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THE UNIVERSITY OF BRITISH COLUMBIA

UBC's Learning Technology Ecosystem:
Developing a Shared Vision, Blueprint & Roadmap

May 2015

This report presents findings and recommendations from an extensive dialogue with faculty, students and staff about the learning technology ecosystem, conducted during the fall of 2014. The process was informed by a spring 2014 community consultation and results from the ECAR Survey of Faculty & IT. Ongoing discussions are planned on both campuses.

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Executive Summary

Teaching and learning is increasingly enabled by and dependent upon technology. A Learning Technology Ecosystem project, sponsored jointly by the provosts of the Vancouver and Okanagan campuses of the University of British Columbia, was launched in September 2014. The project began with an assessment of the current state of learning technology at UBC, based on results of faculty and student surveys, discussions with faculty members and interviews with learning technology leaders at other academic institutions. A small Working Group developed a vision and principles for decision making, identified and prioritized functional and service gaps and created a high level roadmap for the evolution of the learning technology ecosystem at UBC.

Inputs to the project identified the need for more prominent academic leadership in the area of learning technologies, as well as significant shortcomings in the current governance structure. Proposed new governance structures introduce significant agility, defined processes for faculty member and student input, as well as clarity about how decisions are made, and how learning technology governance articulates with academic strategy and other governance structures at UBC.

The functional footprint from a single learning management system has decreased over time, with the addition of tools that provide additional capability or flexibility. The three year roadmap has confirmed this general direction, with a decision about the future of the current learning management system required by the end of 2016. The immediate focus for 2015 is to enhance tool integrations, implement better communication and collaboration tools and increase faculty and student engagement. We will inventory and measure all tools against the principles developed and introduce new governance structures.

UBC will need to continue to invest in learning technologies, to ensure that faculty at UBC have the resources they need for teaching, to meet student expectations, and to keep up with the pace of change in learning technology. We expect that much of the additional work identified in this paper will be accomplished through a reallocation of existing resources. However, several significant investment projects have been identified for the next three years, including the implementation of learning analytics, additional bandwidth (particularly at the Okanagan campus), expanded and updated classroom technologies and a digital repository for teaching content. A decision point at the end of 2016 on the continuation (or change) of the current LMS platform may have associated transition costs.

A note about the word ecosystem

The word “ecosystem” was deliberately used throughout this project, and its use was supported by the Working Group. A learning technology ecosystem represents faculty, staff and students interacting with their learning technology environment, composed of tools and services. There are dependencies in this ecosystem; between technologies, between technologies and services but also between users, technologies and services. The ecosystem is self-organizing, dynamic, constantly changing and evolving. Technologies are birthed, and they also are removed as new ones take their place.

I Background

Teaching and learning is increasingly enabled by and dependent upon technology. Changing societal expectations, learner preferences, cost pressures and other evolving dynamics in higher education add to the impetus for change. In response, UBC launched Flexible Learning (FL), a strategic approach built around six pillars of activity (see flexible.learning.ubc.ca). With respect to undergraduate courses, the intention is to help faculty members to innovate their teaching and to enhance student learning. A robust and agile learning technology ecosystem is critical to the success of this activity.

In late 2013, the UBC Vancouver Provost tasked the leadership of UBC IT and CTLT to work more collaboratively and effectively in the provision of central support for learning technology. In tandem, we were challenged to undertake a consultation exercise that would enable us to define the future of the learning technology ecosystem, and to build a roadmap to achieve this defined future.

This represents a significant program of work, and we began by:

- Re-articulating a shared responsibility for leadership in the central provision of learning technology, both strategically and operationally across design and delivery functions. Pedagogically informed selection and design of learning technology systems is paramount but also must be backed up by robust and effective operational delivery.
- Making changes within CTLT and UBC IT that have fostered closer working relationships, including shared learning technology support processes and approaches. Staff from both organizations are co-located in the Learning Technology (LT) Hub on the third floor of the I K Barber Learning Centre, where they provide in-person, telephone and virtual support to faculty and learning technology support staff.
- Implementing a number of short term improvements to the ease of use and functionality of ***Connect*** (UBC's learning management system, or LMS).
- Collaborating and consulting with the UBC community (faculty, students and staff) about learning technology.

Consultations in the spring of 2014 confirmed the results of the ECAR Study of Faculty and IT conducted in March 2014. Both indicated the need for a strategic vision for learning technology, more agility and responsiveness in governance, and a stronger academic voice in decision-making, while re-affirming the critical importance of learning technologies in support of instruction.

> *Adopt a single, campus-wide 'umbrella' strategy that sets out the institution's long and short term vision, goals and objectives for embracing and deploying technology to support … learning.*
>
> UBC Faculty member,
> ECAR Study of Faculty and IT, March 2014

In September 2014, for a project sponsored jointly by the provosts of the Vancouver and Okanagan campuses, a small Working Group was formed. Its mandate was to develop a shared vision and principles for decision-making, a blueprint for the learning technology ecosystem, and a roadmap for achieving it.

1.1 Context

This project is linked strategically with a number of other UBC initiatives. Through FL, project funding continues to stimulate and support curriculum innovation, with, at the UBC Vancouver campus, a fourth call for proposals for undergraduate course transformations expected in the second half of 2015. Sixty-four such projects have been funded by Flexible Learning and TLEF since 2013.

UBC is expanding access to applied courses through new professional masters and certificate programs, and to other career and personal education offerings, starting in the summer of 2015. Student experience is being improved through additional national and international experiential learning opportunities. Planning for improved learning spaces, for expanded online learning opportunities, and for increased agency in the selection of courses is underway.

In parallel, a new academic model is being proposed as part of the Student Academic Systems Initiative (SASI), and anticipated changes in IT governance provide an opportunity to re-think governance for learning technology.

1.2 Approach

The project was initiated in late September 2014 with an assessment of the current state of learning technology at UBC. We interviewed UBC faculty members and LT leaders at other academic institutions. The Working Group developed a vision and principles for decision making, both of which were unanimously endorsed by the Steering Committee. Functional and service gaps were identified and prioritized, and a high level roadmap developed. Wider dissemination and discussion around the project outputs is currently underway.

Consultation with Peers

The team consulted with LT leaders at peer institutions based on their experiences at the University of Edinburgh, Purdue (now at West Virginia), Pennsylvania State (now at Stony Brook), UC Berkeley and the University of California System. From them we learned that successful institutions:

- have clearly articulated priorities that are sponsored by the University executive;
- have academic leadership in the governance of learning technology;
- use research-based principles and data to inform decision making, course (re)design and student engagement;
- identify faculty champions who can influence and mentor their peers;
- create opportunities for innovation; and,
- support faculty in meeting their teaching and learning goals, taking into consideration their rank and discipline.

