

# Technology Strategic Plan

*Middlesex Community College 2016\_2019*

CAMPUSWORKS

Revised 05/23/2016

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## **I. Executive Summary**

This document provides the outline for the adoption and implementation of technology at Middlesex Community College over a multi-year timeframe. The plan speaks to both specific technologies and broader technology trends that would support the teaching and learning environment. It is organized to be cross functional in nature, as nothing in today’s IT environment can work well in a silo.

Preceding the high level tasks are sections on Governance, Compliance and Policy and Procedures. These elements cut across all areas of the college, but have technology implications that must be addressed.

As initiatives are prioritized by the Cabinet, special attention is paid to alignment of these priorities to the colleges Strategic Plan. The plan is reviewed regularly and will be updated accordingly.

## II. Technology Operations

### A. Governance

The Technology Center effectively manages all technology operations at Middlesex Community College. The management process includes diligent monitoring of the needs of the environment (as identified through the governance process), collegial collaboration, and the disciplined implementation of a best practice technology support model. Like most other Community Colleges, nearly all of MCC's administrative and academic activities are supported by the Technology Center. Collaboration, transparency and inclusiveness in identifying and prioritizing the College's technology needs are the responsibility of the College's governance process.

#### 1. Cabinet

The Cabinet is responsible for the overall prioritization of technology initiatives. It aligns the technology requests with the college's strategic direction and available resources.

#### 2. Faculty Staff Association (FSA) Technology Committee

The FSA Technology Committee focuses on technology in the classrooms, libraries and administrative areas of the college. The IT department, in coordination with the Cabinet works with the FSA Technology Committee to prioritize and fulfill the identified requests.

#### 3. Data Security Committee

The Data Security Committee evaluates the security of Personally Identifiable Information (PII) across the college. Part of this evaluation includes protection of digital versions of this information. The IT department contributes to and helps support the recommendations of this committee.

#### 4. Web / Portal / Mobile App Committee

Changes to the public website and to the student and faculty/staff portal are vetted by the Web Committee. Recommendations from this committee are submitted to the IT department for input and, in some cases, deployment.

#### 5. Banner Users Group

The Student Information System (Banner) and its associated applications, such as Degree Works, are reviewed regularly by the Banner User Group. This group helps review release upgrades, coordinates testing and updates, and identify any systemic problems that arise.

#### 6. Trustee Student Advisor Group

As part of the Board of Trustee's, the Student Trustee works with the IT department to facilitate and record recommendations made by the Technology Student Advisor Group. These recommendations are brought back to the Executive team for prioritization.

## **B. Compliance**

The colleges Director of Compliance maintains an up to date list of areas on which the college must regularly report, based on applicable laws or requirements of various oversight organizations. Some of these, such as the PCI audit, are directly associated with the IT infrastructure. Others, such as IPEDS, draw from data and systems maintained in MCC's data center.

The IT department works with various departments to provide up to date, secure and accurate information. A complete list of this calendar can be found in the office of the Director of Compliance.

## **C. Policies and Procedures**

### **1. Service Level Agreements**

Service Level Agreements were developed to follow best practice Information Technology Infrastructure Library (ITIL) standards. Data from the service desk system should be reviewed regularly for compliance with these agreements. Adjustments should then be made and communicated across the college community.

### **2. Policy review and documentation**

Policies and procedures influencing the purchase and deployment of technology have evolved over the years. The cataloging of these are maintained in the "MCC Technology Policies and Procedures Manual" These should be reviewed and updated regularly. Care should be given to maintaining a central repository which can be communicated clearly and transparently.

### **3. PACE (Partnership Advancing Collaboration and Efficiency) initiatives**

The Commonwealth of Massachusetts commissioned a study to look for efficiencies that might be achieved by IT collaboration among the 24 colleges and universities. The study categorized potential opportunities into five areas:

1. Professional Development
2. Coordinated Purchasing
3. Shared Services
4. Improved Data Standards and Information Sharing
5. Enterprise Applications and Business Process Improvements

MCC continues to collaborate with the PACE group to improve in the areas identified.

### **4. Digital Data Archiving**

The considerable growth of digital content experienced by the college places a strain on physical and/or fiscal resources. It is prudent for the college to appropriately and regularly archive needed content and purge what is not required.

### **III. Technology Infrastructure**

#### **A. Security and Visibility Monitoring**

Network and system security is an ongoing challenge which requires continuous improvement. The college should complete a vulnerability assessment to help prioritize security measures that should be taken. One such measure that is currently being implemented is the engagement with a management service vendor who will assist in monitoring specific systems 24/7. This will be one element of what a vulnerability assessment would recommend.

