beyond who speak different languages to communicate over the telephone and in person.

The Accessible Technology and Information initiative (ATI) is a University-wide effort to improve the accessibility of information technology and policy with regard to websites, applications, and services; policies and purchasing processes; classroom technologies; and learning management systems. Resources for this committee comprise more than 200 people across Penn State with commitments that represent from 5 percent through 100 percent of their individual work time.

» *Educational opportunities on climate and diversity-related topics are ongoing.*

Programs and learning opportunities provided by ITS HR and the Climate and Diversity Team aim to create a more welcoming and comfortable climate within ITS by promoting awareness, tolerance, and sensitivity. Topics have included gender, disability, race, sexual orientation, and ageism. Sessions held included the following:
  • Ranksim: Dignity for All—Wisdom of the Ages: Applying Generational Concepts at Work
  • Sexual and Gender Identity: What's It All About
  • Racial Identity: Surprise, We All Have One

- Exploring the Three R's: Race, Reality, and Responsibility
- DisAbility: Understanding the ADA—World Café
- Climate Control: Promoting Mutual Respect in the Workplace
- Viewing and discussion of the movie Crash

To ensure that staff could remain anonymous, not all of the sessions required registration, and some of the sessions were co-sponsored by other units. Therefore, a full accounting of the number of attendees at all sessions is not available. Attendance for all sessions tracked was well in excess of 500 and as high as 131 for "Exploring the Three R's: Race, Reality, and Responsibility."

» *An ITS-wide anti-bullying policy is under development.*

An anti-bullying policy is currently under development through collaborative efforts of the Climate and Diversity Team, ITSCollab, the IT Communications group, and ITS HR. This policy clearly defines bullying and provides examples of bullying activities in an effort to stress to all employees, including supervisors, managers, and executives, that ITS will not tolerate any instances of bullying behavior. (See Appendix E.)

» *The Climate and Diversity Team has worked to increase awareness of and participation in diversity topics and activities.*

The Climate and Diversity Team is comprised of representatives from all areas within ITS. Through surveying, programming, and constant assessment of opportunities, the committee continues to grow and promote the importance of diversity.

Within ITS, the best measure of success for the goal of creating a welcoming climate is the Climate and Diversity Survey, which measures the comfort level of all employees, including those who identify themselves as minorities.

The results of the 2011 Climate and Diversity Survey were positive overall but indicated some areas for improvement:
- 78 percent feel climate is comfortable overall, up 3 percent from previous survey.
- 94 percent feel a positive climate for diversity is everyone's responsibility.
- Most employees feel the climate for diversity has improved.
- Most employees feel ITS takes a genuine interest in their well-being.
- Most respondents felt more positive about ITS in general.
- Most respondents feel the ITS administration provides visible leadership that fosters diversity and inclusion.

Future Plans (2015–19)

» *Ongoing support for University-wide initiatives will be provided.*

ITS will continue to support University-wide projects and initiatives to create a welcoming campus climate, including those mentioned above and those yet to be identified.

» *New educational opportunities will be guided by results from the Climate and Diversity Survey.*

ITS will continue to conduct a unit-wide Climate and Diversity Survey every three years to measure the

state of climate and diversity within ITS, establish benchmarks for future success, and determine the agenda and direction of future climate and diversity-related programming and activities. The Climate and Diversity Team will expand programming and other learning opportunities.

» *ITS subunits and committees will collaborate to promote the anti-bullying campaign.*

An awareness campaign will be developed to support the anti-bullying policy. This will include collaborative efforts among the Climate and Diversity Team, ITSCollab, ITS HR, and others, as appropriate. Programming will be developed to educate the ITS community on bullying behavior and related topics.

Signature Initiatives and Best Practices

» Formation and work of the Climate and Diversity Team

» Development of an anti-bullying policy

» Guidelines on dealing with bullying behaviors

Measures of Success and Strategic Indicators

» Periodic, unit-wide surveying

» Feedback and reports generated by units that host and manage websites, applications, and projects in support of diversity

» Comparisons and analysis of current and past survey data

» Future Climate and Diversity Survey results

RECRUITING AND RETAINING A DIVERSE STUDENT BODY

ITS has supported Penn State's ability to recruit and retain a diverse student body by providing IT support for diversity related websites, programs, and systems hosted and managed outside of ITS.

Progress Made

» *ITS helped to redesign eLion, Penn State's tool for accessing academic and financial records.*

In collaboration with the Office of the Corporate Controller, the Office of Undergraduate Education, the Division of Undergraduate Studies, the Office of Student Aid, the Office of the Bursar, and the Office of the Registrar, ITS contributed to the implementation of a new, responsive design that allows students and faculty to access eLion features on multiple mobile devices. This work improved both the usability and accessibility of the website, making eLion's tools and features available to all users, regardless of the device they are using or their physical abilities.

» *ITS provides more than 250 wage payroll, work study, and graduate assistantship opportunities for students.*

In support of retaining a diverse group of undergraduate and graduate students, ITS offers opportunities that provide valuable work experience. These wage payroll, work study, and graduate assistantship opportunities are open to students in various disciplines and help to attract and retain undergraduate and graduate students of various backgrounds across Penn State.

» *ITS contributed to developing and supporting the Report Hate website.*

In collaboration with the Office of the Vice Provost for Educational Equity, ITS helped to create the Report Hate website, which provides students with a web form to report acts of hate or intolerance that occur at Penn State. These efforts help to promote diversity by providing a resource for students to resolve instances of bullying and discrimination.

» *ITS supports the Institutional Insight (iTwo)*

iTwo was developed and is maintained through coordinated efforts of ITS, the Office of Student Aid, and the University Budget Office. This web-based data access, analysis, and distribution tool is being used by the University Budget Office and the Office of the Vice Provost for Educational Equity to make diversity-related data available to all units. iTwo makes student enrollment data available for University units and departments to access and analyze. Diversity-specific information is now available through student enrollment dashboards. This will provide benchmarking opportunities that may aid in future student recruiting plans.

» *ITS updated ANGEL to support individual identity.*

In another collaborative effort, ITS worked to provide students with the option of using preferred names, rather than legal names, in information systems such as ANGEL that reveal the identity of participants. These efforts came as a result of student feedback received by the Commission on Lesbian, Gay, Bisexual, and Transgender Equity (CLGBTE). With ITS leading the way, the CLGBTE worked with Penn State officials to institute GURU Policy 84, which "provides guidance for the establishment of a preferred name within the University's information systems," to accommodate such students as transgender individuals, per their requests.

Future Plans (2015–19)

» *ITS will provide expertise to support the redesign of Penn State's employment website.*

Employment opportunities for students will be included in the main employment website for Penn State. ITS will provide consulting and technical support to ensure that this website is both usable and accessible to everyone, regardless of economic status or physical ability. These efforts will help to attract a more diverse student applicant pool, fostering diversity in the student community.

Signature Initiatives and Best Practices

» Providing more than 250 wage payroll, work study, and graduate assistantship opportunities for undergraduate and graduate students

» Supporting University-wide systems and projects related to diversity

Measures of Success and Strategic Indicators

>> Customer satisfaction survey

>> Student diversity data from iTwo

RECRUITING AND RETAINING A DIVERSE WORKFORCE

Diversity ratios within the ITS workforce throughout the past several years have slightly improved in some areas and remained level in others, indicating that recruiting efforts should be expanded. Penn State's employment website must support these efforts if Penn State is to attract a broad range of applicants enabling the recruitment and retention of a diverse workforce.

Progress Made

>> *ITS staff have advised and consulted on the accessibility of tools and websites offered through the Office of Human Resources.*

   Members of ITS worked to ensure the accessibility of the online assessment associated with mandated training on reporting child abuse.

>> *Focus groups identified areas for improvement in Penn State's employment website.*

   Informal, focus group-style discussions led to the discovery that flaws in Penn State's employment website, which all applicants are required to use, may be hindering the ability to attract a diverse workforce. In these discussions, adults who were not affiliated with Penn State reported barriers to the application process directly related to the website, and some individuals specified that the website's barriers directly applied to their diversity category. To achieve the goal of attracting and retaining a diverse workforce, these barriers should be addressed.

>> *Even though diversity of applicant pools has decreased, ITS has increased percentages of underrepresented groups within the workforce from 7.3 percent to 12 percent throughout the last seven years.*

Ethnic Diversity – ITS Workforce

EEO Category	2005*	2008	2013**
White	92.7%	93.2%	88.0%
Black	1.0%	0.5%	2.0%
Asian/Pacific Islander	2.1%	2.3%	2.0%
Latino	0.6%	0.6%	1.0%
Native American	0.0%	0.0%	0.0%
Multi	3.6%	3.4%	7.0%
Total	100%	100%	100%

*Data from Office of Educational Equity
**Data from EIS December 2013

The number of ITS staff members from underrepresented groups is 12 percent of the employee population. This has increased from 7.3 percent since 2005. The number of African Americans applying for ITS jobs has increased from 3 percent to 5 percent. However, the diversity of other underrepresented groups (e.g., Asian, Indian) has gone down. The gender distribution within ITS has remained consistently 73 percent male, 24 percent female, and 3 percent unknown since 2005. ITS now recruits applicants on four distinct online job search sources, a best practice intended to lead to more diverse applicant pools in the future.

Future Plans (2015–19)

» *Support and contribute to the redesign of Penn State's employment website, improving accessibility, functionality, and usability.*

It is the goal of ITS to increase diversity in all categories by contributing to improving the usability and accessibility of Penn State's employment website (http://www.psu.jobs/) to attract a broader range of applicants. ITS will work to make the website compliant with the web standards outlined in policy AD69. These improvements will broaden the applicant pool for ITS, opening doors to hire and retain a more diverse workforce and serving Penn State's overall diversity goals. It is important for Penn State's employment website to be indexed according to commonly expected search tags, and ITS will work with the appropriate units to provide recommendations and assistance to enhance the search experience for applicants.

» *Ensure that all potential applicants have access to all features of Penn State's employment website.*

ITS will collaborate with units and departments across Penn State on work that allows potential applicants to access and navigate Penn State's employment website effectively, regardless of socioeconomic status or physical ability. Ensuring access to people using mobile devices will accommodate those who may not own or have access to a personal computer or Internet connection.

» *Advertise ITS positions on nationwide social media sites and affiliates known to attract diverse groups.*

ITS will research additional employment services and resources to identify those that are reputable and relevant to use for advertising open positions within the unit. ITS will seek to increase the ethnic and gender diversity of all applicant pools. Opportunities to broaden applicant pools through advertising on appropriate social media sites will also be explored.

Signature Initiatives and Best Practices

» National advertising approach for ITS jobs

» The Climate and Diversity Survey

Measures of Success and Strategic Indicators

» Diversity of applicant pools

» Results from the Climate and Diversity Survey

» Diversity within the ITS workforce

» Feedback from Penn State's employment website

» Data gathered from iTwo

» Diversity data gained through partnerships with business units

» Diversity of students entering IT majors as compared to diversity of the ITS workforce

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DIVERSIFYING UNIVERSITY LEADERSHIP AND MANAGEMENT

In the IT culture, leadership transcends organizational positions and formal titles. To that end, ITS encourages all staff to cultivate leadership qualities and participate in leadership activities. ITS also supports University efforts to diversify leadership and management through helping to develop and maintain Penn State systems, such as iTwo, which serve this purpose.

Progress Made

» *An ITS staff member has been selected to participate in the Administrative Fellows Program 2014–15.*

The Administrative Fellows Program is intended to provide Penn State staff members with professional development opportunities that can broaden their experiences and perspectives. In 2014–15, an ITS staff member will serve under the mentorship of the senior vice president for Development and Alumni Relations. This full-year mentorship program has helped to increase the diversity of those seeking administrative careers at Penn State. For more information, visit http://www.psu.edu/vpaa/adminfellows.htm

» *Twenty-five percent (2) of senior leadership positions are filled by females.*

Throughout the last five years, the percentage of women in senior director positions has remained steady at 25 percent. While the overall number of women in IT manager positions has only slightly increased, the number of women filling manager positions at levels 3 and 4 has shown the highest increase at 7 percent.