With respect to specific technological approaches, we learned that social technology tools, Camtasia and media studios have shown demonstrated success, as have faculty/staff collaborations to explore emerging technologies. Learning analytics and adaptive personalized learning show promise. Podcasting, lecture capture and e-portfolios have all failed to realize their potential.

1.3 Current State Assessment

The first step in this project was to gather data from a number of disparate sources: the community consultations in the spring, the ECAR Survey of Faculty & IT, the AMS Student Experience Survey, the National Survey of Student Engagement (NSSE) for first and fourth year students, and the Canadian University Survey Consortium (CUSC) surveys for second and third year students. We analyzed all of the available information and made an assessment of the current state of learning technology at UBC, later validated by the Working Group at its first meeting, using the process framework shown in Figure 1.

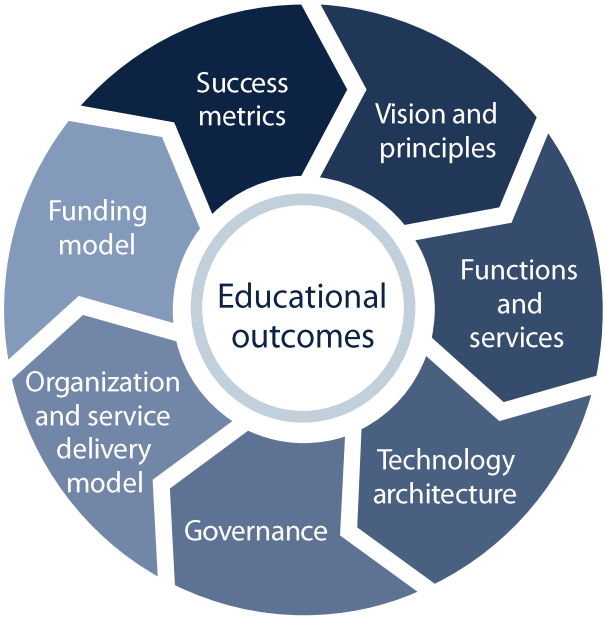


Figure 1. Process Framework

Educational outcomes. Positive student outcomes can be enhanced only if learning technology decisions are informed by pedagogy.

Vision and principles. Faculty need greater clarity about direction so all activities are aligned.

Functions and services. Significant gaps in ***Connect*** functionality exist, and closer alignment between support services and faculty needs is required.

Technology architecture. Both faculty and students demand increased bandwidth and system responsiveness.

Governance. We need greater agility in LT decision making, and clarity about how decisions are made.

Organization and service delivery model. The role of the LT Hub and Faculties in providing service, from development through instructional support, needs clarification.

Funding model. A clearly defined framework for funding allocations will improve transparency and understanding.

Success metrics. There is a need to measure success against defined goals; current metrics focus on system performance and tool use.

1.4 Total Current Cost of Ownership

At UBC, some learning technology service and support activities are centralized and some are contextualized to the local disciplinary environment. Central costs (i.e., within UBC IT and CTLT) for learning technology licenses, as well as staff time on development and support were calculated based on available budget information (see Appendix I for details). After discussion with the Steering Committee, an estimate of Faculty costs was made, based on the number of Faculty-based administrators in ***Connect***, as well as other publicly available information, such as organizational charts.

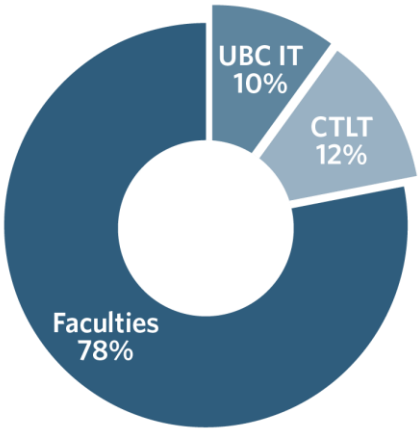


Figure 2. Distribution of current LT spend

Total annual costs for ***Connect***, publishing tools (blogs, wiki) and all other learning tools were estimated at $9.8 million (including technical infrastructure), $8 million of which is spent in Faculties. The vast majority of this expenditure is on salaries, as opposed to licenses and infrastructure. As the central component of our LT ecosystem, the central licensing support and development costs around ***Connect*** were calculated at $1.1M. This is complemented by Faculty-based support (a substantial fraction of the $8M expenditure referenced above). Total estimated costs for media (lecture capture, Kaltura video hosting platform) were $1.9 million. Costs for classroom audiovisual equipment ($1.75 million) and student evaluation of teaching ($495,000) were also calculated. The boundaries of the LT Ecosystem are fuzzy, and one could make the argument that these latter two are outside the core of the ecosystem.

II Vision and Principles

Feedback from faculty indicated a lack of clarity around the overall strategic aims and direction for LT. The Working Group developed a vision statement for the LT ecosystem, as well as principles for decision-making. Both were unanimously endorsed by the Steering Committee.

A vision is a succinct aspirational statement that describes what we would like to achieve. A shared vision, one to which faculty, students and staff ascribe, provides strategic direction for the development of the ecosystem, and enables all learning technology activities to be aligned.

