



THE UNIVERSITY OF BRITISH COLUMBIA

Information Technology @ UBC

2016 AND BEYOND CORE FOCUS AREAS
Interim framework pending UBC Strategic Plan approval (early 2018)

Supporting Excellence Through Information Technology

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EXECUTIVE SUMMARY

Whether to support research activities, enhance learning outcomes, or to improve efficiency, we are seeing increasing need for investment in technology across both of UBC's campuses to support institutional strategies. Changing educational delivery models, as well as other external forces such as rapid technology innovation will require the IT community to work together to deliver an IT environment capable of supporting UBC's strategic objectives. Challenges, as influenced by factors both external and internal to UBC, have been identified as requiring review and resolution in order to ensure UBC's IT ecosystem is capable of meeting institutional needs. Recognizing that UBC is currently undergoing a consultation and refresh of its overall strategy, this framework is intended to ensure we in the IT community, are advancing our maturity and ability in readiness to support UBC's new strategic objectives.

Given current priorities and activities, several linked themes have emerged as immediate strategic focus areas for IT groups across UBC ("IT at UBC"). Once the new UBC strategy has been adopted, UBC will undertake the development of an enterprise digital strategy to ensure we are leveraging digital technologies to their fullest capabilities and in new and innovative ways to enhance the student experience, provide the best possible tools to support teaching and research excellence, and enable staff, faculty and researchers across the institution. In order to prepare our IT environment to deliver the technology capabilities that UBC needs now and in the future, a number of key activities will need to be undertaken:

1. Governance & Investment Planning
2. Foundational IT Activities, including:
 - a. Enterprise System Capability and Renewal
 - b. Data Management
 - c. Privacy and Information Security
 - d. People and Organizational Readiness
3. Teaching and Learning Support
4. Research and Advanced Research Computing Services

Within the above focus areas, following is a list of the strategic activities that IT at UBC will need to undertake over the next few years:

- Provide consistent governance and transparency over IT spending at UBC
- Successfully transform existing business practices and implement new systems to support these changes (HR, Finance, Student, and Learning Management Systems) and have appropriate governance and coordination of structures to ensure success
- Have data, processes and analytics that can scale up, be user-centred and can ensure timely, successful and accurate reporting and data analytics to all areas of UBC
- Improve information privacy and security awareness and protection at UBC
- Workforce planning to ensure UBC is prepared for changing IT delivery models
- Enable use of technology-enabled evidence-based teaching methods through the provision of tools, applications and infrastructure in support of teaching innovation
- Enable world-class research across all disciplines through the provision of appropriate digital research infrastructure



Introduction



HIGHER EDUCATION INSTITUTIONS face new pressures and challenges. Constrained funding, rising costs, and heightened competition for a share of the global learner market with the backdrop of increasing expectations of students as sophisticated digital consumers are leading our institutions to develop new strategies to compete successfully and are fundamentally shifting how we communicate, collaborate and engage in education and research.

Learners are looking for access to services and education seamlessly across user centred technologies that create greater opportunity for engagement and more flexible delivery options. The ability to attract and retain high calibre faculty, researchers, and learners both nationally and internationally in the increasingly competitive higher education environment is critical to help drive globally important research agendas.

At UBC, regardless of campus, faculty or program, changing demographics, new and emerging business models and an increased emphasis on technology to support institutional strategy requires all IT support units to work together as a community to ensure that our institution achieves the most value from its investments in technology. Regardless of reporting relationships, we can and must work together to deliver the best technology support environment to meet UBC's strategic objectives. IT at UBC has made great strides in stabilizing and enhancing the IT delivery landscape. Over the past 6 years, we have created a stable and cost effective base of IT shared services that the institution can rely on for most commodity IT services. We have worked together to

integrate technology services and redeploy staff to new roles. While there are still challenges and varying opinions, the general view has been that this integration and redeployment has been successful, both from a service delivery standpoint and from the individual IT staff perspective. Departments and faculties that have transferred support to the enterprise IT unit, UBC Information Technology (UBC IT), report receiving greater value from their investments, and staff enjoy the ability to progress in their career, and to participate in different opportunities to advance their skills.

We now have a solid core platform from which to support UBC's strategic objectives. The next iteration of the IT strategy for UBC is a framework that establishes the areas of focus for all IT units across campus. This framework can be used to guide both enterprise and local IT departments in establishing goals and activities to align with UBC's overall objectives.

UBC is ambitious and aspires to be one of the top institutions both nationally and globally. Technology is an enabler of UBC's strategy and a source of competitive advantage that propels UBC forward. We must continue the collaborative culture, continue the evolution toward a cohesive IT community, and have a clear focus on supporting the core mission of the university – teaching and research. To do so, IT at UBC must free itself of the weight of the past and, with vision and agility, work across all areas of the institution to create new opportunities and advantages.





