Together we enable:  
New Directions of Waterloo’s IT Community: Fall 2013 Update  
November 2013: 6 month progress report

In May of 2013, as part of the IT Strategic Plan, Waterloo’s IT community released an overview of its directions for the next months and years. In each of the four main focus areas, potential opportunities were identified, and during the first six months initiatives have been underway to move us towards our stated directions. This report provides an update on that progress.

In addition to the initiatives, a review of IT governance has begun by a sub-group of the IT Strategic Plan steering group, the University Committee on Information Systems and Technology (UCIST). The sub-group’s findings will be brought to the UCIST group during the fall for further discussion. As well, an external review of the IT Strategic Plan process will recommend how to track and regularly refresh our directions. More information will be available in the next IT Directions update, expected in May 2014.

Revitalize our student IT environment
Students at Waterloo have high expectations of the IT environment. We need to keep pace with trends and advancements in order to provide a great experience. The growth of BYOD (bring your own device) has produced an explosion in the demands on wireless and cellular networks. Students expect to be able to work anytime and anywhere, and want access to software for their courses in their preferred work spaces. A number of services for students need improvement.

Initiatives underway:

- **S1**: Provide remote access to specialized software, such as from home and Library, for all students, as is available already in some Faculties.
  - Information Systems & Technology (IST) and Applied Health Sciences (AHS) are conducting a pilot of Microsoft technology (VDI/RDS) that provides remote login capability to run Windows applications. This project will showcase capabilities, and estimate the implementation, operation, and support costs, for a possible production deployment to serve the entire campus. The pilot project should be complete by April 2014. See: [http://ist.uwaterloo.ca/~bruce/MicrosoftVDIRDSProjectCharter.pdf](http://ist.uwaterloo.ca/~bruce/MicrosoftVDIRDSProjectCharter.pdf)

- **S2**: Provide mobile access to important applications and information.
  - IST is working with the Registrar’s Office, Graduate Student Office and Human Resources to find a good mobile interface for the services those departments provide. With this solution, students will be able to update personal information, view course schedules, and add or drop a class from a handheld device. Responses to a Request For Proposals (RFP) are being reviewed and a plan will be developed in fall 2013.

- **S3**: Ensure excellent connectivity for mobile devices (smart phones, laptops, tablets, etc.) through campus cell service improvements and wireless upgrades, both of which are underway.
  - Resnet WiFi: This upgrade will completely refresh the residence network services, tripling the number of WiFi access points (APs) to address current and increasing
coverage needs in all Housing residences. CLV North will also receive campus WiFi service, eliminating the need for individual cable modems. All Housing residences were upgraded by November. CLV North is expected to be completed by April, 2014.

- **Campus WiFi**: IST is in the final year of a 3-year, $1.2M upgrade to WiFi in all academic and administrative buildings across campus. Access points are being upgraded and new ones added, nearly doubling the numbers in order to enhance coverage. High density areas, such as classrooms and common areas, are getting special attention. Work completion is expected by April 2014. See: [http://ist.uwaterloo.ca/ns/wifi/index.html](http://ist.uwaterloo.ca/ns/wifi/index.html)

- **Cell tower**: Major cell carriers have identified difficulty responding to increased cell phone usage on the university campus. Reports from students, faculty, and staff also indicate cell service dead zones in areas, including locations in the student residences. The University has contracted with Rogers to locate a cell tower near the Health Services building. The City has concurred with construction, expected to start in 2014.

**S4**: Provide a student portal for convenient and customizable access to important information and services, a project that has started and is getting good feedback.

