

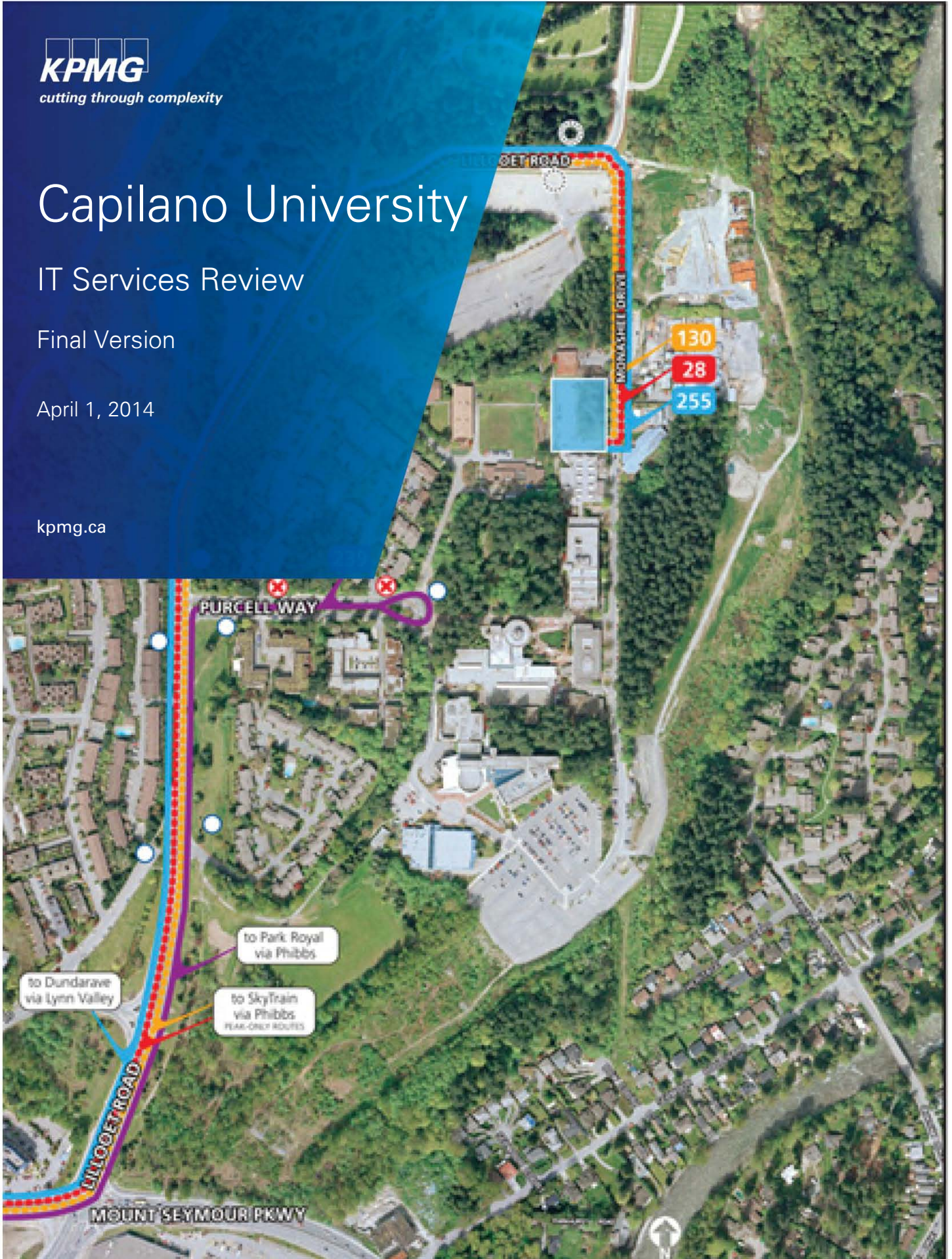
# Capilano University

## IT Services Review

Final Version

April 1, 2014

kpmg.ca





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We take deep **personal accountability**, individually and as a team, to deliver **exceptional service and value** in all our interactions with you.

Ultimately, we measure our success from the **only perspective that matters – yours**.



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# 1. Executive Summary

Capilano University contracted with KPMG LLP to perform an external review of information technology (IT) services, with the following two objectives:

1. Review IT “Lines of Service” based on the standards set by the IT Service Management and the IT Infrastructure Library (ITIL) frameworks;
2. Review the human resource demand and utilization within the IT Services Division (ITSD).

A list of eleven discrete services was specified in the contract as the focus of this review. This report is the final deliverable produced in the engagement.

As with many organizations, Capilano University has made investments for years in automated systems to support both academic and administrative functions, and employed staff to deploy and support them. Unlike many colleges and universities, these staff are managed in a single, centralized IT Services Division. This centralized model has many advantages in terms of clarity, accountability and consistent service delivery.

For the past 3-4 years, the Division has invested in various means to make delivery of some of its services more consistent and systematic, including:

- Adopting a robust tool (Microsoft Service Manager) to track problems reported to the IT service desk, and their resolution; and
- Documenting standard procedures for generic and frequent activities such as Change Management, Request Fulfillment and Incident Response.

Our assessment, based on conducting numerous interviews with ITSD staff, other administrative staff, and selected faculty, indicates that:

- These investments have yielded improvements in the maturity of the service desk functions supporting both classroom and administrative technology, and helped ITSD mitigate the inefficiencies caused by high staff turnover.
- However, it is not clear that these improvements will be sufficient to prevent the gap between user expectations and ITSD performance from continuing to widen.
- Meanwhile, other services such as IT project management have suffered from resource shortages and diminishing capabilities.

From the perspective of stakeholders outside ITSD, therefore, the picture is mixed. Requests for service from the help desk are handled more consistently and promptly, and there is some evidence that the number of such incidents may be decreasing (based on 2012-13 data). On the negative side, the backlog of required IT projects continues to grow, and the quality of project execution suffers from a lack of robust methodologies and tools.

Comparison of ITSD costs (as a portion of overall university operating expenses) and staffing levels (as a portion of overall headcount) with regional, national and North American benchmarks places ITSD at or slightly above relevant norms. And, recent history provides no reason to expect significant funding increases. So, our analysis has focused on identifying ways the University could gradually shift resources toward services that are currently under-funded, to better meet stakeholder needs and expectations.

Based on both our examination of relevant documentation and stakeholder interviews, we conclude that the mission-critical areas of focus for ITSD are:

- 1 Continuing to improve the **service desk function**, by rolling out the self-service portal for incident reporting and follow-up, merging the classroom and administrative service desk tracking systems onto the Microsoft SM platform, and publishing reports of actual performance (e.g., system uptime, incident response and resolution times) against target service levels;
- 2 Reinvigorating the **IT project management** function, by hiring an effective PMO lead, adopting a standard project management methodology and toolset, and accelerating progress on project execution; and
- 3 Increasing effective **internet access speed** from the campus, by purchasing more telecommunications bandwidth and upgrading routers and gateway servers as required. This would enhance both academic and administrative University functions, which all require ever-increasing internet access and speed.

Progress to date is evident on focus area #1, and plans to continue it are already in place. On the other hand, some recent staff reductions have made it impossible to operate the service desks for the full hours of coverage (i.e., until 9pm weekdays). Once these vacant positions are re-filled and target service levels can be maintained, we recommended that resources be gradually shifted from the service desk function to other, currently understaffed services, at a pace that will ensure no erosion of service desk performance. In other words, continued investment in the service desk function is needed in the near term. But, in the medium term, investment in tools such as the self-service portal should allow a smaller service desk staff to maintain acceptable service desk performance. If and when this can be demonstrated, ITSD resources should be shifted toward IT project management and higher internet speed. We do not see opportunities to reduce overall ITSD budget or headcount.

The pace of such a shift must be deliberately and carefully controlled. This can be done by sustaining the recent practice of publishing consistent reports of actual service desk performance, and carefully monitoring this performance compared to agreed-upon target service levels. Although progress may be incremental and gradual, in the medium term this shift should enable ITSD to better meet stakeholder needs for both: (1) operational support; and (2) strategic enhancement of University systems through efficient project execution.

As a final recommendation, we conclude that the University could accelerate progress in these directions by a short-term injection of additional funding in 2014-15 and beyond. In addition to addressing some current gaps such as the need for a disaster recovery plan, the bulk of such funding could be deployed to enhancing the quality and pace of projects to address needs related to some of its major business systems (e.g., Banner system enhancements).

## 2. Introduction

### 2.1. Background and Objectives

Like many colleges and universities, Capilano University has made investments for years in automated systems to support both academic and administrative functions, and employed staff to deploy and support them. In late 2013, the University made the decision to undertake a review of the various services delivered by its IT group, with the following two objectives:

3. Review IT “Lines of Service” based on the standards set by the IT Service Management and the IT Infrastructure Library (ITIL) frameworks;
4. Review the human resource demand and utilization within the IT Services Division (ITSD).

Through a competitive RFP process, a team from KPMG was selected to carry out the review. This report is the final deliverable produced in the engagement.

The University has been operating in a context of tight fiscal constraints for several years. With provincial funding flat or slightly declining, inexorable rises in operating costs, and tight constraints on student tuition and many categories of staff salaries, it has needed to make difficult decisions to eliminate or curtail selected academic programs.

Given this backdrop, there is a natural tension affecting the IT function between two strong factors:

- The (perceived) significant size and operating cost of the IT group, which make it a natural target when areas for potential cost reduction are being sought; and
- The increasing reliance on IT services by both academic departments and administrative groups in the University.

In terms of the second objective of this review, cited above, there is an analogous tension between:

- The view that the IT group should become more “lean” and efficient; and
- The view that the IT group is understaffed and under-funded, has been for years, and could deliver better value with higher levels of expenditure.

So, the second objective could be interpreted as an exploration of how the group could be “right-sized” – either upward or downward.

### 2.2. Scope and Methodology

The centralized nature of the University’s IT Services Division (ITSD), discussed further in the following chapter, makes the organizational scope of this review clear. ITSD supports all university operations and programs. Although there are some differences in levels of support provided to various programs, and delivery vehicles, ITSD is a “monopoly” supplier of IT services at Capilano University.

