

IT Strategies for Discovery

UW Information Technology: Positioning UW for 2015 and Beyond

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

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17 March 2011 DRAFT

Comments to: gray@uw.edu

Letter from Mary Lidstrom – 2y2d – To be added at a later date

14 March 2011

Mary Lidstrom
Interim Provost and Executive Vice President

Dear Mary,

I am pleased to present UW Information Technology's strategic plan "IT Strategies for Discovery." Technical, political and economic forces have aligned to trigger fundamental changes in academic information technology (IT). Every individual connected with the UW is affected, some more than others. This document provides key choices and directions for the UW's future IT landscape, and it will be reviewed and assessed as technology, University needs and resources continue to change at an accelerating rate.

This plan identifies three objectives: Enable students, faculty and staff to be more effective, help the UW manage risks and resources, and foster a community of innovation.

Recognizing that the success of today's students, faculty and staff depends on the quality of the IT tools and infrastructure available to them, UW-IT's first priority is to maintain that quality. We propose to accomplish this through a variety of means including strategic partnerships and more efficient delivery mechanisms.

We in UW-IT must also look beyond maintaining the quality of these current services to adopting the next generation of networking, tools and systems to make our community more productive. This plan proposes to achieve this goal in multiple ways. First, we will support increased collaboration. As a major research university, fostering collaboration is essential to our success. We will strive to eliminate even minor barriers to collaboration so that more will occur. In addition, we will emphasize data. Researchers want to know where they can store enormous datasets and what tools will be available to analyze and manage them. Finally, we will provide access to resources. As demands on faculty time increase, faculty wants to know when IT will achieve the goal of access—any time, any place, on any device—to the resources they care about. Students want to use tools already familiar to them, and they want all of their course information and administrative tasks to be accessible on their mobile devices. This plan sets forth a series of strategies and initiatives to make major advancements in meeting these and all of our other goals.

While our primary job is to deliver ever-better information technology to the UW community, to be successful we must also evolve our organization and our culture. A strategy implies change—getting somewhere else. Often the destination is qualitatively different from the status quo, not just different in scale. In such cases, getting to the goal requires some culture change as well as clarity on what the organization is trying to leave behind and what it is trying to move toward. UW-IT has made substantial progress over the past several years towards meeting our service and operational goals. Our staff is eager to continue our process of change.

This plan proposes an adaptation of new technologies to new circumstances to support the evolutionary success of our University. We look forward to working with you to support the UW's current and future IT needs under this new strategic framework.

Sincerely,

Kelli Trosvig

Interim Vice President and Vice Provost
UW Information Technology

Summary

This document describes UW Information Technology's approach to supporting the University's mission of discovery by increasing the effectiveness of our students, faculty and staff; assisting the institution in risk and resource management; and fostering a community of innovation. The strategy and accompanying plan identify some key choices and directions for UW's future information technology (IT) landscape based on the leadership principles of *partnership, listening, leveraging, agility and anticipation*, combined with the embrace of consumer, social and cloud technologies to provide best IT value-for-dollar to the UW.

Drivers

Any planning for the future must consider both a desired goal-state, and the forces or drivers that push or constrain choices, such as:

- Continuing need for greater effectiveness, efficiency, synergy and return-on-investment (ROI)
- Institutional risk management
- Declining department, university, state and federal budgets
- Local, state and federal regulations
- Globalization trends e.g., 24x7 support, multilingual and distant locations, spotty connectivity
- Global social trends, e.g., new expectations on privacy, autonomy, accessibility and authority
- Greater scale in terms of geography, complexity and volume of data
- Security threats shifting from teenage vandals to organized crime and nations
- Fundamental technology shifts, e.g., wireless, virtualization and cloud computing

Strategic Service Themes

The following themes reflect trends and needs that will guide our service plans and priorities:

- **Mobile:** Any time, any place, any device, which drives applications and wireless infrastructure
- **Global:** Geographically diverse users with 24x7 support needs, e.g., Global Health
- **Cloud** and hosted computing: Includes software, platforms and infrastructure-as-a-service
- **Green:** Requires resource efficiency and low-carbon footprint for data centers and desktops
- **Open:** Accessible, easy to obtain and use data, standards, processes, software and information
- **Safe:** Secure and dependable computing
- **Simple:** Reducing frustration and user-visible complexity via federation and integration

UW Information Technology's (UW-IT) **technology vision** is simple: Provide convenient access to resources across time, place, device and organizational boundaries. Our **organizational vision** is to be an exemplary trusted, sought-after partner. Our plan is centered around the following **mission** and **strategic objectives**:

Mission 1: Enable Students, Faculty and Staff to Be More Effective

- Objective 1: Excellent foundation services and infrastructure
- Objective 2: Improved collaboration and productivity tools
- Objective 3: Improved global research support
- Objective 4: Improved teaching and learning tools
- Objective 5: Information for decision making

- Objective 6: Modern business information systems

Mission 2: Help UW Manage Risks and Resources

- Objective 7: Business continuity, security and privacy protection
- Objective 8: An exemplary organization

Mission 3: Foster a Community of Innovation

- Objective 9: Strategic partnerships
- Objective 10: Exploration and contribution

UW-IT Priorities for 2011

- **Improve the student experience:** Contribute significantly through improvements in student billing; better tools for academic planning and scheduling; more coordination around teaching and learning tools across the UW; better computer laboratory access, including a virtual laboratory; positioning critical applications for any time, any place, any device access; upgrade and expand Wi-Fi access at the UW.
- **Ensure that students, faculty and staff have adequate core IT resources:** Continue core infrastructure upgrades (e.g., networking, telephony, storage, collaboration and teaching and learning tools) for current and anticipated needs; improve offerings around managed desktop, server and storage; implement all current UW-IT improvement initiatives for the coming year.
- **Leverage the cloud to provide more flexible and on-demand resources:** Respond to the growing demand for our Cloud Services Initiative and associated institutional risk management requirements. The primary areas of focus for cloud computing include better integration of groups, easier-to-use tools such as SQL and better vendor contracts to lower cost and improve integration.
- **Integrate mobility and global support:** Ensure key applications are mobile friendly; work toward any time, any place, any device access to services; continue to integrate popular consumer devices; provide adequate Wi-Fi coverage to key UW areas.
- **Become a UW leader in green computing:** Increase server virtualization; leverage newer, more efficient processors; pilot and evaluate improved desktop power management.
- **Provide better business information systems:** Improve enterprise reports with a strategic focus on UW initiatives such as Program Evaluation, Activity-Based Budgeting, Complete to Compete; support national initiatives and accreditation through leveraging the Enterprise Data Warehouse; launch HR/payroll system assessment and modernization; provide incremental but significant improvements in the financial systems.
- **Improve UW's risk profile:** Implement Phase II Business Continuity Initiative deployment and the Chief Information Security Officer (CISO) Privacy Initiative, with greater computer security through centralized patch management, standard laptop encryption and better software compliance.

Preface

About UW and UW-IT

The University of Washington is a \$3.5 billion/year enterprise. Each year since 1974, it has received more federal research funding than any other public university. It operates three hospitals. It is comprised of the main Seattle campus plus campuses in Bothell and Tacoma. The UW has more than 50,000 students across those three campuses and nearly 30,000 faculty and staff. There are well over 150,000 devices using the UW network, almost half of them mobile (wireless connected).

UW Information Technology (UW-IT) is the central IT organization for all three campuses of the University. It is home to about one-third of the IT professionals at the UW and includes units devoted to communication and computing infrastructure; collaborative, academic and administrative applications; plus accessible design, support and customer services. UW-IT currently offers hundreds of services within 85 lines of business in 16 service categories, and it provides regional and international network services via partnerships with the state of Washington (K-20 Education Network) and the Pacific Northwest Gigapop.

The References page of *The Strategy* section (page 28) includes links to the UW-IT Service Catalog, some past UW-IT accomplishments and a brief SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis.

Document Purpose

The purpose of this document is to articulate a strategic framework to position the UW for the future and to identify strategic investment priorities for the coming year and beyond. Perhaps most importantly, it is a **launch pad for discussion** of UW-IT and University-wide IT issues and goals and one snapshot in a process of **continuous strategy improvement**.

While it is a goal of this document to show the connections between vision, mission, objectives and investment priorities, it is beyond its scope to provide a full rationale or value proposition for every IT investment priority described herein. Some priorities will be obvious, such as those expected to improve institutional tactical efficiencies, but the ROI of longer-range strategic investments to pre-position UW for the future or of giving back to the worldwide technology ecosystem in order to encourage innovation or increase future options may be less obvious and will require supplemental explanation.

Document Elements

The document includes two major sections: *The Strategy* and *The Plan*. *The Strategy* identifies the problem to be solved: Anticipating the needs of UW's students, faculty and staff and finding approaches to meet them, in the context of rapid technical, cultural and fiscal change. *The Plan* presents specific approaches and investment priorities to achieve the ten objectives identified in *The Strategy*.

Any plan reflects decisions on priorities. A comprehensive IT plan will include everything from mundane, deferred maintenance tasks to exotic, leading-edge experiments. This document begins with long-term **objectives** and **themes** addressing strategic needs, opportunities and inevitabilities, common across all

research universities, and it ends with UW-specific focus areas, key strategies for each objective and key priorities to achieve the objective. Unlike a business strategy intended to specify how a company will differentiate itself from its competitors, this strategy outlines a path from the status quo to a better place, in terms of IT support for the UW's mission.

Document Scope

This effort is limited to the charter of UW's central IT organization. It is only one part of a comprehensive University IT strategy. UW-IT is one of many IT service providers to the larger UW community, and some units within UW-IT have their own complementary and comprehensive planning documents (For example, the Strategic Roadmap for Information Management and Administrative Systems). This document does not address IT strategies for other UW units, but their needs are reflected. These UW units include:

- Administrative units with their own IT functions (e.g., Office of Research Information Services)
- The eScience Institute
- UWTV
- UW Libraries
- Departmental computing units
- UW Medicine IT Services

Document Audience

The audience for this document includes:

- UW leadership
- Other UW constituencies, including technology users and IT staff
- Internal UW-IT staff and management
- External advisory and oversight groups, funding agencies and regulators

In places where the text seems inwardly-focused, we hope our partners will use the information to provide feedback on whether we are addressing the right issues and opportunities for improvement.

