UNIVERSITY OF OREGON

Information Technology Strategic Plan

FINAL REPORT

November 2015

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- **Project Methodology**

- **Overall Technology Assessment Conclusions**

- **Strategic IT Vision**

- **Improvement Strategies**

- **Prioritized IT Projects**

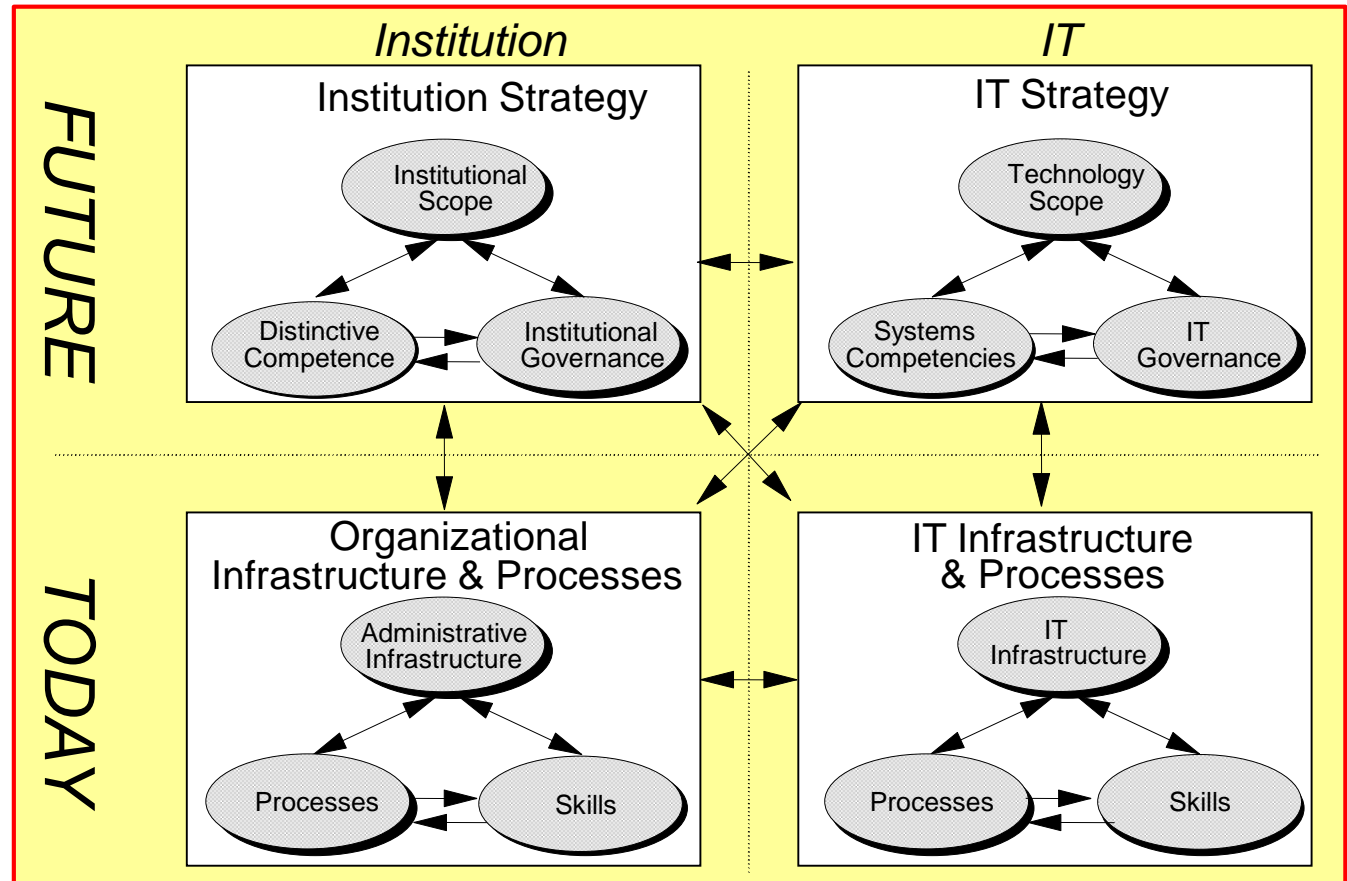UNIVERSITY OF
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The purpose of this document.

- Moran Technology Consulting (MTC) was hired to help the University of Oregon (UO) develop its Strategic Information Technology (IT) Plan.

- The information provided in this document is based on a review of IT environment documents and on user and IT staff perceptions of the current environment, collected in a series of focus groups and individual interviews. Due to end-date time constraints, MTC was not able to conduct extensive, detailed focus groups and interviews across broad groups of users and IT staff. Statements made in this document are based on the limited numbers of individuals with whom we were able to meet.

- The consultant team developed conclusions and recommendations that are based on these interviews, our observations during our campus visits and our extensive experience in performing these types of projects for higher education institutions.

- Our recommendations are focused on addressing the largest improvements that are needed to improve the IT environment across University of Oregon.

- The draft Strategic IT Plan and recommendations of this study can be used to generate additional discussions within the University of Oregon administration to proceed with other improvement strategies.

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MTC used its Strategic Alignment Model to provide a framework to prioritize and align UO's technology investments with the strategic needs of the University.

Using this model, we evaluate each potential user facing project for its ability to support the attainment of UO's institutional objectives and goals.

We prioritize infrastructure projects based on the risks of not implementing the project and the risk of legacy technology failure.

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The Oregon Strategic IT Planning Project was comprised of three Phases.

"Where Are We Today?"
The Assessment

Phase I: Assessment of the Current Environment – "Where are we today?"

- Understand University of Oregon Strategies
- Assess the Current Environment
  - Stakeholder Needs
  - IT Infrastructure & Organizational Review

"What Do We Want To Become?"
The Vision

Phase II: IT Visioning – "Where are we going?"

- Establish a Vision for the role of Information Technology at the University of Oregon

"How Do We Get There?"
The Plan

Phase III: Development of Technology Strategies and Plan – "How Will We Get There?"

- Develop Strategies for addressing the identified needs to achieve the Vision
- Develop a prioritized and scheduled set of projects to move the University of Oregon ahead

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The project's governance model involved key stakeholders from many areas of the University. The Executive Steering Committee and the Strategic IT Task Force were actively involved at every stage of the project to ensure that the project was meeting its goals.

Executive Steering Committee

- Jim Brooks - Assistant VP, Director Financial Aid
- Patrick Chinn - Director of Strategic Communications, Information Services
- Bill Cresko - Associate VP for Research
- Guy Eckelberger - IT Director, Music and Dance
- Randy Kamphaus - Dean, School of Education
- Adriene Lim - Dean of Libraries
- Andrew Marcus - Interim Dean, CAS
- Jamie Moffitt - VPFA/ CFO
- Brook Muller - Interim Dean, A&AA
- Brad Shelton - Vice Provost, Budget and Planning
- Kevin Williams - IT Director, Advancement
- Melissa Woo - Vice Provost for Information Services/ CIO

Strategic IT Task Force

- Zack Barnett - Director of Digital Communications
- Jim Bouse - IT Director, OEM/Associate Registrar
- Patrick Chinn - Director of Strategic Communications, Information Services
- Helen Chu – Director of Academic Technology
- Bryan Dearinger - Assistant General Counsel
- Guy Eckelberger – IT Director, Music and Dance
- Gary Sullivan – IT Director, A&AA

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An analysis of various documents, studies and focus group notes has identified a number of common management challenges.

- **The highly decentralized nature of technology funding and decision-making prevents most campus-wide efforts to improve basic technology services. For example:**
  - Some Faculty blamed central IT for their old PC's; however, this expense is owned by departmental and college administrators regularly making spending decisions that prioritize IT purchases below other needs.
    - This creates an environment where base-level technology resources and services are inconsistent and sometimes unavailable across the campus.
  - UO relies on a 'pass the hat' approach for funding institution-wide services due to lack of central funding. This is not sustainable over time and isn't budgeted for the coming years. For example, UO had a recent opportunity to provide free MS Office licenses to all students, faculty and staff for a small charge to UO; however, extensive effort was needed because of UO's 'pass the hat' culture. Everyone agreed it was a good idea, but it took a lot of work to get enough departments to chip in.
  - UO's CIO has very little opportunity to speak for the technology needs of the University and to lead major initiatives to improve campus-wide technology.
  - Deploying any cross-University strategy is virtually impossible since any department can refuse to participate – even when the objectives are important to UO overall.

