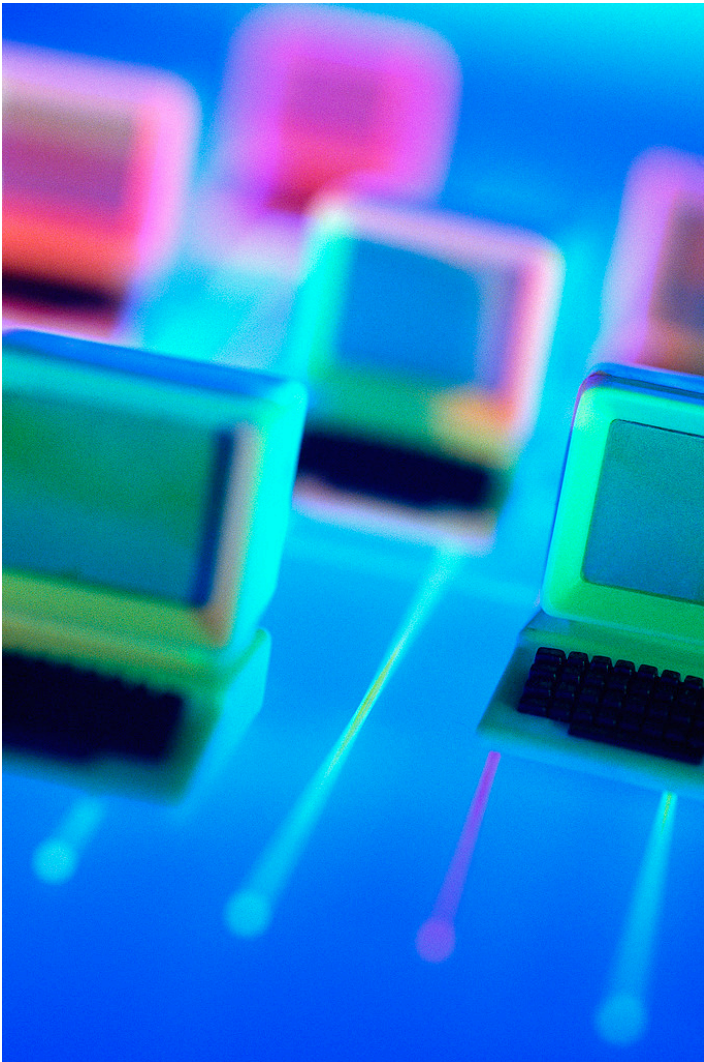




Information Technology 2017 - Strategic Plan



Version 1.0

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Introduction

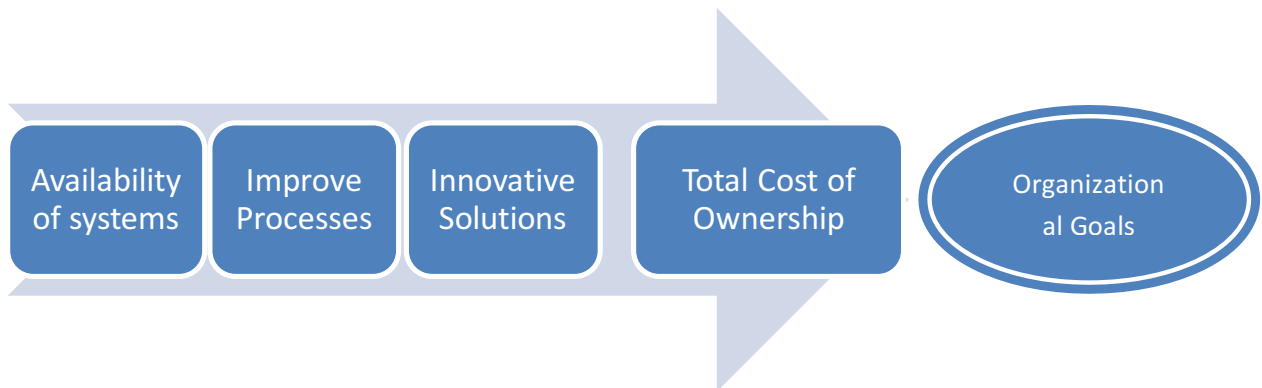
Information Technology is vital to the success of any organization and involves arranging the right mix of skilled individuals who share common objectives and defined processes to deliver services and solutions that support the mission of the organization. Lake Michigan College is served by a dedicated team of individuals whose purpose is to deliver technology to students, faculty and staff in an accountable and cost effective manner.

Mission of IT

Information Technology is a service organization that works in partnership with members of the College to provide technical solutions, systems and services that support the faculty and student relationship, improves business processes, protects informational assets, and kindles innovation that advances Student Success.

