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Information Technology Services Master Plan

2015 – 2017

DRAFT

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Bergen Community College
Three-Year Information Technology Services Master Plan (2015-2017)

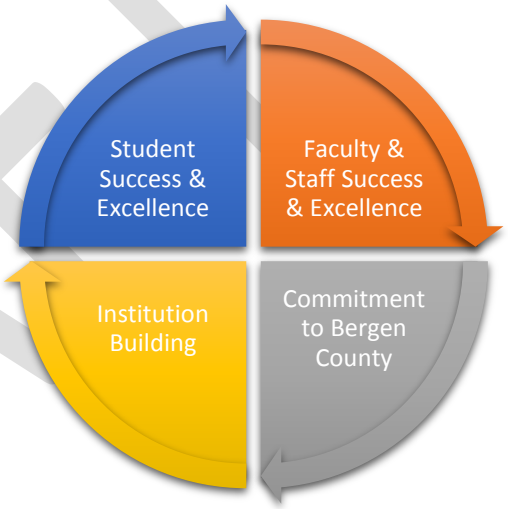
Introduction

The IT master plan is guided by and fully aligned with Bergen Community College's Strategic Plan: *Framework for the Future: Maximizing Potential for Student Success.*

Through careful evaluation of current and future technological needs – which drive high-quality, robust services and support – the IT master plan will help position BCC as a leading institution. In order to adapt to the rapid rate of technology change, the plan will be reviewed and modified on an annual basis. Information Technologies impact in higher education can be a game changer whether it is being applied to teaching and learning or administrative systems.

The four strategic themes of focus:

- Student Success and Excellence
- Faculty and Staff Success and Excellence
- Commitment to Bergen County
- Institution Building



Cultivating student success, making evidence-based decisions and providing superior learning opportunities and environments for our students is foundational to this technology plan. Supporting our faculty and staff through professional development opportunities and reliable and robust learning environments is of paramount importance.
Additionally the plan keeps in mind the needs of Bergen county residents by providing a scalable, technologically advanced environment to provide current in demand skills for students and local business.

Executive Summary

Founded in 1965, Bergen Community College (BCC) is an accredited, co-educational, two-year public community college located in Bergen County, New Jersey. With more than 17,000 students enrolled in Associate's degree programs, and another 10,000 students in non-credit, professional development courses through the Division of Continuing Education, Bergen Community College is New Jersey's largest community college with three (3) campuses; Paramus, Hackensack and Lyndhurst. BCC has been accredited by the Middle States Association of Colleges and Schools since 1972. Students can earn degrees and certificates in 14 different fields such as Liberal Arts and Sciences, General Studies and Humanities, Health Professions and Related Programs, and Business, Management, Marketing and Related Support Services.

Bergen's Information Technology Services (ITS) works with students, faculty, staff, alumni and departments across the college to provide advanced technology solutions. From Internet and phone connections in offices to software that supports admissions, online registration and other aspects of day-to-day business, ITS keeps BCC connected supporting more than 20,000 users across three campuses, more than 20 buildings and two data centers.

ITS' Core Principles relate to the power of People, Processes and Technology.

- **People** - ITS will continually assess and anticipate the needs of the college acting as stewards through the development and retention of key staff to ensure that the right resources are assigned to the right initiatives.
- **Processes** - ITS will develop policies, procedures and process improvements that align with industry best practices while ensuring compliance and governance.
- **Technology** - ITS will concentrate and progress systems and applications that delivers impact in the learning, teaching, development and administration enablement to ensure that the right tools are available for the task at hand.

Expectations regarding technology change rapidly in all areas. With respect to higher education, especially community colleges, we are trying to get more done with fewer resources. This requires innovative thinking and planning on the parts of administration, students, faculty, staff and the technology world.

The key initiatives serving as the foundation of the master plan are:

- The implementation of virtual desktops will allow our students to access the applications they need from any free-time or open lab on campus. The ultimate goal is to allow access from any personally owned device both from on campus and off campus.
- Hybrid classrooms, lecture capture, mobile technologies, social medial all provide methods for students to stay engaged with their teachers and peers.
- Deployment of new technology models which provide self-service tools for students to plan their journey while receiving formative assessment feedback along the way allowing for timely degree completion.
- Improved governance and communications to increase collaboration and greater customer satisfaction.

- Infrastructure upgrades and regular technology refresh plans to continually meet the needs of students, faculty and staff.

