

IT Strategies for Discovery

*Positioning UW-IT
over the next two years,
for the next two decades*



INFORMATION TECHNOLOGY

UNIVERSITY of WASHINGTON

IT STRATEGIES *for* DISCOVERY

UW INFORMATION TECHNOLOGY STRATEGIC PLAN FY 2012

Leveraging clouds, crowds and consumer technology to support UW's mission of discovery in a period of constrained budgets and epic change

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INTRODUCTION

UW Information Technology's strategic plan, "IT Strategies for Discovery," comes at a time when technical, political and economic forces have aligned to trigger fundamental changes in academic information technology. Every person connected to the University of Washington is affected, with major implications for the future.

The purpose of this plan is to articulate a strategic framework for the University's information technology landscape that will position the University for the future. The plan provides key choices and directions, and identifies strategic investment priorities for the coming year and beyond. UW-IT has three missions that are central to this plan: enable students, faculty and staff to be more effective, help the UW manage risks and resources, and foster a community of innovation—all while responding to rapid changes in technology, culture and funding.

Any plan must consider the forces that will push or constrain choices. While it is often difficult to distinguish between trends and cycles, this plan takes into account some key drivers that will influence our future directions—shifting university, state and federal budgets; increasing local, state and federal regulations; expanding globalization; escalating security risks; growing competition; rising complexity; rapid consumerization of IT; and fundamental technology advances that are changing almost every aspect of teaching, learning, collaboration and discovery.

Within the backdrop of this environment, UW Information Technology (UW-IT) must anticipate what is coming, and identify how best to leverage current and emerging technologies to support the work of students, faculty and staff. It also must mitigate risk and deliver services in the most efficient, cost-effective way. This plan recommends key goals and priorities to accomplish these aims.

7 Goals

The plan begins by identifying the role and vision of the UW, and of UW-IT. It then outlines key trends and needs that will guide UW-IT's service plans and priorities. These were identified from a variety of sources including recent campus and national surveys, research on teaching and learning, and input from groups charged with supporting faculty and student IT needs. Based upon this input, the plan proposes the following seven goals and supporting priorities to meet the University's information technology needs in FY 2012 and beyond:

- 1 Excellent foundation services and infrastructure:**
Deliver highly functional, reliable and invisible infrastructure that just works—and doesn't get in the way
- 2 Improved collaboration and productivity tools:**
Enable easy, secure collaboration with partners at the UW and beyond
- 3 Advanced global research support:**
Support UW research with up-to-date tools and resources
- 4 Innovative teaching and learning tools:**
Provide technology to support and improve the learning experience
- 5 Information for decision making:**
Provide access to better business information for planning and analysis
- 6 Modern business information systems:**
Provide modern, flexible and integrated business information systems to support a complex, global research institution
- 7 Business continuity, security and privacy protection:**
Support UW's risk management and compliance objectives

This plan should be considered a starting point—a launch pad for a University-wide discussion of critical information technology needs, goals and priorities. It is also a living document—it will need to be continually adjusted and refined in response to emerging technologies and evolving University needs.

ROLE & VISION

University of Washington Role & Vision

The University of Washington is a premier global research institution with nearly 50,000 students and 30,000 faculty and staff working in 40 centers, institutes and research operations around the world. As Washington State's flagship university, the UW serves more students than any other institution in the Northwest, conferring 12,000 bachelor's, master's, doctoral and professional degrees annually. Each year since 1974, the UW has received more federal research funding than any other public university. It operates a world-class healthcare system with three medical centers, seven clinics and teaching sites across five states. It is comprised of campuses in Seattle, Bothell and Tacoma.

UW Vision

The University of Washington educates a diverse student body to become responsible global citizens and future leaders through a challenging learning environment informed by cutting-edge scholarship.

Discovery is at the heart of our university.

We discover timely solutions to the world's most complex problems and enrich the lives of people throughout our community, the state of Washington, the nation and the world.

UW Information Technology Role & Vision

The future of the research university depends upon a robust technology ecosystem comprised of technical, economic and intellectual assets, combined with values and policies that are designed to further collaboration, innovation and discovery.

Developing and evolving this ecosystem is the responsibility of UW Information Technology, working in partnership with distributed IT organizations across the UW. UW-IT is the core IT organization for all three UW campuses and UW medical centers, responsible for strategic planning, oversight and direction of the University's IT infrastructure, resources and services. UW-IT includes units devoted to administrative systems and information management, networking, telecommunications, data centers, information security and privacy, academic and collaborative applications, accessible technology, customer service and technology business continuity.