Primary Service Delivery Objectives

IT has three constant objectives as it provides services and solutions for the organization. The first objective targets the **availability** of key information services and systems. The second objective is a progressive focus on **improving processes** that enables the organization to be more efficient. The third focuses on growing the organization through the **deployment of innovative solutions** that allows the organization to offer new services and applications.



Availability of Systems

IT must ensure the **availability** of vital information services to the organization at all times. This is accomplished through capacity planning, requirements validation and solution design, project management, risk management and through the monitoring of critical systems and processes. The lack of vital services can harm the reputation and effectiveness of the organization and result in financial loss and missed opportunities. It is also critical that the confidentiality and integrity of information be maintained for all systems. This requires traceability and strong access controls. Without confidentiality, information is not secured and without integrity, information cannot be trusted.

Improve Processes

IT must also work closely with key business process owners to **improve** operational efficiencies. In many cases this relates to the discovery, understanding and documentation of key business

processes and the defining and documenting of business rules. The goal of IT is to assist the organization in the development of effective processes that are repeatable, sustainable and transferable. Improvements are also realized through the full utilization of existing technology investments and through the alignment of software solutions with the needs of the business. Improvements may also include the procurement and deployment of new technical solutions.

Innovation

IT must partner with key organizations within the College to select and deploy innovative solutions that grows and furthers the mission of the College. Traditionally, IT organizations spend 70% of their operational budget maintaining what they already have. It is essential that IT allocate part of its budget to support growth opportunities for the College.

IT Planning & Alignment Process

One of the key roles for IT is to align its internal goals and objectives with that of the organization. This is a continuous process that involves developing a constructive dialog with members of the College. A key element of success involves IT building trust with members of the College to work collaboratively to solve problems and build solutions. IT must listen collectively and embrace positive tension as an opportunity for building a more effective organization.

IT must not only align with the organization goals, but must also develop agility and capacity to respond to unplanned needs and opportunities.



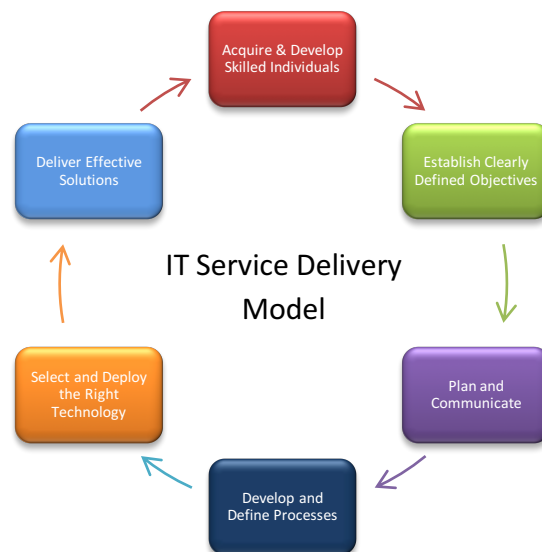
Planning and Alignment

IT publishes an annual strategic plan and a tactical horizontal plan. The strategic plan is a multi-year view that is broad in nature and addresses key deficiencies with IT services, aging and emerging technology, cost of ownership and critical needs within the organization

IT Service Delivery Model

IT is refining its Service Delivery Model to continuously align projects and services with the needs of the organization. The goal of this model is to deliver cost effective solutions and services that enables and furthers the mission of the College. IT must develop an approach of meeting the goals of the organization in a timely and cost effective manner. This model is a methodology used to build structure within the organization for executing and for measuring results.

1. IT Strives to make technology work for the first minute in the classroom.
2. Continuous Evaluation and Stakeholder engagement is vital for effective Support procedures and strategies.
3. Customer Support and Services is a key component of our IT service delivery model.
4. Follow-up and Feedback is a vital part of providing effective support and meeting user expectations.
5. Manage "Change Management" and Communications.
6. Capacity Planning, High Availability Management and Risk Management are core activities within IT that must be executed well.
7. Planning and Project Execution is vital to managing deliverables.
8. Security Control measures is a function for all IT activities.
9. Provide the right "resources" for the task at hand.
10. Quality Control is an essential component for Excellence.
11. Issue Escalation and Follow-up.



2017 - 2020 High Level Objectives

The strategic plan covers seven broad categories for 2017 to 2020 that include:

1. IT Human Capital
2. IT Risk Management & Security
3. Enterprise Applications
4. Pathways
5. IT Helpdesk & Academic Technology
6. Network Infrastructure and Telephony
7. Cloud Computing, Data Center and Computing Resources
8. Napier Campus Capital Plan

IT Human Capital

- 1) **Staffing Levels** – Continue to align IT resource levels with the needs of the business, the shifts with emerging technology and the expanding footprint of technology within the college.
- 2) **Open Source Skills** – Continue to grow open source technology skills within IT around the following areas: Docker, Groovy, REST, Node.js, Angular, SailsJS/Express, JavaScript, MongoDB and Linux.
- 3) **Project Management**- Strengthen IT approach to project management; adopt agile practices and project tracking for key projects.
- 4) **Dev-Ops & Security Position**- Continue to strength the new roles within IT around security and Dev-ops to manage secure computing, system provisioning and compute resources.
- 5) **Security Skills** – Extend security training within IT to safeguard informational assets for key areas.