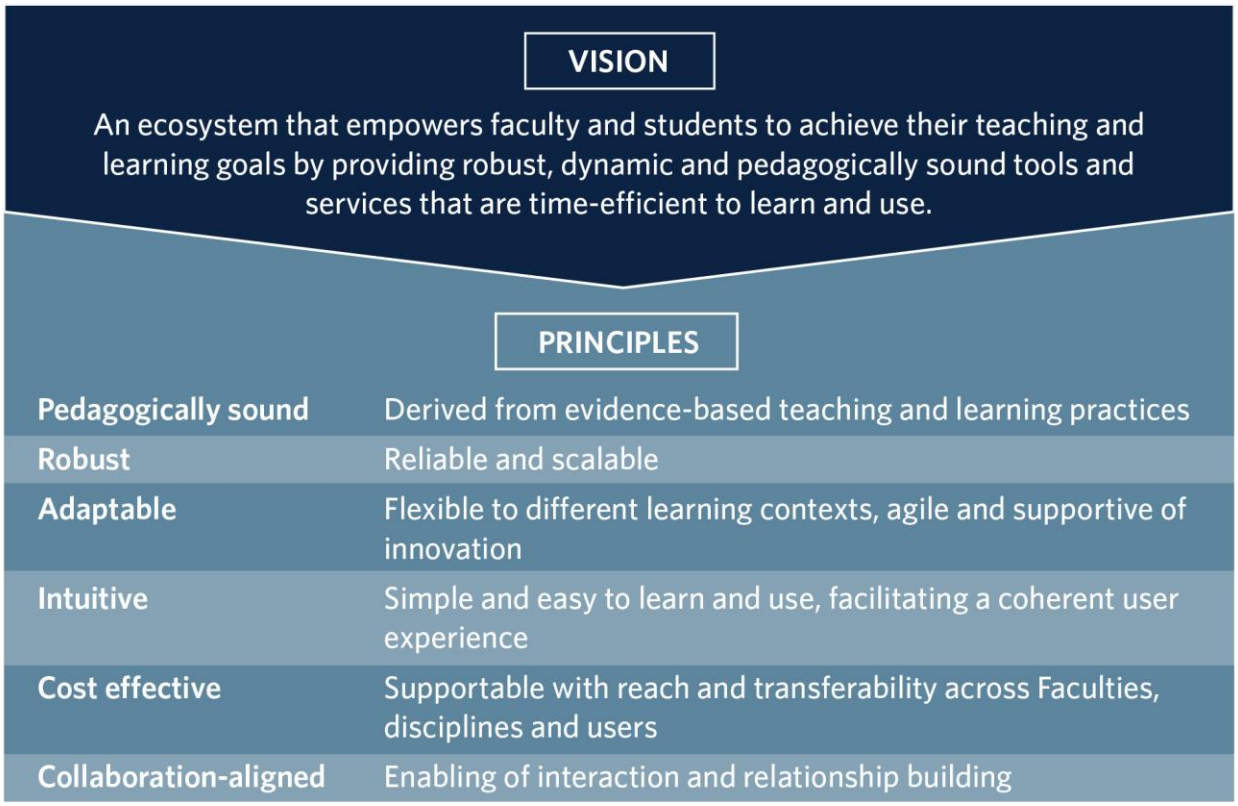


Figure 3. Vision and Principles

Principles form the foundation for the operation of the ecosystem, and provide guidance for decision making. All learning technologies, tools and services will be evaluated against these principles in the coming years.

III Functions

Having developed a vision and principles, the Working Group then focused attention on functions supported by the LT ecosystem. While many teaching and learning functions can be supported through the use of technology, the available technology does not always meet intended pedagogical outcomes.

A course development lifecycle framework was used to represent the processes with which a faculty member would engage when delivering a course. It incorporates elements of course design, learning content creation and / or curation, assembly into a learning sequence, incorporation of assessment and interaction strategies, feedback mechanisms and evaluation. Working group members identified functional gaps in the LT ecosystem, along with their relative importance. There were no functional gaps identified for feedback, and evaluation was considered out of scope for this project. A subsequent (informal) feasibility assessment was based on currently available functionality, the effort required to fill identified gaps, as well as costs (if any).

Learning technology tools must meet intended pedagogical outcomes.

3.1 Course Design/Learning Content

Activities in this function include course planning and conceptual design derived from intended learning outcomes, as well as the selection, development and management of learning content to be delivered. Working group members said they wanted the ability to integrate open content, to share and to access (with permission) content developed by their colleagues (at UBC and elsewhere), and to readily make use of student generated content. The effort required to assess content quality is substantial, and one that faculty at all institutions face. UBC specific challenges include Policy 81 (perhaps mitigated somewhat by the recent revision) and the current Faculty-based permission structures within ***Connect*** (in its role as *de facto* content repository).

3.2 Learning Sequence

The development and delivery of the sequence of learning activities that take place within a course are elements of this function. Working Group members indicated the need for personalized (adaptive) learning sequences, integration of more tools into the ecosystem (e.g., the recent integration of Piazza discussion forum tool), as well as the ability to deliver learning in a classroom context using mobile devices (untethered for instruction). The shift to greater modularity and customization, for example disaggregating courses into a number of shorter units or modules, is a focus of intense discussion in higher education at present. Implementation ability is hampered by the customization effort required, the current credit hour based academic model, as well as provincial funding models which are based on student FTEs.

3.3 Interaction

Communication design, focused on all types of formal and informal interactions, is the basis of this function. The growing use of mobile devices has resulted in expectations of both 24/7 connectivity and the ability to access learning materials with these devices. Currently there is no functional mobile solution for the LMS; the risks associated with limited functionality and / or poor performance of third-party apps used to access the LMS on different mobile devices may outweigh the benefits. Insufficient bandwidth (particularly at UBC's Okanagan campus) prevents the use of some classroom-based learning tools, and cross-campus interaction is challenging.

3.4 Assessment

Activities include the selection, development, delivery and management of both formative and summative assessment activities. Increasing incidence of online assessments, often using tools outside of the ecosystem (e.g. through learning content systems developed by publishers), create academic integrity support challenges, and make testing the efficacy of tools difficult, since the data is often in vendor owned systems. Working Group members indicated a need for enhanced poll and peer assessments to learning outcomes at the institution level.

3.5 Prioritization of Gaps

As indicated above, the functional gaps were prioritized by the Working Group according to their relative importance and an informal feasibility assessment was made. The functional gaps identified in the top left in Table 1 were judged as the most significant, as well as the most feasible to resolve in the short term. These require immediate focus.

