2018 -2020

Technology Plan

A ROADMAP TO OUR TECHNOLOGY FUTURE

INFORMATION SYSTEMS AND INSTITUTIONAL EFFECTIVENESS DIVISION

COUNTY COLLEGE OF MORRIS | 214 Center Grove Road, Randolph, NJ 07869

Information Systems and Institutional Effectiveness Technology Plan – 2018-2020

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PURPOSE STATEMENT - INFORMATION SYSTEMS AND INSTITUTIONAL EFFECTIVENESS DIVISION

The division of Information Systems and Institutional Effectiveness serves CCM, its students, employees and community, by providing the technology infrastructure to support and enhance teaching and learning, computing systems to conduct our core college functions, and reporting and analysis that inform decisions leading to improved student achievements.

PROCESS BY WHICH THE TECHNOLOGY PLAN WAS DEVELOPED

Reorganized IS Division

Over the 2016-17 academic year, Information Systems merged with Institutional Research to form a new division for CCM, Information Systems and Institutional Effectiveness (IS-IE). As an integral part of this merger, a cabinet-level position was revised to oversee the new division; Vice President for Institutional Effectiveness / CIO.

The IS and IE division is charged with strategic planning, effectively delivering data, reports and analysis, maintaining the college's technical infrastructure, increasing the existing investment in Colleague and Blackboard through implementation of existing functionality, all administrative computing systems, set-up and tear-down of technology for events, providing technical solutions to technology needs, amid myriad other responsibilities. The merged departments now allow for the primary, and the various, systems containing data to be more intentionally aligned with the deployment of reports using those data, all while being coordinated with the technical infrastructure supporting those systems.

Strategic Plan

On a triennial cycle, CCM develops a strategic plan as a primary means of achieving its preferred future. The strategic plan identifies the means to that end by setting overall goals for the college and to develop a plan to achieve them. Documenting achievement through a strategic plan provides evidence of accomplishing our mission.

Many goals and objectives in the 2018-2020 strategic plan require technology. Every goal and many objectives require data to establish baselines or measure progress toward achievement. The strategic plan provides a framework to which this technology plan is intentionally aligned. This technology plan encompasses specific activities designed to support the college's strategic plan in achieving its mission.

Open-sessions

On Tuesday, October 24th and Wednesday, October 25th the Information Systems department held open-sessions to gather valuable input into developing the technology plan. During those sessions we heard suggestions regarding improved technology in the classroom, expanded use of our learning management system Blackboard, needs for upgrades in computer labs, among other suggestions. These open-sessions allowed us to validate that we have identified a comprehensive set of priorities for CCM's technology needs; we updated our technology plan with this valuable input.

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EDUCAUSE

EDUCAUSE is a nonprofit association whose mission is to advance higher education through the use of information technology. CCM's membership provides us with two important resources: EDUCAUSE Center for Analysis and Research (ECAR) and the Assessment and Benchmarking services, both of which were used to inform CCM's technology plan.

ECAR helps colleges and universities improve service delivery through data, analysis, and actionable recommendations. Topics include analytics, student and faculty IT needs, the IT workforce, and strategic technologies.

Our division uses EDUCAUSE assessment and benchmarking services to plan for and manage IT service delivery, financials, security and risk, technology-supported learning, and digital initiatives.

VISUAL TECHNOLOGY PLAN ROADMAPS

We have documented the activities we will undertake in the technology plan by creating 'roadmaps.' As the name suggests they provide us with a list of activities necessary to achieve a specific goal or direction we want to take in improving CCM's technology infrastructure, over the next few years. The road maps provide a general direction, like build a data warehouse for business intelligence, but, importantly, they do not identify every specific detail required to do so. Technology changes too quickly for us to forecast the exact brand of computers we will use, version of Windows we will install, etc. The usefulness of a road map lies in its structure and providing an end-point without specifically dictating the path to take to get there. We know what we want to accomplish and that is evident in our roadmaps.

We have created road maps for each department in Information Systems and Institutional Effectiveness and aligned the work in each, where appropriate, to represent the divisions' work overall. The next section of the technology plan provides an overview of the work to be done as outlined in more detail in each of the department roadmaps.

Data Warehouse for Business Intelligence (DW/BI) – Future State of Reporting/Analytics Roadmap

Ellucian Colleague is CCM's Enterprise Resource Planning database. That means it is a primary source of data. It is a transactional database that retains the data it contains with every student, faculty, and employee record change, like programs of study, teaching loads, address changes, grades, etc. That function is critical for maintaining college records. But, that is the primary impediment to reporting data, especially trend data; CCM's primary database is not designed to report historical data or directly translate current data to useful information immediately. In order to provide this type of information a data warehouse is needed. The section on Data Warehouse for Business Intelligence (DW/BI) – Future State of Reporting/Analytics Roadmap addresses this CCM opportunity.

Administrative Computing Roadmap

Ellucian Colleague offers CCM many opportunities for increased efficiencies through implementing modules we currently own but have not used, upgrades in select data systems, more focused implementation management, and more intentional alignment of all systems to better support the

students, faculty, and administration in the use of those systems. This is the focus of the Administrative Computing Roadmap.

Network-Telecom-Technology Services Roadmap

The Network, Telecommunications, and Technology Services departments have been prepared for the opportunity a reorganized division ultimately provides. They stand ready to implement a plan to upgrade and improve the college's technology across core operations. It includes a project for thin-client installations, Wi-Fi upgrades, cloud-based solutions, standards for our computing systems, classrooms, labs, etc. The Network-Telecom-Technology Services Roadmap outlines the plans for upgrading and maintaining CCM's technology infrastructure.

Institutional Effectiveness Roadmap

The strategic plan contains a specific goal for establishing the Institutional Effectiveness department. We are charged with creating a culture of evidence, aligning planning, processes, and results to document the improvements made by using data in decisions. We want to provide an open process in achieving this work and gather information from a wide swath of colleagues. We have prepared an Institutional Effectiveness Roadmap to guide this important work for CCM.