IT Risk Management & Security

Continue to manage compliance and reduce risk across the organization to safeguard IT assets and information.

- 1) **Continue to manage business continuity plan using or existing Comvault investment and high availability service model for virtual Servers**
- 2) **Maintain effective Disaster Recovery processes;** conduct Annual desktop review of LMC Disaster Recovery Plan and maintain production plans.
- 3) **Continue the use of venerability internal security scanner for servers and network devices.**
- 4) **Maintain the IT risk management plan to safeguard IT assets** and to reduce exposures.
- 5) **Maintain the KnowBe4 security awareness campaign at LMC.** Educating our internal stakeholders is a key component of have an effective information security program.

- 6) **Extend the use of the F5 firewall systems within IT** to include deep packet inspection using our unified threat management firewall.
- 7) **Select a Software Defined Networks solution** that extends policy based network security controls between switches and routers that helps isolate key systems. This will enable policy based VLANs that provides robust controls between enterprise applications.
- 8) **Grow the use of LMC's two logging systems** to support critical applications and information.
- 9) **Secure a secondary security review of crucial systems** on an annual basis in addition to the third party pen test.
- 10) **Develop a long-term plan to store all SSNs at Rest in encrypted form using a data in motion key encryption services.**
- 11) **Select a Mobile Device management solution for safeguarding informational assets on BYODs based upon funding.**
- 12) **Continue to grow LMC security program** - Update WISP on a biannual basis and conduct an annual data classification scan using third party tools.
- 13) **Continue the use of Two-factor** authentication for off campus access to Enterprise applications.
- 14) **Develop a long-term internal event log at the user account level for system logins and module access to provide traceability to user activities.**
- 15) **Continue to use third party assessment tools to provide board level insight of LMC's security posture. Leverage the FICO security services as a baseline score to measure IT's effectiveness in managing security.**

Enterprise Applications

1. **Migrate to Banner XE by 2018 that includes the following related projects:**
 - a. Review and update the user and group roles Matrix to ensure that ACLs align with the needs of the business while maintain limited access to PII data.
 - b. Leverage the Banner REST Interface as a new solution to replace selected legacy interfaces.
 - c. Provide a high availability model for Banner Application services using the F5 load balancer, RHELs VM environment and Docker.
 - d. Review core business process for Financial Aid and HR and determine how XE can better support employee onboarding and financial Aid processes.
 - e. Review business processes around selected redesigned forms with XE to strengthen internal process flows.
2. **Strengthen the support model and utilization of Office 365 using Microsoft cloud services.** Determine options for extending file shares for the Academic team for collaboration within discipline.

3. **Continue the rollout of EduDash to build workflows that support robust routing of electronic forms. Enable EduDash to handle document scanning and evaluate options for sun setting our legacy scanning solution.**
4. **Migrate LMC's primary website site to an open source CMS solution that support integration with Pathways and Web Component technology.**
5. **Continue the migration of document scanning to other areas within the college.**
6. **Extend the digital signage solution across the campus that supports effective communication with students.**
7. **Extend the printer monitoring services to manage high availability of services.**

Pathways

Implement the Pathways IPAS system that will provide the following services:

1. Student Dashboard and portal
2. Student Assessments Tools
3. Student, Student Services and Faculty Messaging System
4. Degree Edu Tools
5. College Catalog Lifecycle Management
6. Digital Catalog and Scheduling tool
7. Faculty Attendance System
8. Early Warning System
9. Program and Majors Sequencing and Meta Major Tools
10. Program and Majors Content Management Systems
11. Student Relationship Management System
12. Contract Brokering Services for Emails, texting and notifications.

IT Helpdesk / Academic Technology

- 1) **Maintain the 5 Year PC refresh plan** – Refresh systems as needed to ensure that there is adequate hardware to support the infrastructure as it ages. Target to lower the desktop acquisition cost if possible.
- 2) Start the Windows 10 Migration Plan and review options for the Post PC Era.
- 3) Start a Google Chromebook pilot project to determine options for lowering lab support cost.
- 4) Clarify and plan for any options in supporting one-to-one initiatives as directed by the Academic Team.
- 5) Strengthen Quality Gates for key processes within IT to deliver effective services and to provide accurate information.
- 6) Assist the Academic team in strengthening our instructional support models for.
- 7) Evaluate options to extend the 24/7 IT helpdesk pilot project to a Michigan College supported model shared among colleges.
- 8) Assist the Academic team in extending its current lecture capture service model.