Planning Constituencies

Any planning exercise begs the question: Planning for whom? Who are the constituencies of central IT and what are *their* priorities for central IT services? There are many, but the most fundamental taxonomy of perspectives and (differing) priorities is:

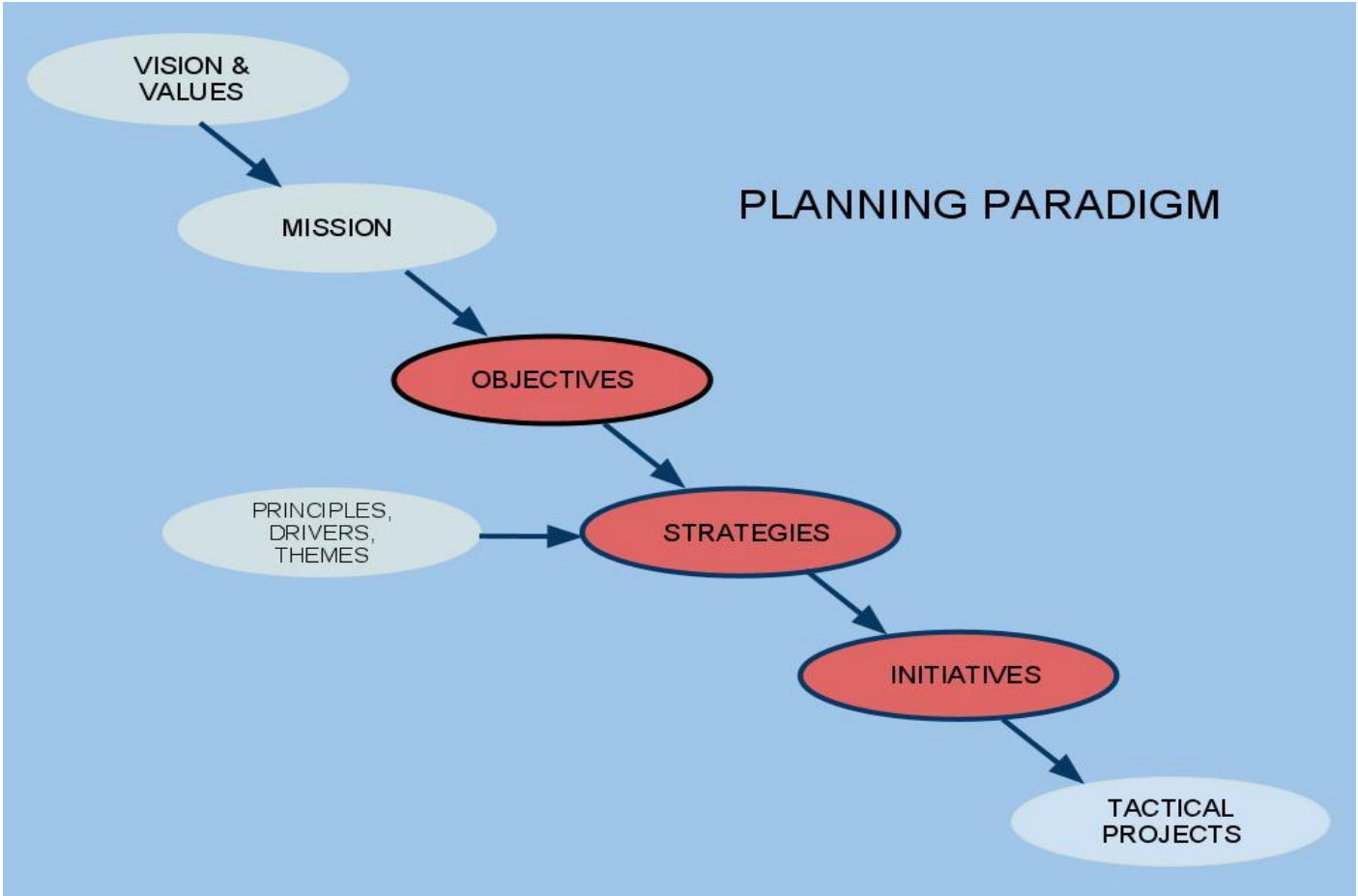
Institution: Priority on efficiency (cost control) and risk management

Individuals (users): Priority on effectiveness (productivity increase)

The institution is analogous to the customer in the Information Technology Infrastructure Library (ITIL) framework, which distinguishes who pays the bill from those who use the service.

Planning Paradigm

In developing a strategy and working toward specific IT plans, we used a variant of the VMOST (Vision, Mission, Objectives, Strategy, Tactics) analysis paradigm and drew upon a wealth of previous work:



The Strategy

Getting From Now to the Future

Strategy Contents:

- 1. The Problem, Drivers and Challenges**
- 2. Vision, Mission and Objectives**
- 3. Principles**
- 4. Service Strategy**
- 5. Operational Strategy**
- 6. Success Indicators**
- 7. References**

S1: THE PROBLEM, DRIVERS AND CHALLENGES

The top-of-mind problem for university leaders today is figuring out how to continue making society better through discovery and innovation in ways that are fiscally, politically, culturally and ecologically sustainable. The problem for central IT organizations is figuring out how to enable students, faculty and staff to be more effective in their pursuit of discovery and how to help their institutions manage risks and resources wisely—all while fostering a community of innovation and responding to rapid changes in technology and culture (and budgets). Toward that end, we need to anticipate what is coming. Here's one possible future scenario that illustrates the impact of emerging technologies on academia, emphasizing the key trends of location-independent virtual organizations, crowd-sourced science and any time, any place access to resources.

A Story

It's 6:00 p.m. on a Tuesday night in Seattle. Alexis has just finished dinner while watching a live feed of the Charlie Rose TV interview show on the kitchen iPad and is about to join a videoconference with colleagues in Washington DC, Honolulu and Melbourne. They're collaborating on a multimedia report that will document their six-month study on the economic tradeoffs of high-scale, centralized nuclear power plants versus highly replicated, small-scale plants.

Earlier that day, a team member noticed an alert on their collaboration Web site that said one of their monitored facilities had produced anomalous data. He asked the group's calendar agent software to arrange a meeting to discuss. It found a 7:00 p.m. time that worked for everyone, including the D.C. team member, who could participate via a SmartPhone video call from a commuter train.

After the conference call, Alexis and two other team members simultaneously change the video portion of their report using a Web-based media editor. Two other team members are modifying the same report at the same time. The new site data from the sensor network is automatically imported into a spreadsheet, which updates a set of charts and graphs used in the video. The new data automatically is processed to validate and record proper provenance, triggering a new simulation run that takes advantage of slack processing capacity on several continents.

Meanwhile interested parties from multiple countries are engaged in "crowdsourced" science. They're playing "what if" scenarios using cross-platform meta-query tools with the project dataset, which now exceeds five petabytes and is distributed across three cloud storage networks. Alexis gets a Twitter update from one of them and responds, using voice recognition and language translation software.

Alexis quickly responds to an alert from the university's calendar agent reminding her of upcoming grant submission and payroll deadlines, then reviews material for her evening class presentation on analyzing and managing SmartGrid transient failures. She's collaborating with faculty at several universities, in which faculty and students are using themselves as guinea-pigs for a third-generation cloud-based residential power monitoring experiment. (Recall that first-generation efforts ended abruptly in 2011, when pervasive implementation flaws in the early smart power meters resulted in some massive, cascading power outages.)

Alexis' presentation includes real-time data from all of the class participants, including data from an Android

application one team developed for monitoring, controlling and comparing power usage data with other participants. The team is spread across three states, but they used recent advances in software development toolkits to complete the initial version in two days. At the end of class, the night's instructor reviews with everyone the results of their last assignment, using correlation software to help categorize results and hypothesize different assumptions that would explain the students' differing explanations. It is not known where the instructor is located tonight—but it doesn't matter.

Behind the Story

The story is based on this premise: **Information technology helps UW accelerate innovation and discovery by improving collaboration and facilitating strong partnerships.** Or, said differently:

**Discovery is at the heart of our university.
Collaboration is at the heart of discovery.
IT is at the heart of global collaboration.**

The future of the research university depends upon the continuing existence of a robust technology ecosystem with low barriers to entry. Such an ecosystem is comprised of technical, economic and intellectual assets, combined with values and policies designed to further collaboration, innovation and discovery, both for technology itself and for its application to research and teaching. Maintaining and refreshing this ecosystem is the role of UW Information Technology and the other IT units at the UW.

As this story shows, the image of the lone researcher in a lab coat or at a desk will be superseded by someone at home doing complex searches on enormous interdisciplinary databases, and even more, by individuals who are active collaborators and always-connected participants in multiple global research teams. New tools and mobility trends will transform education to be independent of specific time or place.

This future will be enabled by a host of technology shifts, which any central IT organization must anticipate and facilitate, including:

- Reliable high-speed wired and wireless networking on a global scale
- Common or compatible identity and access management frameworks
- A suite of collaboration tools, e.g., tools for multimedia document co-authoring and calendar/task/contact/presence management, that work across service providers and institutions
- Technical and administrative interconnections with discipline-specific sensor nets
- Advanced collaborative software development environments
- Refined “Scientist's Workbench” applications to facilitate research data management, including results-replication and provenance safeguards
- Widespread commodity consumer technology, especially mobile devices and cloud computing
- Integration of multiple computing cloud infrastructure providers
- Advanced business information systems, fully integrated with collaboration and academic applications and accessible from mobile Web-centric devices
- IT infrastructure that is reliable, secure and scalable, enabling simple applications that are continuously available—leveraging both local, on-premise and commercial IT resources

- Globally interconnected and cooperative support networks, from user help desks to discipline-specific distributed service monitoring, to multi-vendor network and cloud service monitoring cooperatives

Drivers

Any planning for the future must consider both a desired goal-state, as articulated above, and the forces or drivers that push or constrain choices. Within the institution, there are three constant drivers:

- Need to improve **individual and group effectiveness**
- Need to improve **institutional efficiency**
- Need to improve **institutional risk management**

These internal drivers really form the nucleus of UW-IT's mission, which is described more fully in the *Vision, Mission and Objectives* section (page 15).

Externally, we find dramatic changes affecting the IT business. While it is often difficult to distinguish between trends and cycles (e.g., the pendulum of centralization versus decentralization, or perhaps budgets), many of the issues listed below show little sign of reversal any time soon:

- Decreasing department, university, state and federal budgets
- Increasing local, state and federal regulations
- Globalization trends, e.g., 24x7 support, multilingual and distant locations, spotty connectivity
- Global social trends, regarding privacy, autonomy, accessibility, authority, attention span
- Increasing scale in terms of geography, complexity, volume of data
- Increasing security risks, as threats shift from teenage vandals to organized crime and nation-states
- Fundamental technology shifts, e.g., wireless, portability, virtualization, cloud computing

Some drivers are complementary, for example, technology changes that provide lower-cost services that complement the driver of tighter budgets. Others are conflicting, such as decentralization to improve individual effectiveness and centralization to reduce duplication and improve institutional efficiency.

Academic Challenges

University leaders have many pressing issues such as these, and it is a goal for central IT to seek ways to help via technology:

- Attracting and keeping the best and brightest students, faculty and staff
- Providing a state-of-the-art educational experience
- Backlash against high cost of education; need for increased access to higher education
- Copyright and the future of innovation and the public domain
- Affordable access to academic publications
- Declining state support at a time of growing demand for a university education
- Brand management in a world of low-cost higher education alternatives
- Balancing student- versus faculty-driven curricula
- Supporting global, multidisciplinary, virtual organizations
- Global competition in both research and education; prospecting foreign students

IT Service and Technology Challenges

The care and feeding of computers has never been for the faint-hearted, and while it is now possible for individuals to have direct access to amazing IT capabilities without ever calling an IT department, there remain substantial challenges to fully engage IT practitioners. Among them:

- Providing any time, any place access to resources, including from small, mobile devices
- Simplifying the user experience through integration and federation of disparate systems
- Taming the IT complexity crisis via interoperable standards
- Replacing or maintaining legacy systems
- Data management, including metadata and provenance, navigation and filtering, coping with enormous data sets, curating data over the long-term
- Providing safe access to resources; managing data security risks
- Leveraging and integrating cloud services, in a policy-compliant way
- Embracing consumer technologies
- Enabling mobility in all activities
- Enabling innovation
- Closing the expectation/reality gap
- Coping with increasing regulation and compliance risks
- Enabling very complex collaborations that are 24x7, global in scope and involve enormous technology and cultural diversity
- Enabling flexible, accessible and innovative learning
- Meeting green computing expectations, via virtualization, etc.

