



INFORMATION AND WEB TECHNOLOGY PLAN

2013-14 to 2016-17

Information and Web Technology Committee

Educational Technology Committee

Administrative Technology Committee

Spring 2013

Introduction

The mission of the Messiah College educational community is to educate students toward maturity of intellectual, character, and Christian faith in preparation for lives of service, leadership, and reconciliation in church and society. This mission exists primarily for students, but also relates to how educators and employees do their work. Information and web technologies increasingly facilitate and supplement instruction and also assist with administrative tasks for employees and students. Those tasks involve various forms of communication (email, phone, web, video, and visual images), scheduling, the use of specialized software and hardware, the analysis of data in our databases, and reporting.

Advancements in technology continue to drive changes in society, how society expects education to be transacted, and hence our lives at the College. The research efforts of the governance groups that drafted this document (Information and Web Technology Committee, IWTC; Educational Technology Committee, ETC; and Administrative Technology Committee, ATC) identified three themed areas of strategy and developed goals within those areas. These themes and goals represent a mix of best practice and promise and we believe that the educational and employment life of the College will be improved if we pursue these goals.

Each goal of this plan is offered in summary form initially and in a more detailed form where the context, background, leadership, action plans, and measures are described. We are serious about the accomplishment and assessment of our progress toward these goals. Our desire is to communicate progress on these goals on an annual basis to the appropriate governance groups and to any group that would like to know more.

Please support the efforts of the various persons and groups on campus that will make this plan a reality. It is our intention to create a better learning and working environment that allows us to use of technology as a tool for our collective educational mission.

Members of IWTC, ETC, and ATC

Theme #1 - Administrative Support Technologies

Our efforts in the administrative use of technology should achieve the College's mission and strategic goals, improve the productivity of employees, and enhance the cost-effectiveness and sustainability of our educational/organizational model.

- Goal 1: Productivity and Efficiencies:** Improve the strategic use of scanning/printing, electronic signature processes, electronic forms/routing, and online policy document management to save paper and make processes more efficient.
- Goal 2: Reporting:** Improve our reporting and data analytics capabilities against our enterprise data sources.
- Goal 3: Mobile Access:** Expand mobile computing options to support areas including access to user and college services, print services, secure institutional data, and video conferencing.
- Goal 4: Communication:** Improve communication about the status and support of both current and emerging systems on campus.
- Goal 5: Testing Support:** Improve the support for implementing and testing of software upgrades to existing systems.
- Goal 6: Training, Documentation, Compliance:** Improve our training capabilities (format and delivery) for and documentation of our business processes, systems, and other areas requiring training eg. Regulation compliance training, management, etc.
- Goal 7: Retention:** Provide a database system designed to track and support our retention efforts.
- Goal 8: Website Migration:** Migrate the Messiah College web presence to the Jadu content management system using the full capacity of that system to save time and effort in the future.
- Goal 9: Web Marketing Strategy:** Participate and provide feedback for the implementation of a web marketing strategy as it relates to our web presence, mobile access, social media, and internal and external constituencies.
- Goal 10: Security/Compliance/Risk Management:** Improve the College's security/compliance consciousness training, wireless device defenses, and security management.

Theme #2 - Teaching and Learning Related Technologies

Our efforts in the use of educational technologies should enhance the learning experiences and productivity of students and provide the tools, methods, and support to enhance both the productivity and pedagogy of curricular and co-curricular educators.

- Goal 1: Mobile Access:** Expand our capability in mobile access to learning resources, instructional methods, and the processes that facilitate the administration of graduate and undergraduate educational experiences (registration, financial aid, parking, housing, involvements, etc.).
- Goal 2: Promote Innovation:** Continue to provide funding for all educators to experiment with innovative learning approaches using technologies.
- Goal 3: Teaching, Learning and Technology Initiative:** Engage the campus on best practices related to teaching and learning with technology in the areas of multimedia, pedagogy, community engagement, and classroom technologies. This goal relates to the Messiah College Strategic Plan, Theme 2, Goal 1.
- Goal 4: Curriculum Content Management:** Streamline the maintenance of the following documents via content management technology (College Catalog, Student Handbook and Advising Handbook).