To further specify scope, the contract for this engagement includes a discrete list of IT services that are meant to be examined:

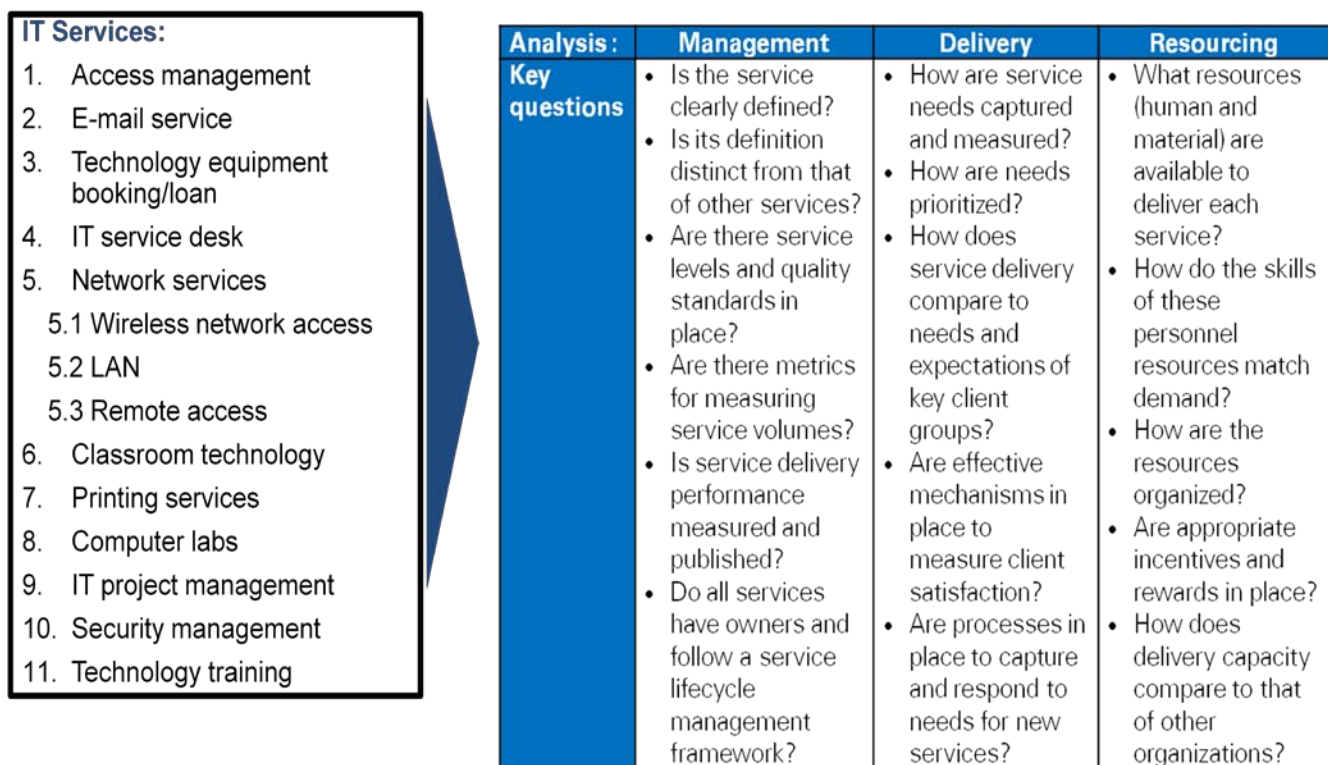
1. Access management
2. E-mail service
3. Technology equipment booking/loan
4. IT service desk
5. Network services

- a. Wireless network access
- b. LAN
- c. Remote access
- 6. Classroom technology
- 7. Printing services
- 8. Computer labs
- 9. IT project management
- 10. Security management
- 11. Technology training

All these services are well-established, and have been within ITSD’s mandate for many years.

The final comment on scope is that this review encompasses IT services delivered on all three of the University’s campuses. There are no IT staff stationed at either the Squamish or Sunshine Coast campuses, which are both considerably smaller than the main campus in North Vancouver. But, ITSD retains responsibility for delivering service on all three sites. They travel to the other sites on an as-needed basis.

The approach applied to this work has been straightforward, as depicted in the diagram below.



Through review of documents and structured interviews with University staff, we have sought information to enable answers to the questions on the right side of the diagram, applied to the services listed on the left side. To complement what we have gleaned from sources within the University, we have obtained various types of benchmarking and reference information from external sources (i.e., surveys related to university IT functions, statistics, and original commissioned research by KPMG’s Research team).

An interim deliverable documenting our initial observations was previously prepared, submitted, reviewed and revised. This deliverable was not informed by external benchmarking information, and was meant merely to summarize our understanding of the University’s current state, based on Capilano-specific interviews and document reviews. This proved to be a useful step, to illuminate and

fill in certain gaps in our understanding, and “preview” some of our preliminary assessments of the current maturity state of the eleven IT services shown in the diagram above.

The engagement has progressed as planned to the production of this draft final Report. The intent is for it to be circulated and reviewed by decision-makers in the University, to elicit comments that we will reflect in the final version.

### **2.3. Organization of this Document**

This report is structured in a manner that is meant to be simple and clear, while covering the prescribed scope:

- Chapter 2 presents a summary of the current state of each of the eleven ITSD services. This includes both our assessment of their current maturity, and how that compares to the needs and expectations of stakeholders (i.e., students, staff and faculty) for the service.
- Chapter 3 directly summarizes those needs and expectations, at a high level. Although specific needs and priorities differ among different academic departments and administrative groups, we have attempted to develop a consensus summary of the salient elements.
- While Chapter 3’s focus is the “demand” side of ITSD’s business model (i.e., needs and expectations), Chapter 4 presents a summary of the “supply” capacity available, in terms of staff size and skills and available technical resources. After presenting a “snapshot” of current capacity, we introduce external benchmarks and reference points, to provide additional perspective on how Capilano compares to selected other institutions.
- Finally, Chapter 5 presents some conclusions from the analysis and some recommendations of practical steps the University could take to “bend the trend” that tends to create ever-widening gaps between stakeholder expectations and actual delivery capacity.

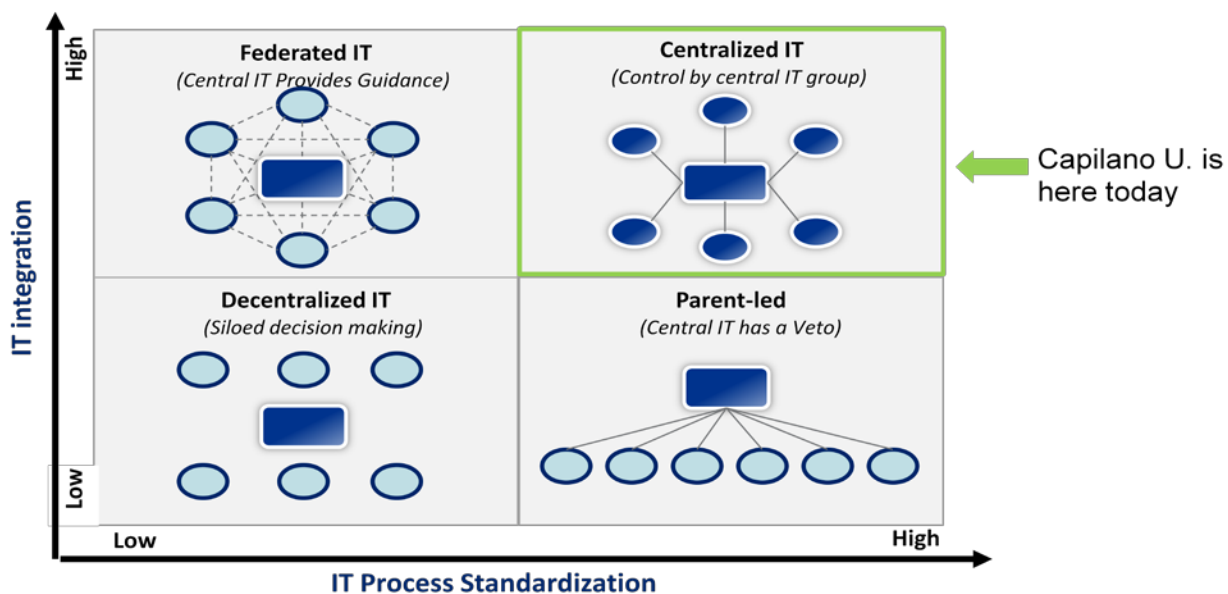


## 3.IT Services: Current state

### 3.1. Overview and Services Catalogue

As mentioned above, the list of IT services we were asked to review contains those which have been in place and delivered by ITSD for many years. To accurately appreciate ITSD's situation, it is necessary to point out some key characteristics of the university context in which it operates.

One important characteristic is centralization. This assessment is rendered simpler than analogous efforts in many universities, because the IT function in Capilano is – and has traditionally been – centralized in a single Division. By way of context, it should be noted that universities generally present a broad continuum of different ways to structure the IT function, from extremely decentralized models where many academic and administrative groups have their own IT resources, to extremely centralized models (like Capilano's) where the bulk of all IT activity is carried out by a single central group. This range is illustrated in the diagram below.



This centralized model has many advantages, from the perspectives of efficiency, consistency and management control:

- It means that all IT functions are governed by a single governance structure and “chain of command”, meaning that accountability is clear and consistent.
- It promotes consistency, by allowing changes to policy or procedures to be applied to IT services provided to all users.
- It avoids the degree of duplication that inevitably characterizes decentralized models with multiple fragmented IT groups.
- As the diagram indicates, it avoids the inconsistencies and contradictions that can arise from siloed decision-making.
- It provides more opportunities and potential for advancement for IT staff than they would have in smaller, more fragmented mini-IT groups. This should help minimize staff dissatisfaction and turnover.

While fewer and arguably less important, the disadvantages of the centralized model are:

- It challenges the IT group to develop policies, procedures and solutions that are robust and flexible enough to work for all administrative groups and academic departments, and for the student, staff and faculty user categories.
- It consolidates IT costs into a single item in the University budget, which can stand out as large compared to those for other administrative functions.

Not only is ITSD a single organization, it also exhibits some other key indicators of centralization:

- A single, centrally-managed network (albeit with a large and diverse number of access points);
- Effective controls over purchasing of devices that connect to the network.

The second factor is really a two-stage control. At the first stage, the University's central purchasing unit ("Contract Services and Capital Planning") seeks ITSD's approval of computer or software purchase requests from other groups. If any unwanted or unauthorized items slip through this screen, ITSD has another chance to detect them through its polling technology, which can produce lists of all devices connected to the university network, and all executable software resident on them. Although the need to apply these controls to detect unauthorized devices arises occasionally, this is not nearly as major a problem at Capilano as at many less centralized universities.

Detection and elimination of unauthorized or unlicensed software is a more frequent and ongoing need, as in many organizations. While risk and uncertainty in this function can never be reduced to zero, ITSD's ability to execute it is greatly aided by the ability of Microsoft System Center software to detect both devices and executables attached to the network.