IT Management Challenges

Within IT organizations, a host of non-technical issues are at least as important as the preceding service and technical challenges, including:

- Cost containment and reduction of duplicate efforts
- Sustainable funding models that permit risk mitigation, infrastructure renewal and anticipatory investment
- Motivating and retaining excellent staff
- Changing workforce demographics
- Balancing budgets with services; right-sizing while retaining top talent
- Cultural engineering to help staff, users and funders adapt to the new IT world
- Efficient and effective oversight
- Desire for broad participation in planning and decisions, versus process paralysis
- Holistic prioritization that recognizes the risks of fake efficiencies
- Avoiding insularity, entitlement and arrogance
- Preserving local autonomy while avoiding excessive diversity and redundancy
- Need for working capital, often to save money later
- University and federal funding patterns favor capital expenditures (CapEx) over operational expenditures (OpEx), making it more difficult to leverage cloud services

Governance Questions

In the course of re-thinking the role of a central IT organization in a modern research university, there are a set of perennial governance questions that are worth considering. These include:

- If a central IT organization didn't exist, what current needs for the UW would cause one to be created?
- If everything moves to the cloud, what is left for central IT groups to do?
- Where does UW want its central IT organization to be on the continuum between “just keep the local trains running” and “be a global factor in shaping the future IT marketplace”?
- In 2015, will UW's total IT spending be more or less than in 2010?
- When budgets contract, who decides between doing “a few things well” and “many things adequately”?
- How do we distinguish true efficiencies from fake efficiencies, such as cost-shifting or deferred maintenance?
- Can broadly participatory governance yield strategic vision or wisdom? What should be the relationship between democratic decision making, informed participation and technical leadership?
- Is it still important to encourage open standards, data and software?
- Can interoperability issues be avoided by choosing a single vendor? Is such a monoculture even an option going forward?
- Might one save more money through consolidation, or by standardization?

The UW is extremely decentralized with diffuse authority—perhaps best modeled as a thousand independent businesses. This makes IT governance challenging because different units have very different priorities and there is often a natural attraction toward local solutions. Finding the right balance between what should be done by departmental IT functions, central IT and external service providers is one of the most important issues for any institution; doing so in research universities may be uniquely challenging, but no less important.

From the perspective of a central IT organization, some of the answers to the governance questions above seem obvious, others not at all clear. Part of the planning process is to understand where IT planners might come up with different answers than their constituency. For example, independent of UW's organizational diversity and decentralization, the research and teaching solution space is complex, with stunning technical diversity. As a result, technology integration is a crucial role for a central IT group—even (or perhaps, especially) if one relies heavily on cloud-based services. Similarly, the diversity of technical solutions available today, combined with a decentralized decision culture, make the need for open standards more important than ever. Tight budgets limit choice, and sometimes that can be a good thing, but opportunities to avoid duplicative work only become available when units can agree on common approaches and standards.

Recap. IT is increasingly essential to the University's mission of discovery. Major changes are occurring in the technology marketplace that enable greater any time, any place access to resources than ever before, but these same changes require rethinking the way central IT organizations operate. At the same time, scaling, budget, regulation and cultural changes present enormous challenges. Yet, the opportunities for making a positive difference are equally enormous.

S2: VISION, MISSION and OBJECTIVES

The last section identified goals, opportunities and challenges facing research universities and their IT organizations in moving toward a future of more constrained budgets and transforming technology trends, notably mobility, cloud computing and consumerization. In this section, a framework for successfully engaging that future is proposed, from the top down—starting with the overall vision and mission of both the UW and UW-IT and proceeding to specific IT objectives to support them.

University 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-IT Technology Vision

This vision is intended to directly support the University's focus on *discovery*, which depends on simple and collaborative access to resources:

**Convenient and safe access to digital information and services
Across *time, place, device and organizational* boundaries**

Digital services include those providing access to people, media and information, plus creative, analytic and transactional tools, applications and basic computing resources.

UW-IT Organizational Vision

Our organizational vision unites *service-orientation* and *organizational relevance* together, which is especially important in an era of cloud-based, self-service IT alternatives: *It is understood that the relevance and success of any central service organization depends on how well it helps its constituency be successful.* Thus, UW-IT seeks to be:

**A trusted, sought-after partner, passionate about using and improving IT to
accelerate innovation and discovery**

An exemplar of organizational excellence and the UW’s core values

Organizational excellence: *Reliable and responsive, agile and anticipatory, effective and efficient*
UW's core values: *Integrity, diversity, excellence, collaboration, innovation and respect*

University Mission

“The primary mission of the University of Washington is the preservation, advancement and dissemination of knowledge.” – Board of Regents, 1998

UW-IT Mission

UW-IT's mission is three-fold:

M1. ENABLES STUDENTS, FACULTY AND STAFF TO BE MORE EFFECTIVE

via technology that accelerates innovation and discovery

in order to enable transformative achievements on a global scale.

M2. HELP UW MANAGE RISKS AND RESOURCES

via better information, processes and tools

in order to operate more efficiently, reliably and safely.

M3. FOSTER A COMMUNITY OF INNOVATION

via a culture of exploration, partnership and contribution

in order to illustrate what is possible and enrich the public domain and global technology ecosystem.

UW-IT Objectives

The objectives below are organized around the three UW-IT mission elements. They should be read as if prefaced with the words “Position the UW for the future by providing ...”

Objectives supporting M1: Enable Students, Faculty and Staff to Be More Effective

- **Objective 1: Excellent foundation services and infrastructure**
- **Objective 2: Improved collaboration and productivity tools**
- **Objective 3: Improved global research support**
- **Objective 4: Improved teaching and learning tools**
- **Objective 5: Information for decision making**
- **Objective 6: Modern business information systems**

Objectives supporting M2: Help UW Manage Risks and Resources

- **Objective 7: Business continuity, security and privacy protection**
- **Objective 8: An exemplary IT organization**

Objectives supporting M3: Foster a Community of Innovation

- **Objective 9: Strategic partnerships**
- **Objective 10: Exploration and contribution**

The first seven comprise **Service Objectives**, deliverables, defining *what we do*; the last three comprise **Operational Objectives**, protocols defining *how we do it*. However, the boundary between the two is not a bright line. For example, business continuity and security have aspects of both, as do soft services such as consulting and broad objectives such as research support. Similarly, specific projects might reasonably fall

under more than one objective, such as increasing research network capacity, which fits into both the foundation services and global research support objectives.

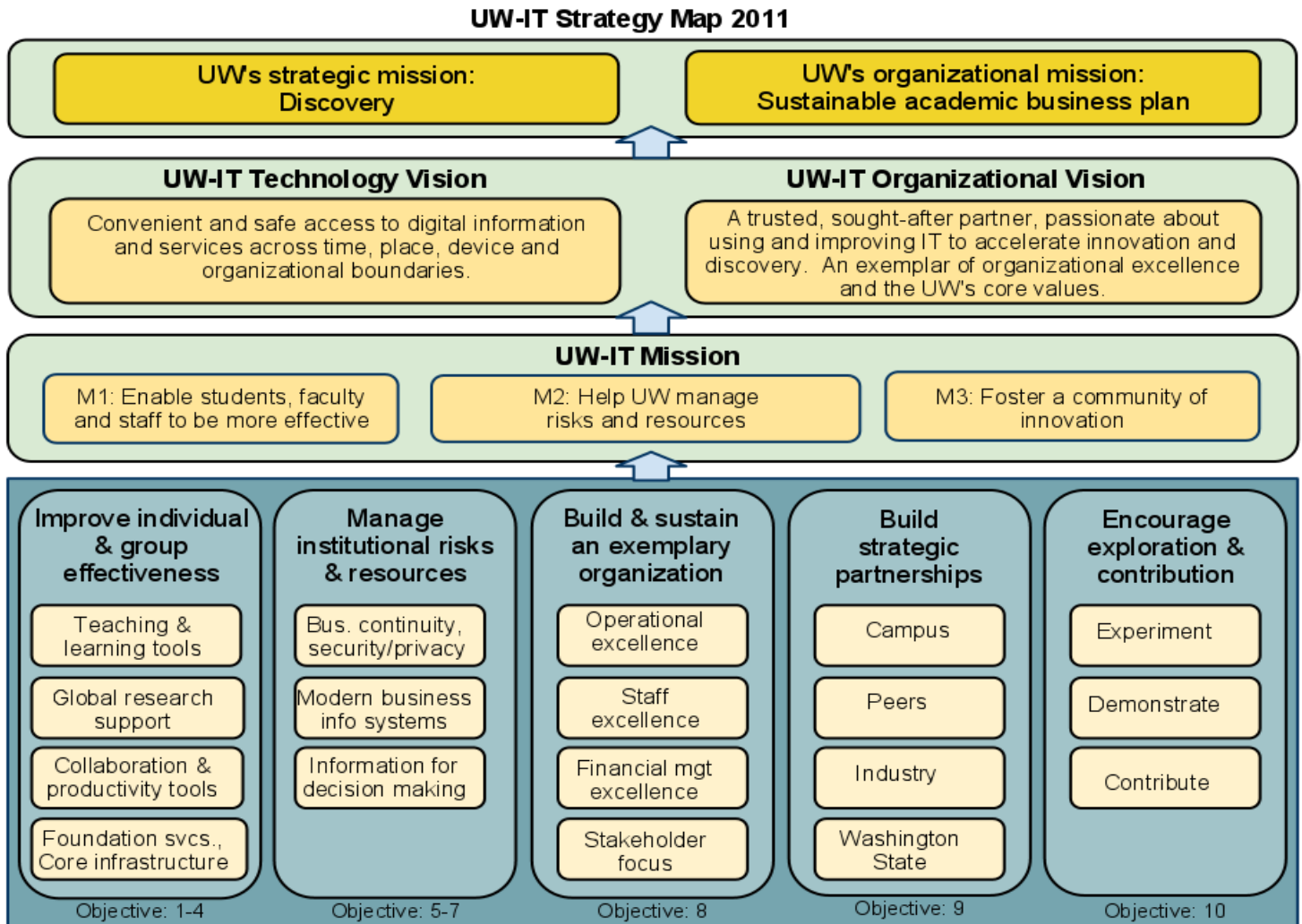
In thinking about these objectives, let's consider the big picture: We know that budget and technology changes require redefinition of central IT's role. UW-IT is expected to lead change and facilitate good technology decisions which balance conflicting requirements. UW users can now meet many of their IT needs via departmental resources, or in the marketplace of cloud and hosted services. To be relevant, UW-IT must offer cost-competitive services and focus on adding value in ways external service providers cannot.

