



Sinclair
Community
College

Information Services Status Report & Strategic Objectives FY 2011-2012



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**Information Services
Status Report
&
Strategic Objectives
FY 2011-2012**

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Executive Summary

Executive Summary

Each year the Information Services Departments: Information Technology Services (ITS), Research, Analytics, & Systems Development (RASD), and the Library (LIB) identify strategic objectives (Major Projects) for the next fiscal year. Last year (FY 2010-2011) 34 Strategic Objectives/Projects were identified. These Strategic Objectives/Projects, as well as additional major accomplishments, are included in Table 1-1 with their respective Target and Actual Completion Dates.

Strategic Objectives	Target Completion Date	Actual Completion Date
RASD		
Support Quarters-to-Semesters Conversion	June 2011	April 2011
Rollout and Enhance My Academic Plan (MAP)	June 2011	January 2011
Support Four Square Planning Process (performance scorecard)	May 2011	February 2011
Enhance Colleague Performance	November 2010	December 2010
Enhance Planning for Disaster Recovery	March 2011	Continuing
Use Predictive Modeling to Support Decision Making	June 2011	June 2011
Support Bookstore Processes	June 2011	June 2011
Implementation of Selected Mobile Applications	June 2011	February 2011
Continue Data Quality Validation and Collection (DQVC) Initiative	June 2011	June 2011
Conduct Feasibility Study and Warranted Implementation of Automated Support for Tech Prep Office	November 2010	January 2011
Feasibility Study and Warranted Implementation of Payment Gateway	December 2010	June 2011
Support Processes of Marketing Department	June 2011	June 2011
Support Processes of Student and Academic Support Services Department	January 2011	June 2011
Conduct Feasibility Study for Replacement of Sinclair's Content Management System	June 2011	June 2011
Implement First Phase of New Schedule Development System	June 2011	June 2011
ITS		
Data De-duplication	June 2011	June 2011
Backup Software Replacement	May 2011	May 2011
Digital Asset Management System Replacement	June 2011	June 2011
Security Information and Event Management (SIEM) Implementation	June 2011	Continuing
Guardian Replacement	June 2011	June 2011

Table 1-1. Strategic Objectives/Projects for FY 2010-11.

Strategic Objectives	Target Completion Date	Actual Completion Date
ITS - Continued		
Virtual Desktop Infrastructure	December 2010	Continuing
Storage Area Network Upgrade	June 2011	Continuing
Network Access Control Improvements	June 2011	Continuing
Data Center Network Upgrades	June 2011	Continuing
Disaster Recovery Resiliency	December 2010	Continuing
Multimedia Classroom Standardization	April 2011	Continuing
Cable Television System Replacement	June 2011	Continuing
Equitrac Expansion	September 2010	September 2010
Copier Management	June 2011	May 2011
Windows 7 Implementation	December 2010	September 2010
Disaster Recovery System Identification	December 2010	June 2011
Investigate Centralization of Plato Data	March 2011	Continuing
Office 2007 Upgrade	February 2011	February 2011
PC Update Improvements	June 2011	June 2011
Internal Network Vulnerability Assessment	June 2011	April 2011
Exchange 2010 Upgrade	September 2010	August 2010
Help Desk CTI Implementation	August 2010	August 2010
LIB		
Reinventing the Sinclair Digital Library	June 2011	Continuing
Library IT Teamwork Studio: Phase 1	December 2010	April 2011

Table 1-1. Strategic Objectives/Projects for FY 2010-11 continued.

Please note that due to the changing economic climate and the increasing complexity of the Information Services environment, several projects, which were not identified last year, have also been initiated and/or completed, and are included in Table 1-1.

Due to the increasing responsibilities of the Research, Analytics & Systems Development Department as a result of the many College-wide initiatives underway (e.g., Completion by Design, Achieving the Dream, and Quarters-to-Semester Conversion), it has become apparent that the college would be better served by establishing two separate departments. Therefore, effective July 1, 2011, the Research, Analytics & Systems Development Department has been split into two distinct departments: Research, Analytics & Reporting (RAR) and Systems Development & Maintenance (SD&M). The 34 Strategic Objectives/Projects identified by each of the Information Services Departments for FY 2011-2012 are listed in Table 1-2, with their respective Target Completion Dates.

Strategic Objectives	Target Completion Date
SD&M	
Support Completion-by-Design and Next Generation Learning Related Activities Challenge	June 2012
Enhance Colleague Functionality	June 2012
Enhance My Academic Plan Software	January 2012
Enhance/Maintain Custom Software	June 2012
Support Semesters Conversion Process	April 2012
Enhance Forms Central and Forms Control	January 2012
Support Business Operations	October 2011
Conduct Feasibility Studies and Support Software Evaluations	June 2012
Develop New Custom Software Applications	June 2012
ITS	
Virtual Server Host Management and Monitoring	April 2012
Datacenter Power Monitoring	June 2012
Disaster Recovery System Planning	June 2012
Mobile Communication Device Procedures	June 2012
Improved Administrative Security Controls	March 2012
Password Complexity	August 2011
Network Infrastructure Upgrades	December 2011
IPv6 Planning	June 2012
Systems/Network Procedure Improvements	June 2012
ShoreTel Reporting Software	March 2012
Fixed/Mobile Communication	April 2012
Wireless Network Needs Identification	December 2011

Figure 1-2. Strategic Objectives/Projects identified for FY 2011-2012.

Strategic Objectives	Target Completion Date
ITS - Continued	
Cable Television System Upgrade	December 2011
Multimedia Podium Expansion	May 2012
Help Desk System Update	December 2011
Fax Server	June 2012
Print/Copy Chargeback Expansion	June 2012
RAR	
Conduct a Comprehensive Augmentation and Realignment of RAR Resources and Services to Better Support Institutional Decision Making	June 2012
Support <i>Completion-by-Design</i> and Other ' <i>Completion Agenda</i> ' Related Activities	June 2012
Support Enhancement of <i>My Academic Plan</i> Software	January 2012
Support Semester Conversion Process	April 2012
Conduct Data Quality, Validation and Collection Projects	December 2012
LIB	
LibGuides	September 2011
Improving Library Communication to All Students	December 2011
Discovery Layer Feasibility Study	June 2012

Figure 1-2. Strategic Objectives/Projects identified for FY 2011-2012 continued.

Detailed descriptions of these projects are provided in Sections 3 and 4.

Section 5 presents a look at technological change and its impact t on society.

NOTE: This document describes many important and necessary projects requested by various Sinclair organizations, all of which need to be accomplished at some point. However, due to the enormous resource demands resulting from the “Quarters-to-Semesters Conversion”, the continuing development of the “My Academic Plan (MAP)” application, and the “Completion By Design” grant, many of these projects may have to be delayed until next year.

Introduction

John Peterson in *The Road to 2015* stated:

You are living in the period of time that will produce more change for humanity than any previous era in history. It is a time of extraordinary importance that will fundamentally reshape almost every aspect of your life during the next two decades. Wholesale change is taking place in almost every segment of your reality-and the pace will only increase in the coming years.

The latest buzzword/acronym making the rounds is VUCA. No, this is not a “Starwars” term; it stands for volatility, uncertainty, complexity, and ambiguity. It relates to how IT leaders must understand and manage fixed or decreasing budgets, constantly changing technologies, escalating compliance requirements, unpredictable demand, and increasing expectations by all stakeholders.

Many times the only alternative for the IT leader is an “educated guess” of what the future will be. Any delay could result in losing a competitive advantage or worse, a catastrophic failure.

The deeper meaning of each element of VUCA serves to enhance the strategic significance of VUCA foresight and insight as well as the behavior of groups and individuals in organizations.

- | | |
|------------------|--|
| V = Volatility: | The nature and dynamics of change, and the nature and speed of change forces and change catalysts. |
| U = Uncertainty: | The lack of predictability, the prospects for surprise, and the sense of awareness and understanding of issues and events. |
| C = Complexity: | The multiplex of forces, the confounding of issues and the chaos and confusion that surround an organization. |
| A = Ambiguity: | The haziness of reality, the potential for misreads, and the mixed meanings of conditions; cause-and-effect confusion. |

These elements present the context in which organizations view their current and future state. They present boundaries for planning and policy management. They come together in ways that either confound decisions or sharpen the capacity to look ahead, plan ahead and move ahead. VUCA sets the stage for managing and leading.

The particular meaning and relevance of VUCA often relates to how people view the conditions under which they make decisions, plan forward, manage risks, foster change, and solve problems. In general, the premises of VUCA tend to shape an organization's capacity to:

- Anticipate the Issues that Shape Conditions
- Understand the Consequences of Issues and Actions
- Appreciate the Interdependence of Variables
- Prepare for Alternative Realities and Challenges
- Interpret and Address Relevant Opportunities

At some level, the capacity for VUCA management and leadership hinges on enterprise value systems, assumptions and natural goals. A "prepared and resolved" enterprise is engaged with a strategic agenda that is aware of and empowered by VUCA forces.

The capacity for VUCA leadership in strategic and operating terms depends on a well-developed mindset for gauging the technical, social, political, market and economic realities of the environment in which people work. Working with deeper smarts about the elements of VUCA may be a driver for survival and sustainability in an otherwise complicated world

One of the more fearsome examples is Cybersecurity. All cyberdefenses today are just that—defensive. Everything we deploy to block external intrusions is predicated on what we know. Therefore, any change or nuance by a hacker will most likely go unnoticed until a serious problem has occurred. In most cases, the significance of the attack or data loss is not even known until a full investigation is complete, which could take days or even weeks.

In the current age of the Internet, the most significant threat for any organization is through its website(s) - 54% of data breaches last year occurred via the Web. With the large number of active Web applications today, organizations may experience costly attacks through seemingly unimportant sites.

Why is it so difficult to address these threats? The answer is VUCA. The environment continues to change, including the types of attacks, the sophistication of the attackers, and the lack of technical knowledge on the part of most users. Hackers are getting much more creative—hacks are no longer done for mere fun; they are now done for monetary purposes. Websites also change constantly, which exacerbates the possibility of new vulnerabilities.

No CEO wants his organization to grab headlines for becoming the next gawker—whose Website and backend database were published on the Pirate Bay Bit Torrent Site—or as a victim of Julian Assange's WikiLeaks devotees. In other words: any publicity is not good publicity. Sinclair needs continually improved, secure technologies that will differentiate us from the competition and help our students achieve their educational objectives.

**Major
Accomplishments
for
FY 2010-2011**

Major Accomplishments for FY 2010-2011

A variety of projects, large and small, were in process or initiated during FY 2010-2011. The overriding objective is to provide innovative processes for students, faculty, and staff. This section describes most of the more significant project accomplishments.

Research, Analytics, & Systems Development

Following are the Major Accomplishments for FY 2010-2011 for Research, Analytics & Systems Development:

- **Support Quarters-to-Semesters Conversion**
- **Rollout and Enhance My Academic Plan (MAP)**
- **Support Four Square Planning Process (performance scorecard)**
- **Enhance Colleague Performance**
- **Enhance Planning for Disaster Recovery**
- **Use Predictive Modeling to Support Decision Making**
- **Support Bookstore Processes**
- **Implementation of Selected Mobile Applications**
- **Continue Data Quality Validation and Collection (DQVC) Initiative**
- **Conduct Feasibility Study and Warranted Implementation of Automated Support for Tech Prep Office**
- **Feasibility Study and Warranted Implementation of Payment Gateway**
- **Support Processes of Marketing Department**
- **Support Processes of Student and Academic Support Services Department**
- **Conduct Feasibility Study for Replacement of Sinclair's Content Management System**
- **Implement First Phase of New Schedule Development System**

Support Quarters-to-Semesters Conversion

As of June 7, 2011, the Administrative Systems unit completed analysis of 91% (1180) of the total number of custom programs impacted by the semester conversion. There are approximately 114 custom programs yet to be evaluated. Monthly testing sessions have been scheduled with users from Advising, Bursars, Financial Aid, and Registration to validate functionality of the programs on the test semester system.

Administrative Systems completed the necessary programming to establish an electronic import process of semester course data from the Curriculum Management Tool (CMT) into Colleague. Using this new process the Registration and Student Records office has successfully imported 1,094 semester courses as of June 13, 2011. This represents more than 90% of the courses approved by the Office of the Provost. The remaining courses will be imported as the curriculum approval process is completed.

Web Systems supported the semester conversion process by:

- Creating bulk data transfer software that allowed courses in the quarter version of CMT to be automatically moved to the semester version. This software eliminated a significant amount of the manual data entry requirement for semester CMT.
- Creating software that provided academic leadership with the ability to electronically manipulate the pre-requisite/co-requisite syntax of quarter courses into the changed syntax for semester courses.

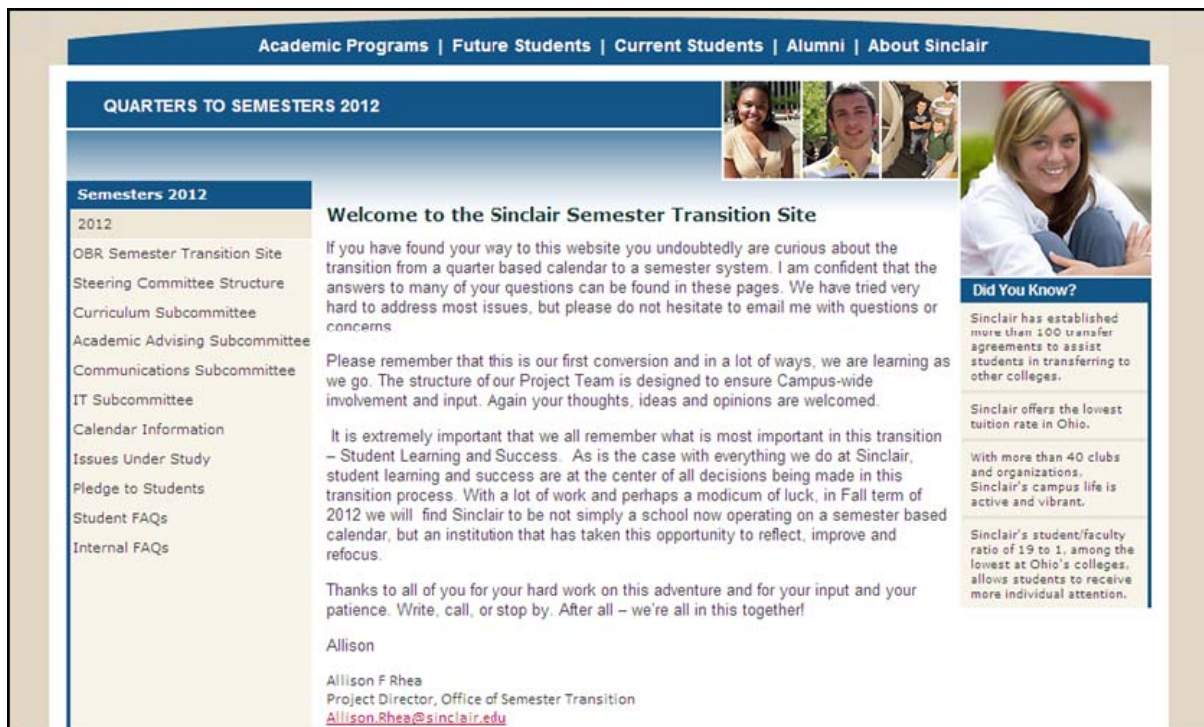


Figure 3-1. Web site supporting the quarters-to-semester transition.

Qualitative/Quantitative Return on Investment: In its University System of Ohio plan, the State of Ohio has actively embraced the semester calendar as the preferred choice for all of Ohio's publically supported higher-education institutions. Sinclair's primary transfer-out institutions have announced that they will be switching to the semester calendar. If Sinclair is to provide maximum flexibility and transferability for its students, this academic calendar transition is required.

Cost savings/Cost avoidance: Administrative Systems and Web Systems provide support for operational and custom developed systems. This support need will be ongoing regardless of Sinclair's academic calendar. Therefore, there is no specific direct cost savings within these units that will be attributable to the quarters-to-semesters conversion. In fact, the quarters-to-semesters process has resulted in the identification of several opportunities for custom programs development (e.g., MAP) that will improve the student's academic experience and will place additional requirements upon the staff within these units.

Target Completion Date: June 2011

Actual Completion Date or Current Status: April 2011

Semester conversion is a multi-year process with a target date of fall 2012 as the date for converting to a semester calendar.

Rollout and Enhance My Academic Plan (MAP)

All 2010-2011 aspects of this project have been met. The degree planning software to map individual student's academic plans has been created and moved to production. The software has been linked to the Course Schedule software to guide students in selecting MAP identified courses, and the registration step to allow MAP selected courses to be pushed to Colleague's shopping cart is currently in beta deployment.

Additional enhancements/facts relating to MAP include:

- In the first five months of production, over 5,500 MAP's have been created by advising staff and have been distributed to students.
- MAP is available to students in the Portal as a Single Sign On module. This feature allows expedited contact between the student and his or her advisor when changes to a MAP are required.
- Access to MAP has been extended to mobile devices.
- Tactical reports have been created to make aggregated MAP information available for academic planners.

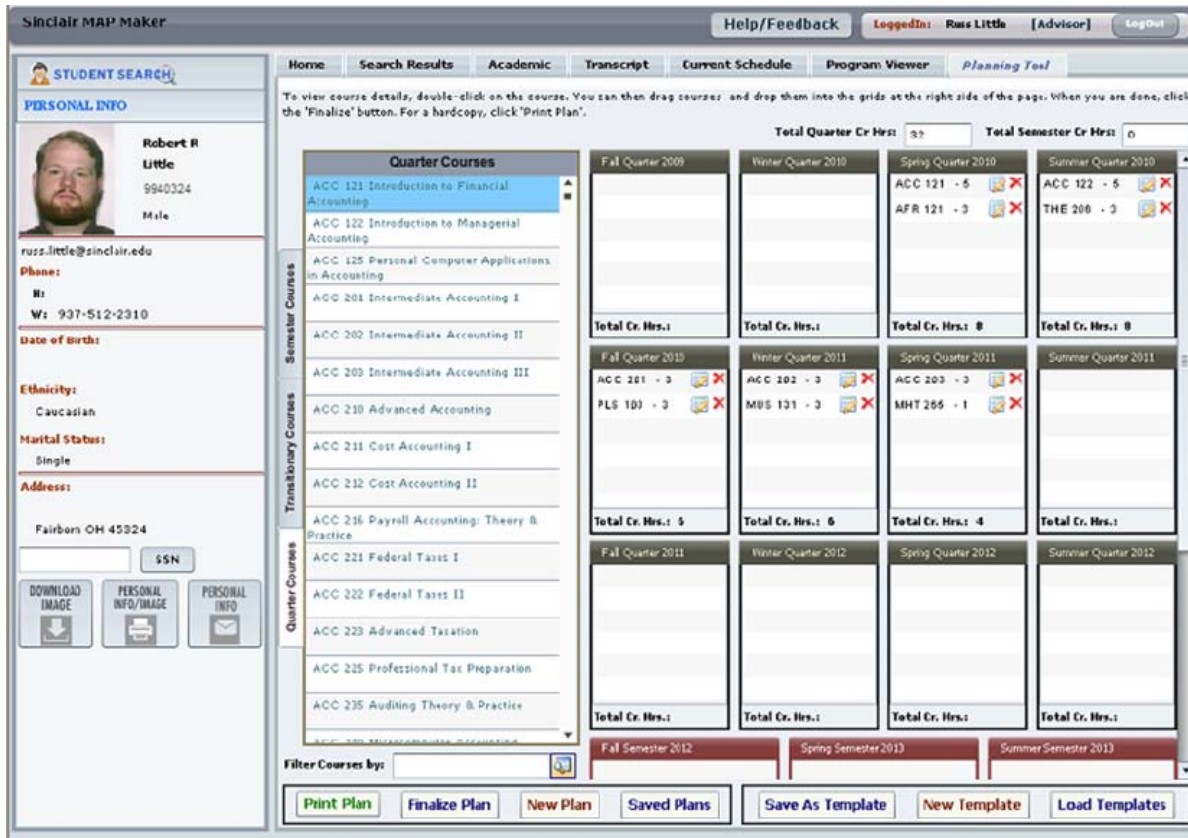


Figure 3-2. Prototype screen for My Academic Plan (MAP).

Qualitative/Quantitative Return on Investment: Educational research is consistent in the finding that goal expression and identification is a significant factor associated with persistence to a degree. As the project reaches full implementation, it is anticipated that a significant, positive increase in retention and degree completion will result.

Cost savings/Cost avoidance: It is not possible to place a precise quantitative value on this project. However, since a portion of state support of higher education is based upon successful program completion, and this project is specifically designed to increase degree persistence, expectations are that this project will result in a positive return to the college.

Target Completion Date: June 2011

Actual Completion Date or Current Status: January 2011

Full implementation of MAP is spread over two academic years. The next, and final, phase of MAP implementation will take place in FY 2011-2012.

Support Four Square Planning Process

Research Analytics and Reporting worked with executive leadership to collapse the current list of fifty-plus KPI's down to a manageable number that can be categorized within the Four

Square planning model. This work was not intended to be a finished product; rather, the goal was to provide an idea for a template on how future representations of KPI's could be categorized.

RAR staff completed and presented two overview reports for the President's Cabinet. These reports gave a state of what Sinclair knows in two areas - characteristics of students coming to us and facts about the student's experience while with us.

RAR staff worked with executive leadership to develop a plan for collecting constituents' ideas and insights on what performance metrics Sinclair should be measuring and reported back to these constituents. A draft plan entitled "Identifying the Right Questions - Integrating Priority Factors for Student Success with the Four Square Strategy Window" was created.

Qualitative/Quantitative Return on Investment: The qualitative return from this project is the enhanced channels of communications established both with internal and external constituencies.

Cost savings/Cost avoidance: There is no direct cost savings or cost avoidance associated with this project.

Target Completion Date: May 2011

Actual Completion Date or Current Status: February 2011

Enhance Colleague Performance

On February 18, 2011, per the request of Payroll and Human Resources, Administrative Systems modified the payroll checks to remove cumulative vacation and sick leave hours to support the leave request import process.

Administrative system successfully completed unit testing of the leave request import process in late January, 2011. On February 24, 2011, HR finalized their testing of the process and approved the scheduling of the rollout to the production system during the month of May, 2011. On April 26, 2011, Research, Analytics and Reporting deployed a process to schedule a nightly job to import leave data into the Colleague payroll module. This scheduled job included a feature to monitor a daily assessment of the job's successful completion.

Administrative Systems deployed the leave import process to the production system on May 1, 2011. The first successful import included 42 records to be modified.

Qualitative/Quantitative Return on Investment: In addition to the staff time savings associated with this project, it had the qualitative effect of increasing the accuracy of data entry and reduced the amount of rework required by faulty data entry.

Cost savings/Cost avoidance: This project removed the need for manual entry of leave data and thus freed up time for HR staff to devote to other duties. The time reduction will be equal to approximately ½ of an FTE per year.

Target Completion Date: November 2010

Actual Completion Date or Current Status: December 2010

Enhance Planning for Disaster Recovery

The goals of this project for FY 2010-2011 were subsumed under an ITS project of a similar nature. That project called for interviewing a broad-based cross-section of users and asking them to identify the critical computer resources they would need to use in a disaster situation. These interview responses were compiled, and an extensive list of computer resources was identified. This list will become the basis for the next level of discussion which will allocate an importance and a rank to each resource. The finalized list will serve as the guide for developing future disaster planning.

Qualitative/Quantitative Return on Investment: Not applicable, see ITS section of accomplishments.

Cost savings/Cost avoidance: Not applicable, see ITS section of accomplishments.

Target Completion Date: March 2011

Actual Completion Date or Current Status: See ITS section of accomplishments.

Use Predictive Modeling to Support Decision Making

One component of this project called for calculating the economic returns that graduates could expect upon graduation. Research, Analytics and Reporting completed the import of wage and employment data, acquired from the Ohio Department of Jobs and Family Services (ODJFS), for non-transferring Sinclair graduates over the last five years. These data were analyzed for academic programs where the number of graduates was sufficient to allow analysis without running the risk of individually identifying any one specific graduate. A report was prepared showing the ranking of post-graduation earnings for approximately thirty Sinclair programs. Not surprisingly, the report showed graduates in the health care field to be, on average, the highest post graduation earners. The data also showed that wage and employment data were available for approximately 80% of graduates, leading to the conclusion that 20% of Sinclair graduates migrate out of state, or do not pursue employment immediately upon graduation, or are employed by agencies not required to submit employment information, such as the federal government.

During this plan year RAR updated a study first conducted in 2008 that analyzed the key factors in online course success. Due to the infancy of the data warehouse initiative, the fall 2008 study was limited solely to Colleague enrollment data. The updated study was able to tap into actual student performance data available through the learning management system; and consequently, the study identified a set of much more actionable characteristics over which faculty and advising staff may have some degree of influence. For example, one

success related factor identified was the duration and quantity of online sessions. Having this information now opens the possibility of influencing student success by proactively contacting students when their online activity falls below a certain threshold.

Qualitative/Quantitative Return on Investment: In an era of reduced state support for higher education, it is not possible to identify actual funding increases that are associated with increased FTE's realized through predictive modeling efforts. However, it is clear that increased FTE's are Sinclair's fundamental measure of growth and that growth is used by state funding agencies as the benchmark for measuring mission attainment.

Cost savings/Cost avoidance: Many predictive modeling efforts are focused on the goal of retaining students who are already associated with Sinclair, either as an engaged student or as someone who has completed the registration process. In both cases, the cost of retaining the connection with actual individuals is significantly lower than the cost of trying to entice unknown individuals to apply.

Target Completion Date: June 2011

Actual Completion Date or Current Status: June 2011

Support Bookstore Processes

One component of this project involved exploring alternative ways of transferring financial aid credits to the Bookstore. Past practice has depended upon the Bookstore point-of-sale (POS) system having software code that allows for a real-time query to Colleague to confirm the availability of financial aid funds to pay for books. An alternative could be to transfer financial aid credits to some type of personal card and to have students bring this card to the Bookstore in order to complete financial aid purchases. Consequently, during this plan year Administrative Systems orchestrated several meetings with our student card vendor to review their products for transfer of funds. No decision has been made with respect to moving to this fund transfer method, but further study is included as an item in next year's activities.

The screenshot displays the Sinclair Schedule Planner interface. At the top, a warning states: "This is only a planning tool, you must register for classes by using WebAdvisor or in person." The main content area is for the course "ACC 201 - Intermediate Accounting I".

Course Description: Accounting theory and practice relating to financial statement preparation and select asset accounts such as cash, 3 credit hours. Prereq: ACC 113 and ACC 115 or ACC 122 or ACC 125.

Booklist for ACC 201:

Item	Author	Ed.	Yr.	New Price	Used Price
PKG/INT ACCT W/PARTY PRACTICE SET (REQUIRED)	KIESO	13	10	\$225.33	\$169.00
ISBN: 978-0-470-90692-7 Section: 01					
PKG/INT ACCT W/PARTY PRACTICE SET (REQUIRED)	KIESO	13	10	\$225.33	\$169.00
ISBN: 978-0-470-90692-7 Section: 50					

Sections for ACC 201:

Synonym	Sec	Class Time	Days	Location	Instructor	Status
0148758	01	11:00AM-12:15PM	TR		Govan	OPEN
0148759	50	05:30PM-06:45PM	TR		Govan	OPEN

The interface also includes search options (Quarter: Fall Quarter, Keyword: , Section Format: In Person Only), a subject list (ACC - Accounting is selected), and a location dropdown (Sinclair Dayton Campus).

Figure 3-3. Screen shot of course scheduling tool with book cost interaction.

Another alternative to the POS/Financial Aid connection is the possibility of replacing the current POS code with procedures and other coding that removes the existing interface. In examining this option, Administrative Systems sought input from schools using batch processes between Colleague and the Bookstore POS. Anne Arundel Community College provided information on their home built processes. Administrative Systems, using the information from Anne Arundel, drafted specifications which defined a batch process to transfer data between the POS and Colleague. At this time this alternative does not appear to be a viable option due to the number of procedural changes it would entail.

Qualitative/Quantitative Return on Investment: Administrative Systems was instrumental in convincing the Bookstore to install a test environment for its POS system. This test system has been determinate in delaying installation of a faulty version of the POS software into the production environment, thus avoiding the business disruption such an installation would have caused.

Cost savings/Cost avoidance: There is no direct cost savings associated with this project. The project's value is in the enhanced service experienced by students.

Target Completion Date: June 2011

Actual Completion Date or Current Status: June 2011

Implementation of Selected Mobile Applications



Figure 3-4. Prototype display of the course schedule mobile application.

All of the mobile features identified in the FY 2010-2011 plan were put into production. There was one notable addition – a MAP feature for mobile devices. This feature allows students to review their academic plans and to identify and communicate with their advisors. The mobile applications introduced this past year include:

- Schedule Planner
 - Search courses by keyword, department, location and course format
 - Displays required books with ISBN's and pricing for both new and used options
 - Uses the same data services as the main web schedule and requires no additional maintenance to keep up-to-date
- My Current Schedule
 - Password-protected tool that retrieves a student's current schedule
 - List course times, locations, and links to course descriptions and book information
 - Features the ability to email the schedule to the student's account
- My Current Booklist
 - Password-protected tool that retrieves a student's current book list
 - Displays required books with ISBN's and pricing for both new and used options
- Program Viewer
 - Allows the lookup of Sinclair programs of study by academic division and keyword
 - Pulls data directly from CMT so all data is accurate and no additional maintenance is required
- Employee Directory
 - Keyword-based employee directory that lists title, location, phone number and email address

Qualitative/Quantitative Return on Investment: Students expect services to be delivered via mobile devices: this project directly meets that expectation. Furthermore, since Sinclair's mobile strategy has focused on the development of web-based, mobile services, the strategy has the added benefit of being available to the broadest range of currently-existing devices.

Cost savings/Cost avoidance: Providing mobile services cannot be avoided; mobile applications have become a foundation service expected by students. Therefore, there will be additional development costs continuing into the future. However, since Sinclair has adopted a mobile strategy that focuses on developing web-based applications, it will be possible to leverage the developed skills of existing staff to meet these needs. Additionally, development skill will not run the risk of becoming obsolete depending upon the market success of a particular mobile device.

Target Completion Date: June 2011

Actual Completion Date or Current Status: February 2011

Continue Data Quality Validation and Collection (DQVC) Initiative

The screenshot shows the 'our.Sinclair' intranet interface. At the top, there is a search bar with the text 'Enter Search' and a dropdown menu set to 'Entire Site'. Below this, the user 'terri.dillon' is logged in. The main heading is 'Employee Directory'. A navigation bar includes links for 'Home', 'Directory', 'Links', 'Tools', 'View', 'Help', and 'Logout'. A search filter is set to 'Administrative Systems'. The results section displays a table of 8 employees in the Administrative Systems Department.

Name	Title, Department	Location	Phone
Administrative Systems (Fax: 512-3254)		13023	512-2114
Clark, Michael	Sr Programmer/Analyst Administrative Systems	13023J	512-2774
Dean, William	Manager Administrative Systems Administrative Systems	13023M	512-2837
Khan, Muhammad	Applications Admin Administrative Systems	13-023-F	512-3355
LeVan, Don	Sr Programmer/Analyst Administrative Systems	13023C	512-2906
Perel, Lana	Sr Programmer/Analyst Administrative Systems	13023	512-3220
Schaefer, Valerie	Sr Programmer/Analyst Administrative Systems	13023K	512-4111
Shoenleben, Cindy	Enterprise Applications Administrator Administrative Systems	13023E	512-2156
Wood, Sue	Sr Programmer/Analyst Administrative Systems	13023L	512-3071

At the bottom of the results section, there are three buttons: 'Add Employee', 'Update Employee', and 'Update Department'. Below the table, there is a footer with contact information: 'Send comments and suggestions to: webteam@sinclair.edu. © 2006 Sinclair Community College All Rights Reserved. [Privacy Statement](#) | [Security Policy](#) | [Emergency Procedures](#) | [Contact Us](#) | 1-800-315-3000

Figure 3-5.: This screen shot is just one of several directory information screens evaluated by the DQVC unit.

This project called for the unit to continue to tackle data problem areas. Some activities completed during this plan year include:

- During the plan year it became apparent that additional systems would need to be put in place to keep track of faculty credentials, especially as these credentials relate to program accreditation. As a consequence, the DQVC unit, working with Human Resources and Administrative Systems, developed new processes to capture and report on faculty credentials. These changes were moved into the Colleague and Data Warehouse production environments in May 2011.
- New survey scanning software was purchased last year at the same time that new scanning equipment was acquired. This software and equipment has allowed the DQVC unit to change survey processing practices and has reduced the overall processing time for student opinion surveys from approximately twelve weeks down to four weeks after the end of a quarter. In addition, the new practices allow handwritten

comments now to be captured electronically and delivered back to faculty within the same four week time limit.

- The DQVC unit has been able to bring a fresh perspective to all sponsored billing practices performed within the Bursar's office and is on the cusp of making recommendations for implementing alternatives to these practices.
- DQVC has performed analysis and made updates to the processing of directory information. The unit's recommendations were placed into production in late 2010 with the result that all campus wide directories now draw upon the same source data and present the same results to end users.

Qualitative/Quantitative Return on Investment: The underlying premise of the DQVC unit is to improve the quality of data collection efforts and to improve the efficiency of data analysis. Each of the unit's accomplishments listed above are directly associated with these goals.

Cost savings/Cost avoidance: Support for accreditation is one concrete area in which the unit's contribution has directly supported cost avoidance. Accreditation is the underpinning of many academic programs and is the quality certification that attracts students to those programs. To the extent that DQVC directly enhances accreditation, the unit directly supports program enrollment.

Target Completion Date: June 2011

Actual Completion Date or Current Status: June 2011

Conduct Feasibility Study and Warranted Implementation of Automated Support for Tech Prep Office

This project called for a systems analysis of the office record keeping processes and data storage needs with the goal of designing replacement systems that will streamline office operations and improve data integrity. This analysis resulted in the following actions:

- Web Systems built a new site for new students in Tech Prep to login based on which classes they are enrolled in.
- Web Systems built a new site for students to register in the Tech Prep system. This site allows for accurate student information to be reviewed by the student before submitting the information to a school coordinator.
- Web Systems built a new site where the Tech Prep coordinator logs into the system through an administration page and verifies the information that the student submits and is able to make any changes to the data.
- Research, Analytics and Reporting (RAR) built processes to place all of the information entered through the new sites into a database where it is connected to enrollment information extracted from Sinclair's ERP.

- RAR created validation reports that are returned to the Tech Prep coordinator and the participating high schools.