IT Manager Position Statistics	Head Count as values	Male		Female		*Gender
2014	Competency Level 01	3	4.5%	2	7.7%	5
	Competency Level 02	15	22.4%	7	26.9%	22
	Competency Level 03	35	52.2%	11	42.3%	46
	Competency Level 04	13	19.4%	6	23.1%	19
	Competency Level 05	1	1.5%	0	0.0%	1
	Job Family 91	67	72.0%	26	28.0%	93
2010	Competency Level 01	4	6.1%	3	12.5%	7
	Competency Level 02	20	30.3%	6	25.0%	26
	Competency Level 03	29	43.9%	10	41.7%	39
	Competency Level 04	12	18.2%	4	16.7%	16
	Competency Level 05	1	1.5%	1	4.2%	2
	Job Family 91	66	73.3%	24	26.7%	90

Future Plans (2015–19)

» *Benchmark the number of students who self-identify as minorities graduating with a Science, Technology, Engineering, Math (STEM) related degree, and compare with the number of ITS employees who self identify as minorities.*

Understanding how the current ITS workforce compares to a future generation of IT workers will help ITS make plans, as necessary, with regard to diversifying staff in the years to come.

» *Ensure all applicant pools have a diverse mix of qualified candidates for ITS leadership positions.*

ITS will leverage national outlets and relevant social media channels to broadly advertise employment opportunities. Providing expertise and support to update the Penn State employment website will also help to ensure diverse applicant pools for ITS positions.

Signature Initiatives and Best Practices

» Staff members taking leadership roles and positions on cross-University initiatives

» Executive support of ITS staff serving in leadership roles on cross-University commissions

Measures of Success and Strategic Indicators

» Diversity in ITS leadership

COORDINATING ORGANIZATIONAL CHANGE TO SUPPORT DIVERSITY GOALS

ITS is coordinating organizational change around diversity issues internally and externally with the active support of leadership.

Progress Made

» *The ATI Committee has positively impacted Penn State's online tools and systems.*

An Accessible Technology and Information Committee (ATI), led by ITS staff and supported by the Accessibility Team within ITS, formed for the purpose of organizing the implementation of the terms of settlement with the National Federation of the Blind (NFB). These efforts, supported by University leadership, represent significant organizational change fostering diversity not only within ITS, but also throughout the University.

The ATI Committee is an ongoing structure to support accessibility of websites and systems across Penn State. This group includes eleven staff members from ITS along with representation from the Office of Disability Services, World Campus, the Colleges of Science and Health and Human Development, University Libraries, and various Penn State campuses. This effort requires the collaboration of IT, marketing, and web professionals across Penn State.

The ATI Committee has proven to be a significant change agent, in conjunction with a newly created ITS Accessibility Team, which provides testing and consulting services and represents the approximate equivalent of three full-time staff members, impacting the culture and business processes of the University. Web Liaisons represent a community of practice comprised of approximately eighty web professionals across Penn State who communicate accessibility requirements and initiatives within their units. Activities carried out by these teams have positively impacted Penn State's web presence, business processes, accessibility of information and online course content, and methods of procurement of enterprise software. (For more information, see the ATI annual report at http://accessibility.psu.edu/ati-annual-report-2013.)

» *The vice provost for IT actively supports and encourages diversity committees and activities.*

At the request of the vice provost for IT, the Climate and Diversity Team led an effort to honor veterans within the unit. In addition, an invitation was extended to all ITS staff encouraging participation in various diversity committees across Penn State. This initiative resulted in ITS having the greatest representation of any unit on CLGBTE, the Commission on Racial/Ethnic Diversity (CORED), and the Commission for Women (CFW). The Office of Educational Equity has appointed an ITS staff member to join the University's Framework to Foster Diversity Review Team.

» *The Climate and Diversity Team continues to grow and improve.*

The Climate and Diversity Team represents a sustained, unit-wide effort to improve diversity across ITS. The committee holds executive meetings each month, holds full committee meetings bi-monthly, and works on various diversity-related initiatives throughout the year. As a testament to the importance of this group, the Climate and Diversity Team holds a standing time slot at the ITS all staff meetings to discuss climate and diversity activities and report on initiatives.

» *ITSCollab initiates and facilitates cross-unit initiatives to improve climate and productivity.*

As a group of change leaders, ITSCollab works together to build partnerships internally and externally; identify areas of opportunity for organizational agility, efficiencies, collaborations, and innovation; leverage and add value to other initiatives across ITS; and recognize the value of diversity to improve the ITS climate. This group meets monthly, collaborates with the IT Leadership Council (ITLC), and communicates priorities and initiatives with regard to IT policies, services, and practices with the goals of reducing duplication, fostering communication, and improving services.

» *Conducted a survey measuring ITS staff resistance to change*

Based on a staff member's graduate work, a survey was conducted in April 2013 to measure the level of resistance to change, motivation, trust, and commitment within the ITS workforce. Results were shared in various venues, including an ITS All Staff meeting.

Future Plans (2015–19)

» *Training sessions on accessibility topics will be provided.*

Training and information sessions will include new professional development opportunities for creating accessible content with the following tools and systems: widely used office suite software, a new learning management system (replacing ANGEL), the new Accessible Rich Internet Applications (ARIA) standard, the emerging EPUB standard for eBooks, and instructional materials for science, technology, engineering, and math.

» *Guidance will be offered on making instructional materials accessible.*

A shift in emphasis to instructional materials is likely to accompany a push for legislation called the TEACH Act (not to be confused with the TEACH Act of 2002). This new legislation will apply accessibility standards to all digital instructional materials, including online courses and digital textbooks, and will have profound effects on students' learning experiences while expanding opportunities for equal participation by students with disabilities. This will require a significant amount of additional training and faculty development as well as changes in allocation of resources and staffing.

Signature Initiatives and Best Practices

» Support and contributions of executive leadership

» The Climate and Diversity Team

» The ATI Committee

Measures of Success and Strategic Indicators

» Number of people trained to support diversity

» Creation of a community of practice around accessibility at Penn State

» Number of people across Penn State involved in supporting accessibility through ATI, the ITS Accessibility Team, and Web Liaisons

Promoting Integrity and Ethical Behavior

Below is a summary of the ways ITS looks to support integrity and ethical behavior throughout the next five years. See specific goal sections for details.

Enable Learning
ITS supports legal compliance and demonstrates ethical behavior where the uses of digital media and other learning materials are concerned. ITS supports academic units in identifying plagiarism and enforces adherence to copyright laws through managed tools and systems. In addition, ITS works to ensure the accessibility of learning technologies for people with differing physical abilities.

Support Research and Innovation
ITS takes measures to protect and support the integrity of research data and works to ensure appropriate access to tools and systems.

Modernize Enterprise Systems and Practices
ITS is committed to protecting the privacy and security of enterprise-level data through all phases of storage and transit. Risk management experts are included throughout enterprise system design and development. ITS will partner to provide education to faculty, staff, and students on the ethical use of enterprise data and will support the integrity of data used for reporting.

Achieve IT Effectiveness
ITS is committed to best practices in project and service management to ensure transparency of priorities and funding models as well as effective customer communication. In delivering on projects, ITS will ensure proper sourcing methods to avoid potential conflicts of interest.

Foster a Collaborative Culture and Community
ITS has adopted an anti-bullying policy to ensure the fair and respectful treatment of colleagues and customers. ITS supervisors hold staff accountable for practicing the ITS Values and Foundational Principles.

Sustainability

Penn State defines sustainability as the "simultaneous pursuit of human health and happiness, environmental quality, and economic well-being for current and future generations" (http://www.sustainability.psu.edu/). Within ITS, an awareness of sustainable practices has emerged in recent years, prompting efforts to improve in the areas defined. To that end, ITS worked with the Penn State Sustainability Institute to identify opportunities and strategies that will increase sustainability within the unit, across the University, and into the broader community.

Moving forward with sustainability efforts, beyond basic awareness and practice, requires strengthening partnerships and advancing education. In order to accomplish these goals, a system of governance must be implemented and should include a dedicated ITS resource accountable for the planning, coordination, and monitoring of sustainability activities such as partnerships, education, and best practices.

To ensure success, a dedicated role should be chartered and held accountable by the Senior Leadership Team (SLT), positioning ITS to focus on the following strategies with the level of governance required to reach established goals:

» Partner with the Office of Physical Plant (OPP) to understand current energy consumption and plan for future measurements and strategies for improvement.

» Leverage the partnership with the Sustainability Institute to prioritize efforts and ensure best practices are understood and followed.

» Formalize Green Teams across ITS for better communication and coordination of sustainability practices.

» Increase programming and educational opportunities to raise awareness and generate willing participation in sustainability efforts.

» Connect with organizations outside of Penn State to investigate opportunities for community service and engagement.

» Consult with University purchasing to ensure that sustainability is factored into vendor relationships.

Operations

Sustainability efforts within ITS have been focused on but not limited to areas of operations, including buildings, office spaces, labs, and equipment. Penn State requires all new and renovated facilities to be LEED (Leadership in Energy and Environmental Design) certified, meaning that they must "meet high standards for indoor air quality, energy efficiency, and water conservation. They must also feature recycled, renewable, or locally-sourced materials" (http://sustainability.psu.edu/live/what-penn-state-doing/infrastructure/buildings#overview). As ITS reorganizes to more effectively support Penn State's mission of advancing teaching, research, and service, careful attention must be given to adhering to these requirements. Efforts will be made to provide education and support for ITS staff to participate in practices that contribute to the sustainability of ITS operations.

Progress Made

» *Green Teams were formed to promote awareness and best practices for sustainability.*

ITS has worked with the Sustainability Institute to create Green Teams across the unit. These teams help to promote awareness of sustainable practices, including energy savings, recycling, and waste management. Tours of Penn State's Recycling and Waste Management Program were coordinated, and efforts have been made across ITS to increase sustainable practices in these areas.

» *Data Centers are under development at Penn State Milton S. Hershey Medical Center and University Park.*

These two data centers are intended to address the growing data storage, processing, and distribution needs of the teaching, research, and medical communities across Penn State. Consolidation of these services will help to save energy, space, and costs by reducing redundancy. The new Data Centers will be LEED certified and metered to measure and monitor energy efficiency.

» *Virtualization technology is being applied to optimize the use of digital storage, a practice referred to as thin provisioning, by colleges, units, and departments across Penn State.*

Thin provisioning provides digital storage based on actual rather than anticipated usage levels, which maximizes efficiency and saves operating costs associated with electricity and space needed to run and house multiple servers. ITS practices thin provisioning where needs are identified to improve efficiency, reduce environmental impact, and save costs.

» *Computer systems management has been implemented to save money and energy.*

ITS implemented a systems management program, referred to as BigFix and supplied by the Office of Physical Plant (OPP), through which computers and podiums in labs and classrooms can be remotely controlled to enter power-saving states when not in use, significantly reducing power consumption across Penn State. Through BigFix, ITS applies power savings to more than 9000 computers that are part of the Cooperative Lab Management program. Savings for the University are estimated at $330,000, 4,700,000 kilowatts, and 6,600,000 pounds of carbon per year, just on lab computers. Annual power consumption by lab computers is estimated at $185,000 and 2,600,000 kilowatts.

Another 22,000 computers across the University that are managed outside of ITS are included in this systems management program. Currently, 64 percent of computers in the systems management program are configured to enter the standby power savings mode. Current annual power usage is approximately 9,700,000 kilowatts and $678,000. With that 64 percent, ITS saves the University approximately $746,000, 10,700,000 kilowatts, and 15,000,000 pounds of carbon per year.

» *The Bulk Buy program was established to minimize costs and maximize efficiencies for purchasing equipment.*

ITS follows Penn State requirements of using Energy Star and EPEAT, resources for identifying environmentally preferable electronics, when purchasing computer equipment. Due to the large quantities of electronic equipment needed within the unit, ITS coordinates purchasing efforts through a program called Bulk Buy, gathering unit-wide requirements on an annual basis and working with vendors to ensure the best pricing and packaging processes are applied.