Guiding Principles and Management Philosophy

Technology is everywhere. It comes in all shapes and sizes and has the capacity to raise awareness, start conversations and change minds. If one were to look back over the literature for the past 20 years, many articles can be found concerning the adoption of technology into teaching and learning ranging from the introduction of computers and whiteboards to Chromebooks and iPads as well as everything in between. Institutions continue to work toward effectively embracing technology into their curriculum to achieve greater student success. There is clearly both an art and science to inspiring and encouraging an institution, faculty and students to maximize educational learning though technology as ubiquitous tools.

In 2001, Prensky made the following observation, “Today’s students are no longer the people our educational system was designed to teach” (p. 1). Our students are constantly exposed to digital content. Prensky (2001) coined the term “digital natives” to describe students who grew up using technology. Those who did not grow up using technology but came into it later in life can be known as “digital immigrants” (Prensky, 2001). The implications for colleges are many as learners consistently evolve as to how they learn.

Keengwe (2007) conducted a study to “examine the nature of the relationship between faculty integration of technology into classroom instruction and students’ perceptions of the effect of the computer technology to improve their learning” (p. 169). Keengwe (2007) believes that merely providing computers in classrooms does not ensure student learning and that faculty must integrate the technology into their instruction. It is the blending of past, current, and future technologies into an educator’s curriculum that will inspire and encourage student engagement as well as engage cognitive thinking.

“The challenge for our education system is to leverage the learning sciences and modern technology to create engaging, relevant, and personalized learning experiences for all learners that mirror students’ daily lives and the reality of their future” (US Department of Education, 2010, p. VI). Professor David Wiley, as cited by Kamenetz (2010), states “If universities can’t find the will to innovate and adapt to changes in the world around them, universities will be irrelevant by 2020” (p. 83). The goal should be to eventually find technology as a ubiquitous tool that ignites critical thinking, problem solving and collaboration that will raise awareness and start conversations within and outside the classroom.

ITS will continue to partner with leaders in the industry, faculty, staff and students to plan and provide a digital environment that promotes learning and provides opportunities for

personalized learning. Self-service options, coupled with early alerts and feedback, will support our students on their journey and provide assistance at each juncture. ITS will align its priorities with those of the institution to enhance BCC's mission of educating a diverse student population in a stimulating academic environment.

Strategic Initiatives, Objectives, and Action Items

This technology master plan represents a blueprint to address the use of digital technologies in higher education. In the past, the digital divide or inability for a large number of students to own mobile technology was cited as a reason why mobile computing could not be integrated in to teaching and learning. This paradigm has shifted, although not fully resolved, and students are willing and expecting to use their devices both inside and outside of the traditional classroom. This means the IT infrastructure which used to be the focus naturally shifts to the background and the digital learning environment becomes the priority.

Providing the environment where students and faculty can personalize custom pathways toward degree completion becomes critically important for IT. Transitioning to the hybrid learning environment, utilizing lecture capture solutions, enhanced features of the LMS, self-service modules, and social media all create an environment where the student selects the method that best suits their learning style. Customized feedback through data analytics provides timely insights which can make the difference between failure and success.

The strategic initiatives, objectives and action items were selected to move the digital learning environment to the next level for BCC students, faculty, and staff while providing the foundation to become a more agile and responsive IT department. One area of concentration that cannot be overlooked that will directly impact the adoption, effectiveness and success of any IT related initiative is an appropriate allotment of professional development for faculty. "Great teachers help create great students. In fact, research shows that an inspiring and informed teacher is the most important school-related factor influencing student achievement, so it is critical to pay close attention to how we train and support both new and experienced educators." – (Edutopia, 2008). Each strategic priority was selected as it is viewed as a core strategic enabler to achieve increased engagement and streamlined progress toward degree completion.

Definition of Terms:

Achieving the Dream – AtD
Americans with Disabilities Act - ADA
Audio Visual - AV
Business Continuity Plan - BCP
Bring Your Own Device – BYOD
Certified Associate in Project Management – CAPM
Content Management System - CMS
Customer Relationship Management – CRM

Disaster Recovery - DR
End User Computing – EUC
Information Security Officer - ISO
Information Technology Infrastructure Library
Information Technology Services – ITS
Key Performance Indicators - KPI
Learning Management System – LMS
Project Management Professions - PMP
Single Sign On - SSO

Student Success, Retention & Excellence

Objective #1: Provide Efficient, Effective Technology Resources and Services to Students, Faculty, and Staff.