Theme #3 - Equipment and Networking Infrastructure

All capital equipment and infrastructure needs to be on a documented replacement cycle to ensure the ongoing funding and resulting operation of these mission critical components of our approaches to undergraduate and graduate education. These approaches involve an examination of current modeling assumptions for capital funding and the identification of three strategic programming areas in the next four years.

- Goal 1: Capital Funding:** Examine the maintenance, documentation standards, and replacement cycles for all capital (computer equipment, physical networking/telecommunication infrastructure) toward a sustainable financial model. Plan for 5 years of infrastructure improvements financially and implement as capital budgets allows. This goal relates to the Messiah College Strategic Plan, Theme 2, Goal 7.
- Goal 2: Telecommunications:** Plan and implement a campus VOIP phone system to replace the college's aging PBX phone system. Plan improvements for cellular signal in campus buildings allowing pervasive use of cell technology.
- Goal 3: Internet and wireless:** Develop and implement a plan for enhancing wireless access anywhere on campus and reliable, and redundant Internet access for the campus.
- Goal 4: Disaster Recovery:** Evaluate the architecture of critical services including data storage, backup, virtualization, cloud services, location, and configuration of systems to ensure a reliable recovery process in case of disaster.

Theme #1 - Administrative Support Technologies

Goal 1: Productivity: Improve the strategic use of scanning/ printing, electronic signature processes, electronic forms/routing, and online policy document management to increase productivity and lower costs

Context:

Background:

Leadership:

Action Steps:

Printer / Copier Review – Dwayne Magee

Context:

Background:

Action Steps:

- Network all campus copiers
- Provide scanning capabilities for all copiers
- Merge copier and printer fleets (plan currently in process)

Imaging System Improvements /Online Forms – New Programmer

- Better imaging system that can store records on multiple levels for various departments across campus
- More scanners to allow easier access to scan documents for proper retrieval
- Online forms software to facilitate data capture (integrate with electronic signatures) and information routing/management

Electronic Signatures – Greg Gearhart (list all members)

- Electronic signatures (internal)– for policies, key receipts
- Electronic signatures (external) – must meet federal standards

HR / Payroll Self Service Improvements – Bob F / Don Lerew

- Web Time Entry and online Administrative Leave Reporting
- Online address and phone number updates (with required residency certification form)
- Online direct deposit updates

Student Employment - Greg

- Direct deposit or pay cards for student employees

Policy Centralization – Kevin et al

- Policy creation and storage

Goal 2: Reporting: Improve our reporting and data analytics capabilities against our enterprise data sources

Context: We need a more capable, easier to use, and more robust reporting system to use with BANNER. It must meet the needs of each administrative area

Background:

Leadership: John Luft / Greg Daub

Timeline: December 30, 2013 completion

Action Steps:

- Review the available options for functionality, financial feasibility, and ease of use.

- Plan for the purchase of a reporting system.
- Implement the system.

Goal 3: Mobile Access: Expand access to mobile computing options beyond educational areas to include support areas of the College. This includes mobile access to services

Context:

Background:

Leadership: Jon Wheat, Neil Weaver

Timeline: Prioritize actions steps over life of plan

Action Steps:

- iPads for Conference Services for students to bring up housing information while out in the dorms or elsewhere
- Increase capacity of wireless access points to support mobile [id card] scanners at large events
- Hand-held devices for Campus Events staff and maintenance workers so they can view and update work orders in the field
- Greater availability of laptops for employees
- Better (and easier) remote access to network files
- Third-party service for processing out-of-state (work location) employees
- Applicant tracking software
- Online onboarding application (for new hires)
- iPads for College Ministries to communicate information in committee meetings, research speakers, pass notes from meetings to other pastors and blogs, and inform the community about events.

