June 29, 2012

Marin Community College District  
Attn: Albert J. Harrison II  
Vice President, College Operations  
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Novato, CA 94949  

file: H:\MARINdata\242-01-ITPlan\Report\Marin-Rpt-Letter-02cbp.wpd

Dear Mr. Harrison:

Enclosed is the final report for the Information Technology Assessment engagement. We are pleased to have had the opportunity to work with the College in developing its 2012-2017 Technology Plan and to assist you with this important information technology assessment. We thoroughly enjoyed our interactions with the many faculty, staff, and students with whom we met during this process.

We hope we have the opportunity to work with you all again in the future.

Sincerely,

Ann-Marie Lancaster  
Engagement Manager

cc: Ginny Schroeder  
Phillip Beidelman
College of Marin

Information Technology Assessment

Final Report

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College of Marin

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Prepared by

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# Table of Contents

1. Purpose of the Work .......................................................... 1
2. Engagement Deliverables .................................................. 1
3. IT Assessment Focus .......................................................... 1
4. Assessment and Plan Development Approach .......................... 2
5. College Technology Accomplishments ................................. 3
6. Enterprise Administrative Systems ....................................... 3
7. College Web Presence ....................................................... 5
8. Campus Identification Card ............................................... 7
9. Learning Management System ............................................. 8
10. Classroom Technology ...................................................... 9
11. Student Computer Labs ................................................... 11
12. Instructional Technology Replacement ................................. 13
13. Faculty and Staff Systems .................................................. 15
14. User Support ................................................................. 17
15. User Training ................................................................. 18
16. Network and Telecommunications Infrastructure .................... 20
17. Server Infrastructure ....................................................... 21
18. Storage of College Documents .......................................... 22
19. On-going Technology Planning ......................................... 23
List of Attachments

Attachment I  Instructional Technology Replacement Process
Attachment II Faculty and Staff System Replacement Process
1 Purpose of the Work

The College of Marin (College) engaged WTC Consulting, Inc. (WTC) to assist the College with the development of a five-year information technology (IT) plan addressing 1) the acquisition, maintenance, and replacement of the College’s technology infrastructure and equipment, and 2) support and training to meet the College’s needs. Additionally, as part of the plan development process, WTC conducted an assessment of the College’s IT environment.

2 Engagement Deliverables

This report represents the deliverable for the IT Assessment. The 2012-2017 Technology Plan, which was developed collaboratively with the Technology Planning Planning Committee (TPC), was submitted to the College as a separate document.

3 IT Assessment Focus

The IT assessment focused on the following areas:

3.1 Existing technology master plans, standards, infrastructures, and enterprise services.

3.2 Viability of existing technology resources.

3.3 Current web-based technologies and staffing.

3.4 Utilization of course management software.

3.5 Upgrade, replacement, and migration strategies.

3.6 Methodologies for addressing the following areas:

3.6.1 Secure student access.

3.6.2 Promoting collaboration between faculty and staff in respect to administrative systems.

3.6.3 Providing measurable outcomes to assist in the ability to report on improvements and success.

3.6.4 Introducing new technology.
4 Assessment and Plan Development Approach

WTC conducted the IT assessment during the period January through May 2012. The assessment process included three on-site visits by WTC for interviews and meetings during February 7-9, March 5-8, and March 26-29. WTC made a final presentation to the President’s Cabinet on May 9 and discussed specific issues addressed in the assessment report with the Technology Planning Committee on May 10.

The assessment and plan development process included the following elements:

4.1 Review of College documents related to planning, accreditation, and technology.

4.2 Interviews with the following individuals and groups:

4.2.1 Academic deans and department chairs.

4.2.2 Administrators, faculty, and staff in the Library, Distance Education, Community Education, Enrollment Services, Student Development and Special Services, Fiscal Services, Office of Instruction Management, Staff Development, and Workforce Development, College & Community Partnerships.

4.2.3 Director of Information Technology (IT) and IT staff.

4.2.4 Associated Students College of Marin (ASCOM) Board.

4.2.5 Students in a film class using the Moodle learning management system.

4.2.6 Staff involved with programs and services supporting students with disabilities and ADA compliance.

4.3 Faculty and staff focus groups at the Kentfield and IVC campuses.

4.4 On-line survey of faculty and staff addressing office computers, communications technology, the campus network, classroom and conference room technology, student computer labs, the MyCOM portal, and the Moodle learning management system.

4.5 On-line survey of students addressing the MyCOM portal, student computer labs, classroom technology, the Moodle learning management system, and the campus data network.
4.6 Meetings with the Technology Planning Committee (TPC) to develop the Technology Plan.