Operating Model



ONE OF THE KEY operating decisions that any large research university faces is the degree to which it is centralized or distributed. At UBC, the past approach of a highly distributed model where the university is a collection of largely independent faculties or units is evolving to a model that attempts to balance the independence of the faculties with supporting resources and services from central support units and the executive. The level of coordination across an institution can have a profound impact on every aspect of its operation from governance to resourcing and outputs.

The ongoing challenge that UBC faces is not whether to move towards a more distributed model or a more central model, but to reconcile the need for central planning and governance with the benefits of local delivery. To avoid the pendulum swing between centralization and decentralization, we should aim for a model which harnesses the benefits of both.

UBC has worked over the past number of years to enable a more coordinated Information Technology framework across UBC and is developing a federated IT structure, with principles¹, governance, policies and planning occurring institutionally, but with local delivery - either through UBC IT delivered services, or through local, faculty/unit IT resources. A federated model recognizes that service delivery occurs both within the central IT unit, and locally within the faculties and departments. The key is recognize and build upon the value delivered through local IT units, and to mature our shared governance model to create transparency, optimize efficiency, and reduce risk. As part of the federation initiative, several faculties and administrative units have staff reporting through to the CIO in addition to those faculties or units that have their own local IT staff and have a less formal “dotted line” reporting relationship to the CIO. Regardless of reporting lines, IT staff across UBC must

still meet certain policy and governance criteria. As well, the delivery of digital services, whether centrally or locally managed, should follow core and fundamental principles, such as:

- Placing the student, staff, faculty or researcher at the heart of digital design and development processes to ensure a humanistic² approach
- Ensuring services are accessible for all members of the community, taking into account varying abilities, and leading the way designing for usability
- A service orientation that acknowledges IT exists to serve UBC. We will align IT strategies with the goals, strategies and priorities of UBC and our stakeholders, especially learners, instructors, and researchers
- Managing our digital services as an investment balancing risk, value, and cost

FEDERATION

“To avoid the pendulum swing between centralization and decentralization, we should aim for a model which harnesses the benefits of both.”

JENNIFER BURNS
UBC CIO

“Federated IT is based on genuine reciprocity and the need for layered policies and standards to support a multi-tiered governance approach to service management, which allows both central IT and regional faculties, agencies, and outliers to build on each others' perspectives and strengths, creating more resilient and responsive IT organizations overall.”

GAETANO MAZZUCA
DIRECTOR, INFORMATION MANAGEMENT &
TECHNOLOGY SERVICES, CONTINUING STUDIES,
UNIVERSITY OF VICTORIA

¹ IT principles are shown in Appendix B

² <http://blogs.gartner.com/hank-barnes/2014/10/14/the-call-for-humanism-in-technology/>



Challenges & Influences

A NUMBER OF ISSUES have been identified as requiring review and resolution in order to ensure UBC's IT ecosystem is capable of meeting institutional needs as influenced by factors both external and internal to UBC (see Figure 1 and Appendix A).

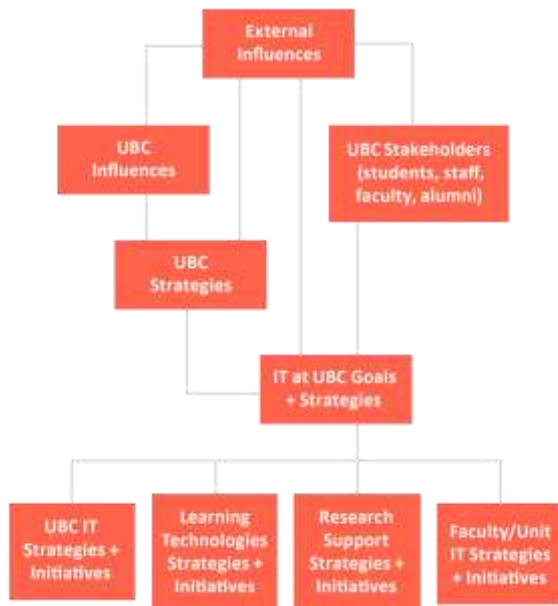


FIGURE 1. Influences on IT at UBC

The review of IT at UBC conducted in July 2014 acknowledged the general success of the integrated and distributed model, and identified further areas for improvement. Several themes have emerged that can be linked to other issues identified as critical areas to address both within the enterprise IT department, and more broadly across the institution. These themes can be divided into the following major focus areas intended to:

- a) Advance IT delivery capability
 - Governance and investment planning
 - Data governance, architecture, and integration
 - Privacy and information security
 - People and organizational readiness

- b) Support activity that differentiates
 - Teaching and learning support (improving student outcomes and increased funding)
 - Research Computing Support (driving increased research productivity)

Progress has been made to resolve a number of these challenges. However, against a backdrop of significant changes in educational delivery, funding models, and institutional strategy, substantive work still remains to ensure we have the capabilities we need. In addition, we must develop a Digital Strategy for UBC that will harness digital platforms to create a contextual and integrated digital environment to deliver on UBC's strategic objectives and enhance the student experience and better engage our staff, faculty, researchers, and alumni.





