

Developing a New IT Funding Model for Campus-wide Infrastructure and Services

Interim Progress Report to the Provost

Executive Summary

UBC spends approximately \$150 M per year on information technology. In the current fiscal year the central department, UBC IT, will spend less than 15% of the total, or about \$23 M. This amount was insufficient to properly sustain necessary campus-wide IT infrastructure and services. UBC IT's revenues have declined in real terms over the past decade and are budgeted at \$21.8 M in 2009/2010. This chronic underfunding of the University's core IT infrastructure and services cannot continue. Substantial cost increases have occurred in recent years and more are expected in 2009/2010. Those costs will be \$28.2 M in 2009/2010. In accord with University financial policy, these necessary costs had previously been covered by the department's unrestricted reserves while such reserves existed. UBC IT has now exhausted these funds and the reserve is in deficit.

In order to cover the shortfall between projected revenues and costs, UBC IT needs an increase of \$6.4 M beginning in 2009/2010 to continue to provide existing services and infrastructure at current levels. This figure assumes continued fee-for-service (sales) income at current levels.

Clearly, an IT funding model based on the sale of services can no longer generate the revenue required to meet the demand for necessary IT infrastructure and services at UBC. For the past decade central IT revenues have remained unchanged and have declined in real terms when inflation is taken into account. During this same period there have been significant increases in the scope and scale of key infrastructure and services that are used by virtually all UBC stakeholders.

Stakeholders have expressed the need to enhance some services, notably the UBC Data Network, beyond current levels. In addition, a preliminary list of possible new services is being developed but is incomplete and has not yet been reviewed by the IT Steering Committee (ITSC). High-level cost estimates for these new or enhanced services, which include improved IT security and electronic identity management, total \$5.7 M and could go higher.

The UBC Data Network illustrates the University's ability to operate large scale IT infrastructure that meets end user needs and is both flexible and cost-effective. Applying a similar model to other services – such as server virtualization, storage, software licensing, business continuity planning, and others – should result in efficiencies across campus. To achieve these savings will require changes in IT practices across the University and effective IT governance. A feasibility analysis to determine the potential for direct cash savings, increased efficiencies, and flexibility in units across the University is underway but incomplete. However, preliminary estimates of the direct and indirect savings through server virtualization are \$2.2 M, not including a potentially significant reduction in the University's carbon footprint through the use of this mainstream technology. Annual cash savings of \$800 K have been identified if the University moved to a campus-wide license agreement for widely used Microsoft products. Cash savings may also be realized in areas such as consulting fees, while efficiencies could be gained by consolidating the large number of email and calendaring systems. These and other areas of potential savings are under review by the IT Steering Committee.

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The recommendations in this interim report are summarized immediately following and explained in slightly more detail at the end of the report. They have been reviewed and are broadly supported by the IT Steering Committee. These recommendations address urgent issues and lay the groundwork for ongoing consultation to develop a sustainable IT funding model for campus-wide infrastructure and services. Our goal is to have the new model in effect for the 2010/2011 fiscal year.

Summary of Recommendations

1. *Provide immediate continuing funding in the amount of \$2.75 M to support the UBC Data network.*
2. *Provide immediate funding in the amount of \$3.65 M to support other existing campus-wide infrastructure and services through the 2009/2010 fiscal year. The need for continued funding beyond this period will be addressed in a subsequent report, pending ongoing service reviews by the IT Steering Committee.*
3. *Change the financial status of UBC IT from an ancillary unit to a centrally funded unit.*
4. *Sustain and enhance IT governance.*
5. *Develop an accountability framework to ensure campus-wide IT infrastructure, services and systems meet or exceed the needs of end users.*
6. *Continue to review and prioritize the need for current, new or enhanced services and infrastructure*
7. *Develop a strategy for moving some services from fee-for-service to central funding*

Highlights of IT Funding and Service Delivery at UBC

Starting in the mid 1980s, UBC distributed most of its central computing resources (many of the staff and most of the money) to academic and administrative units. The remaining central computing operation was converted into an Ancillary unit, defined by the university as an operation that is “fully self-sufficient and receives no direct or indirect subsidy from the University.” Departments had some freedom to allocate their IT funds as they wished, although in some cases there was no practical alternative to spending them with central IT.

Central IT in 1999/2000

Ten years ago the central IT department’s approved budget included \$22 M in annual revenue, most of which came from the sale of services such as telephones and network backbone connections. The unrestricted reserve was \$5M. Total staff headcount was 160.