4.7 Meeting with the Planning and Resource Allocation Committee (PRAC) to discuss requirements for the Technology Plan.

4.8 Meeting with members of the Educational Planning Committee to discuss aligning the Technology Plan to the College’s 2009-2019 Educational Master Plan.

5 College Technology Accomplishments

As part of the assessment and plan development process, WTC documented the College’s technology-related accomplishments since the 2004 planning process. These accomplishments involved enterprise administrative systems, the MyCOM portal, the College web presence, web accessibility standards and guidelines, classroom technology, student computer labs, learning management, faculty and staff systems, user support infrastructure, professional development and training, and the campus technology infrastructure including servers, telecommunications, and the wired and wireless data networks. The details of the initiatives completed in these areas are documented in the College’s 2012-2017 Technology Plan, which was developed in parallel with the IT assessment.

6 Enterprise Administrative Systems

6.1 Findings

6.1.1 Between 2006-2009, the College replaced its collection of separate systems supporting student services and administrative processes with the integrated Banner system.

6.1.2 Several additional modules are scheduled to be implemented during the next five years including DegreeWorks, Employee Self-Service Portal, Enterprise Data Warehouse, Document Management System, and the Faculty Load and Automated Compensation (FLAC) Module. Project phases for these implementations are detailed in the 2012-2017 Technology Plan.

6.1.3 Limitations of the MyCOM portal including non-intuitive navigation were frequently cited as a serious issue in recent surveys of faculty, staff, and students. Upgrade of the MyCOM portal is also included in the 2012-2017 Technology Plan.
6.1.4 To control both implementation and ongoing support costs, the College has limited customization to the Banner baseline and implemented only a few custom-developed applications.

6.1.5 The College does not have a formal on-going assessment process for identifying and correcting problems that are creating inefficiencies in how staff do their work and how they use the enterprise administrative systems.

6.1.6 The College does not conduct formal periodic reviews of work processes including processes spanning multiple offices to ensure that staff members are running daily exception reports and performing the validation checks required to maintain a high level of data integrity. On at least one occasion, the College has had to hire Ellucian consultants to assist with the clean up of account data.

6.2 Conclusions

6.2.1 Implementing new enterprise administrative systems is an enormous undertaking, and typically there are gaps that need to be addressed after the initial roll out. Unaddressed gaps can impede improvements in efficiencies. The absence of a formal on-going assessment process for identifying and correcting gaps is preventing the College from fully realizing the benefits of the new systems. For example, numerous interview participants identified the time required to query for information on an individual employee as an issue. This type of issue can be addressed through custom queries or reports.

6.2.2 The absence of mandated daily running of exception reports and correcting errors is a serious flaw in the College administrative work processes. The impact of this gap will be accumulative and represents a serious threat.

6.2.3 While controlling the number of custom changes and custom applications is a good practice, not implementing additional customization in some instances is limiting the benefits the College can realize from the new system.
6.3 Recommendations

6.3.1 WTC recommends that the College administration address the issue of data ownership responsibilities and staff responsibilities related to ensuring a high level of data integrity through a combination of reorganization, staff training, and ongoing oversight to ensure that the required exception reports are being run and corrections are being made.

6.3.2 WTC recommends that the College establish a formal Administrative Systems Steering Committee responsible for providing ongoing oversight of data ownership responsibilities and identifying and prioritizing ongoing development of new functionality. Senior directors and managers should be members of this committee and the committee should meet once a month at a minimum.

6.3.3 WTC recommends that the Administrative Systems Steering Committee conduct a gap analysis to identify issues causing inefficiencies or limiting the benefits of the new systems, evaluate alternative remediation efforts, and prioritize development. Additionally, WTC recommends that staff who frequently use the systems be involved in identifying gaps.

6.3.4 WTC recommends that the College allocate resources to eliminating those gaps significantly impacting staff efficiency.

7 College Web Presence

7.1 Findings

7.1.1 In 2008, Communications and Community Development implemented the web publishing and web management tool, Adobe Contribute, and restructured responsibilities for web content management to enable redesign, enhancement, and expansion of the College web presence. Content management and publishing responsibilities were distributed from a small central group to approximately 60 designated campus staff. Communications and Community Development provides ongoing training opportunities for end users to learn new or improve existing Adobe Contribute skills.
7.1.2 Communications and Community Development also implemented a new workflow for publications production using Adobe InCopy software. An Adobe training consultant conducted initial training sessions and returns annually to provide training on new or advanced features and techniques.

7.1.3 The College web site currently has more than 10,000 pages. The Director of Communications and Community Development and her staff have concluded that the size and complexity of the College's web presence now warrants taking the next step in web site management by integrating a web content management system (CMS). Integrating a CMS is included in the 2012-2017 Technology Plan.