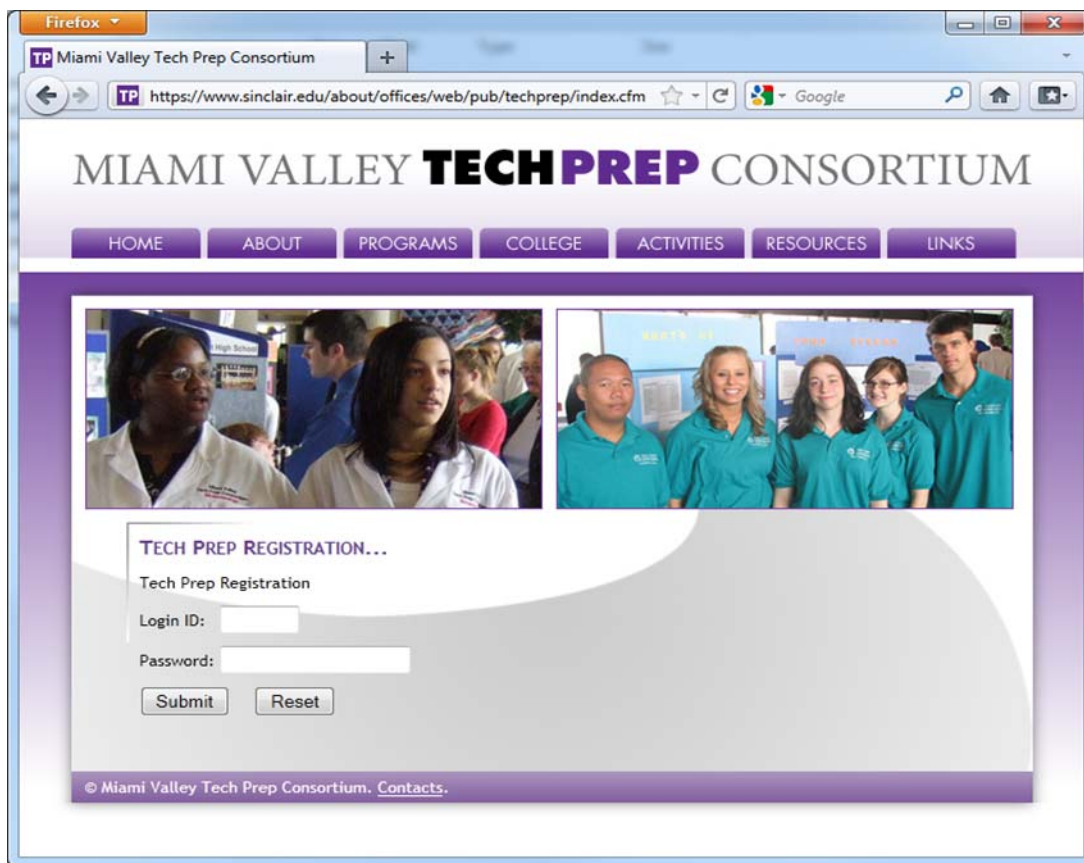


Figure 3-6. Miami Valley Techprep Consortium login screen.

Qualitative/Quantitative Return on Investment: The Tech Prep program has over 5,000 active participants, and it has grown to a size that outstrips the capabilities of its existing record keeping system. These enhancements have alleviated some of the office's record keeping burden, but, more importantly, these changes have set the stage for incremental technological changes in the future that will support continued growth in the program.

Cost savings/Cost avoidance: This project has removed the need to hire additional record keeping staff within the Tech Prep office.

Target Completion Date: November 2010

Actual Completion Date or Current Status: January 2011

Feasibility Study and Warranted Implementation of Payment Gateway

Administrative Systems researched and determined the data elements necessary for an automated import of non-AR account transactions into the Colleague system. On May 2, 2011, Administrative Systems successfully tested the acceptance of Colleague Web Advisor payments using the Official Payments gateway services. This test demonstrated that Official Payments could directly replace the existing PayPal/VeriSign services. Final testing and debugging of the import process and reporting of the data are currently underway, and the move to Official Payments as Sinclair's payment gateway is expected to go into production in July 2011.

Qualitative/Quantitative Return on Investment: The movement to Official Payments will increase the annual processing fees paid by the Bursar's office. However, these increased fees will be offset by the flexibility that this vendor will supply. For example, unlike the current payment gateway, Official Payments does not require that an individual be set up as an entity within the ERP system before the payment gateway can be used. Using Official Payments, Sinclair will be able to consolidate multiple payment venues (e.g. theater box office, child care center) under one system.

Figure 3-7 Web page showing account setup screen for Official Payments.

Cost savings/Cost avoidance: There is no cost savings and/or cost avoidance associated with this project.

Target Completion Date: December 2010

Actual Completion Date or Current Status: June 2011

Support Processes of Marketing Department

During this plan year, monthly coordination meetings were established between the Marketing Department and Web Systems. The purpose of this regularly scheduled meeting was to insure collaboration between unit efforts and to improve communication of upcoming work requirements and expectations.

One specific change took place when Web Systems evaluated the features of new content management software to determine how this software would support the “News and Calendar” feature managed by Marketing. Modifications were made to the news system to allow distribution to more outlets and target specific audiences. Changes to the calendaring system have also been made, and as soon as Marketing has had an opportunity to fully evaluate these changes they will be moved into production.

One specific advantage from this project and the increased level of coordination between Web Systems and Marketing is the tighter linkage that now exists between Marketing’s planning and Web Systems’ allocation of resources to support these plans. For example, two specific Marketing generated goals are being included in the IT Master Plan for the upcoming year – expansion of the online application to support dual admissions and implementation of a new content management system that will allow consolidation of the information found on both my.sinclair.edu and our.sinclair.edu.

Qualitative/Quantitative Return on Investment: Web Systems can be viewed as supplying the web tools and content building blocks upon which Marketing designs a consistent and compelling message about Sinclair. Consequently, the goals and directions of each office need to be in sync. This project, especially the monthly coordination meetings, has gone a long way in supporting this synchronization.

Cost savings/Cost avoidance: There is no cost savings and/or cost avoidance associated with this project.

Target Completion Date: June 2011

Actual Completion Date or Current Status: June 2011

Support Processes of Student and Academic Support Services Department

Perhaps the most significant accomplishment under this item during the plan year was the acquisition of grant funding to allow for the movement of Student Success Plan software to an open-source model. Funding was received from the EDUCAUSE Next Generation Learning Challenge program to transition all future software development to an open-source community of uses. This model will expand the number of programmers who can create features within SSP and will make the efforts of these programmers available to any institution, including Sinclair, adhering to the open-source model. This move assures the long-term existence of the software, without placing an onerous support burden upon Sinclair as the originating institution.

Another example of activity within this item is the fact that a new version of MyGPS is to be delivered to Student and Academic Support Services on June 30, 2011. This version includes features such as giving students the ability to create a personal success road map, access and respond to Action Plan suggestions created by a coach, and creating free form action items. Coaches now have the ability to gain feedback from students online and can more easily track action plans and roadmaps. The system has been modified to allow true “distance-learning” students, those who never come to campus, to access the software and make use of its success features just the same as face-to-face students.

Qualitative/Quantitative Return on Investment: Research is clear when it shows that students who know and accept an academic plan are more likely to persist in degree completion. MyGPS is explicitly designed to support the development and communication of plans.

Cost savings/Cost avoidance: The Next Generation Learning Challenge grant to Sinclair was for \$250,000 to cover the costs of creating an open-source consortium to disseminate Student Success Plan software.

Target Completion Date: January 2011

Actual Completion Date or Current Status: June 2011

Conduct Feasibility Study for Replacement of Sinclair’s Content Management System

MURA CMS, an open-source product, has been selected as the replacement for Sinclair’s current, locally-managed, content management system. Even though the software is open-source, there are a number of vendors who have entered the market of providing support for MURA CMS; consequently, Sinclair will have external resources that can be called upon to address implementation issues as the software is moved into production. During this plan year, the software was used to support a mockup of the current our.sinclair.edu system in order to confirm the appropriateness of the software for Sinclair’s environment. This mockup performed within requirements and, in many cases, provided features beyond the capabilities of the software currently in use. A rollout of MURA CMS into production is planned for the upcoming year. Additionally, the rollout will incorporate both the my.sinclair.edu and the our.sinclair.edu content into this one system.

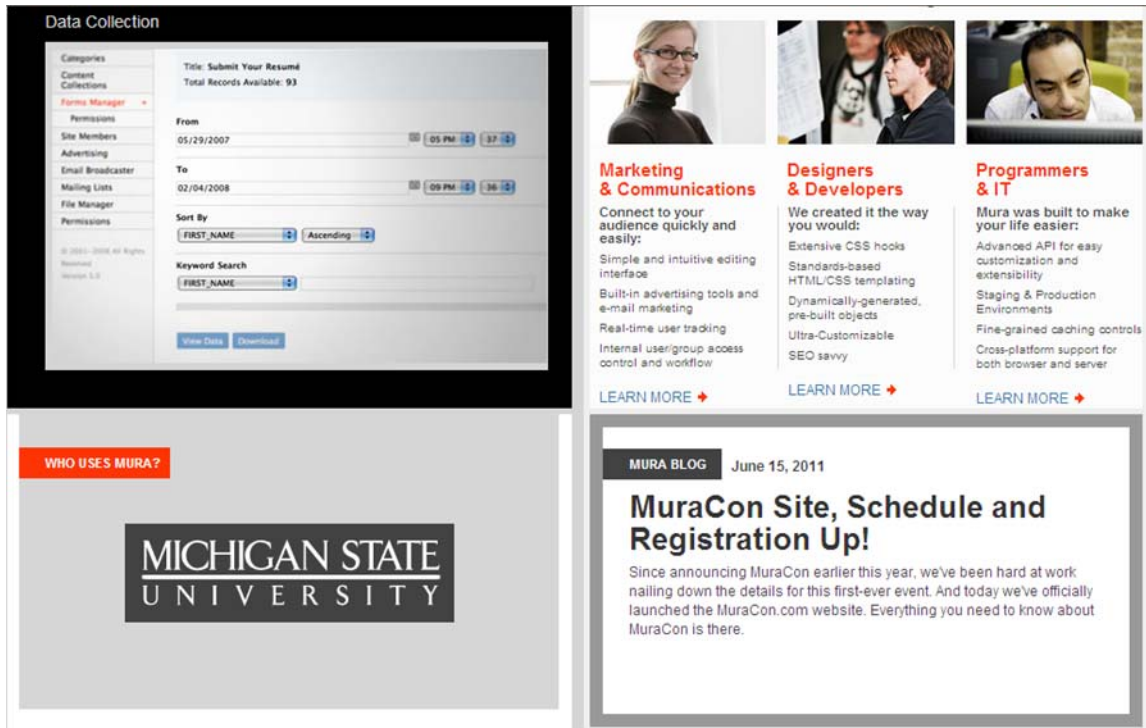


Figure 3-8. Screenshot showing features and users of MURA open source CMS.

Qualitative/Quantitative Return on Investment: An institution the size of Sinclair will always face the challenge of conveying a consistent and accurate message to its various constituencies. A robust content management system with features that allow targeting of content to specific users is a vital tool to assist in this critical communication task.

Cost savings/Cost avoidance: The combination of my.sinclair.edu and our.sinclair.edu will eliminate some redundancy from the web management process. However, the combination will also introduce the added complexity of needing to manage which sets of information are to be made available to which client categories. It is expected that the overall management requirements will not change, and thus, there will be no net savings realized from the change.

Target Completion Date: June 2011

Actual Completion Date or Current Status: June 2011

This project links with the FY 2011-2012 project calling for the movement of the content management system into production.

Implement First Phase of New Schedule Development System

The first phase of a new schedule development system involves developing the programming and procedures that will allow use of an Excel spreadsheet as the source document for loading scheduling information into the Colleague ERP system. If such a document can be used, then the communication between Registration and Student Records and the academic planning

offices can be conducted using the Excel tool; and once finalized, the approved information can be imported directly into Colleague without need for manual data entry. This change would place the planning communication within a known environment for the academic departments and would remove the potential for data entry error within Registration and Student Records. Administrative Systems has successfully conducted tests demonstrating Excel data can be directly imported into Colleague. Some changes in practice are required, specifically on how days of the week are coded; but with these minor changes, the import process has been shown to work. Administrative Systems has met with Registration and Student Records to work out other procedural questions, such as handling the duplicate entry of courses on the Excel spreadsheet.

The Registration staff will use this method of importing courses for the first time in the production environment during the fall 2011 term.

Qualitative/Quantitative Return on Investment: The schedule development processes will significantly improve the quality and scope of information returned to academic planning offices for all iterations of schedule development. Data will be entered quickly into the Colleague system, and consequently, iterations can start with a complete, fresh representation of information already entered within the ERP.

Cost savings/Cost avoidance: The direct cost savings of this project is that it removes all of the manual rework that is required when bad data is entered into Colleague. Due to the nature of how Colleague files are structured, erroneous data automatically updates throughout several critical files. Removal of these updates is an onerous and time-consuming effort. If errors can be caught prior to the Colleague load, (i.e., while still in the Excel spreadsheet) the amount of manual intervention is reduced by a factor of four.

Target Completion Date: June 2011

Actual Completion Date or Current Status: June 2011

This project links with the FY 2011-2012 project calling for the development of phase two of the schedule development process.

Information Technology Services

Following are the Major Accomplishments for FY 2010-2011 for Information Technology Services:

- **Data De-duplication**
- **Backup Software Replacement**
- **Digital Asset Management System Replacement**
- **Security Information and Event Management (SIEM) Implementation**
- **Guardian Replacement**
- **Virtual Desktop Infrastructure**
- **Storage Area Network Upgrade**
- **Network Access Control Improvements**
- **Data Center Network Upgrades**
- **Disaster Recovery Resiliency**
- **Multimedia Classroom Standardization**
- **Cable Television System Replacement**
- **Equitrac Expansion**
- **Copier Management**
- **Windows 7 Implementation**
- **Disaster Recovery System Identification**
- **Investigate Centralization of Plato Data**
- **Office 2007 Upgrade**
- **PC Update Improvements**
- **Internal Network Vulnerability Assessment**
- **Exchange 2010 Upgrade**
- **Help Desk CTI Implementation**

Data De-duplication

Data De-duplication is the process of eliminating duplicate or redundant data to improve storage utilization. De-duplication identifies identical sections of data and replaces them with references back to a single copy of the data. De-duplication is able to reduce the required storage capacity as only the unique data is stored.

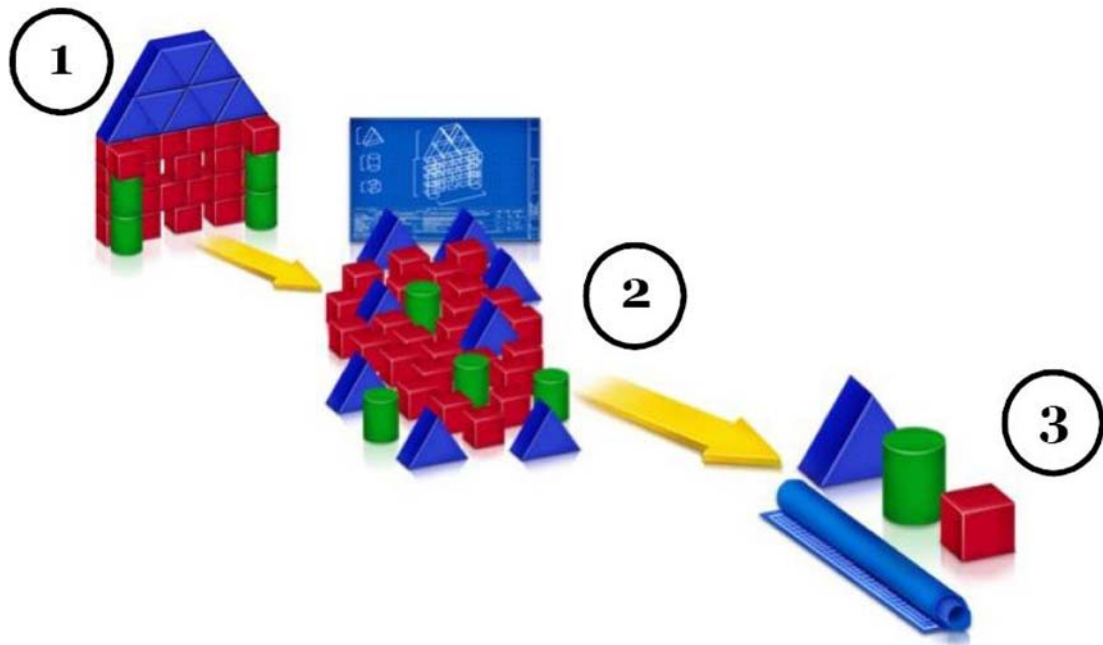


Figure 3-9. De-duplication eliminates redundant data and reduces storage needs.

Recent studies have shown over 80% of data is duplicated across production servers in an enterprise environment. Data de-duplication offers the college an opportunity to dramatically reduce the amount of storage and bandwidth required for enterprise applications and backups. It saves only a single copy of duplicated content resulting in reduced bandwidth and storage requirements as well as shortened backup times.

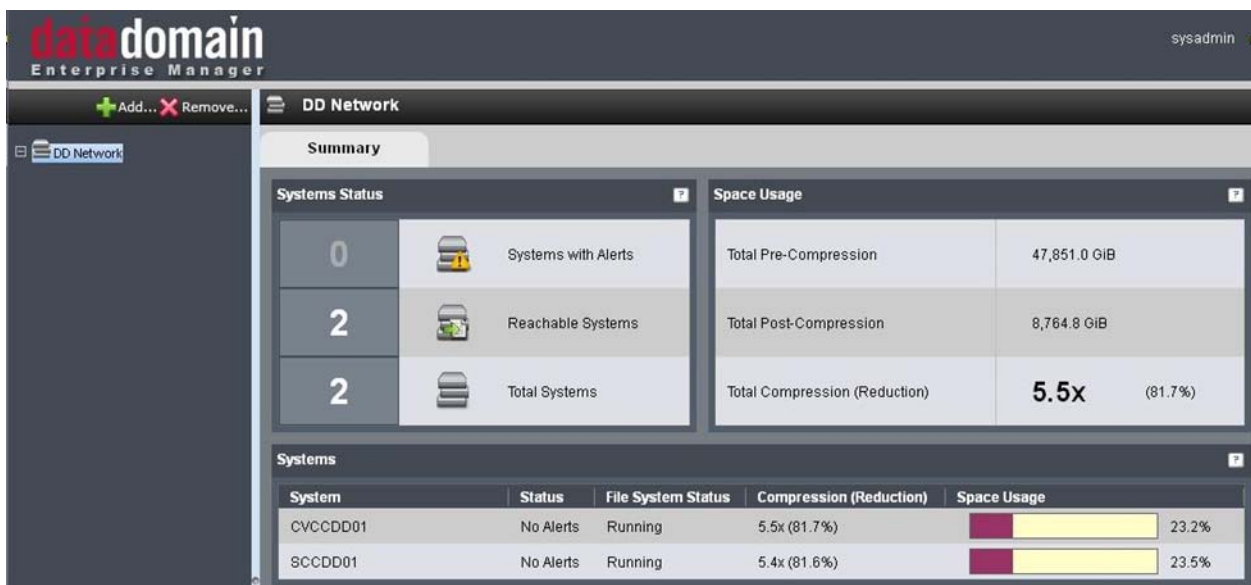


Figure 3-10. Data Domain Management Console.

The initial purpose of this project was to select a de-duplication vendor and implement their solution during FY 2011-2012. Due to the overwhelming benefit that ITS saw in data de-duplication it was determined that priorities should be rearranged so that the solution could be implemented this year. EMC Data Domain DD670 de-duplication appliances were selected and implemented as a disk backup and replication solution. All of Sinclair's servers are now backed up to the Dayton appliance and automatically replicated to the Courseview disaster recovery center's appliance. This provides ITS with the ability to restore data accurately and efficiently, at both locations, with minimal staffing.

Qualitative/Quantitative Return on Investment: The greatest benefits are the improvements in availability of data for routine file recoveries and disaster recovery. Cost savings are achieved through the need to purchase less hardware and tape media. Increased productivity is realized due to employees spending less time on backups, restores, and tape media management and troubleshooting.

Cost Savings/Cost avoidance: De-duplication lowers storage requirements and the number of tapes required to backup that storage. It also shortens backup/recovery times since there is far less data to transfer. With de-duplication, the college will save approximately \$3,000 per year in tape media purchases. Additionally, future storage requirements and the associated costs will be significantly reduced.

Target Completion Date: June 2011

Actual Completion Date or Current Status: June 2011

Backup Software Replacement

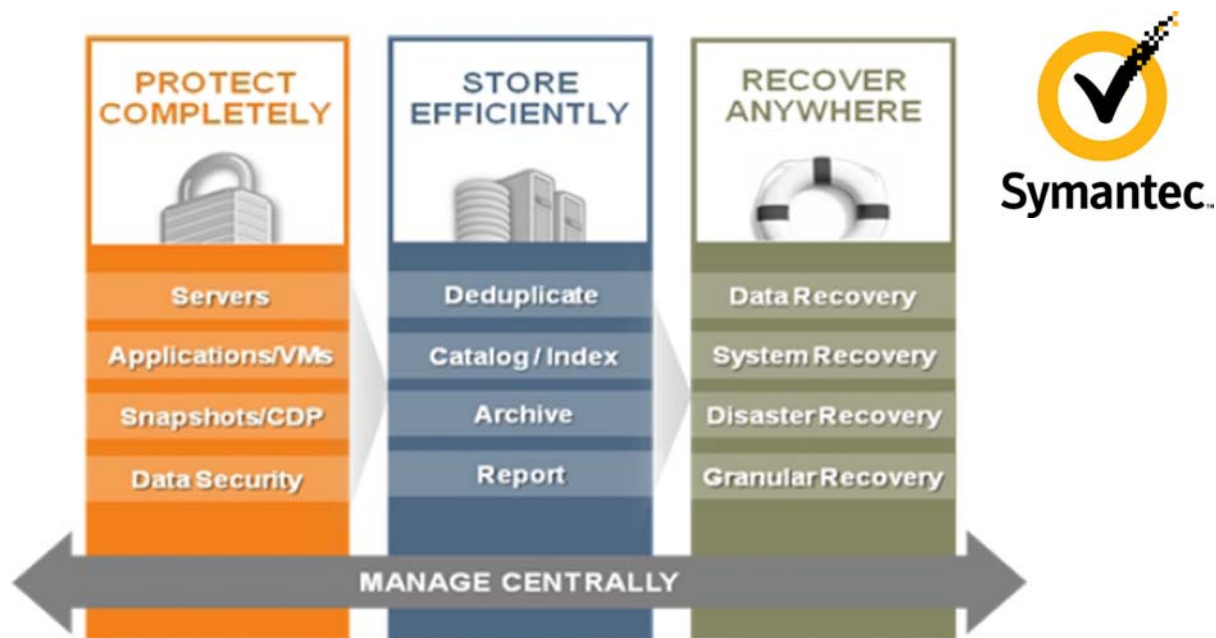


Figure 3-11. Backup Software Replacement Goals.

Information Technology Services has been utilizing the same backup methodology and technology for the past seven years. With the college's continued growth comes the need for more storage, and in turn, more backups. With such a large amount of data to backup, our current backup technology has become inadequate. Recently, there have been exciting breakthroughs in backup technology specifically designed for large amounts of data, such as data de-duplication and replication. With these technologies in mind, ITS began looking for a reliable, secure, automated and scalable solution that can be centrally managed from Sinclair's Dayton campus.

The original purpose of this project was to select replacement backup software and look at implementation during FY 2011-2012. During our investigation of alternative backup vendors, we discovered that our backup software, Symantec Netbackup, is the system that is best suited to our needs. We opted to stay with Netbackup, but changed from a traditional licensing model to a capacity-based license model. This new model allows ITS to take advantage of de-duplication and replication technologies, and also provides increased flexibility in advanced backup configuration situations with no restrictions on the number of client, media, or master server installs.

Qualitative/Quantitative Return on Investment: De-duplication shortens backup and recovery times since there is far less data to transfer and lowers storage costs since fewer disks are needed. Replication will allow the college to recover quickly in a disaster situation as the Courseview campus will have up to the minute data replicated from the Dayton campus. There was no need to purchase Netbackup client licenses as we are now paying by the total number of terabytes protected instead of the number of clients.

Cost Savings/Cost avoidance: By keeping the same backup software and changing the license model ITS saved \$1,500 this fiscal year. The capacity license provides ITS with approximately \$19,000 in annual maintenance savings. Additional costs are avoided due to not having to buy licenses when additional servers need to be backed up as was previously the case.

Target Completion Date: May 2011

Actual Completion Date or Current Status: May 2011

Digital Asset Management System Replacement

In 2005, Sinclair's ITS department in partnership with Distance Learning, implemented "digistore.sinclair.edu", a Digital Asset Management system. This system enabled faculty and staff to store and catalog large documents, files, and rich multimedia content for sharing with students, faculty and staff as learning objects or stand-alone media files. Now five years later the servers that run Digistore are at the end of their useful life and are scheduled for replacement. This hardware replacement offers the opportunity to review the Digistore system's capabilities and to benchmark it against available products that may better meet the needs of Sinclair's students, faculty, and staff.

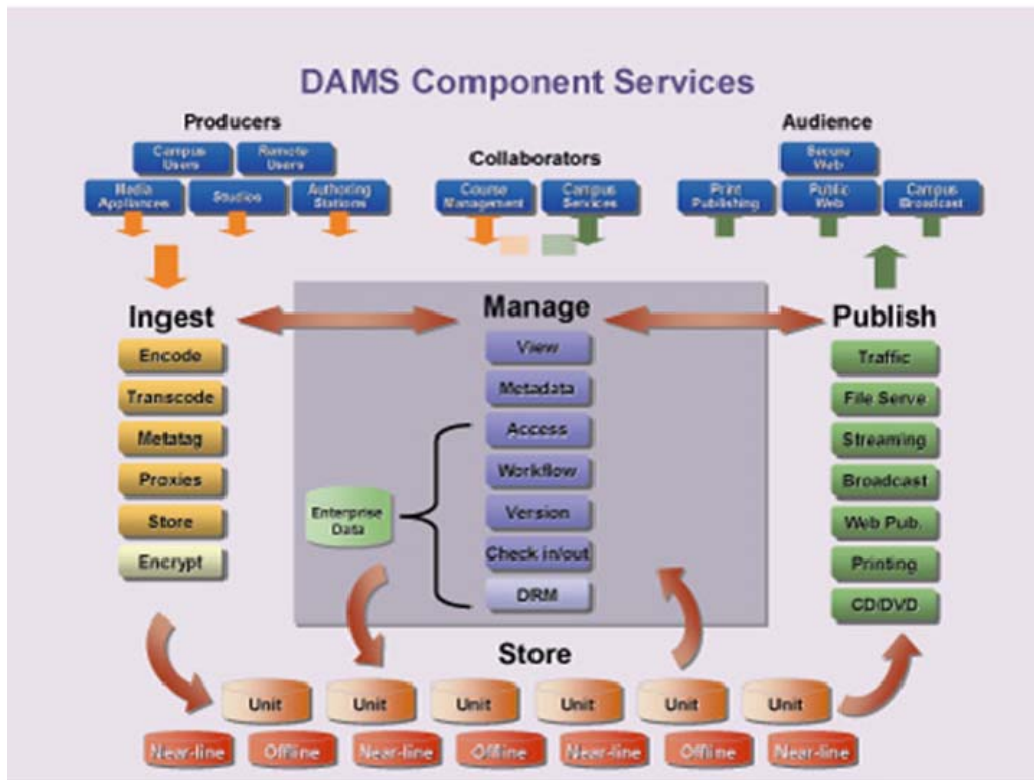


Figure 3-12. A logical view of a Digital Asset Management System.

ITS staff met with representatives from Distance Learning and discussed the capabilities of our current Digistore solution as well as reviewed a couple of the competing solutions on the market from Kaltura and Equella. The functions our current Digistore solution provides are as follows;

- A central repository for all types of digital assets, not just video files, that allows centralized a management and security of these assets. This system provides the infrastructure to store, catalog, index, search and deliver digital assets. We have pictures, power point presentations and documents currently stored in our system.
- Users are able to easily add digital media content to the system using “hot folders”. Copying media to these “hot folders” also encodes the media for streaming in QuickTime and Windows Media format. Centrally defined workflows within the system ensure the encoding is performed in a standardized format and quality.
- The ability to link a digital asset from the Digistore system to Angel, our Learning Management System. By linking streaming media specifically, this allows the content to stream from dedicated “streaming” servers and not use resources from Angel to display the content.

When we reviewed the functions provided by the current system as well as the features that the competitive products provide, we came to the realization that our current solution is satisfactory for today’s usage. However, our current system may not meet our future needs as we move to

more high definition (HD) content, mobile access, 3D video and “youtube” like functionality. Systems that provide for these future needs could potentially be realized synergistically with our current system. In other words, our current capabilities could be expanded by adding to our existing system rather than replacing it.

We will go forward with upgrading our current system in the summer of 2011 by purchasing new server hardware. We plan to further investigate future needs, and the capabilities of applications that could meet those future needs, such as those provided by Kaltura and Equella, with faculty members and Distance Learning staff beginning in FY 2011-2012. Any discussions of these future needs will be aligned with discussions concerning upgrades and/or updates to our current learning management system. We will target implementation of any new technologies and/or capabilities after semester conversion has been completed.

Qualitative/Quantitative Return on Investment: This project assisted in ensuring that the technology used to perform the storing and delivery of digital media meets the requirements of the college.

Cost Savings/Cost avoidance: Since this project was investigational in scope, there was no budget allocated, and therefore no cost savings or avoidance.

Target Completion Date: June 2011

Actual Completion Date or Current Status: June 2011

Security Information and Event Management System

The systems infrastructure required to support Sinclair’s faculty, staff and students is extremely complex and made up of many disparate systems and interconnected networks. To assist in monitoring, maintaining, and troubleshooting these systems, most of the individual devices and components within the infrastructure are capable of generating detailed activity logs. These logs are particularly useful for determining exactly what was happening (or not happening) on a system. However, these logs are generally long and detailed, and manually ‘parsing’ for useful information is very difficult; log storage and parsing also consume hardware resources such as storage and memory

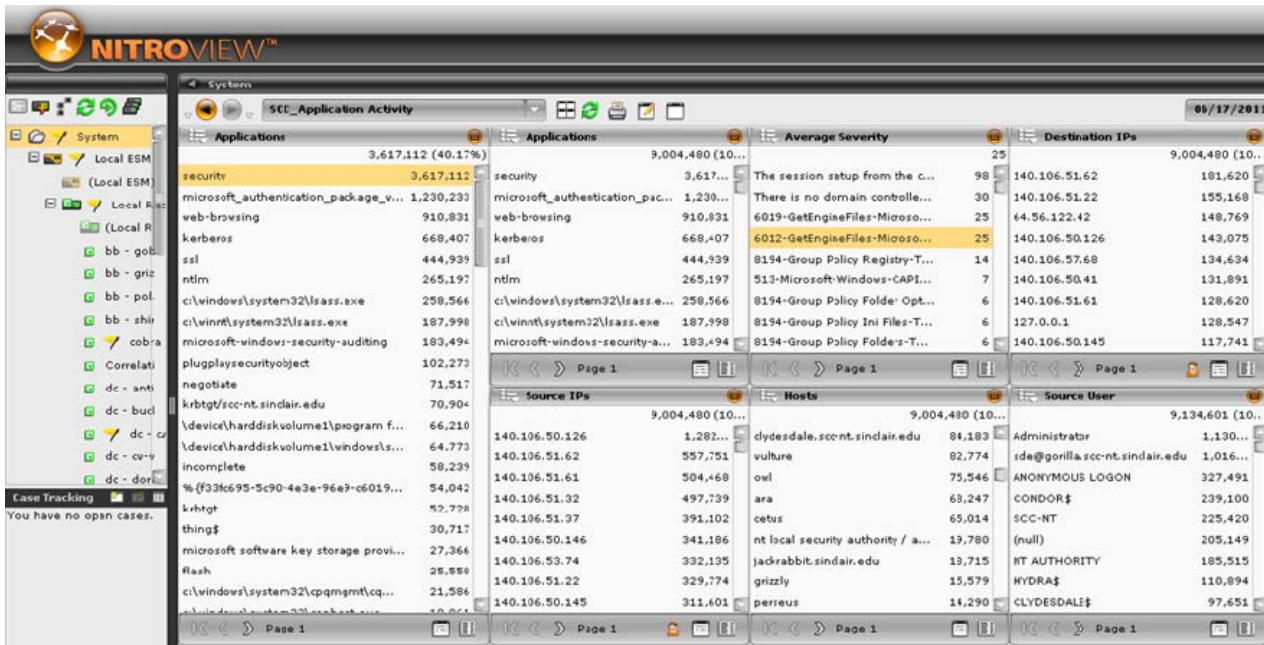


Figure 3-13. Sample Nitrosecurity SIEM “dashboard”.

This project involved implementation of a Security Information and Event Management (SIEM) system to assist in the collection and use of the event logs from the many systems that ITS manages. After a 2-year project to determine requirements and effective solutions, the Nitrosecurity ESM has been purchased and installed. The initial implementation has involved the collection and correlation of events from critical servers and other device logs. Continuing work is being done to develop event trigger rules and reports specifically tailored to compliance with PCI-DSS (Payment Card Industry Data Security Standards) rules. The complete implementation will result in automated monitoring and security information/event management across Sinclair’s IT infrastructure.



Figure 3-14. Nitrosecurity ESM Appliance.

Qualitative/Quantitative Return on Investment:

When an incident or issue involves multiple systems—as most do—the work involved in manually analyzing logs is nearly impossible. It is unrealistic and impractical to assign an individual to manually monitor systems logs around the clock looking for events or issues that might compromise compliance. Active log monitoring and management is also typically required by legislation, financial standards organizations, and other regulatory bodies.

Security Information and Event Management (SIEM) technology automates the log aggregation and correlation functions required to provide both real-time monitoring (to help detect/mitigate current issues) and historical reporting (for incident analysis/lessons learned) of logged events from networks, systems and applications. Effective SIEM implementation improves security operations, threat management and incident response capabilities. While the emphasis on these systems is generally security and compliance related, they are also very useful for troubleshooting and analyzing general system problems.

The SIEM implementation has also resulted in a shift of resources. Utilizing the SIEM as a log aggregator shifts the log storage and log parsing requirements from the production environment to a dedicated event monitoring environment. This has enabled ITS to enable more robust and detailed logging on critical devices such as domain controllers, which provides increased detail and visibility to security related events across the network infrastructure.

Cost savings/Cost avoidance: Cost savings primarily results from automated log/event management vs. manual workload on staff, reduced calls to third party vendors for troubleshooting devices, and cost avoidance of potential fines/penalties for non-compliance with regulatory log monitoring mandates.

Target Completion Date: June 2011.

Actual Completion Date or Current Status: Nitrosecurity ESM is installed and actively collecting event logs from all critical identity and authentication servers such as domain controllers, Microsoft (IAS) Internet Authentication Service and Internet Security and Acceleration (ISA) servers. Verbose logging has been enabled on all domain controllers and logs are being ported to the Nitro. Logs for all servers related to the Blackboard card transaction process are also being collected and correlated via the Nitro SIEM. ITS is currently working with the vendor to import Active Directory data to improve end-point visibility and customize rules for event alerting and notification. This will be an ongoing process to adjust to changes and advances within the IT infrastructure.