Action Items:

- To promote student success, BCC has implemented a One-Stop-Shop for student services. IT will continue to grow this initiative through the Phase 2 implementation of queuing software which will allow students to register for a service from their mobile devices, be place in queue and receive updates as to their status
- Develop and support a Bring Your Own Device (BYOD) strategy to providing ubiquitous access to mobile devices
- To promote student access, BCC will establish an End User Computing (EUC) environment which will provide students with access to required academic applications beginning with on campus access and extending to off-campus access
- Implementing plans to increase access to a robust, campus-wide wireless network
- Facilitate the implementation of new technology to improve learning, teaching and work environments
- Implement Student Scanning Stations to allow students to scan and submit documents to various departments

Objective #2: Implement Student Self-Service Opportunities and Data Analytics

Action Items:

- Provide self-service functionality within Student Information System utilizing Student Planning to provide a clear pathway to degree completion
- Migrate Student Information System from Unidata to SQL providing enhanced data access and reporting capabilities
- Implement Financial Aid Self Service functionality within Student Information System to facilitate more seamless processing, communication, awarding and clarity
- Configure and implement hosted Customer Relationship Management (CRM) platform to provide for simplified and configurable online application and acceptance process
- Identify and implement an online mechanism for scheduling appointments with advising and counseling departments

- Identify and implement mobile capture solutions to enable students to use their mobile devices to submit documents

Objective #3: Improve Identity Management
Action Items:

- Develop and implement a Single-Sign-On strategy providing for streamlined authentication experience for Portal, LMS, and E-mail
- Launch BCC Mobile Application for ease of access to Campus information
- Establish the foundation of data classification and retention policies and identify a continual process improvement culture looking to streamline the provisioning and deactivation of users and other Active Directory objects that may require access approvals and proper audit trails

Objective #4: Achieving the Dream
Action Items:

- Develop and implement a Data Warehouse – Analytics solution to provide data on changes in measurable objects set by Achieving the Dream
- Develop long term strategy for maintaining and updating Data Warehouse solution

Improved Digital Engagement
Action Items:

- Expand lecture capture solution college-wide while ensuring tight integration with College LMS.
- Further develop collaboration between Information Technology Services and the Center for Innovative Teaching and Learning for expansion of e-learning support and services
- Research, plan and pilot innovative methods for increasing digital engagement among faculty, staff and students that will encourage and inspire learning
- Ensure that professional development is included with each project to ensure user acceptance, consistency of usability, and infusion into educational engagements

Resource Management

Objective #1: Create Project Management Group
Action Items:

- Hire and certify IT professionals in Certified Associate in Project Management (CAPM) and Project Management Professional (PMP) to lead College projects containing IT components
- Develop and implement IT project management practices and procedures
- Create documentation standards for all ITS groups and govern day-to-day documentation, processes and procedures
- Create and implement a project intake process utilizing effort and impact scorecards

- Identify and remediate departmental ad-hoc practices and procedures, increasing operational efficiencies and reducing redundant services
- Establishment of a robust Business Continuity roadmap and workbook to ensure fluid execution in case of need for Disaster Recovery

Objective #2: Improved Customer Service Experience
Action Items:

- Upgrade the Help Desk's incident ticket system to acquire better analytics of problems and provide self-service capabilities for user troubleshooting and service request submission, updating, and viewing of status.
- Implement Service Level Agreements, escalation procedures and communications for reported issues
- Configure ticketing system to ITIL standards allowing for consistent language and terminology
- Utilize Change Management functionality of ticketing system to provide framework for approved, managed, and trackable changes.
- Provide central location for customers to check for planned maintenance or system outages
- Establish standards for computer desktops including best practices to enable faster service response and resolution
- Implement regular reporting cadence to enable continuous improvements

Objective #3: Information Security
Action Items:

- In collaboration with Information Security Officer, create:
    - Information Security awareness program and policies
    - Business Continuity Plans
    - Incident Response Plan and supporting teams
    - Industry-standard information security policies and procedures
    - Establish benchmarks by developing instruments to measure pre and post levels of security awareness

Objective #4: Professional Development
Action Items:

- Establish responsibilities matrixes for all IT staff to identify training needs and opportunities
- Align training opportunities with IT and institutional goals
- Provide funding and continuous training plan for ITS staff
- Partner with NJ Consortium for additional, reduced rate training opportunities

Objective #5: Partnerships
Maintaining strategic partnerships allows the College to expand its technical reach and provide a mechanism to respond quickly should a need or incident arise that is outside the skillset of

in-house resources. Additionally, it is a mechanism to deliver services that would be cost prohibitive to maintain internally for prolonged periods of time.