7.2 Conclusions

7.2.1 WTC agrees that given the size and complexity of the College’s web site and the continued role of the College’s web presence, integration of a CMS is needed to ensure that the content on the College web site is current and consistent.

7.2.2 Since integration of a CMS will increase the complexity of the underlying web technology infrastructure and will require additional IT staff expertise to support the new environment, the College should examine both in-house and outsourced options for supporting a content management system.

7.3 Recommendations

7.3.1 WTC recommends that the College integrate a CMS into its web infrastructure.

7.3.2 WTC recommends that in addition to evaluating IT support requirements for maintaining the CMS in house that the College examine external hosting options to determine if external hosting would be more cost effective. Additionally, WTC recommends that the College weigh other potential benefits to external hosting options such as reducing incoming traffic to the College network and increasing business continuity and disaster recovery capabilities.

7.3.3 WTC recommends that Communications and Community Development continue its practice of offering ongoing training opportunities for end users.
8 Campus Identification Card

8.1 Findings

8.1.1 The College does not support a single campus identification (ID) card for faculty, staff, and students.

8.1.2 Student may purchase an ASCOM Student Photo ID Card, which entitles them to discounts from many local business, arts, and entertainment groups. This ID card cannot be used to access campus services such as the Library and printing.

8.1.3 Library cards for faculty, staff, and students are issued by the Library.

8.1.4 Cards to access print services are separate cards and students purchase these cards from Media Services or the Library.

8.1.5 Migration to a single campus ID card is included in the 2012-2017 Technology Plan.

8.2 Conclusions

8.2.1 Adoption of a single identification card will enable the College to improve services including streamlining processes related to printing and library services.

8.2.2 Adoption of an identification card with a magnetic strip or chip would position the College for offering other types of services such as storing money on the card to use for on-campus purchases.

8.3 Recommendations

WTC recommends that the College adopt a single ID card with a magnetic strip or chip that can support multiple functions including flex accounts which would allow faculty, staff, and students to store money on the card for use in the College bookstore, cafeteria, and vending machines.
9 Learning Management System

9.1 Findings

9.1.1 The College recently migrated from the Blackboard learning management system to Moodle. Starting with the Spring 2012 semester, a Moodle shell is created for all credit and non-credit courses.

9.1.2 The College’s Moodle environment is hosted at Remote-Learner.

9.1.3 Spring 2012 was the first semester that Moodle was available for use in on-campus courses. Of the 153 students responding to the recent survey, 35% indicated that Moodle was being used in at least one of their courses.

9.1.4 An Introduction to Online Teaching and Learning workshop was conducted for faculty in April 2012. The workshop will be offered again in June 2012.

9.1.5 The 2012-2017 Technology Plan includes an initiative to conduct workshops for faculty on how to use Moodle for distributing course assignments, materials, and grades and to encourage faculty to use Moodle in their courses for at least these basic functions.

9.2 Conclusions

9.2.1 Integration of Moodle for at least basic functions such as distributing course assignments, materials, and grades would improve the learning environment for Marin students and provide consistency in the learning environment from one course to the next.

9.2.2 Training opportunities for faculty is an essential element in achieving widespread integration of Moodle.

9.3 Recommendations

9.3.1 WTC recommends that the College set goals related to the use of Moodle (e.g., 50% of course sections using Moodle for basic functions by 2014) and monitor progress toward these goals.
9.3.2 WTC recommends that the College develop and run a set of reports each semester documenting the number and percentage of sections using Moodle and share results with the campus community.

9.3.3 WTC recommends that the College use its existing professional development infrastructure, namely the Flex Program and Faculty Academy workshops to offer additional Moodle training.

10 Classroom Technology

10.1 Findings

10.1.1 While the College has a stated goal to equip all classrooms with technology, the College does not maintain statistics on its progress toward this goal and there is no single repository for tracking equipment available in each classroom.

10.1.2 On the Kentfield campus, 40% of classrooms have an installed projector and 33% of classrooms have an installed computer and projector. On the IVC campus, 39% of the classrooms have an installed computer and projector.

10.1.3 The College supports approximately 200 portable classroom technology carts including TVs, traditional overhead projectors, and other media. Some carts are stored in classrooms, some in locations near classrooms, and some in a central location. These technology carts are heavily used by faculty with more than ninety deliveries per week at the Kentfield campus and four deliveries per week at IVC.

10.1.4 Media Services staff use a paper-based process for managing requests for portable classroom technology carts.

10.1.5 The College does not have a well-defined set of classroom technology configurations and procedures for operating classroom technology vary across classrooms.