Guardian Replacement

This project involved researching and testing the UNIX interoperability components built into Windows Server 2008 with the goal of integrating the UNIX and Windows login process to achieve a single sign-on between these two systems. The UNIX integration components built into Windows Server 2008 reportedly has the capability to integrate UNIX Network Information Service (NIS) security and Windows Active Directory services.



Figure 3-15. Integrated single sign-on for Unix and Windows systems.

During our research we found that the UNIX integration components actually includes several capabilities that can be installed as individual features and/or roles in Windows Server 2008. We installed the “Subsystem for UNIX-based Applications” on a server but found that this did not provide the UNIX account integration we were looking for.

We then investigated the Windows server role of “Identity Management for UNIX” that provides three components; Server for Network Information Services, Password Synchronization, and Administration Tools. This set of roles provided a means to export UNIX NIS domain maps to Active Directory and synchronizing passwords between the Windows and UNIX systems, allowing users to just maintain one password for both systems. In addition, user accounts can be managed with a single set of Active Directory tools. While this was closer to what we wanted, it still used separate UNIX and Active Directory accounts, but the passwords could be synchronized between these two systems and could be managed from one management interface. However, it did not provide single sign-on capability and did not use Active Directory as the authentication mechanism.

We also investigated to see if S4 Software, the vendor of our current UNIX authentication product, S4Access, had a product that would integrate with Active Directory. This product was not an acceptable alternative as it uses the UNIX system as the main repository for user accounts, not Active Directory.

A product that may show promise is a HP product called “LDAP-UX Integration” for HP-UX. This software enables the LDAP directory to be used as a central service for HP-UX authentication and authorization. We have not tested this product, but ran across it during our research for this project. We plan to test this product in the next fiscal year.

Qualitative/Quantitative Return on Investment: ITS must continually evaluate the third party products that are used to ensure that we are using the most cost-effective solution for our

needs. The determination has been made that Guardian presently continues to be the best alternative for providing password control on the college's UNIX systems.

Cost Savings/Cost avoidance: Since this project was investigational in scope, there was no budget allocated.

Target Completion Date: June 2011

Actual Completion Date or Current Status: June 2011

Virtual Desktop Infrastructure

At the start of spring quarter 2009, a remote access solution utilizing Citrix XenDesktop went into production. At the time of implementation, the virtual desktops were installed within Sinclair's existing VMware virtual infrastructure. This project replaced the VMware virtual infrastructure with a Citrix XenServer infrastructure and moves all XenDesktop and XenApp components from the VMware environment to the XenServer environment.

There are several reasons for moving the XenDesktop environment to a XenServer infrastructure. One is that XenServer is optimized for Citrix XenDesktop and XenApp products so there are performance benefits in using an underlying XenServer architecture. In addition, there are some Citrix products that only work on XenServer and staying with VMware would limit our ability to use these new products. A third reason is that having a single vendor's products encompass the entire virtual desktop solution makes support calls more efficient and updates to the various products should be better integrated.

Eight new physical servers were installed in a XenServer cluster and Citrix XenCenter was installed to monitor and manage the XenServer environment.

The initial plan was to move the existing virtual desktops and XenApp servers to this new cluster; however, we have decided to install new virtual desktops into this environment as well as the latest edition of XenApp.

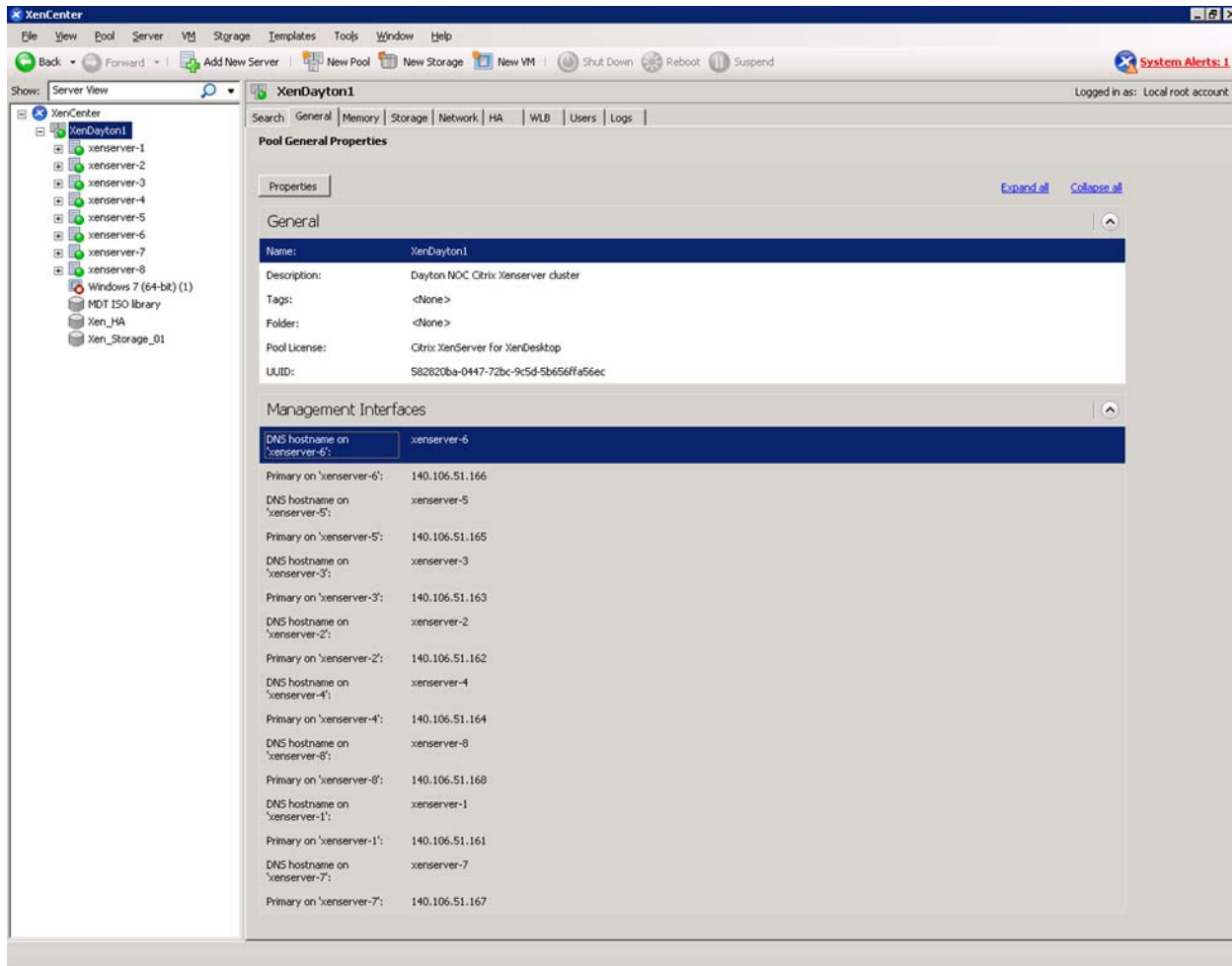


Figure 3-16. Citrix XenCenter.

The initial plan was to move the existing virtual desktops and XenApp servers to this new cluster; however, we have decided to install new virtual desktops into this environment as well as the latest edition of XenApp.

Qualitative/Quantitative Return on Investment: Running Citrix virtual desktops in a Citrix virtual server cluster will provide improved support and decrease conflicts that could make the system unavailable.

Cost Savings/Cost avoidance: By using licenses we have already purchased, we can scale out the XenDesktop environment more cost effectively, thus eliminated \$14,820 in VMware licensing costs for the first year and annual maintenance costs of \$4,544 in subsequent years.

Target Completion Date: December 2010

Actual Completion Date or Current Status: The eight server XenServer cluster has been installed and configured. We plan to install new virtual desktops and XenApp servers into the XenServer infrastructure over summer 2011.

Storage Area Network Upgrade

As referenced in the Storage Area Network R&R project completed in FY 2009-2010, this project involved replacing the HP EVA 5000 disk array installed in FY 2004-2005 with a new array using funds moved forward from the FY 2009-2010 R&R budget.

We met with vendors representing storage products from EMC, IBM, NetApp, HP, 3Par and Compellent to learn about their product offerings and the features and functionality of their products. We also met with some end-users of specific products to learn from their evaluation processes and experience with the products. After learning about the various product offerings, a RFP was developed specifying the size of the array along with specific questions about the technology behind each vendor's solution for the specific features and functionality Sinclair determined to be important.

Two of the specific technologies important to Sinclair were thin provisioning and data tiering. Thin provisioning is a technology where only the space being used is allocated, thereby minimizing wasted space in the storage array. Data tiering technologies monitor data usage to determine where that data should be stored. If data is not used often, it will be automatically moved to slower, less expensive disks. Conversely, if the data is used frequently, it will be automatically moved to the fastest disks in the array. Moving infrequently used data to lower-cost drives can save money by not having to purchase higher cost drives for this type of data, which historically has been the case prior to this technology becoming available.

The RFP was sent to all of the vendors representing the storage arrays listed above. After the RFP's were reviewed, the EMC VNX 5500/5300 storage arrays recommended by Advizex/ EMC were chosen.



Figure 3-17. EMC VNX 5500 Storage Array.

Early in this project, it was determined that it would be advantageous to Sinclair to fund the Data De-Duplication project using funds from this project if possible. It wasn't until we received the bid responses that we determined that this was possible and extra savings were realized since the Storage Array vendor and the Data De-Duplication vendor were the same (EMC). We were also projecting that the results of the Disaster Recovery System Identification project would necessitate the purchase of additional storage space at our Courseview Disaster Recovery site due to additional data and services needing to be recovered.

After receiving the bid responses, it was determined that we would be able to fund both of these projects from the current allocation. So a lower cost model EMC storage array, the VNX 5300, was purchased for the Courseview Disaster Recovery site. Although this device is a lower cost model, the usable disk storage space is the same (54 TB) as the storage array purchased for the Dayton campus. Both storage arrays have been installed, and this project is expected to be completed by the end of July, 2011. The Data De-Duplication devices have been installed and are functioning. A more complete description of that project can be found in this Master Plan.

This project also involved the purchase and installation of a Network Attached Storage (NAS) system. A NAS is one or more devices connected to an IP network that provides file based data storage services (i.e., share access) to users on the network. This provides higher performance and greater redundancy for the Angel File Server, departmental and academic shares, and user home directories. Of particular importance, replacing the single Angel file server with the NAS provides redundancy for this function and eliminates the file server as a single point of failure in the Angel system. The Angel file system was migrated to the NAS in December 2010.

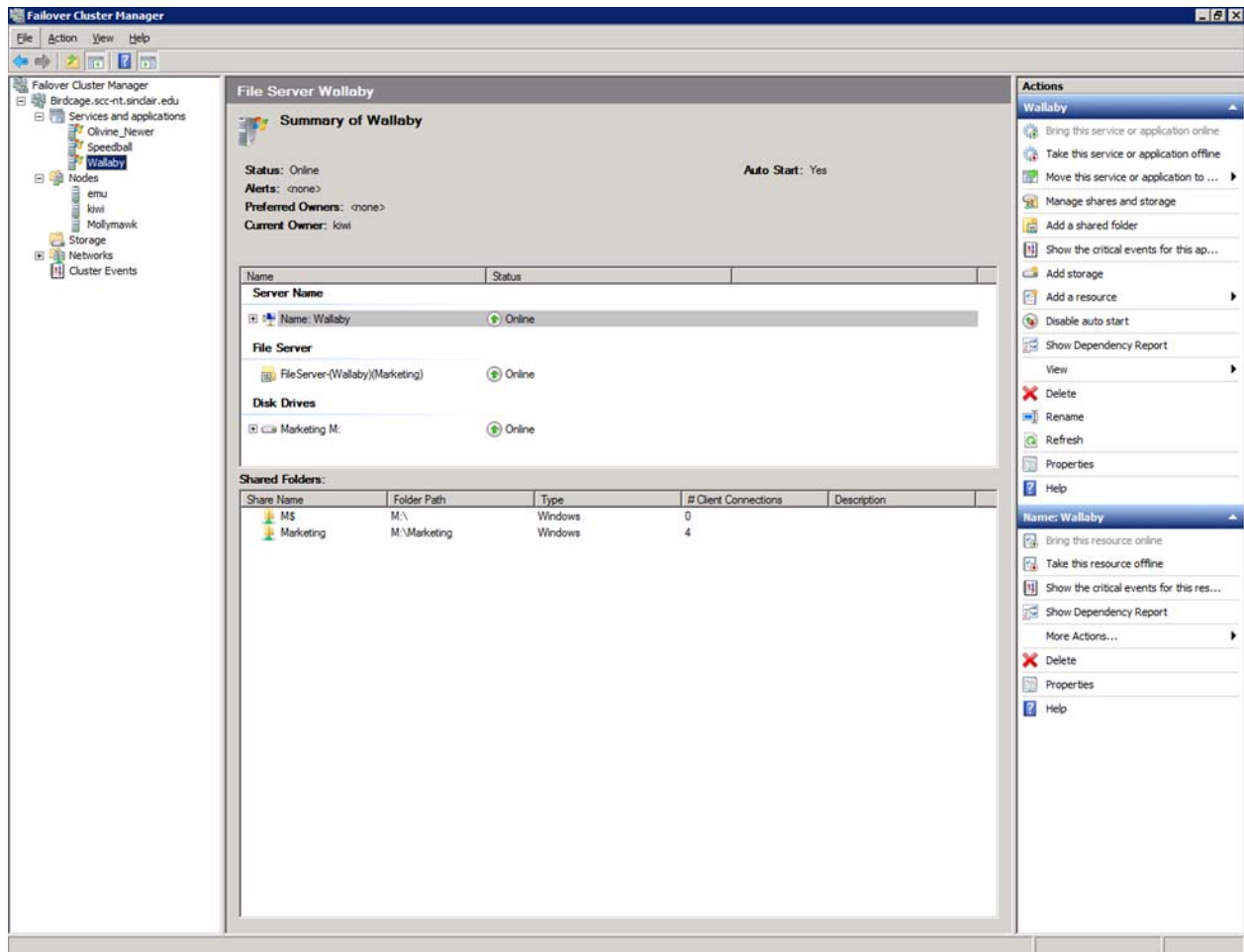


Figure 3-18. NAS Failover Cluster Manager showing the three server nodes and three virtual files systems.

Qualitative/Quantitative Return on Investment: Replacement of the aging disk array on the Dayton campus will provide improved performance and reliability of all systems that use the storage in the array. Replacing the disk array at the Courseview DR site will improve recovery capabilities and improve the ability to perform replication between sites.

Cost Savings/Cost avoidance: Through trade-ins of old equipment and discounts realized by purchasing the Data Domain equipment at the time we purchased the storage arrays, we realized a savings of \$26,500. In addition, the data tiering and thin provisioning technologies mentioned earlier have the potential to save money by making data storage more efficient and cost effective.

Target Completion Date: June 2011

Actual Completion Date or Current Status: The NAS was installed and placed into production hosting the Angel file system in December 2010. Departmental shares, academic shares, and home directories will be moved to the NAS in FY 2011-2012. The EMC VNX Storage arrays have been installed at both the Dayton and Courseview campuses. This project is scheduled to be completed by the end of July 2011.

Network Access Control Improvements

In early FY 2004-2005 ITS began the implementation of a plan to implement a number of technologies on the campus network which are commonly known as “Network Access Control” or NAC. This plan which has become known as the Secure LAN Strategy was initiated to build intelligence into network devices so they can limit the type of communication that they will forward. These limitations vary based on the identity of the user and the type of device that is attempting to connect to the network. This puts the control over the network’s security into the hands of the College rather than at the mercy of the various devices that can be connected.

Since the time that the Secure LAN Strategy was implemented, a new technology has been released by Enterasys, the college’s network infrastructure vendor, which can greatly improve the functions that are provided for campus users. The Enterasys NAC Appliance provides improved capabilities to identify network devices, to remediate issues, and to classify types of devices. In the summer and fall of 2010, four (4) NAC appliances were installed, configured, and tested. The NAC appliances also replaced the identification and authentication functions for non-college owned devices performed by the older Cisco Clean Access (CCA) equipment.

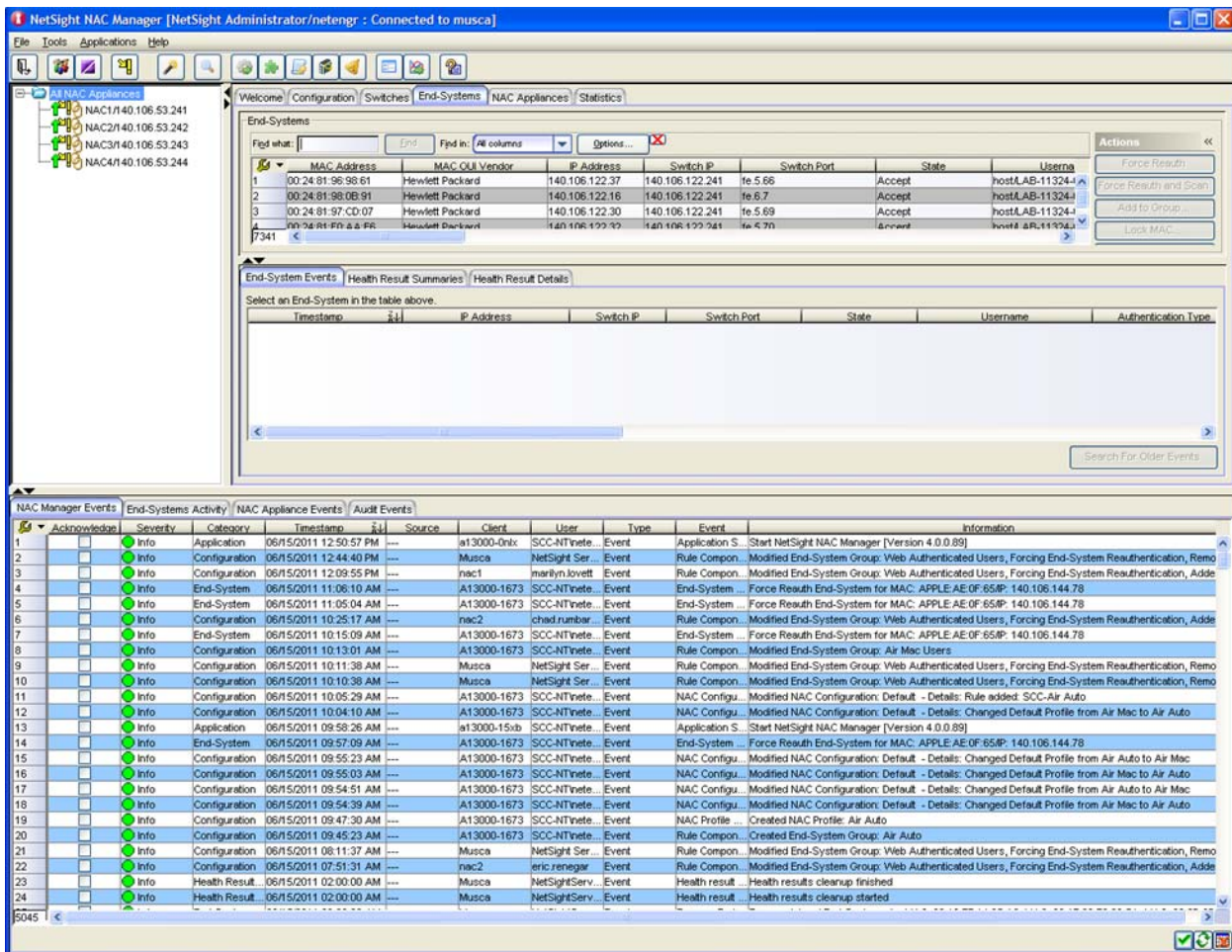


Figure 3-19. NAC Manager interface used for managing the NAC system.

In addition to improving the experience of users with non-college owned devices, the NAC appliance provides improved security for all campus users, since unlike CCA, every device on the network is visible by the NAC appliance, rather than just devices that cannot authenticate. The NAC also provides additional functionality, such as the ability to deploy policies to wireless connected devices which we will implement in the near future.

Qualitative/Quantitative Return on Investment: The main benefits associated with this project are related to personnel. College staff productivity will be increased through improved reliability of the authentication process. Also, ITS staff will spend less time troubleshooting authentication issues.

Cost Savings/Cost avoidance: By combining the purchase of this equipment with the equipment for the Data Center Network upgrade, we were able to save an additional 6%, or \$28,600 compared to the Midwest Higher Education Compact (MHEC) pricing.

Target Completion Date: June 2011

Actual Completion Date or Current Status: The project as stated was completed in December 2010. However, the NAC appliances also provide enhanced capabilities, such as the ability to define and enforce policies on the wireless network. We plan to test and deploy these wireless policies in the summer of 2011.

Data Center Network Upgrades

The devices that provide connectivity between the file servers located in the Dayton campus data center and the rest of the campus network are extremely important parts of the college's IT infrastructure. This year we upgraded this equipment, and other critical network components, to provide much higher throughput capabilities and improved reliability. Another important part of this project was to change the type of equipment that is used to a more modular configuration.

In the past ITS used large, chassis-based switches that allow hundreds of device's connections to be housed in a single device. With the increasing use of virtualization technologies, the number of servers that need to be connected into these devices is beginning to create cabling issues. The new design places two smaller switches directly in each of the server racks, allowing server cabling to be done within the server racks and reducing the number of cables that need to exit the rack. One high performance switch is used to provide network connectivity, and the other, lower performance switch, provides connectivity for management related functions such as remote console access. We currently have three server racks connected in this manner and plan to connect more as rack space is freed up and servers are virtualized and/or consolidated.



Figure 3-20. Enterasys S-Series Family.

We also upgraded the two core routers in the data center, and the four core routers located in buildings 2, 5, 12 and 13 to newer Enterasys S Series routers that have much higher throughput and connectivity options, which will be required as we upgrade the edge switches over the next two (2) years. To make room for the new routers in the data center, we moved all of the connections from one of our chassis-based switches to three SSA switches, the same ones we are using in the server racks. We plan to move these three switches to the server racks as space becomes available in those racks due to server consolidation.

Qualitative/Quantitative Return on Investment: Maintaining critical equipment within the college's network infrastructure is necessary to prevent failure due to aging of obsolete components. The cost of implementing upgrades in a reactive way rather than as part of a planned renewal process can be much more costly.

Cost savings/Cost avoidance: By working with Enterasys, we were able to save an additional 24%, or \$95,268 compared to the Midwest Higher Education Compact (MHEC) pricing.

Target Completion Date: June 2011

Actual Completion Date or Current Status: A total of six SSA switches have been installed along with six core routers. We plan to install additional switches as space is made available in the server racks due to server virtualization.

Disaster Recovery Resiliency

After a careful evaluation of recovery strategies, it was determined that the Courseview Campus Center could serve as the in-house disaster recovery facility. In order to provide and enhance the network connections to this site, a new WAN network would have to be created to serve this location because the existing point-to-point DS3 lacked diversity in its design and in its capacity. The DS3 was also dedicated to Courseview and there was no reasonable alternative for Internet access from Courseview in the event of a forced outage or a disaster. This led to the investigation of the MPLS network technology which could then afford more resilient network connections and alternatives to the concept of dedicated service.

Based on proposals from vendors, Cincinnati Bell proposed a network design utilizing MPLS (Multiprotocol Label Switching) network technology to deliver 100 MB connections at the Dayton campus, two 100 MB connections at the Courseview campus and a 100 MB connection at Donet, our secondary Internet provider. These Ethernet connections will provide increased bandwidth for faster file transfers, data backups, and allow for an alternate Internet connection in the event of a disaster.

This new network now gives Sinclair the ability to use a primary Internet provider (OARnet) with a secondary provider on an as needed basis, especially for disaster recovery. At the same time, the network connections between the Dayton campus and the Courseview campus have been more than doubled so that data replication can be done after-hours in a shorter time frame. Secondly, if there would be a loss of the primary Internet provider service, there is provision and capability to use the secondary Internet provider at the main campus as well as Courseview. Lastly, in the event of a disaster, we would have a fully connected data site with Internet access that can be used for the network traffic normally experienced at the Dayton campus.

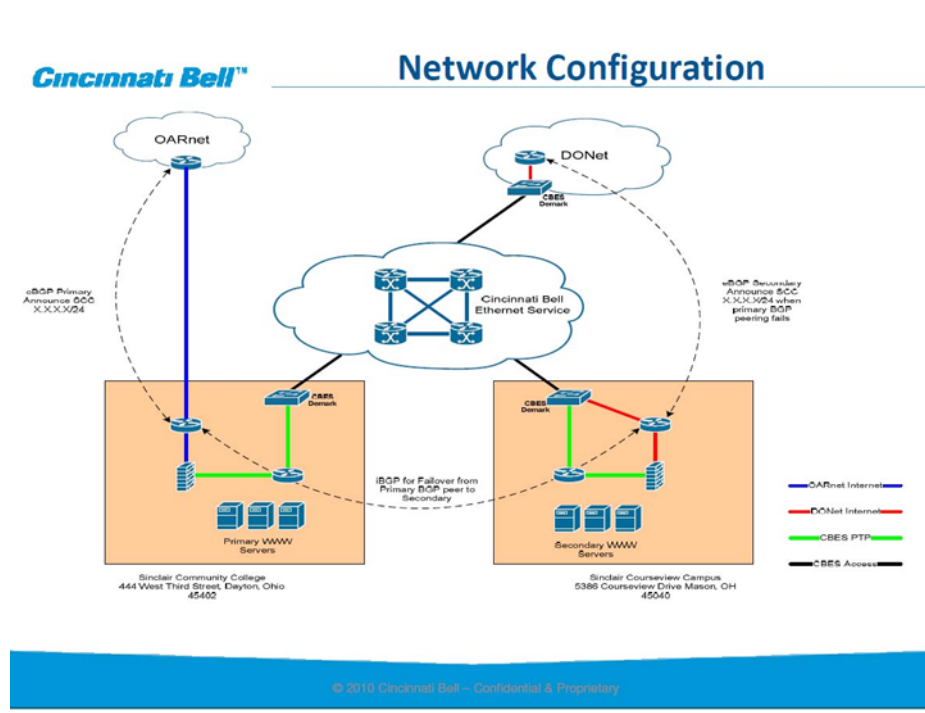


Figure 3-21. Layout of the Cincinnati Bell/Donet connection.

Qualitative/Quantitative Return on Investment: The capability to continue business operations in the event of an outage or disaster is much less costly than the loss of business that could result.

Cost savings/Cost avoidance: As more locations are added to this type of network, the cost of the new location will be much less than a dedicated connection with far more bandwidth capability. Although the network connections will represent an annual increase, the cost savings from the Internet providers will yield an annual reduction of over \$14,000.

Target Completion Date: December 2010

Actual Completion Date or Current Status: The network between the Dayton campus and the Courseview campus has been completed and is working. The connection between the Courseview campus and Donet is up but the link to Donet has not yet been moved to the Courseview connection. This will take place by the end of August 2011.

Multimedia Classroom Standardization

In FY 2008-2009 a project was created to analyze space management and multimedia presentation equipment needs for Sinclair's Dayton campus and to provide a recommendation, including associated costs, for installing standard multimedia presentation systems throughout the campus.

This analysis determined a minimum set of equipment for every logical classroom and lab space on campus, with related costs. Also presented was a set of 115 classroom and lab spaces on the Dayton campus that could accommodate multimedia equipment, but are equipped with non-standard, aging equipment or are currently not equipped with any multimedia capabilities.



Figure 3-22. Multimedia Classroom.

Using this information, capital funding was requested to fund a project to standardize multimedia capabilities in the classroom and lab settings across the Dayton campus.

During FY 2009-2010 and the first part of FY 2010-2011, 27 classroom and lab spaces were standardized as Phase I of this project. During FY 2010-2011, funding was approved to upgrade an additional 38 new standardized classroom presentation systems.

Qualitative/Quantitative Return on Investment: Standardization of the multimedia presentation equipment across all of the Dayton academic spaces creates an opportunity to use space more effectively. Effective use of space translates into time savings for instructors who can, after this project is complete, count on the same presentation equipment being in any classroom in which they are scheduled to teach.

Cost Savings/Cost avoidance: Creating standardized configurations for multimedia systems reduces support costs and costs associated with lost productivity and decreased customer satisfaction.

Target Completion Date: April 2011

Actual Completion Date or Current Status: This project is in the final stages of completion and all rooms will be ready for Fall 2011.

Cable Television System Replacement

The campus television system is used by Sinclair for more than just the distribution of broadcast entertainment. Satellite conferences and other video events can be viewed in virtually any classroom on campus using the campus television system. In addition, the CastNET campus messaging system and the Qflow system used by the Counselor's office, Financial Aid, and Enrollment Services are broadcast to monitors throughout campus using the campus television system.



Figure 3-23. The campus cable TV system displays multiple types of video in Building 14.

Now in its sixth year of operation, the campus television system has begun to exhibit some undesired qualities. Among those are picture quality problems and, at times, channels becoming unavailable for viewing.

In keeping with Sinclair's strategic initiative to maintain and develop the Dayton campus, these issues have been under investigation and repair for the past several years. The first steps towards a solution were taken in conjunction with the FY 2008-2009 Fiber optic cable project; during FY 2009-2010, repairs were made to keep the system stable.

The purpose of this year's project was to replace the legacy cable television distribution system with a more efficient system that will leverage existing infrastructure and technology. Capital funding was requested for this project for FY 2010-2011.

Estimated Cost of Project: \$250,000

Cost Savings/Cost Avoidance Identified with the Project: Continuing to maintain the existing, legacy cable television system is not cost effective. Updating now to a system designed to leverage technologies used throughout campus reduces future maintenance and upkeep costs.

Target Completion Date: June 2011

Actual Completion Date or Current Status: Funding for this project was received in the FY 2010-2011 capital budget. However, due to personnel changes and other priorities this project was delayed. An engineering firm has been hired to develop an RFP for selecting a vendor to work with in upgrading the equipment in the Cable TV distribution system and the funds have been moved forward into the FY 2011-2012 budget.

Equitrac Expansion

The purpose of this project was to install Equitrac in the remaining classrooms and open labs on the Dayton campus. During Spring quarter 2010, Equitrac was implemented in the classrooms and labs that had been using GoPrint. GoPrint was the previous 'pay-for-print' system that was replaced by the Equitrac system. The phrase 'pay-for-print' simply refers to the function that Equitrac performs – requiring users to pay for their printouts in classrooms and labs. Equitrac was chosen as the replacement 'pay-for-print' system because of its ease of use and improved integration into the college's network and lab and classroom spaces.

During summer quarter 2010, the Equitrac 'pay-for-print' system was installed in almost all remaining college labs and classrooms. The exception is the classrooms that are still using generic logins. In winter quarter, faculty began using billing codes to charge the department that they work for rather than using free print allocations. This has resulted in additional decreases in print costs.

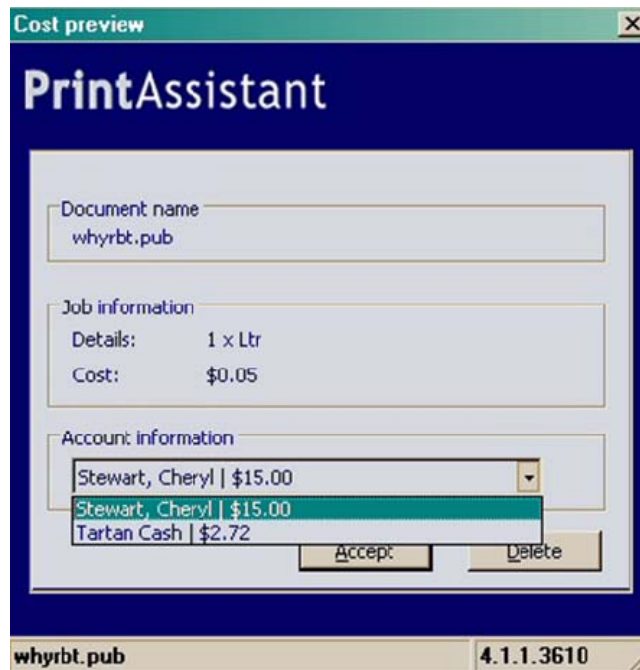


Figure 3-24. Equitrac dialog prompting for the funds to be charged.

Qualitative/Quantitative Return on Investment: This project has reduced cost by decreasing the amount of waste and recovering part of the cost of printing in the classrooms and open labs. The software also ensures that charges are being allocated to the appropriate department.

Cost savings/Cost avoidance: This project has allowed the recovery of \$43,360 in pay-for-print revenue for FY 2010-2011.

Target Completion Date: September 2010

Actual Completion Date or Current Status: September 2010

Copier Management

An important component of the college's print management strategy is to address the management of the campus satellite copier fleet. The responsibility for management of the copier fleet was transitioned from Business Services to Information Technology Services last year as a result of these devices now providing much more function than just copying. This will allow the college to leverage these other capabilities, such as network printing, scanning to email, etc. to make better use of our investment and to decrease costs.

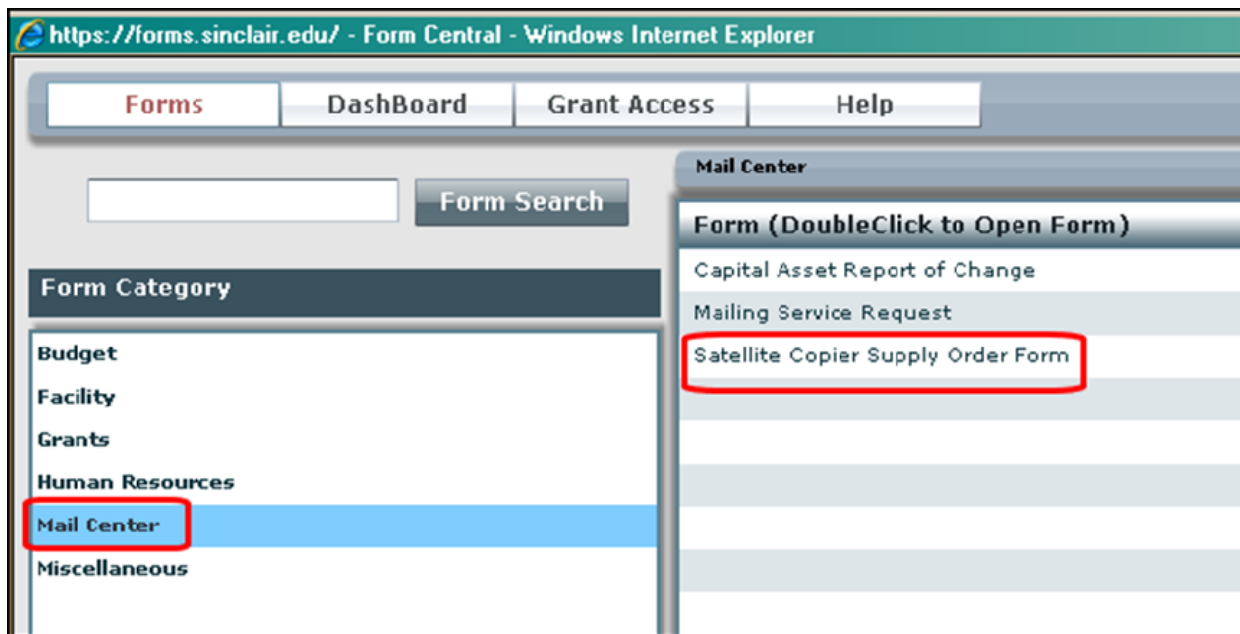


Figure 3-25.: Satellite copier users request supplies via an online form.