Another important characteristic is the constrained business rules under which ITSD operates. ITSD operates with limited degrees of freedom. Constraints are imposed on several key factors:

- Capital and operational funding;
- Staff headcount;
- Staff compensation (i.e., pay scales set by the Post Secondary Employers Association and documented in Collective Bargaining Agreements with unions); and
- Personnel management procedures, which are also circumscribed by Collective Bargaining Agreements.

The compensation constraints, particularly the limit of \$65,000 on technical staff salaries, means ITSD is systemically challenged to attract and retain the best IT talent available. Some direct implications of this are:

- A higher IT headcount than ideal, because more staff may be needed to achieve results that could be produced by fewer, higher paid and skilled resources;
- A recurring pattern of staff spending two to three years acquiring skills in ITSD, then jumping to other employers able to pay significantly more for their skill sets;
- The overhead cost of recruiting and training new staff to backfill for these departures.

More indirect, but important, implications of these constraints include:

- Some shortfalls in meeting operational needs (e.g., hours of service desk coverage);
- Delays in completing some IT projects, and/or constraints on project scope;

- An increasing backlog of required initiatives, ranging from large projects to small enhancements to existing applications.

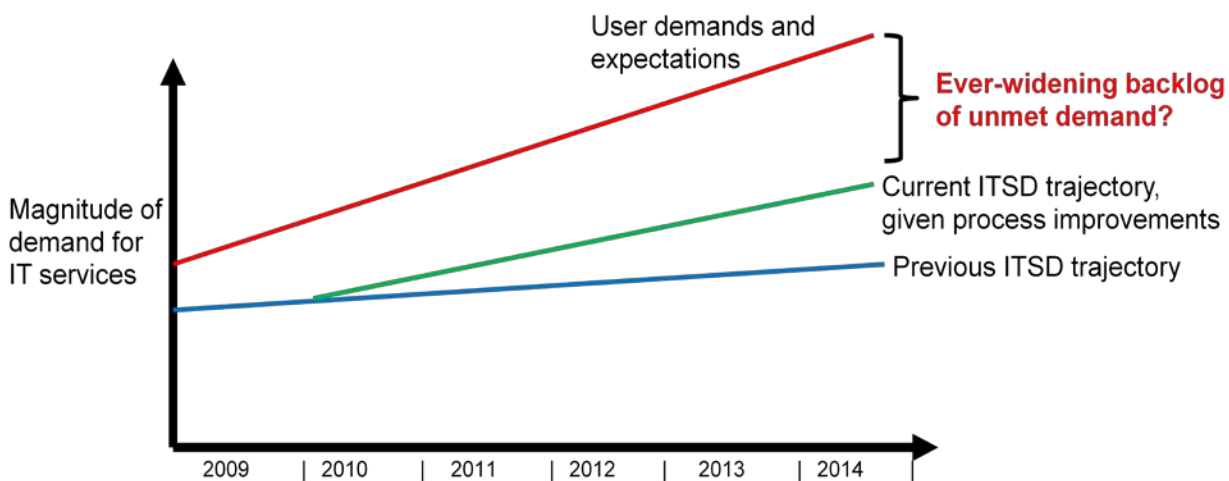
To cite a more specific challenge, the constraints imposed by union agreements on personnel management rules has been cited as a reason why ITSD staff cannot be made to complete detailed timesheets capturing the time they spend on various activities (e.g., IT projects). Timesheets are submitted that simply capture attendance at work, but not the actual activities worked on.

Given these unavoidable constraints, recent ITSD efforts have focused on managing and improving those factors under their control. These efforts, which are still ongoing, include:

- Consolidation of some services (e.g., classroom tech support, app development);
- Standardization and improved documentation of operating procedures;
- Enhanced reporting of actual performance (e.g., incident response); and
- Development of a multi-part IT service catalogue.

One recent initiative is the compilation of an IT Service Catalogue. This document lists 269 services, most of which are currently operational (but some of which have been retired). These range from support for specific applications to cross-cutting services such as equipment loan or remote network access. A service catalogue can be a useful tool for both internal IT group management and articulating an IT group’s offerings to user organizations. It can also be used as the basis for negotiating service level agreements (SLAs) specifying expectations for IT key performance indicators (KPIs) such as uptime, response times, problem remediation intervals, etc.

ITSD’s current efforts toward enhanced process management and maturity yield some benefits in terms of better meeting user needs. But, there is no evidence that this improvement will be sufficient to close the gap with overall demand and expectations, as shown in the diagram below.



Examples of sharply rising expectations include:

- Increasing demand for internet access and bandwidth. The average university student today carries two or more internet-capable wireless devices (smartphones, laptops, tablets, etc.), and expects access to the same bandwidth they have at home, in coffee shops, etc. Available bandwidth at Capilano has often fallen short of these expectations. In 2013, many students joined Facebook groups lamenting the poor bandwidth capacity available on the Capilano North Vancouver campus. Recent acquisition of enhanced bandwidth from Telus has helped, but is at best a temporary stopgap.

- Contention related to control over some IT assets, as evidenced by the recent decision to grant faculty members administrator privileges on their PCs, partly as a result of long-term advocacy by faculty.
- The “bring your own device” trend has led to recent capabilities to connect to the university network with iPads and iPhones, as a result of demand from faculty, staff and students. Such demands can be expected to extend to other devices in the future.
- The University’s portfolio of business applications is not streamlined, and efforts to enhance it are slow. Executives are frustrated when receiving different answers to a given question from different data sources. Progress on building a University data warehouse, to foster more consistent reporting, are constrained by resource skill and availability.
- More generally, there are now 79 projects on ITSD’s list whose status is either “on track”, “on hold”, “underway”, “not started” or “future”. Many of these are meant to address application portfolio needs. All of them have sponsors who have advocated for them, and they have all been approved for addition to the list.

### 3.2. Services Review

The Information Technology Infrastructure Library (ITIL) is an internationally-recognized framework and set of standards applicable to the management of an IT function or organization. ITSD has declared, as early as in the RFP used in the procurement for this project, a preference for ITIL to be the set of standards applied to this services review. Therefore, one of our previous steps was to develop an initial set of maturity ratings for each of the University’s 11 IT services, according to the ITIL Performance Management Framework.<sup>1</sup> The results are shown in the diagram below.

<i>IT Service</i>	<i>0 Not in Place</i>	<i>1 Initial</i>	<i>2 Repeatable</i>	<i>3 Defined</i>	<i>4 Managed</i>	<i>5 Optimized</i>
1. Access management				● ✓		
2. E-mail Service			● ✓			
3. Technology equipment booking/loan				● ✓		
4. IT service desk					● ✓	
5. Network services				● ✓		
6. Classroom technology				● ✓		
7. Printing services				● ✓		
8. Computer labs				● ✓		
9. IT project management		● ✓				
10. Security management			● ✓			
11. Technology training			● ✓			

Further detail on the rationale for our ratings was documented in our earlier “Interim Observations” report. A summary of the salient factors is provided in the table below.

<sup>1</sup> Additional information on ITIL and the PMF can be found here, and at other sources: [https://www.best-management-practice.com/gempdf/itSMF\\_An\\_Introductory\\_Overview\\_of\\_ITIL\\_V3.pdf](https://www.best-management-practice.com/gempdf/itSMF_An_Introductory_Overview_of_ITIL_V3.pdf)

Category item	Current status
<b>Service 1: Access Management</b>	
Student account management	<ul style="list-style-type: none"> <li>• Mostly handled by Architecture group.</li> <li>• Banner interface minimizes amount of manual data entry required.</li> <li>• Old account deletion seems less reliable than new account creation.</li> </ul>
MS Service Manager portal access	<ul style="list-style-type: none"> <li>• Portal not rolled out yet.</li> <li>• Plan is to provide user access, to allow users to report problems directly and view response status on line.</li> </ul>
Faculty & staff account mgmt.	<ul style="list-style-type: none"> <li>• Handled through regular reporting &amp; ticketing system.</li> <li>• Some reported delays, but generally reliable.</li> </ul>
Application access	<ul style="list-style-type: none"> <li>• Handled through regular reporting &amp; ticketing system</li> <li>• Reportedly no single sign-on capability</li> </ul>
Faculty admin. rights on PCs	<ul style="list-style-type: none"> <li>• Policy recently changed to grant faculty admin rights.</li> <li>• Long-standing subject of controversy.</li> </ul>
<b>Service 2: E-mail Service</b>	
External bandwidth	University's bandwidth constraints affect e-mail message and attachment size & speed, as well as other types of traffic.
E-mail "housekeeping"	<ul style="list-style-type: none"> <li>• Reasonable controls are in place for message size, calendar viewing, and mailing list control.</li> <li>• No automated shifting of items (e.g., all messages &gt;X days old) to an archive, and no records management policy to govern how and when such archiving should occur.</li> </ul>
Account termination	No evidence of clear procedure for account termination (i.e., forwarding to whom, for how long, etc.)?
<b>Service 3: Technology equipment booking/loan</b>	
Asset maintenance	<ul style="list-style-type: none"> <li>• Classroom IT support group orders and manages set of equipment that can be borrowed (~600 items).</li> <li>• Equipment is catalogued in ITSD asset database.</li> <li>• Equipment complement reviewed and new purchases planned on annual cycle.</li> <li>• Maintenance activity is tracked by Classroom IT group, using Library's Sierra system</li> </ul>
Loan tracking	Library loan system is used to track IT equipment (as well as book) borrowing.
<b>Service 4: IT Service Desk</b>	
Tracking system	Now using Microsoft SM for both regular and classroom incidents. Just upgraded to 2012 version.
Coverage hours	<ul style="list-style-type: none"> <li>• Currently operating three phone shifts, providing coverage until 5pm weeknights.</li> <li>• Classroom tech desk has provided coverage on exam weekends.</li> <li>• Gaps in coverage in some periods when Library is open but Library IT service desk is unmanned.</li> </ul>
Service levels & reporting	<ul style="list-style-type: none"> <li>• No agreed-upon service level standards.</li> <li>• Have started compiling monthly reports of actual performance.</li> </ul>
Procedures	Have documented procedures for Incident Response, Change Mgmt, Request Fulfillment, etc.
<b>Service 5: Network Services</b>	
Cisco VOIP system	Recently transferred from Facilities to ITSD, without any transfer of funds or staff.
External bandwidth	<ul style="list-style-type: none"> <li>• Have been using PL Net for years, which does not provide purported bandwidth reliably.</li> </ul>