ALIGN TECHNOLOGY PLAN ROADMAPS TO STRATEGIC PLAN GOALS and OBJECTIVES

Coordinating a unified view of what we are collectively attempting to achieve, and succeeding in implementing the components required to succeed, across all the various projects identified in both the strategic plan and technology plan, requires alignment among the goals and activities within each plan. These two documents provide the comprehensive set of projects to be completed over the next three years. Given the critical nature of each plan, alignment across the plans will yield far better outcomes for CCM. Information Systems and Institutional Effectiveness have thoroughly reviewed both plans and identified projects that require our divisions' input and attention.

We will use this icon to identify strategies in the technology plan aligning to goals, and/or objectives, in both plans. If you see this icon, it represents alignment between the strategic plan and technology plan.

Over the next three years we must remain vigilant to what we have committed to achieving in the strategic plan and technology plan. You can expect Information Systems and Institutional Effectiveness to stay the course charted in both plans and documented in each roadmap.

FALL 2017 TO SUMMER 2019 DIVISION MILESTONES

We strongly encourage you to read all of the activities identified in the Technology Plan Roadmaps. The roadmaps will also be available on the Information Systems and Institutional Effectiveness website in March 2018. Below are a few milestones to help provide an overview of the future work and projects of several components of the entire Technology Plan.

- Improved communications and timing of messages when technology changes are made
- Migration to cloud services for select components of CCM's technology infrastructure as a method to ensure catastrophic sustainability management
- Functional Data Warehouse for Business Intelligence (DW/BI) populated with student data and providing immediately consumable, interactive reports providing the measures identified within the strategic plan
- Strategic planning software populated and functioning at the department-level
- Formalized and functional Data Governance Council to improve and enhance the data quality in the DW/BI
- Enhance the analytic capabilities in Blackboard
- Ensure minimum standards are in place for our technology infrastructure
- Enhance and further integrate the component functionality of our Colleague ERP system
- Define and document the core metrics by which CCM operates to achieve its mission

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ESTABLISHING AN INSTITUTIONAL EFFECTIVENESS OFFICE – STRATEGY OVERVIEW

CCM is in the beginning stages of more intentionally documenting its existing 'culture of evidence'. A Culture of Evidence is defined at CCM as "college employees, routinely demonstrating the use of data in making operational and strategic decisions and documenting the improvements achieved by those decisions." The college is also expanding its artifacts used in our Institutional Effectiveness projects. For example, the Institutional Effectiveness office will be administering several Noel-Levitz surveys during the spring 2018 semester. This represents the first time these nationally-benchmarked surveys will be conducted at CCM in nearly a decade.

Strategic Planning software – multi-function use (Goal VIII, Objective 1, Activity 2) (Assessment, Strategic Plan, Division/Department objective alignment)

The strategic plan is currently a Word document. In that state, documenting incremental improvements, decisions based on data, and providing routine status updates such as 'Completed', 'Good progress, going well' etc. is more difficult to manage across all departments than is necessary. Also, the ability to clearly identify departments or offices impacted by the goals, objectives or activities established by other offices is challenging. Therefore, we will be identifying software specifically designed for use in documenting student assessment activities, strategic planning goals and objectives, as well as the interdependency of actions and improvements across every department on campus. This planning software serves as the unified primary source of processes, results and improvements for use in generating our next Middle States accreditation, among many other functions.

Using a features and functions template to guide the planning software selection we identified the need for it to also be useful to collect evidence for several other critical components of CCM's institutional effectiveness:

- Budgeting – uniformly aligning budget considerations to the strategic plan
- Student Learning Assessment - gathering our evidence in systematic manner
- Program Review – collecting and organizing the key elements in a central repository

- Academic and Service Area Review – conversion of our six-year plans into a sustainable system
- Accreditation – providing the evidence and aligning to our Middle States accreditation requirements
- Faculty Credentialing – ensuring documentation of our full-time and adjunct faculty with federal compliance regulations

Acquiring this software is a key component in our shift towards an institution that documents and demonstrates a culture of evidence. The software formally replaces disparate processes and documentation sources, e.g., files and folders on the shared F:\ drive.

The software will provide a single source to use and manage our planning and outcomes evidence.

This planning software also establishes the need for an annual planning cycle for the college. The planning cycle aligns the establishment of goals and objectives to the budget, with our assessment timeline and to the evidence documentation across the entire fiscal year. Below is CCM's new Planning Cycle.

College-wide training opportunities

The breadth, volume and complexity of the technology on-campus have grown exponentially over the past few years. It is an unreasonable expectation that students and/or employees simply know how to use software, hardware, peripherals (printers, tablets, etc.) or how to avoid phishing schemes, among other examples. A key component of our technology plan strategy is to provide training. This doesn't mean Information Systems and Institutional Effectiveness staff will be conducting and leading open sessions on a regular basis. We might, but, more often, we will ensure that end-users have access to self-service tools, such as snippet videos, job aides, process maps, screen shots, work-flows, etc. so that learning can occur on individual's own timeframes and on-demand.

Over the next three years Information Systems and Institutional Effectiveness will be identifying key training that will be required of all employees. For example, completing an online, self-paced, phishing training course will become mandatory so that we are reducing the potential of our employees becoming the victim of identity theft, or exposing CCM to an unintentional cyber security threat. This is but one example of many to come over the next three years.

When applicable, we will partner with the Center for Teaching and Learning (CTL) so the training resources are centrally located and provide convenient access to all employees.

Further use of Blackboard and its Analytics (Goal VIII, Objective 3, Activity 2)

CCM has invested in Blackboard as its Learning Management System. Blackboard has a lot of built-in functionality CCM is currently not using or leveraging to the fullest extent possible. In the Administrative Computing Roadmap, you will see an activity completed in Fall 2017 to install a product called 'ILP' (Intelligence Learning Platform) which is an interface between Colleague and Blackboard. In addition to better connecting the functionality between those two systems, IS will also be expanding the built-in analytical capabilities in Blackboard. Blackboard offers Intelligence, Analytics, and Predictive modules, in order to provide faculty and adjuncts with more easy to use and powerful data on which to help students achieve even better classroom outcomes, leading to higher retention and graduation rates.

