Together we enable:

New Directions of Waterloo’s IT Community: Spring 2014 Update
August 2014: progress report

In May of 2013, as part of the IT Strategic Plan, Waterloo’s IT community released its four page overview of directions to undertake over the next months and years. This report provides an update on what initiatives are underway to move us towards our stated directions.

A review of existing IT governance practices is proceeding through the top-level IT strategy group, the University Committee on Information Systems and Technology (UCIST), with the goal to improve the IT governance model. Objectives include refocusing UCIST on the strategic use of IT, a better understanding and more effective use of IT resource groups, agreement on how resources and services are shared in a federated IT model, and determining roles in decision-making and accountability for IT investments. Discussions culminated in a draft model, expected to be approved in August 2014 and put into practice in September 2014. 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 fall 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) conducted a pilot of Microsoft technology called VDI/RDS that provides remote login to run Windows applications. The pilot project was completed in June 2014 and a production deployment is planned for September 2014.

- **S2**: Provide mobile access to important applications and information.
  - GreyHeller PeopleMobile software was selected to provide a browser-based solution for cellphones and tablets. Testing of the solution is in progress for Quest with a go-live targeted for fall 2014. Examples of mobile functionality include the ability to add/drop classes, view class schedules, and grades.

- **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. The upgrade is complete. Columbia Lake Village (CLV) North will also receive campus WiFi service, eliminating the need for individual cable modems. CLV-North updates are underway.

- **Campus WiFi**: A 3-year, $1.2M upgrade to WiFi in all academic and administrative buildings across campus is complete. Access points were upgraded and new ones were added, nearly doubling the numbers in order to enhance coverage. High density areas, such as classrooms and common areas received special attention. Ongoing expansion and evolution of campus Wi-Fi will continue, as needed.

- **Cell tower**: This project is to improve overall campus cell coverage for interested carriers, by improvement of macro coverage, through installation of a cell tower. The construction will be done by carriers at carrier expense. Construction was approved by the Board of Governors and began in the summer of 2014, near Health Services.

**S4**: Provide a student portal for convenient and customizable access to important information and services.

- A Student Portal has been under development in collaboration between IST’s Client Services and the Student Success Office as a more contemporary facility for communications with students. Two hundred students have access to a beta site for testing and the Portal is now being rolled out to Environment for testing with a larger number of users. The launch will begin this fall, rolling out to one faculty at a time, with plans to have all undergraduate and graduate students accessing it by Winter 2015. 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). This initiative is underway.

- WaterlooWorks is Waterloo’s implementation of the Orbis software suite selected for this project. It provides enhanced management tools for staff, and a much improved user experience for students and employers. The first rollout of a pilot with Architecture went well – employers posted jobs, students applied to jobs, interviews were scheduled, and rank and match was completed on WaterlooWorks. The continuous phase of the recruiting cycle is underway. Timing of full rollout is being reviewed and is anticipated to occur in 2015. 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 completed in fall 2013.

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**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, so we can 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 here on technology, we need to ensure strategic directions are driven by the needs of the instructors and learners.
Initiatives underway:

- **TL1**: Establish the means for setting University directions for teaching and learning technologies.
  - In March 2014, a retreat day was held by groups that provide central support for technology-enabled learning, to set priorities for activities for the next 6 to 18 months. To raise the profile of online learning directions and to increase transparency and user involvement, they will request attendance at existing relevant meeting groups. Undergraduate Operations has been included already and others will be added.

- **TL2**: Offer avenues for faculty and student input towards investigating the next technologies.
  - The March retreat in TL1 also considered options for input and feedback mechanisms for faculty, students, and staff, to increase awareness and encourage user participation in online learning directions. These will be rolled out over the next year.

- **TL3**: Work with Desire2Learn (D2L) to build upon LEARN as an exciting learning space.
  - Two integration projects were completed in fall 2013: Maple TA for easier access to Maple quizzes and transfer of grades, and a reporting project funded by WatPD to provide reports to instructors on how students are faring with activities in LEARN.
  - Waterloo is part of an Ontario government Productivity and Innovation Funding grant, investigating the use of D2L's learning analytics system for assessing learning outcomes. This should provide insight into how well students are attaining competencies, and how program objectives are being met by individual students, and overall in the program.

- **TL4**: Increase support for live collaboration tools, such as videoconferencing and web collaboration, allowing outreach of teaching and learning. This opportunity is underway.
  - With collaboration tools, video and web conferencing, in production, we need a facility for storing, sharing, and delivering video files for use in courses. An investigation will begin in fall 2014.

- **TL5**: Evolve the technologies deployed to classrooms, with input from instructors and students.
  - As part of the "Outstanding Academic Programming" theme area of the Waterloo strategic plan, teaching and learning spaces will be reviewed, with meetings starting in summer of 2014. No specific objectives have been set as yet.