10.1.6 Media Services staff have not been involved in new building or building renovation planning efforts early in the process and have not had opportunities to provide advice on classroom configurations and requirements.
10.1.7 Among the Media Services staff, there often is not sufficient communication between the staff who purchase and install classroom equipment and staff who work with the faculty and staff using the equipment.

10.1.8 In the recent technology survey, 93% of the 149 students responding indicated that they found instructors' uses of technology in their class presentations helpful.

10.1.9 In the recent technology survey, 88% of the 78 faculty and staff respondents indicated that technology was important or very important in their presentation of course or meeting materials.

10.1.10 Currently, there is no formal replacement plan for classroom technology. Developing a formal replacement plan, including integrating virtual desktop technology for instructor classroom computers, is part of the 2012-2017 Technology Plan.

10.2 Conclusions

10.2.1 The lack of well-defined classroom technology configurations is increasing technology support requirements and frustrating both faculty and staff users and Media Services staff.

10.2.2 Integration of classroom technology into new and renovated classrooms will be more consistent if Media Services staff are formally involved in the planning and implementation efforts.

10.2.3 New processes are needed for tracking and replacing classroom technology and managing equipment requests.

10.3 Recommendations

10.3.1 WTC recommends that the College formally involve Media Services staff in classroom planning and implementation on new building and building renovation projects. Additionally, WTC recommends that this involvement include both Media Services staff who install equipment and Media Services staff who work with the faculty and staff users.

10.3.2 WTC recommends that Media Services create and keep current a repository available on the College Intranet of the technology available in each classroom and conference room. This repository can be something as straightforward as an Excel file
or PDF file listing each classroom and equipment within the classroom.

10.3.3 WTC recommends that as the first step in replacing the paper-based process for managing requests for portable equipment that Media Services construct a set of Excel Workbooks for tracking requests and set up an email address for faculty to submit requests. WTC is not recommending that Media Services implement an equipment management application at this time.

10.3.4 WTC recommends that the College develop a formal replacement plan for classroom technology as detailed in the Instructional Technology Replacement section of this report.

11 Student Computer Labs

11.1 Findings

11.1.1 The College supports 558 Windows and Macintosh systems in student computer labs on the Kentfield and IVC campuses.

11.1.2 Four computer labs representing approximately 20% of lab systems were upgraded during the past two years.

11.1.2.1 Library Information Literacy Classroom at Kentfield.

11.1.2.2 Multimedia Studies at IVC.

11.1.2.3 Language and Culture Lab at Kentfield.

11.1.2.4 Fine Arts Lab at Kentfield.

11.1.3 The age of most computer lab systems ranges from three to nine years old. Many systems are at least five years old.

11.1.4 IT has a project underway to create a student domain for computers in student computer labs, which will provide a common management platform for deploying new services to labs, facilitate software license management across multiple labs, and allow for remote inventory tracking. Completion of this project is part of the 2012-2017 Technology Plan.
11.1.5 With the creation of a student domain, IT will be able to implement computer lab management software to track computer usage and application data, and collect data for State reporting. This project is part of the 2012-2017 Technology Plan.

11.1.6 In May-June 2012, the College will conduct a pilot with thin-client systems accessing virtual desktops hosted on a central server to replace 100 lab computers. The Instructional Equipment Committee recommended that some systems in each of the following labs be included in the pilot: Business Center 101, English Writing Center, the Library, and the Science Lab. While most of these systems support basic applications such as word processing, systems in the Science Lab are used for more computing-intensive applications such as geographic information systems (GIS).

11.1.7 If the pilot is successful, the College plans to expand the deployment of virtual desktop technology by replacing an additional 100-200 computer lab systems with thin-client systems.

11.1.8 Currently there is no formal replacement plan for student lab computers. Developing a replacement plan for student lab computers, including integration of virtual desktop technology, is part of the 2012-2017 Technology Plan.

11.2 Conclusions

11.2.1 The range of older systems in the computer labs is negatively impacting both student learning experiences and IT support requirements.

11.2.2 The creation of a student domain and implementation of lab management software will enable IT to manage the computer labs more efficiently and more securely.

11.2.3 Virtual desktop technology has the potential of positively impacting both student learning experiences and IT support requirements for the following reasons:

11.2.3.1 Virtual desktop technology can be updated without replacing the thin-client lab systems.
11.2.3.2 Thin-client systems require 10% of the power used by typical lab desktop systems. Additionally, the College will receive Pacific Gas & Electric (PG&E) rebates based on actuarial calculations of energy savings associated with replacing older equipment with thin-client systems.