Through these efforts, multiple computers and accessories are packaged in a single container by the manufacturer, reducing package volume by up to 40 percent and saving the University approximately $23 per unit in unpacking and waste disposal costs. Some packaging materials are sent back to the

manufacturer, further reducing environmental impact. (For details, visit http://www.dell.com/downloads/global/solutions/public/Case_Studies/resource_987.pdf.)

» *Recycled paper use and paper elimination practices have reduced environmental impact, saved money, and minimized waste.*

All paper purchased by ITS for use in computer labs is 100 percent recycled, saving 170 tons of wood and 485 million British Thermal Units each year when compared to using non-recycled paper. This paper is also less expensive than its non-recycled counterpart. In addition, ITS has implemented a policy to eliminate individual office printers.

Future Plans (2015–19)

» *Create a mechanism and resource for coordination of sustainability efforts.*

A sustainability "champion" chartered and supported by the SLT will work directly with the Sustainability Institute and other appropriate organizations to prioritize efforts and encourage best practices in ITS buildings, offices, and labs, as well as in service portfolio development and management. Through channels to be determined, this role will be responsible for gathering information on progress made and disseminating the information to the appropriate contacts within ITS and across the University.

» *Establish baseline data for energy used in Data Centers and ITS office and equipment spaces.*

ITS will have benchmarked and monitored the efficiency of the Data Centers at University Park campus and the Penn State Milton S. Hershey Medical Center via the meters installed. Improvements will be made based on those measurements.

In addition, ITS will partner with OPP to establish such mechanisms as electronic dashboards, by which to measure and monitor energy usage in University buildings that house ITS staff and equipment. Once baseline data is established, plans for progress will be developed and implemented with the intent of championing energy savings and sustainability, not only within ITS office spaces, but also in buildings and offices across Penn State.

Working with OPP to determine baseline measurements will help to identify areas for improvement in thin provisioning. With mechanisms for measurement in place, machine virtualization efforts will be addressed by creating data-driven plans to consolidate hardware, storage, and networking services. These plans will recommend steps to save costs and improve efficiency by decreasing the amount of space requiring conditioned power and additional cooling where servers and equipment are housed.

» *ITS is working with OPP on a data center and server space inventory.*

This will establish a baseline for understanding the University's resource usage. Data gathered will inform governance decisions on the future distribution of data centers and server spaces across Penn State.

» *Create plans to increase the number of computers taking part in the power saving features of systems management across Penn State.*

ITS will work with OPP to develop plans to increase, by 20 percent, the number of computers currently in the systems management program that enter standby when not in use. While approximately 31,000-32,0000 computers are part of the systems management program, it is estimated that several thousand computers across the University are not part of the program at this time. This coordinated effort between ITS and OPP will include plans to increase the number of computers that are part of the systems management program at Penn State.

» *Central Active Directory will be used to manage digital identities and reduce redundancy.*

Digital identity is increasingly critical to the access, security, and culture surrounding and represented by Penn State information. By providing a central, authoritative source for personal information, ITS will reduce the number of redundant identity providers and ensures that digital identities accurately represent actual identities. By allowing for updates to reflect name changes, resulting from such events as divorce or gender reassignment, ITS will promote a diverse and welcoming culture across Penn State.

» *Strengthen ties with the Sustainability Institute to work toward Penn State's vision of sustainability.*

With a dedicated resource to focus on sustainability efforts, ITS will be positioned to work toward Penn State's vision: "It requires hands-on engagement of our University community in the reinvention of our physical environment, relationships, and policies and processes in a way that connects our students, faculty, and staff to broader communities and landscapes at every scale as a resource for learning" (http://sustainability.psu.edu/reinvention/living-laboratory-principles). Sustainability rubrics and checklists will be created to ensure that all projects and services take sustainability into account.

Measures of Success and Strategic Indicators

» Creation of a dedicated resource/role to coordinate, plan, monitor, and communicate sustainability efforts

» Development of a mechanism by which to measure energy usage in Data Centers, office spaces, and buildings that house ITS staff and ITS-supported equipment

» Increase in numbers of computers participating in systems management across Penn State, resulting in power savings

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TEACHING, RESEARCH, COMMUNITY SERVICE, AND ENGAGEMENT

ITS supports sustainability awareness and practice in teaching, research, and community service through partnerships and services designed to help students complete their course work in these areas. Collaboration with the Sustainability Institute has opened doors to branch out into the broader community through additional partnerships and to continue raising awareness and increasing sustainable practices through education and professional development opportunities.

Progress Made

» *Students in Penn State's MBA program worked with the Sustainability Institute to identify opportunities for ITS.*

A group of MBA students worked with ITS through the Sustainability Institute to identify areas of strength and opportunities for improvement with regard to sustainability within ITS. These findings have been incorporated into the ITS Strategic Plan 2015-19 to increase sustainability awareness and practice over the next five years. (See Appendix F.)

» *Using ITS tools and resources, students produced public service announcements on sustainability as part of their course work.*

Students in the Sustainability 200 course at Penn State Erie, The Behrend College used resources provided through ITS Media Commons to produce public service announcement videos designed to raise awareness of sustainability issues.

» *Machine virtualization has helped to reduce costs and increase energy efficiency.*

ITS also supports sustainability in the areas of teaching and research by reducing the equipment and space needed by colleges and departments for digital storage through machine virtualization.

Future Plans (2015–19)

» *Create opportunities for engagement and community service for ITS staff.*

ITS will strengthen its partnership with the Sustainability Institute to identify opportunities and best practices, prioritize activities, and increase educational programming. Partnerships and collaboration opportunities with additional organizations, such as Shaver's Creek Environmental Center, Millbrook Marsh Nature Center, New Leaf Initiative, and ClearWater Conservancy, will be explored with the goal of increasing interest and sustainable practices across ITS and beyond.

» *Create training and educational programs for students, faculty, and staff.*

ITS will provide training to increase awareness and practice of sustainability activities related to technology. At the same time, professional development opportunities will arise through increased partnerships, providing additional programming for ITS staff; students, faculty, and staff across Penn State; and members of the greater community. Through broader awareness achieved via increased partnerships and educational opportunities, sustainable practices will continue to grow.

Measures of Success and Strategic Indicators

» Training and education for students, faculty, and staff on sustainable IT practices

» Percentage of ITS staff engaged in collaborative efforts with other organizations, both internal and external to Penn State, on sustainability issues and activities

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HUMAN HEALTH AND HAPPINESS

Foundational to the principles of sustainability, human health and happiness create and cultivate a workplace environment fostering sustainable practices that are transferable to personal living. Developing a shared understanding and skill set to make sustainable choices supports the long-term benefits of both human and environmental health. In the workplace, employee happiness can contribute to better teamwork and collaboration, improved productivity, and increased retention.

Human health and happiness have been identified as the weakest areas of sustainability within ITS. (See Appendix F: Sustainability Opportunities Finder.) With the creation of a dedicated sustainability coordinator, ITS can move forward by providing educational opportunities to address areas of sustainability associated with human health and happiness and, as a result, enhance productivity, efficiency, and retention.

Progress Made

» *Partnering with the Sustainability Institute has raised awareness of sustainability issues.*

An awareness of sustainability has emerged within ITS and grown with the creation of Green Teams and partnerships with the Sustainability Institute. ITS has provided opportunities for employees to improve ergonomics by using glare filters on computer screens, adjustable height desks, and adjustable chairs. Efforts to provide reasonable opportunities for telecommuting have been explored, and bicycles were at one time provided as an option for traveling to meetings in different buildings to reduce emissions and increase opportunities for physical activity.

» *Waste reduction has become a priority through collaboration with OPP.*

Subunits and staff members within ITS participate in a program, in collaboration with OPP, to reduce waste by eliminating trash cans in individual offices and encouraging the sorting of individual waste into recyclable, compostable, and disposable categories.

Future Plans (2015–19)

» *Increase professional development and engagement opportunities in sustainability topics and activities.*

ITS seeks to establish a culture that is excited about sustainability, and to reach that goal, professional development, partnerships, and collaboration opportunities must significantly expand. Leveraging diverse knowledge sets through collaboration can improve productivity and boost employee motivation.

ITS will move beyond the awareness stage and into the practical application stage of sustainability with regard to health and human happiness through partnerships with the Center for Workplace Learning & Performance (CWLP), University Health Services, and other organizations as appropriate to provide comprehensive programs for professional development. Employees will be provided with opportunities to participate in sustainable activities, collaborate with individuals in other organizations to learn about and contribute to sustainability efforts, and share their knowledge with others through informal and formal outlets.

» *Create and implement telecommuting programs across ITS.*

Telecommuting can be an effective way to save on costs associated with office space, to minimize environmental impact associated with travel, and to maximize employee satisfaction with regard to work schedules and environment. Telecommuting can increase productivity by reducing interruptions in the work environment and improving time efficiency. ITS will evaluate and implement telecommuting options to determine the most beneficial practices and policies with regard to improving efficiency, providing flexibility, increasing available work time, and boosting employee satisfaction and retention.

» *Provide wellness options for health and physical fitness.*

New building and office spaces will be designed to support not only the ecological and economic functions of sustainability, but also human health and happiness components, including community involvement, collaboration opportunities, physical fitness, and ergonomics. Partnerships with the Office of Human Resources and University Health Services will provide opportunities to explore these areas and provide the most beneficial options to improve employee satisfaction, health, productivity, and retention.

Measures of Success and Strategic Indicators

» Trends regarding staff wellness and satisfaction as shown through feedback collected from the Climate and Diversity Survey

» Number of educational programs offered on sustainability topics

» Number of staff members participating in collaborative efforts, within ITS and with other units and organizations, to improve sustainability

Budget Planning

The current ITS budget is derived from central sources and the Information Technology (IT) Fee, which together account for approximately 87 percent of $110 million in annual funding. The remaining 13 percent of ITS funding comes from other University units through service fees and the Telecommunications Access Fee. Since ITS is a service provider for Penn State, any new revenue generated through service charges will result in cost shifting to other areas of the University, achieving no net gain.

ITS enables work toward the University's mission by supporting technology that enhances teaching, research, and service. During the next five years, the requirements and demand for current and new ITS services will increase. The IT Assessment and IT Roadmap have called for shared services (e.g., email and calendar, data center, service desk) for increased efficiency through decreased redundancy. Consolidating to provide shared services may result in additional costs until the transition to the shared service is completed. Additionally, software and equipment maintenance cost increases, along with years of recycling, have eroded the permanent funding base for ITS. While increasing efficiencies may reduce some costs, the result of these three pressures is an increase in the ITS annual central budget request.

The current University budget model does not plan for intentional investment in lifecycle refresh, new projects, or innovation, three elements that are essential for future progress and require funding predictability for effective planning. To address IT funding across Penn State and ITS as the central IT unit, the IT Roadmap recommended governance and funding guidelines as well as models to be considered. (See Appendix G.) These recommendations allow flexibility and provide guidance on meeting the mission-critical needs of the University as dictated by executive strategy.

Appendix A: Penn State IT Customer Satisfaction Survey April 2014

Summary of IT Customer Satisfaction Survey

In September 2013, the associate vice provost for Information Technology (IT) formed the Customer Satisfaction Survey committee to develop and conduct a University-wide survey of faculty, staff, and students on various aspects of their experience with IT at Penn State. The committee included members of numerous IT units across the University and worked with MOR Associates on the survey process, content, and functionality.

The survey focused on core University services, as identified by the committee, including aspects of the following: IT Service Desk, computer training, network access, email and calendaring, telephone services, conferencing services, technology-enhanced classrooms, instructional support tools, data storage, computer security, computer labs, and software licensing. The intent of the survey was to ascertain service relevancy and customer satisfaction, as well as to establish a satisfaction baseline with the goal of using future survey data to identify trends and opportunities for improvement.