But which services are needed to achieve the objectives? Which provide the foundation for a next-generation central IT organization? Clearly there is a shift from building systems to shaping them via vendor relationships, integrating them with enterprise systems and each other, providing support for them, and helping UW users make good decisions among tempting choices in a minefield of complexity that is evolving at astonishing speed.

Equally clearly, cost is more important than features for many. Moreover, in the "IT Reality Triangle" of features versus cost versus time (*pick any two*), it may be that *time* is becoming the dominant variable, and the key differentiator among IT service providers. Thus, the question for the future is whether central IT organizations can move quickly enough to remain relevant; to be a service-provider of choice. This time pressure must be balanced with the need for good engineering solutions for the community.

Strategy Map

A strategy map attempts to concisely portray the essential elements of an organization's approach to achieving its overarching goals; a way of understanding the connections from multiple individual objectives to higher-level mission and vision statements. Thus, the following diagram is a condensation and summarization of the preceding paragraphs. In it, the numbers at the bottom refer to the strategic objectives that are the foundation of the plan described subsequently. Within each objective, there is a sub-strategy for it.



S3: PRINCIPLES

Principle: A fundamental assumption. A rule used to choose among solutions to a problem.

Rules to Live By

As we plan systems and services for the UW community, as well as transform our organizational culture and processes to better support this community, we should keep the following principles in mind:

Leadership Principles

- Trust is essential, which is built on respect, reliability and results
- Don't act unilaterally or without data. Listen first; then assess, anticipate, adapt and re-assess
- Encourage collaboration, but balance goal of broad participation with the cost of slower decisions
- Within risk constraints, enable, don't mandate or block; control only what really needs controlling

Planning Principles

- Start by understanding marketplace trends and changing needs
- Regularly ask if each service is still needed or can be better provided by others or for less
- Understand our unique strengths and what is best done centrally, in departments, or externally
- Ask where we can partner to share the load, improve service and innovate
- Ask who else has solved a similar problem, and how; Pick good models
- Identify goals, then success metrics, then work backwards to specify steps needed to get there
- Identify anti-goals (things you really don't want to happen) and safeguards to prevent them
- Assess ROI up front; don't focus on small or short-lived problems; don't invest in obsolescence
- Learn from the past, but remember that past is not necessarily a prologue to the future
- Understand the difference between cycles, trends and singular events
- Remember that technology is always a two-edged sword, and not always the solution
- Provide checks and balances, e.g., planning and design reviews
- Good decisions need good data and good decision makers; therefore, invest in both
- Provide decision makers with choices and a context for comparison
- Automate or disintermediate when possible, but know when to keep humans in the loop
- Avoid duplication and *Not Invented Here*; embrace consumer IT, use high-scale/low-cost providers

Design Principles (for Systems, Services and Processes)

- Focus on simplifying user experience and integration; challenge complexity to contain costs
- Prioritize simplicity, speed, resilience, fault isolation, diagnosability; work for least surprise
- Instrument (performance, usage, cost) for real-time status, debugging and long-term assessment
- Start small, but keep the goal in mind; scale incrementally
- Favor modularity and interoperability over monoliths and monocultures
- Minimize vendor and local practice lock-in; integrate via interoperable and standard protocols
- Don't reinvent: Leverage standards and others' work (e.g., ACM collected algorithms, open source)
- Provide accessible and easily usable interfaces and content

Operating Principles

- Establish thresholds for autonomous action instead of review-and-approve rules
- Communicate plans broadly, but use the power of UNODIR (UNless Otherwise DIRected)
- Achieve efficiencies via incentives rather than penalties, whenever possible
- Reduce cost of exceptions by seeking and socializing more standard alternatives
- Make delays visible to those who care most about eliminating them
- When delays occur, communicate clearly whether the need is for resources or a decision
- “Be quick, but don't hurry.” Unlike on highways, in IT it is *lack* of speed that kills
- Recognize the perils of over-specification or under-specification; seek a cost-effective balance
- Know Your Costs: it is hard to compare or control them otherwise

Applying Principles to Key Problems

The preceding list of principles is very general; here we apply some of them to specific UW-IT problems.

PROBLEM 1: Doing the right thing (providing the right services)

- Alignment between UW-IT priorities and UW needs is not always perfect; (An example might be that providing a seamless collaboration environment for the UW in the context of explosive use of consumer devices and Web services arguably deserves a higher priority)
- Our project and decision processes favor familiar solutions, and the comparative cost and trend data needed to overcome that bias is not always readily available
- There is no consensus within the University on how to balance institutional efficiency, risk management, and individual effectiveness goals

PROBABLE CAUSES:

- Increasingly scarce resources are focused on sustaining core infrastructure, thus it is easy to lose touch with changing IT needs on campus, and marketplace evolution
- Our project process tends to filter competing solutions at a relatively early stage, and cost data upon which to make decisions is generally not easy to extract, or is difficult to analyze from multiple perspectives (e.g. by service, versus by group versus by technology)
- UW is a federation of fairly autonomous individuals with differing and often conflicting needs, preferences, and priorities. Unlike central infrastructure services such as power and water, IT lacks universally-accepted standards at the application level. Thus, there is an inevitable tension between *One Size Fits All* (to maximize efficiency) and *Let A Thousand Flowers Bloom* (to maximize individual effectiveness). Similarly, the goals of enabling technical choices and reducing risk often conflict.

APPLICABLE PRINCIPLES:

- Within risk constraints, enable, don't mandate or block; control only what really needs controlling
- Start by understanding marketplace trends and changing needs
- Know Your Costs: it is hard to compare or control them otherwise
- Regularly ask if each service is still needed or can be better provided by others or for less
- Provide decision makers with choices and a context for comparison
- Automate or dis-intermediate when possible, but know when to keep humans in the loop
- Avoid duplication and *Not Invented Here*; embrace consumer IT, use high-scale/low-cost providers

POSSIBLE ACTIONS:

- To maximize alignment, project charters, service management reviews, and business cases could state how the service supports key strategic priorities, including reducing barriers to collaboration, improving sustainability, improving and simplifying user experience, supporting mobile access and global support.
- To resist confirmation bias, we could encourage consideration of non-traditional solutions (either in terms of sourcing or problem definition) and presentation of minority reports and devil's advocate positions. For example, cloud services should be considered first, not because they are always the best answer, but as a way to overcome natural bias toward traditional in-house systems.
- To ensure that service alternatives are evaluated properly, there must be a reasonable understanding of Total Cost of Ownership (TCO) for each option. This in turn requires adequate investment in dashboards and reporting for current services.

PROBLEM 2: Doing things right (delivering services quickly and efficiently)

- It often takes too long to get things done
- Costs need to be understood and reduced
- While efficiency is essential, we must re-balance the conversation toward value and effectiveness

PROBABLE CAUSES:

- Our culture of inclusion has not always been matched by efficient group decision processes
- Priorities within and across UW-IT units are not always fully aligned
- The ROI of some of our processes is suspect
- Perhaps too many one-offs; not leveraging scale as much as we need to
- University partners (and many within UW-IT) do not have access to relevant benchmarks against which to evaluate UW-IT costs and overhead

APPLICABLE PRINCIPLES:

- “Be quick, but don't hurry.” (Unlike on highways, in IT it is *lack* of speed that kills.)
- Recognize the perils of over-specification or under-specification; seek a cost-effective balance
- Establish thresholds for autonomous action instead of review-and-approve rules
- Communicate plans broadly, but use the power of UNODIR (UNless Otherwise DIRected)
- Make delays visible to those who care most about eliminating them
- Focus on simplifying user experience and integration; challenge complexity to contain costs
- Instrument (performance, usage, cost) for real-time status, debugging and long-term assessment

POSSIBLE ACTIONS:

- Benchmark: find out what direct and indirect cost levels are considered reasonable
- Make reducing indirect costs an explicit and measured goal
- Make reducing time to complete customer requests an explicit and measured goal
- Streamline project process, especially for small tasks
- Actively seek and reward ideas for reducing delays and non-essential steps
- To allow flexible analysis, tools for effort and usage recording and inquiry could be built around tags rather than disjoint categories (to, for example, avoid dilemma of whether to have an effort or problem queue defined by service, by customer, by support group, etc.)

S4: SERVICE STRATEGY

Our mission includes enhancing UW effectiveness and efficiency. A service strategy defines which IT services will do that. To help choose, consider where the following current trends and perennial needs lead us:

A 2015 Prediction *(What We Expect Will Happen)*

- Most faculty and students and many staff rely on cell phones for voice communication at work
- Tablets and netbooks/smartbooks are ubiquitous and used as textbook readers
- Most faculty, students and staff use laptops, but desktops are still common
- Most use browser-based applications for most work, often via Web-only devices
- Thin clients remain rare, as they cost nearly as much as real desktops
- Virtual Desktop Infrastructure (VDI) use is limited due to total cost
- Social networking use for teaching is common, but not dominant
- Email continues to be important, but supplemented by more information channels e.g., Twitter and workflow; however, the ideal multi-channel information client continues to elude us
- High-quality video conferencing starts to significantly reduce travel budgets
- The Enterprise Data Warehouse is well-established as a key decision support tool

A 2015 Technology and Service Vision *(What We Hope Will Happen)*

- Mobile communication infrastructure and services are robust
- Mobile-ready business systems greatly enhance student and employee experience
- Generic IT applications are provisioned primarily via cloud services
- Advanced Web tools and services have superseded many stand-alone applications
- Identity and Access Management (IAM) investments allow full use of enterprise groups and Single-Sign-On (SSO) with key local and cloud services
- Interoperability and integration across key services and vendors are achieved
- Global researchers are well-supported
- Information mashups are easy
- Data center costs and carbon footprint are reduced via cloud services, thermal management advances and server virtualization
- Key services are resilient via redundant and geo-diverse infrastructure
- Networks are invisible: They just work, doing what is needed

Strategic Service Themes

The following themes reflect trends and needs that will guide our service plans and priorities:

- **Mobile:** Any time, any place, any device, which drives applications and wireless infrastructure
- **Global:** Geographically diverse users with 24x7 support needs, e.g., Global Health
- **Cloud** and hosted computing: Includes software, platforms, and infrastructure-as-a-service
- **Green:** Requires resource efficiency and a low-carbon footprint for data centers and desktops
- **Open:** Accessible, easy to obtain and use data, standards, processes, software and information
- **Safe:** Secure and dependable computing

- **Simple:** Reducing frustration and user-visible complexity via federation and integration

These themes represent either major trends in the marketplace, for example, mobility and cloud computing, or growing needs, such as open, safe and simple. Additionally, there are trends we must be aware of, even if they are not yet primary drivers for our service plans. Examples include consumerization (bringing your own technology to work), crowdsourcing (giving tasks to an undefined community through an open call), which is important in the context of “armchair science”, social networking (Facebook, etc.), and disintermediation (or self-service), a key automation strategy that has gained new currency due to cloud-based consumer services.