An important component of the college's print management strategy is to address the management of the campus satellite copier fleet. The responsibility for management of the copier fleet was transitioned from Business Services to Information Technology Services last year as a result of these devices now providing much more function than just copying. This will allow the college to leverage these other capabilities, such as network printing, scanning to email, etc. to make better use of our investment and to decrease costs.

This year ITS replaced eight (8) satellite copiers with devices which are connected to the network and integrated with Equitrac and eight (8) additional multifunction devices have been purchased to replace printers. At the beginning of FY 2010-2011, the contract for support of the satellite copiers was changed to an all-inclusive, per-page cost model, and all devices that have been added during the year are incorporated into this model. Late in FY 2010-2011, a new vendor was selected to administer the satellite copier contract and three (3) copiers that campus departments had their own contract for were collapsed into the overall college contract, further reducing costs.

Qualitative/Quantitative Return on Investment: Reductions in the cost to copy or print documents are possible by combining the maintenance of a large number of devices and using competition to reduce per-page costs. These costs can also be reduced substantially by using devices that are engineered to handle the necessary volumes.

Cost savings/Cost avoidance: The need to purchase toner cartridges or other consumables for copiers and printers has been eliminated as these are all part of the per-page price that is paid to the external service provider. A substantial annual cost saving is anticipated.

Target Completion Date: June 2011

Actual Completion Date or Current Status: May 2011

Windows 7 implementation

In late 2009, Microsoft released Windows 7, the long-awaited successor to their poorly received Windows Vista operating system. This operating system is a significant upgrade that has much greater hardware requirements than Windows XP, the current version of Windows being used due to its enhanced user interface. Windows 7 is not only a significant change for the end user; it also operates much differently in the way it communicates with servers and other network devices.

During FY 2009-2010 ITS completed the development of a Windows 7 image and began pilot testing the new image on a small number of campus computers. In September 2010, ITS expanded the pilot test and began the campus wide rollout for the replacement of the Windows XP based image. The implementation plan included determining the impact on hardware replacement schedules, the interdependencies with existing applications, and how the new image would operate within the campus' security infrastructure.

As of September 30, 2010 all new hardware installs and re-imaging of existing PCs are done using the new Windows 7 image. Classroom computer re-imaging requires additional review of software due to the number of applications used and the increased risk of incompatibilities.

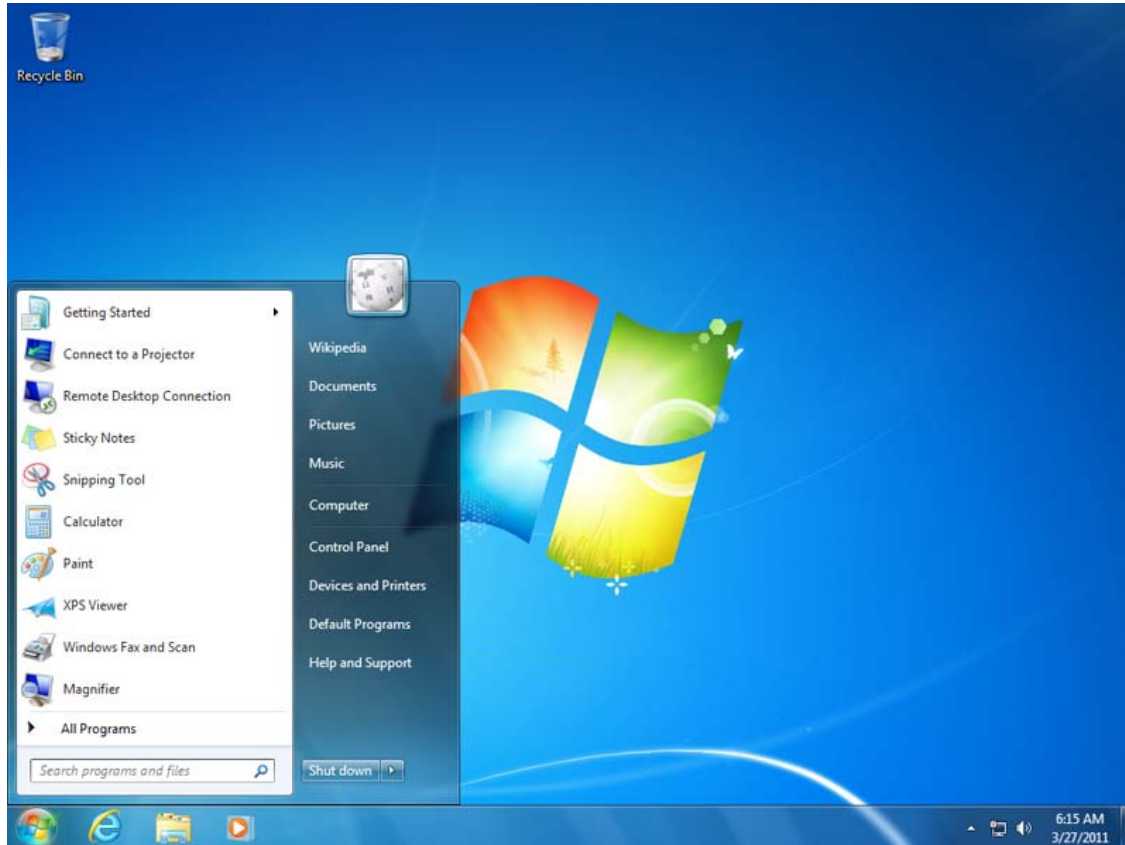


Figure 3-26. Windows 7 looks very similar to Windows Vista.

Qualitative/Quantitative Return on Investment: Windows XP will no longer be supported by Microsoft in April 2014. Moving to Windows 7 prior to this reduces the cost of supporting campus computers.

Cost Savings/Cost avoidance: No changes to the standard hardware that is purchased is required and all software license costs are covered under the existing Microsoft Campus Agreement.

Target Completion Date: December 2010

Actual Completion Date or Current Status: September 2010

Disaster Recovery System Identification

A disaster recovery plan is part of the college's business continuity plan and is necessary due to the reliance on information systems to perform everyday tasks. The risk of not being able to use the college's information systems over a prolonged period of time could make the college unable to provide services to students, to pay employees, and to meet many of the college's legal obligations. Events that could cause the college to not be able to use the information systems include the direct impact of natural disasters such as floods, tornadoes, etc. but also include the accompanying lack of service that these disasters cause. The number one reason why companies declare a disaster is due to lack of electricity from the utility company.

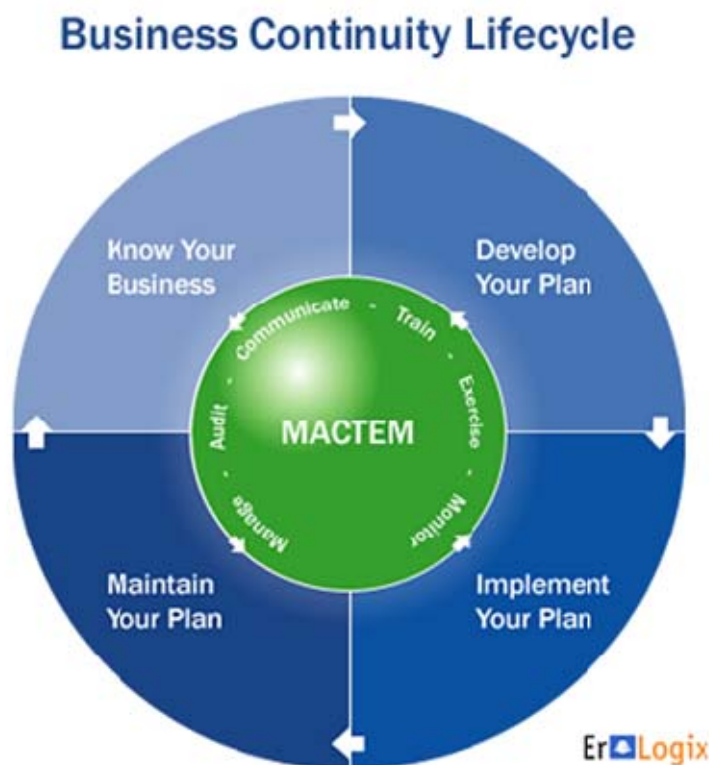


Figure 3-27. Business Continuity Lifecycle.

Information Technology Services discontinued the college's contract with Sungard Recovery Services in December 2008. This contract would have provided temporary replacement hardware in the event of a disaster. As part of the college's program alignment process it was determined that the same hardware could be purchased for placement at the planned Courseview Campus Center with a payback of 5 years or less.

A major shortcoming of the Sungard contract was that the cost of covering systems led to a large number of systems not being included in the contract. Now that the Courseview disaster recovery facility is operational the college has the ability to cover more systems without increasing the investment in hardware. There is also the possibility of using hardware that has been removed from production which could still have some useful life in a diminished capacity.

This year Information Technology Services worked with the college's leadership to create a process for identifying the most critical systems that will need to be available in the event of a disaster. All major functional areas of the college participated in interviews to identify the systems that are required to perform their business functions. This data was used to develop a prioritized list of the systems that are the most critical and would need to be available during a disaster that would make the primary system unusable. This data will be used to identify changes that need to be made to the college's disaster recovery plan.

Qualitative/Quantitative Return on Investment: Prior to this project, the systems that were covered in the college's disaster recovery plan were identified by IT staff. While IT staff have a very good understanding of the critical nature of major systems, they may not understand all of the impacts on the business when a particular system is unavailable. The investment of time by the college's business offices ensures that the most critical systems are identified and prioritized in the disaster recovery plan.

Cost Savings/Cost avoidance: While the cost of providing for disaster recovery of systems is not inexpensive, it is much cheaper than the costs that can be incurred due the loss of access to important systems and data.

Target Completion Date: December 2010

Actual Completion Date or Current Status: June 2011

Investigate Centralization of Plato Data

Sinclair Community College has been implementing Plato software in ARC (Academic Resource Centers) labs at high school locations since 2002. Plato is a learning software application that evaluates a student's abilities, determines which academic areas they are deficient in, and provides remediation of the deficient area. Plato brings the student up to their proper grade level with the goal of preparing the student to enter College without needing to take developmental classes.

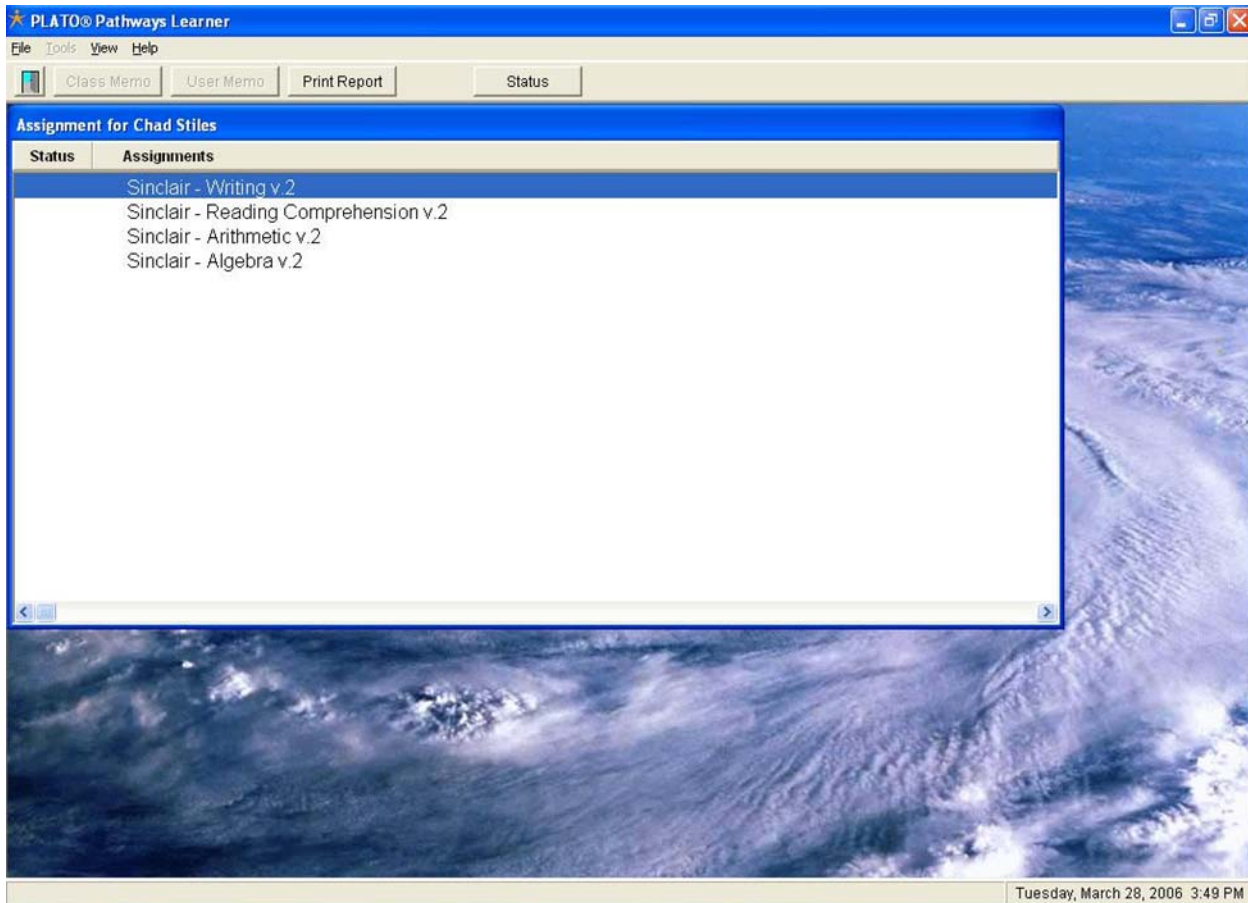


Figure 3-28. The Plato Pathways application interface.

One of the shortcomings of the ARC concept is the fact that the data on students' performance is not maintained in a central location. This makes it impossible to use the data for analysis. This project was initiated to investigate methods of extracting data from the decentralized Plato systems for loading into the college's data warehouse. Additionally, the project was intended to investigate the possibility of centralizing the systems rather than continuing to operate in a decentralized fashion.

A process has been created to copy the data from each ARC to the Dayton campus data warehouse. This process is currently being tested with a single ARC, but will be replicated at all ARCs once testing has been completed. The aggregation of this data into the data warehouse will allow much improved analysis including comparisons of trends and tracking of progress as ARC users become Sinclair students.

The answer to whether the Plato software should be centralized was answered by Plato as they have decided to discontinue the ability to use the existing client-server version of their software. They instead will provide hosting for Plato. This has caused the High School Linkages office to evaluate whether they will stay with Plato or choose a different application for providing these functions.

Qualitative/Quantitative Return on Investment: This project has the potential of saving the college money as well as improving the quality of data that Sinclair has available regarding students' improvement by using the software and as they continue through Sinclair.

Cost Savings/Cost avoidance: The transition to a hosted model for the Plato software will reduce the cost of hardware and possibly the technical support that will be required for the infrastructure within the ARC lab. However, the licensing costs could increase, negating any benefit of the change. High School Linkages is using this as an opportunity to evaluate other software which could have increased cost advantages.

Target Completion Date: March 2011

Actual Completion Date or Current Status: The evaluation of Plato alternatives is being pursued by the High School Linkages office. The process of transferring Plato data has been tested and will be implemented at all remaining sites once the testing is complete.

Office 2007 Upgrade

Office 2007 was released by Microsoft in January 2007 and its implementation began at Sinclair in October 2007. During the initial review of Office 2007, ITS recognized how much of a difference there was in using Office 2007 compared to Office 2003. To help faculty and staff prepare for Office 2007, ITS required every user take a quiz and pass it by at least 70% before having Office 2007 assigned/installed on their office computer. After a user had successfully completed the Office 2007 assessment, the user contacted the Help Desk to get Office 2007 installed.

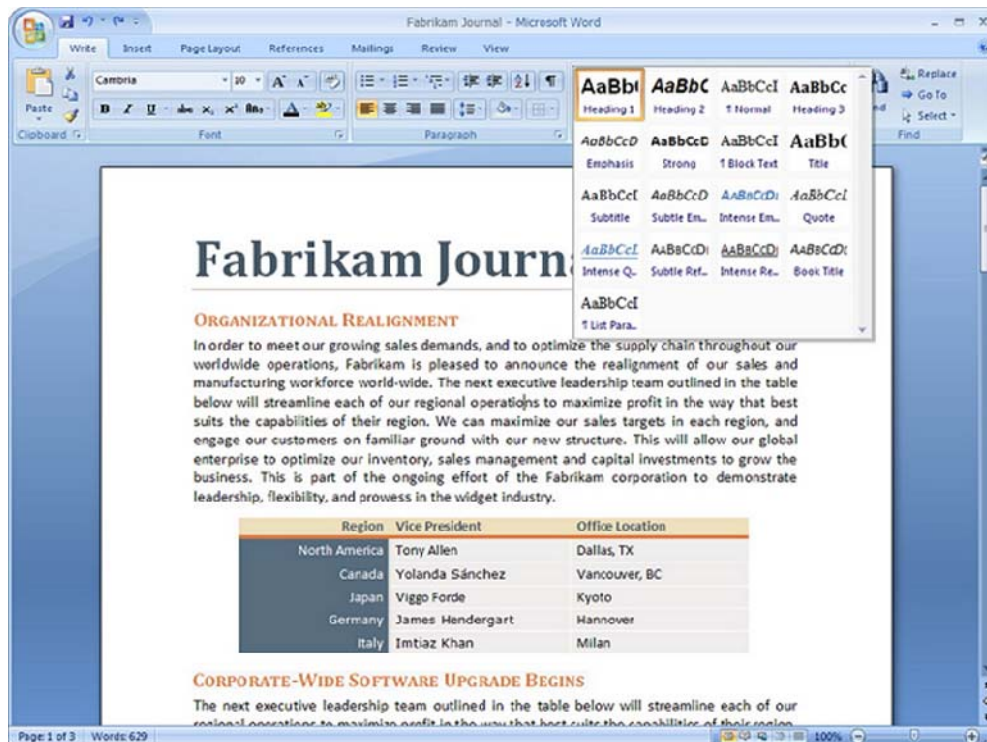


Figure 3-29. Microsoft Word 2007 application window.

Three (3) years after ITS began rolling out Office 2007, the majority of users had chosen to migrate to the new version of Office and Microsoft had release an updated version of the software, Office 2010. Also, there were issues identified with Outlook 2003 clients connecting to the new Microsoft Exchange 2010 server that had been installed earlier in the year. Beginning in November 2010, all administrative PCs, including faculty and staff PCs, that did not have Office 2007 began receiving prompts to install the Office 2007 software suite at some time over the next few months. In February 2011, all remaining PCs that had not had Office 2007 installed were automatically upgraded to Office 2007.

Qualitative/Quantitative Return on Investment: Maintaining obsolete technology can be costly because of the lack of vendor support. Upgrading additional functionality will allow processes to be more efficient.

Cost savings/Cost avoidance: The regular updating of obsolete products allow the college to maintain lower costs for supporting technology.

Target Completion Date: February 2011

Actual Completion Date or Current Status: February 2011

PC Update Improvements

As part of the Windows 7 planning process, we knew that we would have to upgrade our Altiris system if we wanted to maintain compatibility with Windows 7. Anytime that ITS has to upgrade to support future needs, we examine that product to determine if the benefits provided by that product still exceed the cost of the product. This project involved determining what functions and benefits Information Technology Services (ITS) derives from the Altiris system and researching the possibility of replacing those functions with other, more cost effective products Another factor in reviewing the usefulness of Altiris was the budget and the money that could be saved if we did not have to renew this software. After meeting with users of the Altiris system, it was determined that there were lower cost alternatives that would meet our needs and that we would not need to upgrade or renew Altiris for this fiscal year.

One of the main functions Altiris provided was the multicast deployment of computer images. Multicasting is a method of delivering a single stream of data to multiple computers simultaneously and is the most efficient way to image computers. This function was replaced by Windows Deployment Services (WDS) which allows ITS to multicast windows images created with the Microsoft Deployment Toolkit (MDT). Servers running WDS were installed at the Courseview campus, Dayton campus, Englewood and Huber Heights Learning Centers. Additional servers will be installed at the Miami Valley Research Park site and the Preble County Learning Center in the summer of 2011. All of our Windows images were migrated to MDT so they could be deployed using WDS. We also added Microsoft Diagnostics and Recovery Toolset (DaRT) to the WDS menu. This will allow technicians to boot into a recovery environment without the need for a CD and also includes a DoD-compliant disk wiping program to erase drives, eliminating the need for a third party program.

The Altiris Carbon Copy feature that was used to remotely control PC's was replaced with the Remote Desktop and Remote Assistance functions built into Windows. Scripts and firewalls rules were created to allow this functionality across campus. We also wrote programs to replace other functions Altiris provided, such as PC inventory, PC status (i.e., on, off, users logged in, etc.), PC Management, and the ability to remotely power on/off PC's. All of this functionality was combined into one management console called Proteus.

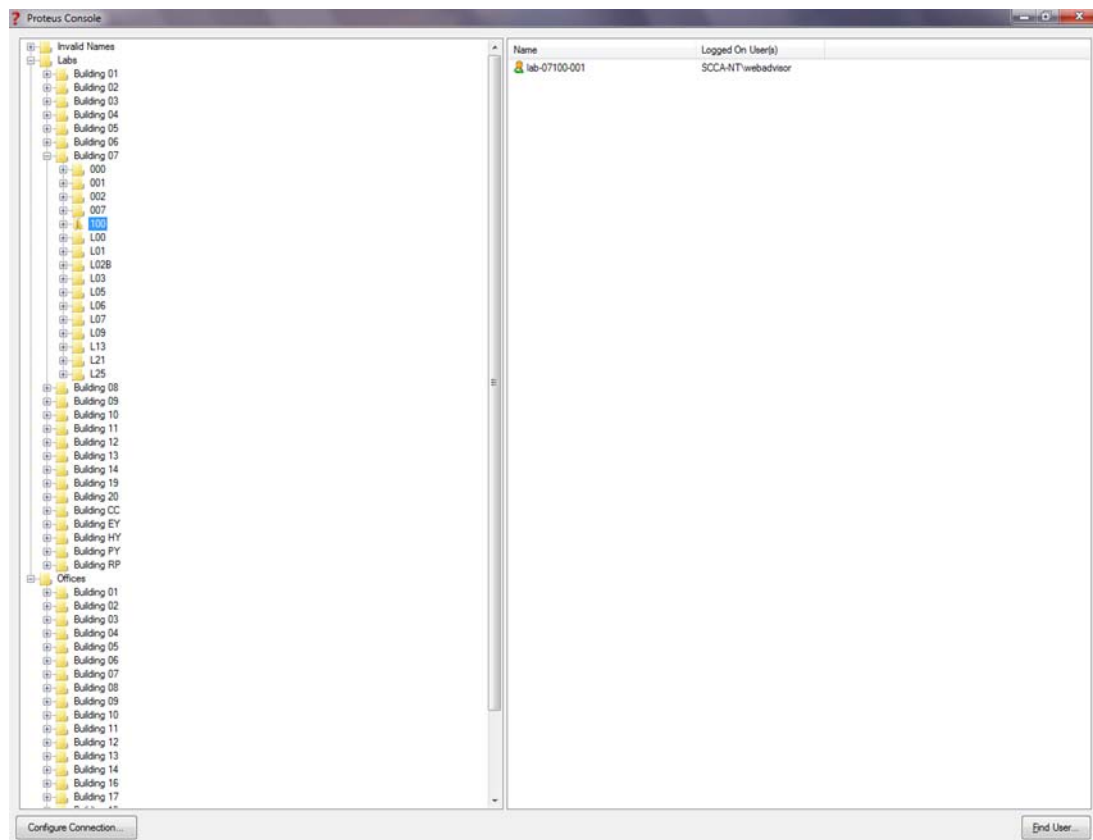


Figure 3-30. Proteus Console used to manage PC's.

Qualitative/Quantitative Return on Investment: The Altiris product required an above average amount of support to keep running. By replacing this system with built-in functions from Microsoft augmented with Sinclair developed programs, we will decrease the staff hours required to manage this system and provide more flexibility in the future.

Cost savings/Cost avoidance: By not renewing the Altiris software and using in-house developed products, along with products we already owned saved \$18,000 per year based on our current PC count.

Target Completion Date: June 2011

Actual Completion Date or Current Status: June 2011

Internal Network Vulnerability Assessment

Sinclair relies extensively on its information technology infrastructure to support the college's core objectives of access and affordability, community alignment, quality and innovation in learning and support, and effective and sustainable organization. A key requirement of this technology infrastructure is that the information and systems within must ensure confidentiality, integrity, and availability—aka the 'security' of stakeholder information. One highly effective method for evaluating and improving the organization's technical security posture is contracting with a third-party expert to conduct an objective vulnerability assessment, and to actually test the security measures in place.



Figure 3-31. Layered approach to Security.

As part of our 'layered' approach to security, ITS contracted with an external security firm to conduct an internal technical assessment. An Internal Attack and Penetration simulates an actual hacker attempting to gain unauthorized access to Sinclair Community College's resources from within the college. Some of the key scenarios tested include:

- A college employee with legitimate, but excessive, system access that would allow them to accidentally make available sensitive information or to accidentally disrupt business activities.

- A casual hacker who infiltrates the college's systems. This includes 'curious' students or 'disgruntled' employees who performs intentional acts for disruption or theft of information.
- A focused hacker who pursues specific information and works with inside information (e.g., knowledge provided by a current or terminated Sinclair Community College employee).

During the assessment, a number of potential vulnerabilities were discovered and reported, and each was ranked by the contactor based on severity and criticality. Some issues have already been resolved and plans are in place to address the remaining issues.

Qualitative/Quantitative Return on Investment: The primary ROI is qualitative. Determining systems vulnerabilities and addressing them is primarily a function of risk mitigation, but it also increases the effectiveness and value of the systems in place. For example, the College employs multiple user roles to protect information (such as student personal information) based on sensitivity. By testing the user roles to ensure they can access the information authorized, and only the information authorized, we ensure the effort in implementing the role-based security adds value.

Ineffective information security/risk management increase the likelihood of an unauthorized disclosure or similar breach that result in significant expense for reporting and mitigation, as well as damage to the College's reputation.

Cost savings/Cost avoidance: Standards such as PCI-DSS (Payment Card Industry Data Security Standards) require third-party vulnerability assessments and fines are levied for non-compliance. Engaging an external service provider to perform an assessment of the campus' internal network security can help to avoid becoming non-compliant and preventing a breach is a significant cost avoidance; a recent report (Ponemon, March 2011) found that unauthorized disclosure cost an affected institution an average of \$214 per compromised record.

Target Completion Date: June 2011

Actual Completion Date or Current Status: April 2011

Exchange 2010 Upgrade

Information Technology Services (ITS) maintains a plan for the annual renewal & replacement (R&R) of information technology infrastructure components. This plan is used to project expenditures of these components over a five year period to provide the college's leadership with information to aid in budget planning. Each year, during the annual planning and budgeting cycle, the R&R plan is updated with any new information that would change expected expenditures for the coming year as well as the next four years.

Each item that is identified on the R&R plan has a useful life. This useful life along with the total cost of the equipment, determines the funds that must be set aside each year to replace the

equipment when it has reached its end of life. The Exchange email system has an estimated useful life of four years. In FY 2009-2010, an analysis was performed to determine if Sinclair should upgrade its Exchange 2003 messaging system or move to Gmail as we did with the student email system. For various reasons, it was determined that the benefits of upgrading to Exchange 2010 outweighed the costs and potential risks associated with moving our messaging environment to Gmail.

In the second quarter of 2010, a RFP was sent to Advizex, Logicalis, Diversatec and Sarcom to replace our Exchange 2003 environment with Exchange 2010 and migrate all user data to this new system. Logicalis was awarded the contract and the Exchange 2010 project was started in the summer of 2010.

Seven new servers were purchased for the Exchange 2010 system and storage allocated to provide the expanded 1 GB mailbox size per user. The system was configured and all mailboxes were migrated to Exchange 2010 by the end of August, 2010.

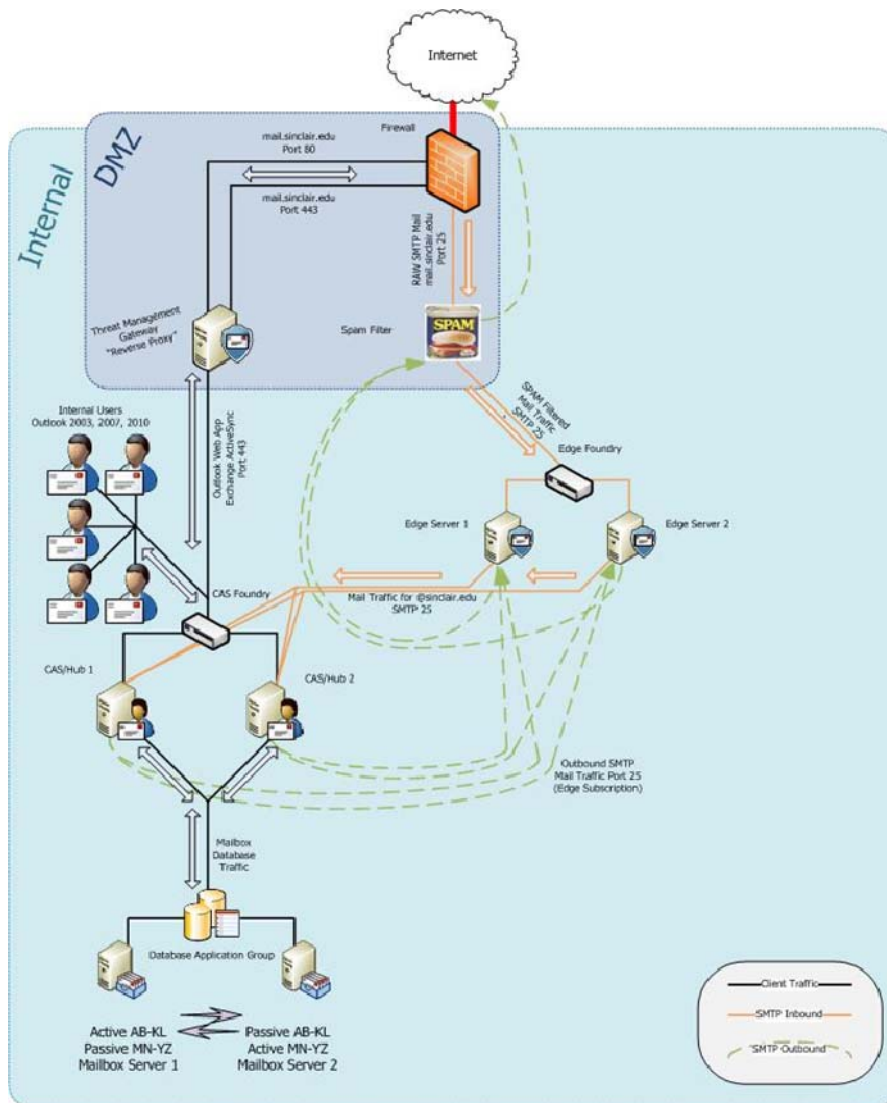


Figure 3-32. Exchange 2010 Environment.

Qualitative/Quantitative Return on Investment: Keeping our messaging system in-house instead of using Gmail provided several qualitative benefits to Sinclair's faculty and staff such as calendar sharing, mailbox delegation and prepares us to use unified messaging in the future.

Cost savings/Cost avoidance: Costs associated with the increased maintenance of old hardware, plus costs associated with decreased productivity due to an increase in unplanned downtime for critical email functions have been avoided through this upgrade.

Target Completion Date: September 2010

Actual Completion Date or Current Status: August 2010

Help Desk CTI Implementation

In an ongoing effort to improve response time and increase efficiency within the Help Desk Operations, a project was developed to reduce the time in taking tickets from clients. One of the initial tasks of a Help Desk analyst, when a call is received, is to find the client in the SDE database to create a ticket. If there was a way for the client to input their ID and have that ID forwarded to the analyst, then the time to look-up the ID would be eliminated and errors could be avoided.

In order to perform this function, it would require the use of Computer Telephony Integration (CTI). Years ago this was attempted in conjunction with the former phone system (Fujitsu) and the current Help Desk ticket reporting software; however, did not work because of the lack of flexible integration tools between the two systems. With the installation of the current ShoreTel phone system, the integration portion of the phone system was now available due to the flexibility of the ShoreTel software.

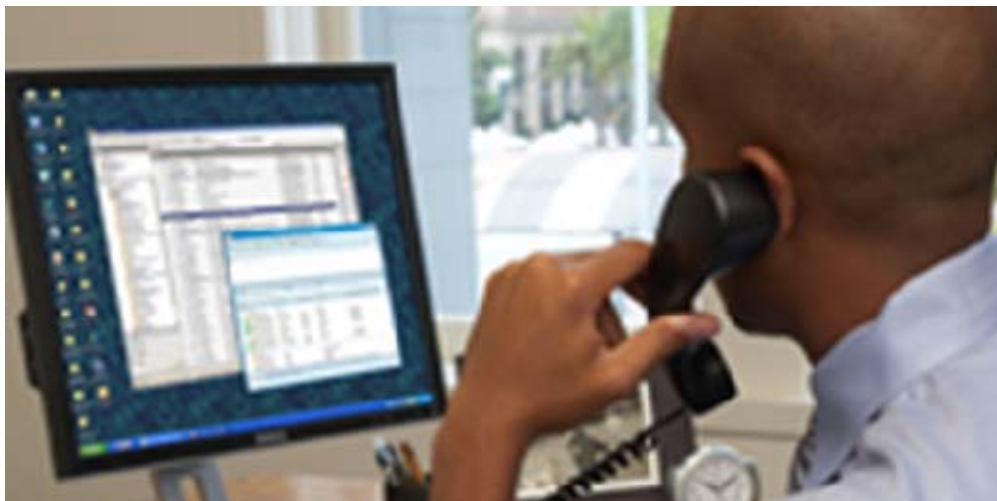


Figure 3-33. A Help Desk Analyst receiving a call from a user.

The screenshot shows a web browser window titled "SCC Default Incident 3: Create - Windows Internet Explorer" with the URL "https://helpdesk.sinclair.edu/sde/CommonFrame.asp?stfFormSeq=1101". The interface is a service desk form with the following sections:

- INCIDENT #**: USER CALLED TIME(S)
- Client Information**:
 - Name: Dennis Hess
 - Tartan ID: 508102
 - Dept: Information Technology Service
 - Email: SMTP:({dennis.hess@sinclar.edu})dennis.hess@sinclar.edu
 - Type: STAFF
 - Room: 13000C
 - Home Ph: 937-667-5896
 - Wrk Ph: 937-512-2288
 - Contact Phone: [Empty]
- Assign To Information**:
 - Assigned To: [Empty]
 - Opened By: [Empty]
 - Closed By: [Empty]
 - Status: OPEN
- Problem Information**:
 - Subject: [Empty]
 - Whiteboard ID: [Empty]
 - Equipment Location: [Empty]
 - Due Date: [Empty]
 - Old Equip Loc: [Empty]
 - Urgency: [Empty]
- Description**: [Empty text area]
- Resolution**: [Empty text area]
- Incident Details**: Work Orders Attachments
- Total Duration**: 00:00:00
- Table**:

Date	Staff	Action ID	Description	Duration	Note

Figure 3-34. The Help Desk's Service Desk Express software populated with a caller's information.