Category item	Current status
	<ul style="list-style-type: none"> <li>New 300 Mbs Telus line now being phased in, starting with administrative applications.</li> </ul>
Network monitoring	<ul style="list-style-type: none"> <li>Tools reportedly in place to monitor actual inbound/outbound bandwidth available.</li> </ul>
Documentation	Both wired and wireless topology and architecture documented
<b>Service 6: Classroom Technology</b>	
Classroom PC configuration	<ul style="list-style-type: none"> <li>ITSD is standardizing both equipment and software image on classroom podium PCs.</li> <li>Still ~200 PCs with XP; will be replaced and/or upgraded to W7.</li> </ul>
Classroom tech support	<ul style="list-style-type: none"> <li>Dedicated help desk, and phone #, for classroom incident response, with separate tracking of performance through MS SM and Sierra system.</li> <li>Can respond immediately to outages when required.</li> <li>Some gaps in coverage after 5pm.</li> </ul>
Other classroom tech	Smart boards being introduced in many classrooms.
<b>Service 7: Printing Services</b>	
Printing application maintenance	<ul style="list-style-type: none"> <li>Library staff report that Paper Cut system is “difficult to manage”.</li> <li>Upgrade to Paper Cut 2013 recently completed.</li> <li>WiFi printing project recently completed.</li> <li>A project to enable online print payments has been approved, and is currently in project initiation stage.</li> </ul>
Cost recovery	Use of Ricoh multi-purpose printers on network requires payment, including some printers in computer labs. Staff need cost centre code; students need cash.
Fee collection and accounting	New plastic bills don't work in pay machines. This has been reported as an incident by the Library before Christmas 2013.
<b>Service 8: Computer Labs</b>	
Labs & locations	There are 69 labs, including all three campuses, with a varying number of PCs & Macs in each.
Lab computer software	Currently deployed apps include many installed in labs (38 in Mac labs, 125 in PC labs).
Lab equipment	<ul style="list-style-type: none"> <li>~600 computers, ~25 printers located in labs.</li> <li>Mix is approx 80% PCs, 20% Macs.</li> <li>Most Macs are in Media Arts Lab, Macintosh Lab, or MIDI Lab. Others are sprinkled in other labs.</li> </ul>
Lab support	<ul style="list-style-type: none"> <li>Either ITSD help desk in Birch or Classroom IT group can receive and respond to lab-related incidents and requests today.</li> <li>Plan is to centralize support for lab equipment in Classroom IT group, after staff skills upgrade.</li> <li>About 15-25% of current support calls pertain to labs.</li> </ul>
Planning, budgeting, refresh	New lifecycle program includes annual review of lab equipment, repurposing as necessary, and six-year refresh cycle for audio-visual equipment.
<b>Service 9: IT Project Management</b>	
Approval and governance	Senate Instructional Technologies Advisory Committee (SITAC) and Closest to the Action Group (CTAG) can recommend projects to Executive Committee, and provide high-level oversight.
Prioritization and resource commitment	Oversight committee recommendation generally does not include relative prioritization among current or planned projects, which is deferred to Executive Committee.
Project staffing	<ul style="list-style-type: none"> <li>Staffing options constrained by budgets.</li> <li>Mix of internal managers and contracted PMs manage projects today.</li> </ul>

Category item	Current status
PMO tools & forms	<ul style="list-style-type: none"> <li>• Have standard EOI form and process.</li> <li>• Lacking standard templates for Status Report, Change Request, Business Case, etc.</li> <li>• MS Project Server 2013 upgrade underway.</li> </ul>
Procedural documentation	Procedures for Request Fulfillment and Change Mgmt. are applicable to projects and non-project work
Tracking vs. budgets	Out of pocket costs can be coded to projects, but internal staff time on projects not captured
<b>Service 10: Security Management</b>	
Network security	<ul style="list-style-type: none"> <li>• Firewalls in place on both wired and wireless NWs.</li> <li>• Penetration testing performed annually.</li> <li>• PCI compliance monitoring contract in place.</li> </ul>
Information security	<ul style="list-style-type: none"> <li>• Mirroring in place for production &amp; dev't environments.</li> <li>• Mirror sites in different campus buildings</li> </ul>
Physical security	Security cameras, videotapes and door swipes are a "boundary area" between ITSD Infrastructure team and Facilities
Backups	<ul style="list-style-type: none"> <li>• Backups are taken on regular cycle (differentials daily, full backup weekly).</li> <li>• Backups are sent to Iron Mountain.</li> <li>• Restoration from backups documented. Two staff trained in process.</li> <li>• No documentation or testing of restoration of full operating system and all files.</li> </ul>
Disaster recovery planning	There is no Disaster Recovery Plan in place.
<b>Service 11: Technology Training</b>	
Classroom tech training for faculty	Classroom tech support team provides some training / coaching to faculty upon request, including use of smart boards.
Online resources	<ul style="list-style-type: none"> <li>• Wiki on intranet useful for self-troubleshooting. Includes links to detailed documents.</li> <li>• Helpful information being posted to "IT Services" folders on Windows, and SharePoint on intranet.</li> </ul>
Training facilities	<ul style="list-style-type: none"> <li>• Applied Information technology lab and Computer Learning centre are available in Library for faculty or student self-training on computers or apps.</li> <li>• Part-time faculty who staffed these labs were cut, increasing the burden on ITSD to provide all support.</li> </ul>
Scheduled training programs	<ul style="list-style-type: none"> <li>• Pre-scheduled training was introduced in 2013, but is now being reviewed because of low uptake.</li> <li>• During major implementations (e.g., Windows 7, MS Outlook), external trainers were contracted to provide technical training to faculty and staff.</li> </ul>

This is a point-in-time "snapshot" assessment as of January-February 2014, and this engagement does not include a means of rigorously measuring the degree or direction of movement of the maturity levels for the services over time. However, input from interviewees – both within and outside ITSD – indicate that significant enhancements have been made recently (i.e., the last ~two years) in the areas of IT Service Desk and Classroom Technology, including:

- Documenting the procedures for key transactions, such as Request Fulfillment, Incident Management and Change Management in clear, succinct documents, which also include relevant metrics and KPIs;

- Compilation of monthly one-page IT Status Reports listing accomplishments and activity levels for the month, and periodic trend reports showing relevant trends for a 3-4 month period;
- Consolidation of support for all classroom technology in a single support group, based in the Library, with their own phone hotline, and the planned consolidation of their activity tracking in the Microsoft SM tool. This will also enhance support for the computers and other technology in the computer labs.

On the other hand, the IT Project Management service seems to be in a state of decline. The previous PMO Manager position is remaining unfilled. Projects are being managed, without the aid of a standard methodology or toolset, by a combination of contracted consultants and fragments of time from Managers and Directors in ITSD. Projects still get approved, launched and completed. But, with very scarce resources to devote to this service, there is no reason to expect the quality or efficiency of IT projects to improve in the foreseeable future. As mentioned earlier, there are now 79 projects on ITSD's list whose status is either "on track", "on hold", "underway", "not started" or "future".



## 4. Stakeholder Needs and Expectations

A selected cross-section of stakeholders was interviewed in the course of this review. (A list of interviewees is provided in the Appendix.) Although the sample size was small and we did not conduct interviews directly with students, the discussions we had and the documents reviewed provided good insight into the needs and expectations of stakeholders.

We made a commitment to the interviewees to keep the discussions confidential, so no names will be cited or quotes attributed in this summary.

### 4.1. Faculty

Discussions with faculty representatives focused on four main types of expectations they have of the ITSD organization and staff.

- **Real-time responsiveness to classroom problems:** The faculty see themselves as the “front line” of the University, engaging directly with students in the classroom. They recognize that no technology is perfect, and that unforeseen and unforeseeable problems can occasionally arise. Their primary need is to know that they have backup support available when needed, and that it can respond **in real time** to address problems in classrooms and labs. When a technical problem impedes the learning process directly, their view is that no amount of delay is tolerable.
- **No surprises:** Many of the faculty are part-time professionals who have other occupations. They need to learn, absorb and apply a finite set of tools and procedures that enable them to teach at the University. Once they have learned these procedures, their tolerance for volatility among them is very low. They dread being caught unawares when, for example, the procedure to access a classroom application is changed in the break between semesters. Concise and clear **advanced notices** of any changes are high on their list of needs.
- **Control:** As mentioned above, the long-standing issue of whether faculty should have administrator rights over the PCs assigned to them has produced a recent decision to grant them such rights. More broadly, faculty see a need to depart from the standard image on “their” machines, to meet the specific needs of their courses, including configuring some classroom PCs as servers to host selected applications. This does not, however, seem to reduce their expectation for ITSD availability and responsiveness when problems arise. The loss of control associated with granting these privileges could elevate the risk of unauthorized access to University information, as well as the chances of malware infecting University networks. In addition to these risks to the institution, it could result in more effort required by ITSD to correct any resulting problems.
- **Input and feedback:** There do not seem to be surveys administered by ITSD to measure either requirements for, or satisfaction with, IT services. Faculty in particular seem to want to augment the several existing channels available for offering comments, suggestions, issues, etc., which include the SITAC Senate committee mentioned in Chapter 2.

### 4.2. Staff

Outside ITSD, the staff interviewed were very senior members of the University administration, including some at the VP and Dean level. While it is possible that the needs of staff at lower levels would be somewhat different in detail, the management views summarized seem to be a fair representation of broader staff requirements and expectations.

- **Reliability:** Not surprisingly, the staff indicate that their reliance on automation, networks and availability of key applications increases steadily over the years. We were told that crashes of one or several Banner modules had occurred on the first class day of several recent semesters (presumably from high load levels placed on the modules). Preventing such occurrences is the staff's primary expectation and requirement.
- **Responsiveness:** Like the faculty, staff expect that problems will occur occasionally. They want a reliable channel for reporting problems, and to count on reasonably prompt response and remediation. Unlike the faculty, they do not expect such response to be real time. Feedback on reported problems is valuable. In the absence of such feedback (e.g., updates on the current status of a problem resolution), they assume their request/report has been forgotten or ignored.
- **System Enhancements:** IT users have come to expect their tools to be periodically upgraded, with enhanced functionality and/or ease of use. Capilano University staff are no exception. Important corporate applications such as Moodle, GreatPlains and Banner are expected to progress and improve through planned life-cycles, as well as desktop toolsets (Windows, Outlook, Office, etc.). A trend toward more automation and self-service, and a desire to keep pace with peers in other institutions, were both cited as driving factors for enhancements. Several staff lamented their lack of access to any IT plans or strategies for scheduling such enhancements over the medium to long term.