Goal 4: Communication: Improve communication about the status and support of both current and emerging systems on campus

Context: Administrative users have a need for a place to go to learn of the status of upgrades, fixes, and progress on the implementation of systems. In addition, they would like to find support options and resources in the same place.

Background:

Leadership: Bob G.

Timeline: End of 2013/14 academic year

- Action Steps:
- Create online site where announcements can be made
 - Published upgrade/system maintenance calendar
 - Area for user contributed content (tips and tricks)
 - Continue to have open agenda item at ETC/ATC to discuss technical issues, projects, product research etc...
 - Publish a list of major software packages, who supports them, and which departments use them

Goal 5: Testing Support: Improve the support for implementing and testing of software upgrades to existing systems.

Context:

Background:

Leadership/membership: Gretchen Greenwood

Timeline: Fall 2014

Action Steps:

Goal 6: Training, Documentation, Compliance: Improve our training capabilities (format and delivery) for and documentation of our business processes, systems, and other areas requiring training eg. Regulation compliance training, management, etc.

Context:

Background:

Leadership: Kevin Nutt / Cindi Tomes

Action Steps:

- Training for College Press staff to help with design (web and mobile) workload in M&PR
- Keep a centralized list of software and online sites we have access to out on the ITS website along with overview/instructions for use.
- Compile a list of time saving methods and post on the IT website (e.g. how to do a mail merge
- Provide web-based training
- In depth training for Excel
- Banner training – running processes, popsels, etc
- Mobile learning technology – Brainshark for possible use in supervisor training
- Safety Training disseminated electronically
- Documentation of current Business and Support procedures
- Training similar to the American Management Association (AMA) sessions that used to be offered at Messiah
- Offer some sort of standardized certificates to employees for training that has been completed

Goal 7: Retention: Provide a database system designed to track and support our retention efforts

Context: System to track information for retention by student – Student A’s profile, advising notes, satisfaction/involvement scores, student in difficulty information etc.

Background:

Leadership: Laura Miller, Bob Felix

Timeline: Implementation – Summer 2013; First complete cycle during 2013/14 academic year

Action Steps:

- Review available options
- Plan for purchase
- Implementation

Goal 8: Website Migration: Migrate the Messiah College web presence to the JADU content management system using the full capacity of that system to save time and effort in the future.

Context:

Background:

Leadership: Ramona, Jon Wheat

Timeline: TBD – ongoing throughout life of plan (task force please provide)

Action Steps: Migrate MCSquare to JADU (Carla to be involved?)

Goal 9: Web Marketing Strategy: Develop, articulate, and implement a web marketing strategy as it relates to our web presence, mobile access, social media, ~~and internal and external constituencies.~~

Leadership: Waiting for summary from Carla; Steve King has volunteered to be involved

Timeline: Ongoing throughout the life of the plan

Background:

Action Steps:

Goal 10: Security/Compliance/Risk Management: Improve the College's security/compliance consciousness training, wireless device defenses, and security management.

Context:

Background:

Leadership: Kevin Nutt, HR, Business Office/Finance, ITS - Networking

Timeline: Entire life of plan

Action Steps:

Theme #2 – Teaching and Learning Related Technologies

Our efforts in the use of educational technologies should enhance the learning experiences and productivity of students and provide the tools, methods, and support to enhance both the productivity and pedagogy of curricular and co-curricular educators.

Goal 1: Mobile Access: Expand our capability in mobile access to learning resources, instructional methods, and the processes that facilitate the administration of graduate and undergraduate educational experiences (registration, financial aid, parking, housing, involvements, etc.).

Context: The [ECAR Study of Undergraduate Students and Information Technology, 2012](#) indicates that students want to access academic progress information and course materials and feel connected with others through their mobile devices. Nearly all students own a laptop and 62% say they own a smartphone. Recommendations from the report include: (1) "develop mobile IT strategies that allows for cross-platform compatibility, such as generic mobile apps and hybrid apps." (2) "Prioritize the development or improvement of mobile-friendly resources and activities that students say are important." (3) Consider alternatives and more affordable options to computer labs.