Working with ShoreTel and Accent Communications Services, it was decided to add the capability to allow incoming Help Desk users to input their Tartan ID so that the Help Desk Analysts could receive a pre-populated screen with the incoming caller's base information for a trouble ticket. In order to do this, additional auto attendants had to be established and a look-up function into the SDE database had to be created.

Qualitative/Quantitative Return on Investment: The new process has decreased the time that an analyst takes to input a new ticket for a user. The response from the user community has been positive because the input process has helped both the user and the analyst by decreasing look-up time and avoiding errors in database searches for names.

Cost Savings/Cost avoidance: This project reduced the time to take client calls and increased the efficiency of the Help Desk ticket process. This results in being able to handle an increased number of calls without incurring the costs of increased Help Desk staff.

Target Completion Date: August 2010

Actual Completion Date or Current Status: August 2010

Library

Following are the Major Accomplishments for FY 2010-2011 for the Library:

- **Reinventing the Sinclair Digital Library**
- **Library IT Teamwork Studio: Phase 1**

Reinventing the Sinclair Digital Library

The Sinclair Library web site is, in effect, a portal to the many digital databases, e-books, electronic journals, digital videos, web links, library catalogs, and similar data products that comprise the authoritative, scholarly and intellectual content of the modern library. Continuing to build upon previous work, the Library web site functions as a digital library for the campus, a portal not only for effective searching for specific information, but a vehicle for the discovery of information across the intellectual spectrum represented by a comprehensive community college curriculum.

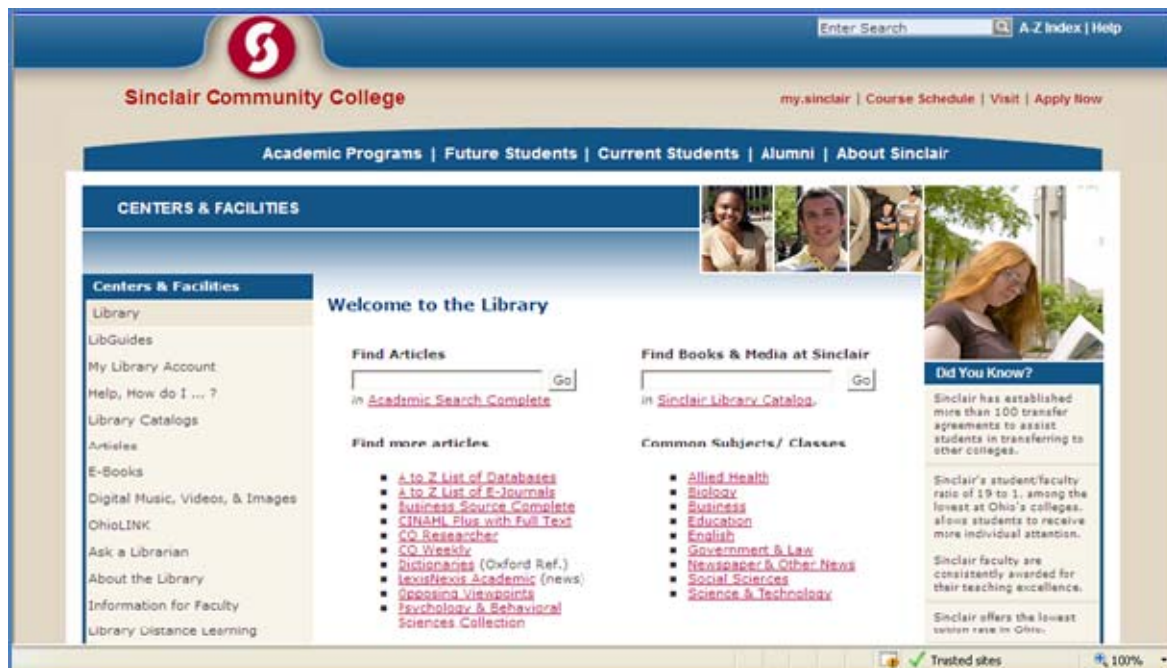


Figure 3-35. Library Homepage.

It is commonly accepted that the first source of information for most students and faculty is a search engine on the Internet: Google, Yahoo, and Bing being the most popular. Unfortunately, these search engines – which are excellent for e-commerce, directories, government sites, restaurants, travel, and the like – are not necessarily the best way to find academic information. Often, scholarly, scientific and technical information appropriate for a college curriculum can best be researched in a specialized database. Recognizing this, the Sinclair Library sought a better way to integrate external web resources into the Library's offerings of carefully selected subscription databases and electronic books and journals.

Staff reviewed resources such as Merlot, the American Library Association award winning libraries, Educause, and the web sites of other Ohio and community college libraries to identify best practices. Following this review, the Library selected **LibGuides**, as a web-based resource that allows for the effective consolidation of diverse information resources on a single page. In addition, LibGuides functions as a shared community of practice among libraries, allowing Sinclair to share and borrow from the work of other librarians, thereby gaining from the professional expertise of many subject experts in collection development and information technologies.

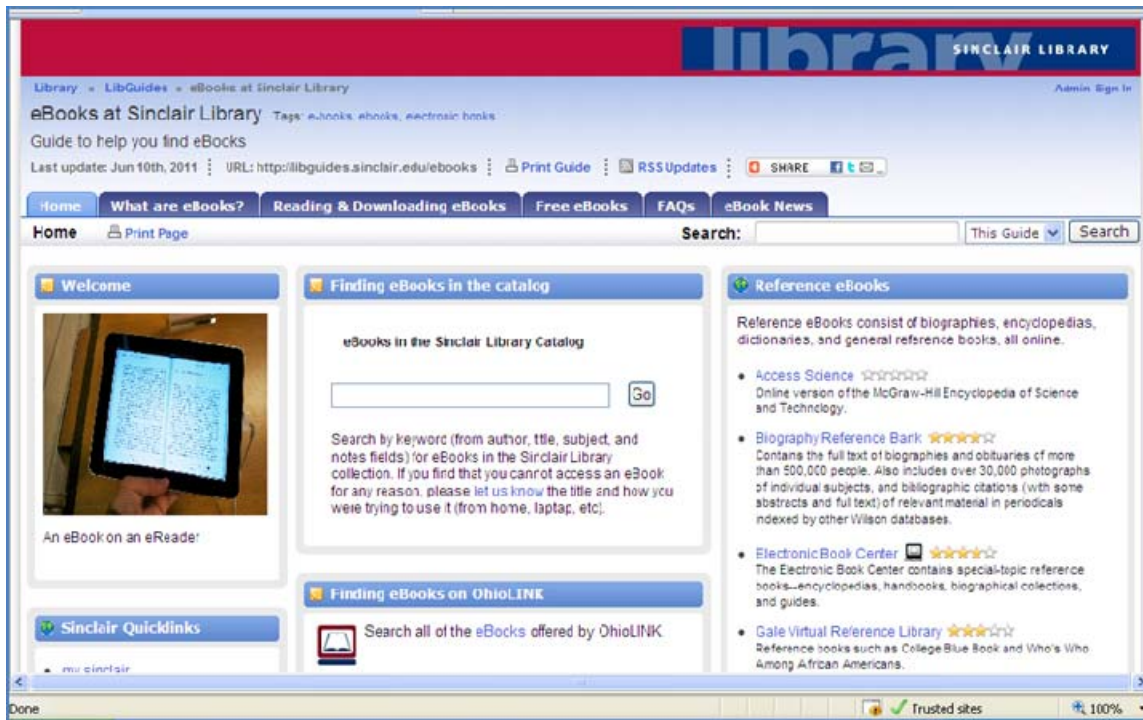


Figure 3-36. LibGuide for E-Books.

At this time, the Library has completed a major LibGuide for E-Books (Figure 3-36), which has been placed on the Library Homepage (Figure 3-35) and also integrated into a number of course pages in the Angel Course Management System. Feedback has been positive for this guide, which includes a mix of subscription and free e-books, searchable links to the library catalog, and helpful information on e-book readers.

In addition to LibGuides, Library staff continued previous work with delivering sound and video to support classroom instruction. After consulting with other Ohio community colleges, the Library joined a consortium to license a complete academic package from Films-on-Demand (Figure 3-37), a streaming educational video collection, and the Library also added capacity for the Naxos Music Library (Figure 3-38), a collection of classical, jazz, and world music appropriate to Sinclair's music curriculum.

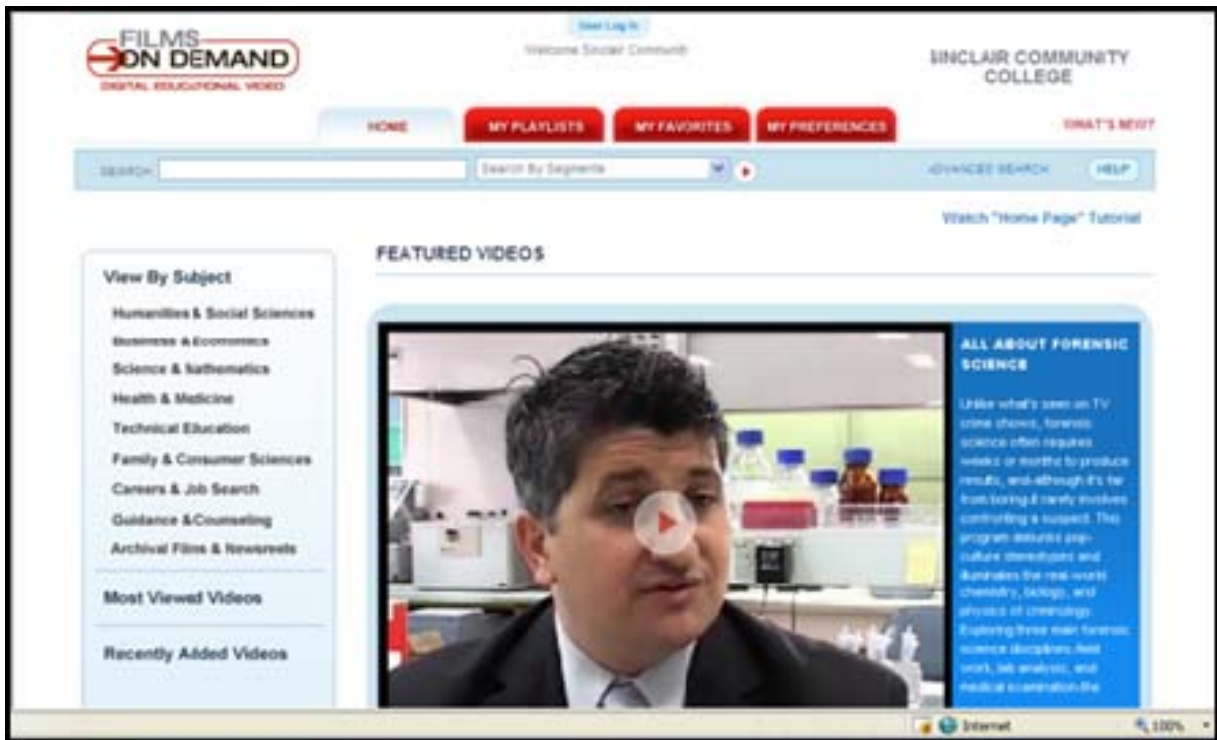


Figure 3-37. 6000+ Streaming Videos.

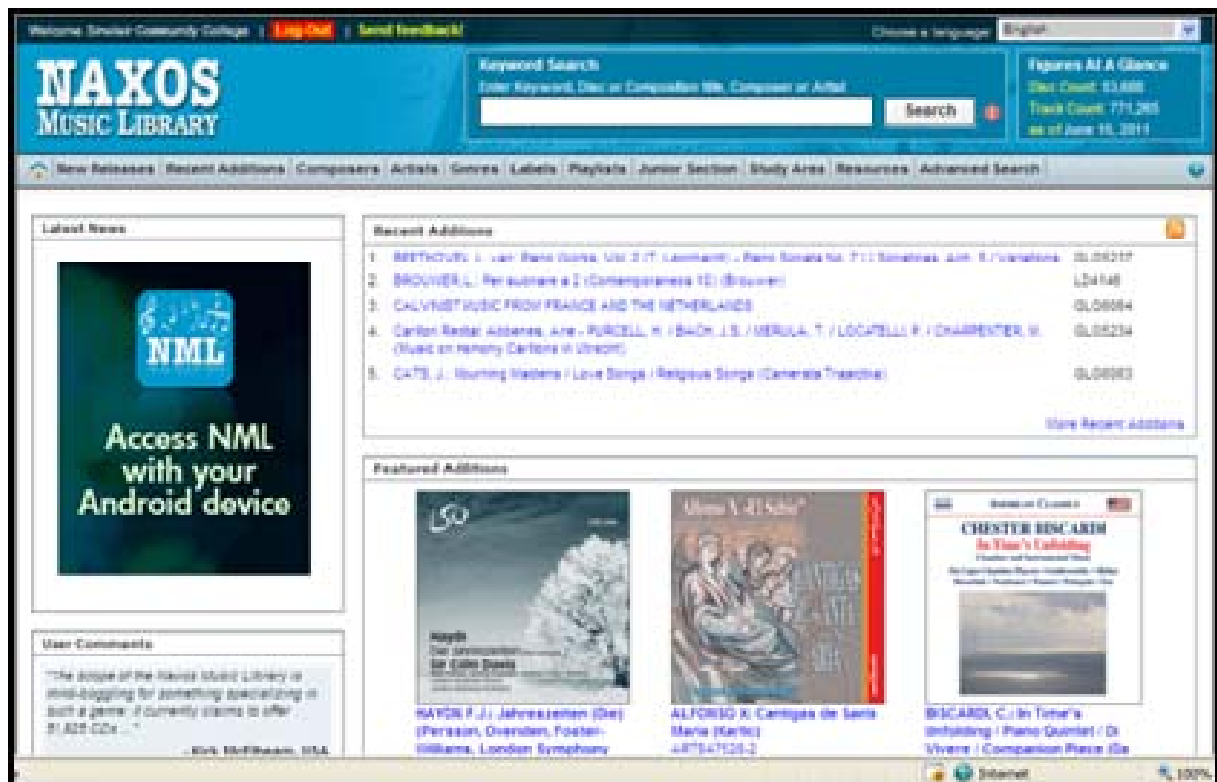


Figure 3-38. 20,000 Streaming Music Files.

Finally, as part of this project, the Library invested more time in social media, participating in OhioLINK's chat reference services and investing more time and effort in Facebook. By the end of the year, over 350 people were following changes to the page.

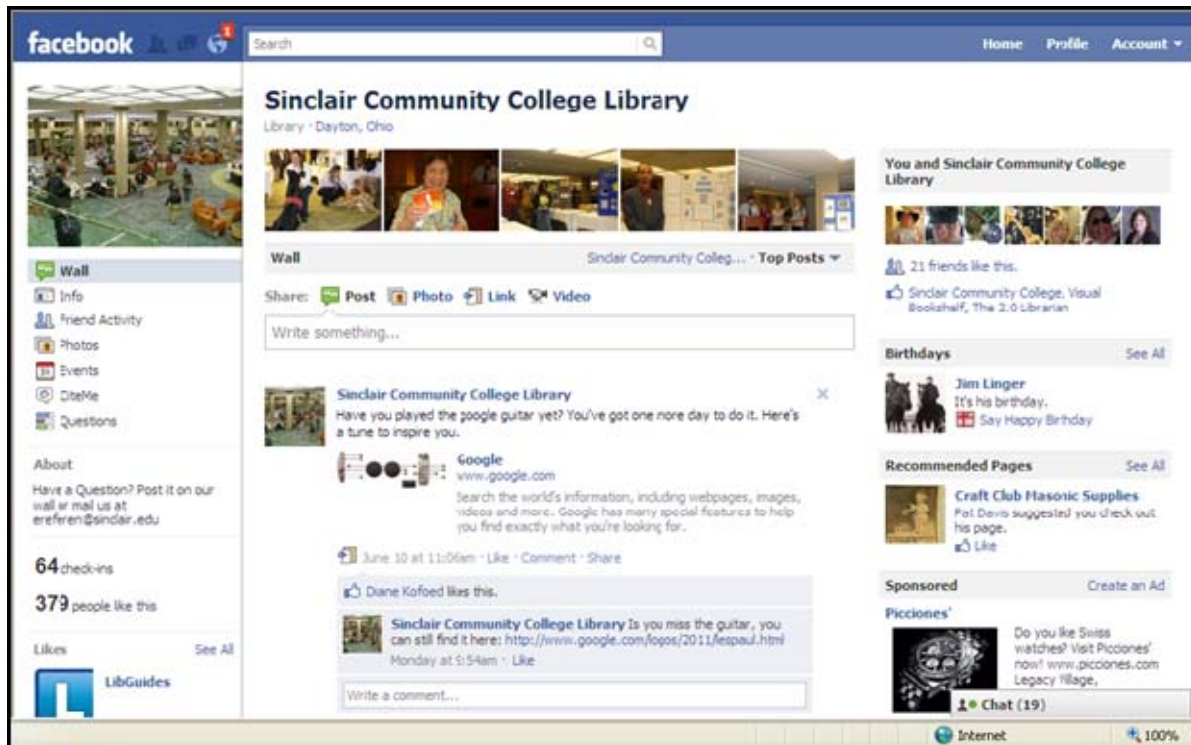


Figure 3-39. Library Facebook Page.

The Library's Facebook page (Figure 3-39) has been used to promote events in the Library, announce new books, communicate changes in hours, and share fun facts to spark interest.

Estimated Cost of the Project: The Library estimated a \$3000 to \$5000 investment in a product to integrate library and internet resources.

Cost Savings / Cost Avoidance: The Library selected LibGuides, which cost less than half the estimate. The cost of Films-on-Demand was offset by a corresponding drop in purchases of individual DVDs and resulted in no increase in the overall materials budget.

Qualitative/Quantitative Return on Investment: To be effective, resources need to be available when it is convenient for students and faculty, and the Library's move to digital, web-based information meets this criteria: it offers 24x7 access to information on many platforms: desktop and laptop computers, smart phones, and tablets such as the i-Pad, whether at home, office, or even in the classroom.

Target Completion Date: June 2011

Actual Completion Date or Current Status: Partial implementation as of March 2011 with the initial implementation of LibGuides for E-Books and the expansion of Films-on-Demand to the Academic Master Collection.

Library IT Teamwork Studio: Phase 1

The Teamwork Studio provides a space in the Library for 24 computers plus an instructor's station, where classes can meet to work in small groups, teams, or on individual projects requiring access to computers. It is located in the open library commons area, and as such, it is an active learning space rather than a traditional classroom. It can be reserved for classes, but when not in use, individual students can sign in to use the computers for their own work. Thus it is also a highly efficient use of space and technology.

The original design from FY 2010 proved to be very expensive given the current economic environment, and a phased approach to the project was adopted. Thus, this project is a first phase. Future enhancements could include the expansion of media technologies, sound controls, large screen monitors for group work, and enhanced instructor controls over student workstations.

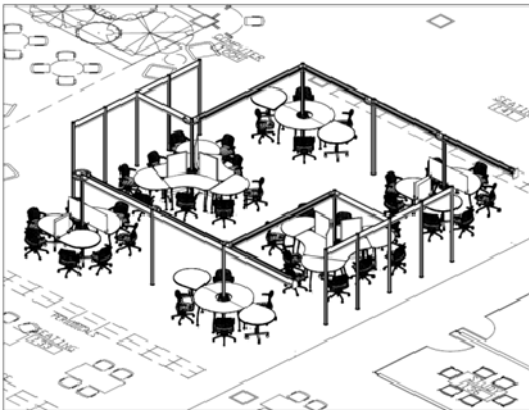


Figure 3-40. Teamwork Studio.

Estimated Cost of the Project: Original project cost was \$135,000. Phase 1 cost was \$80,000.

Cost Savings/Cost Avoidance: Costs were controlled by reusing furniture from another lab on campus. Desktop computers were installed rather than a more expensive proposal for laptops with additional oversized monitors. Also media equipment such as overhead projection was postponed to a future project.

Qualitative/Quantitative Return on Investment

By designing the facility to be used by individual walk-in library users when a class is not using the space raises its utility. There is no downtime as can happen with closed labs or classrooms. During Spring Quarter, its first in operation, there were over 4000 individual logged uses of the computers in this space for an average session time of 57 minutes.

Next, as a learning space, it must be functional. Instructors must be able to manage their classes, and students must be able to successfully complete their work. Because installation was not completed until Spring Break, instructors did not have an opportunity to design assignments to take advantage of the facility before this report was prepared.

However feedback from an initial test with an English 112 class held in this space illustrates the potential value for academic instruction in the future. Sample comments related to the facility were generally positive, with negative comments generally related to more noise than one would find in a classroom. In the following anonymous student comments the teamwork studio is referred to by its room designation, L-25:

- It was fun working in the library. It blended in with what we were doing, the noise was tuned out because of the setting. We had a lot of space to work with. Would enjoy having class in here all times!
- I love working on the L25 computers. It's a little loud, but I found it easy to work with other students. There's more room here also. Please don't make us go to the other room! J
- It was nice to do something different and break the monotony up a little bit. It did seem pretty loud. I thought libraries were supposed to be quiet. It was nice to be able to use a computer since we do not have one in our classroom.
- In working this area there were some pros and cons. The pro was that I liked was working in a big open space and I didn't feel like I was trapped in a closed room. The con was it was a little noisy from other people. I did enjoy being in the area though because it didn't have that in-class environment. Only suggestion I have is to find a way to make it easier to hear.
- I liked this area. Even though it was noisy I thought it was a successful class, and I liked using the computers.
- Working in the library area behind Starbucks was ok, kind of noisy, but it was a welcome alternative to being in a class that doesn't normally have computers. A few wrinkles ironed out and it will be a good learning area.
- The area in general is fine/learning compatible. The noise isn't a problem at all as a

matter of fact it gets greatly diluted out after your train of thought switches to the assignment. Adding onto what's already been said, it is nice to get out of the classroom atmosphere for a change. I can't thin of any negative aspects.

- This area was way better than our small classroom. A computer is packed full of knowledge and resources (and knowledge is power) I would rather work somewhere where I have plenty of space to work and relax while learning.

Target Completion Date: December 2010

Actual Completion Date or Current Status: April 2011

Major Projects FY 2011-2012

Major Projects for FY 2010-2011

A variety of innovative projects are planned for FY 2011-2012 in concert with the Strategic Values established by the Sinclair Board of Trustees. The projects are grouped by four departments within Information Services. Please note that the plan is to complete all defined projects during FY 2011-2012 barring any unforeseen circumstances. Also note that priorities may need to be adjusted based on the availability of required personnel and/or the identification of critical unplanned projects.

Systems Development & Maintenance

Following are the Major Projects for FY 2011-2012 for Systems Development & Maintenance:

- **Support *Completion-by-Design* and *Next Generation Learning Challenge* Related Activities**
- **Enhance Colleague Functionality**
- **Enhance *My Academic Plan* Software**
- **Enhance/Maintain Custom Software**
- **Support Semester Conversion Process**
- **Enhance Forms Central and Forms Control**
- **Support Business Operations**
- **Conduct Feasibility Studies and Support Software Evaluations**
- **Develop New Custom Software Applications**

Support *Completion-by-Design* and *Next Generation Learning Challenge* Related Activities

This project is focused on providing support for Sinclair's "Completion-by-Design Agenda." During FY 2010-2011, Sinclair received major grant support from the Bill and Melinda Gates Foundation and from EDUCAUSE to support efforts to increase the completion rate of students. During FY 2011-2012, Sinclair is in contention for a grant from the U.S. Department of Labor that also concentrates on improving student degree and/or marketable skills attainment.

The Manager of Web Systems will serve on the Completion by Design core implementation team, in addition to serving as the principal investigator for the EDUCAUSE grant. This individual holds a key management position within the Systems Development & Maintenance department, and consequently, the time devoted to these grant efforts has the potential to significantly influence which of the remaining items in this plan can be accomplished during FY 2011-2012.

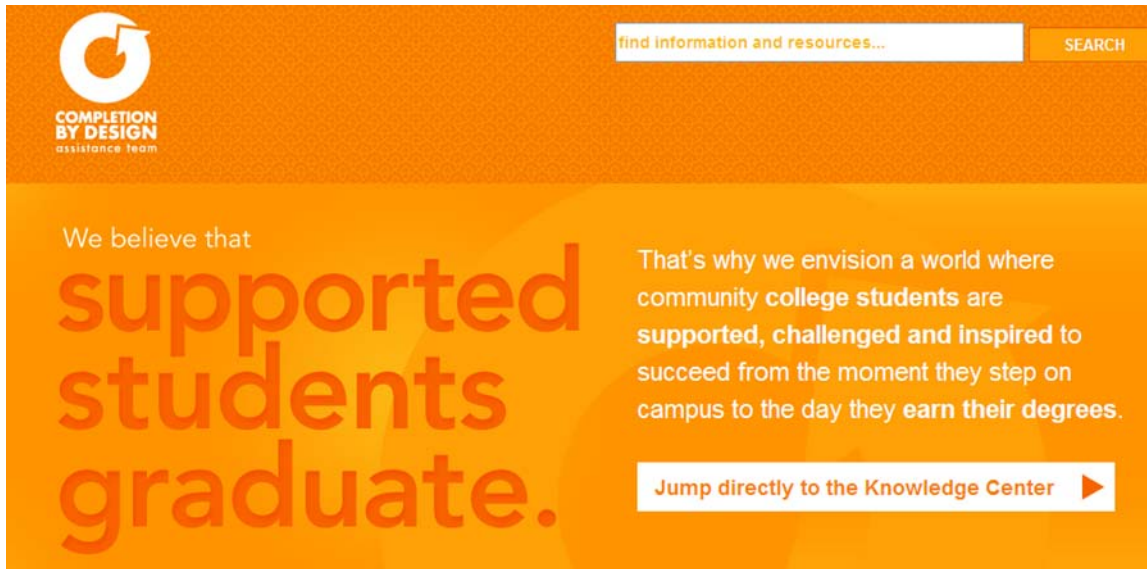


Figure 4-1. Completion by Design website with expression of organization's driving goal.

Estimated Cost of Project: Since the Manager of Web Systems will be serving on the core team for Completion by Design, and is the principal investigator for the Next Generation Learning Challenge grant, it is estimated that these two grants will consume a total of approximately four months of the Manager's time. In addition, there will be travel expenses for dissemination activities associated with NGLC, and there will be increased data costs for information required by Completion by Design. A reapplication opportunity for NGLC occurs during this time period, and there will be expenses associated with this activity. In total, it is estimated that the project will consume approximately \$45,000 worth of staff time.

Cost Savings/Cost Avoidance Anticipated for the Project: There will be an indirect savings realized from the NGLC grant in that Sinclair staff time will not need to be used to support SSP software once the open source organization is in place. Likewise, Completion by Design activities play directly into support for the "completion agenda" that seems to be guiding thinking regarding higher education funding. While it is not possible to put a precise number on the direct benefits of these activities, it is clear that both are closely linked to tangible economic forces impacting Sinclair.

Target Completion Date: June 2012

Enhance Colleague Functionality

Colleague is the software name for Sinclair's Enterprise Resource Planning (ERP) system. It is the core software used to process student enrollment, registration, and academic records. In addition, Colleague software supports all of Sinclair's business functions such as human resources, financials, and payroll. Colleague is a commercial product available from Datatel Corporation.

This project calls for making changes to Colleague that will enhance functionality and reduce costs for Sinclair. The project is a continuation of activity that has been underway over the last several years to pare the amount of custom software used within Sinclair's ERP system.

Several activities will fall within the scope of this project. These include:

- The Administrative Systems unit will link the Colleague faculty payload process to the Colleague payroll process in order to reduce the need for manual data entry between systems.
- Administrative Systems will work with the Bursar's office and the Accounting office to identify and implement alternatives to using paper checks for disbursing financial aid refunds to students. One option to be explored is the possibility of transferring funds to the student's Tartan payment card.
- Administrative Systems and RAR will work with the Human Resources office to link data contained in HR's hosted employee performance appraisal system to the information contained within the Colleague ERP system or Sinclair's data warehouse.
- Administrative Systems will contract with Datatel or a third party to provide consulting for financial aid operations. The goal of this consulting will be to increase usage of the full complement of software features and to increase use of the software's features supporting compliance with federal financial aid regulations.
- Web Systems will continue to develop a link between Sinclair's locally developed schedule creation software and the "shopping cart" feature of Colleague's registration module. This link will allow a direct connection between a student's course selection activity and the finalizing of registration for these selections.

Datatel - Isis-Development - ST

File Edit Favorites Tools Help

Quick Access XFPL Go

XFPL-Faculty Payload

Term: 10/SP Spring 10 Faculty Section Assign Section Restrictions

Budget #	SubjCrseSect	Ses	LoadHrs	Enr	Hon Enr	Factor	Pay Hrs	Override	OvrReas
1	0415 CIS 111	01	4.00	5	1	1.00	4.20		
2	0415 CIS 111	04	4.00	9		1.00	4.00		
3	0415 CIS 166	50	3.00	9		1.00	3.00		

Individual Instructional Responsibilities

Budget #	SubjCrseSect	Ses	Enr	Factor	Pay Hrs	Override	OvrReas
1	0415 CIS 270	01	4	0.20	0.80		
2							
3							

Reassigned Responsibilities

Budget#	Activity	Pay Hrs
1		
2		

Banked Hours: 0.00 Total Pay Hrs: 17.00 YTD Pay Hrs: 49.99

Last Updated by: SWOOD Last Updated Date: 03/10/10

Figure 4-2. ERP screen from faculty payload, information to be loaded directly into Payroll.

Estimated Cost of Project: While project activities will be spread over several individuals and multiple departments, the activities will consume the equivalent of the annual efforts of two full-time analysts. Total cost is estimated to be approximately \$170,000.

Cost Savings/Cost Avoidance Anticipated for the Project: There are several cost savings/cost avoidance benefits to be realized as a result of this project; not the least of which is the fact that this project will directly influence Sinclair’s compliance with federal financial aid regulations which, in turn, will affect Sinclair’s eligibility for federal financial aid dollars. The project will have the operational benefit of reducing the costs of processing paper checks and will result in the added benefit of increasing the likelihood of a higher level of student spending at college-owned or licensed venues.

Target Completion Date: June 2012

Enhance *My Academic Plan* Software

My Academic Plan (MAP) is locally developed software that is designed to provide students with a clear roadmap of their academic program. Additionally, once plans are developed, the plans guide students through their course selection process. The underlying goal of MAP is to keep students focused on completion of their degree goals and to minimize the amount of time needed for degree completion.

The screenshot shows the 'Sinclair's MAP Maker' application with several tabs: 'Home', 'Search Results', 'Academic', 'Remarks', 'Transcript', 'Current Schedule', and 'Planning Tool'. The 'Academic' tab is active, displaying the following information:

- Registration Status: N
- GPA: 3.363
- Credit Hours Attempted: 170
- Credit Hours Earned: 178
- Transfer Hours: 0
- Academic Standing: Dean's List
- Academic Restrictions: (dropdown menu)
- Academic Programs: (dropdown menu)
- Residency Status: Employee in State

Below this is a section for 'Placement/ACT Scores' with the following table:

Type	Score	Status	Date
Arithmetic Placement	45	A	05/24/93
Math Placement	28	A	05/24/93
Reading Placement	46	A	05/24/93
Writing Placement	37	A	05/24/93

Next is a section for 'Financial Aid Status' with the following table:

Fafsa Filed	Awarded	Term Award Status	Transmitted Date

At the bottom, there is a field for 'Intended Program of Study from the Admissions Application'.

Figure 4-3. Sample screen from MAP showing tab options across top of screen.

MAP has had a multi-year development cycle that is expected to culminate in FY 2011-2012. The software has been completed and put into production for the development of the academic plan and the linking of the plan to the courses selected prior to registration. Two final pieces remain. The first is the linking of the selected courses to the actual registration process, and the second is to develop early warning systems that alert advisors when students make registration decisions that are off plan. This latter feature will allow academic advisors to contact students for the purpose of returning them to their academic pathway.

The first of these goals will be accomplished by developing an automated connection between the courses selected using Sinclair's schedule development software and the actual registration process that takes place within the Colleague ERP software. To accomplish this end, Web Systems will need to work with the software vendor, Datatel, to develop an automated system for logging into a student's Colleague account. This automated login will need to be paired with a behind-the-scenes transfer of data from the schedule development software to the "shopping cart" feature within Colleague. Once both of these solutions are in place, the student will be able to move seamlessly from schedule development to finalizing registration.

The second component of this project calls for SD&M to work with RAR to analyze the actual registration selections made by students against the academic plan for those students and to establish a process to automatically alert the appropriate Academic Advisor when there is a disconnection between the two.

Estimated Cost of Project: It is estimated the project will consume approximately half of the time of a full-time web developer. Total project costs are estimated to be \$50,000.

Cost Savings/Cost Avoidance Anticipated for the Project: The primary benefit to be realized from this project is support for state and national completion agendas. These agendas emphasize the importance of students completing degrees and certificates that connect to employable skills. My Academic Plan is one of the most important resources Sinclair has available to keep students on track for degree/certificate completion.

Target Completion Date: January 2012

Current Status: This shopping-cart component and off-plan alerts of My Academic Plan represent the third, and final, stage of the academic planning software developed over the last two years. Previous components, which are currently in production, include planning software to be used when advisors meet with students and guidance software that interacts with students as they develop their actual schedule of classes.

Enhance/Maintain Custom Software

Sinclair's Web Systems unit has, over the years, created several custom software applications that have become central to the successful operation of various Sinclair offices. The Curriculum Management Tool (CMT) and the test management system are two primary examples of these custom applications.

This project involves investment of time and effort to add enhancements to each of these applications. CMT will be enhanced by adding a teaching syllabus feature. This feature will support a single, consistent syllabus to be used for all offerings of the same course throughout Sinclair's curricula. While this feature will allow ample opportunity for faculty to place their unique signature on the expectations communicated through the syllabus, it will ensure that essential and common institutional expectations are also included. This feature will make a significant contribution to the goal of providing students with consistent and timely information concerning academic expectations.

CMT will also be enhanced by adding an automated link between the data stored in CMT and the course information recorded within the Colleague ERP system. When CMT was first created, the Registration and Student Records office wished to maintain a final visual check over approved curricula prior to entry into the ERP system. As confidence in the accuracy of CMT data has increased, this office has now agreed to directly import data from CMT into Colleague.