Build a Data Warehouse for Business Intelligence (DW/BI) – Future State of Reporting and Analytics (Goal VIII, Objective 2, Activity 1)

In order to move away from our current process of manual reporting from data contained in multiple places, to a more efficient and effective process with the ability to generate valid, reliable, immediately consumable, interactive reports with greater ease, a data warehouse is needed. This ability is essential to becoming a data rich institution and help to create a culture of evidence. It is also critical work necessary for achieving the strategic plan.

That is the challenge addressed by this project. CCM will build a data warehouse to collect, organize and store our existing data in a format intentional for longitudinal reporting and analytics, while our primary source of data remains available for maintaining college records.

Our goal is to have a first-version DW/BI fully operational by June 2018.

A component of this project is establishing a Data Governance Council. The council has two primary functions, to create a single source from which to present clean and reliable data to all who use it within

the institution, and, where appropriate, to customers and other consumers of data external to the institution. The other purpose is to identify, establish and oversee the strategy, objectives, processes and technology ensuring that quality data is provided to the institution for making informed decisions that continue to build a culture of evidence.

Overall, this Council will establish a system to ensure there is quality of data used in CCM's operational reports.

Routinely Gathering Strategic Feedback from the College

On a routine and regular basis, we will be gathering feedback from the college, its students, faculty, employees, and community on the progress we are, or are not, making in establishing an Institutional Effectiveness department and the efficacy of the newly combined IS and IE division. We will administer surveys, conduct open-sessions and whenever possible administer EDUCAUSE surveys so we can benchmark the college's technology infrastructure and our division's services. We will then use this end-user feedback to make corrective actions and as a basis for building the next technology plan.

The Institutional Effectiveness roadmap makes clear that, over the next three years, we will begin using Baldrige and Achieving the Dream (ATD) tools to capture the information necessary to construct our 2020-2022 strategic plan. Middle States provides a framework through which CCM is accredited but not the tools necessary to populate the components of the framework. The quality improvement framework of Baldrige and ATD's Institutional Change Assessment Tool (ICAT) are resources we will use to capture the students', faculty, staff, administration and leaderships' input on the foundational components listed in our mission statement. The tools available through both frameworks will be used to craft a SWOT analysis and determine the goals and objectives for our next strategic plan.

Update the Strategic Plan (Goal VIII, Objective 1, Activity 2)

In the CCM Annual Planning Cycle above, there are several times over the fiscal year that the strategic plan will be updated, in the planning software identified on page 6. Updates in the strategic plan are critical in establishing our culture of evidence and the Institutional Effectiveness office. Updates do not mean entire changes in direction, but rather offer opportunities to routinely document the status of our incremental improvements. These updates will most often require departments to enter data relevant to the goal or objective they are updating to document improvements. Over time, regularly, quarterly or biennially, these incremental improvements will become a routine part of the planning cycle and begin providing the evidence needed to know we are achieving our strategic plan goals and objectives.

NETWORK-TELECOM-TECHNOLOGY SERVICES – STRATEGY OVERVIEW

The strategy for this area is to provide technology throughout the College in a uniform, standardized, and reliable way. Below are several ways we will achieve that.

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PURPOSE STATEMENT – NETWORK-TELECOM-TECHNOLOGY SERVICES

The purpose of the Office of Network-Telecom-Technology Services is to provide both the technology infrastructure to support and enhance teaching and learning, and the computing and telecommunications systems to conduct our core college functions at the County College of Morris.

Thin-client Strategy (Goal VIII, Objective 1, Activity 6)

A thin client system is a technology where an end user's computer system runs on a server in a data center, and the user is provided access to it through a desktop device called a thin client. This system allows the user to access their computer system via any thin client device, or even externally via a browser.

The goal with the thin client strategy is to manage the end user desktop experience in such a way to provide consistency and reliability regardless of where the user accesses their desktop. By centrally managing all of the operating systems used throughout campus and software applications delivered to each "computer" and the users access, we will meet objectives of ease of maintenance, ease of use, and enhanced security.

Over the next three years we will be installing thin-clients as replacements for personal computers at employee's workstations. We will pilot test within the Information Systems and Institutional Effectiveness division to learn how to best manage this new environment before rolling it out across CCM's offices and computer labs. Over summer 2018, we have identified a few programs with large software footprints and will be testing delivery of software-intensive systems using thin-clients. The goal is to have an estimated 1,500 thin-clients available, and 75% of the college's software running on servers, instead of computers, by FY 2021.

Documenting Standards

By documenting standards, we will set minimum requirements to assure that technologies and equipment that are procured by the College are adequate for the end user's needs in the following areas:

By February 2018

i. Networked Printers/Multifunction Devices – All printers on campus should be networked, shared, and meet minimum standards. Where appropriate, multifunction devices (copy/print/scan) will be considered.
   1. Research standards
   2. Analyze current inventory
   3. Identify out-of-standard equipment
   4. Develop replacement budget
   5. Develop replacement implementation plan (oldest first)
   6. Implement replacements over next three years

By March 2018

ii. Classroom Technology – Thin client devices will start to be utilized in classrooms, and the audio-visual needs will be assessed and upgraded where needed.
   1. Research standards

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2. Analyze current inventory
3. Identify out-of-standard equipment
4. Develop replacement budget
5. Develop replacement implementation plan (oldest first)
6. Implement replacements over next three years

By April 2018

iii. Laboratory Technology - Laboratory technology needs will be assessed on a per case basis, and appropriate technology will be

1. Research standards
2. Analyze current inventory
3. Identify out-of-standard equipment
4. Develop replacement budget
5. Develop replacement implementation plan (oldest first)
6. Implement replacements over next three years

Software Requests (Goal I, Objective 5, Activity 3)

All service/function/department software requests made of the IS-IE Division must contain a list of features and functions, compiled by a cross-functional team where appropriate, as well as a comparison of the different products being considered and submitted through the 'Help Desk' (see Solutions Center section in this technology plan). A template has been developed and a process is under design. All software requests will be submitted through the new Solutions Center, formerly the Help Desk, and require a minimum of three-week lead notice before installation can occur.