Cloud computing is a subject of great hype, but also great importance. The central IT interest is not to cheerlead or push all known IT problems into the cloud; rather, it is to recognize that UW is already using cloud services, and that UW-IT can play a constructive role in making them more useful (via federation and integration with enterprise services) and less institutionally risky (via partnerships backed by contract terms). UW-IT can also help identify the types of services for which cloud computing is or is not well-suited. For its own services, UW-IT can explore the territory and test the theory that some services can be provided more efficiently via the cloud and can enable staff to “move up the stack” from providing commodity IT services to those requiring more specialized knowledge of academic IT needs. (For more on this topic, see References on page 28 for a paper on UW's approach to cloud-based collaboration tools.)

A cornerstone of the “simple” theme is integration of disparate systems, which is becoming one of the most important strategies for enabling students, faculty and staff to become more effective, and one of the most urgent priorities for UW-IT. It is, however, an area fraught with difficulties, such as competing systems that each wants to own the role of authoritative source for identity, or users' *presence* status or calendar data.

Service Focus Areas / Investment Priorities

There are an infinite number of potential priorities. The following chart identifies a subset selected for special attention in the near future. The blocks highlighted in green are areas targeted for specific focus and investment, but that does not mean unchecked areas are unimportant or irrelevant. It's just a tool to help with prioritizing and aligning our work with those key trends, needs and University initiatives.

Objectives / Themes	Mobile	Global	Cloud	Green	Open	Safe	Simple
1. Foundation services and infrastructure	X		X	X		X	
2. Collaboration and productivity tools	X		X				X
3. Global research support		X	X				
4. Teaching and learning tools					X		X
5. Information for decision making	X			X		X	
6. Modern business information systems	X				X	X	
7. Business continuity, security and privacy	X		X			X	

UW-IT will sometimes have specific initiatives for individual themes (e.g., cloud and green), but more often, the focus points become factors to help prioritize projects within each service objective area. *The Plan* section (page 29), identifies approaches and priorities within each of those areas.

S5: OPERATIONAL STRATEGY

This is about how the UW-IT organization will operate in the pursuit of its mission. It is the methodology for achieving our service objectives as well as our overall organizational vision, which (defined in the *Vision, Mission and Objectives* section) is to be:

A trusted, sought-after partner, passionate about using and improving IT to accelerate innovation and discovery. An exemplar of organizational excellence and the UW's core values.

Two of the UW-IT mission statements, M2: **Help UW manage risks and resources** and M3: **Foster a community of innovation**, are particularly relevant here, since operational strategy is largely, but not entirely, about operational excellence and being an exemplary organization. Facilitating strategic partnerships and a community of innovation is as important as being a well-run organization. By example and direct action we contribute to the larger agenda.

A 2015 Operational Vision

- Our funding and organization structure is stable
- We have good internal support tools and dashboards
- Our staff has re-engaged nationally, building strategic partnerships with key vendors and peers
- Service Management and Planning and Continuous Strategy Improvement initiatives are working, with regular internal and external service assessments and roadmap reviews
- We are fully engaged with UW computing directors, strategic partners and UW leadership
- We are exploring new options and giving back to the technology community

Strategic Operational Themes

UW-IT already has a reputation for technical excellence. Key themes going forward include achieving excellence in risk, relationship and resource management and improving organizational agility, anticipation, transparency and sustainability. All these themes apply to each of the three operational strategy objectives:

- Objective 8: An exemplary organization
- Objective 9: Strategic partnerships
- Objective 10: Exploration and contribution

Approach

UW-IT must take **care of business** by efficiently providing basic IT infrastructure with security, reliability, performance and compliance. We must **tear down the walls** between services, people, times, places, devices, organizations, technologies, applications and communities. Finally, we must **get out of the way** via disintermediation, automation, simplification and a mindset to enable, not block. IT organizations that in the past had the mission and means to build needed technologies now find themselves building less and integrating or brokering more—needing to become experts in the 3 Rs of IT: **risk, resource** and **relationship management**. The new role is as an integrator, broker, consultant and partner. This can only happen by building a culture of **listening, leading** and **leverage**. We seek to be service-oriented and to be guided by the needs of the University. This requires careful *listening*. At the same time, our UW partners expect the central IT organization to *anticipate* needs and provide technology *leadership*. This includes articulating a

technology vision that inspires both staff and users with its possibilities. Lastly, there is *leverage*. Unlike the Wall Street definition (leverage = debt), here it is about leveraging what others have already done or what can be done more efficiently as a shared service that is available to many different customers. This mindset helps focus priorities on high-payoff tasks that leverage knowledge of UW needs, rather than re-inventing services or service paradigms already provided elsewhere. Especially when resources are tight, **progress depends on partnership.**

Cultural Goals

As times change, so must the behaviors of central IT organizations. Here are UW-IT's cultural change goals.

Service Design Culture

<i>FROM</i>	<i>TO</i>
Desk-centric computing	Mobile computing (laptops, tablets, phones)
Custom platforms/fixed apps	Open platforms/mashups
Monolithic	Modular; mix 'n match
On-premise	Cloud-based
Constrained/proprietary content	Open and accessible content
Perfect solutions	Value-for-dollar
Premium, comprehensive approaches	Targeted, cost-efficient approaches

Operational Culture

<i>FROM</i>	<i>TO</i>
Insular	Engaged
Entitled	Service-oriented
Opaque	Transparent
Deliberate	Sense of urgency (but not panic)
Inclusive but slow processes	Quick decisions; agile processes
Builder	Broker/integrator
Monopoly provider	Trusted partner
Ad-hoc service management	Structured service management
Technology focus	Risk, relationship, resource focus

Different groups within UW-IT have different strengths and weaknesses. All have made substantial progress on these goals since the operationally focused 2007 strategic plan for IT was published. Nevertheless, organizational change is hard, especially in tight budget times, so it's worth remembering these quotations:

“Culture eats strategy for lunch.” – A Boeing VP
“Budgets have culture for dinner.” – A UW Dean

S6: SUCCESS CRITERIA

While some may be difficult to measure, here are some broad indicators of success in achieving our goals.

University Success Indicators

- UW-IT is considered a trusted, sought-after partner
- UW-IT is considered agile, anticipatory, efficient, transparent and valuable
- Strategic engagements with UW units are numerous and strong
- Available resources are aligned with strategic IT needs
- Satisfaction with UW's IT capabilities is growing
- UW-IT decision processes are considered fair
- Technology Recharge Fee (TRF) is considered rational and a good value
- Business systems and decision-making tools are considered adequate or better

External Success Indicators

- Partnerships with key vendors are strong
- UW's reputation for IT best practices is growing
- UW researchers' reputation for technology leadership is growing
- UW is seen as a national center of excellence in certain IT areas

Internal Success Indicators

- Staff can easily map their efforts and decisions to overall mission and strategy
- Team members are clear on internal decision-making processes
- Management decisions are timely and fair
- Projects are on-time and on-budget
- Staff see themselves as part of an organization doing important work and attrition is low

Effectiveness Indicators

- Access to desired information and services is possible from mobile devices
- Finding desired information is easier due to improved search and navigation tools with filtering by both relevance and provenance
- IT annoyances, such as maintaining multiple accounts, are diminished via federated identity and access management and improved application interoperability

Efficiency Indicators

- Hidden subsidies of inefficient behaviors have been eliminated or exposed
- Duplication of effort has been identified and is being reduced
- High-scale, low-cost technology service providers are routinely used
- A race to the bottom in the name of efficiency has been avoided

Critical Success Factors

- Ability to obtain and retain excellent staff and leadership
- Ability to develop and sustain key strategic partnerships
- Trustworthiness, as seen by stakeholders, as well as within the organization
- A culture of agility, anticipation, innovation, economy, transparency and service

S7: REFERENCES

Links to all of these references may be found at <http://uw.edu/staff/gray/sp-refs.html>

[UW-IT: What we do](#)

[UW-IT Service Catalog](#)

[UW-IT: Past Accomplishments](#)

[UW-IT: 2010 SWOT Analysis \(Strengths, Weaknesses, Opportunities, Threats\)](#)

[The Eternal Debates: IT = Inevitable Tensions](#)

[IT Evolution and Revolution: Recognizing the “next new thing” vs. “déjà vu all over again” in order to divine and define the future of IT](#)

[2010: UW Strategic Roadmap for Information Management and Administrative Systems](#)

[2010: A Tale of Two Clouds: UW's Approach to Cloud Computing](#)

[2010: IT Strategy for Students Advisory Committee Report](#)

[2009: SM2 Recommendations on research computing needs](#)

[2009: Enterprise Risk Assessment for UW Technology](#)

[2008: Strategic Roadmap for Information Management and Administrative Systems](#)

[2008: Collaborative Tools Strategy Task Force Report](#)

[2007: IT Strategic Plan](#)

The Plan

UW-IT Priorities for 2011 and Beyond

Plan Contents:

Introduction

Objective 1: Excellent foundation services and infrastructure

Objective 2: Improved collaboration and productivity tools

Objective 3: Improved global research support

Objective 4: Improved teaching and learning tools

Objective 5: Information for decision-making

Objective 6: Modern business information systems

Objective 7: Business continuity, security and privacy protection

Objective 8: An exemplary IT organization

Objective 9: Strategic partnerships

Objective 10: Exploration and contribution

Next Steps

Introduction

The Plan builds on The Strategy by identifying approaches and investment priorities for achieving each of the ten objectives designed to support UW-IT's three-part mission:

- **M1: Enable students, faculty and staff to be more effective**, supported by **objectives 1-6**
- **M2: Help UW manage risks and resources**, supported by **objectives 7-8**
- **M3: Foster a community of innovation**, supported by **objectives 9-10**

As noted in The Strategy, the first seven of the ten objectives comprise **Service Objectives** (deliverables, defining *what we do*); the last three comprise **Operational Objectives** (protocols, defining *how we do it*). The investment priorities for the seven service objectives reflect the key themes: Mobile, global, cloud, green, open, safe and simple. Similarly, the priorities within the three operational objectives reflect our strategic operational themes: Achieving excellence in risk, relationship and resource management, and improving organizational agility, anticipation, transparency and sustainability.

UW's Two Years to Two Decades Initiative (2y2d) work toward a [Sustainable Academic Business Plan](#) identified four areas of focus for each UW unit. This table shows how the UW-IT objectives and 2y2d goals relate.

IT Objectives / 2y2d Goals	Increase Revenues	Decrease Costs*	Invest in People	Invest in Infrastructure
1. Foundation services and infrastructure		X	X	X
2. Collaboration and productivity tools	X	X	X	X
3. Global research support	X	X	X	X
4. Teaching and learning tools		X	X	X
5. Information for decision making	X	X	X	X
6. Modern business information systems		X	X	X
7. Business continuity, security and privacy		X	X	X
8. An exemplary organization		X	X	X
9. Strategic partnerships	X	X	X	X
10. Exploration and contribution	X	X	X	X

*Many of our cost-reduction activities require current investment in order to achieve future savings (for example, investing in better network infrastructure for teleconferencing to save on travel costs). In some cases, the investment is to mitigate risk of a substantial future cost in the event of disaster, breach or non-compliance, especially when considering IT security and business continuity. Also, certain cost-reduction efforts may reduce global costs, but increase some local costs, or vice-versa. Moreover, cost-reduction goals must be balanced against improving effectiveness in cases where the two conflict.