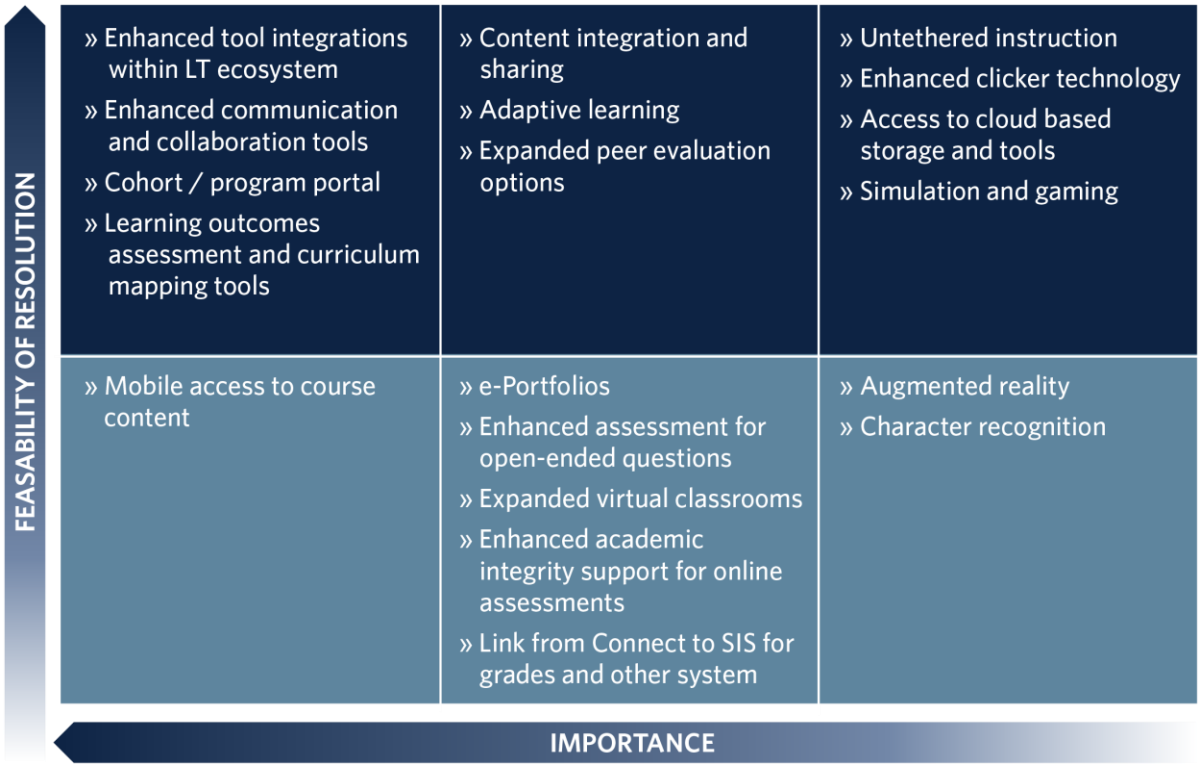


Table 1. Prioritization of Functional Gaps

IV Services

Generally speaking, new technologies follow a predictable lifecycle, beginning with exploration, innovation and experimentation. If shown to be pedagogically effective and technically sustainable, the tool or technology may next be rolled out into mainstream operations. As a result of new innovations, better applications and other changing circumstances, the technology or tool is eventually decommissioned. Further details about the proposed criteria for decision-making within each phase of the lifecycle can be found in Appendix II.

Each phase of the technology lifecycle is characterized by unique goals and service provision. Members of the Working Group identified both phase-specific support required, as well as support services required across the lifecycle. They identified which of the gaps required the most improvement and also prioritized them according to their relative importance.

4.1 Support across the technology lifecycle

Support for faculty, as characterized by the Working Group, should ideally be 1:1, relationship based, and just-in-time. Faculty want to hear from their peers about effective practices in the use of technology, about what they have learned from evaluating its pedagogical efficacy and about any additional research evidence available. Training should be available at each stage of the lifecycle, but customized to phase and context. Some faculty, particularly those on tenure track, said that experimentation was too risky without financial support such as course buyouts. Communications about learning technologies, management, evaluation and policy development are needed at each stage of the lifecycle.

> *As much as possible, make staff available to partner with novice faculty users.*
>
> UBC Faculty member,
> ECAR Study of Faculty and IT, March 2014

4.2 Phase-specific support

In some cases learning technologies introduced to campus are mainstream in other disciplines or at other institutions. In these situations, the support a particular group of faculty and students require may be out of sync with the phase of the technology.

Innovation

Working Group members indicated that they were not always aware of how to get started if they wanted to innovate their teaching using technology. They asked for a step by step guide (illustrative, not prescriptive), support for new pedagogical approaches and a framework for evaluation, as well as assistance in gathering and collating input from students.

Experimentation

The experimentation phase typically involves conducting a number of pilots, preferably across disciplines to assess transferability. Assistance with identifying other interested instructors, consultative support for course and content design (in light of new pedagogies), application for ethics approval (if needed) and navigation of legal processes (if required) were identified as essential services.

Rollout

This phase, between experimentation and mainstream operations, is sometimes referred to as 'beta'. Just-in time adoption support for both faculty and students, as well as facilitation of knowledge sharing is critical to success. If technical infrastructure has been operated locally for the pilots, it is transitioned to central support.

Mainstream

Service activities in this phase include developing a service definition and operating standards, posting self-help documentation (both step-by-step and video), providing a process for after-hours service escalation, and clearly defining a mechanism for feedback and for continuous improvement. Communication and change management are paramount.

Sunsetting

Learning technologies should regularly be evaluated to determine whether they continue to meet the intended pedagogical goals, and whether they continue to be supportable (e.g., the software and/or operating system is no longer vendor supported). When they do not, or better options become available, existing technologies should be deprecated. Clear communication, change management and transition support is needed. Particular attention should be given to continuing students, who may have started their program using one technology, only to be required to shift to another.

4.3 Prioritization of Service Gaps

Working group members identified service gaps in the LT ecosystem, and categorized them according to the degree of improvement needed, as well as their importance relative to other gaps identified.

Learning analytics is the strategic collection, use, analysis and presentation of data about learners, context and their interaction with content, to understand and to optimize learning and the environment in which it occurs, and to create predictive models to inform decision making.

Adapted from ECAR, Baer, Wikipedia & other sources

The services listed in the left-hand column of Table 2 were identified as having the highest relative importance. The assessment of the level of engagement with LT tools and the impact of those tools on teaching and learning was considered the highest priority, and also the most in need of improvement. The use of data (through learning analytics) to inform decision making would assist in this kind of assessment. The linked support services of assisting faculty member and student engagement with LT tools (support for how to use tools and technologies effectively) and faculty-led sharing of knowledge (sharing the stories of successful use and implementation) were also judged to have a high relative importance.