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.
o 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/), and the API, providing data to developers (http://api.uwaterloo.ca/). Work since the beginning of Winter 2014 has been focused on enabling development of applications, meeting needs of the new Student Portal with scalability improvements, engaging the Region of Waterloo with the rollout of Grand River Transit’s Real Time transit data for use in the Portal, enhancing sustainability of Open Data service with dedicated resources, and launching version 2 of the improved API. Fall 2014 activities will include a privacy and security impact analysis, improvements to quality and update frequency of data sources where possible, and establishing a standard onboarding process for new data sources.

o Enterprise Business Intelligence(EBI): In July 2013, Waterloo acquired the Cognos 10 suite of Business Intelligence (BI) tools. The current focus of the EBI program is the migration of existing Cognos 7 distributed implementations to a centralized enterprise Cognos 10 installation. This focus establishes a repository of centralized enterprise data marts that will be leveraged for decision support activities. In addition to enhancing the functionality of existing reporting environments (e.g. the Library, HR and FORE), the EBI program will also enable the development of a new strategic indicator and analytics framework with existing partners like Institutional Analysis and Planning (IAP) and for new applications such as the Student Portal.

o Customer Relationship Management (CRM): In fall 2013, the offices of the Registrar, Graduate Studies, Student Services and IST began work on a Service Integration and Accountability Model (SIAM) that is expected to form the basis of a future campus wide CRM initiative. The project will create a CRM model focused on service activities and delivery that will be used in the next fiscal year to guide CRM product acquisitions and implementations for select areas (e.g., Undergraduate Recruitment).

- **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 the IST and MFCF machine rooms during power outages, to increase the robustness of Waterloo’s information systems and services. This is expected to be in service by December 2014.
  - UW Data Centre: The BlackBerry 2 data centre is being retrofitted 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 approximately one third of students use. The rest forward their university email to their personal account, 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. There is a strong desire from students and IT groups supporting in-house email to move to cloud-based email services. A Privacy and Security Impact Assessment is currently underway. A recommendation is expected by fall 2014.

- Online Expenses: Waterloo is piloting Concur, an industry-leading hosted service for electronic submission of travel claims and expense reporting. See: http://uwaterloo.ca/online-expense-claims
- 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 the latest version, 2013, offering improved reporting and data management tools. New SharePoint Server workflow tools for improving and automating standard office routines and practices will help users streamline processes and centralize storage of important documents. The upgrade and migration process provides an opportunity to work with site administrators to review how the sites are being used, and how functionality and security can be improved. This project was completed in January 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 users 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.
  - A number of information system initiatives incorporate usability as a key factor in their deployment.
    - The GROS (Graduate Reviewer Online Services) project, enhanced in summer 2013, incorporated feedback collected in a survey of system users and from a task force. Improved functionality includes a single compilation document and extra search filters. This project is complete.
    - The upgrade of the Cognos Business Intelligence toolkit, as well as the upgrade of the E-Business Suite financials system, will allow a new reporting environment for financial statements and associated reports, a function
currently handled by FORE. An upgrade to our financial systems is scheduled to begin fall 2014.

- Human Resources is in the process of identifying specific priorities and timelines for projects which will improve usability from both business process and system perspectives. Initial projects will establish foundational and compliance components, in alignment with Waterloo, HR and IT strategic goals. Subsequent projects will build on the foundational and compliance components targeting specific business processes.

- **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 now underway with Finance aimed at enhancing the Purchasing Card (PCard) experience, and rollout for other applications is underway.
  - A major “decustomization” program is underway for the Student Information System (Quest) which will remove the custom code that the university has put into the system over the years to tailor the system to its needs. Now that the PeopleSoft software is more mature, open and with many built-in usability and access features, this decustomization will allow us to take full advantage of these new capabilities while easing the efforts to do new upgrades and maintenance going forward.
  - Quest Self-Service also known as the Student Center, for applicants, students and alumni is the first de-customization project under the decustomization program. The student center has been heavily customized requiring significant resources, both functional and technical during upgrades, adding a substantial amount of time to the process. De-customizing and taking full advantage of PeopleSoft delivered functionality will ensure vendor support for any critical security patches, will greatly improve the user experience for both applicants and students and will greatly reduce the amount of time and resources currently needed during upgrades.

- **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 spring 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 being re-evaluated. See: [http://uwaterloo.ca/rt](http://uwaterloo.ca/rt)
  - Following this investigation of computer incident ticketing systems, the Library adopted the campus RT system and will migrate to RT4 when it is available.
• **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, both internal to the IST department and external or campus-wide communications. Developing a clear and consistent message is integral to effective communication. A plan was completed and presented at the end of November 2013. It is a living document that will be modified as needed.
  