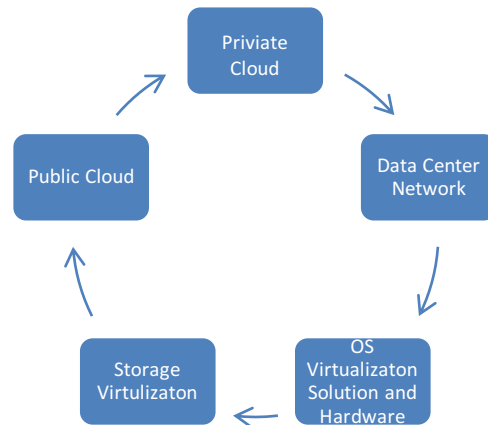
- 9) Strengthen the IT customer service model by replacing our legacy helpdesk ticketing system.
- 10) Implement a new QA process for managing academic software applications.
- 11) Continue to monitor and optimized our print and copying services.

Networking & Telephony

- 1) **Replace end-of-life Network Components** - 5 year life-span for all new components... expandability. Approximately one half of our LAN switching infrastructure lacks both future support and a feature set that will adequately embrace new technologies such as voice over IP and network access control. Over the next 3 years, a predictable and closely monitored phase-in of up-to-date switching technology will be implemented.
- 2) Replace the core network switch with a high-availability solution that supports software defined networking.
- 3) Expand WIFI density within the classroom to support BYOD and new Academic applications.
- 4) Continue to expand outdoor WIFI for all LMC campus to support BYODs and other WIFI applications.
- 5) Continue to expand security cameras across the campuses where needed to support campus safety.
- 6) **LAN Connectivity Expansion and Improvement**
 - a) Maintain and upgrade our network-based telephony system.
 - b) An increasing need for network connectivity in classrooms, labs, office areas as well as customer-service areas.
- 7) **Leverage our new unified threat management Firewall**
 - a) Provide deep packet inspection for common web application injection attacks and provide scanning at the gateway for common malware.
 - b) Our newly acquired next generation of Internet firewall technology employs granular filtering capabilities, greatly enhanced remote-access security authentication features, with improvements in all popular VPN technologies.
 - c) **Internal Firewall Services** –Most network and data security breaches originate from within the organization; not from the Internet and our internal network is virtually open to the public. Implementing a firewall on our “inside” network will allow us to quickly and easily put a very secure barrier around our server network as well as around less-secure areas of our network, both wired and wireless.
- 8) **Improved Internet bandwidth and bandwidth management** - Improved bandwidth metrics and solutions for managing bandwidth.
- 9) **Increase Gigabit Backbone bandwidth and Increased Local Area Network Reliability.** Adding switch ports and interconnecting switch-to-switch links will allow us to multiply bandwidth to select areas in the school by simply using the available fiber connectivity.

Cloud Computing, Data Center and Computing Resources

LMC IT desires to continue to develop an “IT as a Service model” using private and public clouds strategies to lower operating cost and improve agility.



“IT as a Service” includes the dynamic provisioning of computing services within a managed framework for the following class of services:

- **Infrastructure as a Service (IaaS)** - Delivery of raw, virtualized computing infrastructure such as servers and storage as a service to build applications. (Windows Server / Linux Server / Virtual Desktop)
- **Platform as a Service (PaaS)** - Delivery of a virtualized application runtime platform that has a software stack for developing applications or application services. PaaS applications and infrastructure are run and managed by the services vendor. (IIS / HTTP / SQL)
- **Software as a Service SaaS** - Cloud based delivery of complete software applications that run on infrastructure the SaaS vendor manages. SaaS applications are accessed over the Internet and typically charged on a subscription basis. (Email / CRM / SharePoint)

Cloud Infrastructure Architecture Considerations

1. Continue to build upon our Dynamic provisioning of Servers using Microsoft Hyper-V
2. Complete the migration to Blade servers that provide better compute density.
3. Leverage our new dynamic provisioning of storage using EMC storage solution.
4. Continue to leverage our new 10G High speed backbone for storage and virtualization.
5. Continue to leverage Office 365 for Edge Email Gateway services.

6. Evaluate options for implementing a read-only AD server on a public cloud to ensure high availability of Canvas and other AD based systems in the event of major Internet outage.

Napier Campus Capital Plan

1. Support internal stakeholders as they consider options for Classroom modernization that include various technology components not limited to lecture capture, flat screens, smart-boards, Internet of Things and virtual classroom support.
2. Conduct a feasibility plan for relocating the Napier Data Center to the Telco Room.
3. Ensure that adequate fiber and cabling builds are incorporated within any renovations for the long-term support needs of the network.
4. Evaluate options for a modern network distribution model within the renovation project that improves network reliability and reduces long-term maintenance cost.