#### 4.3. Students

Based on information reported to us, we can define three types of expectations by students:

- **Access and performance:** Perhaps the most fundamental expectation by students is that their affiliating with Capilano University would come with access to various apps needed to support their enrollment and learning (e.g., registration, course catalogue, library, learning management system). They further expect that such access will work from at least three types of devices – PCs, smartphones, and tablets – from various vendors, including Apple. As the number and capability of such devices proliferate, there is an implicit assumption that the University would adapt to accommodate new varieties.
- **Bandwidth and network responsiveness:** Students see high-bandwidth wireless networks generally becoming more ubiquitous and easily accessed, and expect the Capilano campus to be no exception. Current and recent shortcomings in wireless bandwidth have therefore become the focus of student complaints – both ad hoc and through semi-organized initiatives such as Facebook groups.
- **Self-service functionality:** Student tolerance for long lineups to conduct key transactions in person (e.g., course registration) is extremely low. Students implicitly expect the University to automate those interactions that can and should be automated, including the ability for them to log in to submit assignments, access marks, etc.

#### 4.4. Summary

This chapter's purpose is to define a few key imperatives that must play heavily in ITSD's future plans for the group to meet its clients' expectations. While several candidates are cited above, it is also useful to point out a few items which were **not** mentioned by interviewees. All are reasonable and relevant directions for IT in some organizations, but were not mentioned as priorities by Capilano stakeholders:

- **State of the art technology:** Those consulted in this study seemed realistic about how up-to-date the University's systems should be. Nobody expects, or wants, the University to be at the "bleeding edge", or to adopt risky or untested technology. Rather, they expressed the hope to simply keep up with the mainstream.<sup>2</sup>
- **Decentralization:** There was no view expressed that the University's IT needs could be better met by splitting ITSD up into multiple groups, or by fragmenting the University's network or other decentralizing steps. In fact, the recent shift of the classroom technology support group from the Library into IT, which grows and further consolidates ITSD, was characterized as a positive step.
- **Outsourcing:** None of the stakeholders interviewed suggested outsourcing parts of the IT function. Those with whom the idea was discussed saw it as unrealistic, both because of the labor disruption it could cause, and because the University could not afford the cost of outsourced services.
- **Customization:** The University operates a few custom applications, notably a complex payroll system that is undergoing major changes. It has also built custom code to supplement some of the major packaged applications (e.g., Banner, GreatPlains, Moodle). But, the strategy endorsed by both ITSD and user groups is to review and eliminate this custom code where new releases available from the product vendors provide the needed functionality. Over time, this should reduce the burden of custom code maintenance.

Given these types of input from diverse sources, the conclusion is that there are three areas where ITSD could place its emphasis and invest resources – both financial and human – to better meet the expectations of its clients and stakeholders.

- The first area is to continue the enhancement of the **IT service desk function**, including allowing more self-service capabilities. This is a high-volume, very visible service that is used by all kinds of stakeholders daily.
- The second area is to revive and reinvigorate the **IT project management function**, by adopting a standard project management framework and applying more dedicated resources to executing those projects seen as priorities by key stakeholders.
- The third and final area is to invest in **greater internet access speed** from the campus. This requires greater line bandwidth from telecom providers, but also higher throughput on internet access gateway devices. Constraints on this access impede both instruction and administrative data processing. No other possible investment could equal the across-the-board benefits of significantly increasing this access.

Any enhanced emphasis on these areas comes down to the availability of funds. Recent history has indicated little reason to expect any significant funding increases, but it is clear that increases could be usefully devoted to better meeting stakeholder needs and expectations. Additional detail on these areas of potential improvement is provided in Chapter 5, as well as some other recommendations ITSD could consider.

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<sup>2</sup> One interesting exception is the ITSD Architecture group's implementation of database appliance devices from Oracle and VCE. These pre-configured appliances may save time and money by simplifying deployment, maintenance, and support of highly available database applications, as well as offering enhanced reliability during their production life-cycle.

## 5. Resource Capacity

While Chapter 3's focus was service demand and expectations, this chapter relates to how ITSD has equipped itself to deliver required services.

### 5.1. Current Resource Capacity and Allocation

As explained in Chapter 1, we were asked to review and assess the University's delivery capacity for each of the eleven defined services, compared to the capacity needed to meet stakeholder requirements and expectations. One of the first steps is to assess the way ITSD's resources are currently deployed. The table below attempts to do that, based on the projected FY 2014-15 distribution of salaries and benefits and full-time equivalent (FTE) positions in each of the five organizational units within ITSD. The FTE and salary figures in the top three rows were supplied by the University. The numbers in the lower rows represent our estimate of the proportion of each group's effort devoted to each service today.

	ITSD Groups:	CIO Office	PMO	Service Delivery	Applications	Infrastructure	Architecture	Ttl FTEs	Total
	<b>Total FTEs:</b>	3.00	1.00	16.80	10.00	10.00	9.00	<b>49.80</b>	<b>Sal &amp; bens</b>
<b>Services</b>	<b>Total sal &amp; ben:</b>	\$262,448	\$104,175	\$1,189,442	\$781,858	\$786,512	\$744,606		\$3,869,041
1. Access management				10%	10%	10%	10%	4.58	\$350,242
2. E-mail service				5%		10%	10%	2.74	\$212,584
3. Technology equipment booking/loan				5%				0.84	\$59,472
4. IT service desk				40%		10%	10%	8.62	\$628,889
5. Network services						25%	10%	3.40	\$271,089
6. Classroom technology				15%		5%	5%	3.47	\$254,972
7. Printing services				5%		10%	5%	2.29	\$175,354
8. Computer labs				10%		5%		2.18	\$158,270
9. IT project management		20%	100%		10%	5%	10%	4.00	\$348,637
10. Security management				5%	10%		10%	2.74	\$212,119
11. Technology training				5%	10%			1.84	\$137,658
Other		80%			60%	20%	30%	13.10	\$1,059,757
<b>Total:</b>		<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>49.8</b>	<b>\$3,869,041</b>

As the table indicates, there is a sizeable portion of ITSD's delivery capacity that is devoted to functions "other" than the eleven services we were asked to review. These other functions include some that are very important and prominent in the Division's mandate:

- Business and educational application maintenance and enhancement (much of the work of the Applications group);
- Database administration services (done mostly by the Architecture group);
- Architecture services – for solutions, network, access, etc. (done mostly by the Architecture group);
- Applications development and testing (done mostly by the Applications group); and
- Division management, planning and administration (done mostly by the CIO office).

In addition to these labor costs of \$3.87M (69% of the total), the budget includes another \$1.77M, allocated as follows:

<b>Cost Centre</b>	<b>Amount</b>
Ed Tech	\$7,050
IT Service Delivery	\$500
Applications	\$4,100
IT Operations	\$1,925
IT Office Admin	\$500
Support Agreements	\$1,028,322
Service Agreements & Consultants	\$311,850
Software Projects	\$15,000
Telephony/Data Communications	\$230,895
Computer Maintenance	\$79,650
Office Supplies & Subscriptions	\$39,100
Training, Conferences & Memberships	\$51,800
<b>Total:</b>	<b>\$1,770,692</b>

Having examined a more detailed breakdown of these expenses, it does not seem feasible or meaningful to try to allocate them among the eleven services in our scope. The bulk of these out-of-pocket expenses are support costs for hardware and/or software that supports both educational and administrative functions of the University (e.g., \$93K for Microsoft site license, \$58K for Cisco SmartNet support, \$150K for PCI security monitoring, \$90K to Telus for landline phones). So, the mapping of labor costs shown in the spreadsheet above seems the best way to depict ITSD's current budget categorization.

## 5.2. External Financial Benchmarking

Comparing absolute IT expenditure levels among universities is obviously of little value, because they differ drastically in size. So, we have collected data showing the percentage of overall operating expenses devoted to the IT and communications function, as shown in the table below. These are 2012 figures, with provincial averages extracted from a listing of over 100 individual institutions.<sup>3 4</sup>

<b>Province</b>	<b>Avg. Computing &amp; communications cost as % of total operating expenditures</b>
Newfoundland and Labrador	4.3%
Prince Edward Island	2.5%
Nova Scotia	2.8%
New Brunswick	4.1%
Quebec	6.0%
Ontario	2.5%
Manitoba	3.9%
Saskatchewan	3.2%
Alberta	5.1%
<b>British Columbia</b>	<b>4.5%</b>
<b>Canadian average</b>	<b>3.7%</b>

<sup>3</sup> Note that Capilano University's numbers are not included in the survey, and do not factor into the BC average.

<sup>4</sup> These statistics are compiled by the Canadian Association of University Business Officers, and are available at:

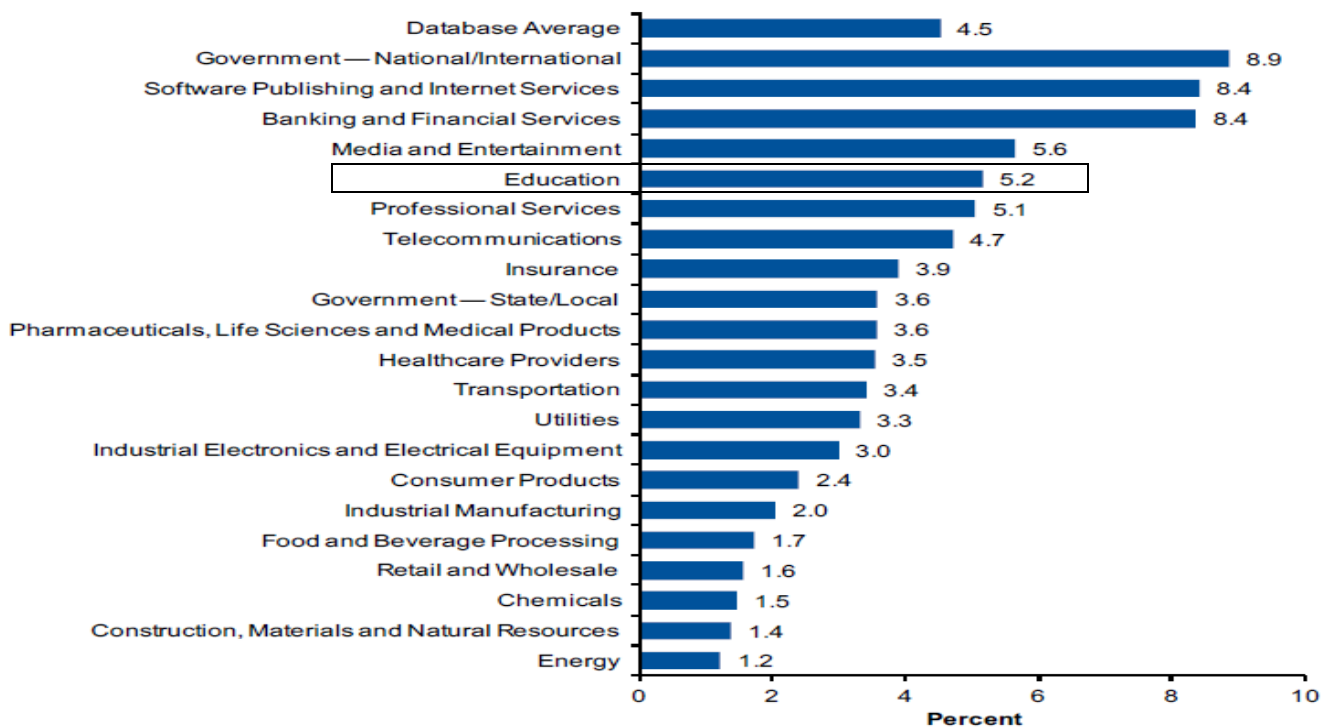
[http://www.caubo.ca/sites/137.149.200.5.pilot/files/CAUBO\\_2011-2012\\_FINANCIAL\\_INFORMATION\\_OF\\_UNIVERSITIES\\_AND\\_COLLEGES.pdf](http://www.caubo.ca/sites/137.149.200.5.pilot/files/CAUBO_2011-2012_FINANCIAL_INFORMATION_OF_UNIVERSITIES_AND_COLLEGES.pdf)

For Capilano University, the comparable percentage can be calculated by adding the 2014 IT budget amounts shown above of \$1,770,692 (non-salary) and \$3,869,041 (salaries & benefits), for a total of \$5,639,733. Assuming that the University’s 2014 budget would not include any significant change from the 2013 total operating expense figure of \$91,543,708, **Capilano’s percentage expenditure on IT would be estimated at 6.1%** (\$5,639,733 / \$91,543,708). This is slightly above the BC average of 4.5%, and well above the Canadian average of 3.7%.