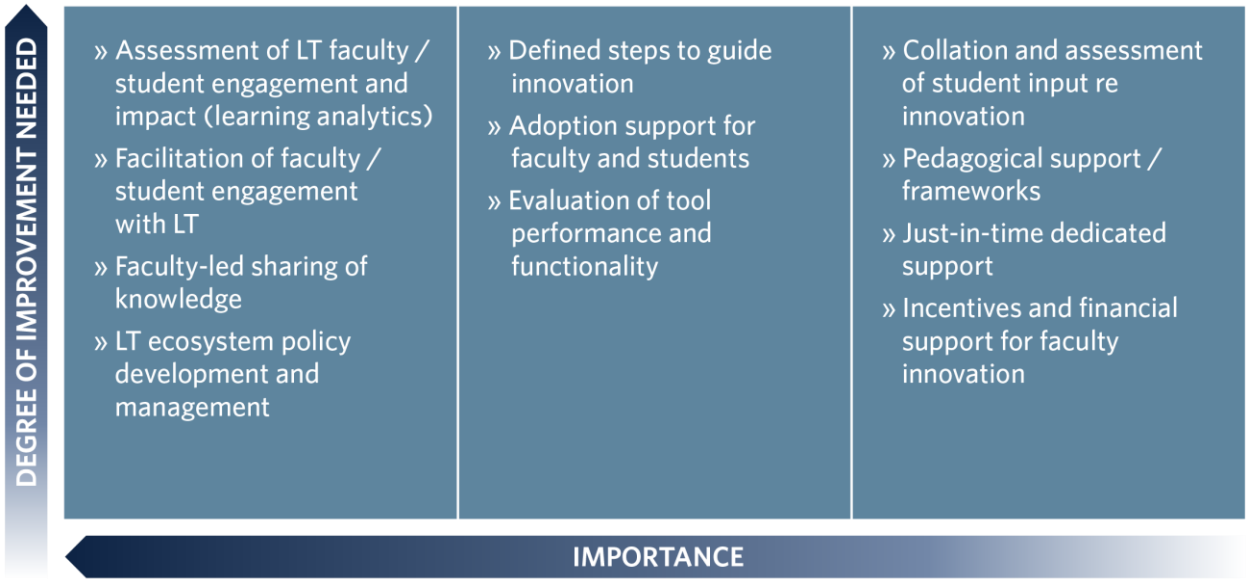


Table 2. Prioritization of Service Gaps

In general, both faculty and students want greater involvement in all aspects of learning technology, and faculty, in particular, want to learn from each other.

V Support Model

In general, learning technology support is pedagogical in nature, supporting evidence-based practice, faculty-led sharing of knowledge and training, but it clearly relies critically on the underpinning technical infrastructure. This intrinsic entanglement was the rationale for the creation of the LT Hub, comprising the relevant personnel within CTLT and UBC IT with roles relating to learning technology support and development. UBC IT provisions systems, manages system performance and upgrades and provides technical support. Integrated support, provided jointly by CTLT and UBC IT in the LT Hub, includes tool license management, integrations with the ecosystem, faculty and student engagement as well as support that is both pedagogical and technical in nature.

Moving beyond central support for learning technology, there is substantial variability within the support provided from within Faculty-based units. Both learning technology support and IT support are distributed to different extents in different Faculties at UBC, based on contextualization to the local environment, available resources and/or campus needs. For example, at UBC's Okanagan campus, all LT support staff are centrally located in the Centre for Teaching and Learning. In Science, Faculty-based LT staff are jointly located in the Centre for Teaching, Learning and Technology and the Science Centre for Learning and Teaching. This better meets the Faculty of Science needs for LT support that is integrated with pedagogical research. Support staff in the distributed undergraduate medical program operate relatively independently of the rest of campus because of their unique needs (and likewise there is more collaboration in the allied health sciences).

Given this variability, within the timeframe of this project, we did not seek to address the ways in which the support model (or, more precisely, *models*, acknowledging the different instantiations) may evolve,

and in which direction. In general, contexts in which there is greater scope for disciplinary specific tools, those that have greater urgency and therefore time constraints, and those in which significant innovation takes place, tend to greater distribution. Drivers of more integration include common goals and tool usage, needs for better cross-Faculty sharing, budget shifts from people to tools and licenses, and economies of scope, particularly in learning analytics and pedagogical research. The relevance of these factors will vary depending on context and can shift over time, so a deliberate review at an appropriate time and (potentially) rebalancing of support is needed as we move forward.

VI Governance

A 2002 recommendation from the Advancing the Creative Use of Learning Technology (ACCULT) resulted in a nascent governance structure for LT. This structure evolved over time; in the last four years focusing almost entirely on the transition from Vista to ***Connect***, and has only recently expanded to explicitly include the entire learning technology ecosystem.

Requirements of good governance:

- *Decision making accountability*
- *Agility*
- *Faculty member and student input*
- *Cross-faculty representation*
- *Interface with IT governance*

Feedback from both Faculty consultations and the ECAR survey responses acknowledged significant shortcomings in the current governance structure. They highlighted the imperative for academic leadership of learning technology and the need to clearly articulate how academic strategy influences decisions. The ways in which faculty could make input into LT governance were limited and convoluted, and the student voice was largely absent. The decision-making processes were seen as opaque and not agile, and it was not clear how LT governance articulated with IT governance, particularly for large investment decisions. Many comments pertained specifically to the transition project that oversaw the migration from WebCT Vista to Blackboard Learn (***Connect***). The proposed new governance structure that emerged from the discussions in the Working Group sessions and Steering Committee meetings seeks to resolve these shortfalls.

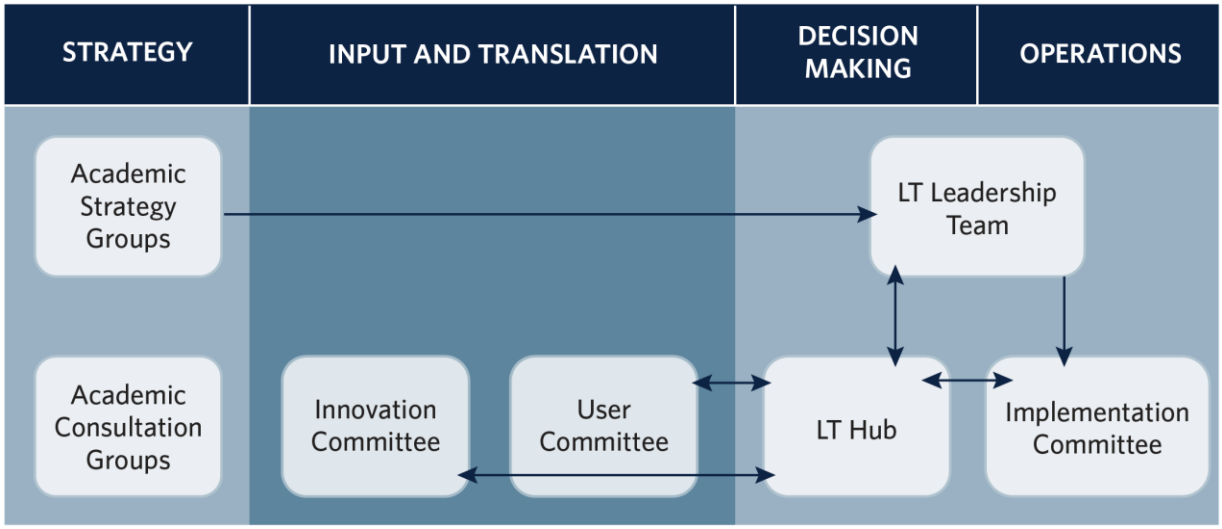


Figure 4. Proposed Governance Structure

6.1 Strategy

Priorities for learning technology are dependent on academic strategy. Academic strategy groups include (but are not limited to) the Executive, Committee/Council of Deans as well as the Flexible Learning Leadership Team. These groups will prioritize the initiatives that require learning technology support and investment. Consultation with groups such as Associate Deans Academic and Senate Committees (as appropriate) will be critical.