Background: By 2012 the following mobile initiatives existed:

- (1) All educators have laptops
- (2) Messiah has mobile a application available to download to iPhone.
- (3) Library applications can be accessed via smart phone.
- (4) The Nursing and Chemistry departments have use of a virtual lab where only laptops are utilized.
- (5) Money is provided for Innovative projects that includes iPads
Fall Innovation Projects
11 fall projects included 32 educators and 35 students
Spring Innovation Projects
13 spring projects included 36 educators and 77 students
- (6) iPad Rollout – Postive learning opportunities that were relatized from these projects led to 96.8% of our full-time educators receiving iPads at the end of spring semester 2012.
- (7) Creating “virtual lab” in Jordan 161 where students and faculty will be able to use their laptops.
 - What applications do students what to be mobile?
 - What is the mobile strategy of the college?
 - What is the priority for development?
 - What are other schools doing to virtualize?
 - How can we best involve students in the design process?

Leadership: Neil, Susan

Action Steps	Measures	Target
Develop mobile apps with potential to enhance the teaching/learning environment of the College	Apps	2015-2016
Ensure “mobile access” is an evaluation criteria for new systems that are implemented on campus	Documentation of new system mobile capabilities	Annual Spring
Continue to promote mobile devices for students and faculty access to educational and administrative systems and data	Documentation of communications	Annual Spring
Refine our ability to offer virtual labs to optimize the use of space on campus	Documentation of lab usage	Annual Spring

Goal 2: Promote Innovation: Continue to provide funding to experiment with innovative learning approaches using technologies

Context: As President Phipps leads Messiah College to become the best College on the East Coast, she is asking educators and staff to find new ways to engage our current and incoming students. With that direction, she has provided funding for innovative projects. Innovation uncovers the possibilities. It requires a change in culture. Innovation takes time. Sharing the good news from practitioners across campus helps promote innovation.

Background: There has been a year and a half of innovative projects. Eleven fall projects included 32 educators and 35 students. Thirteen spring projects included 36 educators and 77 students. Positive learning opportunities realized from these projects led to 96.8% of full-time educators receiving iPads at the end of the spring semester. Active student engagement and sustainability are primary focal points to innovative projects.

- o How should we get faculty members more involved?
- o What do we need to do to get more educators using innovative ways of engagement?
- o How can we reduce the number of printers on campus?

Leadership: Neil Weaver

Action Steps	Measures	Target
Promote and introduce new technologies to educators, administrators, and staff via Educational Technology Day	EdTech Day	Annually Spring
Establish opportunities for sharing of ideas across campus	Innovation Zone	Fall 2013
Establish 3 methods of Communication; Canvas Groups with self-sign-up, Video clips on Ed Tech playlist on Ensemble, McEdTech Twitter	Documented Use	Spring 2014

Goal 3: Teaching, Learning and Technology Initiative: Engage the campus on best practices related to teaching and learning with technology in the areas of multimedia, pedagogy, community engagement, and classroom technologies. This goal relates to the Messiah College Strategic Plan, Theme 2, Goal 1.

Context: There is a relationship between goals 2.1, 2.3, 2.4, 3.1, and 3.2 in the Messiah College strategic plan.

Subgoal 1: Pedagogy

Context: The focus of this goal is on pedagogy and instructional design, how to support approaches to course design and teaching that maximize student learning. This focus maintains a distinction from goals related to term-tenure protocols, faculty evaluation, and program-level assessment of student learning, while recognizing that there are obvious and natural links to work in these areas.

There is a demonstrated need from faculty for support with technology innovations in classroom, blended and online environments. With the rapid advancements in technology for use in educational applications it is essential to provide training. These advancements occur at a rapid rate that necessitates the importance of finding a way to use the expertise on campus to support faculty initiatives using technology in the classroom. Provide professional development activities that will foster the use of educational technology supporting this section's introductory paragraph and to provide opportunities to propagate what was learned to the educational community both here at Messiah as well as local high schools.