Action Items:

- ITS will continue to develop a partnership with the NJ Consortium to facilitate increased collaboration with NJ Chief Information Officers group and preferred partners
- ITS will work to partner with software and hardware vendors, integrators and resellers to provide strategic planning and value for current and future projects
- Through current and new partnerships, ITS is positioned to reduce duplicate efforts and technologies while providing best practice and innovative solutions
- Work to benchmark ITS alongside other colleges in and out of state to gather lessons learned and strategic directions while striving for continual improvements

IT Shared Governance

Objective #1: Redesign Administrative Systems User Group

Action Items:

- Develop membership and charter for Colleague Steering Committee (CSC) to serve as advisory council for Colleague application suite, coordinating operational activities and management of changes that impact multiple systems or departments
- CSC will have leadership from IT and one Functional area
- CSC meeting schedule will be created along with planned agendas and timely minutes

Objective #2: Establish BCC IT Advisory Council

Action Items:

- BCC – IT Advisory Council will advise on issues of strategic impact involving enterprise level technology systems and services and assist with approval and prioritization of technology projects.
- Members will be drawn from a cross-section of the college community and chaired on a rotating basis by a non-ITS member.
- Advisory Council will serve as advisory to the Executive Director of IT and the BCC Executive Team regarding strategic technology direction

Communications

Objective #1: Implement consistent communications strategy for ITS

Action Items:

- Develop newsletter for students, faculty and staff to be distributed once per semester
- Develop Tips and Helpful Information brochure to be updated on a semester basis
- Crate and implement a BCC Change Management Strategy

Objective #2: Establish KPI's to Measure and Quantify Customer Satisfaction

Action Items:

- Distribute new Customer Satisfaction Survey utilizing new Help Desk ticketing system to gauge perceived values of ITS services

- Utilize survey results to create quantitative data to measure satisfaction
- Publish survey statistical data on Bergen website
- Utilize quantitative data to establish Key Performance Indicators (KPIs) to improve services and performance

Stewardship of Technology Resources

Objective #1: Support Sustainability Initiatives

Action Items:

- Develop and implement technology solutions that reduce paper and power consumption
- Reduce and consolidate the number of printing devices on BCC campus
- Promote use of online collaboration tools to reduce paper consumption
- Support LMS growth opportunities reducing need for printed document distribution and submission
- Implement schedule for continued equipment recycling program
- Implement an E-forms solution to eliminate paper forms

Objective #2: End User Computing

Action Items:

- Replace full computer desktop solution with energy efficient and longer life virtual desktops or thin clients
- Provide virtual desktop capabilities while off campus reducing travel to and from campus and enabling the use of personally owned devices
- Seamlessly deliver applications and data to one or multiple devices per user while ensuring security and compliance for BCC, educators and students
- Create an environment where access to all designated applications, data and services are accessible with the exact same user experience regardless of the device selected, on or off campus
- Consistent and streamlined management by ITS will improve user satisfaction while reducing the support costs

IT Infrastructure

The classic IT infrastructure is ever shifting and moving ever more rapidly towards cloud computing, private, public or a hybrid combination. Forces such as manageability, standardization, security concerns, cost containment and economies of scale will continue to influence the design and support of an appropriate environment for BCC. Quicker demands, faster innovation adoption, disruptive new technologies and the unprecedented variety of choice will continue to motivate ITS to be ahead of the trends as they apply to critical learning, risk avoidance and cost containment.

Objective #1: Plan and implement a more Scalable and Adaptive Technology Infrastructure

Action Items:

- Reduce data technology footprint utilizing server virtualization hardware and software allowing for more dynamic scalability and reliability
- Create hybrid-cloud environment to leverage vendor expertize providing opportunities for BCC staff to focus on value add projects including student achievement, satisfaction, retention and cost avoidance

Objective #2: Disaster Recovery and Business Continuity Plan

Action Items:

- Continue to develop disaster recovery program, and identify and build a fully-networked "continuous operations" backup data center or co-location to ensure the immediate failover of critical IT services in the event of a disaster
- Create a hybrid-cloud environment to ensure environment uptime and remove data loss possibilities due to equipment failure and pandemic events
- Implement testing schedule to be coordinated with BCC Executive Team
- Institute architecture and processes that enable continuous availability of business operations and IT environments with a balanced approach to operational resiliency and BC/DR that virtually eliminates downtime caused by a pandemic event, system failure or cyber-attack

Objective #3: Wired and Wireless Network Performance Upgrades & Collaboration

Action Items:

- Continued investment in wireless network infrastructure allowing ubiquitous access across campus for learning activities both inside and outside the traditional classroom.
- Network Infrastructure upgrades will continuously to replace end-of-life equipment building in performance upgrades, redundancy and auditing.
- Replace/Upgrade College VPN device to allow faster and more secure access to restricted College resources
- Plan and implement technology for new Integrated Health Professions building, including wiring and electrical needs, voice and data networks, phones, computers, and SMART classroom technology.
- Design and implement video conferencing technology between the three campuses.
- Acquire, install, configure and monitor software tools for better monitoring and measurement of network activities and traffic to enable better response to potential and actual threats and issues.