During this period the demand for new campus-wide IT infrastructure and services was increasing at colleges and universities across North America. UBC was no exception. However, many of the emerging needs could not be met through the sale of services. The central IT department allocated a portion of its existing reserves to self-fund several new services on a pilot basis. Key indicators of the success of a pilot included the level of its adoption and feedback on how well the pilot service met end user needs. The expectation was that successful pilots could be developed into sustainable campus-wide services that

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would be eligible to receive adequate central funding based on their demonstrated value. Among the successful pilots were:

- The e-Learning service, based on WebCT Campus Edition
- The myUBC web portal, based on the community source software product uPortal
- The Campus Wide Login (CWL) authentication service, which was developed internally

At the start of the decade the UBC data network comprised approximately 10,000 active data ports. There was no wireless connectivity. The central IT organization retained responsibility for the university backbone network with no central funding. A “backbone fee” covered the cost of connectivity between buildings but not within them. Units wishing to connect to the backbone were required to pay a one-time connection charge plus this annual fee. Departments made independent decisions about local networking infrastructure technology. They determined the type of equipment they would use and who could connect to their local network. Some departments invested heavily in local networking while others did not. Some units were unable or unwilling to pay the annual backbone fee. These factors resulted in poor campus-wide connectivity that had increasingly negative impacts on the research, learning, and administrative activities of the University. To address these problems with campus connectivity, the University Networking Program was launched in 2000.

Central IT in 2004/2005

Five years ago, the central IT department’s budgeted annual revenue was \$22 M. The unrestricted reserves totaled \$3.5M.

The University Networking Program (UNP) - a four-year \$30.6 M capital project to upgrade or install 25,000 data ports – had been completed on budget and six months ahead of schedule in September 2003. Originally scoped as a “wired network” project, most of the program’s contingency funds were reallocated to launch a campus-wide wireless network of 1,000 access points. At the time it was the largest university wireless network in the world and was cited by new students as an important contributing factor in their decision to come to UBC. From 2000 to 2003, the central IT department allocated approximately \$6 M from reserves and operating income to UNP. Other funding sources included CFI (\$8M with matching funds), Minor Capital (\$3M), a Faculty contribution (\$2.6 M) and an internal loan (\$11 M) that was authorized by the University executive group.

A new data network funding model was approved by the Deans and Executive. The purpose of the new funding model was to ensure appropriate life-cycle management and sustainability of the infrastructure, including local or “edge” equipment. Some GPO funds were reallocated from UBC units. However, those funds did not cover the full cost of the data network, necessitating a continued internal subsidy from sales revenue and reserves.

During this same period, the Organizational Effectiveness Program (OEP) was underway within the central IT department. Its goal was to increase effectiveness and efficiency. Among the outcomes of the OEP were:

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- Closure of the central printing service (imPress)
- Headcount reduction of 25 (from 160 to 135)
- Organizational restructuring to improve service delivery
- Internal process improvements, notably in project management and change control

The central IT department also completed a successful program of 35 projects to support the launch of UBCO. One-time GPO funds were provided for this program, but total costs exceeded funding. The balance was self-funded by IT using available reserves.

The e-Learning service had grown to 1,500 active courses and 25,000 active accounts. Central funding of \$60 K per year had been allocated. The total cost to operate the service was approximately \$300 K per year with the shortfall covered by reserves. The current generation software had reached the end of its life-cycle and had become increasingly unreliable due to the high level of usage. A special task force was formed to address future directions in course management systems. (The task force became a standing committee, now known as ECMA.)

By 2004/2005, the myUBC portal was being accessed by 15,000 people per day. CWL authentication services had been deployed to major information systems. IT security issues had become very challenging. SPAM and computer viruses were a growing problem at UBC and elsewhere. The central IT department negotiated a campus-wide license for the leading antiSPAM/virus software (Sophos) which has proven highly effective in dealing with SPAM and viruses. The department self-funded the \$130,000 annual cost of the license.

Central IT in 2009/2010

This year, UBC IT's draft budget submission projects revenue of \$21.8 M (assuming sales revenues based on the current pricing model). Costs of existing services at current levels are projected at \$28.2 M, leaving a shortfall of \$6.4 M.

The shortfall is the result of two major cost drivers. First, \$2.75 M per year is required to sustain the UBC Data Network. The network funding model that was approved in 2003 was intended to support growth and ongoing improvements in the network. The network has doubled in size since 2003 as new buildings were constructed or renovated; however, these funds have not been provided. Second, the department has a \$3.65 M structural deficit that results from existing necessary infrastructure and services that cannot be funded through sales. These include myUBC, CWL, AntiSPAM/Virus, virtual storage, virtual servers, virtual private network services (VPN), directory services, security firewalls, and others. UBC IT has been required to cover all of costs from existing reserves that are now exhausted and in deficit.