  - Google Search Appliance: The Google Search Appliance averages 12,000 searches per day on weekdays and 5,000 per day on weekends. During peaks 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 are being released to production as ready, during 2014.
  
  - Implement new WCMS Services: The current focus for WCMS is on Responsive design work - WCMS developers working with designers on new responsive, mobile-friendly templates and themes; Performance enhancements; Testing improvements; Data flow improvements: Continually adding web services to WCMS content types to feed them to the Open Data API for improved content distribution. New content types include Services, Projects, IT Outages/Notices, Important Dates; IAP Accountability Framework site; Upgrading the collaborate.uwaterloo.ca site to Drupal 7. For other feature requests, see: [https://uwaterloo.ca/web-resources/wcms-users/features-functionality/requested](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:
    - September 2013 implementation of the final modules for the new HoME implementation in Housing is complete. This application, developed in conjunction with software vendor FLI, brought together functionality used to support Housing groups for Admissions, Facilities, and ResLife in a common environment.
    - The OFS (Org for Success) initiative in IST identified the need for enhanced project management expertise and recommended the formation of a PMO (project management office). In November 2013, the Portfolio Management group was officially created in IST. Its mandate includes strategic planning and portfolio management, a PMO as well as a policy and standards area. The group is also responsible for such functions as the ongoing evolution of the
governance model, risk management and change management practices. The group will develop and support the use of best practices in IT projects, including appropriate tracking of deliverables and changes, risk and issue logs. See \url{https://uwaterloo.ca/information-systems-technology/projects/project-resources/methodology-toolkit} for systems development life cycle and project management methodologies and related templates.

- **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 the model of payment from a university account (AFF). They will have the option to download and install the software immediately, or have the software managed by automated installation processes. Testing is in progress for a new software download site. Final testing is being done on integration of the webstore with software deployment. A pilot will run on the webstore with Visio and Project, in order to improve the Office 2013 deployment process.

- **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. This has started and will continue as necessary.
  - 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.

**Timelines for Initiatives**

First 6 months: May 2013 to October 2013

**IT governance, federations; plan and details for initiatives; “early wins”**

- **IT Strategic Planning activities**
  - Initial discussions of IT governance and federations by UCIST, and in Teaching and Learning, Administrative Information, and other areas.
  - Creation of initial Service and Operational Level Agreements (SLA and OLA) has begun.
  - IT Strategic Plan process review by Deloitte, which result in recommendations for best practices in cyclic review of IT Directions, and refining and using the IT Strategy Map.

- S6: Promissory note improvements completed and in use in fall 2013.
- TL3: Integration of Pearson content into LEARN.
- TL4: Live collaboration tool, Adobe Connect, in place as a central service.
- TL5: Upgrades to numerous classrooms.
• U1: GROS usability improvements completed summer 2013.
• U4: IST and LEARN communication plans in place. HoME project final modules in place.

6 months – 1.5 years: November 2013 to October 2014

Other “early wins” and near term projects and services; updates communicated, including measures

• IT Strategic Planning activities
  o First update of the IT Directions.
  o IT governance review and associated changes completed by UCIST, and in other areas (e.g., TL1, TL2).
  o New groups in IST will support strategies, in particular the Enterprise Architecture and Portfolio Management areas.
  o Measures (indicators) identified and baselines established.
• S1: Student remote access to specialized software – IST’s investigative project completed by April 2014 (complements services that already exist in some Faculties).
• S2: Mobile access to various Registrar, Grad Office, and HR services, contingent on RFP responses and decisions.
• S4: Portal pilot and initial rollout.
• S5: Phased rollout of WaterlooWorks as in the overall plan.
• TL3: Integration of Maple TA into LEARN, new reporting in LEARN (based on WatPD project).
• IT1: Open Data Initiative website and API in place. Cognos 10 installed in Library and BI strategic indicator reporting framework in place. CRM directions established.
• IT2: Backup power to MC in place.
• IT3: Student email direction set. Online Expenses decision set and underway.
• IT4: SharePoint Server 2013 installed and in use.
• U2: UPK rolled out for a campus project.
• U3: IT Best Practices project has revamped a service catalogue, begun change management processes, etc. Also, RT4 in place.
• U4: New Google Search Appliance and associated improvements are rolled out. Specific new features of WCMS will be in place.
• U5: Additional software for faculty and staff available for online download in place.

1.5 – 3 years: November 2014 to April 2015

Infrastructure and process initiatives; new and improved services

• IT Strategic Planning activities
  o Enterprise Architecture is well defined.
  o Project portfolios well defined and managed.
  o IT dashboards for measurements in place.
• S5: Go-live of WaterlooWorks.
• IT2: UW Data Centre location established and retrofit underway (estimated).

3 – 5 years: May 2015 to April 2017
• Major projects and infrastructure architecture