11.2.4 By including systems in the pilot that support computing-intensive applications such as GIS, the College may lose the opportunity to clearly document the impact on network resources of the different types of applications running on virtual desktop systems. In addition, potential performance issues related to computing-intensive applications may negatively impact the overall results of the pilot.

11.3 Recommendations

11.3.1 WTC recommends that the College not include the Science Lab systems in the initial virtual desktop pilot. This approach will give the College the opportunity to understand the impact on network resources of basic types of applications.

11.3.2 WTC recommends that after a successful pilot and expansion of virtual desktop technology supporting basic types of applications that the College conduct a separate pilot focusing on a small number of thin-client systems in the Science Lab.

11.3.3 WTC recommends that the College develop a formal replacement plan for student computer lab technology as detailed in the Instructional Technology Replacement section of this report.

12 Instructional Technology Replacement

WTC recommends that the College adopt a structure instructional technology replacement process that addresses replacement of student lab computers and classroom technology with the following action steps and practices.

12.1 Establish an Instructional Technology Advisory Committee to advise the Director of IT on operational issues related to student computer lab and classroom technology such as technology standards and configurations, software requirements, and replacement priorities.
12.2 Initial Action Steps.

12.2.1 Establish current inventories of technology in computer labs and classrooms and on portable carts.

12.2.2 Develop standards and configurations for student computer labs, classroom technology, and technology on portable carts.

12.2.3 Identify replacement cycles for different types of technology based on type of use and expected useful life.

12.2.4 Develop a tentative replacement plan that, over a period of five years, results in all student computer lab and classroom technology being within their specified replacement cycles.

12.3 Annual Action Steps.

12.3.1 Develop a replacement requested based on the technology replacement plan (Instructional Technology Advisory Committee).

12.3.2 Submit a prioritized request to PRAC for technology replacements (Instructional Technology Advisory Committee).

12.3.3 Recommend funding allocations and technology replacements based on priority (PRAC).

12.3.4 Allocate funding (President’s Cabinet).

12.3.5 Adjust replacement plan to reflect funding availability (Instructional Technology Advisory Committee).

12.4 WTC Recommended Practices

12.4.1 Continue to deploy virtual desktop technology as appropriate.

12.4.2 As new instructional technology is adopted and deployed, integrate its replacement into these same processes at the time of initial deployment.

12.5 A process diagram illustrating the recommended replacement process appears in Attachment I.
13 Faculty and Staff Systems

13.1 Findings

13.1.1 The College has not defined configuration standards for faculty and staff desktop and laptop systems.

13.1.2 The College has not defined standards for the useful life of faculty and staff systems and when systems should be surplused and removed from campus.

13.1.3 While the College tracks faculty and staff systems through TrackIT, this inventory does not include age of each system.

13.1.4 In the recent technology survey, 56 faculty and 72 staff provided information on the age of their office computer with 30% of faculty and 60% of staff indicating their systems were 4-6 years old and 30% of faculty and 14% of staff indicating their systems were more than 6 years old.

13.1.5 Approximately 50% of the faculty responding to the recent technology survey indicated that for their College work, they primarily use their personal computer.

13.1.6 College departments and offices submit requests for individual faculty and staff computer replacements through the Program Review process.

13.1.7 Age of faculty and staff systems and the tedious, time-consuming process associated with requesting a new system were frequent issues raised by participants in the interviews and focus group sessions.

13.2 Conclusions

13.2.1 The absence of a viable replacement plan for faculty and staff systems is impacting productivity for both the faculty or staff members who are using older systems and the administrators who spend time requesting new systems.

13.2.2 The absence of a viable replacement plan for faculty and staff systems is impacting progress made on IT projects as IT staff resources are diverted to supporting older faculty and staff computer systems.
13.3 Recommendations

WTC recommends that the College adopt a faculty and staff system replacement process separate from the Program Review process with the following action steps and practices:

13.3.1 Establish a Faculty and Staff Technology Advisory Committee to advise the Director of IT on operational issues related to faculty and staff systems such as categories of users, system standards and configurations, and software requirements.

13.3.2 Initial Action Steps.

13.3.2.1 Update the current inventory of faculty and staff systems including age of each system.

13.3.2.2 Establish categories of users based on the type of system they need.

13.3.2.3 Establish system standards for both new desktop and laptop systems including manufacturer and system specifications.

13.3.2.4 Assign categories to faculty and staff and prioritize system replacements.

13.3.2.5 Develop a tentative replacement plan that, over a period of three years, results in decommissioning systems older than 7 years and provides faculty and staff with systems matching their user categories.