Strategic Focus Areas

THE FOLLOWING AREAS are the key strategic goals and activities that we as an IT community will be pursuing over the next few years. Appendix A provides a view of the influences that bring rise to these focus areas.

GOVERNANCE & INVESTMENT PLANNING

Improving governance and investment planning are major focus areas across all areas of UBC. Strong governance and investment planning in the IT arena, which is aligned with institutional governance and investment planning, will ensure that UBC has the ability to direct its IT activities to the areas that will most effectively contribute to UBC's strategic objectives and/or reduce risk. Equally important is the need to ensure that UBC achieves the expected benefits of its investment, and thus benefit realization and measurement is an important component of all major investments.

Capital and Investment Planning

The total annual operating spending on IT at UBC is approximately \$149 million, or roughly 6% of UBC's annual operating budget. Approximately \$60 million of the total is incurred by UBC IT. Total annual IT capital spending across UBC is approximately \$30 million.

UBC must have insight and oversight into the IT-related activities of the entire organization, not just the central IT department, to ensure the connection and delivery of the core mission of the University: Research and Teaching. Governance is fundamentally

about involving the right people in making the right decisions, investing in the right initiatives and managing risks to enable the organization to achieve success.

UBC has an institutional capital planning process that provides oversight to capital projects across UBC, especially in the Building and more recently Information Technology areas. The institution-wide process provides support to the capital and investment planning processes within each area, and a basis for alignment.

Within UBC, steps are underway to ensure that UBC IT has operating and capital budgeting and spending oversight governance and processes that are transparent and aligned with those of the enterprise. An objective of UBC IT is to design its processes so that they can be adopted, or at least serve as a template, by other IT units as they establish their alignment.

Providing consistent transparency into and governance over all IT spending at UBC is a key goal that can be shared by all units. Specific initiatives in support of this goal include:

- Developing and implementing institutionally-aligned planning and prioritization processes to support investment decisions
- Implementing and extending an IT capital planning and reporting framework across the institution
- Developing a benefit realization management framework and building a common understanding and capability across all IT units

FOUNDATIONAL IT ACTIVITIES

Enterprise System Capability and Renewal

Enterprise resource planning (ERP) software is a category of business-management software—typically a suite of integrated applications—that institutions use to collect, store, manage and interpret data from many institutional processes from across the institution and includes:

- Human Resources
- Financial Management
- Learner Lifecycle
- Teaching and Learning
- University Operations

ERP software provides an integrated and institution-wide view of core processes. The applications share data between them and also across various departments that provide the data. ERP applications facilitate information flow between these major institutional functions. These major systems form the backbone of UBC’s institutional administrative capability across all major process areas.

UBC’s systems have evolved over many years in response to an increasingly complex organizational evolution. The Student Information System (SIS) was first developed decades ago, before any ERP’s in HR and Finance existed. It was custom built and maintained by the Registrar and their IT staff, and because it was bespoke, it was optimized for the processes it supported. Likewise, HR and Finance acquired and maintained their own systems, and while the software was purchased, they were each customized to a significant degree, which limited their ability to be upgraded.

Therefore, a number of IT system architecture decisions have been made independently and today we have a fractured and siloed environment, lacking

coherency and scalability. This makes it difficult for UBC to make substantive improvements to our current systems and processes.

As these systems have aged, the problems have become particularly acute, and UBC now faces the prospect of replacing many of these systems at the same time. While presenting significant risk, it also presents UBC with tremendous opportunity to learn from our past experience, re-envision and remake our systems architecture and institutional systems into a cohesive, next generation ecosystem capable of supporting UBC’s drive forward into the next decade of growth and opportunity.

Over the next few years, replacement of these systems will require substantial coordination across multiple areas of UBC, and will need a solid foundation of change management, program coordination, identity management and data governance.

Over the next 3-5 years UBC intends to successfully replace its major systems (HR, Finance, Student, and Learning Management Systems) and will require appropriate governance and coordinating structures to ensure success. Specific initiatives in support of this goal includes:

- Establishing an overarching ERP strategy and roadmap to ensure consistency across programs
- Establish a portfolio management framework to ensure coordination across multiple programs
- Establish a framework to engage all affected stakeholders and to work to ensure successful adoption of new processes and systems
- Establish and implement a comprehensive, cross-program dashboard and reporting mechanisms to identify risks, and scope and schedule compliance
- Conduct an organizational risk and gap analysis to determine areas of potential risk, including items such as Public Cloud Gap Analysis, Enterprise IT Risk Analysis

Data Management

While large enterprise systems support the major functions and processes, many more systems are required to support the activities of a large research institution, creating a complex ecosystem requiring appropriate governance and management. Today, virtually all services required by UBC to support its many stakeholders are delivered through, or are supported by, applications—not only those ERP's identified earlier, but also the constellation of supplementary applications that both receive and transmit data, often in real time, to the ERP systems. The sheer number of interfaces to enterprise systems that we encounter (for example, in excess of 300 for the student system alone) means that data management and integration becomes more complex and difficult.