- A Student Portal has been under development in collaboration between IST’s Client Services and the Student Success Office, to create a more contemporary facility for communications with students. A fall 2013 pilot of approximately 25 students will provide feedback and help pinpoint potential scalability issues. The Portal development team is establishing access to new data sources, and will go through a design review with Communications and Public Affairs. Features will be verified for accessibility. The Student Portal should be released campus-wide during the winter 2014 term. See: [https://collaborate.uwaterloo.ca/student-portal/](https://collaborate.uwaterloo.ca/student-portal/)

**S5**: Provide a great co-op job system, in collaboration with Co-operative Education and Career Action (CECA).

- WaterlooWorks is the name of Waterloo’s implementation of the Orbis software suite selected for this project. CECA and IST are working with the vendor on its initial installation and configuration. A phased roll out is scheduled for 2014, with a full go-live planned for January 2015. WaterlooWorks will provide enhanced management tools for CECA staff, and a much improved user experience for students and employers. See: [https://uwaterloo.ca/co-operative-education-career-action-systems/](https://uwaterloo.ca/co-operative-education-career-action-systems/)

**S6**: Improve the promissory note process by fully integrating with Quest, a system students already use regularly. It was in place for fall 2013.


**Grow our technology-enabled teaching and learning environment**

Significant changes are occurring in online learning. Universities can offer courses in many ways, including choosing to make content open and free, and to showcase select courses in popular MOOCs (massive open online courses). We want our Waterloo online learning tools to be extensible, to add
features and functionality, and adaptable, to allow ease of use and teaching innovation. Also, our classrooms need to evolve with technologies that make them flexible for changing needs. While we are focusing on technology, we need to ensure strategic directions are driven by the needs of instructors and learners.

**Initiatives underway:**

- **TL1:** Establish the means for setting University directions for teaching and learning technologies.
  - Numerous departments collaborate to identify new technologies that can enrich online learning, and provide support for users of these technologies. Discussions have begun to better understand the positive existing partnerships between the Centre for Extended Learning (CEL), the Centre for Teaching Excellence (CTE), and IST’s Instructional Technologies and Media Services (ITMS), and how these units initiate change. This governance review occurs in concert with an IT governance review by UCIST. More information should be available in winter 2014.
- **TL2:** Offer avenues for faculty and student input towards investigating the next technologies.
  - This initiative is connected to TL1. Understanding the process for governance and decision-making is fundamental to ensure input is gathered and used effectively.
- **TL3:** Work with Desire2Learn (D2L) to build upon LEARN as an exciting learning space.
  - Integration of Maple TA into LEARN facilitates easier access to Maple quizzes, and the automatic transfer of grades, all with one sign-on within LEARN. This integration has been completed through a contract with Desire2Learn and will be in use soon.
  - A new integration of publisher Pearson’s materials with LEARN allows professors and students easy access to textbooks, adding to the existing integration with McGraw-Hill.
  - A reporting project funded by WatPD will provide reports on how students are faring with activities in LEARN. These reports will be available to instructors in all courses, and are expected to be in place during fall 2013.
  - Photo class lists: The Faculty of Mathematics provides its instructors with photo class lists of students in their class, which instructors find help them to engage students in the classroom. The Mathematics Faculty Computing Facility (MFCF) is working with IST to make these available online through LEARN to all Math Faculty instructors. The next six months should see photo-class lists made available to instructors of all courses across campus via LEARN.
  - Waterloo continues work with D2L as they implement better change management processes to maximize availability of the LEARN system.
- **TL4:** Increase support for live collaboration tools, such as videoconferencing and web collaboration, allowing outreach of teaching and learning.
  - This fall sees the first pilots of the Adobe Connect web collaboration system as a central service, integrated so that students can access live and recorded sessions through LEARN. See: [https://uwaterloo.ca/adobe-connect-help/](https://uwaterloo.ca/adobe-connect-help/)
- **TL5:** Evolve the technologies deployed to classrooms, with input from instructors and students.
  - As with TL2, this initiative will benefit from a review of governance and decision-making.
RCH classroom technologies were significantly upgraded through a project with the Scheduling office. Upgrades were also made in seven rooms across EIT, DC, HH, and OPT. More classrooms have been equipped with document cameras.

Lab Usage monitoring system: Engineering has developed an application that shows the lab maintainers how busy are the labs, which is shown on their information screen. The application is available to anyone who uses Nexus based labs and the Engineering tools. Math will deploy it soon as well.