6.2 Input and Translation

Effective governance requires both input from user groups and an ability to communicate and disseminate priorities and activities. We propose two distinct committees to contribute primarily to this function. Membership of both the Innovation and User Committees will comprise of faculty, students and pedagogy experts and will replace the current Pedagogical Working Group and Faculty Advisory Committee (both of which lacked meaningful student input). The Innovation Committee will focus on identifying, prioritizing and evaluating the next-generation tools that may form part of a future ecosystem; the User Committee on providing feedback and direction to improve and enhance the current range of tools in the LT ecosystem.

Innovation Committee

The Innovation Committee will identify opportunities for new learning technologies based on pedagogical research, consultations with peer institutions and colleagues at UBC and elsewhere. The Committee will recommend pedagogical priorities for UBC and identify technologies to pilot.

User Committee

This Committee will identify faculty and student needs, will identify required improvements in user experience and recommend priorities for filling functional gaps. Members will also advise on communication with faculty and students and change management strategies.

6.3 Decision Making and Operations

Implementation Committee

The Implementation Committee consists of senior learning technology personnel in each of the Faculties, the Director of CTL, as well as representatives of CTLT and UBC IT, and is co-chaired by senior UBC IT and CTLT staff who are also members of the LT Hub. Members of this committee gather input from faculty and students, as well as from the other LT Committees. This group makes decisions about operational priorities, and about how to approach implementations of new systems, software, functionality and services. Recommendations about operational policies and processes, as well as communication and change management strategies are made to the LT Leadership Team and to the LT Hub.

LT Hub

The Learning Technology Hub has oversight of operational activities, working closely with faculty, staff and all LT committees. The Hub is chaired by the Academic Director of CTLT, and is

comprised by the CIO and the two senior staff from CTLT and UBC IT with oversight for operational activities in this area.

LT Leadership Team

Overall accountability for learning technology rests with this Committee, chaired by the Vice-Provost Academic Affairs, comprised of Deans, Associate Deans and Student representatives from both campuses, as well as the Academic Director of CTLT and CIO. The Committee should be relatively small (rather than seeking to be representative of all Faculties) and have the authority to approve spending within a specified annual budget envelope. For significant investments, this group makes recommendations to the Executive and to the Board. Input comes from the University's academic strategy groups and the LT Hub.

Critical to the successful functioning of these committees will be careful consideration around terms of reference and remit, decision-making responsibilities, membership and cadence. Working Group members devised initial decision matrices for these groups (See Appendix III) to inform these discussions.

VII Roadmap and Success Metrics

> *Reduce reliance on closed, commercial one-size-fits-all software platforms … [so] faculty can innovate.*
>
> *Let faculty use the best tools available.*
>
> UBC Faculty members
> ECAR Study of Faculty and IT, March 2014

The roadmap for learning technology is, in part, contingent on how the LMS (currently ***Connect***) fits into the ecosystem. In the past, the LMS has played a significant role, but the focus has shifted over the last several years. Faculty desire a greater choice of tools, so that the one with the best fit for the pedagogical purpose can be selected. The number of available tools integrated with ***Connect*** has increased significantly over the last few years; these tools provide either additional capability (doing something that the LMS does not) or additional flexibility (a different tool for existing functionality). As a result, the functional footprint of the LMS is shrinking over time (though the footprint of the entire ecosystem is arguably increasing). Moving forward, we see no deviation from this general trend (and potentially an acceleration, driven by faculty needs). We anticipate a shrinking LMS footprint while still envisaging the need for a core within the ecosystem. Exactly what functionality is needed at the centre of the ecosystem requires further consultation with faculty (likely both a portal and a grade book as a minimum).

UBC has a license for ***Connect*** until 2019; realistically, a platform decision must be made at the end of 2016 to facilitate planning and implementation of the (potential) move to a new platform. This will be a primary focus for the various governance groups, once established.

Towards the end of the current project, we engaged in discussion with various groups about whether to bring forward this decision point, motivated partly by a change in Blackboard's business strategy. Their deployment roadmap for user interface and functionality improvements prioritizes cloud-based

(software as a service) clients, and there are currently no firm dates for deploying these changes to (Blackboard) managed or self-hosting clients (such as UBC). Given the level of faculty and student dissatisfaction with the current user interface and functionality, this is a concern. Notwithstanding, lessons learned from the fall of 2013, when ***Connect*** performance was suboptimal, we believe that stability is important for the present immediate future and do not recommend an earlier decision point.

7.1 Roadmap

The outline roadmap for the next three years revolves around this platform decision point, and is presented in Appendix IV. Through the end of 2015 the plan is to implement the priority fixes identified, to inventory and measure all tools against the overarching principles, and to introduce the new governance structures. A decision must be taken related to licensing Blackboard Analytics, with which we have had significant multi-year implementation challenges. Blackboard Analytics was always intended as an interim measure; a larger investment case for learning analytics will need to be prepared to enable us to make evidence-based decisions.

In 2016, efforts will shift to collecting data in support of a platform selection process, which must be completed by the end of the year. Additional effort will be made to ensure the right learning technology tools are available, and we will have preliminary research evidence about the effectiveness of edX. A case for investment in increased bandwidth will also be made. Cost considerations associated with a (potential) change to the core LMS platform will also need to be carefully assessed.

Shaping and strengthening the ecosystem will be the focus of 2017, along with realignment of central services (if needed) in response to the changes in direction. An investment case for classroom technology infrastructure (to accelerate improvements in classroom-based technology), as well as for a central content repository, will also be made.

The roadmap activities represent a deliberate combination of actions and planning activities. A significant number of actions will be undertaken with reallocation and realignment of existing resources, with a small number of cases for substantial investment identified through this project, which are discussed in greater detail in Section VIII.

