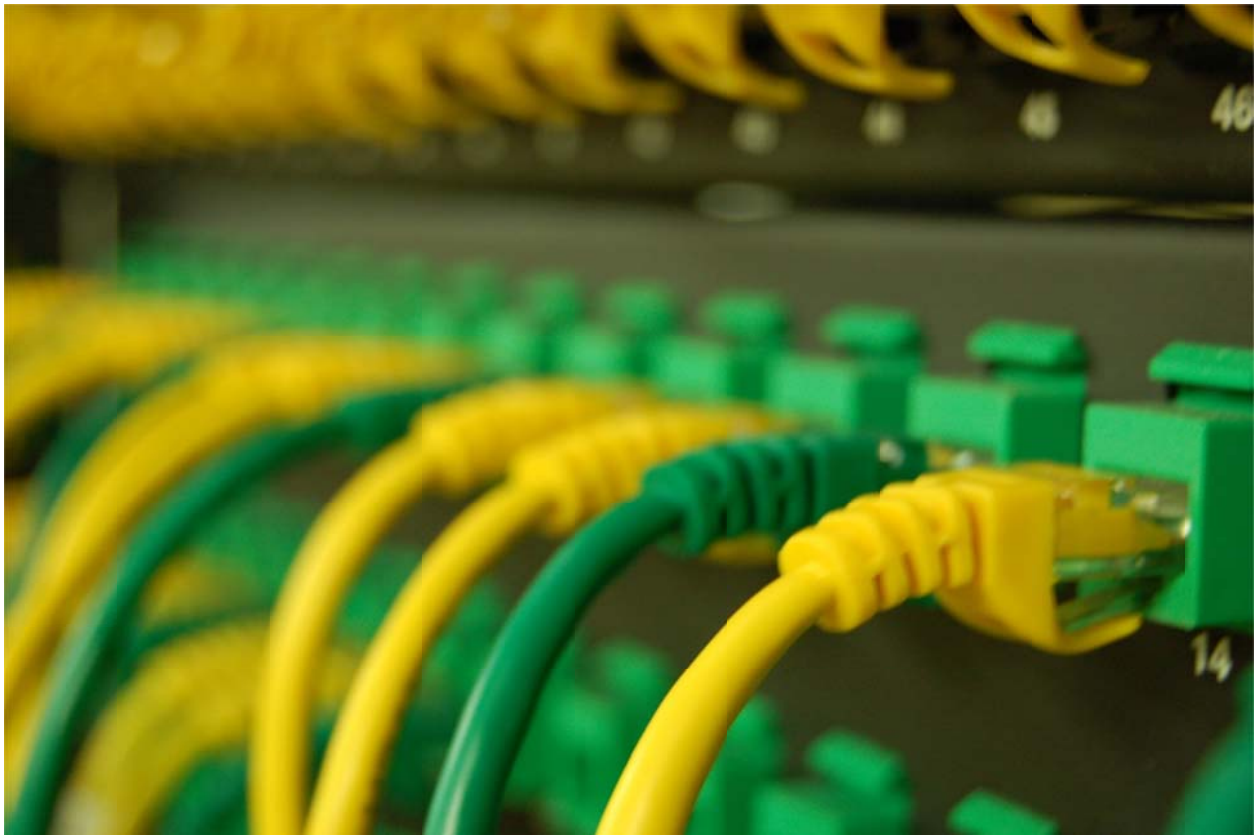
CLARKSON UNIVERSITY
INFORMATION TECHNOLOGY
STRATEGIC PLAN 2014-2017



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"It's hard to make predictions, especially about the future." — Piet Hein, Danish Poet

INTRODUCTION & GOALS

Information Technology is a vital underpinning of all aspects of the University's operations. From teaching and learning, to research and administration, technology has permeated the core of our operations providing great opportunities and great challenges. This is a strategic plan intended to provide a clear direction for information technology initiatives at the University over the next four years. Leaders from across the institution contributed to the development of this document, which resulted in the creation of four high-level goals:

1. Vigorously support the core mission of the University
2. Continue to develop an efficient, effective, and resilient infrastructure
3. Enable data-driven decision making across the institution
4. Support and generate new revenue streams

These four core goals were developed to align with the chief strategies that comprise the University strategic plan, Clarkson@125.