Build upon IT foundations to support research and administration
The IT landscape is ever-changing. New devices appear regularly on our campuses. Software solutions are offered “in the cloud”, where servers, networks and services are run on our behalf. Electronic access to data is ever more vital. Our users need access to reliable and current data in order to understand and plan work in their areas. Not all of our systems have evolved with information migration capacity. We need to provide extensible, forward-looking IT systems that allow growth, adaptation to new technologies, and resilience. We must enable access to high quality data and information when, where and how it is needed, while upholding data security, integrity, and privacy.

Initiatives underway:

- **IT1**: Work with the stewards of data to provide access to information for analysis, inquiry and reporting, based on current, reliable and consistent data. Some needs include: Document, define, and communicate information about the data we hold. Provide a governed data hub to supply authorized data (open and security classified), including options that allow development of applications to use that data.

- Open Data Initiative: The Initiative is largely based on what was a collection of student-developed web page “scrapers”. It now consists of two main parts: the Open Data website, providing information about the initiative ([https://uwaterloo.ca/open-data/](https://uwaterloo.ca/open-data/)), and the Application Programming Interface (API), providing data to developers ([http://api.uwaterloo.ca/](http://api.uwaterloo.ca/)). Activities can be tracked at [https://github.com/uWaterloo](https://github.com/uWaterloo)
  - Define a project for the initiative, including a plan to sustain the API,
  - Find a solution to offer full data sets in addition to individualized queries,
  - Privacy and security impact analysis where required,
  - Improving the quality and update frequency of data sources wherever possible,
  - Releasing version 2 of the API interface,
  - Establishing a standard onboarding process for new data sources.

- Enterprise Business Intelligence: In July 2013, Waterloo acquired the Cognos 10 suite of Business Intelligence (BI) tools. Beginning this fall, the BI program will develop a new framework for strategic indicators reporting, with Institutional Analysis and Planning (IAP), and upgrade Library’s reporting environment with its partners at Laurier and Guelph. The program will establish a repository of information for decision support and for key applications, such as those offered through the Student Portal.

- Customer Relationship Management (CRM): The offices of the Registrar, Graduate Studies, Student Services and IST will explore key CRM concepts and best practices,
develop familiarity with available tools, and establish input into broader campus solutions. The project will create a basic data model for campus CRM activities and guide future product acquisitions and implementations. An initial implementation is being considered for winter 2014 in select areas (e.g., Undergraduate Recruitment).

- Online Advising Tools (OAT): UW student academic records have been recast by the Cheriton School of Computer Science into a simplified database designed to be well suited to the development of tools for advising students. One such tool is ASIS (Advisor Student Information System) which provides academic advisors an interface to any student’s academic record in a simple and configurable interface. This tool is used throughout the Faculty of Mathematics and has recently been taken up by other Faculties, including Engineering and Science. OAT also offers a number of stock queries that provide useful new analysis tools to advisors and academic planners. Recently, web services have been provisioned to permit (authorized) access to the OAT database so that mobile and web apps may be developed and offered. The Student Portal will access this service to provide students with access to their own data through applications. The OAT database is being used or soon will be used by other projects including Engineering Computing’s mobile app development, the Centre for Extended Learning, and the Exam Seating program.

- Exam seating: Many instructors now choose to assign seating to students at their final exam. This capability has been developed by the Computer Science Computing Facility (CSCF) and made available across campus. It makes use of the OAT database managed by the Faculty of Mathematics.

- Common Curriculum Vitae (CCV): Engineering has built a CCV system that automatically generates almost all parts required by agencies such as NSERC, saving faculty members up to 60 hours of work. It also is used in parts of Science and Computer Science. To become widespread, more data sources need to be integrated, but would provide significant benefit. The CCV will be needed by all faculty members in the coming years.

- Nexus Groups Management: Engineering has written tools to allow a non-IT person to manage groups, and to automatically each night put people into groups that reflect their employment, department, Associate Dean groups, etc., based on HR records.