7.2 Success Metrics

Metrics for success allow evaluation of progress together with an assessment of effectiveness of particular functionality or services within the ecosystem. Such metrics should follow from the vision and the principles, should be relatively few in number, and the data required should be readily available. The Working Group identified the metrics shown in Table 3, together with the relevant guiding principles that relate to each metric.

Moving forward, we anticipate evaluating specific tool functionality, service and support wrapped around these tools and system performance on a regular basis.

CATEGORY	METRIC	MEASUREMENT APPROACH	GUIDING PRINCIPLES: Pedagogically sound	Robust	Adaptable	Intuitive	Cost effective	Collaboration aligned
Functionality for teaching and learning	Student outcomes	» Comparison of outcomes before and after use of LT (discipline-specific) » Student engagement (analytics)	Applicable			Primary		Primary
	Faculty / student satisfaction	» Subjective faculty / student user assessment (survey)	Applicable		Applicable	Applicable	Primary	Primary
	Tool usage	» Tool reach / #users (LMS / LTES data) » Level of usage by user (LMS / LTES data)	Primary	Primary	Primary	Applicable	Applicable	Primary
Service and support	Faculty / student satisfaction with support services	» Subjective faculty / student user assessment (survey)		Primary		Applicable	Primary	
System performance	Uptime for Connect (LT Tools)	» System availability less scheduled down time (LMS / LTES data collation)		Primary			Primary	
	Page load	» Minimum, maximum and average page load times of 5 most frequently used functionalities (LMS / LTES data)		Primary			Primary	

Primary Applicable

Table 3. Success Metrics

VIII Resource Implications

In order to ensure that faculty at UBC have the resources they need for teaching, to meet student and employer expectations with respect to proficiency in the use of technology, and to keep up with the pace of change in learning technology, it is imperative for UBC to continue to make investments in this area. However, in the current budget climate, it is also important to consider whether the tools and services provided are the most cost effective, and what can be accomplished with a reallocation of current capacity. Items which are likely to require a substantive investment, and thus a formal business case, are identified below.

8.1 Learning analytics

The strategic collection, use, analysis and presentation of data about learners, context, and their interaction with content will allow us 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). Peer institutions have made substantial investments in learning analytics, in terms of institutional policy and practice, as well as integrating data from disparate systems for analysis. Our assessment is that UBC is significantly behind comparator institutions in this area, and the challenge will increase as learner data is fragmented over a larger number of disparate systems.

8.2 Additional bandwidth

Increased multiple device ownership (59% of students own 3 or more devices according to the 2014 ECAR Study of Undergraduate Students and IT) and ubiquitous use of online resources in formal and informal settings place significant demands on the IT infrastructure. Wireless networks, particularly at UBC's Okanagan campus, require substantial improvement in order to meet teaching needs (e.g., faculty cannot currently use Learning Catalytics as a classroom-based learning tool because the wireless network is insufficient).

8.3 Expanded and updated classroom technologies

Faculty identified classroom technologies as critical to their success in the recent ECAR Survey but less than 40% of faculty members are satisfied with the rate at which classroom technology is refreshed. At present, the conversion of existing classroom technology from analogue to digital won't be complete until 2020 (when initial conversions will already be eight years out of date). Faculty in the Working Group said they wanted to be able to teach collaboratively, with faculty at other UBC campuses, as well as at other institutions. That is not currently possible in the vast majority of classrooms at either campus. Additional investment is required to create a small number of experimental spaces with such capability.

8.4 Standalone digital repository

Faculty members need a place to store, curate and share (if desired) their teaching content, with their colleagues, with faculty in another discipline, or even another campus. This is particularly critical in the absence of a monolithic LMS (which is where much of the content is now stored). Such a repository would be more effective from an analytics point of view, and would also aid the transition to new technologies and platforms (far content would not need to be moved if it were managed outside the LMS). An enterprise repository would be the most efficient from a faculty workload point of view, as well as the most cost effective, but there will be substantial variation in requirements across Faculties and Departments.

Next Steps

This project confirmed a shift from a single (monolithic) LMS to an integrated LT ecosystem, with a clear decision point at the end of 2016 to confirm implications for the ***Connect*** license. Careful attention must be given to implications of the transition, to ensure that any additional costs are justified and managed.

Planning and actions identified for addressing priority gaps in functionality and services have been initiated. The transition to a new, more agile governance model has started. In the latter part of 2015, all current LT tools will be measured against the principles, and a lifecycle management process will be

formalized. An evaluation of analytics will continue, with a clear investment case to be made for the next budget cycle.

The new governance structure will be pivotal to ensuring that the momentum initiated by this project is maintained.

There are a number of additional questions to be addressed in the coming months.

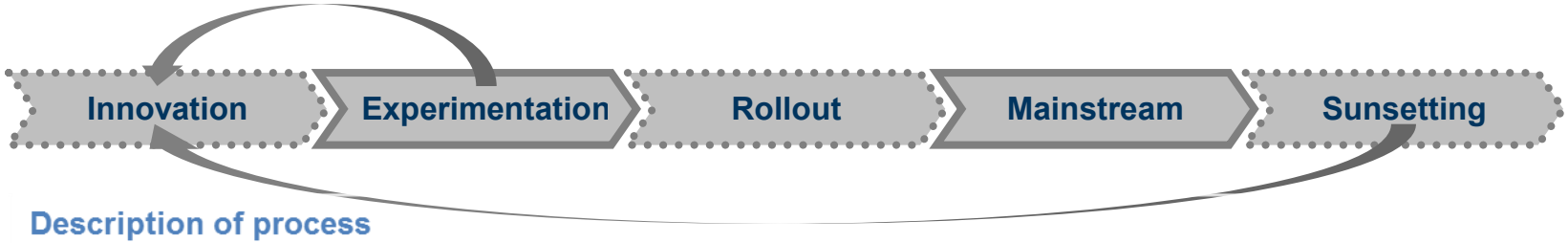
1. What are the realistic budget parameters within which LT needs to operate over the next 5 years?
2. To what extent does the proposed governance model for LT resonate with the emerging governance model of the University (budget accountability, alignment with IT governance)?
3. What would be the impact on the LT vision and requirements of a significant increase in fully online teaching?
4. How should CPE be integrated in LT governance (and ultimately in the LT blueprint)?
5. Does the balance between integrated and distributed services and support need to evolve over time?

The outputs represented in this document have been presented to a number of academic leadership committees at UBC (both Point Grey and Okanagan campuses), to some of the committees in the current governance structure, as well as to UBC community members. Additional consultations are planned on both campuses to ensure that no significant considerations have been omitted. Thus far, all groups have confirmed the general directions represented in this report.