UW
vision

UW-IT vision

UW-IT supports three campuses, the UW Medicine Health system, and UW research operations around the world—processing payroll for 38,000 employees, operating financial systems for a \$5.8 billion institution, and managing information systems for over 50,000 regular and 37,000 continuing education students. We provide networks and communications systems through miles of fiber optics throughout the Seattle metropolitan area. More than 170,000 devices use the UW network in a given month. We manage more than 600,000 UW NetIDs that allow students, faculty, staff, alumni and healthcare providers to access UW resources, as well as more than 1,300 servers and 33,000 square feet of data center space. In addition, UW-IT operates the State K-20 Education Network, which connects all primary and secondary education institutions, telemedicine sites and private colleges in the state. We also engineer and operate the Pacific Northwest Gigapop, a next-generation regional research network with links across the globe.

UW-IT Vision

Convenient and safe access to digital information and services across time, place, device and organizational boundaries.

To achieve this vision, UW-IT must anticipate and facilitate technology shifts that will enable the future. These shifts serve as the foundation for UW-IT's plan and service strategy. They include:

- Reliable high-speed wired and wireless networking on a global scale
- Widespread commodity consumer technology, especially mobile devices and cloud computing
- A suite of next-generation collaboration and productivity tools that work across service providers and platforms—enabling multimedia document co-authoring and advanced schedule, task and contact management
- Integration of multiple, cloud computing service providers
- Easier to use and more seamlessly integrated learning management applications
- Advanced business information systems, fully integrated with an advanced enterprise portal and personalized to make student, faculty and staff work more efficiently and effectively
- IT infrastructure that is reliable, secure and scalable—leveraging both local, on-premise and commercial IT resources
- Globally interconnected and cooperative support networks, from user help desks to discipline-specific service monitoring, to multi-vendor network and cloud service cooperatives

SERVICE STRATEGY

UW-IT's service strategy defines which IT services will best support the UW's mission of discovery and enable students, faculty and staff to be more effective. This service strategy considers the technology shifts described above, as well as current trends and needs.

Strategic Service Themes

The following themes will guide our service plans and priorities:

Mobile

Anytime/anywhere/any-device, which drives applications and wireless infrastructure

Green

Includes resource efficiency and a low-carbon footprint for data centers and desktops

Global

Geographically diverse users with 24x7 support needs, such as the UW's Department of Global Health

Open

Accessible, easy to obtain and use data, standards, processes, software and information

Cloud

Includes software, platform and infrastructure-as-a-service

Safe

Secure and dependable computing

Consumer

Embracing the use of consumer-oriented technology within the enterprise, which is one of the most powerful trends shaping our future

Simple

Reduce frustration and complexity for users through federation and integration

SPECIFIC UW-IT PRIORITIES *for* **FY 2012**

Improve the student experience: Provide better academic planning and scheduling tools; enhance support for teaching and learning; expand computer laboratory access through a “virtual laboratory”; upgrade and increase Wi-Fi access to the UW community.

Deliver core IT resources to students, faculty and staff: Continue core infrastructure upgrades, including networking, telephony, storage, collaboration, teaching and learning; improve managed desktop, server and storage offerings; implement UW-IT improvement initiatives.

Leverage the cloud to provide more flexible and on-demand resources: Respond to growing demand for cloud services and associated institutional risk management issues. Continue replacing on-premise email with cloud-based solutions. Provide easier-to-use tools. Negotiate better vendor contracts to lower costs and offer more training to the UW community. Work with the eScience Institute to provide more access with better value to cloud computer platforms such as Microsoft Azure and Amazon EC2 & S3 for research.

Integrate mobility and global support: Ensure key applications are mobile friendly; work toward anytime/anywhere/any-device access to services; continue to integrate popular consumer devices.

Be a UW leader in green computing: Increase server virtualization; leverage newer, more efficient processors; pilot and evaluate improved desktop power management; consolidate data center space.

Provide better business information systems: Improve enterprise reports by leveraging the Enterprise Data Warehouse with a strategic focus on providing analytical data for key UW initiatives; launch Human Resources/Payroll system modernization; provide incremental, but significant, improvements to business information systems, including piloting an enterprise workflow and document imaging and management solution.

Improve UW’s risk profile: Implement Phase II of the Business Continuity Initiative; launch campus privacy initiative; provide greater computer security through centralized patch management, standard laptop encryption, and better software compliance.