• **IT2**: Improve the resilience of our data centres, including better back-up power, and find a longer term solution for an off-site data centre for disaster recovery, continuity, and expansion.
  - Math and Computer machine rooms: A backup generator will be installed to support IST and MFCF machine rooms during power outages, to increase the robustness of our information systems and services. This is expected to be in service by summer 2014.
  - UW Data Centre: Explorations continue into acquiring an off-site data centre to meet disaster recovery planning expectations.

• **IT3**: Consider and plan the use of cloud services, including private clouds, to provide computing resources (servers, storage, back-up) as demands arise.
  - Student email: Student preferences and trends in higher education suggest it is time to re-evaluate maintaining an in-house email system for students, a system that about one third of students use. The rest forward their university email to personal accounts, with
Gmail and Hotmail being the most popular choices. This project is an investigation into the potential use of cloud email services for undergraduate student email, with a recommendation expected by fall 2014. See: http://ist.uwaterloo.ca/~bruce/StudentEmailInTheCloudProjectCharter.pdf.

- Online Expenses: Waterloo is evaluating Concur, an industry-leading hosted service for electronic submission of travel claims and expense reporting. Key factors are usability and a review of privacy associated with the services, including the new Privacy and Security Impact Assessment (PSIA) templates and process. The project will take an iterative approach to campus-wide involvement in evaluation and implementation. The system will be evaluated in fall 2013. See: http://uwaterloo.ca/online-expense-claims

- Private Cloud Storage Network: The Library is one of eight partners in building a private cloud storage network across Ontario university libraries. Housed at the University of Toronto, the Library’s commitment to an initial 50 TB will provide affordable storage to locally digitized and born-digital objects, such as digitized maps, texts and departmental files that are now stored on expensive Storage Area Networks (SAN).

- IT4: Provide local versions, where cloud systems may not be appropriate solutions, of frequently needed tools such as a drop-box and video and audio storage and delivery systems.

  - SharePoint Server 2013: SharePoint will be updated from 2010 Foundation to SharePoint Server 2013, offering improved reporting and data management tools. New workflow tools will help users streamline office processes and centralize storage of important documents. The upgrade and migration also provide an opportunity to work with site administrators to review how sites are being used, and how functionality and security can be improved. This is expected in service by winter 2014.

Work together to improve the usability, delivery and support of IT

During the recent consultations, IT users recounted stories where usability problems proved a barrier to many systems running University processes, such as financial reporting (FORE), admissions (GAP), recruiting (HR), and Quest student information. IT groups, working with steering groups that guide the evolution of these systems, need to ensure that intuitive interfaces are a priority. Other aspects of usability include excellent support and communications, and providing services useful to our users. Keeping users informed of IT service interruptions, changes, improvements, and work in progress is important so that they know what is happening, understand change, and trust IT decisions.

Initiatives underway:

- **U1**: Work with the groups that steer the University-wide process management tools, to seek user input on usability problems.
  
  - Information system initiatives are incorporating usability as a key factor in deployment.
    
    - The GROS (Graduate Reviewer Online Services) was enhanced in summer 2013, with feedback from a survey of system users and through a task force. Improved functionality includes a single compilation document and extra search filters.
    
    - The upgrade of the Cognos Business Intelligence toolkit, as well as the upgrade of the E-Business suite, will allow a new reporting environment for financial
statements and associated reports, currently handled by FORE. An upgrade to our financial systems is scheduled to begin in 2014.

- Recommendations from the HR audit address a number of usability issues in business process and systems perspectives. Priorities and timelines have not been established yet, but projects will likely involve an upgrade of PeopleSoft Human Capital Management (HCM) application and a look at specific processes such as position management and recruiting.

- **U2**: Develop a usability resource, including tools and expertise, with a team to address usability in applications and data.
  - Early in 2013, Waterloo acquired the license for Oracle's User Productivity Kit (UPK). An initial pilot is underway with Finance, aimed at enhancing the Purchasing Card (PCard) experience. Rollout for other projects will begin in fall 2013.