Cloud Based Services

Cloud Based Services are computing environments that vendors provide as a service, to allow institutions to make use of these environments without significant capital expense.

We will explore and implement where appropriate cloud based services as it relates to server management and backup solutions as a way to achieve redundancy and reliability, as well as reduce our reliance on the physical hardware that we would otherwise need to procure and maintain.

Audio-Visual

A plan will be developed to upgrade the A/V Technology in the Davidson conference rooms. Our current A/V Technology in these rooms is not adequate and disjointed. A complete integrated system is required to bring those rooms up to date to provide both internal and external users a modern A/V experience.

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Learning Management System (LMS) Implementation (Goal 2 & 8, Objective 3 & 5, Activity 1 & 2)

Our current LMS is Blackboard, and basic administration of this system is handled by the Director of Network and User Services and the Help Desk Specialist.

Upgrades to our Blackboard LMS system to incorporate analytics as well as additional features to be used by the Virtual Campus will be pursued. The Administration of the LMS system to include these additional functions are beyond our current expertise, and will require a new position entitled LMS Administrator.

Transform the Help Desk into the Solution Center (Goal 2, Objective 4, Activity 2)

The Solution Center will replace the Help Desk. Eventually, we hope that the current helpdesk functions and personnel will be transitioned to the Academic Complex where the majority of customer support services are provided. This physical move reduces the current wait-time required for customer support to leave from Building 675 in a golf cart and arrive at the classroom, lab, or office requiring their support. This will also provide a more convenient location for users to bring their CCM mobile equipment, e.g. laptops, tablets, iPads, for servicing. We are assigning Computer Solution Specialists primary (not exclusive) responsibility for servicing specific buildings so that each specialist is known by the colleagues requesting computer support services as well as the specialists being familiar with the technology in each building. Finally, we will also upgrade the software used for our customer support. The upgraded software and personnel moves will mean no more missed calls, that specialists use access manuals, technical schematics, etc., when out on service calls, documentation of services performed are more complete for future use, among many other improvements in our divisions' support of CCM students, employees and community.

Wi-Fi Upgrades

Information Systems and Institutional Effectiveness is working on expanding coverage, improving connectivity and increasing the bandwidth of CCM's wireless network in 2018. In addition to already tripling our bandwidth, we are increasing the number of access points and the wireless security across the campus. This will be a staged deployment.

Beginning in the Academic Complex, in February, the first phase adds 101 new access points in these buildings to greatly improve Wi-Fi coverage in our primary learning areas. The second stage, beginning in May, includes Henderson Hall, Music Technology, the Learning Resource Center, Landscaping and Horticultural Technology, and Plant and Maintenance Buildings. In those buildings, 41 new access points will be added. The third stage will begin in August and includes the Student Community Center and Health and Physical Education Buildings, adding 24 more access points.

IS-IE is also going to analyze wireless connectivity in the auditorium and gymnasium as part of the third stage. The deployment includes integrating a more secure wireless network using a single (one-time) sign-on for each semester.

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DW/BI AND THE FUTURE STATE OF REPORTING/ANALYTICS – STRATEGY OVERVIEW

In order to achieve key components of the strategic plan and strategic enrollment management plan the need for easy to access, consume, and use data is paramount. The Institutional Effectiveness (IE) office will coordinate the activities necessary to be successful in achieving the results identified in each plan. This will require fundamentally changing the current systems and processes used to provide data to end-users, the trend and historical data available to end-users and the data types, including internal and external benchmark data available to end-users. Over the next three-years IE will transform access to an intentionally designed and well-defined system of historical data, immediately-consumable reports that allow end-users to filter the data being presented and visualized on their screen, and the analytics necessary to predict future events based on models of student behaviors.

PURPOSE STATEMENT – OFFICE OF INSTITUTIONAL EFFECTIVENESS

The purpose of the Office of Institutional Effectiveness is to provide information that will enhance College effectiveness and support the planning and decision-making processes of the County College of Morris.

Launch DW/BI – phase 1 (Goal VIII, Objective 2, Activity 1)

Higher Education is transforming. As a consequence, how an institution measures itself must change. Done well, Business Intelligence (BI) and analytics can empower leaders and decision makers throughout an institution. Those who need BI must be able to access it quickly and in such a way that they can both understand and trust the underlying data they use to support their decision making. Despite this potential, it becomes increasingly challenging for institutions to provide a unified view of both historical performance and predictive trends. The challenge is to transform how the institution works with BI in order to enable strategic decisions more quickly and to ensure that those decisions are based on higher quality data.

Our goal is to have a functioning DW/BI in June 2018. The Phase 1 version will contain student data only. We will use Phase 1 as our lessons learned source before proceeding to incorporate other data sources, such as finance, human resources, blackboard, etc., among many sources into the data warehouse. This phase 1 will also end with CCM having immediately consumable, interactive, drill-down capable reports available. These reports will provide student headcounts, course offerings, course success rates, retention, graduation, and other critically important operationally relevant information all with filters to allow end-users the opportunity to customize what data are displayed by their choice.

Phase 1 of the DW/BI launch will also require training end-users in how to successfully open reports, to navigate the various types of reports available, how to use the filters to drill-down into the specific data they are interested in learning more about, and how to use the reports to identify key information useful in making data-based decisions.

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The launch of the DW/BI is a critical milestone in establishing CCM's culture of evidence. For more details on the scope of the DW/BI project, you are encouraged to read the "DW/BI Future State of Reporting/Analytics" roadmap on page 8.