- **Due to recent repeated turnover at the senior executive levels in the university, there has been a consistent lack of communicated University strategies which has hindered improvement efforts across the institution over the past few years.**
  - Several interviewees spoke to the notion of "we don't know what we want to be." This leads to a variety of visions of where the university should be moving.

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An analysis of various documents, studies and focus group notes has identified a number of common management challenges. (cont'd.)

- **Campus IT infrastructure has been underfunded for years and now requires a large infusion of capital in the short term to remove the risk of major failure and to bring it to an acceptable level for a premier research university.**
  - The network is already at/past "end of life" for much of its hardware.
  - There is no sustainable funding model for much of IT on the campus. Many IT Services that are included in most campuses as budget items (like annual software maintenance) are not included at UO, so one-time monies must be searched for every year.
  - There is no campus-wide refresh policy in place for most technology.
    - Many campuses budget 'annual PC, network and server refresh' reserve pools to stay 'up-to-date.' UO does not have this long-range funding strategy.

- **Decision making is often a problem - decisions are often made at the wrong levels for IT purposes and a need for consensus stymies the ability to react to common opportunities and challenges. Colleges are sometimes making IT decisions that should be made at the University level.**
  - For example, there are at least 3 different email systems on campus. While this is an improvement from the 10 systems that used to exist, this leads to inefficiencies in spending and support and creates difficulties in communicating across the campus.
  - Little collaboration occurs to problem solve between central IT and decentralized IT, and in general, across UO – IT is the just a 'tail of the UO dog.'
  - The decentralized model has created an environment of "haves" and "have-nots."
  - The lack of a good IT governance model has allowed inefficient decision-making.

- **Cross-campus communications requires improvement across the university.**
  - UO has no commitment to using a common calendaring system, resulting in scheduling complications in setting up meetings and other campus-wide commitments.

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Some basic information technology issues were cited numerous times during the course of our discussions.

- **UO has no clear strategy for online education – it is scattered around the university.**
- **Network security is a major risk to the University, with attempts being made to address the issues.**
  - The addition of the CISO position has raised the level of awareness of security around the campus. However, the CISO's efforts are made more difficult because of the decentralized nature of the University's technology resources.
- **Technology purchasing is not centralized, making it difficult to take advantage of enterprise discounts and other institutional efficiencies.**
  - There are too many "one-off" purchases being made across campus because of the decentralized nature of the university. Some basic enterprise licensing could produce cost savings as well as advantages for students, faculty and staff by providing more tools at lower costs.
- **Administrative processes are in need of redesign, changing from paper intensive to more automated processes.**
  - Banner is heavily customized and many new features are not being utilized.
- **IT Policies are virtually non-existent but attempts are being made to establish a number of critical processes, such as an "acceptable use policy."**
  - The absence of IT policy has created a culture that allows users to do almost anything they want to do, without consequence.
  - Some policy creation attempts have been hung up in the approval process, waiting for decisions to be made.
- **UO doesn't have a good data governance strategy, so data owners often prevent data usage by managers who have legitimate business needs.**

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To set the context for our IT Vision, we interviewed a group of UO executives, and reviewed the work done in drafting a UO Strategic Plan. We found a few common themes that will likely be part of UO's institutional vision and plan.

Attract and retain high quality, diverse faculty and staff

Elevate research, scholarship and creative profile including expanding graduate education

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Enhance physical and IT infrastructure to ensure academic excellence

Attract high quality, diverse students and promote student access, retention, and success

Pursue resource efficiencies to effectively fund high priority needs

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Using these strategic institutional themes, UO's Strategic Technology Vision was developed to ensure a focus on supporting UO's strategic needs.

Information Technology Vision

UO will strive to create a collaborative and secure IT environment that attracts and retains the best students, faculty and staff by providing a common foundation of anytime/anywhere technology access for all UO 'citizens' and that focuses on strategically funding targeted technology capabilities to support its learning and research goals.

To achieve this vision, the University of Oregon must:

- Ensure that a collaborative IT Governance Model is deployed that continually focuses on prioritizing, funding and driving community-valued IT services
- Recognize that having a secure and robust underlying technology infrastructure is critical to providing all other technology services
- Identify cross-campus core IT services that are more cost effectively provided in a centralized approach and use the potential savings to fund strategically targeted projects
- Mobilize collaborative cross-campus constituencies to identify and address common goals
- Streamline our administrative processes and systems to provide more seamless and automated service to all campus stakeholders
- Have consistent and strong executive support to ensure that the IT Strategic Plan is supported and fully funded over the long-term
- Excite students and faculty to leverage technology to improve learning and research outcomes
    - Stop using "the Oregon Way" as an excuse for not moving forward

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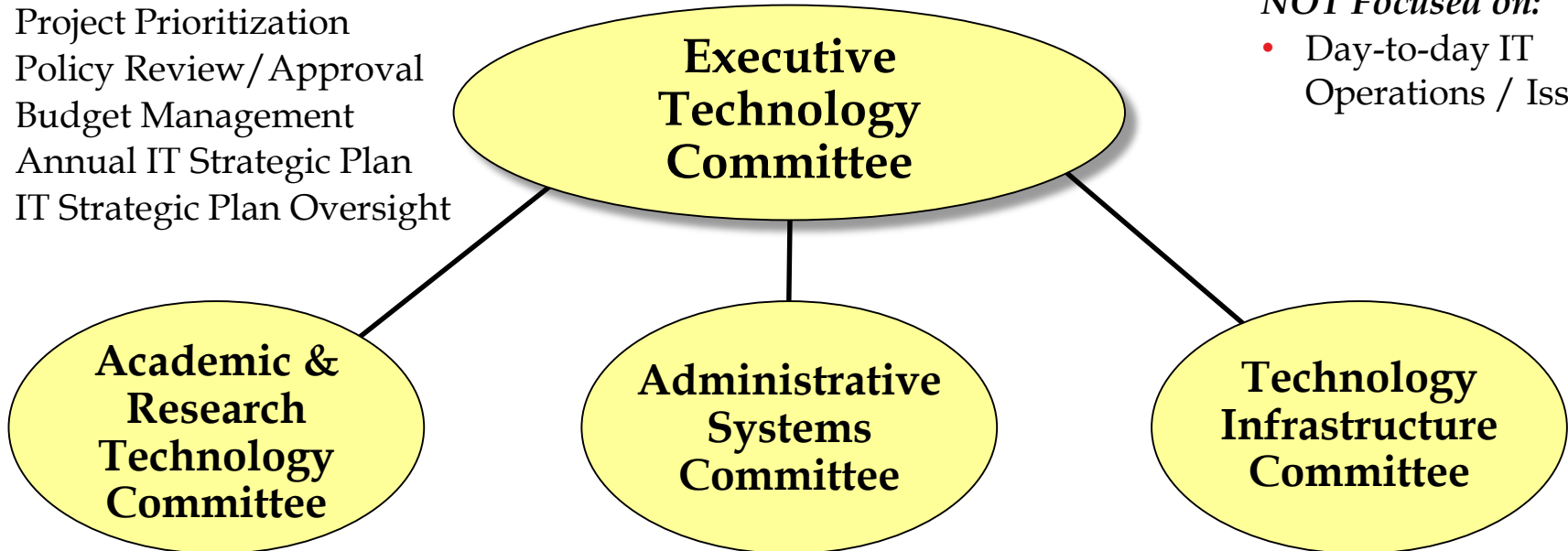
- **Prioritized IT Projects**

UO should develop an IT Governance model that will select, prioritize and provide oversight on major technology investments and policies.