13.3.3 Annual Action Steps.

13.3.3.1 Confirm inventory of faculty and staff systems and update as needed (Information Technology).

13.3.3.2 Confirm prioritization with directors, deans, and managers (Information Technology).

13.3.3.3 Develop a replacement requested based on the technology replacement plan (Faculty and Staff Technology Advisory Committee).
13.3.4 WTC Recommended Practices

13.3.4.1 Physically remove systems older than 7 years from campus.

13.3.4.2 After the College has successfully migrated all systems older than 7 years out of service, develop a plan to reduce the number of years a system remains in service to 5 years.

13.3.4.3 As deployment of the virtual desktop technology within the College environment matures, integrate virtual desktops into the replacement process. Virtual desktops may work well for staff in offices using standard office applications such as MS Office as well as for faculty who prefer using their own devices.

13.3.5 A process diagram illustrating the recommended replacement process appears in Attachment II.

14 User Support

14.1 Findings

14.1.1 All campus computers are supported by the central IT staff.

14.1.2 IT supports TechStream, a web-based form for faculty and staff to report problems and submit requests to the IT Help Desk.

14.1.3 IT uses TrackIT for tracking requests, problem reports, and inventory.
14.1.4 While TechStream submissions currently have to be reviewed by an IT staff member and forwarded to the appropriate IT group, IT is working with a group of users to test a web-based form for entering work orders directly into TrackIt. Use of this new form will enable automatic routing of requests and problem reports to the appropriate IT group.

14.1.5 The most common issue raised by interview and focus group participants regarding user support was the response time related to requests and problem reports.

14.1.6 There are nineteen IT staff all of whom report directly to the Director of IT. An organizational review of IT was conducted several years ago and the firm conducting the review recommended that several supervisory positions be added. These positions have not yet been added.

14.2 Conclusions

14.2.1 IT is taking the proper steps to build an efficient and effective user support infrastructure.

14.2.2 Absence of supervisory level positions within IT will impede efforts to improve user support processes on a continuous basis.

14.3 Recommendations

14.3.1 WTC recommends that IT continue its efforts to improve the efficiency and effectiveness of their user support processes.

14.3.2 WTC recommends that the College implement the recommendations from the earlier organizational review to establish supervisory positions and reduce the IT Director’s number of direct reports.

15 User Training

15.1 Findings

15.1.1 The College has a history of integrating training into the deployment of new systems. This integration is detailed in the 2012-2017 Technology Plan.
15.1.2 The College Staff Development Office has recently added introduction to College technology resources and services to Faculty Academy workshops and other Flex Training Programs.

15.1.3 The following training needs were cited during the interview and focus group sessions:

15.1.3.1 Formal training on using the College’s technology resources for new faculty and staff.

15.1.3.2 MyCOM and Moodle training for students.

15.1.3.3 Moodle training for faculty including a focus on pedagogy for the online environment.

15.1.3.4 Training on making online course materials ADA compliant.

15.1.3.5 Required training for faculty teaching distance education courses.

15.1.4 Only 25% of faculty respondents in the recent technology survey indicated that they have had training on making online course materials ADA compliant.

15.1.5 Getting faculty and staff to attend training sessions was frequently cited by interview and focus group participants as a challenge.

15.2 Conclusions

15.2.1 Training for faculty, staff, and students needs to be an high priority as the College continues to implement new applications and systems.

15.2.2 Training for course instructors on integrating Moodle and other technologies into instruction including pedagogical and ADA considerations will be an ongoing need.

15.2.3 Training for faculty teaching distance education courses should be a requirement.
15.3 Recommendations

15.3.1 WTC recommends that the College continue its practice of making training a part of deploying new applications.

15.3.2 WTC recommends that the College explore new avenues for engaging faculty in training activities such as working with individual departments or areas to offer training sessions tailored to a department’s particular needs.

15.3.3 WTC recommends that the College establish training requirements for faculty teaching distance education courses.

16 Network and Telecommunications Infrastructure

16.1 Findings

16.1.1 The College recently enhanced the capabilities of its Mitel 3300 telephone system by upgrading the system controllers to comply with federal E-911 regulations. With the upgraded system, the physical location of the telephone is transmitted when a 911 call is made. Additionally, the upgraded telephone system is now on a maintenance contract. The upgrade also enables the College to expand its deployment of IP-based phones to new buildings.

16.1.2 The College has an aging voice mail system which has limited capabilities and frequent outages. Replacement of the voice mail system is included in the 2012-2017 Technology Plan.

16.1.3 The College uses network switches that are covered by a lifetime warranty.

16.1.4 The College has been able to coordinate upgrades to its cable plant and network devices with new buildings and building renovations. During the past technology planning cycle, the College has upgraded and expanded its data network in several areas. These areas are identified in the 2012-2017 Technology Plan.