Another perspective can be gained from comparison to selected specific institutions, as shown in the table below (2013-14 figures):

Institution	Overall IT operational spend	IT % of overall operational spend
Kwantlen Polytechnic U	\$5,024,100	4.2%
Douglas College	\$5,767,500	5.2%
Langara College	\$4,744,500	4.7%
Vancouver Island U.	\$5,134,482	4.5%
Capilano U.	\$5,639,733	6.1%

More broad-based data is also available from Gartner, showing the same percentages (i.e., IT opex as % of total opex) for multiple industries, including “education” (which includes K-12 and higher ed, US, Canada and other countries, private, public, for profit institutions, etc.). Such data for 2011 indicates an overall average for education of 5.2%, as shown in the graphic below.



The conclusions that can be drawn from this data on spending are:

- Canadian universities probably under-spend on IT and communications overall.
- Capilano University’s IT operating expenditure portion is not below provincial or national averages, and fits is slightly higher than some local/regional peer institutions.

Some caution is advisable when interpreting this data, however, for several reasons:

- The data do not all refer to the same fiscal year. So, there are small inconsistencies.
- The data do not show the trends over a multi-year period, and so don't reflect trends.
- These are operating expenses, and so exclude capital spending. If Capilano is under-investing in IT equipment and major applications, it is not revealed by these numbers.
- As discussed in Chapter 2, Capilano differs from many universities in that all of its IT resources are concentrated in ITSD. Its single, central IT budget may appear equal to or higher than the central IT budgets of other institutions. But, the other institutions may have considerable "hidden IT" resources in the form of technicians or data administrators employed in academic departments or other program areas.

Given that operational spending is heavily weighted (at both Capilano and generally) toward staff salaries and benefits (which comprise 69% of the total opex in ITSD, and 71.5% for the University as a whole)<sup>5</sup> it can also be useful to examine the headcount devoted to the IT function, as a portion of overall institution headcount. Statistics of this type from Gartner are shown below for 2012, indicating that the average for education is 4.5%

**Figure 4. IT FTE as a % of Total Employees**



Source: Gartner IT Key Metrics Data 2013

A comparable ratio for Capilano can be calculated using the following FTE figures:

- Faculty: 634
- Support Staff: 340
- Admin & Excluded: 78
- Total: 1052

<sup>5</sup> Source: Capilano University Audited Financial Statements, April 2013, p. 23.

**ITSD’s capacity of 49.8 FTEs equals 4.7% of this total**, which approximately matches the Gartner benchmark shown above. However, this benchmark includes contract, as well as internal staff (although it excludes staff of outsourced service providers). There does not appear to be data available from CAUBO or other sources on the average portion of university IT staff that are contractors; however, it would seem reasonable to assume this could be in the 5-10% range, while the number of contractors at Capilano seems very low. So, it appears ITSD’s staff complement is consistent with an average benchmark for North American education organizations, as a portion of total headcount, but with a lower portion of contracted resources than many.

The difficulties with drawing conclusions from these data stem partly from the more centralized nature of Capilano’s IT group, which can distort comparisons with institutions who have additional IT resources sprinkled in groups such as the Registrar’s Office, library and academic departments.

Perhaps the most important caveat, however, is that **quantitative capacity does not equate to qualitative capability**. Capilano’s IT operating expenditures are mostly salaries of staff whose skills, levels of experience and compensation may be more modest than their peers elsewhere. When coupled with the high turnover discussed in Chapter 2, this means it may be unwise to expect the same productivity from the Capilano staff as other institutions realize from theirs. In terms of headcount, the analogous caution is that having the right number of staff does not mean the University has all the required skills.

### 5.3. Activity Volume Benchmarking

Another angle is to explore whether Capilano is facing an abnormally high number of incidents and problems to deal with, compared with other colleges and universities – either as a function of the student or staff headcounts. Comparative data are only available for the service desk function, and only from a small fraction of institutions. We have been able to find some data, published by the institutions themselves.

As shown in the table below, while there is a fairly wide range in the number of IT incidents dealt with by the various institutions, it does appear that Capilano is materially higher than most in terms of the volume of reported incidents.

Institution	Year	Total Incidents	Number of students	Number of staff	Incidents / student	Incidents / staff
Wisconsin Madison (US)	2010	70000	43000	16000	1.63	4.38
University of Texas (US)	2012	71043	50000	24000	1.42	2.96
Okanagan College	2013	6000	9941	1235	0.60	4.86
Davidson College (US)	2013	10758	3571	461	3.01	23.34
Capilano University <sup>6</sup>	2013	15028	5450	1052	2.76	14.29
<b>Averages:</b>					<b>1.88</b>	<b>9.96</b>

There are several factors that might lead Capilano to have a higher number of IT incidents (i.e., any factor that causes a ticket to be created in the help desk system) than the “average” institution:

<sup>6</sup> Source: monthly IT Status Reports for nine of the twelve months in CT 2013. Reports are not available for June-August.



- Capilano has a high ratio of part-time students and faculty. They may use University systems less frequently than those at residential universities with more full-time students and staff, and thus require more assistance remembering how to use them.
- ITSD has been recently emphasizing using the SM system to create a ticket for virtually **any** problem or request reported to it (some of which might produce work orders at other institutions). This may mean its statistics are more comprehensive than those in other institutions.
- Finally, it is possible that some skill deficiencies in ITSD (explained earlier) could mean that systems are put into production that are less robust than they should be, or that have not had levels of testing consistent with leading practice. One result could be a higher volume of trouble tickets.

## 6. Conclusions and Recommendations

### 6.1. IT Services Definition and Documentation

Articulation and documentation of a discrete list of services provided is leading practice among IT organizations, across all industries. ITSD's recent efforts to build such a service catalogue are recognized and endorsed. They should be continued. However, we have not seen a list of services that is complete, accurate and useful.

When we presented our Interim Observations deliverable, one of the comments received was that the list of eleven services we examined (reproduced below) was incomplete.

1. Access management
2. E-mail service
3. Technology equipment booking/loan
4. IT service desk
5. Network services
  - a. Wireless network access
  - b. LAN
  - c. Remote access
6. Classroom technology
7. Printing services
8. Computer labs
9. IT project management
10. Security management
11. Technology training

We make the same observation. There are several services missing from the list that are definitely being delivered today, and are vital to the University, including at least the following:

- Business application maintenance and support (i.e., Banner, Moodle, GreatPlains, etc.);
- System and application architecture services;
- Application development services (an ongoing function, particularly for web applications and major business systems such as payroll).

We understand that constraints on funding available for this review are reflected in scope limitations. However, we recommend that these other vital services be examined when possible in a subsequent study. For resource allocation and measurement purposes, management/administration/ reporting should also be added to the list.

The services catalogue ITSD has developed is a useful document, which serves several worthwhile purposes:

- Listing all the myriad activities ITSD performs;
- Assigning each to a "service owner" within ITSD, who is responsible for delivery;
- Listing a "business service owner" for most services. Most of these are client managers outside ITSD, but the CIO is listed for some internal services (e.g., capital requisitions);
- Capturing selected technical parameters for some services (e.g., development platform, whether it is web-based, etc.).

Without losing any of the detailed information in it today, it is recommended that ITSD enhance the catalogue by superimposing a categorization scheme such that:

- Each service fits into one category.
- The categories do not overlap, and are clearly defined within the catalogue;
- Together, the list of categories covers the entirety of what ITSD does.

The current list of categories is:

- Access management
- Architecture management
- Desktop management
- Classroom support
- Enterprise applications
- Project management
- Security management

While this is a fairly good list, it is not comprehensive, as evidenced by the number of services in the catalogue for which no category is listed. Some recommended additions, which would enable the category list to encompass close to all ITSD activities, would include:

- Network management;
- Equipment loan;
- Application development; and
- Service desk / user support.

The format ITSD has chosen for its service catalogue (an Excel workbook) appears appropriate and robust. However, should it wish to seek guidance to align with leading practice, there are numerous resources available, notably including the recent publications of the Technology Business Management (TBM) initiative. Chapter 2 of the TBM framework book is specifically devoted to service portfolio management.<sup>7</sup>

## 6.2. Service Delivery

Having examined copious written material and spoken with most of the ITSD senior staff, our conclusion is that ITSD is progressing well at adopting ITIL standards as a vehicle for elevating maturity levels, but is doing so for primarily the service desk / user support function, which is too narrow a focus. The procedural documentation that has been produced for discrete transactions such as Request Fulfillment, Change Management, and Incident Response in particular is excellent. But, we recommend this same degree of clarity and discipline be applied to documentation of all services.