STRATEGIES

Each of the above goals will be accomplished by focusing on several key strategies:

1. Vigorously support the core mission of the University
    a. Distance learning support
    b. Support for enhancing and expanding research opportunities
    c. Building smarter classrooms
2. Continue to develop an efficient, effective, and resilient technology infrastructure
    a. Campus fiber optic cable plant and network backbone upgrades
    b. Datacenter in Old Main
    c. Pervasive wireless infrastructure
    d. Establish a robust suite of tools to facilitate collaboration
3. Enable data-driven strategic decision making across the institution
    a. Reduce the number of data silos and implement a data warehouse
    b. Improving student success and retention
    c. Academic scheduling & room/event scheduling
    d. Targeted communications tool
    e. Expansion of self-service functions and paperless data flows
4. Support and generate new revenue streams
    a. Colo@Old Main
    b. Residential ISP services for leased apartment facilities
    c. Support for conference services and special events

1. VIGOROUSLY SUPPORT THE CORE MISSION OF THE UNIVERSITY

1A. DISTANCE LEARNING SUPPORT

Distance learning provides an opportunity for the University to increase its reach by including students who are not able to travel to Potsdam in the educational process. This provides a tremendous benefit to those remote students but also poses a number of technological challenges. As the University's distance learning program expands, there will be an increased demand for technical support: after-hours end-user support, in-classroom audio-visual support and server administration support. This will require a commitment to adding staff and to licensing appropriate software packages to provide a polished, seamless experience to this new population of students.

1B. SUPPORT FOR ENHANCING AND EXPANDING RESEARCH OPPORTUNITIES

One of the strategic priorities of the University is to expand and grow research. IT will play a role in this effort by continuing to work together with the Division of Research to produce efficiencies in our administrative systems and data-flows, as well as working with faculty to provide appropriate support for research computing systems.

1C. BUILDING SMARTER CLASSROOMS

The population of students that we have on campus today is much different from the students of 10-15 years ago. Today's students are much more technologically savvy and expect a high-degree of technical functionality in their classroom experience. Providing instructionally appropriate and consistent classroom experiences is key to delivering on the expectations of these students.

2. CONTINUE TO DEVELOP AN EFFICIENT, EFFECTIVE, AND RESILIENT TECHNOLOGY INFRASTRUCTURE

2A. CAMPUS FIBER OPTIC CABLE PLANT AND NETWORK BACKBONE UPGRADES

The majority of campus fiber optic cabling infrastructure was installed in the early 1990s and consists of 62.5um multimode fiber bundles. This infrastructure has seen minimal updates since its installation; with updates being concentrated around areas of "fiber discovery" via unintended excavation and areas of new building construction. While this legacy fiber optic cabling is sufficient to support the existing campus 1Gbps backbone, it is not compatible with the next generation advances in backbone speeds that are necessary to support both consumers and producers of big data sources. Installation of singlemode fiber will be ongoing as a prerequisite to enhancing network backbone speeds.

The current campus 1Gbps network backbone is insufficient to support the continued trend in network traffic expansion. As a temporary solution to this problem, some campus backbone links have already been increased to 2Gbps. However, an upgrade to 10/40Gbps links will ensure that the network has available capacity to support the future needs. These efforts will be completed by 2017.

2B. DATACENTER IN OLD MAIN

The construction of a Datacenter in Old Main is currently underway, with an anticipated completion date of 2Q 2014. This new datacenter represents a generational improvement over the current facility, which was constructed in the 1970s, and will provide a modern, energy-efficient datacenter space via the adaptive reuse of Clarkson's original facility, Old Main. It was designed, is being constructed and will be managed according to current industry standard best-practices and will incorporate a number of energy-efficiency measures to reduce operational costs.

2C. PERVASIVE WIRELESS NETWORK

In its current form, the campus wireless network is designed only to provide service in classrooms and some group study spaces. Some students and faculty have implemented their own wireless networks to provide service to their dorms and/or research labs, however these networks are not implemented in a coordinated fashion and lack the performance that would be expected of a professionally administered wireless deployment. This lack of adequate coverage leads to frustration on the part of campus constituents and hampers the deployment of wireless sensor networks in support of several research projects. Furthermore, the lack of residential wireless coverage has become a negatively distinguishing factor in recruiting undergraduate students. A full-scale campus wireless deployment should be implemented to provide pervasive wireless coverage in the academic, administrative and residential spaces.