16.1.5 There are a number of older switches in College buildings that are not scheduled for renovation and there is no replacement plan for these switches.

16.1.6 There is no switch-level redundancy in the campus network.
16.1.7 The existing wireless network was installed in 2006 and coverage is limited to a few campus buildings. The College is currently conducting a Request for Proposal (RFP) process for a new wireless network, which is an initiative in the 2012-2017 Technology Plan.

16.2 Conclusions

16.2.1 The College’s strategy to purchase network devices that are covered by a lifetime warranty enables the College to target replacement of network devices based on the need for additional capacity, not age of equipment.

16.2.2 A formal replacement plan is needed for network switches.

16.3 Recommendations

16.3.1 WTC recommends that the College develop a formal plan for the ongoing refreshment of network switches, use this plan to generate an annual budget request, and update the plan annually based on funding availability.

16.3.2 WTC recommends that the College consider adding redundant switches at its network cores on the Kentfield and IVC campuses to eliminate single points of failure impacting an entire campus.

17 Server Infrastructure

17.1 Findings

17.1.1 The College has been moving server-based applications to virtual servers since 2008. Of the 46 servers that the College is supporting, 22 servers are virtual.

17.1.2 All physical servers are on maintenance contracts with either 4-hour or 24-hour replacement required depending on the level of criticality of the applications supported on the server. The physical servers supporting virtual servers are high-end servers with redundant key elements such as power supplies and RAID arrays.

17.1.3 An initiative in the 2012-2017 Technology Plan addresses upgrading server processors, memory, and disk drives needed to support applications on an ongoing basis.
17.1.4 The College does not have a disaster recovery plan for its mission critical applications.

17.2 Conclusions

17.2.1 The College’s server infrastructure is sound with an appropriate level of virtualization. Server consolidation and virtualization has many benefits including reduction in space and energy requirements, increased utilization of resources, and decrease in the time required to bring up new servers, prepare upgrades, and recover from problems.

17.2.2 The absence of a disaster recovery plan for the College’s mission critical applications is a significant gap.

17.3 Recommendations

17.3.1 WTC recommends that the College initiate a disaster recovery planning effort for its mission critical applications.

17.3.2 WTC recommends that the College consider at least the following disaster recovery options:

17.3.2.1 A disaster recovery site at the IVC campus.

17.3.2.2 An externally hosted “hot” disaster recovery site. A hot site would support the equipment needed for the College to continue running its mission critical applications.

17.3.2.3 An externally hosted “cold” disaster recovery site. A cold site would require installation of equipment when needed to support the College’s mission critical applications.

18 Storage of College Documents

18.1 Findings

18.1.1 IT provides central storage for College offices to store documents.

18.1.2 Many College documents continue to be stored on the local drives of staff computers.
18.2 Conclusions

18.2.1 The practice of storing College documents on the local drives of staff computers has both a security risk and a data loss risk associated with it.

18.2.2 Policies and procedures are needed to ensure that College documents are located in designated central electronic storage areas.

18.3 Recommendation

WTC recommends that each administrative office develop policies and procedures for maintaining its documents in designated central electronic storage areas.

19 On-going Technology Planning

The *Ongoing Planning, Implementation, and Evaluation* section of the 2012-2017 Technology Plan details annual technology planning activities. These activities are designed to facilitate ongoing review and update of the College’s Technology Plan, which in turn will expedite development of the next five-year technology plan.

WTC recommends that in addition to the activities detailed in the 2012-2017 Technology Plan that in preparation for the next self-study process, the College implement a structured process for collecting and storing documentation in the following areas on an annual basis:

19.1 Technology replacements and related allocation of funds.

19.2 Updated technology replacement plans.

19.3 Training workshops conducted for faculty, staff, and students.

19.4 Survey results from workshop participants.

19.5 Results of faculty, staff, and students surveys addressing deployment of new applications and technologies (e.g., new WiFi network).