The test management software is a solution created for the Testing Center to manage the authentication of individuals using the center's services and to assist in the secure transfer of test data between teaching faculty and the center. This component of the project will add additional security to the test exchange features and will extend the range of the software beyond the physical boundaries of the Dayton campus' testing center.

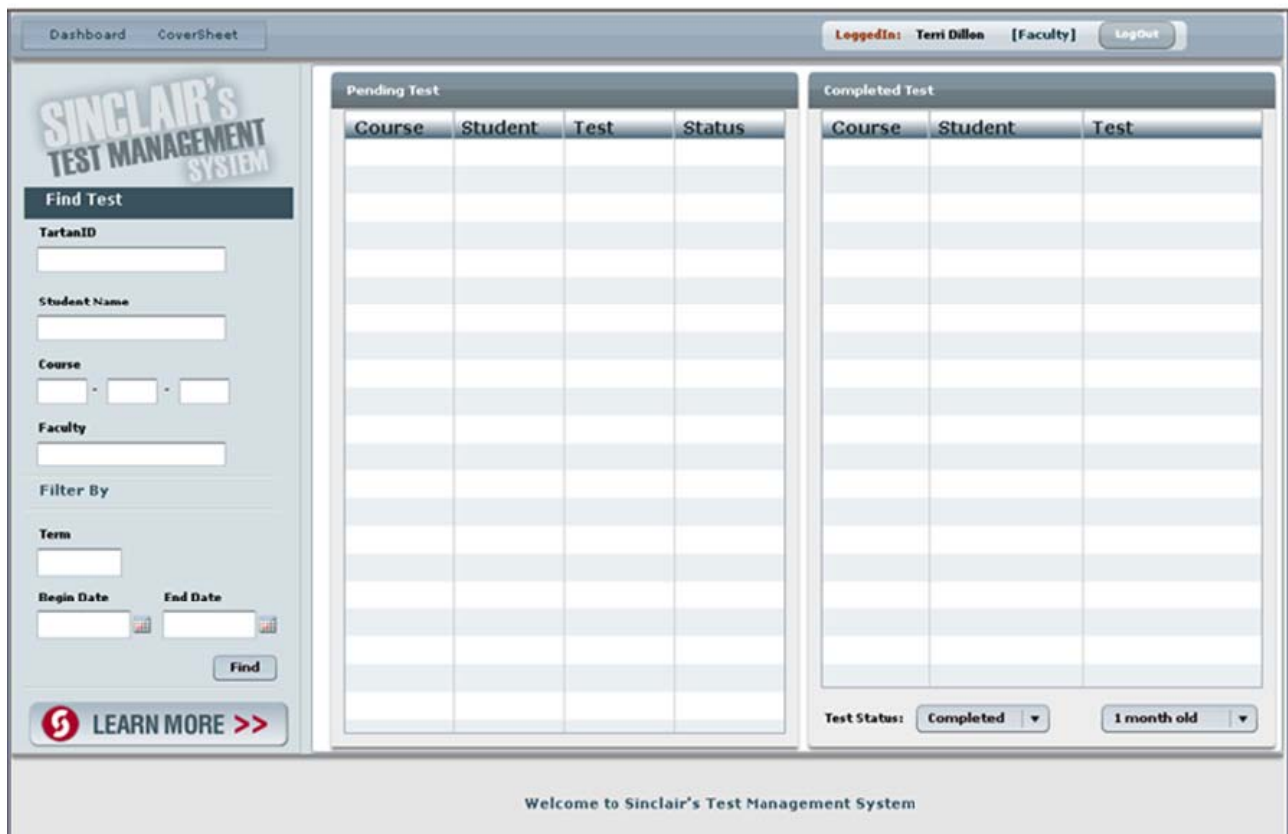


Figure 4-4. Sinclair's Test Management System is used to monitor operations within Sinclair's Testing Center.

A third component of this project will support a pilot effort underway within the Director of Curriculum's office to introduce a new method for measuring the effectiveness of general education instruction across the curricula. This new design will rely heavily on acquiring easy access to specific student assignments contained within the learning management system and presenting these assignments in a unified manner to a group of reviewing faculty. It is not expected that this project will move beyond the pilot stage during FY 2011-2012.

Estimated Cost of Project: The project will require expertise from staff both in Web Systems and Administrative Systems. The combined effort will equal approximately one-quarter of a full-time programmer's time. Estimated cost is approximately \$21,000.

Cost Savings/Cost Avoidance Anticipated for the Project: The cost of the project will be more than offset by increases in efficiency resulting from improved accuracy and reduced clerical time needed for data entry.

Target Completion Date: June 2012

Current Status: The test management software has been in production for approximately two years. Likewise, CMT is a longstanding Sinclair software creation that is core to curriculum development processes. This project involves making incremental improvements to these existing products.

Support Semester Conversion Process

Semester conversion is one of the most extensive and important institutional transitions currently underway at Sinclair. FY 2011-2012 represents the final year of a multi-year transition process. Sinclair will convert to semesters in August 2012, and this upcoming year presents the final opportunity to prepare for this fundamental change.

The Systems Development & Maintenance department is significantly affected by the semester transition. While Web Systems will have the responsibility of transitioning CMT from a quarter to a semester version, the majority of the work will be carried out by the Administrative Systems unit. This unit has, over the last several years, cataloged and changed all of the custom code within the Colleague software to bring it into compliance with the changes required by semesters. In this final preparation year, Administrative Systems will be faced with the challenge of vigorously and thoroughly testing all of these changes to assure correct operation. Additionally, Administrative Systems will lead the multi-department testing operation to assure that software and processes between business units operate as expected.

Estimated Cost of Project: This year's activities will require the equivalent of work from two full-time programmer analysts. Estimated cost is approximately \$170,000.

Cost Savings/Cost Avoidance Anticipated for the Project: Adoption of a semester calendar will synchronize Sinclair with the academic calendar of all other public higher education institutions in Ohio. The long term effect will be to improve coordination of academic course work between institutions and thus improve student transferability and success.

Target Completion Date: April 2012.

Current Status: Preparation has been ongoing over several years with FY 2012 being the last year of preparation for semester conversion, which is scheduled to go live for Fall 2012.

Enhance Forms Central and Forms Control

Forms Central is a software application developed several years ago to assist Sinclair in a transition to paperless business operations. The software allows both web and electronic forms to be linked to approval workflows, thus eliminating the need to complete, copy, transport, and store paper versions. Since introduction, the application has experienced significant acceptance within the Budget office, Human Resources, and the Grants office.

This project calls for the expansion of this software to a wider range of forms. Additionally, the project calls for the cataloging of Sinclair's entire inventory of forms with the goal of removing obsolete forms from circulation. Examples of forms that can be moved into the electronic workflow include forms associated with the employee hiring process, consolidated budget development forms, and budget transfer forms.

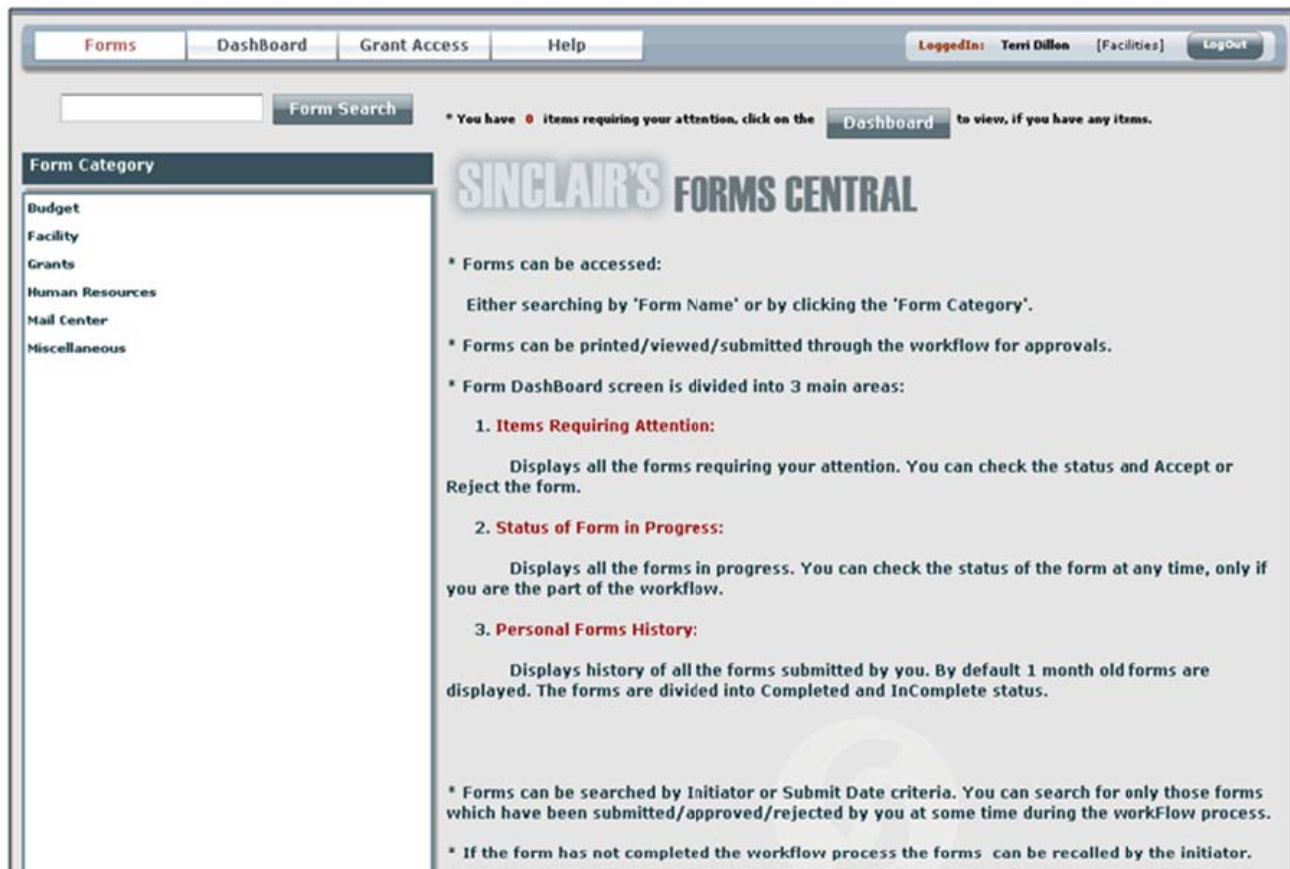


Figure 4-5. Screen showing the landing page for Sinclair's Forms Central software application.

Estimated Cost of Project: The project will require about one-fourth of a web developer's time. The estimated cost is approximately \$21,000.

Cost Savings/Cost Avoidance Anticipated for the Project: The project is expected to result in increased efficiency of forms processing. This improved efficiency should more than offset anticipated development costs.

Target Completion Date: January 2012

Current Status: This project builds upon the features included in a form processing tool put into production two years ago. The project adds enhancements to this existing product.

Support Business Operations

Sinclair's Business Services office will be undertaking several significant initiatives during FY 2011-2012 that will require technical and software support. For example, plans are underway within the Bookstore to make more extensive use of the customer service features available within the store's vendor supplied point-of-sale software. Each additional feature will require an assessment from Administrative Systems as to the Colleague changes needed to link these features to Colleague functionality. Once these linkages have been identified, Administrative Systems will need to modify and test the Colleague code associated with each change.

Business Services will be changing parking vendors during FY 2011-2012. Since parking lot access is tightly linked to the Tartan One-card system supported by Administrative Systems, this change will require that Administrative Systems train new parking personnel on system use, reporting, and troubleshooting.

Estimated Cost of Project: It is expected that the activities under this project will consume about one-half the time of a full-time programmer/analyst. Anticipated cost is approximately \$43,000.

Cost Savings/Cost Avoidance Anticipated for the Project: The Sinclair Business Services area will be completing negotiations of Sinclair's parking management contract during FY 2011-2012. It is expected that this new contract will result in substantial cost savings to Sinclair. The support identified in this project is a primary factor contributing to the success of this contract transition.

Target Completion Date: October 2011

Conduct Feasibility Studies and Support Software Evaluations

FY 2011-2012 is the third, and final, year for the current contract Sinclair has with Blackboard Corporation for their learning management system (LMS), "Angel". During this year plans will need to be made with respect to Sinclair's LMS strategy beyond the end of the existing contract. While the demands of semester conversion will preclude the possibility of actually

switching LMS vendors early in FY 2012-2013, a strategic decision will need to have been made by that time regarding long-term commitment to Blackboard. If there will be a long-term commitment, then an extended contract can be negotiated for future years. If a switch to another vendor is anticipated, then a transition strategy will need to be in place.

Sinclair's Human Resources unit will be engaged in another software evaluation during the coming year that will require assistance from SD&M units. Specifically, HR wishes to investigate the possibility of using software to support the position description creation and management process. The office wishes to eliminate the multitude of existing position descriptions and to consolidate on a series of more generic, multi-purpose descriptions. SD&M units will assist this software evaluation by providing advice on integration with the Colleague ERP and the data warehouse.

The Sinclair Foundation has a need to evaluate its existing customer-relationship-management and fundraising software. A major goal for The Foundation in the upcoming year is to enhance the connection between The Foundation and all past Sinclair attendees. This will significantly increase the size of The Foundation's database and will greatly expand the total number of communications with past students. SD&M staff will support The Foundation's software evaluation by providing technical support for evaluating capacities and capabilities.

Estimated Cost of Project: The various activities under this project will consume approximately one-fourth of a full-time manager's time. Consequently, the estimated cost for the project is \$26,000.

Cost Savings/Cost Avoidance Anticipated for the Project: The selection of software to support fundraising/alumni activities has the potential to directly influence the contribution support from these constituents. The project costs would be more than offset by this increased support.

Target Completion Date: June 2012

Develop New Custom Software Solutions

As constituent groups were interviewed in preparation for this plan, it became very clear there is a continuing desire for Sinclair to continue to invest in the creation of custom software solutions. The strategic value of previous applications such as CMT, SSP, and MAP has been recognized, and multiple offices would like to see the benefit of customized software extended to their own operations. Unfortunately, this increasing demand comes at a time of shrinking resources and competing strategic initiatives. Sinclair's commitment to the "Completion Agenda" and its previous acceptance of changes such as semester conversion have drawn SD&M resources away from creation of customized software and toward support for these critical initiatives. Consequently, it is quite possible that sufficient programming resources will not be available to address all of the custom software needs identified during development of this plan. These identified needs include:

- During FY 2010-2011, SD&M began the process of developing an integrated system that supports Sinclair's schedule development process. While that project had limited scope for the first year, it was envisioned to be the beginning step in a multi-year process that would result in a schedule development process which maximized space utilization, rationalized course sequencing, and reduced the amount of manual data entry required to support schedule changes. SD&M has been requested to continue this multi-year development process during FY 2011-2012.
- It is expected during the FY 2011-2012 Sinclair will move to the implementation stage for a dual-admission process with neighboring higher-education institutions. This dual-admission would be a web-based process that anticipates a one-point-in-time collection of the various and many data elements required for admission to each of the participating institutions. Sinclair's existing online admission form would need to be extensively modified to include additional data elements, and the logic underlying the program would need to be rewritten to incorporate the increased complexity of forwarding different data sets to different admitting institutions.
- High school performance is one source of information that is particularly important to assist in predicting future college performance. During FY 2011-2012, a pilot project will be initiated whereby Sinclair will establish a partnership with at least one local high school to develop a means of importing high school performance information into Sinclair's student information system. This information will be incorporated into predictive models of success in order to identify the high school performance factors contributing the most to future performance.
- During FY 2010-2011, web content management systems were evaluated and the decision was made to replace the existing system with one possessing a much wider feature set. The implementation of this replacement will take place during FY 2011-2012. The change of content management systems offers an excellent opportunity to address the need to combine the features of the staff-oriented web pages of our.sinclair.edu with the student-oriented web pages of my.sinclair.edu. However, since the combination of my.sinclair and our.sinclair will change the login default times for staff, and the combination will significantly affect how internal communication messages are structured, this program will need to be accomplished in close coordination with Sinclair's Marketing unit.

Estimated Cost of Project: Approximately one-half of the time of a full-time programmer is available to devote to this project. If all of this programming time were devoted to this project then costs are projected to be around \$52,000.

Cost Savings/Cost Avoidance Anticipated for the Project: Successful implementation of the software installations anticipated in this project will result in improved handling of web content, enhanced utilization of physical space, and better matching of employee skills to required duties. Each benefit on its own, and certainly all three combined, will offset the anticipated costs of this project.

Target Completion Date: June 2012.

Information Technology Services

Following are the major projects for FY 2011-2012 for Information Technology Services:

- **Virtual Server Host Management and Monitoring**
- **Datacenter Power Monitoring**
- **Disaster Recovery System Planning**
- **Mobile Communication Device Procedures**
- **Improved Administrative Security Controls**
- **Password Complexity**
- **Network Infrastructure Upgrades**
- **IPv6 Planning**
- **Systems/Network Procedure Improvements**
- **ShoreTel Reporting Software**
- **Fixed/Mobile Communication**
- **Wireless Network Needs Identification**
- **Cable Television System Upgrade**
- **Multimedia Podium Expansion**
- **Help Desk System Update**
- **Fax Server**
- **Print/Copy Chargeback Expansion**

Virtual Server Host Management and Monitoring

In our current HP Operations Manager implementation, the Network Operations Center (NOC) has no way of monitoring the physical machines that host virtual servers in our VMware ESX infrastructure. The physical servers host multiple VMs (Virtual Machines), and are the backbone of Sinclair's VMware configuration. If an ESX host starts having an issue, it can affect all VMs hosted on the server (anywhere from 3 to 10 virtual servers). Examples of the types of problems that could go undetected include bad CPU fans or power supplies, or even low data store space. In these cases, the NOC would not know about the problem until the Help Desk was already receiving calls. The Veeam nworks SPI will allow the NOC to monitor and manage both physical and virtual environments from one console.

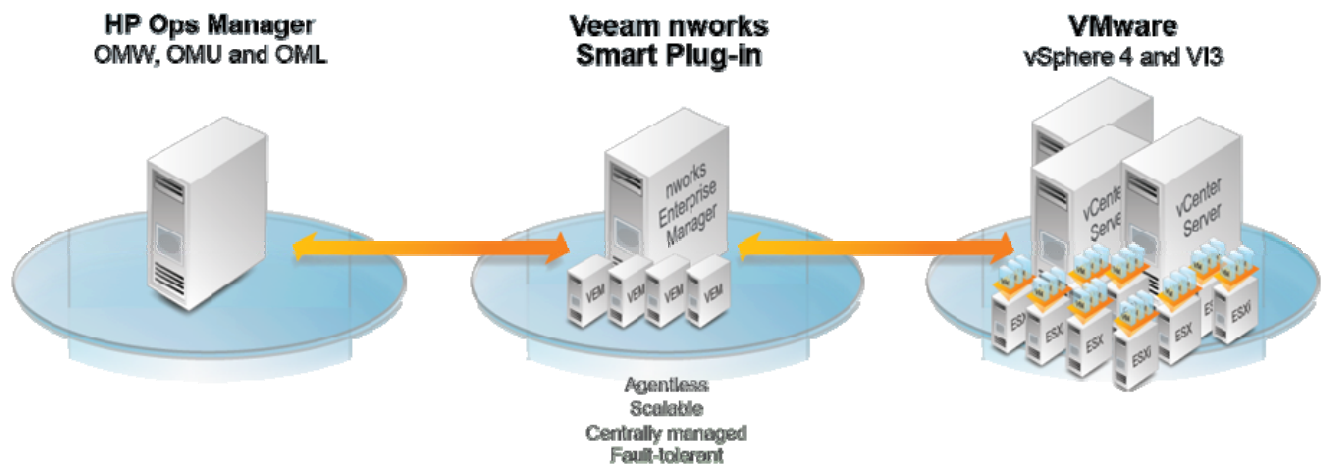


Figure 4-6. The Veeam nworks software integrates with the college's current management environment.

The nworks SPI provides distributed monitoring and management of the VMware infrastructure and is fully integrated into HP Operations Manager. It provides VMware performance, events, configuration, state and topology directly into HP Operations Manager, giving the Network Operations center a common view across Sinclair's physical and virtual infrastructures.

Estimated Cost of Project: This project will cost approximately \$30,000 depending on the chosen solution.

Cost savings/Cost avoidance anticipated for the project: The ESX servers host the guest VMs, and are the backbone of Sinclair's VMware configuration. If an ESX host starts having an issue, it can affect all VMs hosted on the server (anywhere from 3 to 10 virtual servers). By proactively monitoring the physical ESX hosts, we are helping to prevent large scale outages which in turn results in the avoidance of costs due to the inability to provide service to our customers.

Target Completion Date: April 2012

Datacenter Power Monitoring



Figure 4-7. APC Smart Power Distribution Unit.

The APC Next Generation Rack PDU (Power Distribution Unit) platform will help IT and Facilities Management more effectively manage power capacity and functionality for critical network, server, and data center equipment. These new units solve rack-level power needs while incorporating intelligent features such as real power measurement and environmental monitoring, all in a space-efficient zero-U form factor.

Standard rack PDUs provide reliable power distribution, but they do not provide any insight into how much power is being consumed by a piece of equipment. APC metered and switched solutions provide real-time remote load monitoring of connected equipment. APC also allows individual outlet control to power cycle outlets, and manage on-off equipment sequencing. NOC personnel can configure alarms to warn IT and data center managers of potential circuit overloads to prevent accidental power loss to critical equipment.

This fiscal year, ITS will purchase enough PDUs to monitor a single server rack and determine if there is enough benefit to look at purchasing additional intelligent PDUs for all 15 server racks in Sinclair's Dayton Datacenter.

Estimated Cost of Project: The project will cost approximately \$ 3,500 per rack.

Cost savings/Cost avoidance anticipated for the project: APC PDUs with metering-by-outlet provide greater power management with individual outlet-level power metering and user-resettable energy (kWh) logs for capacity planning and energy efficiency initiatives. Having information on the amount of energy each piece of equipment is using in the server room is the first step in eliminating older inefficient equipment.

Target Completion Date: June 2012

Disaster Recovery Systems Planning

In early 2011, Sinclair's IT department, in partnership with Afidence, began developing a DR (Disaster Recovery) system identification project. Individuals from Afidence began meeting with divisions across campus to identify the college's most critical business systems and capture a sense of "tolerance" relative to recovery time and system performance during a disaster.

The DR Systems Planning project will review data gathered during the division meetings and compare the information against Sinclair's current Disaster Recovery system list. A DR systems plan will then be developed to add any additional "business critical" systems and add a prioritization category to those systems based on the results of the DR identification project.

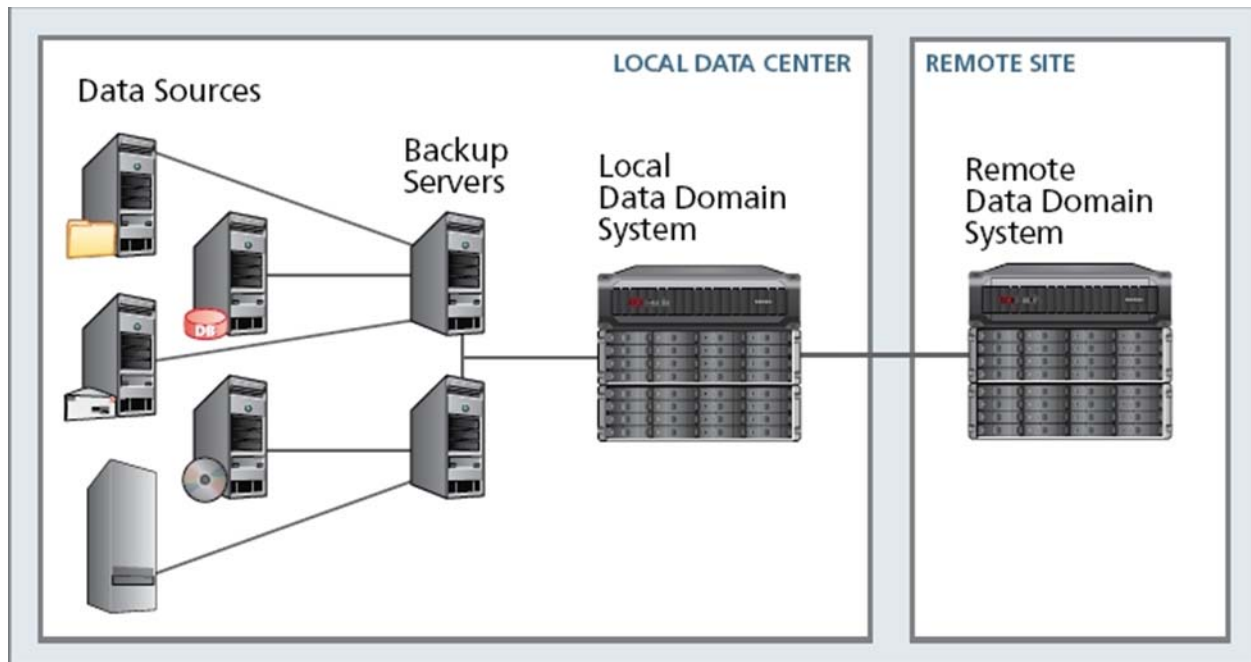


Figure 4-8. Disaster Recovery Map.

Estimated Cost of Project: There were no additional capital funds requested for this project. Any additional funds to purchase new servers would come from cost savings from other, funded projects.

Cost savings/Cost avoidance anticipated for the project: Developing and maintaining effective disaster recovery procedures and guidelines is less costly than the permanent loss of student and employee data.

Target Completion Date: June 2012

Mobile Communication Device Procedures

Mobile communication devices are used by some Sinclair Community College employees for internal and external communication. Mobile communication devices are understood to include any devices that make or receive phone calls, leave messages, send text messages, surf the Internet, or access email. These devices regularly incur charges for their communication services. Examples of such devices include smartphones, iPads, tablets, MiFis, etc.

Many other colleges have moved to a stipend model for the use of, and payment of, mobile communication devices for their employees. ITS, in cooperation with Business Services, recommends that Sinclair implement a similar plan for mobile communication devices for Sinclair employees whereby the majority of employees who require a mobile communication device will use their personal devices supplemented by a stipend provided by the College for mobile communication needs. The stipends are designed to compensate employees for the business use portion on their personal devices. The stipend program will also allow employees greater flexibility in choosing their devices and it will allow the College to alleviate some

administrative tasks but continue to fulfill IRS reporting requirements. A limited number of employees will continue to use college-owned mobile devices based on the functions of their positions.



Figure 4-9. Mobile devices.

In addition, as mobile communication usage continues to increase and the myriad of operating systems on these devices continue to multiply, a need to develop up-to-date procedures for supporting these mobile communication devices has been identified. Support documentation already exists for the College's wireless network, including connection procedures and troubleshooting steps, but additional documentation is needed such as support procedures based on the device and its owner.

Estimated Cost of Project: There are no non-personnel costs associated with this project as it will only involve the development of policy and procedure recommendations.

Cost savings/Cost avoidance anticipated for the project: This project could lead to cost savings through the reduction in the amount that is paid for entire cell phone plans, rather than just the amount of the plan that is proportional to the business use of the device. Additional cost savings could be experienced due to the reduction in overhead for the administration of college-owned cell phone plans.

Target Completion Date: June 2012

Current Status: Initial research has begun for this project (including benchmarks from league and Ohio community colleges), and initial meetings have been scheduled or taken place. Also, work on a draft document has begun.

Improved Administrative Security Controls

Administrator accounts are the most powerful and privileged accounts on a Windows-based system or infrastructure. There are different types of administrator accounts, or groups, ranging from Local Machine Administrator that provide full control of a machine through Domain Administrator that provides full access to any device or machine within the domain. Other administrator groups provide full control to specific machines or devices. All administrator

accounts have a common security vulnerability — misuse or compromise may result in a significant security incident.

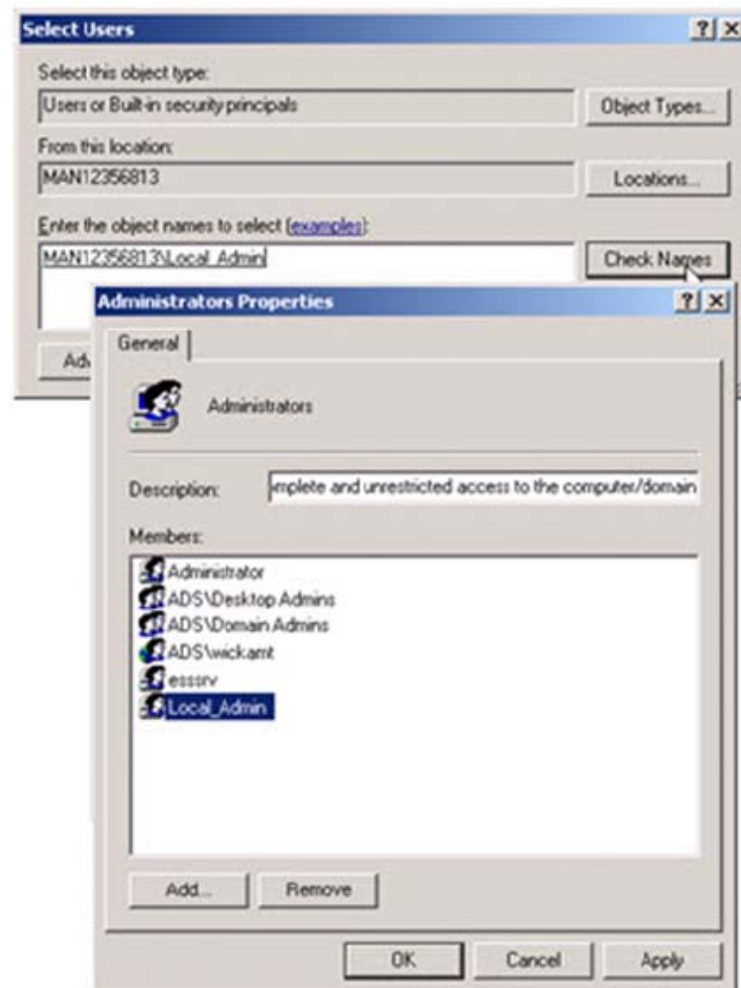


Figure 4-10. Administrator controls.

ITS has implemented controls that provide local administrator access to users who need it in a secure fashion. This project involves evaluating current practices and recommending improved secure practices for higher-level administrator accounts such as domain admin and service admin accounts. The primary focus will be to ensure these accounts are used only when necessary, not for routine system use, while ensuring the process is not complex or burdensome.

Estimated Cost of Project: The only cost for this project will be personnel resources.

Cost savings/Cost avoidance anticipated for the project: Administrator account misuse or compromise can result in a significant breach and associated costs of mitigating the breach.

Target Completion Date: March 2012

Current Status: ITS has implemented procedures to improve the controls over use of local administrator accounts on user PCs. Additionally, password complexity was enabled, which will improve the security of administrator accounts in addition to user accounts.

Password Complexity

At Sinclair, federal and state laws — most notably FERPA (Family Educational Rights and Privacy Act) — dictate how we handle much of the information we use to support our students and community. Who can access student information, how the College and its employees can use this information, and minimum standards or controls the institution must implement are all part of the FERPA equation. Ohio's data breach notification law dictates specific and extensive notification and remediation requirements, at the institution's expense, in the event of unauthorized access to personal information.

Since the password is the primary protection measure, it is imperative that every UserID is protected by an effective password. An important characteristic of an effective password is that it should be hard to guess or otherwise 'crack.' Unfortunately, most people do not use effective passwords, and also do not protect the passwords from discovery. Simple passwords, such as '123456', 'password', 'qwerty', 'abc123', or 'sinclair' are common. Pet, children, or grandchildren names, birth dates, and other easily guessed or discoverable information (information that can be easily found on social network sites like Facebook) are also not effective as passwords.

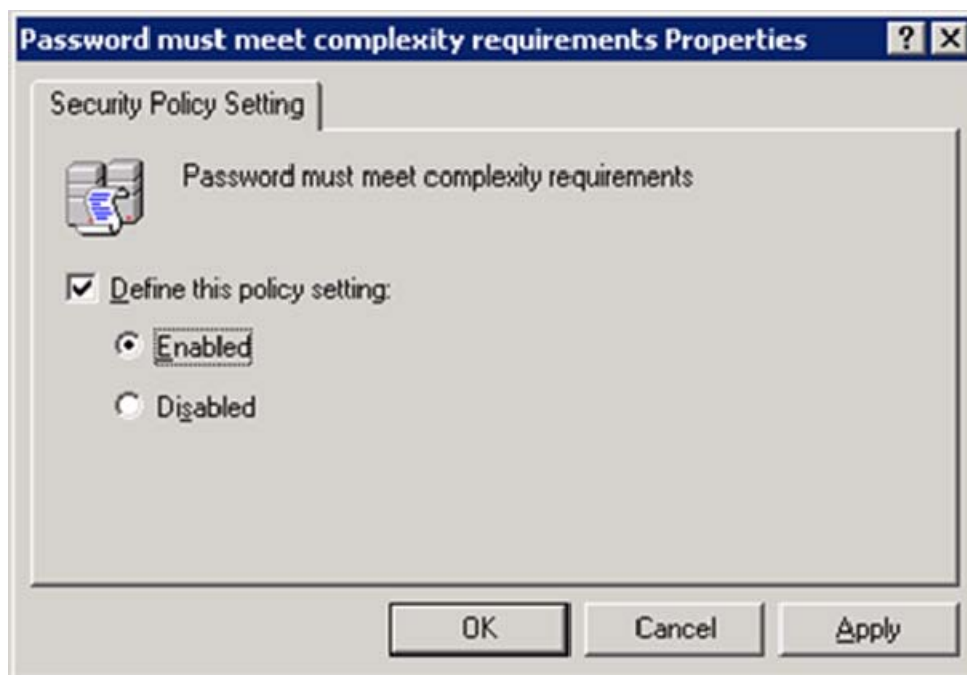


Figure 4-11. Password complexity settings.

This project involves implementing technical controls to enforce standards for password *complexity*. These standards will be technically enforced when an account is initially created and whenever a user changes his or her password.

- Passwords **must not**:
- Contain the user's account name
- Contain more than two consecutive characters of parts of the user's full name
- Passwords **must**:
- Be at least 8 characters long.
- Contain characters from 3 of the following categories:
- Uppercase characters A-Z
- Lowercase characters a-z
- Numbers 0-9
- Special characters (such as !,\$,#,%).

Estimated Cost of Project: The only cost of this project will be personnel resources to implement procedures. There may be an initial 'spike' in password resets until users become familiar with creating/memorizing complex passwords.

Cost savings/Cost avoidance anticipated for the project: Passwords are the first, and often only, line of defense against unauthorized and/or illicit use of the systems and data they contain. Passwords are the primary protection from cyber attacks. Using weak passwords increases likelihood of account compromise and can result in a significant breach and associated costs of mitigation of the breach.

Target Completion Date: August 2011

Current Status: Password complexity has been enabled and communication has been published to assist users in understanding the need for the change and how the process works.