In the following pages, the description for each objective includes an overview, vision and strategies specific to the objective, and key priorities. While The Strategy section identified broad visions and strategies, those herein are more focused. For example, the key strategies listed under *Improved Global Research Support* describe approaches specifically to assist UW researchers in meeting their goals.

Objective 1: Excellent Foundation Services and Infrastructure

In support of mission **M1: Enable students, faculty and staff to be more effective**

Overview

UW students, faculty and staff deserve and expect first-class IT infrastructure. Anticipating IT infrastructure needs and keeping them up-to-date is a fundamental purpose of UW-IT. Foundation services include behind-the-scenes core IT infrastructure plus the following UW-IT Service Catalog areas:

- Accounts and Passwords
- Data Networking
- Identity and Access Management
- Managed Desktops
- Servers and Storage
- [Accessibility](#) Resources
- Developer Tools
- Software Distribution and Licensing
- Consulting, Training and Support

Core IT Infrastructure in this context includes the lower-layers of the IT Stack, as depicted [here](#). Specifically:

- Facilities (e.g., data centers and router centers)
- Network (both wired and wireless, on-campus and external)
- Storage (supporting both departmental and UW-IT services)
- Servers (supporting both departmental and UW-IT services)
- Middleware (e.g., database, security, identity and access management)

Infrastructure support accounts for a significant percentage of UW-IT's budget; however, from the users' perspective, it is—and should be—largely hidden, except to departmental staff charged with procuring or supporting UW-IT infrastructure services. Although captured within a single objective in this document, its importance and scope should not be underestimated. Desktop management is also included here.

Vision of Future Core IT Infrastructure

The essential vision for IT infrastructure is that it's invisible; users are not even aware of it, because it just works and doesn't get in their way. It anticipates their future needs and is ready when they are, as are the UW-IT staff who support it.

With respect to facilities, our data centers will provide a high level of physical security, energy conservation and resilience against electrical and HVAC outages.

With respect to networking, individuals will have adequate access to resources from diverse work locations around the world and superior connectivity at the UW.

With respect to identity and access management (IAM), individuals will be able to use UW NetID credentials for accessing a broad range of core services via single sign-on (SSO) and no longer need to create a new set of credentials for each new service they try (in particular, the extensive range of relevant cloud services becoming available). Unfortunately, this particular element of the core IT infrastructure vision may be the most elusive, as it depends on the cooperation of many different service providers in using common identity protocols and trust fabrics such as [SAML](#) and [InCommon](#).

Key Strategies

- Continue investments to upgrade core infrastructure, e.g., network and phones
- Focus on identity and access management, e.g., groups for cloud services
- Leverage cloud infrastructure services where and when feasible, e.g., [Microsoft Azure](#), [AWS](#)

Key Priorities for 2011

- Data storage: Flexible, scalable, low-cost storage cluster available to faculty and departments
- Network backbone: Add virtualization to leverage existing physical infrastructure for more sophisticated services
- Network backbone: Deploy IPv6 to prepare for worldwide transition
- Network backbone: Enhance facilities network to segregate and better manage SmartGrid and other critical UW infrastructure
- Wireless networking: Upgrade to latest 802.11n technology, and continue working with cell phone providers for improved UW coverage
- Telephone system: Stabilize and lay groundwork for next-generation VOIP and other advanced services
- Telephone system: Begin integration of unified communications with cloud services, including voice, instant messaging (IM), videoconferencing, email and presence
- Data center: Begin planning for needed upgrades and assess University needs for different co-location offerings
 - More service offerings for co-location, allowing the UW community more choices around price and service levels
- Servers: Develop technology lifecycle plan for servers and laptops/desktops—especially Windows XP and Server 2003, where operating system (OS) upgrades may require new hardware
- IAM: Improve Unix integration with central IAM services
- IAM: Improve integration of Web apps on MS Windows with central IAM services
- [Accessibility](#): Improve access for people with disabilities to all information technology resources, including online content and applications
- Desktop and labs: For both, experiment with online/virtual services, allowing access to the most in-demand software to students with a UW NetID and Internet connection
 - Provide more desktop offerings, allowing the UW community more choices around price and service levels
- Enterprise systems: Continued evolution of [Resource-Oriented Architecture \(ROA\)](#), in particular [RESTful Web Services](#), as a primary mechanism for application integration
- Enterprise systems: Invest in Event-Driven Architecture (EDA) as an additional mechanism for application integration and information exchange

Key Priorities Beyond 2011

- IAM: Integrate/consolidate University Active Directory domains to leverage central authentication and authorization infrastructure
- Enterprise Applications: Next phase of ASTRA authorization system
- Enterprise Applications: Focus on workflow building blocks to simplify advanced services
- Enterprise Applications: More Resource-Oriented Architecture (ROA) and Event-Driven Architecture (EDA) for application integration and data exchange
- Desktop: Assess alternative desktop management options to lower cost, increase security and provide greater reliability, and virtual desktop infrastructure (VDI) to support certain segments of desktops needing high security and reliability
- Network: Enhance/extend isolated facilities network for increased security
- Telephones: Facilitate further transition to cell phones and VOIP
 - More support for shift to cell phones for daily business use, better coverage for UW, University stipend policy
- Storage: Leverage cloud storage services more broadly to reduce costs
- Servers: Increase levels of virtualization in UW data centers to improve efficiency
- Printing: Enable printing from wireless devices

Objective 2: Improved Collaboration and Productivity Tools

In support of mission **M1: Enable students, faculty and staff to be more effective**

Overview

This objective is about *reducing barriers to collaboration* and *increasing personal productivity*. This requires delivering excellent tools and doing our best to integrate tools and platforms from multiple vendors, e.g., Microsoft Office 365 and Google Apps. It relates to the following Service Catalog topics:

- Email and Calendaring
- Phones and Voice
- Web Publishing and Collaboration Tools

This objective follows from the premise that *collaboration is at the heart of discovery*, but it encompasses basic personal productivity tools (e.g., word processing, calendar, spreadsheet) that are essential to collaboration. It also includes tackling the frustrations and annoyances associated with those tools, as directed by the *simple* theme.

Vision for Future Collaboration

- Scheduling meetings is no longer difficult, even when crossing organizational boundaries (intra- or inter-university)
- Essential data and tools are accessible via mobile devices, etc.
- Web publishing and collaboration with easy access control is routine
- Administrators have (well-founded) confidence that institutional risk relating to basic collaboration and productivity tools is understood and well-managed
- Multi-point videoconferencing is easy and works well
- For all sectors (research, teaching and learning, admin/business) tools are mobile enabled, interoperable, cloud-leveraged and have federated IAM capabilities
- Easy movement between collaborative environments, with a low entry barrier for individual environments and easy discovery of tools, resources or information contained therein
- Portability of data between systems, especially cloud systems, to mitigate loss of institutional knowledge
- Easy, secure collaboration with partners beyond the UW
- All collaboration options are accessible to participants with disabilities, including blindness and deafness

Key Strategies

- Embrace consumer technologies such as iPhones, iPads, Netbooks
- Embrace mobility: Any time, any place access to resources
- Embrace cloud-based collaboration platforms
- Embrace social networking: Content, context, and relevance from the users

- Disintermediate (self-service), automate and mitigate IT annoyances
- Make custom applications easier: Web erector sets for the masses (mashups)
- Build awareness of tools that are already available and provide context and guidance for choosing among the options
- Encourage and participate in early adopter communities to assess validity and usability of new tools
- Improve Enterprise Content Management (ECS) solutions
- Improve consulting services available to the UW community such as:
 - System administration, security, service-oriented architecture
 - Video capture and streaming
 - Facility design (e.g., teleconferencing rooms)

Key Priorities for 2011

- Cloud services: Continue to embrace and extend for basic departmental and individual computing needs, limiting demands on system administrators and hardware budgets
- Cloud services: Improve integration with IAM infrastructure to permit easier collaboration based on department or group affiliation; simplify sign-on to key services
- Calendaring: Improve interoperability between main collaboration platforms
- Cloud services: Transition from on-premise to cloud-based Exchange and SharePoint
- Mobility: Conduct needs assessment for, then development of, mobile-device applications for collaboration, teaching and learning
- Enterprise document management: Document Imaging and Management System (DIMS) project
- Unified communication: Develop plan for integrating new voice system upgrades with Microsoft and Google collaboration platforms (e.g., IM, presence, video chat)

Key Priorities Beyond 2011

- Enhance the enterprise directory to include additional types of data (e.g., photo, Web page URL, IM identities, etc.) to facilitate easier collaboration
- Evaluate options for an advanced, mashable portal to permit rapid customization
- Evaluate next-generation content management systems for UW use
- Transition Uniform Access services (Web publishing, storage, email) to cloud platforms
- Improve videoconferencing options
- Develop documentation and guidelines re: When cloud solutions do/do not make sense and tradeoffs among them at different service layers

Objective 3:

Improved Global Research Support

In support of mission **M1: Enable students, faculty and staff to be more effective**

Overview

The importance of research to UW cannot be overstated; clearly UW-IT needs to support it in every way possible. Although providing excellent infrastructure and collaboration tools (as per the first two objectives) is perhaps the most important way to support UW researchers, there are several other ways UW-IT can help. For example, managing and curating petabyte-scale datasets is a growing research problem, and while not a core competency of UW-IT, we can help broker engagements among our community, the eScience Institute (which does have such expertise) and external vendors.

Vision of a Future Researcher

- Remote system access via federated IDs is routine, with minimal support burden
- There is sufficient peak and average bandwidth for advanced applications, e.g., Super-Hi-Def remote data visualization, 3D immersion, huge file transfers
- Easy collaboration is possible via federated access management and cloud services
- Key services are accessible via mobile devices
- Cross-institution consortia have been created to tackle long-term curation and management of huge discipline-specific data collections

Vision of Future Research Computing

- Extensive use of network/cloud computing, e.g., massive data sets stored in Texas, image analysis done in San Diego, 3D immersive display in Seattle
- Pervasive remote sensing, e.g., Ocean Observatory Initiative (OOI) undersea observatories, sensors detect seismic event; UW researchers alert colleagues; HD video seen worldwide in real time
- Armchair science: Huge datasets widely available on Web, accessible to amateurs and experts alike
- Amazon's Mechanical Turk used to identify interesting data, and smartphones have become pervasive sensors (e.g., earthquake, health)

Key Strategies

- Continue to engage principal investigators (PIs); integrate needed IT work with research proposals
- Provide networking technology and expertise for data-intensive science
- Embrace cloud Infrastructure and Platform-as-a-Service (IaaS and PaaS)

Key Priorities for 2011

- Continue to assist PIs in integrating IT needs into their proposals
- With Vice Provost for Research, plan for a research-oriented Web portal
- eScience partnership: Expand Hyak HPC cluster; co-market storage cluster; improve eScience Web tools

- Global health: Develop support plan
- Ocean Observatory Initiative (OOI): Provide network support as needed

Key Priorities Beyond 2011

- Provide better global videoconferencing and teleconferencing
- Provide better remote-access computing options
- With eScience Institute, encourage and facilitate use of cloud infrastructure services (e.g., AWS EC2, S3 and Microsoft Azure) by researchers when doing so offers cost or capability benefits to the UW

Objective 4:

Improved Teaching and Learning Tools

In support of mission **M1: Enable students, faculty and staff to be more effective**