The survey was distributed to a random sample of 6,472 faculty members, graduate students, undergraduate students, and non-IT staff members as well as 1,256 IT staff members across Penn State. Results from IT staff members were not included in the general report. The total response pool was 2,193 (34 percent) of the surveyed population. Response rates were 36 percent faculty, 31 percent graduate students, 12 percent undergraduate students, and 49 percent non-IT staff, while 60 percent (750) of IT staff members responded to the survey.

Results showed that members of the Penn State community hold primarily positive views of core IT services. Fifty percent of the polled services were considered to be very good or higher, and more than twenty percent of the total ranked in the excellent range. In addition, many services rated above the 4.75 (very good*) mean, and some rated above 5 (excellent*). Areas of opportunity became clear with some services receiving a mean score in the 4.37-4.75 range. The survey also rated services by importance to the user, and results varied from a mean of 1.87 (low criticality) to 4.69 (high criticality).

Survey comments, in which respondents were given the opportunity to add personal feedback, aligned closely with the other survey results with a few common themes emerging. Requests for specific software and the desire to administer computers, rather than rely on IT staff to do so, were the two most common comments. These comments identified opportunities for improvement in areas of communication and education.

The Customer Satisfaction Survey committee plans to work with the IT Communications group to share survey results, showing the Penn State community that responses were reviewed and action is being taken. The committee will also leverage ITSCollab to assist in determining appropriate next steps and best methods for engaging service owners to ensure accountability.

Ratings based on the survey experience of MOR Associates.

All Satisfaction Ratings from the Survey Sorted by Mean

Question	Mean	Tot Neg (VD/D/SD)	Tot Pos (SS/S/VS)	Count
Q14b. Wired networking (when your device is plugged into a network jack)	5.20	5%	95%	1648
Q1a. Penn State IT keeps IT systems up and running	5.14	5%	95%	2092
Q5d. IT Service Desk in person help at Wagner Building or Pattee Library	5.13	5%	95%	105
Q5a. IT Service Desk via telephone at 814-865-HELP (4357)	5.05	8%	92%	797
Q1d. Penn State IT provides services that are valuable to you	5.03	8%	92%	2059
Q27a. Wired desk phones	5.03	7%	93%	1482
Q27b. Penn State voice mail	5.02	7%	93%	1452
Q1b. Penn State IT is responsive to your needs	4.97	9%	91%	2034
Q1c. Penn State IT provides high-quality services	4.97	9%	91%	2062
Q8a. lynda.com	4.95	2%	98%	655
Q5b. IT Service Desk via email at ITServiceDesk@psu.edu	4.95	8%	92%	595
Q41d. Penn State World Campus	4.94	7%	93%	210
Q5c. IT Service Desk via a web form at itservicedesk.psu.edu	4.92	9%	91%	319
Q41e. Other Penn State online courses	4.87	9%	91%	145
Q8b. ITS Training Services classes (Scheduled Training, Training on Demand, Vendor Training)	4.80	6%	94%	879
Q41b. eLion	4.78	8%	92%	1001
Q31a. Penn State-provided audio conferencing	4.77	6%	94%	1119
Q31c.	4.73	9%	91%	1061

Meeting@PennState web conferencing, powered by Adobe Connect				
Q54a. Penn State computer labs	4.73	9%	91%	386
Q57b. Software available for download at downloads.its.psu.edu	4.73	8%	92%	1205
Q48b. Box at Penn State	4.72	8%	92%	461
Q8c. Tech Tutors	4.71	6%	94%	332
Q31b. Penn State room-based videoconferencing	4.66	8%	92%	1116
Q48a. Penn State Access Account Storage Space (PASS)	4.66	10%	90%	860
Q37a. Technology-enhanced classrooms	4.65	11%	89%	1038
Q48c. UDrive	4.65	10%	90%	375
Q41c. Penn State's delivery of MOOCs (massive open online courses, e.g., Coursera)	4.65	12%	88%	34
Q1e. Penn State IT communicates clearly about their services	4.64	16%	84%	1997
Q57a. Software available for purchase via http://software.psu.edu	4.62	10%	90%	1003
Q8d. Microsoft IT Academy	4.60	8%	92%	243
Q21a. UCS email	4.58	15%	85%	890
Q21b. UCS calendaring	4.48	17%	83%	723
Q14a. Wireless networking (non-cellular wi-fi)	4.41	21%	79%	1838
Q41a. ANGEL	4.37	21%	79%	1046

All Importance Ratings from the Survey Sorted by Mean

Question	Mean	Total Very/ Critically Important	Count
Q20a. UCS email	4.69	94%	920
Q40a. ANGEL	4.52	89%	1080
Q40b. eLion	4.41	86%	1039
Q40d. Penn State World Campus	4.33	80%	221
Q13a. Wireless networking (non-cellular wi-fi)	4.31	83%	2032
Q36a. Technology-enhanced classrooms	4.23	79%	1119
Q4a. IT Service Desk via telephone at 814-865-HELP (4357)	4.12	84%	853
Q13b. Wired networking (when your device is plugged into a network jack)	4.12	77%	1961
Q40e. Other Penn State online courses	4.09	70%	163
Q26a. Wired desk phones	3.99	74%	1626
Q4b. IT Service Desk via email at ITServiceDesk@psu.edu	3.98	78%	640
Q4c. IT Service Desk via a web form at itservicedesk.psu.edu	3.94	76%	351
Q4d. IT Service Desk in person help at Wagner Building or Pattee Library	3.89	75%	113
Q26b. Penn State voice mail	3.86	70%	1630
Q20b. UCS calendaring	3.81	64%	911
Q56b. Software available for download at downloads.its.psu.edu	3.62	60%	1601
Q53a. Penn State computer labs	3.61	55%	436
Q47d. Dropbox	3.46	55%	1280
Q40c. Penn State's implementation of MOOCs (massive open online courses, e.g., Coursera)	3.30	36%	44
Q30c. Meeting@PennState web conferencing, powered by Adobe Connect	3.29	47%	1513
Q30a. Penn State-provided audio conferencing	3.25	44%	1571
Q47a. Penn State Access Account Storage Space (PASS)	3.24	49%	1315
Q47e. Google Drive	3.23	48%	1130
Q56a. Software available for purchase via	3.20	44%	1538

software.psu.edu			
Q30b. Penn State room-based videoconferencing	3.19	41%	1584
Q7b. ITS Training Services classes (Scheduled Training, Training on Demand, Vendor Training)	2.92	34%	1483
Q7a. lynda.com	2.87	34%	1173
Q47b. Box at Penn State	2.70	32%	931
Q47f. iCloud	2.60	32%	978
Q47c. UDrive	2.57	31%	873
Q7c. Tech Tutors	2.42	21%	1148
Q7d. Microsoft IT Academy	2.15	14%	1027
Q47g. OneDrive (aka SkyDrive)	1.87	14%	687

Appendix B: Student Technology Advisory Committee Recommendations

Student Technology Advisory Committee (STAC) - IT Strategic Planning Recommendations
June 19, 2014

The Student Technology Advisory Committee (STAC), based on data collected from Penn State students and in conversation with University leadership, offers the following recommendations for strategies to improve IT for students at Penn State:

Integrated/Interoperable Email and Collaboration Tools
According to the 2014 Penn State IT Customer Satisfaction Survey, a large portion of students utilize programs other than Webmail to fulfill their technological needs in and out of the classroom (see page 4 or survey results). Webmail is limited to email which is why students are looking to external sources for online calendars, collaborative document authoring, cloud storage, and more. In order to optimize technology use for students and faculty Penn State needs to adopt an integrated system for communication and collaboration that ideally interoperates with other Penn State IT infrastructure (SSO, LMS, etc.). We recommend that the Student Technology and Advisory Committee (STAC) explore potential alternatives to the current Webmail system and decide on a new system to best fulfill the needs that students are currently looking elsewhere to obtain (as noted on page 4 of the survey).

Student Mobile Services
Students increasingly use mobile devices for productivity purposes: to collaborate with peers, to access academic content and services, and to interact with faculty. According to the 2013 ECAR (EDUCAUSE Center for Analysis and Research) report, 83% of Penn State students own smartphones capable of these functions (up 14% from last year and 7% higher than the national average). In order to provide IT services to meet the needs of current and future students, we recommend expanded mobile access to the LMS to view and interact with course materials, and improvements to mobile email and calendaring, library services, course registration, computer lab availability, and classroom technology, as well as services to support student life, such as campus dining and transportation. In order for these capabilities to adapt to the changing device landscape, mobile solutions should be designed to accommodate a variety of student owned devices, being platform-agnostic or equally available to the most common platforms. Finally, a task force should be established to further identify and prioritize student needs.

Modern Cloud Storage Options
Cloud storage enables students to easily share files across their multiple devices, between peers, and collaborate around files. According to the 2014 Penn State IT Customer Satisfaction Survey, more students use Dropbox, the cloud-based file sharing service, than PASS space and U-Drive, the previous alternatives for file storage and sharing. Additionally, Student Technology Advisory Committee (STAC) listed this as one of the top 10 IT issues for students. Box.com, Penn State's new cloud storage solution was a new service at the time of data collection for this survey, but its usage is expected to grow as its features align with Dropbox's with the added benefit of PSU authentication. We recommend significant promotion of Box to the student population, visibility of Box on lab computer desktops (similar to PASS/U-Drive links), and promotion and training on Box for teaching and learning purposes, including methods for integrating Box and the LMS.

Wireless as a Common Good
According to a report created by student leaders in the Student Technology Advisory Committee (STAC), wireless access as the #1 IT issues for students. The 2014 IT Satisfaction Survey supports this, stating that 26% of undergraduates and 19% of graduates give Penn State wireless a negative rating. The importance of wireless to students is driven by an increasingly mobile academic workflow where students

leverage small increments of time between classes or activities to complete assignments or coordinate with peers. Those periods of time might find students in eateries, outside green spaces or classroom building hallways. We recommend more ubiquitous coverage of wireless, including the aforementioned spaces, as well as a more intuitive process for students to setup, connect to, and resolve wireless issues. We recognize the Wireless as a Common Good initiative is underway, and thus also recommend student feedback is actively factored into its planning.

Computer Labs, Specialty Software, and Printing
Despite the high percentage of device ownership among Penn State Students (according to ECAR: 97% own laptops, 29.5% tablet or iPad), computer lab usage continues to grow. Students often do not carry these devices with them due to either weight or no-technology classroom policies by faculty. In a report produced by the Student Technology Advisory Committee (STAC), students cite the need for convenient printing stations, access to specialized software, and generally the availability of available workstations as IT issues that need to be improved. We recommend a number of strategies to address these issues. First, provide additional printing stations in high-traffic areas on campus, as well as promoting paperless classroom approaches to faculty. Second, invest further in virtualization to enable students to gain access to specialty software on their own computers. Third, create a mobile application or mobile-friendly website to easily determine workstation availability in computer labs.

Appendix C: Update on the Seven Opportunities from the 2011 IT Assessment

Update on the Seven Opportunities from the 2011 IT Assessment

In 2011, Penn State conducted a University-wide **assessment of information technology.**[1] The assessment, which was led by the University and facilitated by an outside consultant, originated from **goal six**[2] of the 2009–14 Penn State Strategic Plan and focused on three broad objectives:

1) To quantify and understand Penn State's current level of investment in technology

2) To recommend changes to improve the efficiency and effectiveness of IT services, with particular focus on optimizing the balance between distributed and common services

3) To recommend changes to IT governance (planning, prioritization, assessment, and decision making) to improve the University's collective ability to manage its investment in technology

Through the assessment, seven opportunities were identified as being key factors in improving the effectiveness of technology and the ability to balance common and distributed IT services at Penn State. This document outlines the status of those seven opportunities as of **June 2014**.

OPPORTUNITY

Deploy a common email and calendaring solution for faculty and staff.