- This Governance model should cover all IT services across the University, including administrative systems, instructional technology, websites and other technology-based services, regardless of what organization(s) deliver the service.

- An effective IT Governance model needs to be established to oversee an annual Strategic IT Planning process that prioritizes IT investments and guides IT decision-making for all projects. At a minimum, this model should include the following:

  o Replace or provide oversight for all other existing technology planning and oversight groups.

  o Review the current highly decentralized IT support model to determine if more centralization in some areas could create both cost efficiencies and service delivery effectiveness.

  o Executive oversight to develop strategic directions for IT services.

  o Work on developing a long term financial model to provide sustainable funds to maintain IT.

  o An annual process for identifying potential future projects and prioritizing them in time to feed into the annual campus budgeting process.

  o An architectural review group which helps to identify new technology standards to be used across the UO, particularly for enterprise systems and technologies that will interface to enterprise systems.

  o Defined application support roles and responsibilities for Central and Decentral IT.

  o Clear decision-making and escalation procedures to keep projects moving.

  o The governance model must also address the process for approving IT policy.

  o A clearly defined data governance strategy which is based on defining access levels and which has data stewards identified ensuring access for business-driven purposes.

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The new IT Governance structure should consider following the responsibilities as outlined below.

Focused on:
- Project Prioritization
- Policy Review/Approval
- Budget Management
- Annual IT Strategic Plan
- IT Strategic Plan Oversight

NOT Focused on:
- Day-to-day IT Operations / Issues

Executive Technology Committee

Academic & Research Technology Committee

Administrative Systems Committee

Technology Infrastructure Committee

Focused on:
- Learning & Teaching Technology
- Research Technology
- Classroom Technology
- Distance Learning Tech.
- Library Technology
- Academic Tech. Policies

Focused on:
- All ERP functionality
- Management Reporting
- Data Warehouse/Analytics
- UO's Web Site
- Institutional Tech. Policies

Focused on:
- IT Security
- LAN/WAN Resources
- Data Center Resources
- Security Tech. Policies
- IT Support Strategies
- IT Standards

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The governance structure should have appropriate representation to comprehensively plan technology projects and gain campus buy-in.

Proposed IT Governance Structure Membership

IT Governance Committees	Executive Technology Committee (ETC)	Education & Research Technology Committee (ERTC)	Administrative Systems Committee (ASC)	Technology Infrastructure Committee (TIC)
Members	• (Co-Chair) SVP and Provost • (Co-Chair) VP for Finance and Administration/CFO • VP for Enrollment Management • VP for Research • VP for Student Life • CIO	• (Chair) SVP and Provost • Dean of Libraries • Academic Dept./Unit heads • Faculty Rep(s) • Central and Decentral IT Directors • Faculty Senate Representative • Potential Student Rep	• (Chair) VP for Finance and Administration/CFO • VP for Enrollment Management • Admin./Enrollment Mgmt. Dept./Unit heads • Academic Dept. heads • Director Marketing & Public Relations	• (Chair) CIO • Facilities Director • Dean of Libraries • Central and Decentral IT Directors
Size	6-7	8-10	8-12	7-9

- The Chairs of the committees are also on the ETC to ensure an understanding of key issues/needs.
- These committees are designed to set policy, prioritize opportunities and make decisions, where applicable - they are not intended to do all the necessary research and/or work.
- These are working committees with scheduled meetings, agendas and homework assignments.
- Consistent participation by members is encouraged, sending replacements must be discouraged.

UO should continue the current IT Planning process every year and link it to the annual budget process that funds prioritized IT investments for the coming year.

The Strategic IT Planning Process should:

- Leverage the work done as part of this project.

- Be managed by the CIO with participation by the entire UO community.

- Serve as an overall IT governance process to help make decisions about IT priorities, provide implementation oversight, and help improve technology-related communications across Oregon.

- Work with all major stakeholder groups to create a complete set of potential IT projects.

- Prioritize potential projects based on University strategic goals and projects.

- Schedule prioritized projects over a three to five year planning horizon.

- Be integrated into the Oregon institutional strategic planning and budget planning cycles with broad communications to the UO community about the upcoming funded projects.

- Establish a deployment schedule that matches UO's available funding and its ability to accomplish the projects.

	Yr0	Yr1	Yr2	Yr3	Yr4	Yr5
User-Facing Projects						

IT Infrastructure Projects

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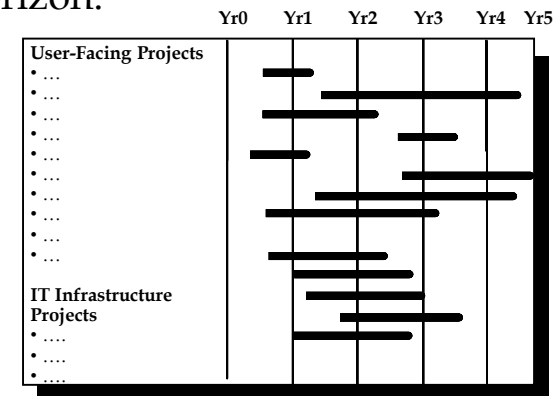
UO should evaluate all technology services and centralize technology services which don't "add value" at the decentralized level and where economies of scale can be achieved, such as PC/Mac purchases and core software products.

UO should:

- Build and control a centralized budget for PC/Laptop and 'core' user applications to improve economies of scale and ensure that all UO 'citizens' have modern PC's. This would:
  - o Help to eliminate the current "have" and "have not" situations for core IT products.
  - o Significantly reduce the support workload due to old technology and increase user satisfaction.
  - o Use the IT governance model to provide oversight of an annual process to select standard PC and Mac machines that the departments could acquire.

- Create a centralized software purchasing process that would allow UO to get the appropriate discount levels when it purchases new software licenses. It would also provide easier software license control, an area that is getting increasing scrutiny by both UO and software vendors.
  - o When occasional exceptions are needed, an executive review/approval process will be utilized.

- Once UO centralizes PC/Laptop and software purchases, UO should create a set of technology 'refresh' age targets and a fund to get all older machines replaced over the next several years.
  - o This same approach should be used for major infrastructure needs as well, such as the wired and wireless network components and core servers.
  - o We recommend these target replacement ages: PC/Mac - 5 Years; Servers - 5 Years; core network electronics - 5 Years; and edge network electronics 7 years.
  - o A review of the current highly decentralized IT support model to determine if more centralization in some areas could create both cost efficiencies and service delivery effectiveness.

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Baseline budgets need to be established for many core infrastructure needs and recurring costs. "Pass the hat" should not be a method to obtain annual funding to pay for critical technology capabilities that are required across the campus.

- The cost of Banner maintenance is one example which, for years was not included in the baseline budget, but is now part of the baseline budget.

  o Major institutional systems and their supporting costs should be included within the annual baseline budget. This assumes that these purchases have been vetted through the proper governance structure and approval process before being purchased.

- Technology refresh funds, as described on the previous recommendation (IT Procurement) would also be recurring line items in the budget.

  o Making refresh funds a part of the ongoing budget helps eliminate the future need to make huge outlays in order to bring technology up to minimum standards for a premier research university.

Oregon needs to establish policies around the use of package solutions vs. in-house custom software development, and hosting applications vs. operating them "in the cloud".

- Workflow is an example where UO has some groups using custom built solutions for workflow, due to the lack of deployed workflow tools. In this day and age, building your own workflow tools is not cost-effective given the availability of strong workflow packaged software.

  o Banner has some built-in workflow capabilities for which the University is already paying. While not a strong offering, it does offer benefits for Banner-based workflow needs.

- There are multiple email solutions on campus. As previously discussed, there is no reason why there cannot be one email solution on campus. NOTE: In some instances, we have seen campuses move to two email solutions, one for students and one for staff and faculty.

  o Email is usually the topic which brings up the hosted versus on campus discussion. While we understand the arguments for keeping email on campus, most of those arguments have already been resolved by over 80% of US schools who have already moved to cloud based email (and calendaring, messaging, etc.) systems. UO should not invest in any new on campus email technology – it should move the entire campus to a virtually free web-based solution.

  o UO needs to establish policies around cloud solutions which has the criteria for evaluating whether the hosted solution meets legal, security and other acceptable criteria for data storage and exchange.