Network Infrastructure Upgrades

Information Technology Services (ITS) maintains a plan for the annual renewal & replacement (R&R) of information technology infrastructure components. This plan is used to project expenditures of these components over a five year period to provide the college's leadership with information to aid in budget planning. Each year, during the annual planning and budgeting cycle, the R&R plan is updated with any new information that would change expected expenditures for the coming year as well as the next four years.

Each item that is identified on the R&R plan has a useful life. This useful life along with the total cost of the equipment, determines the funds that must be set aside each year to replace the equipment when it has reached its end of life. Network Infrastructure equipment has an

estimated useful life of five years. In FY 2011-2012, ITS plans to replace the edge switches in 10 network closets located in buildings 7, 10, 12, 13 and the Library. Concurrently, the patch cabling in the network closets will have to be upgraded to permit connectivity to these devices and support the increased connectivity speeds these devices will support.

The network devices that we will use for this upgrade are the latest S-Series switches from Enterasys and will connect user devices to the network at 10 times their current speed. Currently, network devices are connected to the network switch at 100 Mbps and each switch is connected to the network core at 1 Gbps. The S-Series switches will increase that connection speed 10 times to 1 Gbps and 10 Gbps, respectively.



Figure 4-12. Enterasys S-Series Family.

Estimated Cost of Project: \$1,250,000

Cost savings/Cost avoidance anticipated for the project: The renewal and replacement of network equipment avoids the costs that can be a result of failures. Due to our relationship with Enterasys and issuing the PO for this equipment prior to June 30, 2011, we were able to secure an addition 5% discount, resulting in a cost savings of \$88,000.

Target Completion Date: December 2011

Current Status: The equipment for this project has already been ordered with delivery expected in July 2011.

IPv6 Planning

The purpose of this project is to develop a plan to support Internet Protocol Version 6 (IPv6) in the campus network. IPv6 is the internet's "next generation" protocol designed to succeed Internet Protocol version 4 that is widely used today. To communicate over the network, computers and other devices have numeric addresses analogous to telephone numbers. These numeric addresses are known as Internet Protocol (IP) addresses. As the Internet and the number of people using the Internet grows exponentially, so does the need for unique IP addresses.



Figure 4-13. Internet Protocol Version 6.

The Internet Engineering Task Force (IETF) is the organization that develops Internet technologies. In the mid 1990's, the IETF developed a draft standard for IPv6, anticipating the need for more IP addresses in the future. IPv6 allows more users and devices to communicate over the network by using bigger numbers to create IP addresses. With IPv4, every IP address is 32 bits long, which allows for 4.3 billion unique addresses. In comparison, IPv6 addresses are 128 bits long, allowing for 2.3 Quintillion addresses. In other words, about one address for every square inch of the earth.

The reason for this project is that the supply of unique IP addresses is running out. In fact, as reported by potaroo.net, the supply of IPv4 addresses is already exhausted. So new requests for addresses going forward may only be fulfilled by using IPv6 addresses. As such, Sinclair has to be prepared to accommodate this addressing scheme. Much of the equipment Sinclair uses is compatible with IPv6 and Microsoft Windows 7 and Server 2008 come with IPv6 enabled, so we have IPv6 on our campus network now, it is just not being used. This project will evaluate the devices on our network to determine if they are IPv6 capable and develop a plan to use IPv6 enabled devices on the Sinclair network as well as connect to IPv6 devices external to Sinclair's network.

Estimated Cost of Project: As this project is investigational in scope, there is no cost associated with this project.

Cost savings/Cost avoidance anticipated for the project: Not being ready for IPv6 as it becomes more widely available could result in disruption to users.

Target Completion Date: June 2012

Current Status: Five people in ITS have attended training/informational classes on IPv6.

Systems/Network Procedure Improvements

The purpose of this project is to perform research to determine the most critical processes performed within ITS and then document them. There are various reasons to document critical processes, such as compliance, operational needs, management of risks, and continuous improvement. This project is being undertaken to primarily focus on the last two reasons, management of risk and continuous improvement.

Established procedures are a control activity necessary to effectively manage risks. These procedures document an individual's and/or department's knowledge of a process so that the process is accomplished in a standardized manner, minimizing the chance for unregulated activities to creep into those processes. This documentation (shown in Figure 4-14) is also important if an individual leaves Sinclair so that his/her knowledge of that process will be retained. In addition, some processes are seldom used, and this documentation can help ensure that the process is executed in a standardized manner.

Procedure Title: [REDACTED]	Date: [REDACTED]
	Procedure No: [REDACTED]
Written/Revised By: [REDACTED]	
Approved By: [REDACTED]	

Figure 4-14. Critical process documentation form.

Documented processes also provide a base from which continuous improvements can be made. They provide a standardized method for executing processes with clear goals for the process. Changes implemented to improve those processes can then be compared to the original to ensure the goals of the process are still being met.

This project will begin by holding Compression Planning meetings to determine what processes are critical to ITS. The output of those meetings will be a list of processes for which documentation is necessary. Processes from this list will then be assigned to ITS staff to complete.

Estimated Cost of Project: Only personnel costs are associated with this project.

Cost savings/Cost avoidance anticipated for the project: Having documented processes will reduce errors in executing those processes, thus avoiding the costs that downtime would incur.

Target Completion Date: June 2012

ShoreTel Reporting Software

As college departments have had to service ever increasing call volumes with the same amount of staffing there has been a heightened interest in getting data on phone operations in individual departments. This data can be used to determine whether changes need to be made to the department's handling of calls or whether automated processes can be used to make improvements within the phone system. The most used function of the phone system to handle call volume is the auto attendant feature. Auto attendants serve a function to filter callers and assist in routing calls to appropriate destinations without any operator intervention. They can also assist in routing calls according to the time of day as well as weekend and holiday routing.

Auto Attendant Summary Report	
For Auto Attendant(s) 8037, 2427, 2426, 2413, 2419, 2422, 1016, 2632, 2604, 2609, 1130, 1831, 2614, 1862, 1098, 1352, 2683, 2634, 2644, 2501, 2513, 2635, 1838	
Name(xExtension)	Number of Calls
Allergy AA(x1130)	834
325 Exam Room 3(x2419)	2
325 Exam Room 6(x2422)	1
325 Centralized Queue(x2426)	102
325 Centralized AA(x2427)	818
Anne Haffa(x2513)	31
Amber Hill(x2614)	237
Angelica Kraft(x2634)	50
Annette Rudes(x2635)	10
Angio Line(x2644)	38
6333 Main MedRec(x2664)	28
2nd Floor Reception(x8037)	3

Historical Lookup						
For Caller ID: 3304146469						
Date	Call Type	Extension	Trunk	Start Time	End Time	Duration
9/13/2010	Outbound	139	+13304146469	14:17:08	14:17:29	00:00:20
9/14/2010	Outbound		+13304146469	13:17:43	13:18:34	00:00:50
9/15/2010	Inbound		121	08:02:18	08:02:27	00:00:09
9/15/2010	Inbound	101	121	08:06:57	08:07:22	00:00:24
9/17/2010	Outbound		+13304146469	13:04:31	13:04:57	00:00:26
9/24/2010	Outbound	139	+13304146469	13:25:12	13:25:20	00:00:08

Figure 4-15. Examples of reports provided by new software.

Although ShoreTel has several reports within its system, the reports do not adequately give an administrator the ability to measure and evaluate most departments' phone operations. With the help of Accent Communications, our phone system maintenance provider, it was determined that there is a company that has developed customized reports which provide improved statistics based on the call event records in the ShoreTel system.

These reports give increased drill-down capability over the standard reports that are a part of the ShoreTel system. It is also possible to run the reports on a separate server to prevent impacting the performance of the phone system. In addition to using the reports for evaluating operations of features such as workgroups and auto attendants, they can assist in servicing requests for phone call investigations.

Estimated Cost of Project: \$17,000

Cost savings/Cost avoidance anticipated for the project: This software will enable ITS to assist departments in making changes to operations that could result in the avoidance of additional staff.

Target Completion Date: March 2012

Current Status: The software has been identified and the reports that are available are being reviewed to determine which would be of the most benefit.

Fixed/Mobile Communication

Fixed/Mobile convergence is the trend towards seamless connectivity between a fixed and a wireless telecommunications network. It implies a physical network that will allow cellular telephones to function smoothly with a fixed infrastructure such as a phone system or a private wireless network. The ultimate goal of this convergence is to optimize the transmission of all data, voice, and video communications, to and among clients, no matter what their location or device. In other words, this convergence means that a single device can connect through, and be switched between, the wired network of the phone system, the cell network, and the on-campus wireless network.

In order for this concept to work, there is a need for a third party software to bridge and switch connectivity between a cell carrier, the ShoreTel phone system, and the existing wireless network at Sinclair. ShoreTel recently acquired Agito, and they have combined the Mobility Router (shown in Figure 4-16) into their product line. This router is a highly scalable network appliance that meshes the wireless LAN, the carrier cell network, and the ShoreTel phone system together to extend voice and Unified Communications to mobile devices. It lets users make and receive calls from both the ShoreTel system and personal cell numbers by automatically selecting the best network (Wi-Fi or cellular) with fast and automatic network handover.



Figure 4-16. ShoreTel Mobility Router.

With this technology, Sinclair can benefit from lower cost in-building voice coverage by leveraging the existing wireless network, reduce mobile call costs through the least cost routing while on campus, and maintain call quality and cell phone battery life. Ultimately, additional efficiencies could be gained by using common wireless devices, thus reducing our dependence on cell phones for everyday use while on campus.

Estimated Cost of Project: \$50,000

Cost savings/Cost avoidance anticipated for the project: This will further utilize the existing wireless infrastructure and reduce the overall dependence on cell phones and reduce their usage while on campus. Although it is difficult to specify exact cost savings, estimated substantial savings should occur as proliferation of mobile devices continue to escalate.

Target Completion Date: April 2012

Current Status: A system upgrade is being planned for July 2011 to accommodate the Agito router hardware and software.

Wireless Network Needs Identification

As the availability of wireless devices and e-books, as alternative to hard copy text books, continues to grow, the need for wireless access in the classroom will be increasingly important. Currently the wireless access on campus is mainly in public spaces, and only classrooms that are adjacent to these spaces have coverage. A small number of additional classrooms have coverage based on the need to support laptops that have been purchased for a particular academic program.

This fiscal year ITS will work with the Academic divisions to develop a plan for determining how classrooms, that require wireless capability, will be identified. Also, a budget for the wireless equipment, cabling, and installation will be created and requested in the FY 2012-2013 capital request process.



Figure 4-17. Wireless access is provided throughout public spaces on campus.

Estimated Cost of Project: There is no non-personnel cost for this project as it will identify the scope of the work to be done and provide an estimated cost to be budgeted for in FY 2012-2013.

Cost savings/Cost avoidance anticipated for the project: This project will support the Bookstore's initiative to rent netbooks and sell e-books, which will result in increased revenue. Developing a plan for strategically placing wireless in classrooms will be more cost effective than unplanned, reactive installations of equipment that would occur over the next few years.

Target Completion Date: December 2011

Cable Television System Upgrade

The Sinclair Cable Television system is used by Sinclair for more than just the distribution of broadcast entertainment. It is a video distribution network that ITS can use to transmit video throughout the campus. Satellite conferences and other video events can be viewed in virtually any classroom on campus using the campus television system. In addition, the CastNET campus messaging system and the Qflow system used by the Counselor's office, Financial Aid, and Enrollment Services are broadcast to monitors throughout campus using the campus television system.



Figure 4-18. The campus cable TV system displays multiple types of video in Building 14.

This year a project was initiated to upgrade the campus television system to transmit digital signals while leveraging the existing infrastructure. To accomplish this ITS has hired Heapy Engineering to provide design, contract administration, and field observation for the Upgrade of the CATV Head End for Digital and HD Broadcast. The specifics of this contract include the college being provided the design for new frequency agile Digital Cable decoders to receive and decode channels to baseband audio/video and feed into the existing analog NTSC modulators currently used for the AV System. This will provide the college with the ability to have some digital content on both the analog and digital sides of the CATV Head End until a full switch over to Digital can be completed.

Estimated Cost of Project: \$250,000

Cost savings/Cost avoidance anticipated for the project: Continuing to maintain the existing, legacy cable television system is not cost effective. Updating now to a system designed to leverage technologies used throughout campus reduces future maintenance and upkeep costs. The college will also be able to broadcast in digital and provide a clearer picture.

Target Completion Date: December 2011

Current Status: A purchase order has been issued to Heapy Engineering to provide professional engineering design, bidding services, contract administration, and field observation services for the upgrade of the CATV Head End for Digital and HD Broadcast.

Multimedia Podium Expansion

In FY 2008-2009 a project was created to analyze space management and multimedia presentation equipment needs for Sinclair's Dayton campus, and to provide a recommendation including associated costs for installing standard multimedia presentation systems in all remaining classrooms and labs throughout the Dayton campus.

This analysis determined a minimum set of equipment for every classroom and lab space on campus with related costs. In FY2009-2010 and FY 2010-2011, ITS worked with Facilities Management and the Academic divisions to identify and upgrade 65 classrooms to the new multimedia standard. This brought the total number of multimedia-capable classrooms to 274.



Figure 4-19. Multimedia Classroom.

ITS and Facilities Management has identified 34 remaining rooms that can benefit from multimedia podiums. Capital funding has been requested to upgrade these rooms in FY 2011-2012 which will complete the campus-wide installation of multimedia capabilities in all classrooms.

Estimated Cost of Project: \$200,000.

Cost savings/Cost avoidance anticipated for the project: Standardization of the multimedia presentation equipment across all Sinclair academic spaces creates an opportunity to use space more effectively. Effective use of space translates into time savings for instructors who can count on the same presentation equipment being in any classroom in which they are scheduled to teach.

Target Completion Date: May 2012

Current Status: The rooms have been identified that will be installed and the funding has been made available in the capital budget.

Help Desk System Update

BMC Service Desk Express is used by IT and Facilities Management to assign, view and track requests, run reports and allow Sinclair faculty, staff or students to enter work requests to report problems and check the status of requests.

The screenshot displays the BMC Service Desk Express web application in a Windows Internet Explorer browser. The interface includes a navigation menu on the left with categories like Problem Management, SMS Viewer, Crisis Management, Asset Management, Service Level Mgmt, Administration, System Administration, Self Service, Business Rules, External Links, and Support. The main content area shows 'ALL INCIDENTS 2 (SCC)' with a search filter set to 'All Incidents 2 (SCC)' and an optional filter for 'Incident #'. Below the search area are tabs for 'Table', 'Calendar', and 'Chart'. The 'Table' view displays a list of incidents with columns for Open Date & Time, Incident #, State, Client ID, Last Name, Urgency ID, Loc, and Subject ID. The incident with ID 423508 is highlighted in yellow.

Open Date & Time	Incident #	State	Client ID	Last Name	Urgency ID	Loc	Subject ID
6/15/2011 12:12:23 PM	423509	C	735276	Higgins	REQUEST	N/A	MISC-XFER-CC
6/15/2011 12:05:43 PM	423508	O	331915	Kimmel	HIGH	SINCLAIR	ADM-COLL-AC
6/15/2011 12:04:04 PM	423507	C	413342	Massie	REQUEST	SINCLAIR	ACCT-PROB
6/15/2011 11:59:49 AM	423506	O	574776	Kelly	ADM-IMPORTANT	N/A	ADM-POS-TAR
6/15/2011 11:58:47 AM	423505	C	165004	Calahan	REQUEST	SINCLAIR	HARD-PC-DVD
6/15/2011 11:58:38 AM	423504	C	628389	Joseph	STANDARD	N/A	SOFT-EQUI
6/15/2011 11:55:19 AM	423503	C	226853	Fulenkamp	REQUEST	N/A	MISC-XFER-CC
6/15/2011 11:55:07 AM	423502	C	407182	Jackson	REQUEST	N/A	SOFT-OUTLOOK
6/15/2011 11:53:14 AM	423501	C	428200	Harter	REQUEST	SINCLAIR	WEB-SINCLAIR
6/15/2011 11:52:44 AM	423500	C	631289	Fox	REQUEST	N/A	WEB-BROWSER
6/15/2011 11:51:41 AM	423499	O	GENERIC	GENERIC	REQUEST	N/A	WEB-ANGEL

Figure 4-20. The Help Desk's BMC Service Desk Express Software.

The purpose of this project is to upgrade the BMC Service Desk Express software from version 9.20.4164.0 to version 10.1. Steps in the upgrade will include the importing of data, creation of business rules to perform automated tasks, entering client information, and setting up access for support staff members and groups. Some customizations that need to be tested on the new version of the software include CTI Integration and the Self-Service capability.

Estimated Cost of Project: \$20,000

Cost savings/Cost avoidance anticipated for the project: This upgrade will allow ITS to maintain vendor's support.

Target Completion Date: December 2011

Fax Server

As paper forms have been replaced by electronic documents and web forms, the requirements by most offices for fax machines has continued to decline. However, many offices still have the need for fax machines on a regular basis, and most people have the need to send or receive a fax on an infrequent basis. These factors have resulted in Sinclair offices having a total of 170 fax machines. Some of these fax machines have high usage, but many of them have almost no usage.

This year ITS will investigate alternatives for providing a centralized, network-based fax server that will allow the replacement of separate fax machines around campus. The system that will be implemented will be usable by every user on the network, and therefore will not require the continuation of the installation of separate fax machines and the associated costs to maintain an analog phone line for each machine.



Figure 4-21. A typical standalone fax machine and a Multi-Function Printer which includes fax capabilities.

Estimated Cost of Project: The solutions that are available have a wide range of prices; however, limiting the scope of this project should allow the cost to be somewhere between \$10,000 and \$15,000.

Cost savings/Cost avoidance anticipated for the project: The ongoing costs related to the replacement of fax machines and the maintenance of analog phone line equipment will be eliminated. A substantial annual saving is anticipated.

Target Completion Date: June 2012

Print/Copy Chargeback Expansion

During FY 2009-2010 ITS evaluated pay-for-print solutions to determine which system would provide for the best replacement of the GoPrint system that had been in place for several years in a number of academic labs. The solution that was chosen was Equitrac, which replaced GoPrint and was subsequently installed in all remaining spaces during FY 2010-2011. In the beginning of FY 2010-2011 ITS also switched the satellite copier fleet to use Equitrac for performing chargeback. These copiers had previously used the Tartan Card system for allowing departmental chargeback, which did not provide adequate reporting and management control.

Having all printer and copier chargeback under the Equitrac system has provided significant improvements in the quality of data that is available regarding the usage of campus printers and copiers. This fiscal year the remainder of campus printers, which are in administrative offices, will be migrated to Equitrac. This will allow much better access to information by budget managers and decrease costs by reducing waste and improving user accountability.

The screenshot shows the Equitrac website interface. At the top, there are navigation links: Check Balance | Check Activity | Change PIN | My Billing Codes | Departmental Activity/Users. Below this, a message states: "The table below contains a detailed listing of all Equitrac activity associated with your account sorted by transaction date." Instructions for sorting and exporting are provided. An "Export To CSV..." button is visible. The main content is a table titled "Equitrac Transaction History for Selected User".

Transaction Date	Transaction Type	Charge/To	Document Name	Computer Name	Printer/Copier	Cost	Free Print Balance	Pages
3/30/2010 5:29:28 PM	prn	Equitrac Free Prints	http://data.sir... oid=10% sfsps%5F	LAB-05214-900	qp5214b	0.05	14.95	1 x Ltr
6/24/2010 8:42:02 AM	son	10-3460-55300-0000	PCC: Scan		mp0144d8-snr	0.00	NA	1 x UltraSpeed/C
8/18/2010 1:28:56 PM	cpy	3460	Copy		qp13000SNAH	0.72	NA	6 x Ltr/D
8/18/2010 1:41:39 PM	prn	Equitrac Free Prints	file://C:/Docum... and Settings/scott... Settings	A13000-0HX	p13000sna	0.20	14.80	4 x Ltr
8/18/2010 1:42:10 PM	prn	Equitrac Free Prints	file://C:/Docum... and Settings/scott... Settings	A13000-0HX	p13000sna	0.20	14.60	2 x Ltr; 2 x Ltr/Manual
8/21/2010 10:39:30 AM	prn	Equitrac Free Prints	Microsoft Word - Brnker assignment... s.doc	LAB-CC111-009	qpcc111	0.20	14.40	4 x Ltr
4/26/2011 6:50:34 PM	prn	3460	https://data.sir... oid=11% sfsps%5F	LAB-06230-900	qp6230	0.05	NA	1 x Ltr
4/29/2011 2:03:35 PM	prn	Equitrac Free Prints	Test Page	A13000-0HX	qp13test	0.36	7.14	1 x Ltr/C

Figure 4-22. The Equitrac website provides information on print and copy charges.

Estimated Cost of Project: There are no additional non-personnel costs for this project as the Equitrac software has already been purchased.

Cost savings/Cost avoidance anticipated for the project: Data that has been collected shows that implementing a pay-for-print system reduces print volumes and associated costs by approximately 50 percent.

Target Completion Date: June 2012

Research, Analytics & Reporting

Following are the Major Projects for FY 2011-2012 for Research, Analytics & Reporting:

- **Conduct a Comprehensive Augmentation and Realignment of RAR Resources and Services to Better Support Institutional Decision Making**
- **Support *Completion-by-Design* and Other ‘*Completion Agenda*’ Related Activities**
- **Support Enhancement of *My Academic Plan* Software**
- **Support Semester Conversion Process**
- **Conduct Data Quality, Validation and Collection Projects**

Conduct a Comprehensive Augmentation and Realignment of RAR Resources and Services to Better Support Institutional Decision Making

This project is focused on targeted outreach to institutional stakeholders to identify information that would be beneficial in supporting their strategic and operational decision-making, and subsequently aligning RAR resources and services to best meet priority needs. The project will also include a thorough review of existing RAR offerings (including portal reports) to identify opportunities to consolidate, standardize, and add value to key informational components.

This work will focus on enhancing the value of RAR provided resources and services through the embedding of appropriate analytic information to assist users in interpreting and understanding what data means, improving ease of use of resources and services, and the anticipation and proactive provision of information that meets stakeholder needs.

This project will include conducting a departmental SWOT assessment; needs assessment meetings with college leadership and key operational areas; a thorough inventory, review and assessment of all DAWN reports; the development of key comprehensive reports (DAWN with additional context and others tbd) to meet institution’s priority needs; and the establishment of processes to ensure data and information quality and to streamline information access.

The following is a non-exclusive listing of related items requested by stakeholders:

- RAR will expand the data warehouse view into the fund raising database used by The Sinclair Foundation and will need to structure reports that combine these data with information available in the financial sections of Colleague.
- Sinclair’s focus on a “Completion Agenda” will require extensive research and reporting on the employment opportunity and trends within Sinclair’s service area.
- Sinclair’s Human Resources office has made the commitment to create an annual “Employee Fact Book” and will be looking to RAR to provide several critical statistics for that book. Examples include reports on faculty credentials, listings of employees by category, reports on benefit usage, and employment trends for PT employees.

- RAR will move aggressively to “push out” reporting information. In order to minimize information access time delays for end users, RAR will need to automate some report creation processes and push the results of these processes directly to the end user’s media of choice, e.g. email, .pdf on mobile device, etc.
- With the transition to a “pay-for-print” charge back system across the institution, RAR will create easily-available usage reports that will give budget managers access to print usage statistics across their areas of responsibility.
- Sinclair completed its first update to the Higher Learning Commission’s *System Portfolio* during this past year. It was clear from these efforts that more structured and rigorous practices are needed with respect to how data are collected, compiled and presented within this report. Consequently, during this upcoming plan year, RAR will develop procedures to identify and capture information needed for future inclusion into the next edition of the *System Portfolio*.

Estimated Cost of Project: The activities identified under this project will require the efforts of one full-time report analyst and one full-time researcher. The combined cost is estimated to be approximately \$170,000.

Cost Savings/Cost Avoidance Anticipated for the Project: Sinclair’s Research, Analytics and Reporting office is committed to the goal of transforming data into the tangible, value-added resource of information. While it is not possible to put a precise quantifiable value on this resource, it is clear that it plays a central role in influencing decision making and future strategic planning. Consequently, its value is directly related to the quality of management decisions and the accuracy of strategic and tactical plans.

Target Completion date: June 2012

Current Status: For the last seven years, Sinclair has made a substantial investment in creating a data warehouse, a reporting portal, and an extract process that fills the warehouse with data from dozens of disparate information sources. This project builds upon this base and continues the process of transforming data into actionable information.

Support *Completion-by-Design* and Other ‘Completion Agenda Related Activities

This project is focused on providing data and analysis support for Sinclair’s “Completion Agenda.” During FY 2010-2011, Sinclair received major grant support from the Bill and Melinda Gates Foundation to support efforts to increase the completion rate of students. During FY 2011-2012, Sinclair is in contention for a grant from the U.S. Department of Labor that has the same concentration on improving student’s degree and/or marketable skill attainment.

Sinclair’s Research Analytics and Reporting (RAR) unit will play a significant role in support of these completion efforts. Success of these grants will be defined by improvements in student completion rates, RAR will be the campus unit responsible for establishing longitudinal data

and the ongoing reporting of student success, as well as, providing the research design and execution to measure the effectiveness of changes brought about by the grants. In addition, RAR will develop predictive analytical models that use existing data to create suggested options for future change.

Estimated Cost of Project: Both the Director and the Manager of Research, Analytics, and Reporting will be serving on the core team for Completion by Design. RAR research staff will be involved in the analysis of pathways, the assessment of the effectiveness of interventions, and the development of predictive models. It is estimated that this grant will consume a total of approximately four months of assigned staff's time. In addition, there may be increased data costs for information required by Completion by Design.

Cost Savings/Cost Avoidance Anticipated for the Project: Completion by Design activities play directly into support for the "completion agenda" that seems to be guiding thinking about current higher education funding. While it is not possible to put a precise number on the direct benefits of these activities, it is clear that both are closely linked to tangible economic forces impacting Sinclair.

Target Completion date: June 2012

Support Enhancements to *My Academic Plan* Software

My Academic Plan (MAP) is locally developed software that is designed to provide students with a clear roadmap of their academic program. Additionally, once plans are developed, the plans guide students through their course selection process. The underlying goal of MAP is to keep students focused on completion of their degree goals and to minimize the amount of time needed for degree completion.

RAR will support Systems Development & Maintenance (SD&M) in their completion of the development of MAP. RAR will analyze the actual registration selections made by students against the academic plan for those students and work with SD&M to establish processes to automatically alert where there is a disconnection between the two. Research indicates that students will often make course selection decisions for reasons completely at odds to the goal of degree completion, (e.g. selecting classes that meet at a certain time, or choosing courses because a friend is enrolled in the course). Time-to-degree and overall expenses of higher education are directly related to goal-directed academic planning. This project component is designed to help reduce the amount of non-goal-directed decision making by providing alerts to Sinclair's academic advisors in sufficient time to intervene when such decisions have been made by students.

Estimated Cost of Project: The anticipated costs for analysis and implementation of support are estimated at approximately \$30,000.

Cost Savings/Cost Avoidance Anticipated for the Project: The primary benefit to be realized from this project is support for state and national completion agendas. These agendas emphasize the importance of students completing degrees and certificates that connect to

employable skills. My Academic Plan is one of the most important resources Sinclair has available to keep students on track for degree/certificate completion.

Target Completion date: January 2012

Support Semester Conversion Process

Semester conversion is one of the most extensive and important institutional transitions currently underway at Sinclair. FY 2011-2012 represents the final year of a multi-year transition process. Sinclair will convert to semesters in August 2012, and this upcoming year presents the final opportunity to prepare for this fundamental change.

In support of this project, Research, Analytics, and Reporting will need to transition all reports within the DAWN information portal to use a semester calculation and will need to establish translation rules that will allow multi-year enrollment comparisons across quarters and semesters.

Estimated Cost of Project: The effort required for the analysis and development of translation rules and resulting report modifications is estimated at approximately \$65,000.

Cost Savings/Cost Avoidance Anticipated for the Project: Adoption of a semester calendar will synchronize Sinclair with the academic calendar of all other public higher education institutions in Ohio. The long term effect will be to improve coordination of academic course work between institutions and thus improve student transferability and success.

Target Completion date: April 2012.

Conduct Data Quality, Validation and Collection Projects

Sinclair's Academic Administration has come to agreement with full-time faculty that a student opinion survey will be administered for all classes. Past practice required administration of the survey only in those classes taught by part-time faculty. As a result of this agreement, the number of end-of-quarter surveys will grow from approximately 17,000 to approximately 38,000. This project includes the changes in practice required to respond to this increased workload. Duties of some personnel will need to be shifted, and additional hardware resources will need to be added to the unit.

During the summer of 2011, the DQVC unit will complete an analysis of alternative means of processing sponsorships that do not rely on custom programming changes to the Colleague ERP code. While the full analysis has yet to be completed, it is hoped that a less support-intensive and equally effective alternative can be found. If found, then this component of this project will involve the transition of the alternative solution from feasibility to production, and the DQVC analyst responsible for developing the alternative will take the lead in training Bursar office staff in the steps necessary for implementation.

The last component of this project continues the process improvement focus that is core to DQVC's function. The unit will continue to evaluate issues of data flow and data processing which have historically exhibited inefficiencies and/or inconsistencies, and the unit will study existing processes with the goal of recommending alternative practices.

Estimated Cost of Project: The doubling of the number of forms processed each term will increase processing costs by approximately \$30,000. The majority of these costs will come from additional personnel required to process the additional workload. Estimated costs for DQVC staff's work on sponsored billing are estimated to be \$20,000.

Cost Savings/Cost Avoidance Anticipated for the Project: Instruction is Sinclair's core business, and the processing of student opinion surveys is one of many data sources used to evaluate the quality of this activity. To the extent that this project contributes to increased instructional quality, it will have a direct effect on Sinclair's ongoing success. An alternate approach to sponsored billing could potentially eliminate the need for related custom code in Colleague and result in institutional savings of approximately \$80,000 annually.

Target Completion date: December 2012

Current Status: Since taking on the data scanning responsibility last year, RAR has made changes to both the scanning software and to the procedures used to handle finished products. Both of these changes have made possible the doubling of survey workload that this project will entail.

Library

Following are the major projects for FY 2011-2012 for the Library:

- **LibGuides**
- **Improving Library Communication to All Students**
- **Discovery Layer Feasibility Study**

LibGuides

The Library will continue to reinvent and improve its value as a digital library by expanding LibGuides development for both academic disciplines represented in Sinclair curriculum and also for specific classes that have a research or library assignment and corresponding need for additional library support. These guides will take the place of static bibliographies and subject guides on the current web site, which are generally pdf files without interactive links.

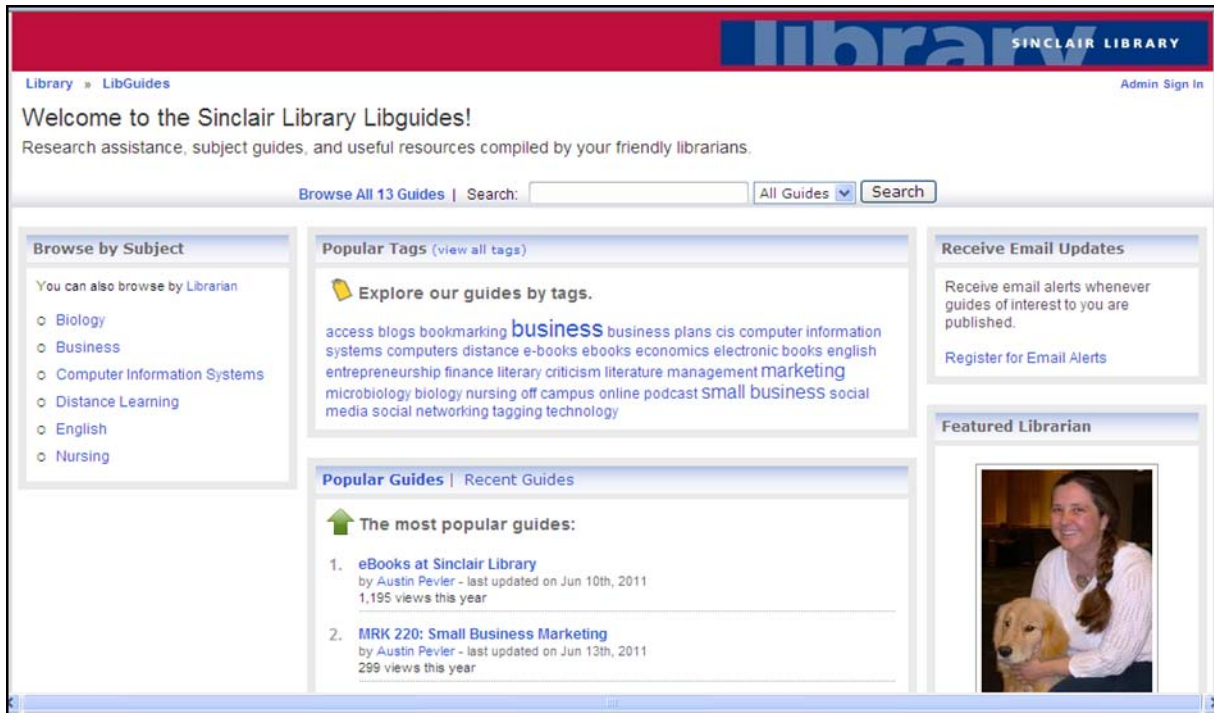


Figure 4-23. Sinclair LibGuide Page.

Estimated Cost of Project: The cost of this project involves the time of five librarians who will be developing and then maintaining the LibGuides. However, this is not an additional time requirement but a reallocation of their time. In the past, they have regularly developed subject guides, handouts, and bibliographies in preparation for information literacy instruction, classroom support, and reference and instructional services. Their time will be redirected to LibGuide preparation.

Cost Savings / Cost Avoidance: Because LibGuides are more functional than static pdf files, they should improve the productivity of teachers and students who use them. Also, because the system performs automatic link checking to identify broken links, librarians invest far less time in maintaining a LibGuide once it is operational.

Target Completion Date: September 2011 for academic disciplines and quarterly additions of course specific guides.

Improving Library Communications to All Students

The Library participates in several social media and technology-based projects to support students on a 24x7 basis, but efforts have been largely opportunistic, taking advantage of existing projects such as the Ohio Chat Reference Service or Facebook. Students in the Learning Centers and Courseview have had less access to librarian expertise than students on the Dayton campus. The Library plans to improve access to librarians through improved business processes, digital communications, social media, and dedicating more staff time to digital communications strategies. This is another aspect of Reinventing the Digital Library.