The Provost will ensure campus coordination and alignment of work on this initiative, the diversity plan, the term-tenure and promotion policy, reward structures for excellence in teaching and student learning, and program-level assessment of student learning.

Background: Initiatives will be placed in the context of overall individual faculty development and will address needs of instructors at all levels of proficiency and career experience.

1. Differences in disciplines and in the needs of particular programs will be considered.
2. Attention will also be given to addressing development needs that arise in response to specific institutional and curricular programs. The 2013 Ed Tech Day was successful in many ways, one of which was to include opportunities for secondary schools to engage with members of the Messiah

Campus and with each other. Requests were made for more of these opportunities.

3. Recommendations from this group will be processed in accordance with existing governance protocols.

Leadership: Rhonda Jacobsen (chair), Bill Strausbaugh, Jennifer Fisler, Jean Corey, Scott Kieffer, Seleena Lindsey, Cindi Tomes,

Classroom Technologies

Context: Messiah College supports using technology in all forms in the classroom including computers, tablets, AV equipment and multimedia used by faculty, staff and students. Our LMS supports our online graduate programs and enhances many of our traditional undergraduate programs. ePortfolios provide space for student to share, reflect and archive their work for a specified audience. Messiah College provides a Google Site application that is used successfully by four departments on campus. Google Sites on the Messiah domain provides a space for departments to create and share templates for their students. Students may copy their ePortfolios to a personal Google account upon graduation. This allows them to continue to develop a living ePortfolio.

Background: Initiatives will support graduate and undergraduate faculty in traditional, hybrid, and online contexts.

1. What is the best way to provide the necessary support in a format and at a time that faculty can use them effectively?
2. Can we provide smaller, more targeted modules as a response to in-the-moment requests for information and assistance?
3. How can we make this training easily accessible?
4. What is the best way to promote the availability of support, training and professional development?
5. How can we maintain superior systems (Classroom hardware, LMS, ePortfolio, etc.)?
6. How frequently are TS being used? At what point do we remove them?
7. How quickly do we change (ie. DVD to BlueRay)?

Currently technology in all classrooms is standard with a PC, monitor, keyboard, mouse, DVD/VCR unit that includes a TV tuner, projector, screen and control unit. Conference rooms have a control unit that allows for laptop connection as well as a projector and a screen. Implementation of Google sites as viable ePortfolio software continues.

1. How frequently are teacher stations being used? At what point do we remove them?
2. What is the most used device for displaying to the projector, laptop, iPad, phone, etc.?
3. How do we determine when to upgrade equipment (i.e. DVD to BlueRay)?
4. If laptops contain DVD players, is it necessary to have DVDs in the teacher's station?
5. What is the best way to make these decisions?
6. How do faculty members prefer to be contacted for participation in these decisions?
7. Who will write proposal for a new system if the pilots are favorable?

Leadership: Berte Thompson, Susan Shannon

Action Steps	Measures	Target
Determine Faculty Needs	Survey	Fall 2013
Outline Options and get Feedback	Documentation	Spring 2014
Pilot Options and get Feedback	Documentation	Fall 2014 and Spring 2015
Begin Rollout	Documentation	2015-16

Multimedia

Context: Messiah College promotes and supports educational learning opportunities with multimedia through advancing technologies. We strive to use technologies that support public and private community engagement on multimedia content produced by the Messiah community. Learning Technology Services provides consulting services for educational video projects (synchronous and asynchronous). We support asynchronous video projects from conceptualization, through planning, scripting, filming, editing and uploading of multimedia projects. Platform options we use most frequently for recorded multimedia include iTunes U, YouTube, Vimeo and Messiah's video uploader.

iTunes U provides public viewing and engagement around educational content produced by the Messiah community for the global community. We strive for high quality multimedia productions for the iTunes U platform. Dean or VP approval is required. YouTube and Vimeo provide public and unlisted/filtered viewing and engagement

around educational content produced by the Messiah community. Each of these platforms provides the option of creating a channel for multimedia content (School, Department, Major, Course, etc.). Content producers are encouraged to communicate with their Dean or V.P. Some multimedia is not intended for public viewing. The Messiah video uploader and Channel 13 provide viewing and engagement around content produced for selected groups of the Messiah community. Accessing videos posted through the Messiah video uploader requires Messiah authentication. Channel 13 provides viewing opportunities for students via their TV.