Develop a sound and effective two-way communications plan to provide users with knowledge related to the activities of IT and to learn what users need.

- Develop a communications plan to provide IT information to users when they need it:
  - Communication is a critical success factor for any IT department. In the decentralized culture of Oregon, effective communication even more essential.
  - Actively solicit user feedback to help IT understand its major challenges and successes.
  - The plan should provide a variety of communications channels to the various IT support groups to help them know where problems or needs exist.
  - The Communication Plan should be seen as a living document – to be regularly updated to reflect the changing communication needs of the University.
  - UO should rapidly move to a single e-mail and calendaring system, such as Office 365 or Gmail. This would result in a significant reduction in spending for these systems and an increase in collaboration capabilities.

- Major components of the communications plan should focus on addressing key questions:
  - Who's leading the communications effort within each decentralized IT group?
  - Who (stakeholder groups) needs to know what, and when do they need to know?
  - What is the best way to communicate with each stakeholder groups?
  - What are the messages that we want to communicate?
  - How do we communicate these messages in the most effective manner?
  - When will messages be delivered?

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A set of IT projects were developed to address needs at the University of Oregon. They were divided into two buckets: User Projects and Infrastructure Projects – these buckets are interrelated.

Direct Needs For a Home

Infrastructure Foundation
(Power, Water, Gas, Sewers, Drainage, …)
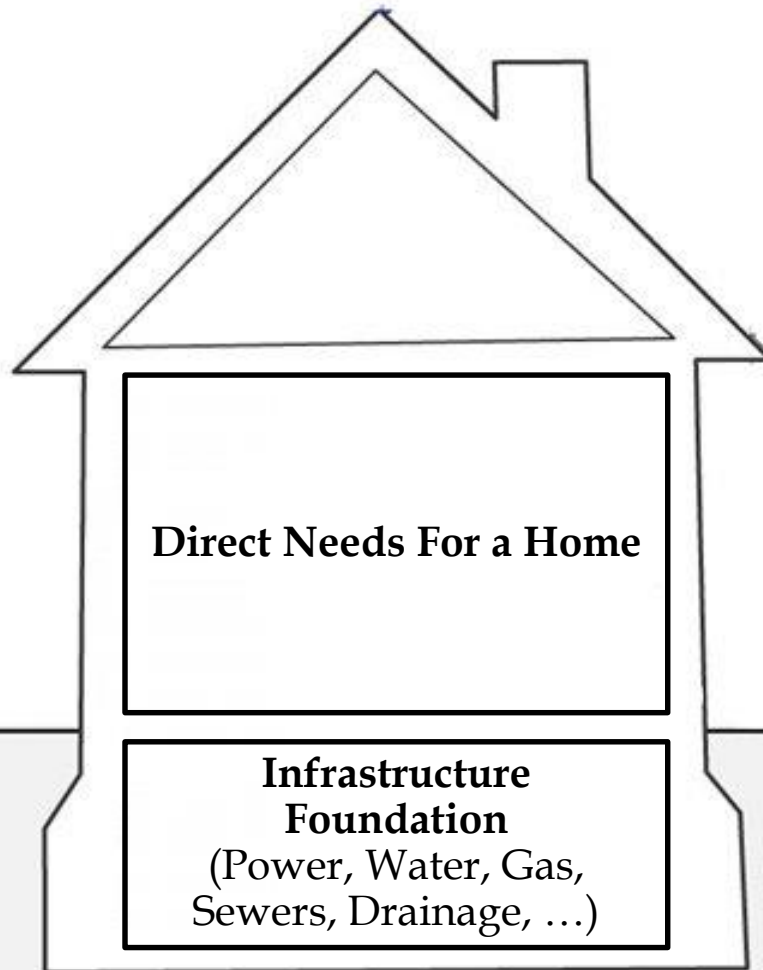
User Projects:
Directly addressing visible needs of Students, Faculty and Staff

Infrastructure Projects:
Providing underlying foundation for users to access user projects

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Potential 'User' Projects were identified that support the critical user facing strategies of the University.

POTENTIAL USER PROJECTS	TYPE
Integrate and Extend Research Administration Tools	Research
Ongoing Support for HPC	Research
Canvas Catalog for Online Education	Academic
Centralized Management of Crestron Classroom Systems	Academic
Centralized Scheduling Software Implementation	Academic
Classroom Technology Refresh	Academic
Digital Media Asset Management System	Academic
Learning Analytics	Academic
Virtual Computing Labs	Academic
Web Services and Data Integration	Academic
White Stag Classrooms added to Refresh Program	Academic
Accessibility Policy and Compliance Develop. and Implementation	Administrative
Banner ERP Functional Evaluation and Upgrade	Administrative
EAMS (Enterprise Asset Management System) Replacement	Administrative
Electronic Time and Attendance System	Administrative
E-Mail Security and E-Discovery	Administrative
Enterprise Access Management System	Administrative
Enterprise Data Warehouse Service	Administrative
Enterprise Workflow Management System	Administrative
Mobile Strategy and Applications for Student Services	Administrative
Online Security Awareness and Training	Administrative
University Business Continuity Assessment	Administrative

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Potential 'Infrastructure' Projects were identified that strengthen UO's IT infrastructure that is needed to support UO's institutional needs.

INFRASTRUCTURE POTENTIAL PROJECTS
Enhanced Collaboration Tools
Content Delivery Network
Digital Storage for Shared and Preserved Research Data
Duckweb Single Sign-on Integration
Firewall (with IPS capability)
IT Service Management Product
LMS Integrated Videoconferencing
Core Network Infrastructure
Campus Building Infrastructure
Campus Wireless Infrastructure
Private Cloud Reinvestment
Security Information/Event Management (SIEM)
Site Licensed Software Management Program
Two Factor Authentication
University Wide Data Backup Protection

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User-visible projects were prioritized based on a project alignment with the high level Critical Strategies for the University of Oregon.

UO Critical Strategies*		Final Wt.
1.	Attract high quality, diverse students and promote student access, retention, time-to-degree, and success	15%
2.	Elevate instructional, research, scholarship and creative profile including expanding graduate education	10%
3.	Attract and retain high quality, diverse faculty and staff	10%
4.	Provide a powerful and unique student experience	5%
5.	Utilize technology to enable and capture cost efficiences to help UO remain financially stable and responsible	10%
6.	Support our funded Research Clusters of Excellence	10%
7.	Ensure the long term health and viability of UO's physical and IT infrastructure so that essential campus and technology services can operate	40%
	Total Weights	100%

* = Developed based on a number of executive interviews and focus groups.

Prioritized IT Projects: Methodology
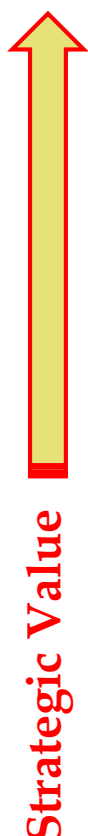
All projects were scored for their risks institutional and technology risks; Infrastructure projects were prioritized based on their risks.

INSTITUTION RISKS		
1.	UO's ability to capture the financial benefits of this project	10%
2.	The negative consequences of NOT IMPLEMENTING	40%
3.	When will we be prepared to invest in solving this problem?	15%
4.	ADMIN Staff technical skills and business knowledge	20%
5.	Total Cost of Project	15%
	Total:	100%

TECHNOLOGY RISKS		
1.	Project implementation duration	20%
2.	IT staff technical skills and business knowledge	20%
3.	Risk of legacy technology failure	20%
4.	Dependency on application software development	20%
5.	Technical environment readiness	20%
	Total:	100%

Overall Category Weights		Final Wt
Risks (Negative Values):		
	Institutional Risks	50%
	Technical Risks	50%
	Total Value:	100%

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All 'User Projects' were ranked and then sorted, based on each project's ability to deliver Strategic Value to support UO's Critical Strategies.