*Task: Complete monitoring service implementation. Conduct a vulnerability assessment and develop a college security road map.*

#### **B. Cloud Strategy**

The college has had success placing some services in the cloud. The learning management system (Blackboard) and the student email system are two examples. Other smaller systems such as Collegiatelink and Raisers Edge have also been moved to the cloud. Doing so reduces the dependency on the internal network and infrastructure, puts the responsibility for upgrades and patches on the vendor, and places responsibility for data security outside of the college's data center.

As new systems and services continue to be requested, placing them in a cloud hosted environment must be a consideration. Contract management will be a key to making a cloud strategy successful.

*Task: Develop and document 3-year plan for MCC's cloud strategy. Review current systems for hosted cloud based options. Consider cloud options for any new systems.*

#### **C. Wireless infrastructure updates**

The continued demand for wireless connectivity at the college requires regular review of the wireless infrastructure. Continuous review of bandwidth and density needs are paramount to staying ahead of the demand. Planning a thoughtful multiyear strategy recognizing more devices are connecting to the network and that academic teaching is beginning to incorporate wireless usage in the classrooms will help keep the infrastructure current.

*Task: Develop a multiyear wireless infrastructure strategy to stay ahead of general demand and increased academic teaching usage.*

#### **D. Print Management**

As the college tries to provide additional services without increasing spending, print management becomes a candidate for analysis. Currently, students, faculty and staff have

unlimited printing abilities without cost recovery. Computers used for printing must be wired on campus and have print drivers installed on each computer. Additionally, if sensitive documents are printed to a shared printer, there is no security system that allows for users to “release” documents when standing at the printer. This has led to a number of departmentally purchased printers which are directly connected to computers in secure locations. Finally, one of the requests that have come from students and employees is the ability to print wirelessly from their own devices.

*Task: Analyze print management options that could address controls on printing as well as the option to print wirelessly.*

## **E. Mobile Device Data Management**

Due to the wireless and increasingly mobile nature of technology, data can be easily transferred from one device to another and from the college network to mobile devices. For both college provided and personal devices, a mobile device data management strategy must be developed. This should include both policy and Mobile Device Management (MDM) technology. This will help ensure protection of Personally Identifiable Information (PII) and other college specific data.

*Task: Develop and implement policy and technology controls for data that can be accessed from and copied to mobile devices.*

## **F. Disaster Recovery / Business Continuity**

Disaster Recover and Business Continuity have been part of past tactical plans. Progress has been made in the areas of a 2<sup>nd</sup> ISP point, web presence hardware, a virtual server environment and telephone switch redundancy on the Bedford campus. Most of this redundancy requires manual intervention to achieve failover. Having a fully automated fail over system may continue to be cost prohibitive. However, as more services are moved to the cloud, the recovery and continuity eco system changes. Current options should be reviewed and prioritized. As important as the technology involved, documentation with accurate expectations should be developed and promoted.

*Task: Develop a Disaster Recovery / Business Continuity document that creates accurate expectations if an outage were to occur. Explore failover opportunities afforded by being in a virtual server environment and hosting more services in the cloud.*

Completed since last revision:

- Virtual Desktop Infrastructure
- Telecommunications Upgrade
- Oracle to Linux Banner Migration
- Security and Visibility Monitoring improvements
- Exchange Upgrades
- Planning for new buildings
- Maintenance and Backup strategy

## IV. Academic Technology Environment

### A. Academic Technology Planning

Developing a multiyear Academic Technology Plan is a formidable undertaking. One common misconception is that technology leads the way in this effort when in fact it is only a part of the process. Some of the key elements that should inform the planning process are:

#### **Instructional Technology Infrastructure**

Distance, Local, Synchronous, Asynchronous

#### **Classroom Infrastructure**

Classroom design standards, Classroom Planning cycle, Classroom Management Process

#### **Distance Education Infrastructure**

Instructional design and development, Student support services, Faculty support services, Administrative support services, Academic resources, Academic community, Enabling technologies

#### **Instructional Technology Processes and Support**

Training, Support, Communication, Collaboration, Decision Making

*Task: Develop a multiyear Academic Technology Plan and schedule that includes the elements listed above.*

### B. Online learning

The college has made a significant investment in its learning management system (LMS), Blackboard. The college has been working at increasing adoption of this technology by adding the Outcomes module and purchasing professional services from the vendor. This work is ongoing and being monitored by the Academic Affairs Division of the college.