We support synchronous video conferencing for administrative and educational purposes with current hardware and software.

Background: A video project team is working toward a strategic plan for the campus

1. What synchronous software(s) should be used going forward for interviews/guest speakers/synchronous class experiences?
2. What hardware is required? Are there mobile options?
3. As we begin to produce more videos, where will we archive them? 8 TB = \$1000
4. Do we need a system for streaming and management distribution? (Media Core, Media Cast, Kultura, Cumulus)

Leadership: Video Project Team

Action Steps:

1. Expand the use of digital media (texts, video, audio) into course materials to make courses more cost effective and easier to manage
2. Develop a learning strategy for the capture of class/lecture experiences and content for review by students at later times
3. Support podcasts, module development
4. Support Channel 13 as an on campus communication option for students

Measures:

1. Survey campus now and Survey in one year - How well is the college using video to deliver and enhance the educational mission of the college?
2. Survey campus now and Survey in one year - In the past year, how many multimedia projects were you a part of?
3. Survey campus now and Survey in one year –

- In the past year, how many times did you engage with someone from another department related to a multimedia project?
4. Documentation clearly indicates current resources and extent to which those resources are utilized and needed. A proposal is developed and acted upon in budget process.
 5. Work-flow mechanism is in place and well communicated to the campus.
 6. Document number and types of training sessions provided (Pedagogy, Pre-production, Production, Post Production)
 7. Documentation developed and location for accessing materials is communicated through multiple channels including mass email.
 8. Communicate this strategy to the campus through multiple channels including mass email

Target: All measures are complete by Spring 2014 – [See full Video Strategy Here](#)

Community Engagement

Context: The focus of this goal is to provide opportunities for faculty to engage with the educational community, both here at Messiah as well as local high schools, in relation to the use of technology to enhance learning. In this goal we use the phrase, “educational community” to identify faculty at Messiah College and local high schools. We want to provide opportunities in the form of workshops, conference-like venues, etc. in which the educational community can present how they enhance learning with the use of technology.

This sub-goal provides an opportunity for those involved in Goal 2: Promote Innovation to present their innovative use of technology to the educational community. It also addresses Goal 7: Retention on the Administrative Support Goals document in an indirect way.

Action Steps:

1. Develop a think-tank involving representatives from the local high schools (both teachers, support staff, and/or students) the purpose of which is to communicate as a group how to use technology to enhance learning and to plan events that support this effort.
2. Plan another Technology day for January 2014 and increase high school participation. This is also addressed in Goal 2: Promote Innovation.

3. Work in conjunction with the Learning Commons committee and their action plans related to technology use and community engagement.

Measures:

1. Success for the development of a think-tank would be evidenced by the participation of at least 3 area high schools, meeting at least twice within this school year.
2. The technology day scheduled for January 2014 and invite local high schools as well as schools on the east shore.
3. At least 2 conversations with the Learning Commons committee to develop joint action plans.

Leader: Scott Weaver, Michelle George

Target: Annually in Spring

Goal 4: Curriculum Content Management: Streamline the maintenance of the following documents via content management technology (College Catalog, Student Handbook and Advising Handbook)

Context: Communicating our academic program requirements accurately and with digital ease fits into Strategic Plan 1.3, 2.4, 2.7, and 4.3. Prospective students, current students, parents and advisors should be able to quickly find accurate and up-to-date requirements for majors, concentrations and minors online, as well as learning objectives for the programs.