While the Phase 1 of the DW/BI will only include Colleague data, Phase 2 will identify and bring in other external sources of data. Some of the major sources initially identified are Blackboard and the National Student Clearinghouse. Data from these two sources offer additional information on the student experience and can be used in combination with other variables as leading indicators to predict certain behaviors as successful.

The DW/BI will also provide an environment for streamlining frequent and mandatory compliance reporting allowing IR staff more time to fulfil true research requests and implement predicative modeling.

Data visualization /Dashboards

Once the DW/BI is operational the ability to create visual reports and dashboards will be possible. By Fall 2018 we hope to have comprehensive collection of college-wide dashboards available to the college community. The initial set of dashboards will be designed with the strategic plan initiatives in mind. These data visualizations and drill-down dashboards will give the end-user the ability to see information like never before.

Launch DW/BI Phase 1 – Training

Training will be necessary from all aspects. From the IS-IE staff to end users. Once the DW/BI is fully operational, the IE staff will coordinate training sessions on how the system works, ways to use the information and definitions, and types of requests that can be asked. In some instances, the IE staff will attend departmental/divisional meetings to answer specific questions and maintain continual communication. Since maintaining accuracy and setting a standard for use of data and their definitions is the primary focus, training will be required prior to allowing users to access the DW/BI.

Building a Data Warehouse is a good foundational component to creating a culture of evidence but in order for the campus to actually use the data and report repository we must provide training and support. Once the DW/BI is available for use, training will be comprised of two distinct components, functional use of the DW/BI and analytical approach to interacting with data. These training components will begin in June 2018 and be repeated several times every year over the next three years.

With the DW/BI and training, end-users can easily access information they are seeking without need for submitting a data request. With this type of environment individuals can access information like never before and at times, will be required to access information on their own, which is why training is essential.

Data Governance

There is an inherent complexity involved in managing data. Technology by itself could not produce a sole solution. Delivering this new type of BI necessitates looking beyond hardware and software requirements. Another area that must be incorporated to drive effective change in the institution's BI data gathering and management process is, people. Analytics needs to be a cultural attribute of the College so that it is embedded in the culture and is pervasive across the institution. Each functioning

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area needs to understand that they should own the data they collect and manage because they own the process and the ultimate impact they are trying to drive. Owning the data also means that areas and individuals need to take on the responsibility of learning about their data as well as how to use tools and technologies to drive insights. We are shifting from IS-IE being responsible for cleaning up the data for reporting to where functional areas would have to care about how their data is being entered by staff and/or students. Driving this cultural change of understanding peoples' new roles and responsibilities in the institution is key. The new owners of the data must know what to do to ensure the data they use on a daily basis is where it needs to be. This culture shift, where the functioning area becomes more knowledgeable about their data reflects a critical process change—data governance

Data governance is a set of processes for defining, implementing, and enforcing data rules to meet an institutions mission or to achieve specific objectives. It is about putting people in charge of fixing and preventing data issues so that the College achieves its strategic goals.
When properly implemented, data governance ensures there is a mechanism to facilitate and communicate a common definition and understanding of information.

Data Governance Council

While creating a DW/BI system is a huge initial undertaking, maintaining integrity and standards is a necessary ongoing function. The recent creation of the Data Governance Council (DGC) is an integral part for establishing data standards and maintaining data integrity, processes, and training. The DGC consists of members across campus who are deemed experts in their area based on the College's primary data entry point offices, as well as external and internal reporting specialists from those areas that are responsible for compliance reporting.

In an effort to integrate CCM's separate data systems into an enterprise view of data the establishment of this Data Governance Council is essential to ensure data quality. The Data Governance Council provides decision making authority in the determination of appropriate data codes, data types, input and extract processes, definitions and counsel to the institution regarding the appropriate use of those data.

The council has two primary functions, to create a single source from which to present accurate and reliable data to all who use it within the institution, and, where appropriate, to customers and other consumers of data external to the institution. The other purpose is to identify, establish and oversee the strategy, objectives, processes and technology ensuring that quality data is provided to the institution for making informed decisions that continue to build a culture of evidence

The first year of the DGC with be to create a standard by which the institution operates and handles data and is aligned with Phase 1 of the DW/BI.

Initial Function

- Establish and maintain a data definition dictionary and coding standards for the college's critical external compliance and internal operations reporting requirements for use by the institution
- Identify, establish and oversee processes for data corrections at the source or data-entry level that are based on established data definitions and standards (ex: exception reports, data correction parameters)

- Align the college's data management practices and usage policies to allow for data and information to flow across systems, offices, departments and divisions
- Outline the guiding principle around data sharing, security and access (in line with FERPA, internal policies)
- Define, develop, document and manage data metrics, used in external and internal reporting, e.g., benchmarking datasets, Achieving the Dream, Middle States reports, persistence/retention reports.

After the initial set of standards is created ongoing maintenance/ governance will ensure continued reliability. The same steps will need to be taken whenever new data sources and processes are identified.

- Continuous review of existing policy, processes, procedures, definitions, metrics, and changes to ensure data integrity and quality
- Provide continuous training on data standards, metrics and usage to the responsible data owners and the college community

Overall, the DGC will follow steps to ensure the progress towards a Data Maturity Model as demonstrated progress in improving the college's data quality via the DW/BI. The DGC is to move the college from Data Aware, to Data Proficient, to Data Savvy, and ultimately to Dave Driven.

National Benchmarks for CCM Improvement and Internal Surveys

In addition to the DW/BI other services offered by the IE office in contributing to the Strategic Plan will be Benchmarking. Benchmarking essentially allows us to gauge how well we are doing as compared to national standards. Our goal is to have the following benchmarking tools completed and available for planning by the summer of 2018. These benchmarking surveys typically are conducted every 2-3 years, but can be done annually as initiatives are identified and needed to be gauged.