UW-IT GOALS & PRIORITIES

for FY 2012 & BEYOND

UW-IT has three missions that are central to this plan:

- Enable UW students, faculty and staff to be more effective
- Help the UW manage risks and resources
- Foster a community of innovation

To achieve these objectives and deliver on our service strategy, UW-IT has identified the following seven goals and supporting key priorities.

Goal 1

Excellent Foundation Services & Infrastructure

The success of students, faculty and staff depends upon a first-class IT infrastructure. A fundamental purpose of UW-IT is to keep the IT infrastructure up-to-date and anticipate future needs.

Foundation services include core IT infrastructure, such as:

- Networking, wired and wireless, voice and data
- Data centers
- Database services
- Accounts, passwords and authorization
- Managed desktops
- Servers and storage
- Accessibility resources
- Identity and access management
- Security services
- Software distribution and licensing

The Future of Core IT Infrastructure

Highly functional IT infrastructure that is reliable and invisible; users are not even aware of it, because it just works and doesn't get in the way. The infrastructure is up-to-date and upgraded as necessary to meet future needs. The future also includes:

- Data centers that provide a high-level of security, energy conservation and resilience
- Networks that provide superior wired and wireless connectivity at the UW and access to resources from diverse work locations around the world
- Identity and access management that allows single sign-on to a broad range of core services using a UW NetID, and authorization via groups

Key Objectives for FY 2012

- **Network:** Deploy next-generation IPv6 to prepare for worldwide transition
- **Wireless networking:** Upgrade to latest 802.11n technology, allowing faster download speeds and more network capacity, and continue to work with cell phone providers for improved UW coverage
- **Telephony:** Stabilize and lay groundwork for next-generation Voice Over Internet Protocol (VOIP) and other advanced services such as unified communications
- **Storage:** Implement a flexible, scalable, low-cost storage solution available to faculty and departments
- **Servers:** Replace end-of-life servers using virtualization or cloud platform services where possible
- **Managed desktops and servers:** Assess alternative managed desktop and server options to lower costs; increase security and provide greater functionality
- **Data storage and facilities:** Leverage cloud storage services more broadly where feasible to reduce costs (includes Microsoft Azure and Amazon Web Services)
- **Accessibility:** Improve access for people with disabilities to all information technology resources, including online content and applications
- **Enterprise systems:** Improve application integration and provide more efficient data delivery

Goal 2

Improved Collaboration & Productivity Tools

This goal focuses on reducing barriers to collaboration and increasing personal productivity. Achieving this goal requires delivering excellent tools and integrating tools and platforms from multiple vendors, such as Microsoft Office 365 and Google Apps.

The Future of Collaboration

Easy, secure collaboration within and beyond the UW is routine:

- Scheduling meetings or resources is no longer difficult, even when crossing organizational or geographical boundaries
- Essential data and tools are accessible via mobile devices
- Web publishing and collaboration with easy access control is routine
- Multi-point Web and videoconferencing is easy and works well
- Tools for research, teaching, learning and administration are mobile, interoperable, leverage the cloud and have federated authentication and authorization capabilities that allow single sign-on within the UW and with external partners

- Data is portable between systems, especially cloud systems, to avoid vendor lock-in and mitigate loss of institutional knowledge
- Collaboration is easy, secure and accessible to partners beyond the UW
- All collaboration options are accessible to people with disabilities

Key Objectives for FY 2012

- **Cloud services:** Continue to embrace and extend cloud services for basic departmental and individual computing needs; improve integration to permit easier collaboration based upon department or group affiliation; simplify sign-on to key services
- **Calendaring:** Enable scheduling across organizational boundaries by improving interoperability between the main calendaring and collaboration platforms
- **Cloud services:** Begin transition from on-premise to cloud-based Exchange and SharePoint
- **Mobility:** Starting with a needs assessment, provision mobile-device applications for collaboration, teaching and learning
- **Unified communication:** Develop plan for integrating new voice system upgrades
- **On-premise collaboration tools:** Enhance usability for general collaboration and mobile platforms; continue integration with cloud collaboration platforms

Goal 3

Advanced Global Research Support

Discovery is at the heart of the University. UW-IT needs to provide up-to-date tools and resources that support and advance the work of UW researchers. One of the most important ways is to provide excellent infrastructure and collaboration tools, as described in the first two goals. UW-IT will seek additional ways to help UW researchers with the vision outlined below.