More specifically, we recommend applying this six-part sequence of steps to all services where it could be applied (equipment loan, access management and project management would be leading candidates):

1. **Document procedures:** The first step is to draft short how-to documents defining how to deliver the service, including definitions of relevant terms, prioritization guidelines, etc. The existing documentation for Incident Management is an excellent example (although it is somewhat longer

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<sup>7</sup> See, for further information: <http://tbmcouncil.org/en/about/b/news/archive/2012/11/26/technology-business-management-council-launches-second-chapter-in-industry-driven-tbm-framework.aspx>

than ideal, at 18 pages). Many more such documents could be produced without unreasonable levels of effort.<sup>8</sup>

2. **Quantify volumes:** The next step is to put in place procedures to measure the volume of services delivered, on a regular cycle (e.g., monthly). Systems are already in place from which counts can be extracted for some services (e.g., classroom support, equipment loan, user accounts created / deleted). Practical mechanisms to measure some others could be developed. Although there are some services whose abstract nature makes quantification difficult (e.g., architecture, network tuning), there is still value in quantifying those services that lend themselves to it.
3. **Enforce quality:** To wring full value from documenting procedures, organizations need mechanisms to ensure they are being followed, and that services are being delivered the right way. Informal audits and “spot checks” of activity or documented results is one mechanism. Other means of encouraging a focus on quality include bestowing awards on those who are found to deliver consistent quality, or who garner high client satisfaction feedback.<sup>9</sup>
4. **Report:** As volumes and quality performance are increasingly measured, they should be reported. Even if ITSD is not under pressure from the University executive to report on its activities and performance, such reporting imposes a healthy discipline on an organization, and can stimulate considerable interest among internal staff members. The monthly IT Status Reports being prepared at least since 2005 are useful, although we are told they have lost some detail in recent years. Additional statistics could simply be added to them, including Key Performance Indicators (KPIs) defined in terms of service levels (see below).
5. **Measure client satisfaction:** The relations between ITSD and certain other parts of the University are fraught with “mythology” about how the group is viewed, and how certain recent changes (e.g., shifting the classroom support group into ITSD) have been received. We recommend instituting a regular process of garnering and publishing client satisfaction indicators as a more healthy, fact-based way of the group obtaining feedback. Specific, service-based satisfaction surveys provide the most meaningful results. It may require several iterations to refine the specific questions and distribution mechanisms, but simply eliciting feedback would reinforce ITSD’s customer-service orientation in the view of many client stakeholders. Separate mechanisms, with different questions, may be needed to survey staff, faculty and students.
6. **Define service levels:** The final component of a sound IT services regime is the negotiation of agreed, expected service levels. Writing up formal SLA “contracts” is probably unnecessary. But, we recommend ITSD suggest and document benchmark levels for each discrete service that are measurable and feasible, by which its performance should be judged. Without such expectation levels, ITSD will remain open to criticism indefinitely that its services are inadequate, no matter what it accomplishes. Once service levels are defined, they should be factored into the regular reports of actual performance. Service level targets should be reviewed annually.

Instituting these provisions would not solve all the University’s IT challenges, especially resource and funding constraints. However, it would have some marked benefits, including:

- Clarifying and exposing to all stakeholders – both external clients and ITSD staff – all the services the Division delivers;
- Elevating the consistency of service quality, by publishing good procedural documentation and enforcing its use;

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<sup>8</sup> Many IT policies and procedures can be accessed in the public domain from sources such as:

<http://www.techproresearch.com/topic/it-policies/> Although these may not be usable as-is without some tailoring, they should provide a useful starting point.

<sup>9</sup> Although awarding significant financial bonuses is probably ruled out by the terms of union contracts, staff in many organizations tend to respond strongly to informal “points” programs and opportunities for recognition by their peers.

- “Closing the loop” on client relations by eliciting feedback on performance; and
- Specifying and quantifying expectations, so ITSD has a chance of meeting them.

### 6.3. ITSD Resource Management

As discussed in Chapter 4, there is no compelling evidence that ITSD staffing levels are below relevant norms. However, it does appear that they have a higher than average level of incidents to handle. In this light, the recent emphasis on enhancing the maturity of the IT Service Desk function appears well-conceived. We recommend continuing and extending it, including some already-planned measures:

- Roll out the Service Management portal, including mechanisms for users to submit incidents/requests on line, and obtain later updates on their status through self-service features;
- To the extent that it’s cost-effective, invest in other self-service tools allowing users to process transactions themselves (e.g., password reset, change of home address, benefits enrollment), and make the utilities for doing this easy to find, on the intranet and elsewhere;
- Consolidate classroom and non-classroom incident tracking in a single (Microsoft SM) tool, for easier reporting;
- Continue to upgrade the Classroom Support group’s expertise in Apple Mac/iOS tools, to make them fully able to handle all classroom and computer lab technology requirements (with the possible exception of film and animation studies, which has its own dedicated support personnel).

The objective of these steps should not be only to elevate quality levels in incident response and IT Service Desk, but to enable these services to be delivered with less manpower, as part of a broader strategic shift.

Strategically, options for the University to realize more benefit from its capital investments and operating expenses on the IT function are limited. In an atmosphere where budget dollars are a scarce commodity, outsourcing is unlikely to be an attractive option, because it is likely to cost more – not less – than in-house operation, at least in the near term. Moreover, meeting faculty expectations for real-time, in-person classroom incident response would likely not be feasible using outsourced service providers.

In time, there might be potential to enter into shared services arrangements with other regional institutions (BCIT, Langara, Douglas College, VCC). A report recently done for the Ministry of Advanced Education’s Administrative Services Delivery Transformation (ASDT) program lists IT as one of the “Tier 1” shared service opportunity areas that could be explored.<sup>10</sup> However, the same report emphasizes that:

- The potential from shared services will not materialize quickly. Tier 1 opportunities would take at least four years to bear fruit.
- No single institution can drive this process on its own.
- Fostering collaboration among institutions with legally autonomous governance structures and a history of competition will be difficult, and will engender some resistance.

It is recommended that Capilano continue to participate, as it has for several years, in discussions of potential shared services that are convened by the Ministry, or by other lower mainland colleges and universities, with a pragmatic goal of seeking additional value from its expenditures on IT or other functions. If and when an opportunity for shared IT services arises, one scenario which might be

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<sup>10</sup> See “BC Post-Secondary Administrative Service Delivery Transformation: Opportunity Assessment” submitted by Deloitte 2013, available at: [http://www.aved.gov.bc.ca/administrative\\_service\\_delivery/welcome.htm](http://www.aved.gov.bc.ca/administrative_service_delivery/welcome.htm)

worth exploring would be for Capilano to expand its IT Service Desk coverage to other institutions, in return for external assistance with IT project execution.

In the short to medium term (1-2 years), it cannot be assumed that Capilano will be able to decrease its IT workload or cost by participation in a shared services venture. So, our recommendation is that ITSD take steps to re-allocate resources toward the priority areas identified in Section 3.4 above (IT service desk, IT project execution, and internet access speed).

This recommendation is premised on data showing that recent investments in enhancing the IT service desk function may be starting to bear fruit. The table below, for example, shows the clear, familiar pattern of incident tickets each academic term, with peaks in September and January, and a gradual diminishment until the terms end in December and May. More encouraging is the hint at a longer-term trend, where **both the volume of tickets and remediation times improved from Nov-Dec 2012 to Nov-Dec 2013.**

	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Sep-13	Oct-13	Nov-13	Dec-13
<b>NW Uptime</b>	99.99%	99.99%	99.47%	99.95%	99.99%	99.93%	99.94%	99.97%	99.89%	99.97%	99.98%
<b>Service Desk</b>											
Calls/day	60	31	76	65	70	74	54	77	50	42	31
emails/day	77	88	84	81	96	104	137	78	39	41	44
new tickets	1472	901	2162	1641	2068	1922	1182	2439	1557	1325	732
<b>Resolution times</b>											
<4 hours	52%	47%	63%	51%	60%	59%	44%	38%	61%	63%	55%
<day	4%	6%	8%	7%	8%	6%	1%	17%	2%	4%	2%
<week	17%	17%	7%	14%	8%	10%	21%	7%	14%	14%	24%
>week	27%	30%	22%	28%	24%	25%	34%	38%	23%	19%	18%
<b>E-Mail</b>											
messages/day	18465	16875	25598	30625	23362	24359	18241	NA	NA	NA	NA
% spam	61%	68%	79%	76%	84%	61%	59%	NA	NA	NA	NA
<b>Websites</b>											
external site visits	292296	246,367	270,028	209,236	242,313	254576	190,531	254,321	218,545	226,876	192,787
intranet visits	45815	27,167	47,181	41,362	46,819	48431	48,656	44,754	46,949	41,926	29,389
* Statistics are not compiled for July & August.											

If this general – albeit slow – improvement is borne out by results from future months, we recommend ITSD deliberately shift resources away from the service desk function, at a rate that allows adherence to service levels (or at least no decrease in performance, until satisfactory service levels are defined and achieved). We realize such a shift will not be dramatic, will take some time, and may involve some turnover of resources. But, even a shift of 1-1.5 FTEs per year could provide solid augmentation of capacity for executing projects and addressing application-related gaps. The specific steps encompassed in such a shift would include:

- Continue to refine procedures and implement self-service capabilities in the IT Service Desk function, with the aim of lowering the required manpower levels required to deliver this service. Reduce the approximately 13 FTEs devoted to this function over time, using consistent activity and client satisfaction data as a reference to guide the pace of this reduction.

- To the extent feasible, seek other opportunities to economize on infrastructure maintenance manpower levels, perhaps including outsourcing of selective infrastructure components if/where cost-effective, and/or a migration to cloud-based applications over time.<sup>11</sup>

Whatever resources can be freed up from these steps, albeit gradually and incrementally, should be devoted to IT project management and execution. Optimizing the user support / service desk function yields benefits, and mitigates one type of criticism of ITSD. But, reducing the group's ability to execute IT projects, including the IT components of projects vital to the University's educational mission, could be fatal to ITSD, and we recommend arresting the current trend in this direction. The gap between expectations and reality shown graphically in Chapter 2 is most pronounced with respect to projects. A chronic inability to get IT projects done, and a growing backlog of unmet project needs, will inevitably lead to them being contracted out, with an associated decrease in control and consistency, and higher overall costs to the University.

To stave off this risk, we recommend that ITSD try again to recruit someone to fill the vacant IT PMO Manager position, adopt a standard project execution methodology, and take other steps to push projects through their life-cycle more crisply and effectively.

These shifts could result in a quantitative re-distribution of resources to the target allocation shown below, as compared to the current state shown on p.14 above. In this scenario, a more healthy ~18% of ITSD resources would be devoted to the IT project management service, as opposed to the current ~9%. Note that we are using the FY 2014-15 budget for illustrative purposes here. In reality, such a shift would likely have to be spread over a 2-3 year period, to allow adequate service desk performance to be maintained.