- Noel Levitz Student Satisfaction Inventory (SSI)
- Noel Levitz Priority Survey for Online Learners (PSOL)
- Noel Levitz Institutional Priorities Survey (IPS)
- Achieving The Dream – Institutional Change Assessment Tool (ICAT)
- EDUCAUSE- Technology Research in the Academic Communities survey (ETRAC - benchmark what students need and expect from technology)
- Consortium for Student Retention Data Exchange (CSRDE – retention and graduation rates)
- Cost and Productivity Project (Costs associated with current program offerings)
- National Community College Benchmark Project (35+ Institutional-Level Benchmarks)
- Economic Impact Study (CCM's economic impact on Morris County)

Within the next year, CCM is joining Achieving The Dream (ATD) which will act as an organizational experience for all the initiatives and various definitions of student success. These too will need to be incorporated into the DW/BI, visualization, and Data Governance definitions.

The use of internal surveys has not been coordinated or maintained. Any department who wishes to do conduct a survey has done so on their own. From identifying the survey tool, respondents pool, administering the survey, analyzing, and sharing the results. IR is in the process of identifying a tool that will allow departments/individuals to survey students and staff in a coordinated fashion so the

respondents do not experience survey fatigue. As a service, IR will be available to assist in proper question formulation and design if needed.

Labor Market Data

JobsEQ Software as a Service (SaaS) gives CCM 24-hour online access to our labor market data. Designed and developed with data governance as the priority, economists and data scientists at Chmura ensure that the tool provides credible data. JobsEQ helps CCM identify unique workforce characteristics within our tri-county service area and surrounding areas and provide quality data to users by describing current industry and demographic trends, as well as targeted occupation and labor market information. JobsEQ delivers data-driven empirical evidence that a region's workforce has the skills they need, and uses charts, tables, and maps to help the audience visualize the talent pipeline.

Employment, wages, and demographic data are all provided at the zip code level of detail. JobsEQ users are trained to use this software. JobsEQ helps CCM define its delivery region by a radius or drive-time from an address then quickly and easily creates dynamic reports and presentations that couple current regional demographics with occupation-specific data or education data, for example.

The following are benefits of JobsEQ to CCM

- Economic Impact
- Curriculum development
    - Embed in 6-year Program Review process
    - Require for New Program approval
    - Utilize in creation of Workforce development programs
    - Aid in development of career pathway (types of degrees required for each industry)
- Grant development
- Career services - jobs by education level
- Identify employers in region – establish internships
- Marketing – industry demographics (earnings / new jobs), worker demographics

JobsEQ also represents our IPEDS enrollment and graduation data in one location and in an easy to read format.

Staffing needs

The shift in, and additional workload expected, by the office of Institutional Effectiveness comes with necessary changes/addition to staff in order to accomplish its purpose.

The design and development of Business Intelligence (BI) solutions is needed in order to provide an effective and efficient data and analysis solution that can support and transform the institution. With the roll out of the DW/BI we will have the ability to create and simplify data flows, data models, reports and dashboards, however, we will need someone to continue to maintain and share data findings.

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There is also a need for an individual that can use predictive modeling to allow for analyses of trends and anomalies and perform detailed analysis of various scenarios. As well as an individual for visual reporting which turns abstract information from data analyses into appealing and understandable visualizations.

ADMINISTRATIVE COMPUTING - STRATEGY OVERVIEW

County College of Morris has been using Ellucian's Colleague Enterprise Resource Planning system since 1996. This system has changed over the years and we made a major upgrade in August 2015. This upgrade positioned the college to better leverage industry standard databases and positioned CCM for building the DW/BI.

We are changing how ERP improvements are identified, implementation projects are managed, our post-implementation assessments, as well as approach to aligning currently disparate ancillary systems. Our past approach of accepting nominations from the floor is changing to a model of leading the improvements made to our administrative computing systems. We will base improvements on goals and objectives in the Strategic Plan, this Tech Plan, alignment needs for data acquisition from database systems for operational and strategic reporting, research conducted at national and regional conferences, as well as the needs received from other offices and divisions. Over the next three years will transform from reacting to requests to leading administrative computing changes and improvements.

We are also changing our approach to how software is requested and used across campus. We are developing new, or revitalizing old, processes and collecting documentation associated with Colleague, integrated 3rd party, and Ellucian standalone software systems. Non-classroom software purchases on campus will be required to communicate to Colleague, the Business Objects Universe and Data Warehouse. Software that is feature rich and able to be used in multiple offices on campus will be preferred. We will save money as we purchase products that solve multiple business problems instead purchasing one off systems.

We will be leveraging the existing Student Systems Team, who represent the primary functional areas of the college, to expand and form CCM Ellucian Users Group, when additional input is needed. The expanded CCM Ellucian Users Group will add include representatives from the following areas; director of budget and business services, purchasing manager, director of HR, director of enrollment services, academic affairs representation and director of accounting. A component of this group's function will be acting as the single source for unifying the Administrative Computing department's future initiatives, timing of software implementation and being a communication interface with the college. The CCM Ellucian Users Group/Student Team will allow for discussions regarding new products, establish priorities, and discuss open cases and new functionality. The group would develop and recommend college-wide policies and procedures for new Colleague software and functionality. This supports Strategic Goal III, IV & VIII.

Outcomes from attending Ellucian Live conferences will include learning in-depth about the new products available, hear firsthand where Ellucian is heading in the future, see what other users are doing and how they have implemented new software at their institutions, and how the Ellucian partner's 3rd

party products integrate into the ERP landscape. We'll use this conference experience to inform our future implementation plans. Additionally, we'll leverage our time at this annual conference to exchange ideas, system issues, successful integration stories, or concerns with colleagues from other colleges about new modules or third party products we may be interested in pursuing.

PURPOSE STATEMENT – ADMINISTRATIVE COMPUTING

Develop, support and improve County College of Morris's Enterprise Resource Planning (ERP) and ancillary systems to increase institutional effectiveness, positively impact student success and provide long-term support for the college's increasing use of those systems, and the data they contain.