User Projects	Strategic Value	Total Risks
Classroom Technology Refresh	76.0	-42.5
White Stag Classrooms added to Refresh Program	76.0	-38.0
University Business Continuity Assessment	59.0	-41.5
Enterprise Data Warehouse Service	50.0	-53.5
Banner ERP Functional Evaluation and Upgrade	48.0	-75.0
Digital Media Asset Management System	48.0	-28.5
Ongoing Support for HPC	48.0	-75.0
Virtual Computing Labs	42.0	-37.5
Centralized Management of Crestron Classroom Systems	42.0	-37.5
Enterprise Workflow Management System	40.0	-64.5
Enterprise Access Management System	39.0	-34.0
Canvas Catalog for Online Education	36.0	-38.0
Learning Analytics	32.0	-60.0
Web Services and Data Integration	32.0	-38.5
Integrate and Extend Research Administration Tools	28.0	-51.5
Centralized Scheduling Software Implementation	25.0	-42.0
Mobile Strategy and Applications for Student Services	24.0	-42.0
Electronic Time and Attendance System	18.0	-35.5
EAMS (Enterprise Asset Management System) Replacement	11.0	-42.5
Online Security Awareness and Training	8.0	-13.0
Accessibility Policy and Compliance Develop. and Implementation	7.0	-13.0
E-Mail Security and E-Discovery	0.0	-39.0

NOTE: USER Projects Ranked by TOTAL BENEFITS

Strategic Value

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All 'Infrastructure Projects' were ranked and then sorted, based on each project's institutional and technical risks.

Infrastructure Projects	Total Risks	Impact of Not Doing	Risk of Legacy Failure
Campus Building Infrastructure	-69.0	-16.0	-10.0
Core Network Infrastructure	-68.5	-20.0	-10.0
Campus Wireless Infrastructure	-65.0	-16.0	-10.0
Firewall (with IPS capability)	-60.0	-12.0	-6.0
University Wide Data Backup Protection	-53.0	-8.0	-6.0
LMS Integrated Videoconferencing	-49.0	-8.0	0.0
IT Service Management Product	-48.5	-16.0	-6.0
Digital Storage for Shared and Preserved Research Data	-46.5	-12.0	-2.0
Enhanced Collaboration Tools	-40.5	-12.0	-6.0
Duckweb Single Sign-on Integration	-40.5	-20.0	-2.0
Private Cloud Reinvestment	-38.5	-12.0	-6.0
Security Information/Event Management (SIEM)	-37.5	-16.0	-6.0
Two Factor Authentication	-37.5	-16.0	-2.0
Content Delivery Network	-26.5	-12.0	-6.0
Site Licensed Software Management Program	-22.5	-8.0	-2.0
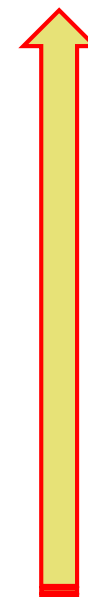
Risk

NOTE: The biggest drivers of Infrastructure Project "Risk" are the 'negative impact of not implementing a project' and the 'risk of legacy failure.'

In analyzing the User projects, we can see those that deliver the most Strategic Value and those that carry the highest risks.

Strategic Value

Project Risk

USER Projects

- Accessibility Policy and Compliance Develop. and Implementation, 7, -13
- Online Security Awareness and Training, 8, -13
- Digital Media Asset Management System, 48, -29
- White Stag Classrooms added to Refresh Program, 76, -38
- Electronic Time and Attendance System, 18, -36
- Centralized Scheduling Software Implementation, 25, -42
- Enterprise Access Management System, 39, -34
- Classroom Technology Refresh, 76, -43
- EAMS (Enterprise Asset Management System) Replacement, 11, -43
- Web Services and Data Integration, 32, -39
- Virtual Computing Labs, 42, -38
- University Business Continuity Assessment, 59, -42
- E-Mail Security and E-Discovery, 0, -39
- Canvas Catalog for Online Education, 36, -38
- Enterprise Data Warehouse Service, 50, -54
- Mobile Strategy and Applications for Student Services, 24, -42
- Centralized Management of Crestron Classroom Systems, 42, -38
- Banner ERP Functional Evaluation and Upgrade, 48, -75
- Learning Analytics, 32, -60
- Integrate and Extend Research Administration Tools, 28, -52
- Enterprise Workflow Management System, 40, -65
- Ongoing Support for HPC, 48, -75