Overview

This objective relates to providing technology to support and improve the student and faculty learning experience. It relates to the following Service Catalog areas:

- Technology Spaces (computer labs)
- Web Publishing and Collaboration Tools (especially [Catalyst Web Tools](#))

Vision of the Future (Uber-Connected) Student

- Devices: Laptop, netbook, iPhone, Kindle, iPad, or other tablet device
- Services: Facebook, Twitter, IM, multiple email accounts, games
- Characteristics: Mobile, social, collaborative note-taker, multimedia consumer and producer, Web search expert, interactive/participative, impatient multitasker, operating system agnostic

Vision of Future Classes

- Course technologies are intuitive and easy-to-use, requiring minimal technical support
- Course technologies are accessible to students and faculty with disabilities
- Seamless integration between course technologies from multiple sources (UW, cloud, etc.)
- Course resources are available online and are accessible any time, any place, from any device
- Resources include eBooks, library resources and multimedia Web sites
- Easy student-faculty and student-student interaction using a variety of collaboration tools
- Easy to integrate multimedia and interactivity into courses
- Majority of assignments submitted and graded electronically

Vision of Distributed Learning

- Improved support for synchronous distributed learning using big screens, fast networks, smartphones and cameras
- Web-based tools that support asynchronous and synchronous collaboration and interaction

Vision of Future Faculty/Staff Teaching

- Better support and models for selecting appropriate technologies and using them to meet instructional goals
- Easy to share access and administrative rights and to collaborate to 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 group of student consumers

Vision of Future Student Learning

- Learning resources can be accessed from a variety of devices and a variety of locations
- UW infrastructure supports wireless and mobile learning
- Advanced technologies available in learning spaces for collaboration, video-editing, audio production, etc.

Key Strategies

- Partner with academic leadership and technology fee governance bodies on establishing teaching and learning priorities for UW-IT
- Conduct regular surveys, user feedback and focus groups with faculty, teaching assistants, students, staff
- Cloud integration with on-premise tools
- Leverage open-data and open-source solutions
- Work toward more consistency and integration among tools and schools
- Encourage more consistent technology across classrooms and training on how to use it

Key Priorities for 2011

- Improve Catalyst integration with cloud services (e.g., Google Sites Portfolio project, improved Groups capability)
- Improve teaching tools such as WebQ and course management capabilities
- Improve mobile access to teaching and learning tools
- Continue needs assessments and technology surveys

Key Priorities Beyond 2011

- Additional focus on mobility and any time, any place access to tools
- Continue needs assessment
- New thinking on group learning spaces
- Improved accessibility for Catalyst Web Tools

Objective 5: Information for Decision Making

In support of mission **M1: Enable students, faculty and staff to be more effective**
and **M2: Help UW manage risks and resources**

Overview

Good information facilitates good decisions, which are essential to achieving the goals in UW's Sustainable Academic Business Plan. This objective focuses on providing better business information, but the same concept applies to operational information, academic research information, etc. The relevant Service Catalog entry is Business Information Systems (especially [Decision Support Services](#)).

Future Faculty, Staff and Student Vision

Premise: Data → Information → Knowledge → Action

- Faculty and staff run reports showing visual graphs of program performance across units and peer institutions
- Students using handheld devices check on course availability, grades and account status
- Administrators set up automated distribution of reports to faculty and staff

Future Enterprise Information Management Vision

- Trusted and well understood institutional data
- Enhanced decision making with scorecards, dashboards and real-time alerts
- Self-serve Business Intelligence (BI) capabilities with slice-and-dice and drill-down capabilities
- Ubiquitous access to data and metadata according to well-defined responsibilities for both humans and machines
- One-click data definitions from any report or application
- Systems (as opposed to just humans) can make automated decisions based upon business intelligence capabilities

Key Strategies

- Reduce unnecessary data silos via shared Web services and the Enterprise Data Warehouse (EDW)
- Provide real-time access to analytical data by humans, applications and workflows
- Support Key Performance Indicators (KPIs) for UW
- Build an integrated cross-subject area Enterprise Data Warehouse
- Coordinated support between central and decentralized staff in building and deploying reports
- Publish enterprise data models and definitions

Key Priorities for 2011

- EDW expansion (Planning and Budgeting, Research)
- Data governance and security enhancements

- Coordinated training and support programs
- Data quality improvement initiatives
- Central data dictionary and metadata repository
- BI tool infrastructure upgrades and improvements

Key Priorities Beyond 2011

- Security metadata for Web services and other non-EDW systems
- EDW infrastructure (servers/storage/RDBMS) expansion/redesign

Objective 6:

Modern Business Information Systems

In support of mission **M1: Enable students, faculty and staff to be more effective**
and **M2: Help UW manage risks and resources**

Overview

This objective highlights the need to update the UW's business and administrative information systems, some of which are three decades old. The relevant Service Catalog entry is Business Information Systems.

Vision

Provide modern, flexible and integrated business information systems to support a complex, global University that has been recognized as one of the world's best.

Key Strategies

- Identify realistic funding scenarios and achievable milestones
- Make strategic investments in incremental improvements that deliver efficiencies, balancing short-term delivery with long-term goals
- Partner with business owners and end-users to facilitate development of a shared understanding of vision and priorities and align the portfolio of projects and services to the business needs of the UW
- Partner with business owners to make business model choices in each functional domain aligned with the Roadmap strategic approaches (consortium, SaaS, best-of-breed, etc.)
- Invest in the Roadmap Foundation as the key to achieving the vision of incrementally replacing and modernizing the UW's business information systems

Key Priorities for 2011

- Governance, investment planning
- Portfolio management
- Business architecture design
- LEAN process improvement
- Information and application architecture design
- Kualu Rice Consortium
- Enterprise middleware services
- Business Web services
- Messaging middleware/event programming
- Kualu Financial System (KFS) assessment
- Electronic Faculty Effort and Cost Sharing (eFECS) Phase 3
- Financial Desktop Reconciliation (final phase)
- Enterprise chart of accounts design
- HR/Payroll Alternatives Assessment
- Kualu Student Consortium

- Quali Curriculum Management
- Student systems modernization

Key Priorities Beyond 2011

- Quali Financial System enterprise implementation
- HR/Payroll System Replacement
- Quali Student implementation
- Re-architect ASTRA so that responsibilities/functions can be given to job roles, and assign people to those roles
 - This requires policy decisions before the design and development can take place
 - The change would save time for developers who use ASTRA to manage access to their applications
 - It would also be less confusing to our customers who manage authorizations for their work units

Objective 7: Business Continuity, Security, Privacy Protection

In support of mission **M2: Help UW manage risks and resources**

Overview

This is about keeping bad things from happening and/or mitigating their impact on UW operations. Business continuity, security and privacy protection are all essential to UW's risk management and compliance objectives. The term *security* includes data confidentiality, data integrity and data loss prevention. The relevant Service Catalog entry is Emergency Preparedness.

Vision for Business Continuity

- Key services are resilient via redundant and geo-diverse infrastructure
- UW-IT's Business Continuity (BC) program is the foundation upon which other departments and units build their business continuity plans

Vision for IT Security and Privacy

- A common understanding exists that perfect security is a myth; that efforts for prevention must be combined with efforts to increase resilience and reduce the impact of security incidents
- All employees understand UW data categories and protection obligations
- A risk-management approach to IT security has been fully embraced
- Sensitive data is inventoried and has extra protection (e.g., two-factor authentication)
- Compartmentalization is used so that compromise of a single computer does not compromise an entire database or collection of systems
- IT security/privacy protection strategies are fully integrated into UW Enterprise Risk Management (ERM) program

Key Strategies

- Improve UW's business continuity capability:
 - Analyze dependencies and Single Points of Failure (SPOF)
 - Harden the network
 - Increase geographic diversity (e.g., Spokane facility)
 - Enterprise system support (e.g., Active/Active)
 - Help UW units leverage BC infrastructure
 - Monitoring and configuration tools
 - Increase Quality Assurance discipline
 - Leverage external resources, e.g., [DRI Institute for Continuity Management](#) and external auditors to complement limited in-house capacity/expertise
 - Regularly review systems with business/process owners
 - Incorporate hosted/cloud/outsourced solutions into BC requirements and plans
- Improve University IT security practices:

- Allocate risk mitigation resources by Enterprise Risk Management IT risk assessment results
- Develop, maintain and promulgate appropriate data protection practices
- Develop low-overhead security and privacy compliance tools
- Invest in discovery and analysis of current and evolving threats
- Encourage servers with sensitive information to be in secured data centers
- Encourage scanning for sensitive information
- Encourage scanning for compromised systems
- Encourage at-rest encryption of sensitive data on portable devices
- Encourage two-factor authentication for access to sensitive data
- Improve UW community awareness and education about security and privacy issues, responsibilities and best practices by encouraging broader understanding of security and privacy risks and compliance obligations via targeted campaigns to specific audiences
- Enhance information assurance risk framework to embrace UW's broader mission; include experts with different views of risk to help assess and drive a program that meets UW priorities
- Develop a business intelligence strategy and deliver real-time information to the UW community for strategic planning, at UW and college/school/department level
- Work with key compliance, control and audit departments and external regulators to evaluate and approach due care standard for UW
- Support UW-IT efforts toward modern business information systems, with appropriate risk-based security and privacy protection advice

Key Priorities for 2011

- Implement Business Continuity (BC) core infrastructure; validate remote site production readiness
- Implement BC Early Adopters at remote site
- Promote use of Data Access Agreements to facilitate departmental access to enterprise data with appropriate security management policies
- Develop recovery and crisis communication plans
- Establish emergency reciprocity agreements with external agencies
- Align service management functions with Unit Response Center protocols
- Establish a formal University-wide privacy program
- Strengthen Security Operations and incident response service capabilities
- Enhance risk-based decision tool for anticipated security service requests
- Promote use of development tools for security and privacy
- Strengthen partnership between Chief Information Security Officer (CISO) and IAM teams
- Support institutional policy making regarding data retention and ownership and access

Key Priorities Beyond 2011

- Develop ongoing service dependency and Single Points of Failure analyses
- Establish formal security/privacy awareness program
- Revise, create and consolidate related institutional policies and standards on privacy/security
- Identify and prioritize critical or sensitive IT assets at the UW
- Next-phase implementation of Business Continuity initiative

Objective 8: An Exemplary IT Organization

In support of mission **M2: Help UW manage risks and resources**

Overview

UW-IT must provide needed services in a way that is sustainable—even as the UW enters a period of ever-more-constrained state resources. Doing so requires improving our tactical efficiency while also promoting strategically important investments. Since the essence of a good technology organization is good people, investing in them is every bit as important to the UW as finding more efficient ways of delivering core services. Moreover, in order to achieve organizational sustainability, UW-IT leadership must be fully and transparently engaged with the UW community regarding priorities and resources, and focused on anticipating future needs before they are obvious. The scope of this objective is improving the UW-IT organization and its internal operations, but success implies positive impact on broad UW initiatives such as 2y2d. The key strategies below are divided into four groups, following Balanced Scorecard methodology.