STATUS

The **University Collaboration Suite**[3] (UCS) was centrally funded in 2011 and now has 14,674 UCS email users (11,018 faculty and staff members and 185 student workers) and approximately 3,471 UCS calendar users (the calendar users migrated to UCS but forward email elsewhere). As of late June 2014, there were 3,631 mobile UCS users and the average mailbox size was approximately one gigabyte. In ongoing efforts to evaluate future directions for a common email solution, an Information Technology Leadership Council (ITLC) task force submitted their recommendation for email and calendaring services in December 2013.

University Collaboration Suite primary contact: **Pablo Garaitonandia**

Service owner: **Administrative Information Services**

OPPORTUNITY

Create a new University service to meet the shared needs for long-term data storage and archiving.

STATUS

Management, archiving, and preservation of research data is now supported by **ScholarSphere**,[4] a joint initiative of ITS and the University Libraries. ScholarSphere is a secure repository service that enables the Penn State community to share its research and scholarly work with a worldwide audience. Faculty, staff, and students can use ScholarSphere to collect their work in one location and create a durable record of their papers, presentations, publications, data sets, or other scholarly creations. Through this service, Penn State researchers can also comply with grant-funding agency requirements for sharing and managing research data.

ScholarSphere primary contact: **Mairéad Martin**

Service owner: **Services and Solutions**

OPPORTUNITY (CONTINUED)

Create a new University service to meet the shared needs for long-term data storage and archiving.

STATUS

ArchiveSphere[5] will support the long-term management of University electronic records and archival materials. There are four phases in ArchiveSphere development: 1) ingest and preservation services for archive staff, 2) administrative tools for managing, arranging, and describing submissions for public access and discovery interfaces, 3) integration with ArchivesSpace for holistic management of archival context around repository materials, and 4) alternative submission tools, including self-deposit options for institutional records. Phase one has been in production since January 2014. ArchiveSphere is a joint development between ITS and the University Libraries.

ArchiveSphere primary contact: **Mairéad Martin**

Service owner: **Services and Solutions**

As of June 2014, there were 12,389 accounts active in Penn State's enterprise **Box** service. Account users have stored an aggregate 12.5 terabytes of data since the service was first offered in October 2013 and are sharing data with 1,914 external Box users at other institutions. Since November 2013, Penn State students, faculty, and staff have been able to self-provision their own Box accounts through Single Sign On. In early 2014, the Box service team repatriated 1,330 free commercial Box accounts that were using some form of a psu.edu address and 311 Office of Physical Plant users who had been on a separate pilot of Box. An important addition to the service has been Non-Person Accounts—accounts that can be used by departments, committees, groups, etc., for group collaboration. The Penn State Box service team provides full user support through the IT Service Desk; offers an informational website (box.psu.edu) with news, use cases, and support information; uses a Yammer group for user discussion; and gives scheduled training and training on demand.

Box primary contact: **Kurt Baker**

Service owner: **Services and Solutions**

OPPORTUNITY

Expand ITS' server colocation and virtualization services in a manner that is cost competitive with units providing the service on their own. Commit first to increasing use of this service for administrative applications that require high availability and redundancy.

STATUS

Throughout the University, adoption of **VM Hosting**[6] increased more than 75 percent during fiscal year 2013–14 (more than 200 virtual servers were added).

In addition, the **vLearning**[7] pilot that began during fall semester 2013 is being extended through spring 2015. At this point, the pilot has included nine unique classes for 300 students at four campuses. The pilot provides the following:

- A safe, consistent environment where every student can run the necessary software using a web browser
- A virtual classroom where students can do their work wherever they have an Internet connection
- Data safety and consistency for students—viruses, malware, or hardware issues no longer cause students issues in relation to educational work

To gain a better understanding of customer requirements, financial/cost models, and requirements for service design, the vLearning pilot will soon be entering the service strategy phase.

VM Hosting primary contact: **Mike Burns**
vLearning primary contact: **John Schubert**

Service owners: **Services and Solutions, Data Centers**

OPPORTUNITY

Extend the ITS computer lab management service to all campuses and colleges and begin to develop a similar solution to manage administrative desktops.

STATUS

Two small-scale **Virtual Desktop Infrastructure**[8] (VDI) pilots have been completed to better understand desktop virtualization technologies and inform future decisions on a virtual desktop service for Penn State. The first pilot began in June 2012 with approximately thirty participants and the second pilot began in January 2013 with approximately twenty people. Work is currently being done to evaluate customer requirements, financial and cost models, and service design requirements for the VDI service.

Virtual Desktop Infrastructure primary contact: **Blake Ferchalk**

Service owner: **Services and Solutions**

OPPORTUNITY

Reduce the cost of software purchases by extending the use of shared, server-based software licenses instead of licensing software for every individual computer.

STATUS

Launched on July 1, 2013, **Software at Penn State**[9] evolved from the former Computer Store. Current initiatives include:

- Collaborating with Penn State campuses on a project to expand software titles at shared costs
- Managing the implementation and support for a new Adobe enterprise license and distribution/cost sharing model
- Gathering proposals from vendors for a software catalog that will increase the breadth of offerings to large- and small-volume customers
- Supporting fifteen communities of practice around software through user meetings and Yammer groups
- Gathering stakeholder requirements and evaluating tool options for a University-wide software repository to better coordinate software license usage
- Focusing on software compliance
- Exploring the possibility of a University-wide Microsoft Office 356 software offering

As a result of leveraged discounts, the University saved $21 million during fiscal year 2012–13. In addition, streamlining internal processes has increased overall efficiencies.

Software at Penn State primary contact: **Sue Gavazzi**

Service owner: **Services and Solutions**

OPPORTUNITY

Implement a common help desk system and knowledge base to improve the productivity of IT staff and the quality of user support services.

STATUS

As part of the larger Information Technology Service Management (ITSM) project, Penn State IT has been working with **Third Sky**,[10] an IT service management consultant, to develop a **Shared Service Desk** and evaluate and choose a service desk software solution.

Shared service desk tool evaluations are complete, a final tool will be selected by the end of June 2014, and process workshops will conclude in July 2014. The new tool and processes will be implemented in a phased rollout throughout the coming months.

Shared Service Desk System primary contact: **Allen Stubblefield**

Service owner: **Services and Solutions**

OPPORTUNITY

Make wireless networking at University Park campus a common service to achieve greater network coverage and a more consistent experience for faculty, students, and staff as they move about campus.

STATUS

On May 3, 2013, the Penn State Board of Trustees approved a **wireless networking**[11] effort expected to be complete by 2016. Substantial progress has been made to establish a common good wireless networking service across the University. As of June 2014, the management of most of the College of Engineering's wireless network has been transferred to Telecommunications and Networking Services (which was a high-priority goal), while forty-one of approximately 480 buildings have been upgraded and equipped to support wireless service standards (with installations underway in nine more buildings). Installations have also been completed and wireless services activated in all but a few residence halls across University Park. Before the start of classes in fall 2014, wireless service standards will be met within most classroom buildings at University Park campus.

Wireless Networking primary contact: **Chuck Enfield**

Service owner: **Telecommunications and Networking Services**

Related Projects

Although the following are not part of the seven opportunities from the 2011 IT Assessment, they have resulted from those initiatives and/or are closely related to the seven opportunities.

Data Centers

As part of the ITS server colocation and virtualization services opportunity, Penn State **Data Centers**[12] has been working with the Virtualization and Colocation Task Force since its inception. The Colocation Center is experiencing significant growth due to an increasing number of requests from units throughout the University. Those requesting colocation space for physical servers are asked to first consider, when applicable, the ITS Virtual Colocation service (VM Hosting). If they cannot move to VM Hosting, rack space is provisioned in the Colocation Center. In addition to the physical space, networking, power, and cooling offered in the Colocation Center, the Data Centers team works directly with each customer to help them transition from their current location. An inventory process is underway to identify at-risk and small server spaces that are candidates for consolidation. A new data center is expected to be fully operational by 2017.

Data Centers primary contact: Mark Saussure

ITSCollab Project Groups

The ITSCollab projects identified in 2013—service portfolio management, project portfolio management, and resource management—became components of the IT Transformation Program (ITX) in 2014. As one of the early adopters of ITX, ITS will begin working with the ITX Program Planning Team to develop shared processes for request fulfillment, incident management, a service catalog, and change management across all ITS units. This work and the implementation of shared processes will be a major step toward fostering one ITS and one IT at Penn State. The ITSCollab community continues to stay engaged in ITX's progress and supports and advocates the changes happening throughout the organization. Additionally, members of ITSCollab have worked to explore, refine, and join communities of practice around IT topics, ITS-wide change management approaches, and forward-thinking input to how staff will work together differently in the 300 North Science Park Road building.

ITSCollab primary contact: Christy Long

IT Transformation Program

To meet Penn State's changing needs, IT must be a customer-focused service that supports and facilitates innovation, collaboration, and excellence. The **IT Transformation Program**[13] (ITX) is an initiative to re-evaluate the University's IT service models and approach to customer service by providing services and partnerships at scale. To enhance the value of IT for students, faculty, and staff, the program is focusing on:

- IT governance
- IT portfolio management
- IT service management

ITX is working with **Third Sky**,[10] an IT service management consultant, along with five Penn State IT units to create a baseline for IT services, processes, tools, and structures at the University. To develop these baselines, Third Sky and the ITX program team have conducted process workshops, technical tool evaluations and demos, and peer reviews, fostering the broad involvement of IT staff across the University.

IT Transformation Program primary contact: **Mairéad Martin**

Service owner: **Office of the Vice Provost for IT**

Visitor Wireless

In October 2013, Penn State entered into a two-year agreement with AT&T Wireless to provide easy-to-access **visitor wireless**[14] networking to University guests. The conversion from paid to free Wi-Fi access for visitors began June 26 at University Park campus. Most Penn State campus locations will be converted to free visitor wireless by the end of July 2014. To prepare for the end of the current AT&T visitor wireless service agreement, the visitor wireless committee is investigating high-performance, reduced-cost alternatives. The committee will issue a request for proposals to determine Penn State's future visitor wireless solution by the end of 2014 and implement the new solution by October 2015.

Visitor Wireless primary contact: **Chuck Enfield**

Service owner: **Telecommunications and Networking Services**

Penn State Voice Advocacy Working Group

As part of creating a common email and calendaring solution for the University, the Penn State Voice Advocacy Working Group (Penn State VAWG) developed the following goals and objectives:

- Provide flexibility and options in the provisioning of voice services to University units and campuses that meet the University's requirements and educational needs in a cost effective manner
- Reduce the cost of voice services by 25–50 percent in five years
- Encourage and establish a similar/standard user experience from campus to campus
- Leverage University resources to the greatest extent possible

Penn State VAWG, composed of representatives from throughout Penn State, has completed an analysis of vendor service offerings, gathered stakeholder requirements, and released and evaluated vendor proposals.

Concurrent with this effort, external influences (such as the Active Directory, Microsoft Exchange, and growing expectations for unified communications) caused Penn State VAWG to re-evaluate the viability of the initial plan and approach. After some discussion, Penn State VAWG decided to end its initial effort and transition its focus to the Telephony Expansion Project (TEP). TEP is focused on expanding a Voice over Internet Protocol (VoIP) solution to all Penn State campus locations based on the VoIP platform at University Park campus. The design is scheduled to be complete by December 2014, and initial deployments are expected to take place during the first or second quarter of 2015.