The requirement to better utilize UBC's data and external data for reporting, analytics, and identity management is becoming increasingly critical. This in turn is dependent on data being well structured and managed to meet those requirements.

Therefore, the four major system refresh programs contemplated must include a standardized data structure (or "data model") that will deliver processes and analytics that can scale up, be user-centred and can ensuring successful and accurate reporting and data analytics.

At the same time, we need to analyze the application environment and through the enhancement of functionality in our enterprise systems seek to reduce duplication, complexity and cost.

The enterprise goal is to have data, processes and analytics that can scale up, be user-centred and can ensure timely, successful and accurate reporting and data analytics to all areas of UBC. Specific enterprise initiatives in support of this goal for this area include:

- Establish an institutional data governance framework to ensure an enterprise data architecture has the appropriate oversight, inputs and collaboration to achieve its goals
- Develop an enterprise data model and architecture to ensure alignment across multiple ERP's and other enterprise and local applications
- Develop policies and standards to ensure data is securely exchanged with appropriate documentation and ongoing oversight
- Provide mechanisms for systems peripheral to the 4 major ERPs to be able to access ERP and other institutional data in a streamlined, consistent and secure manner

Privacy and Information Security

To deliver services to our institution across multiple campuses we rely on an increasingly complicated ecosystem of technology that is constantly under threat. Protecting the university and its stakeholders from the increasing barrage³ of security threats is a fundamental challenge for institutional leadership. Information Security is not just the domain of IT staff, it is a responsibility of the entire institution and the Privacy and Information Security Management (PrISM) initiative encompasses not only technology but includes risk-management, user training and education, and institutional practice.

Some data from a global survey done in 2015⁴:

- In 2013, 11.6% of the 3.3 million mobile applications were found to have malware; in 2015 that jumped to 33.6% of over 10.8 million mobile applications
- Symantec discovered more than 430 million new unique pieces of malware in 2015, up 36 percent from the year before
- Over half a billion personal records were stolen or lost in 2015

³ More than "barrage" they are increasing in number/frequency, increasingly difficult to detect and proving to be increasingly costly (cost, recovery time, damage to reputation, etc.) to the institution.

⁴ Source: *Symantec 2016 Internet Security Threat Report*



- More than 75 percent of all legitimate websites have unpatched vulnerabilities
- Insurance claims for remedying cyber-attacks ranged up to US\$15 million, while typical claims for a single attack ranged from US\$30,000 to US\$263,000

Substantial investments of time and resources are required to stay on top of continually evolving security threats. Aging systems without security patches available or without patches applied – a not uncommon situation at higher education institutions – significantly increases the likelihood of these threats being successful. A single security incident can expose confidential data of stakeholders, in addition to the potential loss of operational capability leading to significant out-of-pocket costs connected with responding to the incident, and diminish UBC’s reputation. A serious incident can also lead to a significant distraction for UBC leadership, requiring substantive investment of valuable time to respond to the incident. Institutionally, we need to implement a comprehensive approach to information security to create a secure network, effective security policies, and reduced institutional exposure to information security threats.

A set of initiatives have been developed under the PRISM program that are designed to increase UBC’s capability to protect and respond to security threats. Beginning in 2016/17, significant investments in awareness, risk management, and cybersecurity are planned over the next 5 years.

PEOPLE ARE OUR GREATEST ASSET... BUT IN CYBERSECURITY TERMS ALSO OUR WEAKEST LINK.

One key lesson of the military’s experience is that while technical upgrades are important, minimizing human error is even more crucial. Mistakes by network administrators and users—failures to patch vulnerabilities in legacy systems, misconfigured settings, violations of standard procedures—open the door to the overwhelming majority of successful attacks.

In nearly all penetrations on the .mil network, people have been the weak link. The Islamic State briefly took control of the U.S. Central Command’s Twitter feed in 2015 by exploiting an individual account that had not been updated to dual-factor authentication, a basic measure requiring users to verify their identity by password plus a token number generator or encrypted chip.