Hi-Value "User" Projects

Hi-Risk "User" Projects

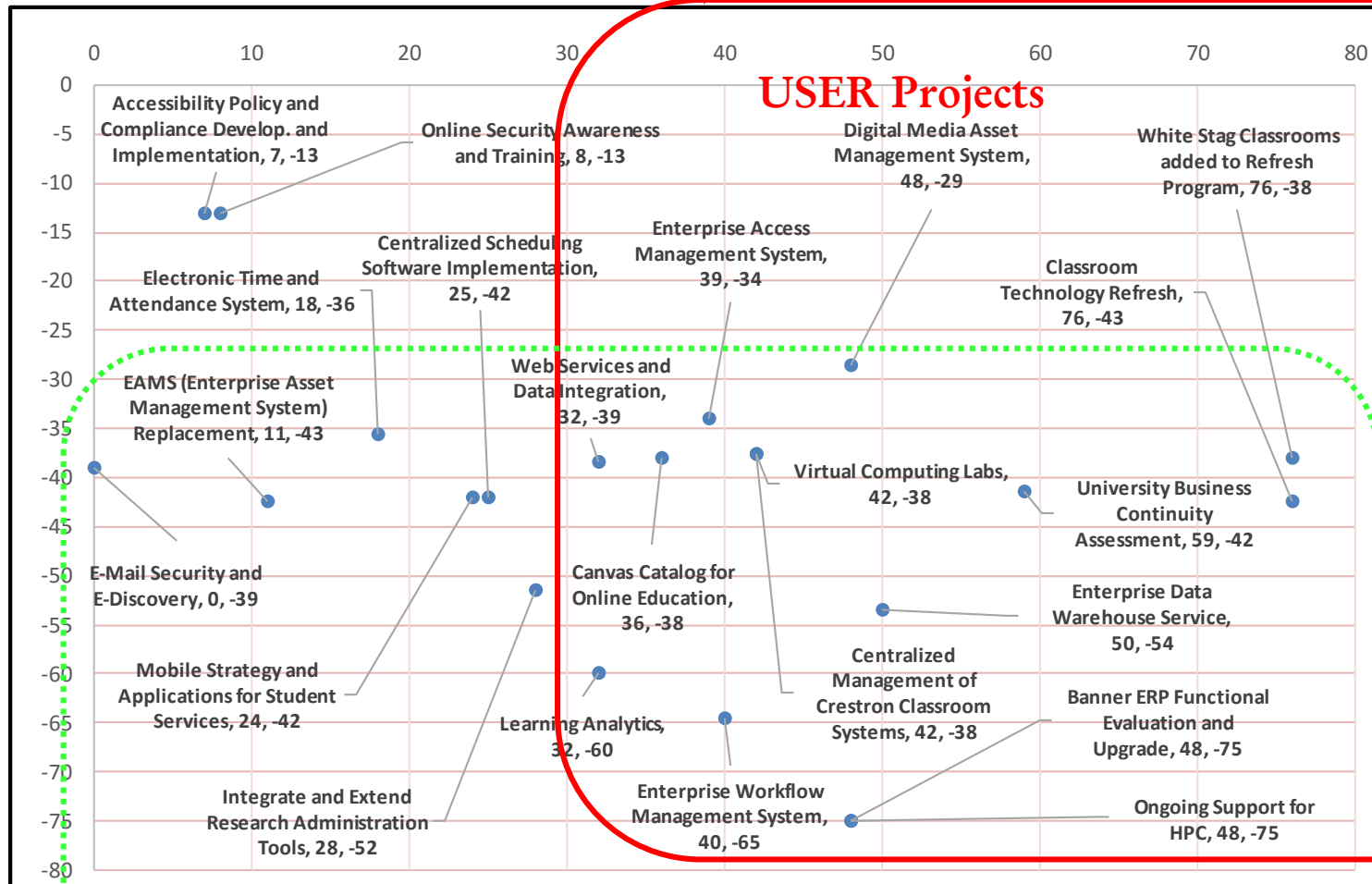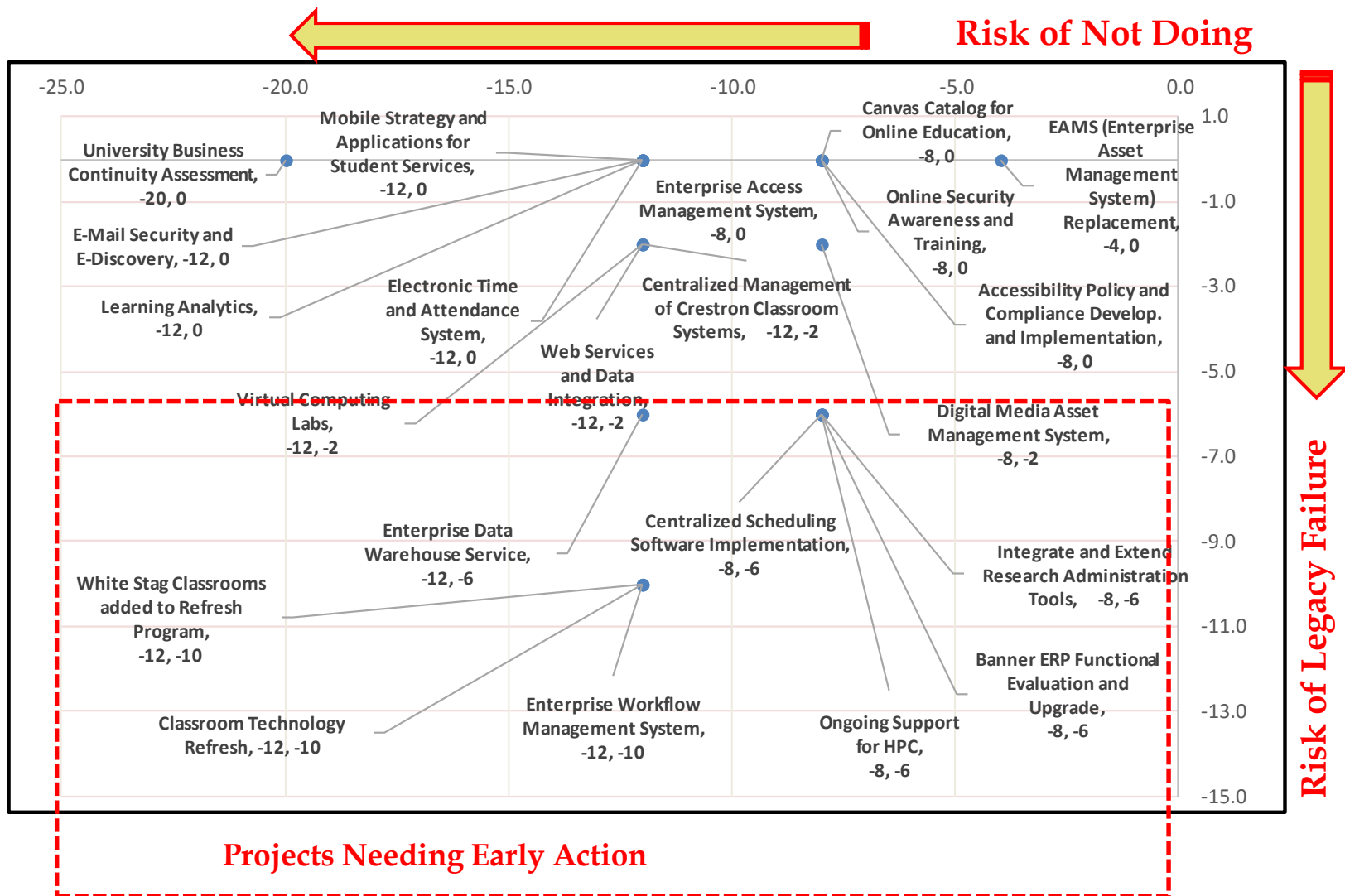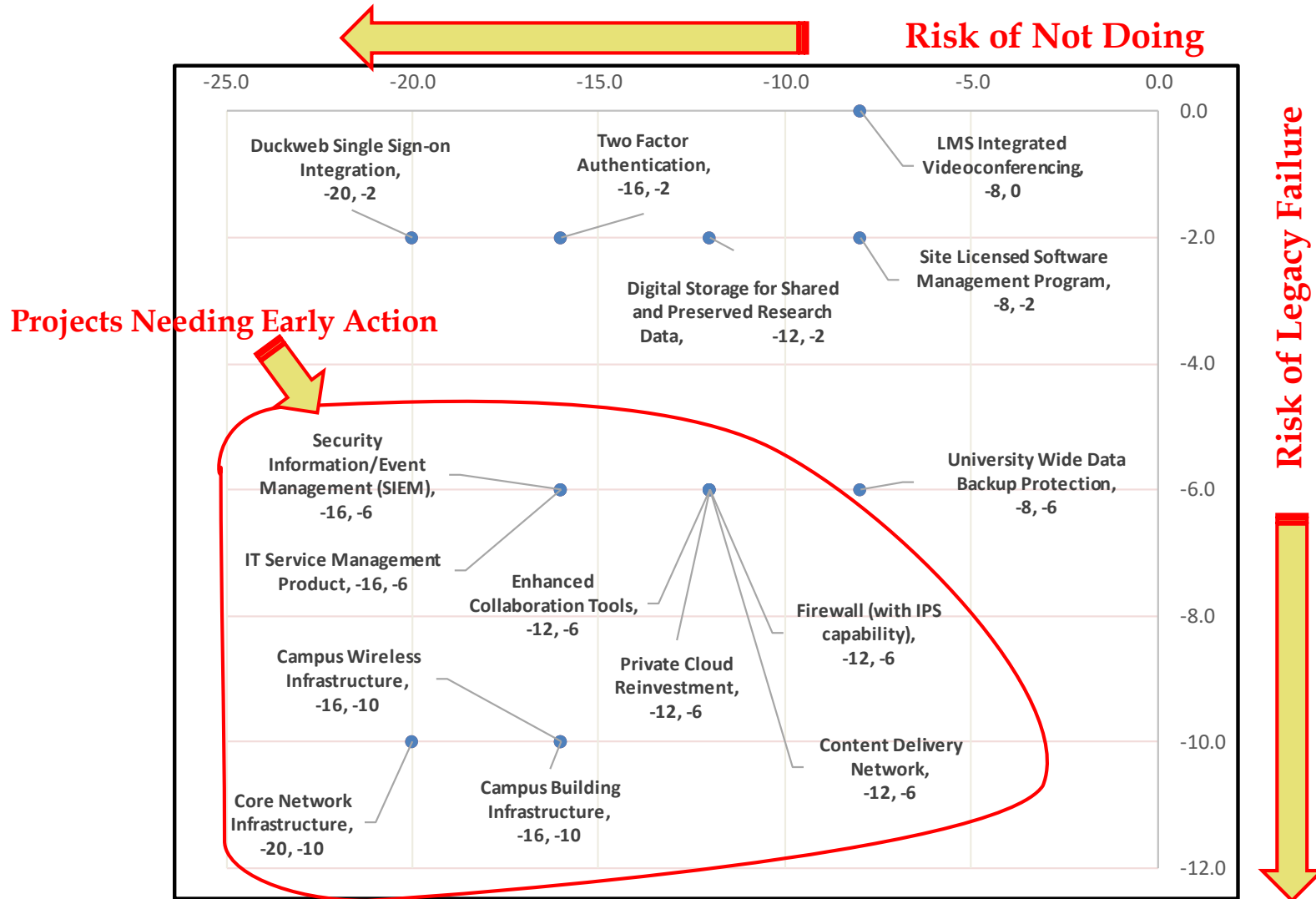*NOTE: The biggest drivers of User Project "Risk" are the 'negative impact of not implementing a project' and the 'risk of legacy failure.'*

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An analysis of the potential User Projects show that two key risk factors ("Impact of Not Doing" and "Risk of Legacy Failure"), identify several projects that need more immediate action.