IMPROVEMENTS TO COLLEAGUE AND ANCILLARY DATA SYSTEMS

We will work with ASR in 2018 to develop data warehouse allowing administrative computing to expand use of Business Objects (BOE). There are 3 phases to the ASR project. Phase one is get all of the student enrollment data into the data warehouse so enrollment reports can be utilized to make informed decisions. This supports Strategic Goal III & VII of the strategic plan.

We are in the process of expanding usage of our Colleague software to include assignment contracts for all part time in the summer of 2018 and full time faculty hopefully in the spring of 2019. We are in the process of understanding how we pay our faculty so we can implement assignment contracts. Once implemented Colleague will be used to generate the contracts that will be offered to faculty and the system will generate stipends.

This brings us to our next project of Web Time Entry. Some of our Part time employees are already entering their time worked into Web Advisor. We plan to move these individuals in to the world of Self Service/Titan's Direct by the fall of 2018 so they can enter their time using new modernized interface into Colleague. We will also be expanding web time entry to include student and college work study for Spring 2018 and all full time employees in spring 2019. This supports Strategic Goal VI, VII & VIII of the strategic plan.

We are in the process of expanding usage of our Self Service software – Titans Direct to student finance for the spring 2018, student financial aid for the spring 2018, proxy for the summer 2018, where student allow their parent or guardian access to certain information and emergency information. Currently, all current students are able to access and use the software to plan their schedules and future courses. They can see their unofficial transcript, communicate with their faculty advisors, setup their current and future schedules and register for classes. When new software is released it delivers new functionality to the self-service software. This supports Strategic Goal III, V & VIII of the strategic plan.

The office of Campus Life has been capturing student and employee pictures. The student photos have been uploaded into a location and are able to be accessed through Student Planning in Titan's Direct and only limited individuals within Colleague's Web UI interface. We wish to expand the usage of photos in Colleague as well as eliminate the Access Database that is used to house the student pictures in Campus Life. We would like to implement this feature by the summer of 2018. This supports Strategic Goal II & VII of the strategic plan.

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Future Implementations

Replacing the R25 scheduling software with a new an improved version, Live 25 or other feature rich software that can be used elsewhere on campus and saving money as we purchase products that solve multiple business problems instead purchasing one offs. A cross-functional group of departments have evaluated the Ad Astra and CollegeNet Live25 software systems. We will need to replace the existing R25 software by December 18, 2018. In the spring of 2018, we will begin the purchasing process to replace the R25 software. There are numerous improvements to this software and it should lead to efficiencies with room scheduling.

There are plans in the works to implement Ellucian Intelligent Learning Platform (ILP) by April 2018. The ILP software connects Colleague and the learning management software, Blackboard together to allow for a seamless, real-time integration of data between the systems. This allows for Blackboard to become the system of choice for faculty by allowing for instant data communication between the systems, e.g., students rosters, grades, attendance, withdrawals. This supports Strategic Goal II, IV, V, VII, VIII & X of the strategic plan.

We are looking to the future of integration by leveraging Ellucian Ethos Identity, a Software as a Service (SaaS), which allows for seamless integration for single-signon for the college's major systems. We will need to implement this new software in the summer of 2018. This service will allow the college community to enter their password once and access all major systems. This supports Strategic Goal II, IV, V, VII, VIII & X.

Implement a customer focused initiative to identify and establish based lines for end-user satisfaction. This initiative will allow for the creation of a customer satisfaction survey to measure how we are responding to end-user requests and measure responsiveness going forward.

Ongoing improvement in college-wide reports and support of reporting tools. Continue to evaluate new products to enable mobile reporting. This allows for better capabilities in data access and analysis by putting data into the hands of decision-makers and allowing for ease-of-reporting. This supports Strategic Goal III, IV & VIII.

Implement and support time and attendance tracking online modules within WebAdvisor and Titans Direct. This initiative allows for County College of Morris to no longer have to and track paper timesheet. This supports Strategic Goal III, IV & VIII.

Continue to establish and strengthen the training and development of the IS staff by attending conferences and training. This allows for employee development and allows the Colleague IS staff to maintain technological efficiencies and knowledge of new products. This supports Strategic Goal VI & VII.

Develop and implement a communication plan to the college community. This allows for proactive communication regarding changes and new technology effecting the Colleague system, e.g., upgrades, changes, outages, training and others. This supports Strategic Goal IV & X.

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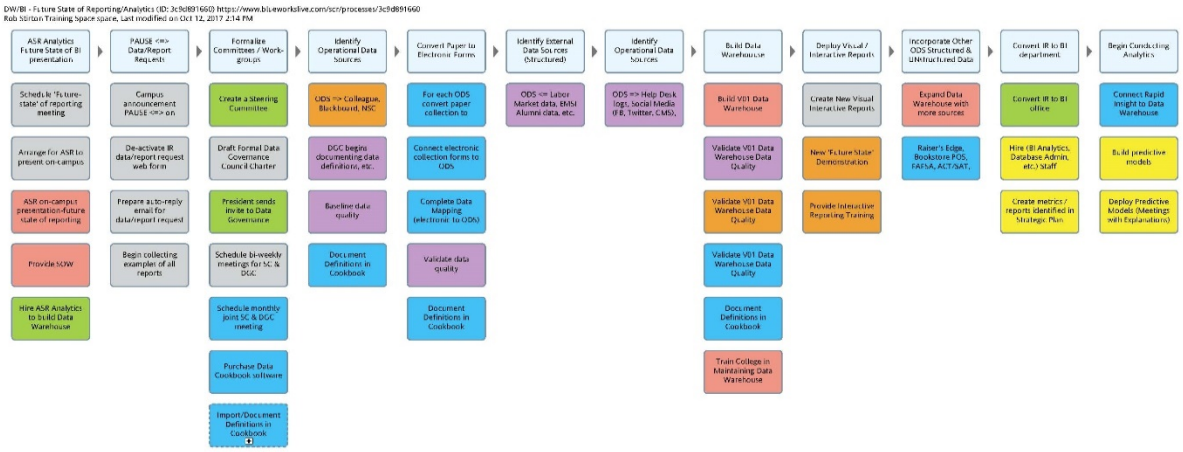
Implement a Colleague training program for the college community. The training program would allow for end-users to have a centralized location for training material, videos and others documentation required to navigate colleague. This supports Strategic Goal IV & X.