Voice Advocacy Working Group primary contact: **Jerry Krawczyk**

Service owner: **Telecommunications and Networking Services**

Related Web Links

1. 2011 IT Assessment
   http://it.psu.edu/strategies/pdf/IT%20Assessment%20Executive%20Summary.pdf

2. Goal Six of the Penn State Strategic Plan
   http://strategicplan.psu.edu/technology

3. University Collaboration Suite (UCS)
   http://ait.its.psu.edu/services/ucs/

4. ScholarSphere
   https://scholarsphere.psu.edu/

5. ArchiveSphere
   http://stewardship.psu.edu/

6. VM Hosting Server Virtualization
   https://www.vmhost.psu.edu

7. vLearning
   https://vlearning.psu.edu/

8. Virtual Desktop Infrastructure (VDI)
   http://desktop.psu.edu

9. Software at Penn State
   http://software.psu.edu/

10. Third Sky
    http://www.thirdsky.com/

11. Wireless Networking
    http://wireless.psu.edu/
    Detailed plans of deployment sequences and schedules
    https://wikispaces.psu.edu/display/PSWP/Penn+State+Wireless+Projects+Home

12. Data Centers
    http://dc.psu.edu/

13. IT Transformation Program (ITX)
    http://sites.psu.edu/ittransformation

14. Visitor Wireless
    http://wireless.psu.edu/visitorwireless.html

Penn State IT
Information Technology

Appendix D: ITS Anti-Bullying Policy

Harassment: Workplace Bullying Policy

*Penn State Information Technology Services (ITS) defines bullying as **unwanted, aggressive, and repeated inappropriate behavior directed at a person or persons that involves a real or perceived imbalance of power**. Such behavior violates the ITS Community Principles, which clearly state that all employees will be treated with dignity and respect.*

The purpose of this policy is to communicate to all employees, including supervisors, managers, and executives, that ITS will not, *in any instance,* tolerate bullying behavior. Any incident can be subject to discipline ranging from resources to correct the behavior to termination.

Bullying may be intentional or unintentional; however, as with sexual harassment, it is the effect of the behavior upon the person or persons being targeted that is most important.

ITS considers the following types of behavior as examples of bullying:

- **Physical Abuse**
- **Verbal Abuse**
- **Psychological Abuse**
- **Work Sabotage**
- **Social Sabotage** (work-related social ostracizing)

Specific Bullying Behaviors

The following lists of behaviors represent the types of bullying mentioned above but are not complete. The unacceptable behaviors may encompass multiple categories.

Physical Abuse

- Intimidating by not moving out of the way in a hallway
- Violating personal space
- Slamming doors
- Pounding on tables
- Making unwanted contact (slaps on back, etc.)
- Moving or touching personal items
- Throwing a temper tantrum when someone disagrees with you
- Making obscene, angry, or dismissive gestures

Verbal Abuse

- Shouting at someone (in private or public)
- Name-calling
- Flying off the handle over minor things
- Complaining to others about a person (targeting a person's reputation)
- Lying about a person
- Nitpicking on a regular basis
- Blaming without justification
- Not allowing a person to express himself (interrupting/ignoring)
- Reprimanding someone publicly
- Making private conversations public

Psychological Abuse

- Shaming someone
- Spreading rumors
- Insulting or offensive remarks made about the target person's intelligence, competence, attitudes, or private life
- Gossiping about a person with intent to discredit or marginalize
- Ignoring or being hostile when the target approaches
- Humiliating or ridiculing in connection to work
- Giving offensive or unwanted nicknames

Work Sabotage

- Withholding information or resources that's needed to do a job (undermining)
- Arriving late (intentionally) for meetings
- Refusing to help when asked
- Responding slowly to or ignoring (intentionally) important requests, calls, and emails
- Accusing someone of making a mistake on purpose
- Monitoring (excessively) tasks and time
- Overloading (intentionally) a person with work/giving shorter deadlines than others
- Under-loading (intentionally) a person with work
- Not providing appropriate feedback
- Ignoring contributions and/or not giving praise when deserved
- Managing by threat and intimidation
- Preventing access to opportunities
- Abusing the CC'ing function (adding people to conversations for political advantage)
- Threatening poor reviews as a way of intimidating
- Taking credit for someone else's work
- Encouraging others to disregard a supervisor's instructions
- Excluding an individual or isolating someone from work-related activities (meetings, etc.)

Social Sabotage

- Excluding someone from normal work conversations/making someone feel unwelcome
- Leaving someone out of work-related social events
- Leaving the work area when the person enters
- Participating in mean pranks
- Mocking a person's beliefs (religious, political, philosophical beliefs, etc.), physical attributes, mannerisms, etc.

What is NOT bullying?

- Constructive feedback intended to improve job performance or a project
- Differences of opinion expressed in a respectful manner
- Reasonable disciplinary actions taken by an employer toward an employee (including reprimand and dismissal)
- Management or HR decisions based on reasonable grounds
- Reasonable deadlines set by manager
- Expectations to meet reasonable deadlines

Appendix E: Sustainability Opportunities Finder

Opportunity Finder Self-Report

Respondent: Tim Sandusky

Contact Information: tsand@psu.edu

Campus: University Park

Unit: Information Technology Services

Responses Represent: Information Technology Services/

Thank you for completing the Opportunity Finder.

We are confident that taking the time to assess your current activity will pay off as you set sustainability strategies that support the goals of your unit.

In order to gain the most benefit, please review your results and discuss them as a group. Below you will find recommended steps to examine your responses and discover new opportunities.

Steps to Review Results and Find Opportunities

1. Review your responses.
   - For "yes" responses, consider whether this is a strategic area where enhanced activity would yield even more impact.

   - For "no" responses, consider whether this is a strategic area where new activity would make an impact.

2. Discover resources. In addition to your responses, this report contains resources to increase the sustainability capacity of your unit as well as support your efforts to include sustainability strategies in your planning goals.

3. Take what you have learned and continue with the SMART Strategy Builder at www.sustainability.psu.edu/strategic-planning.

Review your responses in the area of <u>Teaching and Co-Curricular</u>:

Teaching and Co-Curricular
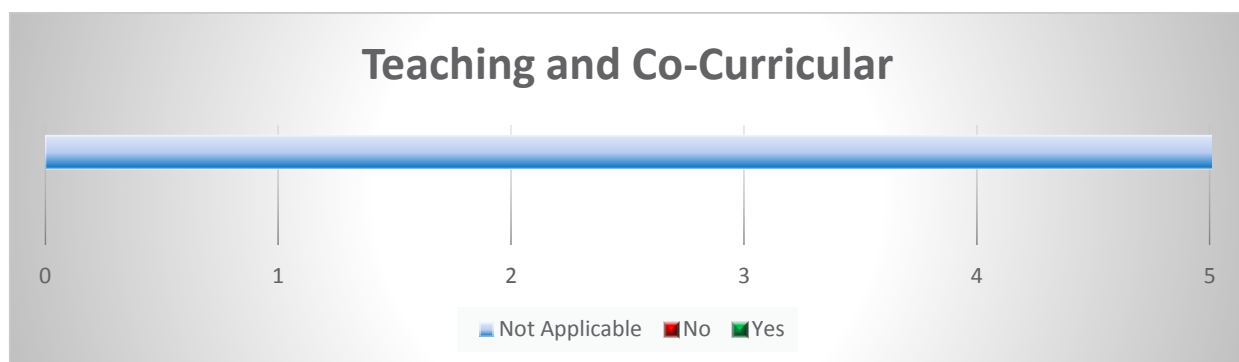
Q1 Does your unit offer academic courses with sustainability content?   Not Applicable

Q2 Does your unit offer any undergraduate or graduate sustainability-focused major or minor degree programs?   Not Applicable

Q3 Do any of your courses or academic programs specify sustainability learning outcomes? Not Applicable

Q4 Does your unit offer any immersive experiences *related to sustainability?* Not Applicable

Q5 Does your unit have an ongoing program to encourage students to conduct sustainability research? Not Applicable

Q6 Does your unit provide students with opportunities to engage in sustainability-related activities outside of the classroom (e.g., clubs, symposia, student-run enterprises, etc.)? Not Applicable

Q7 Does your unit apply the "campus as a living laboratory" concept, by using campus infrastructure and operations as living environments for multidisciplinary student learning and applied research in sustainability? Not Applicable

Discover Resources in the Teaching & Co-Curricular area:

Sustainability Leadership Minor
http://sustainability.psu.edu/learn/students/minor-sustainability-leadership

The Intercollege Minor in Sustainability Leadership allows students in any major to incorporate sustainability as a significant theme in their undergraduate degree program. Through a combination of coursework, immersive and applied experiences in sustainability, students develop the knowledge, skills and attitudes they'll need to become sustainability leaders in their respective fields.

Faculty Development – The Penn's Woods Project

The Penn's Woods Project includes all Sustainability Institute initiatives on faculty development for sustainability education. Workshops in sustainability education at Penn State fall into two main categories: shorter workshops, primarily held during the semester, and multiple-day workshops, held in the summer for faculty who wish to create or revise sustainability-focused courses. In both cases we work with faculty to help them find ways to incorporate more sustainability concepts and practice into coursework across the university curriculum.

Contact: Sue Barsom, sbarsom@psu.edu

Field Guide to Teaching Sustainability at Penn State http://fieldguide.sustainability.psu.edu/

The Field Guide to Teaching Sustainability at Penn State is an online resource developed to make it easier for instructors to create and implement effective teaching materials that address the various aspects of sustainability. It is intended to help further the principles and actions contained in the Penn State Sustainability Strategic Plan.
http://sustainability.psu.edu/learn/students/courses
http://sustainability.psu.edu/sustainable-communities

Overview of Sustainability-Related Courses and Degree Programs
http://sustainability.psu.edu/learn/students/courses
Our list is not exhaustive, but it is a good start. You and others can help make it even better by providing information on courses and programs in your unit.

Sustainable Communities
The Sustainable Communities Collaborative (SCC) is the University's strategic platform and opportunity to develop an innovative University/community collaboration that engages Penn State Faculty and students in existing courses from across the University through real world, community-identified sustainability projects.
http://sustainability.psu.edu/sustainable-communities

Review your responses in the area of <u>Research</u>:

Research

0   1   2

■ Not Applicable   ■No   ■Yes
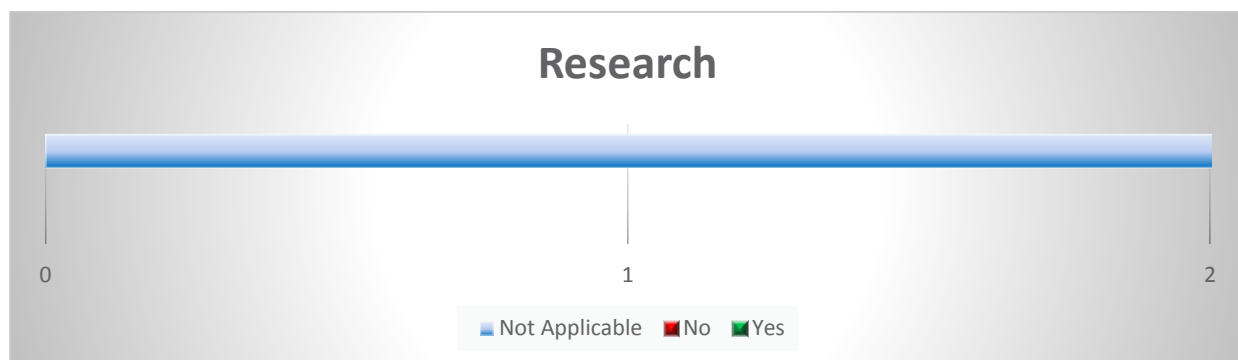
Q8 Do your unit's faculty members conduct research on sustainability topics? Not Applicable

Q9 Does your unit support one or more research centers or sub-units that conduct research relevant to sustainability? Not Applicable

Discover Resources – for Research:

Reinvention Fund Seed Grant Program
http://sustainability.psu.edu/reinvention

The Reinvention Fund will serve as a financial catalyst to empower transformative sustainability initiatives at Penn State. The Fund will invest in a broad portfolio of innovative, interdisciplinary projects of basic and applied research, practice, education, and outreach that will enhance our collective expertise on sustainability, initiate interdisciplinary projects across the University, and increase recipients' abilities to secure larger external grants.

Expert Database
http://sustainability.psu.edu/learn/researchers/expert-database

The Expert Database connects sustainability scholars at Penn State. This searchable database of research faculty expertise is a collaborative effort of the Penn State Institutes of Energy and the Environment (PSIEE) and the Sustainability Institute. Search by name of researcher, theme, department, or keyword. You may also request to be added to the Expert Database to highlight your own research efforts.