The Future of Research Computing

- Extensive use of network/cloud computing supports research needs for massive data storage, analysis and visualization regardless of geographic location (e.g., massive data sets are stored in Texas, image analysis is done in San Diego, and 3D immersive display happens in Seattle)
- Pervasive remote sensing provides real-time data delivered via high-definition video worldwide
- Easy collaboration is possible across organizational and geographical boundaries via federated access management and cloud services
- Huge datasets are widely available on the Web, accessible to amateurs and experts
- Key services are accessible via mobile devices

Goal 4

Key Objectives for FY 2012

- Continue to assist Principal Investigators in integrating IT needs into research proposals
- Expand the Hyak High Performance Computing (HPC) cluster; partner with the eScience Institute to co-market the storage cluster; improve eScience Web tools
- Develop support plan for global videoconferencing, collaboration, and data sharing
- Provide advanced network support for the Ocean Observatory Initiative
- Plan for a research-oriented Web portal in partnership with the Office of Research

Innovative Teaching & Learning Tools

This goal focuses on providing technology to support and improve the learning experience.

The Future of Teaching & Learning

- Intuitive and easy-to-use course technologies, requiring minimal technical support
- Seamless integration between course technologies from multiple sources
- Course resources available online and accessible anytime, anywhere and on any device; Resources include eBooks, library resources and multimedia Web sites
- Easy student-faculty and student-student interaction using a variety of collaboration tools
- Advanced and easy-to-use technologies are available in learning spaces for collaboration, video-editing, audio production, etc.
- Easy integration of multimedia and interactivity into courses
- Improved support for learning across geographical boundaries in real time using big screens, fast networks, smartphones and cameras
- Majority of assignments are submitted and graded online, rather than on paper
- Easy-to-share access and administrative rights to collaborate and produce course materials
- Ability to use same tools for teaching, research and administrative activities
- Course content and Web applications are usable and accessible to the largest possible groups of faculty, instructors and students

Key Objectives for FY 2012

- Partner with academic leadership and student governance bodies to establish teaching and learning technology priorities; participate in the UW's Committee on Teaching, Learning and Technology; support implementation of resulting recommendations
- Conduct regular surveys and focus groups with students, faculty, teaching assistants and staff to understand their technology needs
- Improve integration with cloud services (e.g., Google Sites Portfolio project, improved Groups capability)
- Improve teaching tools and course management capabilities across the UW
- Enhance integration with vendor-provided teaching technologies so that class rosters can be easily synchronized and grade data can be extracted
- Explore and pilot synchronous teaching tools and discipline-specific teaching technologies, from both commercial vendors and the open-source community
- Improve mobile access to teaching and learning tools
- Continue support for faculty and student software use via workshops and online curriculum
- Improve accessibility of teaching and learning tools for people with disabilities
- Leverage open-data and open-source solutions

Goal 5

Information for Decision Making

Key analytical data is critical to institutional strategic planning and decision making, and is essential to achieving the UW's goals. This goal focuses on providing accessible, accurate and integrated business information, reporting and analysis.

The Future of Enterprise Information Management

Data → Information → Knowledge → Action

- Faculty and staff run reports showing visual graphs of program performance with self-service Business Intelligence capabilities
- Students use handheld devices to check course availability, grades and account status
- Enhanced decision making with scorecards, dashboards and real-time alerts
- Trusted and well understood institutional data
- Ubiquitous access to data and metadata
- One-click away data definitions from any report or application

Goal 6

Key Objectives for FY 2012

- Continue to build out the Enterprise Data Warehouse (EDW)
- Migrate the Office of Planning and Budgeting data into the EDW to provide integrated, analytical data and a “single source of truth”
- Enhance data governance and security
- Continue to develop a central data dictionary and metadata repository
- Upgrade and improve business intelligence tool infrastructure to enable better reporting and analysis
- Coordinate training and support programs
- Continue with data quality improvement initiatives

Modern Business Information Systems

Replace or upgrade the UW’s aging business information systems, which average over 30 years in age.

The Future of Business Information Systems

Modern, flexible and integrated business information systems support a complex, global, research institution.