ITSD Groups:	CIO Office	PMO	Service Delivery	Applications	Infrastructure	Architecture	Ttl FTEs	Total
<b>Total FTEs:</b>	3.00	1.00	16.80	10.00	10.00	9.00	<b>49.80</b>	<b>Salaries</b>
<b>Services</b>	<b>Total sal &amp; ben:</b>	\$262,448	\$104,175	\$1,189,442	\$781,858	\$786,512	\$744,606	\$3,869,041
1.Access management			10%	10%	5%	10%	4.08	\$310,916
2.E-mail service			5%		5%	10%	2.24	\$173,258
3.Technology equipment booking/loan			5%				0.84	\$59,472
4.IT service desk			30%		10%	10%	6.94	\$509,944
5.Network services					25%	10%	3.40	\$271,089
6.Classroom technology			10%		5%	5%	2.63	\$195,500
7.Printing services			5%		5%	5%	1.79	\$136,028
8.Computer labs			5%		5%		1.34	\$98,798
9.IT project management	20%	100%	20%	10%	20%	10%	8.86	\$704,502
10.Security management			5%	10%		10%	2.74	\$212,119
11.Technology training			5%	10%			1.84	\$137,658
Other	80%			60%	20%	30%	13.10	\$1,059,757
<b>Total:</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>49.8</b>	<b>\$3,869,041</b>

(Note that the service with the most significant relative increase is shown in green, while that with the largest decrease is shown in red.)

Finally, it seems unavoidable that the University will have to spend more on internet access speed. Buying additional bandwidth through the provincial BC Net service does not sound like an attractive option, but better deals may be available from Shaw, Bell or Telus. These would have to be coupled with upgrades to web/internet access gateways, and perhaps faster authentication utilities. The current situation, where faculty are unable to show online videos to their class because of insufficient internet access speed, is untenable. Steady increases in effective bandwidth would help improve the

<sup>11</sup> There are steady increases in the number and quality of applications being offered in cloud configurations by vendors, including a growing number with hosting and backup facilities in Canada.

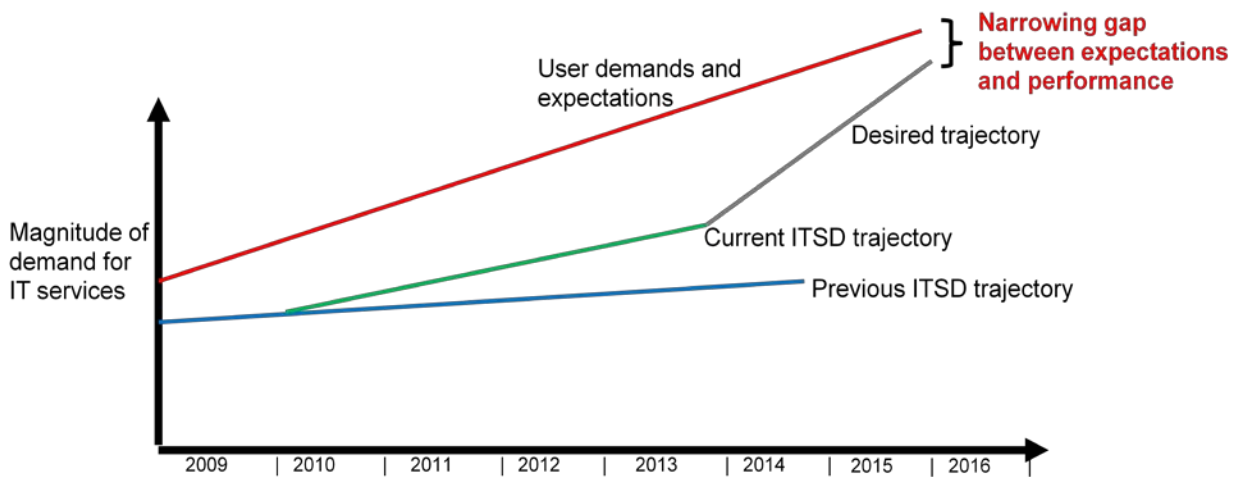
performance of countless academic and administrative services and applications, while mitigating a chronic cause of complaint among students. They should be factored into the University’s budget each year. There is no other single type of additional IT expenditure that could yield comparable benefits.

The current FY 2014-15 budget shows \$72K being spent on external bandwidth (with Telus). Perhaps increased spending in this area could be offset by economies in other telecommunications costs. We recommend this be specifically explored further.

More generally, the strategic resource shifts recommended here should be portrayed as part of a future “culture” characterized by two areas of ongoing focus:

- Continuous improvement in quality and consistency of service; and
- Constant seeking of opportunities to save labor and cost through the use of more self-service and low-maintenance automated tools.

The intent of these recommendations is, of course, to “bend the trend” away from the widening expectations gap illustrated in Chapter 2, to the situation depicted in the diagram below, in which ITSD would be able to steadily chip away at the list of unmet requirements and bring performance more into line with expectations.



Without any increases in funding, progress in these directions is possible, but will be very gradual. To come closer to the improvement depicted in the diagram above, we recommend that the University make an additional allocation of funds to the IT budget for FY 2014-15. There are a number of ways additional funds could be cost-effectively allocated to help address the backlog in required IT projects, and narrow the gap between ITSD performance and stakeholder expectations. In particular, the use of consultants is recommended to address certain tasks in ITSD’s backlog, for several reasons:

- The consulting marketplace is a source of resources with higher levels of skills and experience than can be attracted for the salaries Capilano is able to offer.
- Good consultants bring with them knowledge of leading practice in certain domains (e.g., disaster recovery planning, IT strategic planning).
- Consultants can often produce results faster, because they can devote major portions of their time to these assignments, rather than having to steal small intervals from “day jobs” as staff members.

The table below shows a recommended scenario, in which an additional \$250,000 would be used to address a selected set of specific gaps. These items were selected because they have the potential to



bend the ITSD performance curve upward (as shown in the diagram above), and start narrowing the gap between delivery and stakeholder expectations.

		Short term	Medium	Long
		Year 1	Years 2-3	3+ years
Initiative	Approach	Projected costs		
IT Strategy & Plan	Consulting contract	\$30K		
Secure Internet gateway capacity enhancement*	Router & software upgrade	\$15K		
Other business applications*	Contracted assistance	\$110K		
Disaster Recovery Plan	Consulting contract	\$40K		
PMO methodology & toolset*	License & consulting	\$10K		
Application rationalization	Portfolio review consulting	\$25K		
Application dev't toolkit*	License purchase	\$5K		
Microsoft SM portal rollout*	License purchase, change mgmt.	\$15K		
	<b>Totals:</b>	<b>\$250K</b>	<b>TBD</b>	<b>TBD</b>

Notes:

- These funds would be additional to the \$3.89M in salaries and benefits and \$1.77M in other operating costs provided to us as components of the draft FY 2014-15 ITSD budget, as discussed in Section 4.1 above.
- It may be possible to book all or part of the initiatives flagged with an asterisk(\*) as capital investments.

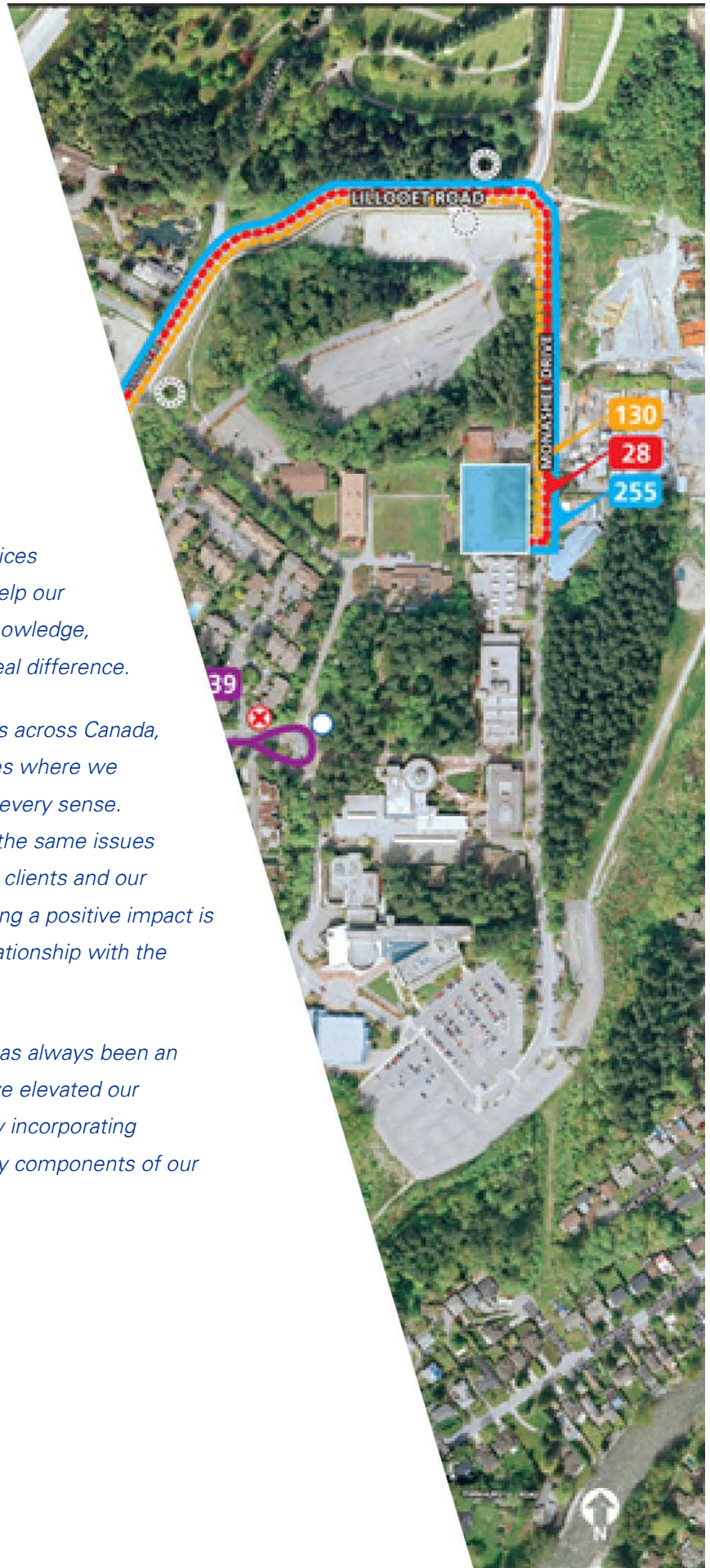
In summary, we acknowledge that the University has been continually challenged by tight funding constraints – overall, and for IT. But, there are some signs of recent investments yielding improved performance in the crucial service desk function. More broadly, ITSD is delivering the right services, and taking reasonable steps to deliver them better. The shifts in resource allocation and injection of supplementary funding recommended here are not a panacea, but they should enable the group to better meet stakeholder expectations.

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