Background: The Provost's Office maintains advising sheets for majors and minors (n=147 majors and 70 minors), blueprints for incoming students (n=74), and 8-semester plans (n=50). These documents are used to create the College Catalog, the Advising Handbook, and as the source to program DegreeWorks. Portions of the College Catalog and the Advising Handbook also appear within the Student Handbook. Single curriculum changes and/or policy changes (e.g course title change or GPA requirement) require manual updates to multiple sources: Banner, DegreeWorks, advising sheets, the Catalog, the Advising Handbook, 8-semester plans and Blueprints. The process is both time-intensive and prone to error. While much of the content is repetitive, because the documents are used by various constituents for different purposes, the format and contents of each document varies slightly. Investigating the feasibility of a database management system or software program to build these publications could reduce costs (both labor and publication) and our environmental footprint. Potential benefits may include increased accuracy, customizable reports, a smart phone application, better search features for current users and better internet search engine results for prospective students.

Leadership: Susan Donat, Jon Wheat

Action Steps:

Measures:

Theme #3 - Equipment and Networking Infrastructure

All capital equipment and infrastructure needs to be on a documented replacement cycle to ensure the ongoing funding and resulting operation of these mission critical components of our approaches to undergraduate and graduate education. These approaches involve an examination of current modeling assumptions for capital funding and the identification of three strategic programming areas in the next four years.

Goal 1: Capital Funding: Examine the maintenance, documentation standards, and replacement cycles for all capital (computer equipment, physical networking/telecommunication infrastructure) toward a sustainable financial model. Plan for 5 years of infrastructure improvements financially and implement as capital budgets allows. This goal relates to the Messiah College Strategic Plan, Theme 2, Goal 7.

Context: The educational culture is becoming increasingly dependent on technology. Therefore, the proper planning for the maintenance, documentation, and replacement of these equipment and infrastructure resources is equally important.

Background: Over the past decade the College has added many technologies (card readers, wireless access points, cellular equipment, etc.) that were never included in capital replacement cycle financial forecasts. Just like other capital resources, we need to bring these systems within a financial model that plans for their continued functionality into the future.

The fiber and copper cable in the ground along with building wire are an important base of the entire communication infrastructure for the college. As such, they sometime require upgrades or replacements due to age or to support higher speed networking.

Single mode fiber upgrades

Needed to support more reliability in the gigabit network, provide support for cell signal boosting, provide additional fiber for other activities such as fire alarm monitoring and video. The current multimode cable is used to capacity in key locations. On center campus, single mode is available for key large buildings but build-out should continue. In residence halls, no single mode is available which will cause shorter term problem if not addressed.

Building wire upgrades

While many buildings are in good shape for the next few years, a few need more short term attention. Issues include dirty, hot environments that should be avoided for newer POE equipment. The dirt and heat will cause failures. Another issue are buildings using the “split jack” system which is not compatible with anything over 100mb networking. We need to be in the gigabit networking business.

Reduce need for copper

In planning for a move to an IP based phone system, we can greatly reduce the need for maintain the large copper cable plant in the ground. Copper cable will also be needed but as it ages, replacement with smaller bundles will save money. A recent repair between two manholes of a 900 pair cable costs about \$20,000 for just a small segment.

Reduce need for hard line coax

While not part of network services, hard line coax will eventually have similar issues to the copper as far as cost of maintenance and repair. Video services can be moved to single mode fiber once it is available and funding provided for the appropriate equipment.

Action Steps:

- Document IT equipment inventory and infrastructure, estimate replacement costs and life cycles to come up with yearly budget requirements.
- Compare the results of the replacement cycle calculations to current budget. Review consequences related to the difference between the calculation and actual funding. Discuss creative ideas related to the replacement cycle.
- Layout several years of infrastructure upgrade plans and cost estimates. Document reasons and priorities for the needs. Implement as funding allows.

Goal 2: Telecommunications: Plan and implement a campus VOIP phone system to replace the college's aging PBX phone system. Plan for improvements for cellular signal in campus buildings allowing pervasive use of cell technology.