In addition to costs associated with existing services, new services have been proposed as useful or necessary. These have not yet reviewed by the IT Steering Committee. Preliminary cost estimates for these possible new services total approximately \$5.7 M. The list includes improvements to IT security and Identity Management, campus-wide Microsoft software licensing, next-generation communications, project management services, architectural roadmaps for UBC's major information systems, events

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calendar, business continuity planning, and a feasibility assessment for a possible campus-wide data warehouse.

The department's unrestricted reserve, which had been used for operational funding, has been exhausted and will be in deficit by the end of the 2009/2010 budget year. Total headcount remains at 135.

Today, the UBC Data Network comprises 50,000 active data ports and 1,700 wireless access points. Central staffing to support the network has declined by 1.5 FTE since 2004. A major upgrade of e-Learning services (WebCT Vista) is nearing completion. The service supports 3,500 active courses with 40,000 active users (students and faculty) and continues to grow rapidly. The CWL authentication service supports 117 systems with approximately 350,000 accounts and 30 million identity authentications in 2008. A significant portion (22%) of the growth in the number of accounts can be attributed to the use of CWL to support youbc, UBC's international and domestic student recruitment website where prospective students, parents and counselors. All alumni, faculty and staff accounts remain enabled to facilitate such services as alumni engagement initiatives and post-employment systems (e.g. online pension information tracking).

A new Campus Events calendar was launched in 2008 and is widely used across campus.

The University of British Columbia is leading the development of a next generation student system (Kuali Student). The UBC executive has approved a \$9 M investment that is leveraging more than \$30 M from other institutions and \$2.5 M from the Andrew Mellon Foundation. UBC IT provided a loan to the project during its first year of operation (2007/2008). Those funds were taken from reserves and the loan was fully repaid to the department. However, UBC IT also spent approximately \$100,000 to cover costs of the nine-month planning and preparation phase during which time the University successfully recruited the other core investors in the project. These expenditures were partially covered by a \$50,000 planning grant from the Mellon Foundation with the balance coming from reserves. The program management function for the \$40 M international partnership operates out of UBC IT with associated costs covered by a \$2.5 M grant from the Mellon Foundation. The compelling vision of Kuali Student, which is the primary reason we have been so successful in attracting investment in the project, was created by Richard Spencer, former University Registrar and currently the Executive Director of UBC IT.

Other campus-wide information systems are in varying stages of their life-cycle and will require ongoing investments as well as improved governance to ensure they deliver expected end-user benefits.

Summary of Highlights

In the past ten years the central IT department's annual revenues have declined in real terms. Today, the department supports a data network that is five times larger and significantly more complex than it was ten years ago. Fully 25 fewer people are providing highly-scaled services that the campus community relies upon to do their daily work. These services mirror those that are available at other

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universities in North America. However, a cost-recovery model based on sales can no longer generate the revenue required to meet current demand for key IT infrastructure and services.

External Review of IT at UBC

Recognizing the strategic enabling role of information technology and the disabling effect of UBC's funding model for campus-wide IT infrastructure and services, the Provost commissioned an external review of Information Technology at UBC. The review, which was completed in August 2008, identified some serious systemic IT issues. These included the need for a new funding model, improved governance, and a redefined role for the CIO.

The external review report stated that:

"UBC must position information technology as a key element in its strategic thinking, planning, and implementation. In the process of so doing, the University's central unit, UBC IT, must be viewed as a "strategic enabler" not only for the success of information technology, but also in order to ensure the achievement of the University's overall strategic objectives."

After outlining the negative consequences of the current IT funding model, the report stated, in Section 3, Funding of Central IT Infrastructure, Applications and Services:

"The degree to which there is a lack of adequate funding to sustain the IT infrastructure of UBC, and the negative consequences of the current funding model have reached a critical point. Serious system failures and security intrusions will occur that will damage UBC's ability to achieve its mission, as well as damage its reputation and ability to attract top quality faculty, students, and staff, or to be considered a reliable partner to peer institutions.