- **U3**: Create integrated, service-oriented helpdesks that uphold excellent standards and stay connected in order to share information so we can best serve users.
  - IT Best Practices: Define and implement IT best practices including aspects of service catalogue, change management, asset management, and knowledge management for IST and other services. Expected time of completion is the end of the winter 2014 term. See: [https://uwaterloo.ca/it-service-asset-management/it-best-practices-project](https://uwaterloo.ca/it-service-asset-management/it-best-practices-project)
  - Implement new Request Tracking System, RT4: Provide a reliable system for request tracking, creation of a knowledge base, integration with service catalogue, etc. In addition, as appropriate, the RT4 system will enable workflow and functionality for IT Best Practices on campus, especially service desk operations processes for IT services. Expected time of completion is the end of winter 2014 term. See: [https://uwaterloo.ca/it-service-asset-management/request-tracker-4-rt4-implementation-project](https://uwaterloo.ca/it-service-asset-management/request-tracker-4-rt4-implementation-project)
  - Improve technical expertise in the CHIP: The goal is to reduce the number of referrals from the CHIP, handling more by CHIP staff members. Client Services will make progress by the end of the winter 2014 term by hiring more technical staff as opportunity arises, providing more training for CHIP staff, and liaising more closely with IST expert areas.

- **U4**: Facilitate improved internal and external communications and collaboration by providing and using appropriate tool sets (such as social networking applications and add-ons to Drupal).
  - IST Communications Plan: The Plan outlines the framework for managing and coordinating communications, internal to the IST department and external or campus wide communications. Developing a clear and consistent message is integral to effective communication. A plan will be completed and presented near the end of November 2013. It is a living document that will be modified as needed.
  - The LEARN team finalized a communications plan to address how to proceed during significant disruptions to LEARN. The team will use the LEARN Help site, Twitter, mailing lists, and other posted notifications in order to quickly disseminate information to instructors and students. See: [https://uwaterloo.ca/learn-help/](https://uwaterloo.ca/learn-help/)
Google Search Appliance: The Google Search Appliance averages 12,000 searches per day on weekdays and 5,000 per day on weekends. During peaks, such as in September, these increase to 15,000 and 7,000 searches per day, respectively. A second Appliance has been installed, providing a back-up and a development environment to test new features. New features include searching individual content types (e.g., news and events), website-specific searches, and eventually, document preview, multilingual support, and auto-complete. They will be released to production as ready, during 2014.

Implement new WCMS Services: In the short term, new features will be added, including those to enable accessible magazines, newsletters, etc., a calendar view for events, an interface to easily provide WCMS content to other systems (e.g., Student Portal) and new content types such as IT Bulletins, Projects, Services and Important Dates. This work will be completed by the end of 2013. For other feature requests, see: https://uwaterloo.ca/web-resources/wcms-users/features-functionality/requested

Information systems projects are focused on improvements in communications and in the use of common toolkits. For example, in September 2013 the final modules for the new HoME were implemented in Housing. This application, developed in conjunction with software vendor FLI, brought together in a common environment functionality used to support Housing groups for Admissions, Facilities, and ResLife.

- **U5**: Provide software distribution online, in collaboration with Retail Services to rationalize all software sales across campus.
  
  Some software packages for faculty and staff members are sold online, with downloads available from the software vendor websites. IST will expand this service to include the majority of software available to faculty and staff, continuing with a model of payment from a university account (AFF), with the option to download and install the software immediately, or have the software managed by automated installation. Investigations continue, with additional software packages anticipated online by spring of 2014.

- **U6**: Make IT staff development a regular practice, in order to foster excellence in IT services, staff knowledge renewal and to assist in succession and back-up planning.
  
  Improve Technical Expertise in the CHIP as described in U3.
  
  Continue to identify opportunities for information security skills development for IT staff across campus. The Library is focusing on strategic, high-priority IT training, including VMWare administrator training, ITIL certification, and IBM Cognos training to support Library and campus projects over the next year.