Funding Opportunities
Follow us at https://twitter.com/sustainPSU to learn about the latest grant news. Every day the communications team at the Sustainability Institute tweets out a sustainability-related grant opportunity. Look for the hashtag #GRANT. We announce hundreds of grant opportunities each year.

DOW SISCA
http://sustainability.psu.edu/learn/students/programs/dow-sustainability-innovation-student-challenge-award

The Dow Sustainability Innovation Student Challenge Award (SISCA) recognizes and rewards students and universities for their innovation and research of sustainable solutions to the world's most pressing problems. Penn State has joined an international field of Universities participating in this program.

Review your responses in the area of Public Engagement:

Public Engagement
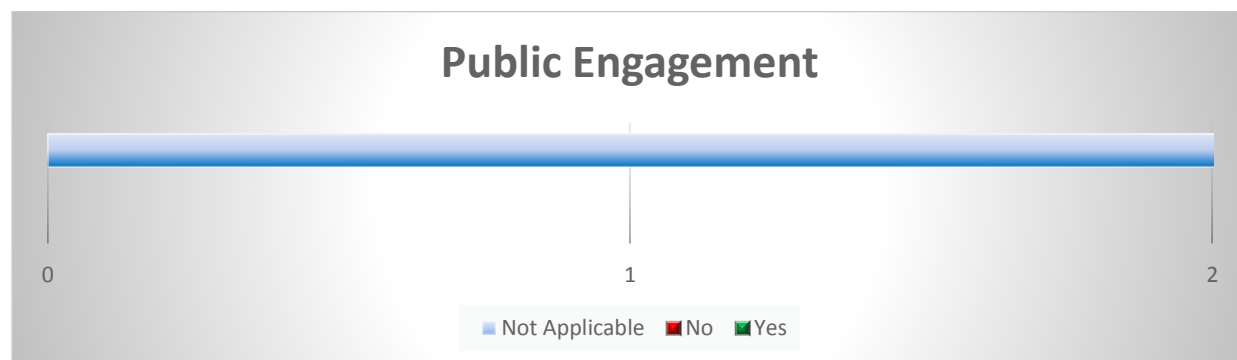
Q10 **Does your unit offer short courses, certificate programs, workshops, or conferences on sustainability topics that are open to the general public?**   Not Applicable

 Q11 **Does your unit have formal partnerships with the local community, including school districts, government agencies, non-profit organizations, or other entities, to work together to advance sustainability within the community?**   Not Applicable

Discover Resources in the area of Public Engagement:

Sustainable Communities Initiative
http://sustainability.psu.edu/sustainable-communities

The Sustainable Communities Initiative (SCI) is the university's strategic platform and opportunity to develop an innovative university/community collaboration that engages Penn State faculty and students in existing courses from across the University through real world, community-identified sustainability projects. SCI partnerships are created between the Sustainability Institute and the top local government official, who may elect to involve other organizations and entities in the community. Projects focus on strategic sustainability-related community priorities. In a typical year, the SCI anticipates it will support 15-20 projects associated with a single community, involving more than 400 students across 20-30 classes associated with a wide range of disciplines, devoting 40,000+ hours of effort.

Contact: Nancy Franklin, nef10@psu.edu,   Terry Shupp, trs255@psu.edu

Penn State Green Tour
http://www.greentour.psu.edu

This self-guided tour showcases select buildings and sites on the University Park Campus that either incorporate LEED (Leadership in Energy and Environmental Design) green building principles or demonstrate a wide variety of sustainable features and services.

Sustainability Experience Center
http://www.sustainability.psu.edu/live/what-penn-state-doing/buildings-teach/learning-grounds

The nine-acre Sustainability Experience Center (SEC) at University Park is a destination for students, teachers, business leaders, and citizens to experience and experiment with ways to apply the practices of sustainability to food, water, building materials, and energy systems. Located at SEC is the MorningStar Solar Home, a net-zero home that produces as much energy as it consumes.

Tour the MorningStar Solar Home: http://www.sustainability.psu.edu/live/what-penn-state-doing/buildings-teach/morningstar-solar-home/morningstar-tours-and-events

Review your responses in the area of <u>Governance and Administration</u>:
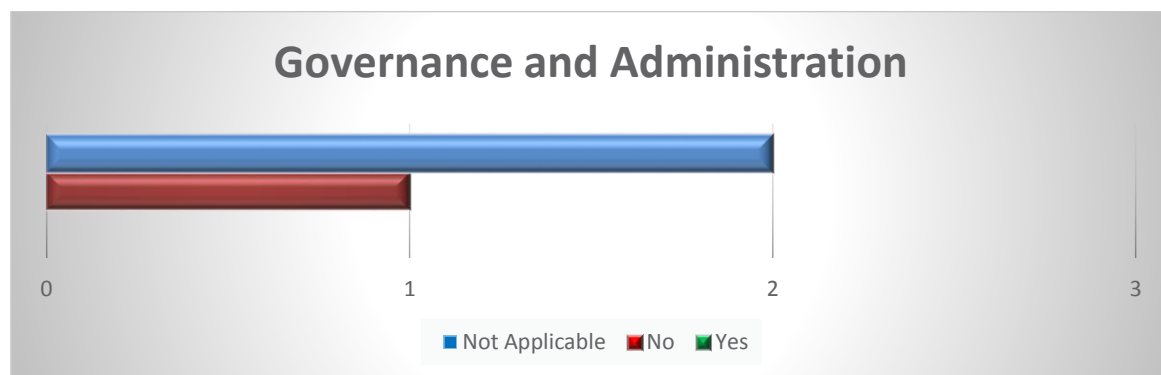
 Q12 Is there an individual or committee within your unit charged with promoting sustainability activities and initiatives?   No

 Q13 Does your unit give positive recognition to interdisciplinary, transdisciplinary, and multidisciplinary research during faculty promotion and tenure decisions?   Not Applicable

Q14 Do your unit's Faculty Activity Report guidelines request identification of sustainability-related teaching, research, and outreach activities?   Not Applicable

Discover Resources in the area of Governance and Administration

Penn State Sustainability Strategic Plan
The plan will help spur ideas for how to embed sustainability into a unit's organizational culture and processes. The plan presents the Penn State definition of sustainability, three sustainability principles and three goals with a number of strategies under each.
http://sustainability.psu.edu/sustainability-strategic-plan

Unit-Level Strategic Planning Pilots
http://www.sustainability.psu.edu/strategic-planning#pilot-summaries

In December 2011, the Penn State Sustainability Strategic Plan was delivered to President Rodney Erickson. He requested that we "test the plan" by seeing how it could be operationalized at the unit level.   The pilot units were the Smeal College of Business, Penn State Public Media, and Finance and Business. You can read a summary of what they did and download their plans. Many of the units discovered that creating a governance structure and sound administrative support around the effort was key to success.

Review your responses in the area of <u>Operations</u>:
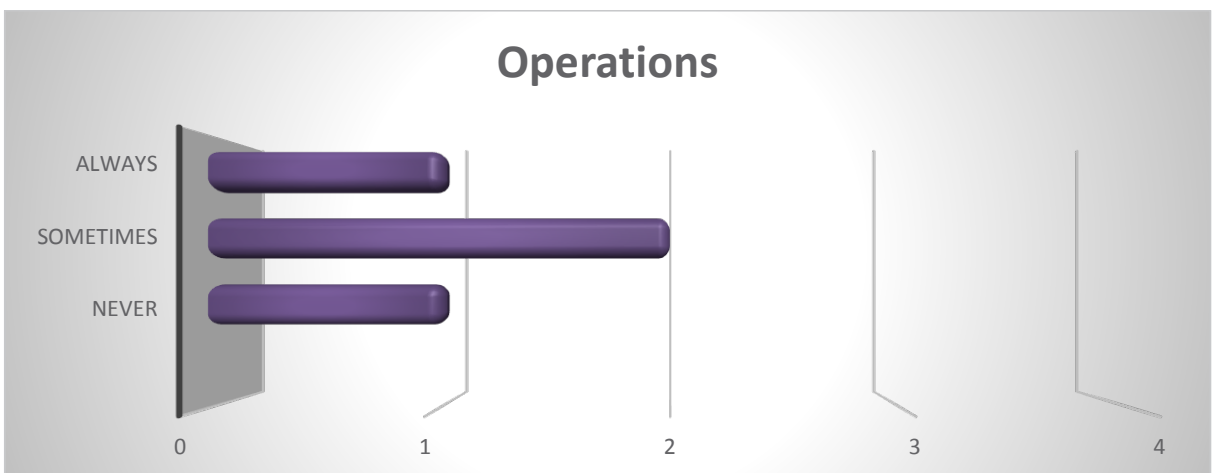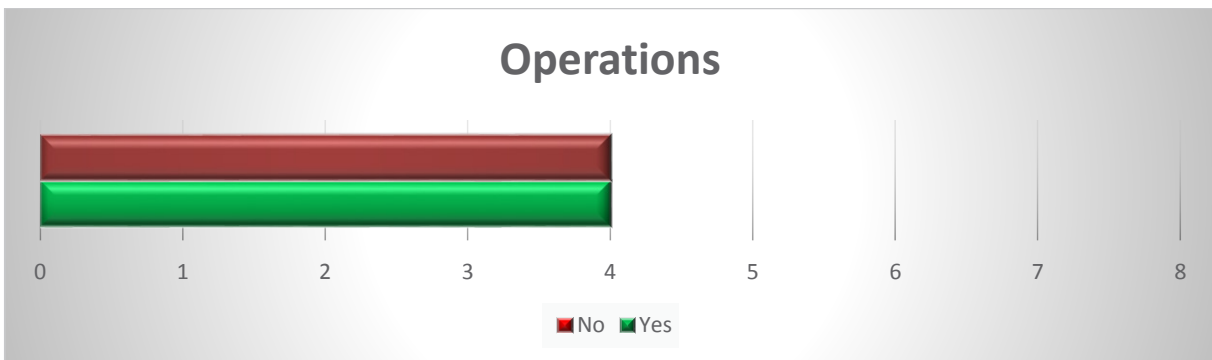
Q15 Does your unit use sustainable practices when planning events and functions (e.g., using reuseable or compostable plates and utensils, giving preference to sustainable caterers, etc.)   Yes

Go to http://sustainability.psu.edu/live/what-faculty-staff-can-do/green-teams-program/how-organize-low-waste-or-green-meeting

Q16 Does your unit participate in a recycling program, such as the UP campus's Mobius program?
Sometimes

Learn more at http://sustainability.psu.edu/mobius

Q17 Does your unit participate in a composting program, such as the UP campus's Mobius program?
Sometimes

Q18 Does your unit consider sustainability when making purchasing decisions (e.g., energy efficiency, recycled content, reduced packaging, durability, low toxicity, etc.)?   Always

Resources on sustainable purchasing are at http://sustainability.psu.edu/live/what-penn-state-doing/infrastructure/green-purchasing

Q19 Are your unit's administrators familiar with the guidelines in Penn State's Energy Conservation Policy, AD 64? No

Learn more about the University's Energy Conservation policy (AD64) at
http://sustainability.psu.edu/live/what-penn-state-can-do/energy-environment/ad64

Q20 Does your unit offer a condensed work week or telecommute option or encourage employees to commute to and from campus using more sustainable options, such as walking, bicycling, vanpooling/carpooling, taking public transportation, riding a campus shuttle?   No

Discover options available to you at Transportation Services at http://sustainability.psu.edu/live/what-penn-state-doing/infrastructure/transportation

Q21 Does your unit participate in a program in place to recycle, reuse, and/or refurbish all electronic waste generated by the unit?   Yes

Q22 Does your unit participate in Penn State's furniture reuse program?   Yes

The furniture reuse program collects and redistributes furniture among Penn State offices. Learn more at http://sustainability.psu.edu/live/what-penn-state-can-do/recycling-and-waste-management/furniture-re-use-program

Q23 Does your unit have policies to restrict paper use? (i.e. Is your unit's default to not print course catalogs, course schedules, and directories, but instead make them available online?)   No

Here are some tips on reducing and reuse, go to http://sustainability.psu.edu/live/what-penn-state-can-do/recycling-and-waste-management/ways-reduce-and-reuse

Q24 Does your unit encourage employee participation in professional development opportunities in sustainability? (e.g., Environmental Forum, Speakers Series, conferences, etc.) Never

To find out about news and opportunities, sign up for Mainstream at
http://sustainability.psu.edu/mainstream

Q25 Does your unit have one or more Green Teams?   Yes

For Green Team resources go to http://sustainability.psu.edu/green-teams-program

Q26 Do your unit's employees participate in Penn State's Green Paws (sustainable office practices) certificate program?   No

For Green Paws resources go to http://sustainability.psu.edu/greenpaws

Discover Resources – Operations:

Green Paws Program
http://www.sustainability.psu.edu/greenpaws

The Green Paws Program allows Penn State staff and faculty members to apply knowledge of sustainability to daily practices. The program is built around Green Paws Action Checklists that outline high impact actions employees can do immediately to green their workspace.