HBR.ORG: CYBERSECURITY’S HUMAN FACTOR: LESSONS FROM THE PENTAGON
FROM THE SEPTEMBER 2015 ISSUE



The institutional goal is to measurably improve information privacy and security awareness and protection at UBC. Specific initiatives in support of this goal include:

- Implementing recommendations from an audit of the proposed PrISM plan by KPMG
- Increasing privacy and security awareness for faculty and staff through a Privacy and Information Security Awareness Campaign and online training modules (beginning Oct. 2016), in-person training sessions and new web resources
- Increasing the numbers of encrypted devices across both campuses
- Implementing more advanced security measures to protect both local and enterprise systems
- Data mapping and risk analysis initiatives to identify repositories of personal information and implement measures to ensure privacy and security.
- Enhanced incident response resources and protocols

People and Organizational Readiness

Regardless of IT service delivery models or reporting lines, we in IT at UBC will continue to be challenged by the need to adapt, evolve and be more effective. The evolution of the technology industry continues apace, and while BC has been relatively shielded by privacy legislation, vendors' roadmaps are now driving changes in IT delivery models. Most vendor's roadmaps signal a move away from on-premise solutions. BC's privacy legislation has prohibited the hosting of Personal Information (PI) outside Canada. With the move of a number of large vendors such as Microsoft and its Azure cloud service, and Amazon and its corresponding Amazon Web Services, the potential to host services outside UBC is likely to be an option. However, it is not yet confirmed that all services will be available, and each individual service must be assessed for compliance with FIPPA Section 30.1. UBC may be at some risk of being unable to access some services, and we will always be under

pressure to find tools that are compliant with our legislation.

Assuming some compliant tools become available, the move of hosting, storage, and applications to the cloud means that IT units may no longer be the sole primary or direct provider of IT services to their stakeholders. Over time, as more cloud services are offered with storage within Canada, a range of options that are legislatively compliant will exist outside UBC IT or local IT units, often more feature rich, and secure compared to what can be provided by the institution. This shift will lead to a change in the role of IT units and their staff, the skills required, the mix of skills and the models of support. The IT departments will need to shift from building services to being service brokers – analyzing the capabilities required, and acquiring and integrating the right set of tools and services. Therefore IT staff must be integrated participants in understanding and delivering on activity that enables institutional and local strategies. To do this, the focus of IT organizations needs to be on understanding institutional and local strategies, identifying the necessary capabilities to achieve that strategy, ensuring that the anticipated outcomes are achieved, that existing services are still relevant, and are the right combination of cost, risk, and functionality.

Thus, we will begin to see a shift in the types of roles required in IT organizations, with a much greater focus on governance, investment management, client relationship management, data, analytics, architecture, business requirements gathering, and vendor and contract management. While the need for traditional IT skills will remain, increasingly many of the traditional IT skills will be provided through vendors. New skills will be required by UBC's IT staff to ensure effective integration and data management practices. IT staff and leaders across UBC need to ensure the institution is ready for change, and that staff have the support needed to transition to new roles. UBC IT workforce will be encouraged to develop a cultural of change resiliency, with the



ability to respond to new technologies with a willingness to learn and adapt. Key attributes of workforce will be not only technical skills but also the ability to acquire new skills on an ongoing basis.

Public cloud's biggest impact on UBC will stem from the differences between on-premise applications and software-as-a-service (SaaS) (e.g. Salesforce CRM, Office 365, etc.). In the SaaS model, the application development and support resides outside the institution, and is 'rented', thus freeing the institution of capital overhead and having to constantly play "catch-up" to advancing technology. This may cause UBC to reconsider funding models that have relied upon large capital investments, rather than ongoing operational costs. These models would not necessarily be less resource intensive for UBC – they merely shift the type of skills and resources required, and can often have different licencing arrangements.

In addition to SaaS offerings, many vendors are or will no longer offer on-premise options. Where UBC relies primarily on on-premise, we will have to change. The main potential benefit for a move to SaaS is more timely access to services, reducing the time from idea generation to operation for new institutional models and ideas. While SaaS may reduce costs, few business cases exist in higher education to validate that claim. For higher educational institutions, the key driver for SaaS would be the greater focus on institutional strategic

objectives, greater agility, and improvements in functionality and security available from cloud vendors.

A key activity is identifying where our services will be impacted by public cloud, where UBC will experience a skills gap, identify and prepare to remediate the risks, and build roadmaps to support our existing units in creating an organizational strategy that is flexible and agile in order to adapt to our changing landscape, and support our staff through the transition.

Specific initiatives that will ensure UBC can take advantage of new technologies in a timely and effective manner include:

- Ensuring that IT at UBC is appropriately prepared to adopt and support new technologies
- Undertaking a UBC organizational readiness assessment for cloud computing
- Developing a strategy for assessing and implementing cloud solutions
- Developing roadmaps for IT services at UBC that identifies which services or systems are likely going to move to hosted solutions and establish plans for those transitions
- Identifying skills gaps and career paths for changing needs and establish plans for necessary transitions





TEACHING AND LEARNING

UBC is recognized internationally for outstanding teaching and for creating an exceptional learning environment. Through large scale programs such as the Carl Wieman Science Education Initiative, Teaching and Learning Enhancement Fund (TLEF) and Flexible Learning at UBC's Vancouver campus, as well as the Aspire Learning and Teaching (ALT) Fund at UBC's Okanagan campus, the university has made strategic investments to support evidence-based, technology-enabled teaching methods. In the last few years, significant focus has been on transformation to active learning, introduction of technologies to enhance classroom interaction, and the implementation of additional options for access and flexibility (including for non-traditional learners).