Key Objectives for FY 2012

- Identify a realistic investment approach to replacing and upgrading the UW’s core administrative systems, with achievable milestones
- Conduct HR/Payroll alternatives assessment project
- Continue Electronic Faculty Effort and Cost Sharing online certification project
- Kick-off pilots to support Quali curriculum management implementation and continued participation in the Quali Student consortium
- Develop Web-based academic planning tool
- Manage the Document Imaging and Management System pilot project
- Support UW Operational Effectiveness Initiative priorities
- Develop and document business, information, application and technology architecture designs
- Continue Quali Rice workflow pilot projects and participation in Quali Rice consortium

Goal 7

Business Continuity, Security, Privacy Protection

Business continuity, security and privacy protection are all essential to UW's risk management and compliance objectives. This includes data confidentiality, integrity, and loss prevention.

The Future of Business Continuity

- Key services are resilient through redundant and geographically diverse infrastructure
- UW-IT's business continuity program provides a foundation for other UW departments and units to build their business continuity plans
- Business continuity plans and processes are in place and tested regularly

The Future of Security and Privacy

- Prevention programs are combined with efforts to increase resilience and reduce the impact of security incidents
- All UW employees are aware of their responsibilities for IT security and data protection
- Sensitive data is inventoried and has appropriate protection, including two-factor authentication
- Compartmentalization is used so that a single computer breach does not compromise an entire database or collection of systems
- IT security and privacy protection strategies are fully integrated into the UW Enterprise Risk Management program

Key Objectives for FY 2012

- Implement business continuity core infrastructure; validate remote site production readiness
- Install servers at remote locations in a strategic and prioritized manner
- Complete network and data center recovery plans and high-level disaster recovery procedures
- Develop crisis communication plans for UW-IT and align Safe Campus with UW crisis communications
- Revise, create and consolidate related institutional policies and standards on privacy and security
- Identify and prioritize critical or sensitive IT assets at the UW

PROVIDING BETTER SERVICE & FOSTERING *a* COMMUNITY *of* INNOVATION

UW-IT's main focus is on providing the technology environment, resources and services that support and advance the work of UW students, faculty and staff. We strive to be the partner and provider of choice for the UW community. To accomplish this, we must:

- Fully engage with the UW community to understand evolving needs, priorities and resource constraints
- Provide cost-effective, sustainable services, especially during this period of ever-more-constrained state resources
- Be transparent, communicate broadly and demonstrate that we are wise stewards of the University's resources
- Expand and strengthen relationships with our community, industry, academic and government partners
- Invest in our people, our most important asset
- Continually assess and anticipate by trying new approaches and piloting projects
- Respond quickly and flexibly to rapidly changing conditions, needs and expectations

Key Objectives for FY 2012

- Enhance and sustain stakeholder/customer engagement, focus and communications
- Forge partnerships within the UW and with peers, industry, the region and the state
- Emphasize financial stewardship
- Instill operational and project management best practices
- Encourage staff learning, growth and overall workforce development
- Explore and experiment with new technologies
- Discover key trends and practices from vendors and peers
- Showcase and share advanced technology capabilities
- Encourage open data and technology
- Give back to the community
- Be prepared to promote the importance of technology exploration and community contribution even when budgets are tight
- Re-engage in the national conversation with our peers and partners
- Support state-wide Washington Higher Education Technology Consortium initiatives

NEXT STEPS

Execution of this plan requires coordination and action within UW-IT and cooperation across the institution. Some next steps include:

Develop and Execute Tactical Plans to Deliver on Key Priorities for FY 2012

Tactical plans include specific timelines, resource and return on investment (ROI) estimates.

Engage UW on Broader IT Strategy Issues

UW-IT represents only one of many IT operations across the UW. Although outside the scope of this particular effort, a comprehensive IT policy and strategy for the University should be developed to address issues such as:

- Identification and security of sensitive data (encryption, two-factor authentication)
- Green IT (e.g., encouraging use of laptops, mobile appliances, virtualization)
- Consistent classroom technology across the UW
- Avoiding subsidies that encourage the proliferation of unsecured and inappropriate server spaces and data centers across campus
- Sustainable funding for research computing infrastructure and support

Communicate to the UW Community

UW-IT is committed to ongoing communication with the UW community about key goals, directions, and initiatives through the following:

- Participating in key formal and informal University IT governance committees
- Providing ongoing updates through UW-IT's regular publications, including IT Connect News and UW-IT Insights
- Providing information about IT services and resources through the UW-IT Service Catalog and IT Connect
- Soliciting input through IT satisfaction and technology surveys

FOR MORE INFORMATION

Contact Kelli Trosvig, UW-IT Interim Vice President and Vice Provost, at it-ovp@uw.edu