Contact: Lydia Vandenbergh , lydia@psu.edu, 814-863-4893

Green Teams
http://sustainability.psu.edu/live/what-faculty-staff-can-do/green-teams-program

The Green Teams initiative educates and engages Penn State's employees in sustainability. Green Teams comprise faculty and staff who volunteer their time to learn about sustainability, and how these concepts can be applied to their unit. The Sustainability Institute supports Green Teams with free workshops (on sustainability, recycling, energy, behavior change, communications, budgeting, and more), hosting challenges, and publishing a newsletter.

möbius
http://www.sustainability.psu.edu/mobius

Penn State has committed to "closing the loop" on its solid waste through a new program called möbius. This is a University-wide commitment. Along with the paper, plastic, and metal recycling

bins already in most buildings at University Park, new "möbius stations" will now include organic waste bins.

Energy and Environment:
http://sustainability.psu.edu/live/what-penn-state-can-do/energy-environment

You can find out the greenhouse gas emissions of any Penn State campus, use an interactive energy conservation chart, read about investments Penn State Is making in energy conservation, learn what you can do to reduce energy use and more.

Transportation:
http://sustainability.psu.edu/live/what-penn-state-doing/infrastructure/transportation

Every day tens of thousands of us commute to work and to classes, go back-and-forth to meetings, and all of this adds up to a lot of fuel, emissions, and cost. Every day Penn Staters are reducing this impact by car-pooling, walking, biking, busing and tele-commuting. Learn more about these activities and what resources exist for your commute.

Appendix F: IT Planning Funding Committee Draft Report

IT Funding

Introduction

The IT Funding Committee focused on improvements to the efficiency and effectiveness of the University's IT funding allocation practices. Overall, its recommendations will improve the ability to understand and budget for lifecycle IT costs, provide sustainable funding models for technologies and services, and help the institution use incentives to foster more effective technology management. A major focus of the group centered on how to recalibrate the principles of funding allocations for core versus edge services (see the IT Services report for an in-depth definition). This resulted in a consideration of how Penn State could align funding allocation practices with service types including compliance, core, competitive, and emerging.

The following sections discuss in more detail the current state of IT funding on campus, consider major drivers for change, the specific goals for IT funding identified by the committee, strategies Penn State should use to achieve the goals, and a consideration of factors that may influence the institution's ability to implement changes.

Environmental Scan

Current State

Current IT funding practices are ad-hoc and the method for allocating funds to the providers or consumers of a service is frequently misaligned with the type of service or desired behavior of prospective adopters. For example:

- Highly decentralized funding and control for many services across units make it difficult to create or foster adoption of core or shared services even when more cost-effective.

- Many departments lack sufficient financial and human resources allocated to IT to fund the transition to new core or shared services and sustain legacy solutions through their replacement.

- Most IT leaders and budget executives are not provided information necessary to forecast and plan for future IT costs.

- Current processes and practices do not reserve funds to sustain or replace technologies that have already been implemented as they age.

- There is no consistent practice in the development of IT investment requests and cost projections. Methods, assumptions about cost drivers, and varying experience of project planners make it difficult for budget executives to fully anticipate the full costs of their units' IT decisions.

Change Drivers

The committee anticipates that broader university and technology goals will demand major change to funding allocation practices so that these goals can be achieved. The opportunity to capture efficiencies and provide more consistent technology experiences across all Penn State locations necessitate greater adoption of shared services with sustainable funding. There is significant momentum to achieve greater collaboration among IT units; funding allocation practices and processes must foster, not inhibit, collaboration. Collectively, the university makes a substantial annual investment in technology projects and operations. The IT strategic plan will introduce new opportunities to invest across and within units, and these opportunities will have

to compete for limited resources. To make effective resource allocation decisions, budget executives and IT leaders need more consistent and comparable long-term cost projections.

Goals

Improvements to IT funding are designed with five goals in mind:

1. Define the optimal, appropriate, and efficient use of primary sources of funding for technology including the management of the student technology fee, general budget allocations, auxiliary operations, and direct and indirect cost recovery on research grants

2. Adopt funding models and cost allocation methods to drive the targeted behaviors for a service.

3. Create better tools to categorize, manage, and track IT spending within the university and give decision makers access to meaningful information.

4. Create sustainable models of funding that promote collaboration on services while ensuring transparency and accountability.

5. Improve efficiency through more effective resource planning and funding allocation methods that minimize unnecessary duplication of services and anticipate the life-cycle costs of technologies and services.

Strategies

The following changes, which are discussed in greater detail below, are recommended to support the implementation of the IT plan:

- Develop funding models to drive desired behavior for a service

- Align funding and cost allocation practices with the university capital and operating budget.

- Optimize the effective and appropriate use of IT funding sources

- Improve the capacity to track and report IT costs

Develop funding models to drive desired behavior for a service.
Presently, Penn State lacks consistent practices for allocating funding to the provider or consumer of a service. Fragmented funding spread across many budgets makes it difficult to create and sustain a shared service. Likewise, there are few incentives to commit to collaborative services and discontinue departmental services. Conversely, there are often gaps in available funding within department IT budgets to operate unique services or promote innovation and adoption of new services. Penn State should migrate to a more effective approach. Broadly speaking, two main concepts should guide this change:

1. Services that everyone is required to use will be funded centrally.

2. Services that units choose to use must be paid for or cost shared with the units.

The decision to fund a service centrally implies that a budget is allocated and implemented by the unit responsible for providing the service to the institution. That budget may be created either by designating already available University funds to this purpose or by raising the money

via a charge to all unit budgets. In contrast, concept 2 allocates funding to units that consume the service. Consuming units use these funds to provide the service themselves or procure it from an internal or external service provider.

The decision about a funding model change should be held separate from any related to the distribution of costs. For accounting purposes, these can be quite different—a technology could be centrally funded but have its costs allocated to the units in conjunction with central dollars to pay for its use. The purpose of this type of allocation process is to understand total cost of operations in the unit, not to provide a choice to units on the provision of mandated services.

Additionally, the approach to allocating funding to operate a service should be aligned with the definition and characteristics of a service. The committee recommends the following principles based on the service-funding matrix below:

Type of Service	Examples	Target Behaviors	Optimal Funding Model
Compliance/Life Safety/Risk Mitigation	• Critical skills training for IT staff • Payroll system • Video surveillance cameras	• Near complete adoption. • No variability due to differential priorities or funding levels. • Sufficient funding to mitigate risk	• University funded, costs not allocated to individual units.
Core- Service	• Wireless networks • Server hosting • Storage • Email • Data Centers • Voice	• Substantial adoption. • Disincentive to duplicate the service. • Consistent baseline experience for all. • Leverage economies of scale. • Sufficient funding to meet service level objectives. • Sufficient funding to start-up a service that will attract "customers". • Scalable funding as use grows.	• University and unit funded. • University funds costs of service start-up and portions of on-going costs. • Units charged for some share of costs based on size (e.g., headcount, budget size) and for the differential cost of a premium service (if applicable). • All units charged regardless of whether they use the service.
Competitive & Differentiated Services	• Printing • Discipline specific instructional software • On-line ticket sales for events and performances •	• Allocate service or capacity based on need • Discourage waste • Growth in demand enables growth in capacity • Sufficient funding to meet service level objectives • Multiple providers spur innovation and meet differentiated needs.	• All costs charged to units using the service based on metric of consumption. • University may invest to seed the creation of new service or support transition costs.
Emerging	• iPad pilot for teaching and learning •	• Encourage focused experimentation • Sustain multiple approaches	• Funded by university or division sponsoring the innovation. No cost to early adopters.

Type of Service	Examples	Target Behaviors	Optimal Funding Model
		• Encourage use	

Align funding and cost allocation practices with the university capital and operating budgets.
The implementation of the IT strategic plan requires new capital investment as well as on-going funding for replacement of existing technologies as they age. The implementation of the strategic plan should include the development of a five-year financial plan that forecasts required capital budget allocations and the implications of new services for IT operating budgets. Forecasts should inform the establishment of IT capital investment budgets and the allocation of unit operating budgets. The Executive Board should allocate available University capital investment in IT and have the opportunity to advocate for increased investment by the University and individual budget units. Penn State should strive to make IT financial planning part of the University's financial plan. This should incorporate life cycle and replacement funding, as well as the development of an ongoing five-year financial forecast for the capital and operating budgets. In addition, the approach to allocating the costs of core IT services to units should follow whatever method Penn State employs as part of the redesign of the budget process, which is currently under review.

Optimize the effective and appropriate use of IT funding sources.
There are relatively few options for funding technology investments and operations. To make best use of these funding streams the committee recommends that Penn State:

- Establish a committee to recommend the future uses of the student technology fee and establish efficient mechanisms to identify, substantiate and propose future rate changes to the Board of Trustees. Technological changes such as bring your own devices, virtualization of labs and classrooms, and the ubiquitous need for wireless make it difficult to identify technologies that are solely for the benefit or use of students. Conversely, students benefit substantially from a broad set of university technologies and services including student information systems, classroom technology, instructional design support and learning management systems. In light of these changes and convergences, the future use of the technology fee should be regularly examined.

- Develop a common set of principles for all budget executives to use for IT funding and costing decisions. These principles complement the overarching IT principles adopted by the ITLC and should be defined in consultation with this group. These common principles should include a commitment to track and develop funding plans for the future cost to replace already implemented technologies, evaluate the full life-cycle costs of a proposed IT project with consistent templates and tools, and to maintain transparency.

- Facilitate a more consistent approach to IT cost projections by developing and using, on an institution wide basis, an IT costing methodology and checklist. The funding committee has developed an initial framework that should be refined during implementation.(hyperlink).

- Define and adopt best practices and tools on the use of funding from general, auxiliary, research funds, and sponsored awards. IT budgets should anticipate that sponsored awards will be less available to fund core infrastructure essential to research. Research computing should be available and costs measured in a manner that maximizes the ability of researchers to use sponsored awards to acquire IT services.

- Bundle allocated IT costs into a single chargeback tied to a metric of unit size such as headcount. Maintain transparency by providing an annual analysis of the IT costs that

comprise the bundled rate. Use IT governance groups to review and approve changes to the bundled rate.

Improve the capacity to track and report IT costs.
The IT assessment was a labor-intensive, manual analysis of the university's total expenditures on technology. In order to provide more accuracy and transparency, the committee makes the following recommendations:

- Design and implement more discrete expenditure codes to facilitate a more detailed understanding of non-personnel IT expenditures

- Develop standard definitions of IT cost metrics to be employed by units benchmarking costs in concert with the work of the IT Operational Effectiveness committee.

Implementation Considerations
Implementation of these recommendations requires two significant enablers. It requires a fully implemented governance structure to endorse the designation of service type (based on service funding matrix) and the selection of cost allocation method in alignment with the table. Second, it requires the availability of seed and bridge funding to facilitate the transition to core and/or shared services.