The Educational Leadership stream for faculty requires contributions to innovation and enhancement of courses and curricula, supported in part by TLEF and ALT. Learning technology, used in pedagogically and discipline appropriate ways, supports, and in some cases drives these innovations.

An extensive community engagement process has changed the way learning technologies, tools and

platforms are supported across the technology lifecycle. UBC IT staff are working collaboratively with staff in the Centre for Teaching and Learning Technology (CTLT) in Vancouver and Centre for Teaching and Learning (CTL) in the Okanagan, to support technologies ranging from innovative to enterprise. In Vancouver, collectively known as the LT Hub, staff from both organizations consult with local faculty-based instructional support units to ensure teaching and learning needs are met. The pace of technological change, and faculty preference to use "best of breed" (cloud-based) tools requires a strategic focus on faster evaluation and implementation (including privacy impact assessments and integration).

Experimentation is currently occurring in areas such as digital content repositories, interactive video, integrations between multiple course content systems (e.g., Connect, Blogs, edX Edge), adaptive / personalized learning, augmented and virtual reality and learning analytics. Teaching and learning innovation requires significant and strategic technological investment.



The enterprise goal is to enable use of technology-enabled evidence-based teaching methods through the provision of tools, applications and infrastructure in support of teaching innovation. Specific initiatives in support of this goal include:

- Maturing the new governance structures, implemented in September 2015
- Implementing the three-year LT Ecosystem roadmap, which includes:
 - Renewing the technology that sits at the core of our ecosystem (LMS)
 - Implementing learning analytics: technology to enable the collection and analysis of learning data to optimize learning and the environment in which it occurs, and to create predictive models so we can identify conditions for student success (and engage early intervention when the conditions are not met)
 - Improve WiFi access in classrooms to enable the use of technology in the classroom. This is particularly critical for the Okanagan and clinical academic campuses, though with increased use of mobile devices, is important for all campuses
 - Investigating possible course content repository systems for faculty to store, curate and share (if desired) their teaching content, with their colleagues, with faculty in another discipline, or even another campus
 - Enhance ability to incorporate types of learners in our identity framework for ease of access
- Responding to increased demand for faster evaluation and implementation of new technologies, including greater focus on lifecycle management

SUPPORT FOR RESEARCH AND ADVANCED RESEARCH COMPUTING

Within any large, research-intensive university, one of the key objectives is to carry out outstanding research. This research is carried out intra- and inter-institutionally by faculty, staff, and learners. In partnership with the Vice President Research and International (VPRI) Office, the primary role of IT at UBC should be an enabler of research excellence by accelerating time to discovery and innovation through continued advances in and access to digital research infrastructure and resources.



Research Computing consists of the infrastructure, software, expert staff, policies, and other resources required to support research related activities. Within UBC, as shown in the diagram, the research computing ecosystem consists of commodity IT services, research IT support (central and local), advanced research computing (ARC) and national digital research infrastructure components. Many research computing needs are supported directly by researchers, departments, and faculties, sometimes in conjunction with UBC IT. Other research efforts require a more institutionally and nationally coordinated effort such as the VPRI and VP Academic

Advanced Research Computing initiative (ARC). Increasingly, research teamwork and collaborations are becoming more inter-disciplinary and inter-institutional in nature, benefiting from a federated IT structure with governance, policies and planning occurring centrally while services are delivered locally.

Across many research domains, there are growing demands for digital research infrastructure, domain expert knowledge and technical support, technique- and discipline-specific training, and access to emerging hardware and software technology. Through proactive and collaborative consultative support on research applications, service providers can better identify critical needs, communicate services available and coordinate digital infrastructure investments, thus providing the opportunity for more effective, scalable, and sustainable research computing support. By strategically supplementing and augmenting existing institutional, departmental and faculty research computing support, UBC will be better positioned to address the growing research computing demands. Competitive advantages can also be enabled through institutional developments in research data platforms