2D. ESTABLISH A ROBUST SUITE OF TOOLS TO FACILITATE COLLABORATION

As the world-reach of the University expands, it becomes increasingly important to have easy-to-use, easy-to-support collaboration and communications tools. In this global workspace, it is important that it is as easy to work with someone across the globe as it is to work with someone across the hall. Towards that end, it will be important to establish collaboration solutions to support voice, video and document-based interaction.

3. ENABLE DATA-DRIVEN STRATEGIC DECISION MAKING ACROSS THE INSTITUTION

3A. REDUCE THE NUMBER OF DATA SILOS

By necessity the University has a large number of information systems, many of which are both data-sources and data-sinks. PeopleSoft has historically been regarded as the data authority for most information and a concerted effort has been made to pull information flows and storage under the PeopleSoft umbrella. This is appropriate and has a benefit of reducing the level of effort required to support a wide variety of systems. There is opportunity to continue this consolidation with a variety of administrative systems, including: Millennium, SmartBen, PeopleAdmin, SafetyNet, and Starfish among others.

However, it is sometimes necessary for a particular function to remain implemented outside of PeopleSoft. In those cases, to ensure that the information stored in those systems is available for appropriate use across the University, we turn to data warehousing. By defining University-wide data models and implementing the long-term storage of the data represented by these models within a data warehouse, we can effectively integrate the information stored in these distributed systems while also consolidating information for single pane-of-glass presentation. Additionally, once data is accessible in a format that shares common definitions and structure, it

becomes much more feasible to prepare and present functional dashboards to display operational data for easy consumption by decision-makers.

3B. IMPROVING STUDENT SUCCESS AND RETENTION

There are many information systems that our student population interacts with on a regular basis. There are also a number of data silos across campus that contain information about individual student academic progress and social "fit." These systems, if viewed as a whole, have the potential to present a holistic view of a student's likelihood to succeed at Clarkson. Centralizing the storage of this information and presenting an appropriate representation of warning signs to academic advisors, program heads and to staff in Student Life would permit a much more efficient and targeted effort to identify, assist and retain borderline students.

3C. ACADEMIC SCHEDULING & ROOM/EVENT SCHEDULING

The process for preparing the academic schedule of classes and exams is currently extremely segmented and does not meet all of the University's needs in an efficient manner. Additionally, there is a desire to implement demand-based and priority-scheduling, which have the potential to utilize classrooms in a more efficient manner and to provide course availability that more closely aligns with student demand.

3D. TARGETED COMMUNICATIONS TOOLS

Effectively communicating with the University's various constituent bases requires targeting communications to the unique needs and situations of each recipient. Providing a toolset to enable timely, strategic communication will ensure that recipients receive relevant information in an easy to digest format. Because such a tool would reduce the amount of over-communication, recipients are less likely to ignore communications and are more likely to ingest important information.

3E. EXPANSION OF SELF-SERVICE FUNCTIONS AND PAPERLESS DATA FLOWS

In the era of "always-on, always-connected" our constituents have come to expect that all functions of the University are accessible electronically. To meet this expectation, we must continue to move traditional paper-based processes into electronic formats within PeopleSoft. This allows us to be more nimble in responding to requests and permits data-mining activities to more easily identify and respond to trends.

4. SUPPORT AND GENERATE NEW REVENUE STREAMS

4A. COLO@OLD MAIN

The construction of a new datacenter in Old Main also includes provisions for a facility that would provide colocation services to external tenants. This has the possibility to generate external revenue streams to support the capital needs of several of the initiatives outlined above.

4B. RESIDENTIAL ISP SERVICES FOR LEASED APARTMENT FACILITIES

There is a potential for Clarkson to provide Internet services to the proposed residential facilities in Cogdon and Old Snell. The developer would pay a flat-rate fee to the University in exchange for service to the entire facility, including all apartments. Conversations between Clarkson CFO, the Office of Information Technology and the developer will be ongoing.

4C. SUPPORT FOR CONFERENCE SERVICES AND SPECIAL EVENTS

One of the strategic goals outlined in Clarkson@125 relates to expanding the University's revenue streams generated by hosting conferences and special events on campus. If this goal is to be achieved, we must focus on appropriately resourcing and supporting both Information Technology and Audio-Visual services in support of these types of functions.