Appendix I: Current LT Spend by Component and Unit

	Blackboard	Publishing	LT tools	Media	Class / AV	SEoT
Faculties (including UBC-O)						
Development				270,000		
Support	←	5,000,000	→	550,000		290,000
MED IT	←	3,000,000	→	900,000		
SUB-TOTAL	←	8,000,000	→	1,720,000		290,000
						CTLT
Licensing	200,000		220,000	40,000		30,000
Development	90,000	85,000	235,000			
Support	210,000	185,000	255,000	40,000		175,000
SUB-TOTAL	500,000	270,000	710,000	80,000		205,000
						UBC IT
Licensing	91,000		7,000			
Development	250,000					
Support	819,000			100,000	1,750,000	
SUB-TOTAL	1,160,000		7,000	100,000	1,750,000	
TOTAL	**9,660,000**			**1,900,000**	**1,750,000**	**495,000**

Appendix II: Process for Iterative Evolution of the Learning Technology Ecosystem



Description of process

Innovation	Experimentation	Rollout	Mainstream	Sunsetting
• Evaluate technology • Evaluate potential pedagogical impact	• Determine transferability to other disciplines • Strengthen understanding of pedagogical value	• Develop support model, resources and metrics • Define change management / communications / plan • Integrate with LTES • Prepare operational environment	• Implement training, support, evaluation • Support ongoing evaluation and/or research • Iterate if research and/or evaluation indicate need • Maintain operational environment	• Define change management / communications / plan • Identify alternate systems if needed • Decommission

Primary criteria for decision making

Innovation	Experimentation	Rollout	Mainstream	Sunsetting
• Technology security • Alignment with pedagogy practices	• Promising impact on student learning • Acceptable TCO	• Community buy-in • Minimum technology performance	• Successful adoption (tool usage, performance) • Evidence of impact on student learning	• Access to better functionality • Support no longer cost effective • Limited high-value but specialized (low-scale) application

Appendix III: Governance Decision Matrices

Strategic Decision Matrix

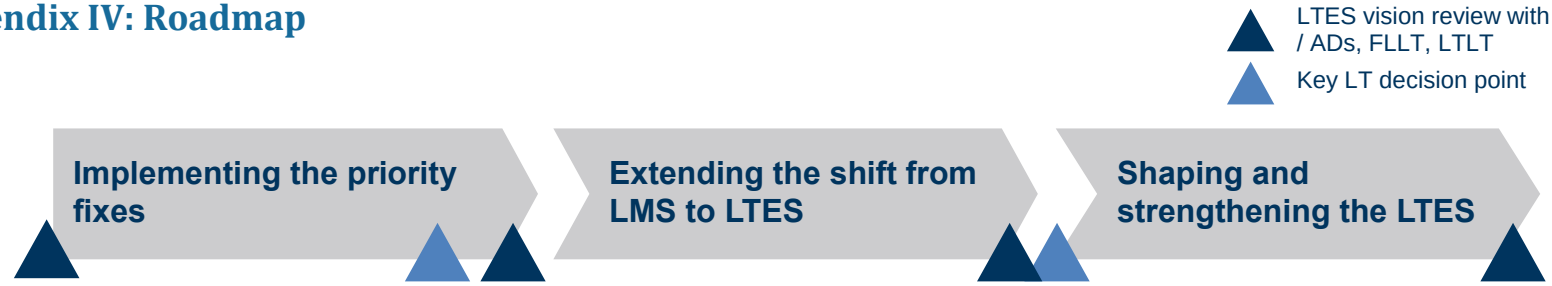
Greater strategic importance, investment level, implications for broader systems or impact on people

	Sources of input	Decisions	Recommendations	Decision makers
LT leadership team	• LT Hub • Academic strategy groups (CoD, FLLT, Associate Deans Academic, Executive)	• Evolution of LTES blueprint • Pace and shape of LTES roadmap implementation • LT investments within agreed budget parameters	• LT budget requirements	• IT leadership team • UBC Executive
LT Hub	• LT leadership team • Innovation committee • User committee • Implementation committee	• Prioritization of operational activity • Shape of F(f)aculty support and service model • Lifecycle management of tools and services	• Evolution of LTES blueprint • Pace and shape of LTES roadmap implementation	• LT leadership team

Operational Decision Matrix

	Sources of input	Decisions	Recommendations	Decision makers
Innovation committee	• Peer universities • Colleagues • Pedagogical research • User committee	• Pedagogical priorities for LT • Technologies to pilot	• Strategy and resource allocation for pilots • Pilot technologies to mainstream	• LT Hub
User committee	• Faculty and student needs (surveys) • Innovation committee	• User experience improvements	• Priorities for filling functional gaps • Communication and change management strategies	• LT Hub • Implementation Committee
Implementation committee	• Cross-Faculty faculty and student input • Innovation committee • User committee • LT Hub • LT leadership team	• Operational priorities • Implementation approach for new systems, software, functionality and services	• Operational policies, processes and procedures • Communication and change management strategies	• LT leadership team • LT Hub

Appendix IV: Roadmap



	Through end 2015	Through end 2016	2017 onwards
Timing			
Decisions	Bb analytics license	Confirmation of platform (Connect licence)	
Actions	• 'Quick win' improvements to functionality and service • Streamlining of LT tool inventory against principles • Transition in governance • Implementation of new lifecycle management processes (tool tracking) • Tailored communication around LTES (current, vision)	• Priority gap filling around functionality and support, including training • Focused analytics activity to strengthen pedagogical / decision-making value of LT • Ongoing LT tool evolution • Evaluation / co-development of edX LTES capabilities	• Continued gap filling around functionality and support • Realignment of CTLT / UBC IT service provision as needed to better meet Faculty needs • Ongoing LT tool evolution and LT analytics
Planning	• Testing of Bb Analytics and development of analytics investment case	• Assessment of / planning for platform decision in context of latest experience and budget implications • Consolidation of requirements and investment case for increased bandwidth	• Vision refinement in context of Connect decision • Consolidation of requirements and investment case for classroom technology infrastructure and content repositories

* Tool integrations, collaboration tools, cohort / program portal; facilitation of engagement, faculty-led knowledge sharing, LTES policy development
Source: Discussions with LTEP Steering Group

Appendix V: Post Publication Version Control

June 12, 2015	Version 1	Editorial changes recommended by representatives of UBC Okanagan campus. Two representatives of peer institutions named, with consent.
July 20, 2015	Version 1.1	Factual error corrected.