19.6 New policies and procedures implemented.
Attachment I
Instructional Technology Replacement Process
### Instructional Technology Replacement – Initial Action Steps

<table>
<thead>
<tr>
<th>Early Fall 2012</th>
<th>Late Fall 2012</th>
<th>Spring 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Information Technology</strong></td>
<td>Establish current inventories of technology in computer labs, classrooms, and portable carts</td>
<td>Develop standards and configurations for technology in computer labs, classrooms, and portable carts</td>
</tr>
<tr>
<td></td>
<td>Develop technology replacement cycles</td>
<td>Develop tentative replacement plan including budget</td>
</tr>
<tr>
<td><strong>Instructional Technology Advisory Committee</strong></td>
<td>Establish current inventories of technology in computer labs, classrooms, and portable carts</td>
<td>Develop standards and configurations for technology in computer labs, classrooms, and portable carts</td>
</tr>
<tr>
<td></td>
<td>Develop technology replacement cycles</td>
<td>Develop tentative replacement plan including budget</td>
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<tr>
<td><strong>PRAC</strong></td>
<td>Involve faculty with technical expertise and involved in using technology for instruction</td>
<td>Recommend priorities for replacement plan</td>
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<tr>
<td></td>
<td></td>
<td>Allocate resources to replacement plan</td>
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</tbody>
</table>
## Instructional Technology Replacement – Annual Action Steps

<table>
<thead>
<tr>
<th>Early Fall</th>
<th>Late Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Information Technology</strong></td>
<td><strong>Instructional Technology Advisory Committee</strong></td>
<td><strong>PRAC</strong></td>
</tr>
<tr>
<td>Confirm/update priorities</td>
<td>Confirm/update priorities</td>
<td>Recommend priorities for replacement plan</td>
</tr>
<tr>
<td>Develop funding request based on replacement plan</td>
<td>Develop funding request based on replacement plan</td>
<td>Allocate resources to replacement plan</td>
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<tr>
<td>Systems purchased and installed. Older systems decommissioned</td>
<td>Adjust plan to reflect funding availability</td>
<td>Update database to reflect system changes</td>
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<tr>
<td></td>
<td>Adjust plan to reflect funding availability</td>
<td></td>
</tr>
<tr>
<td>Recommended Practices:</td>
<td></td>
<td>Note: PRAC will also have allocation requests for faculty and staff systems and technology infrastructure.</td>
</tr>
<tr>
<td>- Continue to deploy virtual desktop technology as appropriate</td>
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<td>- Integrate new instructional technology into process as it is deployed</td>
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<td>Note: President’s Cabinet will also have allocation recommendations for faculty and staff systems and technology infrastructure.</td>
</tr>
</tbody>
</table>
Attachment II
Faculty and Staff Systems Replacement Process
### Faculty and Staff Systems Replacement – Initial Action Steps

<table>
<thead>
<tr>
<th>Information Technology</th>
<th>Faculty and Staff Technology Advisory Committee</th>
<th>Directors, Deans, Department Chairs, Managers</th>
<th>PRAC</th>
<th>President’s Cabinet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Fall 2012</td>
<td>Late Fall 2012</td>
<td>Spring 2013</td>
<td></td>
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</tr>
<tr>
<td>Establish standards and user categories</td>
<td>Create database with data from TrackIT</td>
<td>Generate Excel report for each area</td>
<td>Upload into database</td>
<td>Develop tentative replacement plan including budget</td>
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<td></td>
<td>Make viewable on Intranet</td>
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<td>Update staff and system information, user category, and priority</td>
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<td>Develop tentative replacement plan including budget</td>
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<td></td>
<td>Adjust plan to reflect funding availability</td>
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<td>Update database to reflect system changes</td>
</tr>
</tbody>
</table>

**Note:** PRAC will also have allocation requests for student computer labs, classroom technology, and technology infrastructure.

**Note:** President’s Cabinet will also have allocation recommendations for student computer labs, classroom technology, and technology infrastructure.
Faculty and Staff Systems Replacement – Annual Action Steps

**Early Fall**
- Confirm inventory and prioritization
- Develop funding request based on replacement plan

**Late Fall**
- Adjust plan to reflect funding availability
- Update database to reflect system changes

**Spring**
- Systems purchased and installed. Older systems decommissioned
- Adjust plan to reflect funding availability

- Recommended Practices:
  - Physically remove systems older than 7 years from campus
  - Integrate virtual desktops into the replacement plan as appropriate

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**Information Technology Directors**
- Confirm inventory and prioritization
- Develop funding request based on replacement plan

**Faculty and Staff Technology Advisory Committee**
- Confirm inventory and prioritization
- Develop funding request based on replacement plan

**Directors, Deans, Department Chairs, Managers**
- Confirm inventory and prioritization
- Develop funding request based on replacement plan

**PRAC**
- Recommend priorities for replacement plan

**President’s Cabinet**
- Allocate resources to replacement plan

Note: President’s Cabinet will also have allocation recommendations for student computer labs, classroom technology, and technology infrastructure.

Note: PRAC will also have allocation requests for student computer labs, classroom technology, and technology infrastructure.

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Prepared by WTC for Marin CCD Attachment II - Page 2 of 2 June 29, 2012