Additionally, the Academic Affairs Division conducted a SWOT analysis to evaluate online learning and develop a roadmap for the future. It focused on four themes; 1) Professional Development, 2) Technology (Facilities, Hardware, Software, Course Delivery), 3) Marketing, Enrollment, & Communication Strategies, and 4) Student Retention and Completion Strategies/Research. This will be instrumental in developing an Academic Technology Plan.

*Task: Incorporate the SWOT analysis in to the larger Academic Technology Planning efforts.*

### C. Classroom Infrastructure

MCC reached a milestone a couple of years ago in that one hundred percent of its classrooms were considered “smart”. That means they have a computer and projector at the instructor’s station in all teaching classrooms. Most teaching stations allow for wired



external devices to access the projector. Requests for wireless access to projectors has been on the rise. This has been explored and a possible solution is ready to be implemented.

Another issue that has been highlighted that positioning of projector screens in coordination with whiteboard access is sometimes not optimal. This can be addressed as classrooms are re fitted.

In addition, some of the technology still remaining in a number of classrooms is outdated and obsolete. Examples of these are manual overhead projectors, large bulky televisions and VCR's. These should be phased out.

Finally, concerns have been expressed over the standard wheel able cart that is permanent in many classrooms. These expose the wiring of the technology and allows users to unplug and dismantle the equipment. A better more secure instructors station should become the new standard.

Recognizing that it is not fiscally feasible to redo all classrooms at once, a new classroom standard should be developed and documented. As funds are available the new standard should act as the guide to inform changes.

*Task: Create a new standard for classroom design which addresses: 1)Wired and wireless access to projectors, 2)screen and projector placement which coordinates with whiteboard access, 3)retiring of obsolete equipment and replacement with a new standard, and 4)a more secure instructor station which does not allow for rewiring by the general public. This is part of the Academic Technology Plan.*

#### **D. Open Educational Resources (OER) and Digital Delivery**

The landscape of course delivery has been changing for some time. Much historical and most new content is now in some digital form. This trend has affected changes to the operations of bookstores, libraries and instructors. Attention must be given to assist students and faculty in gaining access to these materials.

Open Educational Resources (OER) are potentially changing the course material instructors use in their classes. They offer a less expensive and more focused method for providing material that was historically in a textbook.

For students purchasing or renting books, easy access to electronic copies required for their courses will streamline access to the content. Incorporating available financial aid (i.e. book vouchers) into this process should be part of the consideration.

For students using library resources access is the key. The MCC library already has an extensive database of electronic material. In addition to the computers available in the libraries, eReaders or tablets for check out could be considered.

*Task: Evaluate and respond to student access to OER, library, and digitally published material. This should be part of the Academic Technology Plan.*

## **E. Lecture capture and streaming**

Requests for lecture capture and live streaming have increased over time. The colleges network infrastructure will be able to handle this, but the endpoint devices such as camera's and microphones are not in place. Additionally, support for these services has not been defined and potentially lives in multiple departments. There are mature platforms hosted in the cloud which can help delivery this service.

*Task: Evaluate business need for lecture capture and video streaming. As needed put endpoint devices in place and support structure.*

Completed since last revision:

100% Smart Classroom achieved  
ePortfolio - Digication

## **V. User Support Services**

### **A. Expansion of Support Services**

The college would like to expand, yet simplify, the ability for students, faculty and staff to receive support. The objective is to improve digital literacy across MCC. The Academic Technology Plan should include Instructional design and development, Student support services, Faculty support services, Administrative support services, as well as training and collaboration support. Although there may be people at the college who can do these things, roles and responsibilities are not clear.

*Task: As part of the Academic Technology Planning process, evaluate and clarify support for all students, faculty and staff.*

### **B. Account lifecycle and identity management updates**

The college has developed a good system for account creation and deactivation with students. The key to this is timely data entry into the Banner system. For Faculty and Staff, this process includes some manual steps to give users the access that their role requires. The place where the college could most benefit is in employee account deactivation. The challenge here is timely entry of deactivation requests in the Banner system by various departments.

*Task: Work with HR and departments on a process to streamline activation and deactivation of employee accounts.*

### **C. Bedford Walk In Service Center**

The Lowell campus now has a walk in Service desk for technology requests on the 4<sup>th</sup> floor of the Cowan building. Traffic to this service has followed normal semester trends, as it is busy in the beginning of the semester and quieter later. Walk in requests are recorded in the service desk software. Requests have been made to duplicate this service on the Bedford campus. Consideration should be given to “going to places where the students are”, such as the library.