Risk of Not Doing

Risk of Legacy Failure

Scatter plot data points:
- University Business Continuity Assessment, -20, 0
- Mobile Strategy and Applications for Student Services, -12, 0
- Canvas Catalog for Online Education, -8, 0
- EAMS (Enterprise Asset Management System) Replacement, -4, 0
- E-Mail Security and E-Discovery, -12, 0
- Enterprise Access Management System, -8, 0
- Online Security Awareness and Training, -8, 0
- Learning Analytics, -12, 0
- Electronic Time and Attendance System, -12, 0
- Centralized Management of Crestron Classroom Systems, -12, -2
- Accessibility Policy and Compliance Develop. and Implementation, -8, 0
- Web Services and Data Integration, -12, -2
- Virtual Computing Labs, -12, -2
- Digital Media Asset Management System, -8, -2
- Enterprise Data Warehouse Service, -12, -6
- Centralized Scheduling Software Implementation, -8, -6
- Integrate and Extend Research Administration Tools, -8, -6
- White Stag Classrooms added to Refresh Program, -12, -10
- Classroom Technology Refresh, -12, -10
- Enterprise Workflow Management System, -12, -10
- Ongoing Support for HPC, -8, -6
- Banner ERP Functional Evaluation and Upgrade, -8, -6

Projects Needing Early Action

An analysis of the potential Infrastructure Projects show that two key risk factors ("Impact of Not Doing" and "Risk of Legacy Failure"), identify several projects that need more immediate action.

Risk of Not Doing

Risk of Legacy Failure

Duckweb Single Sign-on Integration, -20, -2

Two Factor Authentication, -16, -2

LMS Integrated Videoconferencing, -8, 0

Site Licensed Software Management Program, -8, -2

Digital Storage for Shared and Preserved Research Data, -12, -2

Projects Needing Early Action

Security Information/Event Management (SIEM), -16, -6

University Wide Data Backup Protection, -8, -6

IT Service Management Product, -16, -6

Enhanced Collaboration Tools, -12, -6

Firewall (with IPS capability), -12, -6

Campus Wireless Infrastructure, -16, -10

Private Cloud Reinvestment, -12, -6

Core Network Infrastructure, -20, -10

Campus Building Infrastructure, -16, -10

Content Delivery Network, -12, -6

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High-level budget estimates were made for the User Projects and the largest cost projects are highlighted…

Potential USER Project Cost Estimates	Strategic Value	Estimated One Time and First Year Implementation Costs	Estimated On-Going Support Costs	5 Year Total Cost
Classroom Technology Refresh	76	$ 304,000	$ 304,000	$ 1,520,000
White Stag Classrooms added to Refresh Program	76	$ 80,000	$ 80,000	$ 400,000
University Business Continuity Assessment	59	$ 500,000	$ -	$ 500,000
Enterprise Data Warehouse Service	50	$ 355,500	$ 266,000	$ 1,419,500
Banner ERP Functional Evaluation and Upgrade	48	$ 75,000	$ 4,000	$ 91,000
Digital Media Asset Management System	48	$ 250,000	$ 90,000	$ 610,000
Ongoing Support for HPC	48	*	*	*
Centralized Management of Crestron Classroom Systems	42	$ 100,000	$ 100,000	$ 500,000
Virtual Computing Labs	42	$ 3,170,000	$ 1,324,000	$ 8,466,000
Enterprise Workflow Management System	40	$ 1,151,000	$ 370,000	$ 2,631,000
Enterprise Access Management System	39	$ 23,000	$ 3,000	$ 35,000
Canvas Catalog for Online Education	36	$ 430,000	$ 415,000	$ 2,090,000
Learning Analytics	32	$ 250,000	$ 55,000	$ 470,000
Web Services and Data Integration	32	$ 55,000	$ 5,000	$ 75,000
Integrate and Extend Research Administration Tools	28	$ 73,500	$ 7,000	$ 101,500
Centralized Scheduling Software Implementation	25	$ 160,000	$ 30,000	$ 280,000
Mobile Strategy and Applications for Student Services	24	$ 55,000	$ 5,000	$ 75,000
Electronic Time and Attendance System	18	$ 99,945	$ 23,445	$ 193,725
EAMS (Enterprise Asset Management System)	11	$ 700,000	$ 100,000	$ 1,100,000
Online Security Awareness and Training	8	$ 11,250	$ 10,000	$ 51,250
Accessibility Policy and Compliance Develop. and	7	$ 220,000	$ 220,000	$ 1,100,000
E-Mail Security and E-Discovery	0	$ 350,000	$ 220,000	$ 1,230,000

NOTE: The "Ongoing Support for HPC" has a separate funding source, so it won't be included in budget needs.

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UO has been and continues to be unable to address the massive scale of its IT deferred maintenance. Only emergency repairs can be done, starting with the core network replacement effort.

MAJOR DEFERRED MAINTENANCE IT INFRASTRUCTURE PROJECTS	Estimated One Time and First Year Implementation Costs		Estimated On-Going Support Costs	5 Year Total Cost	
Campus Building Infrastructure	$	2,660,000	$2,660,000	$13,300,000	(100% CapEx)
Core Network Infrastructure	$	3,660,000	$3,660,000	$18,300,000	(100% CapEx)
Campus Wireless Infrastructure	$	2,300,000	$3,600,000	$16,700,000	(100% CapEx)
Private Cloud Reinvestment	$	3,400,000	$1,780,000	$10,520,000	(100% CapEx)
TOTAL UO Deferred Maintenance on IT Instrastructure:				$58,820,000	(100% CapEx)
Emergency: Core, Wireless, Cloud and Building Maintenance	$	2,300,000	$2,300,000	$11,500,000	(100% CapEx)

NOTE: A significant amount of UO's network and server infrastructure is over 8 years old with some being over 10 years old, creating a significant risk of full to partial failures across the university.

These IT Infrastructure replacement projects could be completed in 3-5 years, but for planning purposes, the costs were spread over 5 years. The equipment generally has a 6-7 year expected life, at which point the replacement cycle begins again. These costs should all be Capital Expenses.

The "Emergency Only" project expenses will slowly reduce the deferred maintenance for a while.

By moving to 'emergency only' repairs, UO will be unable to address these major issues:
- Network is too slow to support the needs of big data for research, as well as unable to support additional departmental needs
- Adding additional wireless coverage and density will not be possible
- Expanding the use of centralized 'cloud-configured' server farms won't be possible
- Getting rid of old slow speed cabling and network hubs won't be possible
- Support costs of repairing/replacing failing equipment will continue to grow

...and high-level budget estimates were made for the Infrastructure Projects. The largest cost projects are highlighted.

Potential INFRASTRUCTURE Project Cost Estimates	Risk Value	Estimated One Time and First Year Implementation Costs	Estimated On-Going Support Costs	5 Year Total Cost
Emergency: Core, Wireless, Cloud and Building	-69.0	$ 2,300,000	$ 2,300,000	$ 11,500,000
Firewall (with IPS capability)	-60.0	$ 500,000	$ 100,000	$ 900,000
University Wide Data Backup Protection	-53.0	$ 1,190,000	$ 1,040,000	$ 5,350,000
LMS Integrated Videoconferencing	-49.0	$ 150,000	$ 15,000	$ 210,000
IT Service Management Product	-48.5	$ 115,000	$ 75,000	$ 415,000
Digital Storage for Shared and Preserved Research Data	-46.5	$ 102,000	$ 2,000	$ 110,000
Duckweb Single Sign-on Integration	-40.5	$ 100,000	$ 2,000	$ 108,000
Enhanced Collaboration Tools	-40.5	$ 525,000	$ 235,000	$ 1,465,000
Security Information/Event Management (SIEM)	-37.5	$ 220,000	$ 45,000	$ 400,000
Two Factor Authentication	-37.5	$ 80,000	$ 50,000	$ 280,000
Content Delivery Network	-26.5	$ 10,000	$ 5,000	$ 30,000
Site Licensed Software Management Program	-22.5	$ 407,282	$ 715,197	$ 3,268,070

NOTE: The site licensed software project includes money that is already funded by UO departments.