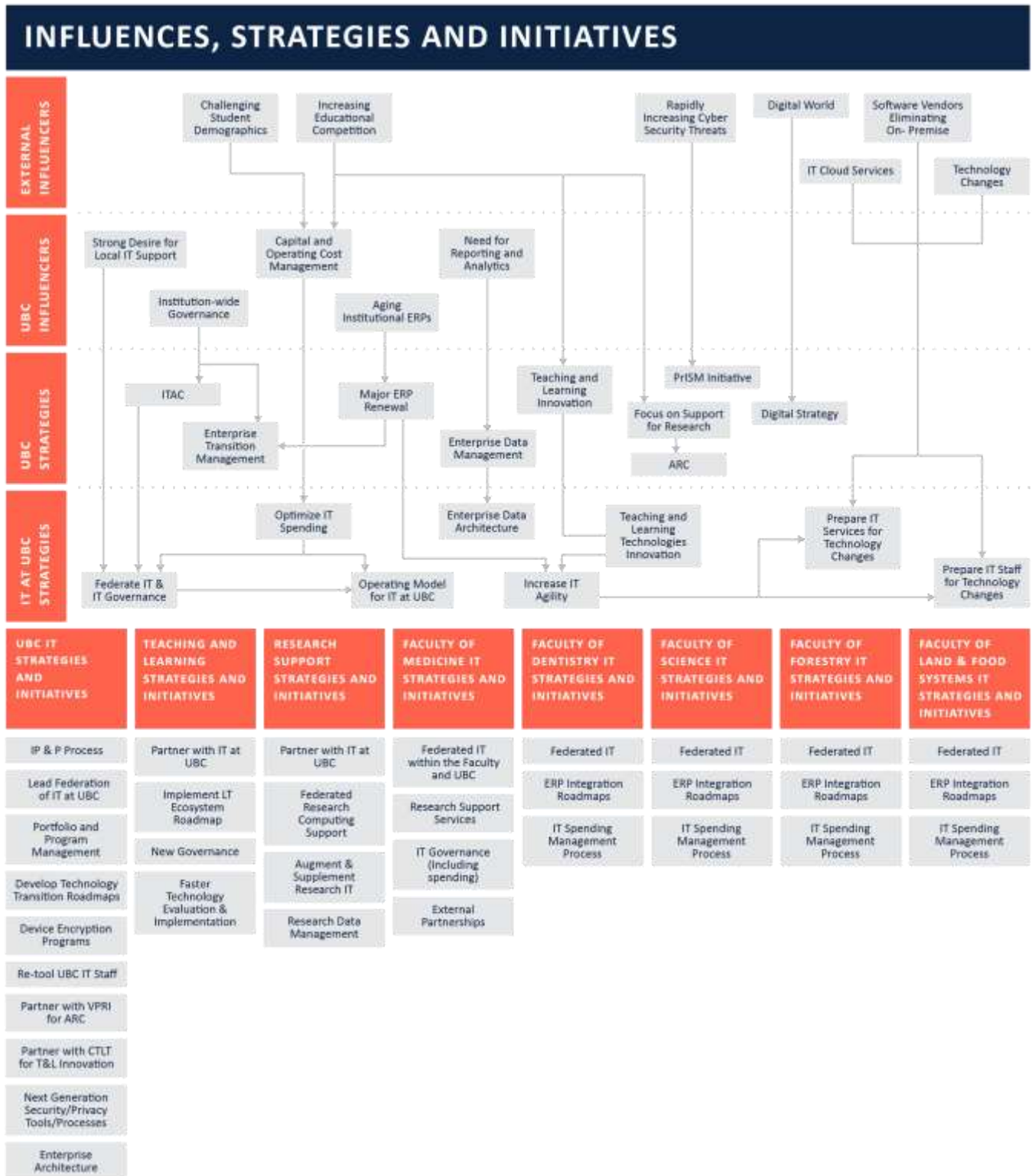
allowing for storage, curation, discovery, reuse, and analysis of rich data sets.

The goal is to enable world-class research across all disciplines through the provision of appropriate digital research infrastructure. Specific enterprise initiatives in support of this goal includes:

- Working with UBC's research and IT community to identify the current state of support and priority areas of focus and investment
- Identifying potential federated research computing support frameworks and highly qualified support personnel that will align to institutional priorities and service research needs
- Investigating opportunities to augment and supplement existing research IT support resources in coordinating the planning, evaluation, procurement, delivery, training, and sustainability of digital research infrastructure investments
- Reviewing enterprise research data management best practices to ensure UBC's digital research assets are secured, preserved, discoverable, and reusable.

APPENDIX A

Influences, Strategies and Initiatives



APPENDIX B

Institutional IT Principles

Short Phrase	Principle
Learners, researchers, faculty, staff at the heart of digital design	Learners & researchers will be at the heart of our design, ensuring a humanistic approach.
Accessibility	Ensuring services are accessible for all members of the community, taking into account varying abilities, and leading the way designing for usability.
Service and change orientation	IT at UBC exists to serve UBC. We will align digital strategies with the goals, strategies and priorities of UBC and our clients, especially learners, instructors and researchers. IT will enable/facilitate innovation and change within UBC.
Manage digital services as an investment	Will manage information technology and all digital services as investments. Will balance risk, value and cost.
Highest value focus	Will focus on the services of the highest value to clients; will focus on providing reliable services.
Trusted advisor/partner	Will build and maintain strong trusted advisor/partner relationships with clients and IT colleagues
Federated IT	Will actively and objectively participate in a federated approach to IT at UBC.
Collaborative/common solutions	Will objectively investigate and give preference to collaborative or common IT solutions when considering solutions. Will pursue unique/local solutions only when there is a very strong reason for doing so. Will give preference to integrating rather than interfacing. Will work to reduce "island of automation".
Enterprise Architecture	Will actively participate in the development, refinement and adherence to an enterprise IT architecture. Will strive to capture data only once in order to avoid cost, duplication of effort and the potential for error, and will enforce and adhere to data policy, data sharing and access, data standardization and data quality.