"UBC is already behind in a very high-risk area and given that major changes in administrative policies, processes, procedures, and practices take years to fully implement, we recommend that the UBC administration:

- ***"Recommendation 6: Immediately restructure and/or completely replace the current funding model for UBC IT and other central information technology infrastructure and services."***

Developing a New IT Governance Framework

In September 2008, the UBC Executive and the UBCV Deans endorsed a governance framework to create a new funding model for campus-wide IT infrastructure and services. Two working groups were established to develop the new model and create a transition plan: a Financial Working group comprising senior faculty business officers and an IT Managers Working group with members from a diverse cross-section of academic and administrative units. In addition, a strategically focused IT

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Steering Committee (ITSC), whose members were nominated by their Dean or administrative head, now provides senior level oversight to the process. These teams play a vital role in assessing the delivery of IT at UBC and provided invaluable guidance in the preparation of this report.

Good progress has been made in a few short months, but the process of fully developing a new IT funding model will not be complete until later this year, and will require ongoing oversight by the ITSC to ensure the new model results in efficient services that meet end user needs. Although their current focus is IT funding, these groups can and should play broader roles in IT governance at UBC, including information systems and architectures.

Guiding Principles

The Financial Working Group has developed a set of principles to guide the development of the new funding model. The principles are under review by the IT Steering Committee and are expected to evolve in concert with the development of the funding model through 2009 and from time to time thereafter to reflect future needs.

Benchmarking and Best Practice Review

UBC is fortunate in having excellent relationships with universities across Canada, with many of the major research universities in the United States, and several in the UK and Australasia. These relationships are being leveraged to obtain accurate detailed information about the costs of IT infrastructure, services and systems at a select group of institutions. This information, some of which is sensitive or confidential, is enabling UBC to compare our IT costs with those of other universities. We intend to develop an ongoing program of regular benchmarking and reporting to the IT Steering Committee. Benchmarks will be posted on a public website while respecting the confidentiality of our partners' data.

Establishing meaningful benchmarks requires care due to variations in the ways that different institutions allocate their costs. However, we are confident that we can work through those details to report relevant and accurate comparative information. This process is of as much interest to the other universities as it is to UBC.

Early results of benchmarking the costs of UBC's Data Network show that we compare favourably to our peers.

We will also work with select partner schools as well associations such as the Canadian University Council of CIOs (CUCCIO), EDUCAUSE, and the Research University CIO Conclave (RUCC) to complete targeted best practice reviews. This will be particularly important in any areas where UBC is not aligned with best practice.

The IT Service Catalogue

A preliminary list of campus-wide IT infrastructure and services – called the IT Service Catalogue – is being developed. Using non-technical language, the catalogue lists the services that are provided today, and others that are necessary but are not presently available.

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From an end user perspective, the service catalogue will become a searchable on-line resource that describes IT services that a person may wish to use. If the request requires approval or other service management steps, it can be routed accordingly. The person requesting the service can check its status and overall metrics on how well the service is being delivered. One example is the process to provision a new employee with a telephone, network connection, computer, CWL identification, and group permissions to information systems or security credentials.

From an IT funding perspective, the catalogue will identify: services that should be provided centrally and funded centrally; services that should be provided centrally and funded on a fee-for-service basis; and services that should be provided locally. It is also a tool to assist with priority setting and, when appropriate, reallocation of funds between services based on evolving needs and infrastructure life-cycles.

Potential Savings and Efficiencies

A high level analysis suggests that UBC spends approximately \$150 M per year on information technology. Further analysis is underway to identify potential savings in areas that were suggested by the Financial Working Group, including:

- Infrastructure, specifically servers, that can be consolidated in a “virtual” environment
- Software licensing, such as Microsoft products, common statistical packages, etc.
- Consolidated Email Service
- Maintenance contracts
- Professional fees (IT consultants)

We currently estimate that there are at least 700 servers housed at UBC. In addition to the annual cost of depreciation and staff to support these servers, each device contributes disproportionately to the University’s carbon footprint. It should be possible to reduce overall costs – including direct cash-out-of-pocket and indirect savings realized through productivity gains – by “virtualizing” many of these physical servers.

A preliminary analysis of potential savings through virtualization has been completed but has not yet been reviewed by the IT Steering Committee. The analysis indicates average annual direct savings of \$600K/year and additional indirect savings of \$1.7M/year, representing reductions in administration (staff) costs, service downtime, space costs and the impact of disaster recovery events over the first five years. When virtualization is complete in year six, annual direct savings would be \$1M/year, with additional indirect savings of \$2.5M/year. In order to achieve these savings the University would need to invest in centralized infrastructure and departments would need to change their current buying behavior. In this new model, as existing servers reach the end of their useful life over the next five years, most of them would not be replaced with new local servers. Instead, the applications that run on those servers would move to the centralized virtual environment. The current savings estimates assume that fifty-five percent of all existing servers can be moved to this environment. We believe that to be a

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conservative assumption and that a larger proportion of existing servers can be virtualized, thereby yielding higher overall annual savings.