High cost projects require careful evaluation and design to leverage cost effective deployment approaches.

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A sample prioritized USER Project plan was developed and is shown below. A multi-year implementation budget will need to be developed once the availability of funds for the coming year is better known.

USER Projects	Strategic Value	Start Year	Year 1 FY 16/17	Year 2 FY 17/18	Year 3 FY 18/19	Year 4 FY 19/20	Year 5 FY 20/21
TOTAL ANNUAL SPEND FOR USER PROJECTS			$ 3,518,500	$ 4,985,500	$ 4,619,195	$ 3,631,445	$ 3,631,445
Classroom Technology Refresh	76	1	$ 304,000	$ 304,000	$ 304,000	$ 304,000	$ 304,000
White Stag Classrooms added to Refresh Program	76	1	$ 80,000	$ 80,000	$ 80,000	$ 80,000	$ 80,000
University Business Continuity Assessment	59	1	$ 500,000	$ -	$ -	$ -	$ -
Enterprise Data Warehouse Service	50	1	$ 355,500	$ 266,000	$ 266,000	$ 266,000	$ 266,000
Banner ERP Functional Evaluation and Upgrade	48	1	$ 75,000	$ 4,000	$ 4,000	$ 4,000	$ 4,000
Digital Media Asset Management System	48	1	$ 250,000	$ 90,000	$ 90,000	$ 90,000	$ 90,000
Centralized Management of Crestron Classroom Systems	42	1	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000
Virtual Computing Labs	42	2		$ 3,170,000	$ 1,324,000	$ 1,324,000	$ 1,324,000
Enterprise Workflow Management System	40	1	$ 1,151,000	$ 370,000	$ 370,000	$ 370,000	$ 370,000
Enterprise Access Management System	39	1	$ 23,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000
Canvas Catalog for Online Education	36	1	$ 430,000	$ 415,000	$ 415,000	$ 415,000	$ 415,000
Learning Analytics	32	1	$ 250,000	$ 55,000	$ 55,000	$ 55,000	$ 55,000
Web Services and Data Integration	32	2		$ 55,000	$ 5,000	$ 5,000	$ 5,000
Integrate and Extend Research Administration Tools	28	2		$ 73,500	$ 7,000	$ 7,000	$ 7,000
Centralized Scheduling Software Implementation	25	3			$ 160,000	$ 30,000	$ 30,000
Mobile Strategy and Applications for Student Services	24	3			$ 55,000	$ 5,000	$ 5,000
Electronic Time and Attendance System	18	3			$ 99,945	$ 23,445	$ 23,445
EAMS (Enterprise Asset Management System) Replacement	11	3			$ 700,000	$ 100,000	$ 100,000
Online Security Awareness and Training	8	3			$ 11,250	$ 10,000	$ 10,000
Accessibility Policy and Compliance Develop. and Implementation	7	3			$ 220,000	$ 220,000	$ 220,000
E-Mail Security and E-Discovery	0	3			$ 350,000	$ 220,000	$ 220,000

An analysis should be done to break these costs into Capital and Operating Expenses.

A sample prioritized INFRASTRUCTURE Project plan was developed and is shown below. A multi-year implementation budget will need to be developed once the availability of funds for the coming year is better known.

INFRASTRUCTURE Projects		Start Year	Year 1 FY 16/17	Year 2 FY 17/18	Year 3 FY 18/19	Year 4 FY 19/20	Year 5 FY 20/21
TOTAL SPEND FOR INFRASTRUCTURE PROJECTS	**Risk**		$ 2,800,000	$ 2,867,000	$ 4,509,000	$ 4,281,282	$ 4,584,197
Emergency: Core, Wireless, Cloud and Building Maintenance	-69	1	$ 2,300,000	$ 2,300,000	$ 2,300,000	$ 2,300,000	$ 2,300,000
Firewall (with IPS capability)	-60	1	$ 500,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000
University Wide Data Backup Protection	-53	3			$ 1,190,000	$ 1,040,000	$ 1,040,000
LMS Integrated Videoconferencing	-49	2		$ 150,000	$ 15,000	$ 15,000	$ 15,000
IT Service Management Product	-49	2		$ 115,000	$ 75,000	$ 75,000	$ 75,000
Digital Storage for Shared and Preserved Research Data	-47	2		$ 102,000	$ 2,000	$ 2,000	$ 2,000
Enhanced Collaboration Tools	-41	2		$ 100,000	$ 2,000	$ 2,000	$ 2,000
Duckweb Single Sign-on Integration	-41	3			$ 525,000	$ 235,000	$ 235,000
Security Information/Event Management (SIEM)	-38	3			$ 220,000	$ 45,000	$ 45,000
Two Factor Authentication	-38	3			$ 80,000	$ 50,000	$ 50,000
Content Delivery Network	-27	4				$ 10,000	$ 5,000
Site Licensed Software Management Program	-23	4				$ 407,282	$ 715,197

An analysis should be done to break these costs into Capital and Operating Expenses.

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UO's lack of an on-going investment in its major IT infrastructure over the past ten years has resulted in an environment that requires significant massive investments to avoid major core technology failures. These numbers only cover emergency IT infrastructure repairs/replacements.

POTENTIAL BUDGET SPENDING	5 Year Total FY16-21	Year 1 FY 16/17	Year 2 FY 17/18	Year 3 FY 18/19	Year 4 FY 19/20	Year 5 FY 20/21
TOTAL ANNUAL SPEND FOR USER PROJECTS	$ 20,386,085	$ 3,518,500	$ 4,985,500	$ 4,619,195	$ 3,631,445	$ 3,631,445
TOTAL SPEND FOR INFRASTRUCTURE PROJECTS	$ 19,041,479	$ 2,800,000	$ 2,867,000	$ 4,509,000	$ 4,281,282	$ 4,584,197
TOTAL 5-YEAR PROJECT SPEND	$ 39,427,564	$ 6,318,500	$ 7,852,500	$ 9,128,195	$ 7,912,727	$ 8,215,642

Perspective:

The potential total cost is very large, particularly when the deferred maintenance costs are included...

However, this investment will support the needs of EVERY student, faculty, and staff every day, around the clock, 365 days/year...

AND it is in the range of most single building campus construction projects.
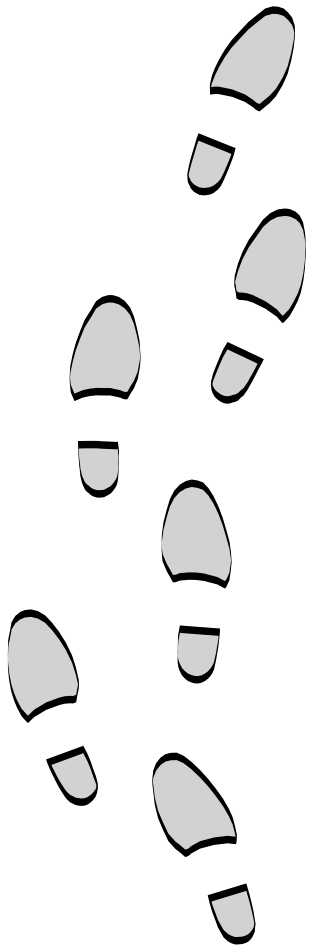
- **Review, Refine and Address the IT Improvement Strategies**

- **Review and Finalize the Prioritization Rankings for the Potential Projects and submit this information to the UO Budgeting Process**

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