*Task: Find a location on the Bedford campus where walk in service could be provided. Consideration should be given to the library.*

### **D. User Support data analysis**

In addition to the walk in service center analysis, general user support trends need to be reviewed on a regular basis. The data should provide direction on adjustments to technology configuration, training, event management, and staffing.

*Task: Annually review user support data for adjustments to services.*

### **E. Life Cycle Management**

All technology hardware and equipment must be replaced on a regular basis. The asset management system maintained by the technology center keeps a record of purchase date and repair history for each piece of equipment. These assets should be reviewed on an annual basis and projections for replacement reported.

*Task: Review asset inventory and project replacement time and cost.*

Completed since last revision:

- Service Desk self service
- Campus Emergency notifications upgrade
- Life Cycle management - annually

## **VI. Administrative Systems Environment**

### **A. Enterprise Content Management (Document Imaging)**

Document imaging is a process which allows users to digitally scan and index paper documentation, so that it can be retrieved online by anyone with the appropriate authority. It also allows for submission of documents electronically, without the need for paper. This improves services by reducing the time needed by staff or faculty to retrieve and review paper documentation. It also increases security and back up of the content that often lives in files in a single office, or must be copied and mailed or faxed to other locations. MCC is in the process of implementing an ECM system.

*Task: Continue with implementation of the chosen ECM system.*

## **B. Reporting – Warehouse and Analytics**

Data driven decision making continues to be a high priority as the college revises its strategic plan and as government funding looks to a variety of metrics to produce its funding formula. Real time and archived data, with reporting tools that provide role based security, flexible delivery methods and the ability to quickly put the right data in the right hands, is a key to a reporting strategy. Since the last plan was revised the Argos tool was implemented as a delivery system. This calls on data directly from Banner. Another need is the ability to archive data for trending and analytical purposes.

*Task: Research and implement a data warehouse or analytics tool for archived and trend reporting.*

## **C. Customer Relationship Management (CRM)**

MCC is trying to improve communications with prospective students. Currently, the process used has a number of manual steps and is difficult for the Admissions department to manage. The CRM products on the market today are robust and can greatly improve the enrollment process.

*Task: Research and implement a CRM tool to improve the enrollment process.*

## **D. Banner XE**

The next version of the Banner ERP system changes the infrastructure on which the applications live and the methods used for accessing data. XE is an acronym for Extensible Ecosystem. To keep this mission critical application up to date, MCC must make the migration to this new infrastructure. To date, it has implemented Faculty Grading, but have received resistance during testing. As this system will continue to be a key ERP system, it is important to plan and execute the roadmap for it.

*Task: Plan for and implement the new Banner XE system as modules are released following the XE roadmap.*

Completed since last revision:

- Enrollment Business Process Reviews
- Reporting – Argos tool
- Banner Licensing Review
- Service Request System – Institutional Research

# **VII. Web Technologies**

## **A. MCC Mobile**

The first version of the MCC Mobile app has been in production for several years with the majority of modules being public domain content. A few modules, such as courses, and grades, required authentication and access to person specific data. The vendor does have additional interactive services such as admissions, registration and add/drop available. To

implement this would require an evaluation of Banner's configuration to allow for these services. Additionally, an eye should be kept to opportunities to use this app, or others, for academic purposes.

*Task: Implement additional interactive services for students from within the MCC Mobile app.*

## **B. Website**

The current version of the MCC website was revised in 2012. Since then requests that have come up have included: 1) more multimedia and less written word, 2) a more accurate search engine, 3) easier navigation and 4) mobile friendly, or responsive, design. To accomplish these tasks another rewrite of the website would be necessary. To accomplish the responsive design, it should be rewritten with HTML5. This is a major, campus wide undertaking and should include a structured project and rollout plan.

*Task: Map out a project for the redesign of the website to include more multimedia, a better search engine, easier navigation and a mobile friendly, responsive design.*

## **C. Student Portal**

The college has committed to Microsoft's SharePoint as the platform for the student and faculty/staff portals. This allows for a flexible, modularized approach to displaying content that is personalized to the user within the portal. This responsive development should continue as student's needs for services and individualized content are identified.

*Task: Analyze current student portal traffic and enhancement requests to develop a roadmap for the student portal. Prioritize and develop these modules.*

## **D. Faculty/Staff Portal**

Like the student portal, the faculty/staff portal lives on the SharePoint platform. The same strategy that is followed for the student portal is relevant here.

*Task: Analyze current faculty/staff portal traffic and enhancement requests to develop a roadmap for the faculty/staff portal. Prioritize and develop these modules.*

Completed since last revision:

- Student portal interactive improvements
- Faculty portal interactive improvements
- Single Sign on into additional systems
- Deep links in to Banner