Another area of potential savings is professional fees. Financial records show that UBC spends approximately \$40 M annually on professional fees. However, it is difficult to determine precisely what portion of the total is spent on IT. A reasonable estimate, developed by manually sifting through transactions, is that the University spends \$6 M on IT consultants and contractors. We speculate that a substantial number of those contracts are for project managers and business analysts, in addition to more technical roles. Ironically, the ongoing need for these skills is easily identified, yet they are in short supply among the 480 professional IT staff employed by the University.

The average cost of an IT contractor is roughly double the average cost of an employee. It should be possible to reduce overall professional fees while investing in staff to perform the same or better quality and quantity of work. Annual direct savings of over \$1M per year appear to be well within reach, and would be accompanied by indirect benefits including fewer changes in project management staff over the course of projects, and staff with key knowledge remaining at UBC when projects are complete.

Analysis of these and other areas of potential savings is ongoing.

Recommendations

The following recommendations have been reviewed and are broadly supported by the IT Steering Committee. Recommendations 1 and 2 address the \$6.4 M shortfall in the 2009/2010 UBC IT budget.

1. *Provide immediate continuing funding in the amount of \$2.75 M to support the UBC Data network.*

Additional annual fund of \$2.75 M is required to sustain the UBC data network at current levels. This amount assumes the continuation of existing annual sales revenues of \$1.8 M from UBC ancillary units, students in residence, and external stakeholders, plus the current GPO allocation of \$2.1 M.

2. *Provide immediate funding in the amount of \$3.65 M to support other existing campus-wide infrastructure and services through the 2009/2010 fiscal year. The need for continued funding beyond this period will be addressed in a subsequent report, pending ongoing service reviews by the IT Steering Committee.*

Annual funding of \$3.65 M is required to sustain existing services at current levels (in addition to the funding for the UBC Data Network in recommendation 1).

3. *Change the financial status of UBC IT from an ancillary unit to a centrally funded unit.*

Funding for all campus-wide IT infrastructure and services should be based on the documented life-cycle costs necessary to ensure that each service provides the expected benefits to end users and that it can be sustained at the required level over time, until the service is retired. Many campus-

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wide services should be funded centrally. Others should be offered on a fee-for-service basis, with fees set to the lowest level that will cover all life-cycle costs. The level of central funding should reflect both the need for campus-wide infrastructure and services and the priority given to these needs by the IT Steering Committee. A framework to ensure transparent accountability, including key performance indicators and benchmarking, should be developed.

4. *Sustain and enhance IT governance.*

Two working groups that were created to develop a new IT funding model (the financial working group and the IT managers working group) should become standing advisory committees within an evolving IT governance framework. Similarly, the IT Steering committee should become a standing committee to provide comprehensive senior level oversight and advice on the need for campus wide services and infrastructure, and the priority that should be given to them. Other standing committees should be established to address other campus-wide IT infrastructure and services, such as information systems. These committees should report up through the IT Steering Committee.

5. *Develop an accountability framework to ensure campus-wide IT infrastructure, services and systems meet or exceed the needs of end users.*

The framework should evolve over time based on changing needs, starting with ongoing benchmarking and best practice reviews, and an annual report to the campus community. Actual service delivery data relative to key performance indicators should be made available on the web and reviewed with the community on occasions such as the annual e-Strategy Town Hall meeting.

6. *Continue to review and prioritize the need for current, new or enhanced services and infrastructure*

a. *Improve the security of the UBC Data Network.*

Necessary security improvements such as virtual networks, virtual firewalls, and VPN service will require additional continuing funds that have not yet been estimated.

b. *Develop a comprehensive online IT Service Catalogue that describes the campus-wide IT infrastructure and services, their costs, service levels, and how they can be accessed.*

The IT Service Catalogue will be developed and maintained using best practice principles such as those described in the ITIL¹ service management framework.

7. *Develop a strategy for moving some services from fee-for-service to central funding*

¹ <http://www.itil.org/en/>

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- a. Ensure that all UBC stakeholders have access to appropriate connectivity by eliminating the monthly per-port fees currently paid by UBC ancillary units and setting fees paid by students in residence to match the cost of providing the service.*

The additional cost of these enhancements is estimated at \$1 M per year.