Key Strategies

Stakeholder Focus (Customer Perspective)

- Communication and marketing:
 - Explain IT decisions and approaches to stakeholders
 - Invite input on how we can better understand and serve their needs
 - Support UW technology-oriented events and Special Interest Groups (SIGs)
 - Promote significant core service offerings that can save customers money
- Transparency and accountability to the University:
 - Present service assessments and roadmap reviews for feedback from the UW community
 - Disclose investment priorities and cost data; provide progress/status reports
- Planning and governance:
 - Create forums for stakeholder input
 - Engage with the UW community on continuous IT needs/priorities evaluation
 - Bring conflicting perspectives to the table; work for accommodation

Resource Management Excellence (Financial Perspective)

- Stabilize funding and adjust to new budget realities:
 - Do more with less: Eliminate waste (e.g., UW LEAN initiative)
 - Do less – temporarily or permanently (readjust service portfolio to match available funding)
 - Find new resources (e.g., partner with PIs)
 - Implement new rate model
 - Align with Sustainable Academic Business Model, Activity Based Budgeting (ABB) and LEAN initiatives
- Work smarter, not harder:
 - Avoid duplication of efforts; partner; share; re-use; disintermediate; automate
 - Leverage low-cost technologies and market economies of scale, e.g., utilize commodity

technology, cloud services, open-source software when possible

Operational Excellence (Internal Process Perspective)

- Develop (and use) improved success and Key Performance Indicators:
 - Tactical: Meeting today's needs?
 - Strategic: Meeting tomorrow's needs?
 - Organizational: A place you'd want to work, or work with?
 - Financial: Sustainable business model?
 - Reputational: Trusted/sought-after partner?
- Improve information available to managers and stakeholders:
 - Budget/financial/procurement
 - Customer/stakeholder satisfaction and needs
 - Project/portfolio plans and status
 - Equipment and service status (operational and lifecycle management)
- Improve organization structure and culture (organizational development):
 - Organize to facilitate agility and anticipation
 - Strengthen culture of listening, leadership, transparency, sustainability, service
 - Develop leadership accountability
- Improve service operations and delivery and internal business processes:
 - Encourage peer-to-peer (rather than hierarchical) problem solving
 - Seek ways to expand current service center 24x7 operational support
 - Information Technology Infrastructure Library (ITIL) deployment for service management, request fulfillment, etc.
 - Service Catalog updates; portfolio and service management/planning
 - Service plan reviews for continuous service and strategy improvement
 - Standardize tools/policies/procedures throughout UW-IT
 - Develop consistent approaches for communications to stakeholders
 - Develop product backlogs for every UW-IT service that reflect prioritization input from customers

Staff Excellence (Learning and Growth Perspective; Workforce Development)

- Invest in our people: Make UW-IT a great place to work:
 - Improve communication with staff
 - Improve communication across the organization
 - Improve training and retraining resources
 - Ensure staff are trained in ITIL, UW context and relevant technologies
 - Rebalance workloads, with some strategic investments
 - Strengthen capabilities in risk, resource and relationship management
 - Develop business acumen and related competencies
- Empower staff:
 - Enable decision-making authority and clarify boundaries
 - Establish thresholds for autonomous action instead of review-and-approve rules
 - Encourage use of UNODIR (UNless Otherwise DIRected)
 - Encourage interaction with all UW campuses (e.g., attending research presentations)

Key Priorities for 2011

- Organization and budget stabilization
- Effective University IT governance mechanisms
- Service management and planning
- Continuous strategy and service improvement
- ITIL deployment
- Review and improve strategic sourcing
- Better billing system
- Better financial and management information
- Professional and leadership development
- Internal communication/engagement
- New UW communication strategy
- Deploy Equipment Management Database (EDB)
- Staff recruitment and retention

Key Priorities Beyond 2011

- Self and peer benchmarking
- Review and refine funding models
- Staff recruitment and retention
- Review the multiplicity of tools we use and see where consolidation is possible
- Identify manual processes that may be candidates for automation
- Develop improved infrastructure KPIs and align with our monitoring capabilities
- Reduce duplicate monitoring: Share data across apps and groups such that it only needs to be collected once
- Develop a unified and consistent way for customers to order services and for them to view and manage all of the services that they have ordered/own

Objective 9: Strategic Partnerships

In support of mission M1: **Enable students, faculty and staff to be more effective**
and M2: **Help UW manage risks and resources**
and M3: **Foster a community of innovation**

Overview

Strategic partnerships with and for the University are a critical success factor. In support of UW's collaboration and discovery goals, UW-IT can play an important role in brokering and strengthening relationships between our community and industry, academic and government partners. In addition, UW-IT cannot achieve its own organizational and service goals without them. It is therefore essential to find better ways to engage the University, peers, industry partners and Washington state constituencies.

In addition to facilitating relationships that further research and teaching, UW-IT seeks to share information with its partners in order to make better IT recommendations and service deployment decisions. It is also an opportunity to build UW's reputation, which can have important long-term benefits. Engaging with industry and standards bodies allows us to shape the technology marketplace upon which we depend. Most importantly, engaging seriously with the University allows us to learn from our colleagues, to jointly establish IT priorities and to make UW-IT intellectual assets more broadly available to the UW community.

Key Strategies

- Recognize that it's all about trust
- Strengthen partnerships with the University (many overlap with Objective 8):
 - Build trust by delivering value
 - Develop better community governance and oversight mechanisms
 - Provide better communication and transparency
 - Provide more direct support to researchers
 - Engage PIs to integrate UW-IT services in grant applications
 - Promote a robust technology community at UW, e.g., Special Interest Group (SIG) support
 - Facilitate and participate in the University IT conversation, e.g., SIGs, computing directors and UW committees
 - Work with Purchasing to shape the future University IT landscape
 - Support major UW initiatives, including but not limited to:
 - Climate Action Plan
 - Global Health Initiative
 - Sound Transit Light Rail project
 - Safe Campus project and UW Crisis Communication
 - SmartGrid
 - Sustainable Academic Business Model; Activity Based Budgeting
 - eScience Institute

- Strengthen partnerships with peers:
 - Participate in the national conversation, via meetings, email lists, etc.
 - Represent UW at regional and national Higher Education technology groups
 - Respond to requests for help on group initiatives
 - Develop mutual-assistance arrangements, e.g., data center sharing
 - Find opportunities to share code and best practices
 - Find opportunities to strengthen Higher Education development consortia (e.g., Kuali, Sakai)

- Strengthen partnerships with industry partners:
 - Develop deep partnerships with key companies (e.g., Microsoft, Google)
 - Work with Higher Education community to develop technology consortia

- Strengthen partnerships with Washington state:
 - Participate in state committees, boards, etc, as needed
 - Work with other Washington state Higher Education institutions on policy initiatives

Key Priorities for 2011

In addition to the specific priorities listed below, this objective might lead to projects that fall under other objectives. Moreover, many of the activities supporting this objective will not be projects—which by definition have well-defined deliverables and an end date. Rather, they may be informal and continuing conversations, collateral interactions as part of service delivery, episodic engagements, or partnerships such as the one between UW-IT and the eScience Institute.

- Make expert IT advice more accessible at the UW
- Re-engage in the national conversation with our peers and partners
- Support the state-wide Washington Higher Education Technology Consortium (WHETC) initiative
- Continue technology partnerships with Microsoft

Key Priorities Beyond 2011

- Update technology standards for Purchasing's Request for Proposals (RFPs)
- Partner with the eScience Institute on "Tech Days"

Objective 10: Exploration and Contribution

In support of mission **M3: Foster a community of innovation**

Overview

This is about recognizing the importance of allocating some resources for experimenting and to giving back to the technology community. *Exploration*, e.g., trying new things, pilot projects, is an essential aspect of UW-IT's role. It helps us both anticipate upcoming University needs and assess what is technically possible now and in the future.

The concept of *contribution*, as used here, reflects an important aspect of corporate and global citizenship. UW's [Vision and Values](#) includes the statement: "We embrace our role to foster engaged and responsible citizenship as part of the learning experience of our students, faculty and staff." *Citizenship*, when defined as "[the quality of an individual's response to membership in a community](#)" applies to both UW as an institution and the individuals who comprise the institution. It involves giving back to, in our case, the technology community. This may involve participation in standards bodies, review panels, etc., or giving back code to the Free/Open Source Software (FOSS) community, from which the UW has benefited substantially. These activities are critical to maintaining UW-IT's long-term value to the UW and UW's value to the larger community. Having a robust technology ecosystem, with low barriers to entry and innovation, not only encourages local talent, it is very much in the national interest, and we can help sustain it.

This objective strongly complements Objective 9, Strategic Partnerships.

Key Strategies

- Explore and experiment with new technologies:
 - Find opportunities to adapt/exploit technologies in new ways
 - Fund pilot projects to evaluate new technologies
- Discover key trends and practices from vendors and peers:
 - Actively participate in local, regional, national technology conversations
- Showcase and share advanced technology capabilities:
 - Find opportunities to share what is possible with the UW community and peers
 - Participate in advanced technology demonstrations, UW and national
- Encourage open data and technology:
 - Promote open interoperability standards
 - Support the open data movement
 - Encourage use of supported/supportable open-source software
- Give back to the community:
 - Identify and share UW-IT technical excellence with broad impact (i.e., seek to be a nationally respected and sought-after resource)
 - Understanding barriers to collaboration in complex environments
 - Interoperability and integration among multiple cloud services and enterprise systems

- Federated Identity and Access Management (IAM) systems

Key Priorities for 2011

- Set exploratory targets and guidelines
- Review policy on use/creation of FOSS (Free/Open Source Software)

Key Priorities Beyond 2011

- Review default permissions on files, calendars, wikis, etc., with an eye toward making data more open and easily shareable and encourage other UW departments to do the same
- Be prepared to promote the importance of technology exploration and community contribution even when budgets are tight

NEXT STEPS

Execution of *The Plan* requires collective action and coordination within UW-IT and cooperation across the institution. Some of the necessary steps include the following:

Develop and Execute Tactical Plans Within Our Service Management Framework.

Tactical IT plans include specific timelines, resource and ROI estimates.

Institute Continuous Strategy Improvement

- Vet and periodically re-assess *The Strategy* and *The Plan*
- Work toward a UW-wide IT policy and strategy development process
- Conduct regular service assessments

Engage UW on Broader IT Strategy Issues

As noted, UW Information Technology is only one part of UW's IT mix. Although outside the scope of this particular effort, a comprehensive UW IT policy and strategy 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 or thin clients to save power)
- Future role of cell phones versus desk phones
- A UW vision for social interaction and collaboration versus electronic interaction
- Broad IT competency training
- Consistent classroom technology across the UW
- UW power/space subsidies that discourage use of secure data centers
- Funding research computing infrastructure/support
- What IT tasks should be central versus departmental versus external
- Carrots and sticks: Subsidies, local autonomy, solution diversity

Communicate Service and Organizational Values

The *success* of UW-IT fulfilling its mission depends on both the organization and its services being:

- Reliable and Responsive
- Agile and Anticipatory
- Excellent and Economical
- Effective and Efficient
- Collaborative and Collegial

Thus, we need to broadly communicate and instill these values.

Working toward implementing these values, in partnership with the University community, we can ensure that UW gets the most value for its IT investments.