Objective #4: Continue PC Refresh Initiative

Action Items:

- Continually update process for PC tracking and inventorying.
- College-wide PC refresh initiative continuation
- Replace all PC's five years of age and older with thin/zero-client devices and leverage virtual desktops and applications

- Develop a five-year-life-cycle plan for PC replacement

Objective #5: SMART Classroom for 21st Century Learning
Action Items:

- Define SMART Classroom Audio Visual (AV) technology and standards in support of teaching and learning
- Expand cross-training program between Medial Technologies Staff and User Support
- Create and implement an AV life cycle management plan
- Create, fund and implement plan for expansion of SMART technology enabled rooms College-wide
- Research and initiate agile and modular technology-enabled furniture that supports 21st Century Learning so students and educators can better connect and collaborate with greater agility and efficiency

Objective #6: Website
Action Items:

- Develop protocol for ensure website content is current
- Develop procedure for reviewing and ensuring ADA compliance
- Develop an RFP for bring website to full ADA compliance, potential CMS move with ADA compliance, mobility options and migration of Sharepoint sites to CMS platform

Objective #7: *Cloud*
Action Items:

- Develop plan to migrate Student Information System to Cloud
- Develop protocol for engaging in cloud based offerings including data protection and liability responsibilities
- Movement towards augmenting/replacing existing data centers, servers, and applications physical presence on campus with cloud-based services enabling students, faculty, staff and administrators access their email, file storage, databases, and other university applications from anywhere and anytime. Cloud computing also provides a high degree of data protection and recovery as well as the ability to "burst" in heavy traffic periods such as registration, on boarding and finals.

Conclusion

Bergen Community College's Information Technology Service Master Plan has been developed to strengthen the Colleges underlying infrastructure to improve services, reduce costs, and adapt quickly to changing needs. IT is a service that provides the entire College with the ability to implement innovative and creative practices that support our student's goal of degree completion. Streamlining and aligning IT projects with the College's Strategic Plan is critical to ensure we are working toward a common goal and applying resources to carry out the College's established goals.
Many thanks to MESA Community College for allowing us to utilize their Master Plan template.

Appendix A
Information Technology Services and Strategic Priorities Alignment

Information Technology Services Strategic Priorities & Goals	Student Success and Excellence	Faculty & Staff Success and Excellence	Commitment to Bergen County	Institution Building
Create Broad Access to Technology Resources and Services	X	x		x
Develop and Procure Student Services and Predictive Analytics Capabilities	X	x		x
Improved Identity Management	X	x		x
Achieving the Dream (AtD)	x	x		x
Improved Digital Engagement	x	x	x	x
Create Project Management Group	x	x		x
Improved Customer Service Experience	x	x	x	x
Information Security	x	x	x	x
Professional Development	x	x		x
Partnerships	x	x	x	x
Redesign Application Services User Group	x	x		x
Establish Technology Steering Committee	x	x		x
Communications Strategy	x	x	x	x
Measure and Quantify Customer Satisfaction	x	x		x
Support Sustainability Initiatives	x	x		x
End User Computing Environment	x	x		x
Scalable, Robust, Adaptive Infrastructure	x	x	x	x

Information Technology Services Strategic Priorities & Goals	Student Success and Excellence	Faculty & Staff Success and Excellence	Commitment to Bergen County	Institution Building
Disaster Recovery	X	X	X	X
Mobility and Network Performance Upgrades	X	X		X
PC Refresh Initiative	X	X	X	
SMART Classroom 21st Century Learning	X	X		
Website	X	X	X	X
Cloud	X	X		

References

Edutopia. (2008). *Why is teacher development important? Because students deserve the best*. Retrieved from: http://www.edutopia.org/teacher-development-introduction

Kamenetz, Anya. (2010). *DIY U: Edupunks, edupreneurs, and the coming transformation of higher education*. White River Junction, VT: Chelsea Green Publishing Company.

Keengwe, J. (2007). Faculty integration of technology into instruction and students' perceptions of computer technology to improve student learning. *Journal of Information Technology Education, 6*, 169-180.

Prensky, M. (2001). Digital natives digital immigrants part 1. *On the Horizon, 9(5), 1-6.*

U.S. Department of Education, Office of Educational Technology. (2010). *Transforming American Education: Learning powered by technology*. Washington, DC: Education Publications Center.