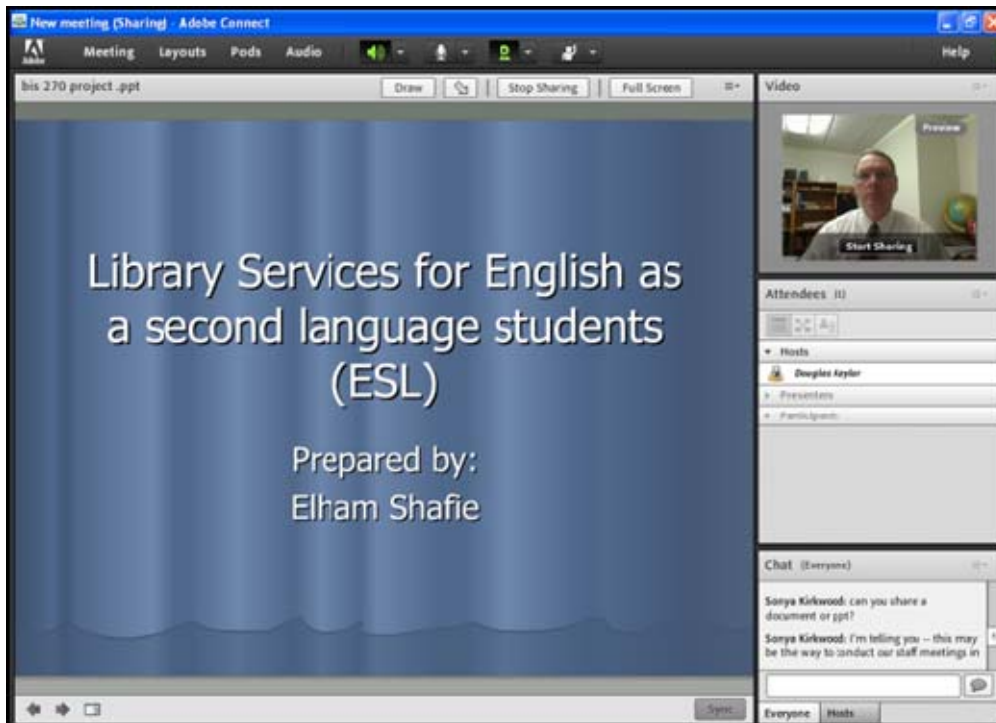


Figure 4-24. Adobe Connect Presentation.

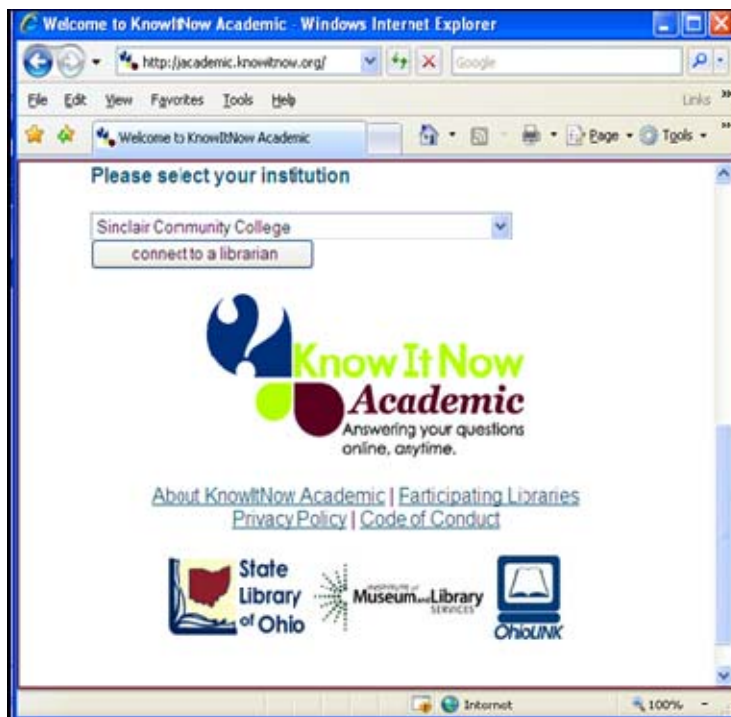


Figure 4-25. Chat Reference.

For several years, students have had the ability to “instant message” or “chat” with a librarian. These text-based sessions, are real-time, synchronous communications that require a fair amount of typing. Using products like Adobe Connect or Skype, the Library hopes to take this process one step further and create a virtual room where students work with librarians in an audio/video setting. Files can be shared, visual and voice communications can supplement text, and a transcript of the session can be sent to the student as an instruction set for research on the topic, thus providing personalized services at a distance.

Estimated Cost of Project: This project can be integrated into the daily work of librarians and done with little additional staff cost. In terms of software, the College already has a license for Adobe Connect, which is a leading candidate for building the virtual reference room. Librarians will have to develop improved business processes to optimize the use of these technologies. Also, the Library will experiment with putting more mobile devices in the hands of librarians to increase their access and availability on the Internet.

Cost Savings / Cost Avoidance: If the Library can provide students at remote locations with personal support via a video chat session or similar technology, then the College may not have to add support staff or invest in very specialized staff training at those locations in order to provide students with a professional level of library support.

Target Completion Date: Have a working test in place for September 2011 and full implementation operational by December 2011.

Discovery Layer Feasibility Study

The Library offers over one hundred subscription databases and thousands of full-text articles, e-books, and digital media items. LibGuides provide students with very powerful web-based guides to finding, choosing, and using each of these many products as well as selected Internet sites that may be relevant to a topic, class, or assignment.

A discovery layer product goes a step further and integrates disparate databases into a single search through federated, multi-database searching, de-duping results, and presenting those results in a common interface. It makes searching multiple library databases more like searching Google or searching on Amazon.com, both of which have a single search box. OhioLINK has been working on a Discovery Layer product for several years and the Library is still waiting for a working model. There are now several commercial discovery layer products on the market, and the Library needs to move ahead with evaluation and, if financially feasible, selection of a discovery layer product.



Figure 4-26. Possible Discovery Layer Products.

Estimated Cost of Project: The costs of this project will involve the staff time needed to develop a specification document and then evaluate different products that are on the market against those criteria.

Cost Savings / Cost Avoidance: The value of this project will come from the selection, if appropriate, of the right product for Sinclair: one that works with our mix of database products and technological infrastructure. The status of the OhioLINK project will also be a cost factor to include in any decision.

Target Completion Date: June 2012.

Technological Change

Technological Change

The technological-change current continues at a rapidly increasing pace. We have experienced the **Agriculture Age**, where most of the population were farmers, the **Industrial Age**, that transitioned much of the employee base to factory workers, the **Information Age**, where knowledge workers became the dominant sector, and now the **Conceptual Age**, where creators and empathizers, pattern recognizers, and meaning-makers will become the mainstream influencers of business progress.

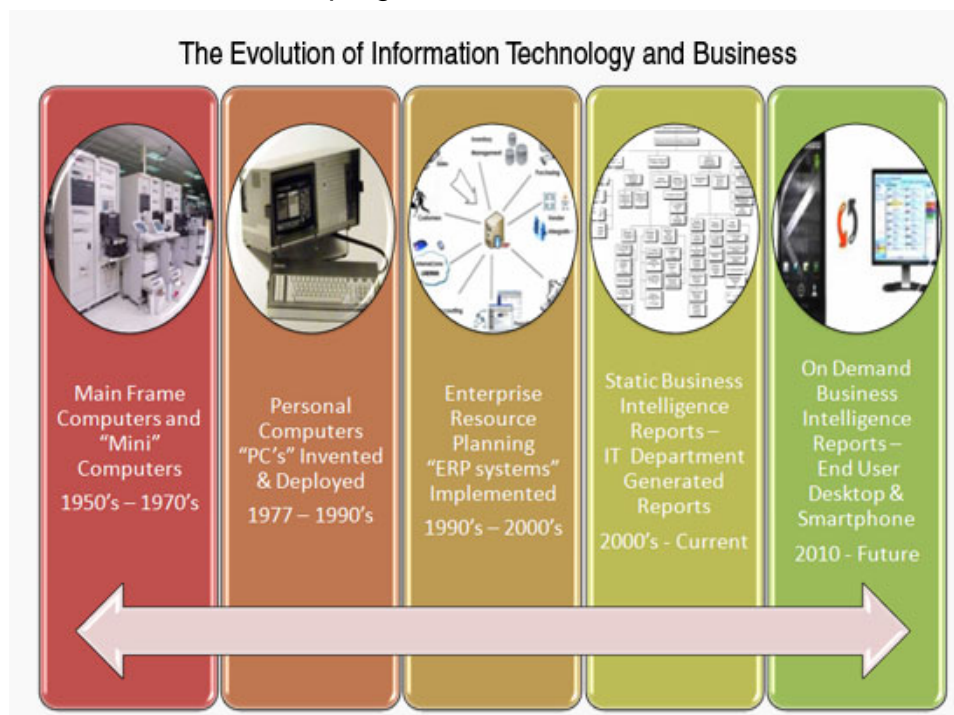


Figure 5-1. Evolution of Information Technology up to the Conceptual Age.

Technology has already shifted several degrees in the 2000s. In fact, several unanticipated events have already occurred. First, Microsoft's dominance of the desktop has waned in conjunction with its disputed ability to take unfair advantage of competitors and customers. The question is: Will Microsoft bounce back, or will Google, Apple, or some other, yet unknown entity, take the lead?



Figure 5-2. Information Technology Leaders - Google, Apple, and Microsoft.

In the realm of the fastest supercomputers, Japan has surged into the lead, with China second, and the U.S. third. Note that the U.S. held the first place position since 2002. Is the globe getting flatter, or are the U.S. educational standards declining, and with them, the U.S.'s place in technological advances?



Figure 5-3. A Super Computer.

Many notable advances have occurred during the 2000s, including digital cameras, Global Positioning Systems (GPS), online/mobile video, wireless broadband, and a huge array of web-based apps, all of which are available for tablets and smartphones. Since these devices allow people to perform work chores wherever they are, the defined workday is quickly fading. Because of this phenomenon, productivity is rising, and even throughout the recession, businesses have come to rely on this increased productivity. Additionally, the use of these devices has resulted in an end-user-driven technology revolution. The workforce, today and in the future, desires access to data and applications from anywhere, wants to collaborate with colleagues and customers easily, and wants to use smartphones, tablets, and laptops to do it.



Figure 5-4. Examples of Digital Cameras.



Figure 5-5. Global Positioning System (GPS) Units and Resources.



Figure 5-6. Examples of Tablets and Smartphones.

What influence will the economic changes currently being experienced have? One notable factor is that many IT organizations are seriously considering outsourcing critical IT services to companies such as Google and Amazon in what is now called “Cloud computing,” a new name for time-sharing, facilities management, or hosted services. Some are calling cloud computing a natural extension of IT’s new mission: to focus on core competencies and use technology to create unique business value aimed at increasing profit. Although cloud computing will more than likely become the norm, most CIOs believe that concerns about security and privacy will delay full-fledged adoption and implementation.

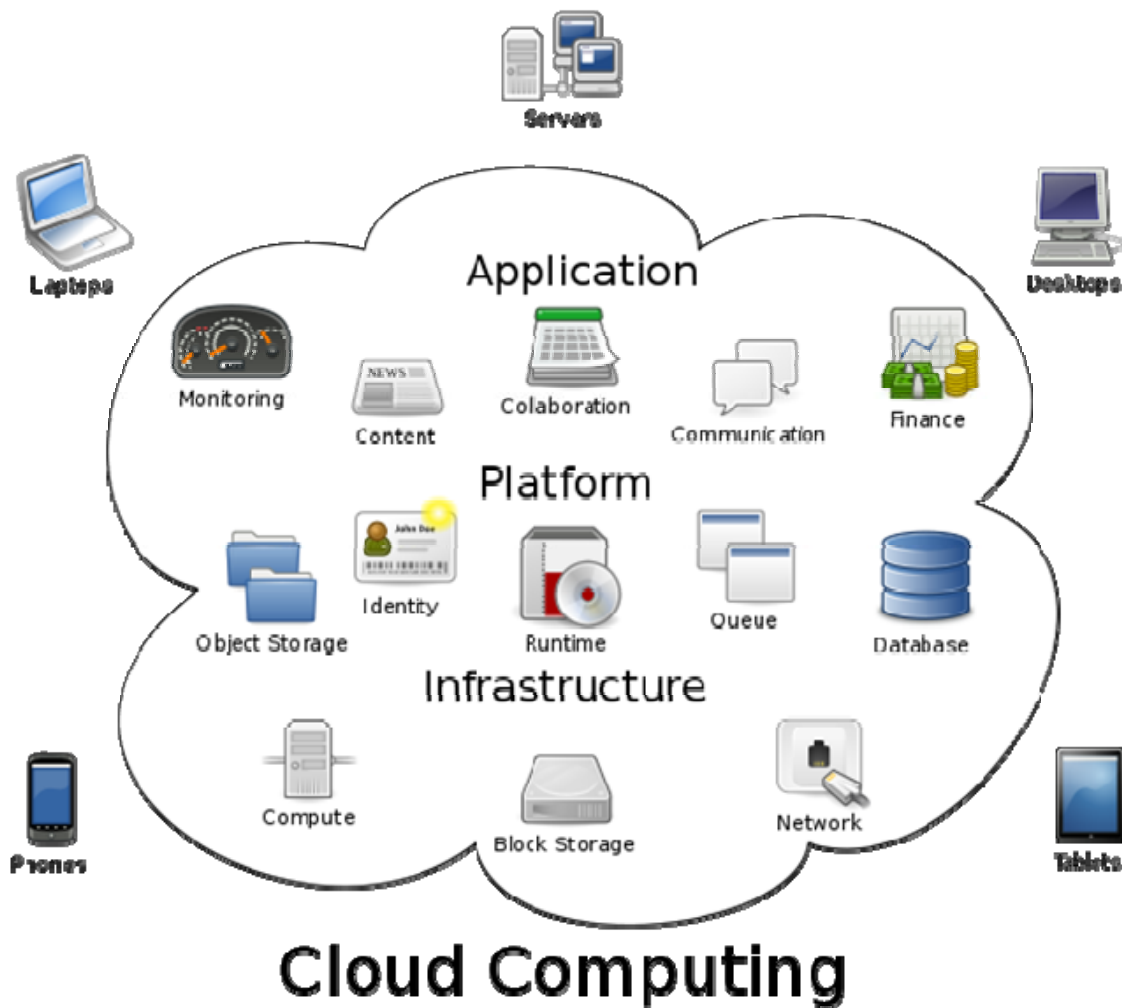


Figure 5-7. Cloud Computing.

Social networking and mobile apps are the software side of the consumerization of IT. The old adage “it’s not what you know, it’s who you know” is being emphasized as social networking rewrites the rules of how you get to know people. Most IT pundits believe that the consumerization of IT is a transformational change, not a fad. Current trends represent a whole new way of gathering information, staying up to date on required job skills, and promoting the business enterprise.



Figure 5-9. Social Networking.

The big question is: Are we, as a society, ready for these life-changing technological experiences?

Appendix A

Glossary

Acceptable Use Policy: also known as TOS (Terms of Service); a contract specifying what a subscriber can and cannot do while using an ISP's service. Policy contains things like liability disclaimers, lists of actions or behavior that will result in the termination of a customer's account, definition of terms such as "unlimited use," billing policies, SPAM clauses, etc.

Access: The technology choices available by which users can connect to the public data network at the level they demand or need (dial-up, cable, DSL, ISDN, wireless, etc.)

ACS: Automated Cartridge System is a storage and retrieval system, often used for library management.

Anti-virus Software: Programs to detect and remove computer viruses. The simplest kind scans executable files and boot blocks for a list of known viruses. Others are constantly active, attempting to detect the actions of general classes of viruses. Anti-virus software must be regularly updated to be effective against the latest viruses as they are released and discovered.

Authentication: The process of verifying that an electronic identifier is correctly mapped to the person using it. Authentication may take a variety of forms and typically relies on one or more of the following:

- Something you know, such as a password;
- Something you have, such as a smartcard with a public-key certificate;
- Some personal attribute, evidenced by a retinal scan, fingerprint, or photo.

B2B (business-to-business): The exchange of products, services, or information between two or more businesses using networked technologies.

B2C (business-to-consumer): The exchange of products, services, or information between businesses and consumers over the Internet.

Bandwidth: The amount of data that can be transmitted in a given amount of time over a particular connection.

Blog: Web-based content consisting primarily of periodic articles or essays listed with the latest entry and visitor comments at the top. Blogs topics can range from personal diaries to political issues, media programs and industry analysis. Blogs are also known as "weblogs" or "web logs."

bps: Measurement of transmission speed - bits per second.

Broadband: High speed data transmission over which a single medium can carry several channels at once. DSL and cable modem service are broadband services.

Business Intelligence (BI): A broad category of applications and technologies for gathering, storing, analyzing, and providing access to data to help enterprise users make better business decisions. BI applications include the activities of decision support systems, query and

reporting, online analytical processing (OLAP), statistical analysis, forecasting, and data mining.

Byte: A byte is a series of 8 bits - also called a character. Computer storage space is measured in bytes. A kilobyte (1 KB) represents 1024 bytes. A megabyte (1 MB) represents 1024 KB. A gigabyte (1 GB) represents 1024 MB. A terabyte (1 TB) represents 1024 GB.

Cable modem: A device that enables a personal computer to be connected to a local cable TV line and receive and send data.

Chat Room: An online forum where people can broadcast messages to people connected to the same forum in real-time. Sometimes, these forums support audio and video communications allowing people to chat in audio and watch each other.

CIO: Chief Information Officer

CISO: Chief Information Security Officer

Cloud computing: A model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. The concept of cloud computing fills a perpetual need of IT: a way to increase capacity or add capabilities on the fly without investing in new infrastructure, training new personnel, or licensing new software. Cloud computing encompasses any subscription-based or pay-per-use service that, in real time over the Internet, extends IT's existing capabilities.

CMT: Curriculum Management Tool – Software written by Sinclair's Web Systems unit. The software manages all phases of curricular additions and changes.

Colleague Application/Database: The application (developed by Datatel, Inc.) used by the College for Enterprise Resource Planning (ERP). It is a collection of software programs that tie all of the various diverse functions (student services, business operations, finance, HR, etc.) into a cohesive database.

Common Address Redundancy Protocol (CARP): Its primary purpose is to allow multiple hosts on the same network segment to share an IP address. CARP works by allowing a group of hosts on the same network segment to share an IP address. This group of hosts is referred to as a redundancy group. The redundancy group is assigned an IP address that is shared among the group members.

Course Management System (CMS): See Learning Management System.

Customer Relationship Management (CRM) software: CRM entails all aspects of interaction a company has with its customer, whether it be sales or service related using tools such as help-desk software, e-mail organizers and Web development apps to personalize online experience.

Data Base Management System (DBMS): A complex set of programs that control the organization, storage and retrieval of data for many users; extensively used in business environments. Data is organized in fields, records and files. A database management system must also control the security of the database.

Data Cleansing: The act of detecting and removing and/or correcting a database's dirty data (i.e., data that is incorrect, out-of-date, redundant, incomplete, or formatted incorrectly).

Data Warehouse: A database designed specifically to support decision-making (Business Intelligence). It is a data repository which may be populated from multiple sources, including multiple transaction-oriented databases.

Dial-up access (modem): Refers to connecting to the Internet via a modem and standard telephone line. Maximum speed is 56 Kbps.

Digital Subscriber Line (DSL): A technology which enables the ordinary copper component of telephone lines to carry data at rates much higher than ISDN. Maximum speed is 8 Mbps.

Distributed computing: An industry-standard software technology for setting up and managing computing and data exchange in a system of networked computers.

Domain name: The unique name that identifies an Internet site and its address.

Domain Name System (DNS): An internet service that translates domain names into IP addresses.

DriveLock: Software that is installed on laptops that prevents the hard drive being used without knowing the password to the drive. This software protects against loss of sensitive data in the event a laptop is stolen.

Dynamic Host Configuration Protocol (DHCP): A set of rules used by communications devices such as a computer, router or network adapter to allow the device to request and obtain an IP address from a server which has a list of addresses available for assignment.

Electronic Advising: A Colleague module designed to allow students to design and review a program completion plan which can be shared with and receive approval from an academic advisor.

Electronic Business (e-Business): The transformation of key business processes through the use of Internet technologies.

Electronic Commerce (e-Commerce): Commercial and noncommercial transactions facilitated through the use of networked technologies, such as over the Worldwide Web.

Electronic Data Interchange (EDI): The transfer of data between companies using computer networks, such as the Internet.

Electronic Mail Services/System (E-mail): Any messaging system that depends on computing facilities to create, send, forward, reply to, transmit, store, hold, copy, download, display, view, read, or print computer records for purposes of asynchronous communication across computer network systems between or among individuals or groups, that is either explicitly denoted as a system for electronic mail; or is implicitly used for such purposes, including services such as electronic bulletin boards, listserves, and newsgroups.

Electronic Mailbox: A file (or folder) designated to a particular user on a particular computer in which received electronic mail messages are stored ready for the user to read them. Using the example `firstname.lastname@sinclair.edu`, “firstname.lastname” is the name of the user’s mailbox file on the mail server.

Email Address: The string used to specify the source or destination of an electronic mail message. A typical college e-mail address format is `firstname.lastname@sinclair.edu`.

Email Distribution List: A distribution list is a group of recipients, all gathered under one name, or address. A distribution list allows you to send a message to all of the recipients by entering just that one address. There are two common kinds of distribution lists: Personal Distribution Lists (stored on an individual’s PC) and Public Distribution Lists (server-based). See their individual definitions.

Email Record/Email Message: Any or several electronic computer records or messages created, sent, forwarded, replied to, transmitted, stored, held, copied, downloaded, displayed, viewed, read, or printed by one or several email systems or services. This definition of email records applies equally to the contents of such records and to transactional information associated with such records, such as headers, summaries, addresses, and addressees.

Email Users: Individuals who create, send, forward, reply to, transmit, store, hold, copy, download, display, view, read, or print email (with the aid of College email services). A (College) Email User is an individual who makes use of (College) email services. Receipt of email prior to actual viewing is excluded from this definition of “use” to the extent that the recipient does not have advance knowledge of the contents of the email record.

Encrypted/Encryption: Procedures using algorithms to encode or convert plain text into cipher-text to prevent any but the intended recipient from reading that data. There are many types of data encryption; they are the basis of network security.

Enterprise Resource Plan (ERP): A system that supports the planning and management of all the resources in an enterprise - a multi-module software system that supports enterprise resource planning. An ERP system typically includes a relational database and applications for managing purchasing, inventory, personnel, customer service, shipping, financial planning, and other important aspects of the business.

File Transfer Protocol (FTP): Used to transfer data from one computer to another over the Internet, or through a network. FTP is a commonly used protocol for exchanging files over any network that supports the TCP/IP protocol (such as the Internet or an intranet).

Frame Relay: Used for connecting local and wide area networks - can support data transfer at T-1 and T-3 speeds.

Gigabits per second (Gbps): A measurement of the rate of speed at which data is transferred (e.g., 1 Gbps equals 1 billion bits per second).

Global Positioning System (GPS): A space-based global navigation satellite system (GNSS) that provides location and time information in all weather, anywhere on or near the Earth, where there is an unobstructed line of sight to four or more GPS satellites. It is maintained by the United States government and is freely accessible by anyone with a GPS receiver with some technical limitations which are only removed for military users.

Graphical User Interface (GUI): A computer terminal interface, such as Windows, that is based on graphics instead of text.

Information Delivery Portal (IDP): Web-based interface that enables users to view and organize analytical content such as reports prepared by using SAS statistical software.

Information Map: A grouping of data warehouse elements that have been joined and linked in a conceptually related manner that is meaningful to end users.

Information Technology (IT): The broad subject concerned with all forms of technology used to manage and process information electronically.

Infrastructure: The communication networks that connect users to a networked environment such as the Internet.

Instant Messaging (IM): A software tool that allows real-time electronic messaging or chatting. Instant messaging services use "presence awareness" indicating whether people on one's list of contacts are currently online and available to chat. Examples of IM services are AOL Instant Messenger, Yahoo! Messenger and MSN Messenger.

Integrated Services Digital Network (ISDN): A service that allows for higher data transmission speeds over telephone lines and is capable of handling at least two services over one line simultaneously (i.e., voice and fax or voice and data). Maximum speed is 128 Kbps.

Internet Authentication Service (IAS): Microsoft's implementation of a Remote Authentication Dial-in User Service (RADIUS) server and proxy with Microsoft Windows Server 2003. As a RADIUS server, IAS performs centralized connection authentication, authorization, and accounting for many types of network access including wireless and wired connectivity. IAS stores its authentication data in Active Directory.

Internet Protocol (IP): Internet Protocol is a protocol used for communicating data across a packet-switched internetwork using the Internet Protocol Suite, also referred to as TCP/IP.

Internet Service Provider (ISP): A company or organization that provides users with connectivity to the Internet.

Kilobits per second (Kbps): The rate of speed at which data is transferred (e.g., 1 Kbps equals 1,000 bits per second).

Learning Management System (LMS): A software application or Web-based technology used to plan, implement, and assess a specific learning process. Typically, a learning management system provides an instructor with a way to create and deliver content, monitor student participation, and assess student performance. A learning management system may also provide students with the ability to use interactive features such as threaded discussions, video conferencing, and discussion forums. The Advanced Distributed Learning group, sponsored by the United States Department of Defense, has created a set of specifications called Shareable Content Object Reference Model (SCORM) to encourage the standardization of learning management systems.

Letter or Mail Bomb: An email message containing malicious code intended to do nefarious things to the recipient's computer or network. Also, to send, or urge others to send, massive amounts of electronic mail to a single system or person, with intent to crash or spam the recipient's system. Letter or Mail bombing is a serious offense and is not tolerated.

Lightweight Directory Access Protocol (LDAP): An online directory service protocol defined by the Internet Engineering Task Force (IETF) which is a simplification of Directory Access Protocol (DAP). An LDAP directory entry is a collection of attributes with a unique identifier, called a distinguished name (DN). The directory system is in a hierarchical structure.

List Owner: Individual(s) who establish the scope and distribution of and perform the maintenance of email distribution lists.

Listserv: An electronic mailing list software application that was originally developed in the 1980's and also known as "discussion lists." A listserv subscriber uses the listserv to send messages to all the other subscribers, who may answer in a similar fashion.

Local Area Network (LAN): A network of interconnected workstations that share the resources of a single processor or server within a relatively small geographic area, such as an office.

Mail relay server: Often referred to as an e-mail server, a device and/or program that routes an e-mail to the correct destination. Mail relays are typically used within local networks to transmit e-mail among local users.

Malicious Code: Code is a common term used to describe a set of instructions to a computer, also called program or software. Malicious code in general can be defined as "software which interferes with the normal operation of a computer system." Another general definition might be "software which executes without the express consent of the user." Common types of malicious code include viruses, Trojans, and worms.

Megabits per second (Mbps): A measurement of the rate of speed at which data is transferred (e.g., 1 Mbps equals 1 million bits per second).

Megabyte (MB): A measurement of capacity (e.g., 1 MB equals 1 million bytes).

Microsoft Outlook: The Microsoft “groupware” information management and communication software used by the college for email communication, group planning and scheduling, and contact/task management.

Mobile e-Commerce (m-Commerce): Commercial and noncommercial transactions facilitated through the use of wireless networked devices.

Online Analytical Processing (OLAP): A method of database indexing that enhances quick access to data, especially in queries calling for large quantities of data or viewing the data from many different aspects.

Online Forum: A web application where people post messages on specific topics. Forums are also known as web forums, message boards, discussion boards and discussion groups. They were predated by newsgroups and bulletin boards in the 1980’s and 1990’s.

Peer-to-Peer (P2P) File-Sharing: Directly sharing content like audio, video, data, software or anything in digital format between any two computers connected to the network without the need for a central server. Examples of P2P networks are Kazaa, OpenNap, Grokster, Gnutella, eDonkey and Freenet.

Personal Distribution Lists: These lists are created by individuals for their own use. Personal distribution list files are stored in the individual’s Personal Address Book. Personal Address Books usually reside on the individual’s hard drive (or a drive of their choice). These lists are called “Personal” as they should be created for personal (one person) use. Sinclair users are permitted to create and share the lists to facilitate group communication.

Point Of Sale (POS): The time and place in which a transaction is made. Point of sale computer systems include cash registers, optical scanners, magnetic card readers, and special terminals. Reading product tags, updating inventory, and checking credit are some of the operations performed at the point of sale.

Portlet: A portlet is a Web-based component that will process requests and generate dynamic content. The end-user would essentially see a portlet as being a specialized content area within a Web page that occupies a small window in the portal page.

Privacy Policy: A statement by an organization describing the ways in which it collects, stores, and uses personal information gathered from citizens and consumers.

Project DAWN: Data Analysis Warehousing and iNtelligence (DAWN) initiative that is deploying business intelligence services to the Sinclair decision makers

Public Distribution Lists: These are created by IT staff for use by all Sinclair users. The distribution list files are stored on the Exchange Mail server. These lists are called “Public” as they are designed to be available to all users. Use of these lists is for academic and administrative purposes only as misuse wastes system resources and can affect the entire College network.

Remote Authentication Dial-in User Service (RADIUS): Multi-user client-server security protocol used in computer networks to provide remote user authentication and accounting. The RADIUS software can read several kinds of password databases and use several kinds of authentication schemes.

Return on Investment (ROI): A quantitative analysis of investment in budgets and the resulting return on the investment.

Role-based Access: After official authentication, access to Information Technology resources is granted based on the individual's role at the institution. As an example, a faculty member would have access to a totally different set of resources than a student, and a Dean might have access to a greater set of resources than an individual faculty member.

SAN: Storage Area Network is a high-speed subnetwork of shared storage devices. A storage device is a machine that contains nothing but a disk or disks for storing data.

Secure Sockets Layer (SSL): A protocol developed by Netscape for transmitting private documents via the Internet. SSL works by using a private key to encrypt data that's transferred over the SSL connection. Both Netscape Navigator and Internet Explorer support SSL, and many Web sites use the protocol to obtain confidential user information, such as credit card numbers.

Sender Policy Framework (SPF): An extension Simple Mail Transfer Protocol that stops e-mail spammers from forging the "From" fields in an e-mail. SPF is one method that can be used to stop spam from being sent using unauthorized domain names.

Server: A computer that provides some service for other computers connected to it via a network. A mail server has a drive that hosts user electronic mailboxes and receives, stores, and sends email messages via the network.

Single Sign On (SSO): A software program that accepts a single authentication transaction and brokers this transaction to provide authenticated access to multiple web or computer based services.

Smartphone: The term smartphone is usually used to describe a high-end mobile phone with Wi-Fi and mobile broadband access for more advanced connectivity and computing ability. A smartphone combines the functions of a mobile phone with a high-resolution touch screen, a personal digital assistant (PDA), portable media player, digital camera, and GPS navigation. A smartphone runs a mobile operating system such as Apple iOS, Google Android, Microsoft Windows Phone 7, Nokia Symbian, Research In Motion BlackBerry OS, or embedded Linux distributions like Maemo and MeeGo.

Social Networks: Websites promoting a "circle of friends" or "virtual communities" where participants are connected based on various social familiarities such as familial bonds, hobbies or dating interests. Examples include eHarmony, Facebook, Friendster, Linkedin, Match.com, MySpace, Plaxo and Yahoo!Groups.

Spam or Spamming: Electronic junk mail or junk newsgroup postings. Spam is generally email advertising for some product sent to a mailing list or newsgroup. Spamming is sending or transmitting these junk messages. Receipt of Spam is virtually impossible to control; Spamming to or from college email systems is strictly prohibited.

SQL Server: A relational Database Management System (DBMS) supplied by Microsoft.

SSP: Student Success Plan – Software written by Sinclair’s Web Systems unit designed to serve as a customer relationship management system for “at risk” students.

Staff Person Month: A metric of cost that equates to the average of all non-management or system maintenance staff within Systems Development & Maintenance multiplied by a 1.30 weight to account for fringe benefits and divided by the total number of staff month available to perform work.

Structured Query Language (SQL - *pronounced SQL or Sequel*): A language used to create, maintain, and query relational databases. It is an ISO and ANSI standard. SQL uses regular English words for many of its commands, which makes it easy to use. It is often embedded within other programming languages.

T-1: Point-to-point dedicated phone line connection. Maximum speed is 1.544 Mbps.

T-3: Point-to-point dedicated phone line connection. Maximum speed is 44.7 Mbps.

Technological Change (TC): A term that is used to describe the overall process of invention, innovation and diffusion of technology or processes. The term is redundant with technological development, technological achievement, and technological progress. In essence TC is the invention of a technology (or a process), the continuous process of improving a technology (in which it often becomes cheaper) and its diffusion throughout industry or society.

Telecommunications: Refers to all types of data transmission, from voice to video.

Terabits per second (Tbps): A measurement of the rate of speed at which data is transferred (e.g., 1 Tbps equals 1 trillion bits per second).

Terabyte (TB): A measurement of capacity (e.g., 1 TB equals 1 trillion bytes).

Twitter: Twitter is a free social networking and micro-blogging service that enables its users to send and read other users' updates known as *tweets*. Tweets are text-based posts of up to 140 characters in length which are displayed on the user's profile page and delivered to other users who have subscribed to them (known as *followers*). Senders can restrict delivery to those in their circle of friends or, by default, allow anybody to access them. Users can send and receive tweets via the Twitter website, Short Message Service (SMS) or external applications. The service is free to use over the Internet, but using SMS may incur phone service provider fees.

Unidata: The database management system used for Colleague.

United States Postal Service (USPS): Commonly referred to as snail mail.

Usage: The extent to which business, government and household users utilize the Internet access and infrastructure available to them.

User Interface (UI): The means by which a user interacts with a computer. The interface includes input devices such as a keyboard, mouse, stylus, or microphone; the computer screen and what appears on it; the way commands are given, etc. With a command-line interface, only text appears on the screen, and the user must type in commands; with a graphical user interface, windows, mice, menus, and icons are used to communicate with the computer.

User Login/Logon ID: The string that, in conjunction with the password, identifies a user to the network. A typical college user ID consists of the user's first and last name separated by a period. As in "firstname.lastname".

Virtual LAN (VLAN): Method of creating independent logical networks within a physical network. Several VLANs can co-exist within such a network. This aids in network administration by separating logical segments of a LAN (like company departments) that should not exchange data using a LAN.

Virtual Private Network (VPN): A private data network using the public telecommunication infrastructure with security procedures that maintain privacy.

Virus: A program or piece of code that generally executes without the user's knowledge and runs against their wishes. Most viruses are malicious in nature and can also replicate themselves. All computer viruses are man-made and vary in degree of danger. Even a simple virus that replicates itself without actually harming system files is dangerous because it quickly uses available memory and other resources. A more dangerous type of virus is one capable of transmitting across networks and mutating to bypass security systems.

Web Content Management System (WCMS): A system or set of tools used to manage the content of a Website. Typically, a WCMS consists of two elements: the content management application and the content delivery application. The content management application allows the content manager or author, who may not know Hypertext Markup Language (HTML), to manage the creation, modification, and removal of content from a Website (via an intermediate database) without needing the expertise of a Web Developer. The delivery element uses and compiles that information along with predefined templates to generate web pages. The features of a WCMS system vary, but most include a data repository, format management, revision control, indexing, search, and retrieval.

Wide Area Network (WAN): A geographically dispersed telecommunication network.

Wiki: A web application that allows one user to add content and any other user to edit the content. The popular software used to implement this type of web collaboration is known as "Wiki." A well-known implementation is Wikipedia, an online encyclopedia.

Wireless access: A communications system in which radio-frequency or infrared waves carry a signal through the air, rather than along a wire.

World Wide Web (WWW): The system of Internet servers and users that support documents formatted in the HTML language.