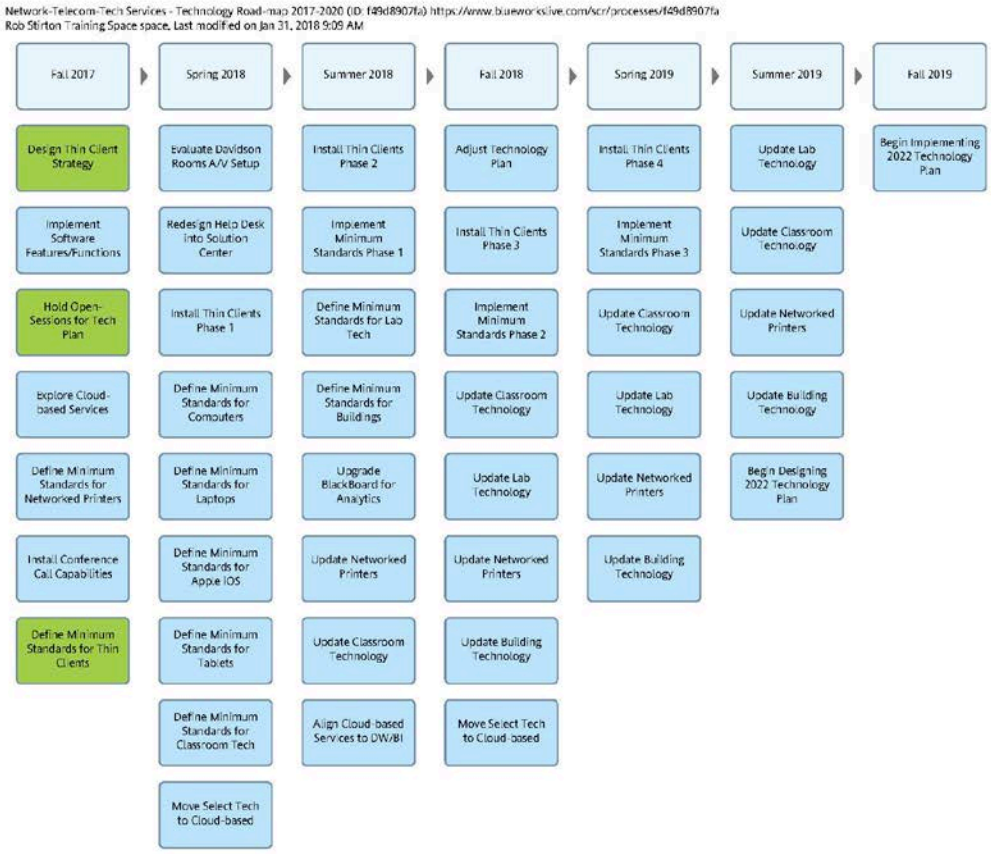
We will be creating a data governance council to enforce college standards. Working collaboratively with the IE office, we'll begin using exception reports to correct data as it is being entered into the system in order to improve the quality and integrity of our data.

ROADMAPS

Data Warehouse for Business Intelligence (DW/BI) – Future State of Reporting/Analytics Roadmap



Network-Telecom-Technology Services Roadmap



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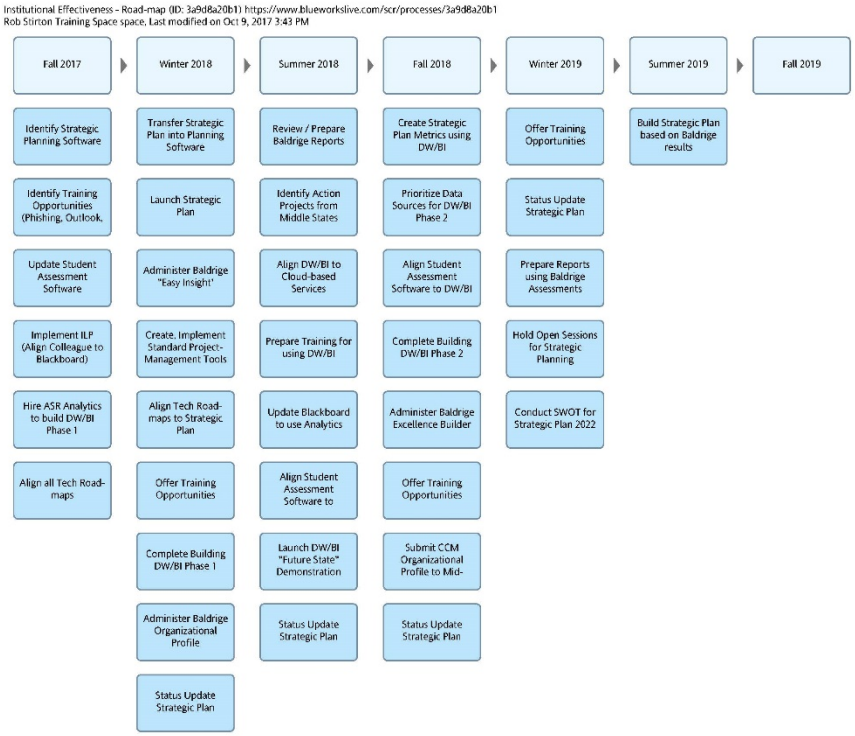
Institutional Effectiveness Roadmap



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Administrative Computing Roadmap