Context: Phone and cellular communications are key elements of the campus communications system. The aging phone system should be updated before end of service dates approach. The ability to use cellular devices for voice and data should be enhanced in campus buildings as signal level is poor in many places.

Background: The current PBX and voice mail systems are aging and steps should be taken to replace before support is no longer available which will be likely occur in several years (5-10). The replacement is an expensive and lengthy process. Since the college has the right personnel resources, a modern VOIP phone system can be implemented at a much reduced cost compared to typical implementations. The campus currently has 150 phones on a new system as a pilot project.

Cellular voice and data signals are poor in many campus buildings. As each year goes by and people have become increasingly dependent upon cellular communications, the frustration level has increased. Emergency notification is also hampered by the unusable signal in many campus

buildings including residence hall areas.

Action Steps:

- Plan and implement (as budget allows) a VOIP based phone system to provide enhanced communication abilities and reduced maintenance costs for the college. System will include about 1125 phones but will NOT provide phones in every residence hall room which will save significant dollars.
- Plan and implement (as budget allows) an updated DAS system for growing our building cellular coverage. Residence halls should be a priority as the college looks to remove room phones in the near future.
- Plan for the eventual upgrade of the 5 current buildings on the older voice only DAS system to the newer system providing voice and data services.

Leadership: Tony Wyland, Chris Culbert

Goal 3: Internet and wireless: Develop and implement a plan for enhancing wireless access anywhere on campus and reliable, redundant internet access for the campus.

Context: The importance of Internet and wireless access to for campus resources has evolved into services that are expected to work everywhere, every time. Constituents of the college, especially students, have begun to use multiple wireless devices placing increasing demand on the wireless network along with bandwidth and reliability demands on Internet connectivity.

Background: The original campus wireless system was designed for basic coverage over all of the buildings providing access to the typical notebook computers of 8 years ago. As devices have become smaller, they have required higher signal strength than those of the past. As they become more numerous, a higher “density” access point deployment is needed. Classrooms full of mobile devices also require higher “density” than the original network.

The college’s reliance upon the internet itself has drastically increased. Not only do we need to provide adequate bandwidth (speed) as demand increases, thought must be given to redundancy for critical operations such as credit cards approvals, Messiah web site availability, hosted services that are off-campus including email and potentially a learning platform in the future.

Action Steps:

- Plan and implement (as budget allows) a higher density wireless deployment using the 5GHz N wireless standard.
- Plan and request budget for increasing internet connectivity bandwidth over the next several years
- Plan for a secondary internet connection from a different provider to provide a certain level of reliability and redundancy for critical functions. Depending on funding and contract pricing, this may start off with a limited scope of services and hopefully expand in the future.

Leadership: Tony Wyland

Goal 4: Disaster Recovery: Evaluate architecture of critical services including data storage, backup, virtualization, cloud services, and communication infrastructure, identifying problems and making recommendations to ensure a reliable recovery process in case of disaster.

Context: Computer network systems are becoming more and more critical to the operation of the college, and having a severe outage could create a major disruption to the operation of the college. It is imperative that some type of disaster recovery plan be put in place to ensure that critical services can continue under various disaster scenerios.

Background: Information critical to ensuring recovery of Messiah information systems is currently limited to what's in the minds and memories of key Messiah personnel. What documentation exists is not updated regularly and mostly outdated.

Action Steps:

- Produce a document identifying problems and vulnerabilities, and list recommendations (along with cost/benefit analysis), detailing ways that those problems and vulnerabilities can be addressed at various levels of expenditure.
- Identify/form a Disaster Recovery Team; identify essential systems and document procedures for recovery.
- Produce a Disaster Recovery Plan document, containing key information and procedures needed to recover from conceivable disasters
- Assign responsibility to an individual or set of individuals to update the essential systems inventory and disaster recovery plan on regular basis.

Leadership: Jason Long, Tony Wyland, Kevin Nutt, Bob Getty