APPENDIX C

Engagement Approach

Timeframe :	Audience	Message	Vehicle/ Channel: the medium through which the message is to be sent	Person Responsible for Delivering Message	Status
Validation of Focus Areas, goals, and approval					
Sep	Okanagan Leadership	<ul style="list-style-type: none"> • Overview of current state • Information of history of IT strategic planning (local vs enterprise) • Suggested integration approach • Federation as a model • Proposed focus areas • Feedback requested 	In person	Jennifer	Meeting with OLT Documents distributed Follow up meeting to be scheduled
Jan-Sep	Deans - Vancouver	<ul style="list-style-type: none"> • Overview of current state • Information of history of IT strategic planning (local vs enterprise) • Suggested integration approach • Federation as a model • Proposed focus areas • Feedback requested 	In person meetings	Jennifer	50% complete Science, App Sci, Forestry, Medicine, Sauder remaining Some conversation on governance with Medicine already
Oct	IT Directors	<ul style="list-style-type: none"> • Overview of current state • Information of history of IT strategic planning (local vs enterprise) 	In person	Jennifer/Ken	Complete



		<ul style="list-style-type: none"> • Suggested integration approach • Federation as a model • Proposed focus areas • Feedback requested 			
Oct 2015- Sep 2016	UBC IT Vancouver & Okanagan senior leadership	<ul style="list-style-type: none"> • Development of model and priorities 	In person meetings	All	Complete
July-August	CTLT	<ul style="list-style-type: none"> • Development of the Teaching and Learning narrative and proposed goals 	Simon Bates	Jennifer & Claudio	Complete
September	Learning Technology Leadership Team (LTLT) Vancouver & Okanagan Leadership	<ul style="list-style-type: none"> • Review of the Teaching and Learning narrative and goals • Validation of approach and engagement activity 	Simon Bates, Jennifer Burns, Ken Nowlan	Jennifer and Ken	Complete
September	Associate Deans Academic (Vancouver)	<ul style="list-style-type: none"> • Overview of current state • Information of history of IT strategic planning (local vs enterprise) • Suggested integration approach • Federation as a model • Proposed focus areas • Validation of the T&L component and goals 	Presentation at regular meeting	Simon, Jennifer, Ken	



September 2	ARC Research steering committee	<ul style="list-style-type: none"> • Overview of current state • Information of history of IT strategic planning (local vs enterprise) • Suggested integration approach • Federation as a model • Proposed focus areas • Validation of the Research component and goals 	Strategy discussion (proposed)	Jennifer/Ken/Steve	Meeting pending approval
July/August	Faculty IT Directors	<ul style="list-style-type: none"> • Federation as a model • Proposed focus areas • Discussion on how to include them 	In person meetings	Jennifer	Discussion complete, need to finalize how to involve.
July/Aug/Sept	Provost & Provost office Vancouver	<ul style="list-style-type: none"> • Overview of proposed focus areas • Engagement plan • Federation as a model • Proposed focus areas 	In person meetings and discussion	Jennifer/Ken	In progress
Sep	Okanagan Leadership	<ul style="list-style-type: none"> • Overview of current state • Information of history of IT strategic planning (local vs enterprise) • Suggested integration approach • Federation as a model • Proposed focus areas • Feedback requested 	In person	Jennifer	Meeting with OLT Documents distributed Follow up meeting to be scheduled
September	UBC Board	<ul style="list-style-type: none"> • Introduction to possible focus areas and planning process 	In person presentation at Finance committee	Jennifer	In progress
September	Community forum	<ul style="list-style-type: none"> • Open invite for discussion by UBC community using open minds tool or other crowd sourcing tool 	Crowd sourcing software/focus groups	Ken	



October	President	<ul style="list-style-type: none">• Sharing of engagement strategy and activity• Overview of history and why this approach• Framework document	Email/In person	Jennifer	
November 9	ITAC	<ul style="list-style-type: none">• Overview of current state• Information of history of IT strategic planning (local vs enterprise)• Suggested integration approach• Federation as a model• Proposed focus areas• Validation of the topic areas, approach, and seek recommendation to Exec	In person meeting November 9	Jennifer	
November	Exec	<ul style="list-style-type: none">• Overview of current state• Information of history of IT strategic planning (local vs enterprise)• Suggested integration approach• Federation as a model• Proposed focus areas• Validation of the topic areas, approach, and seek approval from Exec			