Information Technology Plan: 2004 - 2007

FINAL v4.0

October 12, 2004
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Information Technology Plan 2004–2007

Overview:

During the fall 2003 semester, the Ad-Hoc Technology Committee developed and distributed a “Position Paper” which described the need for an information technology plan to improve coordination of both administrative information systems and instructional technologies to support teaching and learning at College of Marin. Due to the lack of success over the past eight years to develop an information technology plan, this Paper recommended hiring an outside consultant to assist the College to write an information technology plan. With funds made available from the Marin Community Foundation and endorsements from the Academic, Classified and Student Senates as well as Management Council, the District hired Strata Information Group (SIG) in February 2004.

Since February, the Ad-Hoc Technology Committee has been working with SIG to develop a draft Technology Plan. The planning process has included the following major activities:

- Application by the Technology Committee to become a standing committee within the College’s governance system;
- Review of existing technology studies, assessments and related documentation from College of Marin;
- Discussion and review of IT plans from other community colleges;
- Administration of a comprehensive set of online surveys for Faculty, Staff, Administration, and Students to assess their perception of the use of technology at the College;
- Individual and group interviews by SIG personnel with more than 80 College faculty and staff about their technology needs and concerns;
- Review and discussion of online survey and interview results;
- Development of goals and recommendations to improve the use, deployment and support of technology for instructional programs and business operations of the College.

The current membership of the Technology Committee includes:

Ingrid Schreck, Chair
Bonnie Borenstein
Steve Dodson
Harriet Eskildsen
John Hinds
Kathleen Kirkpatrick
Nancy Kutcher
Jim Locke
Mike Lewis
Deb Mindel
Rene Prado
Rainer Wachalovsky
Derek Wilson
Assessment Process:

The purpose of the assessment phase of the planning process was to develop an understanding of College of Marin’s strengths, weaknesses, opportunities, and areas for improving the deployment and support for information technology. That is, it is necessary to understand the College’s existing information technology environment in order to develop goals and recommendations for the Information Technology Plan.

It is important to note that the College, in spite of limited resources, has made significant improvements in many areas related to technology over the past few years. As a small college, College of Marin is not in a financial position to make large investments in technology, infrastructure, and support services.

Some of the data collected through this assessment, both from the online surveys and staff interviews, may include perceptions of the various groups and individuals who were interviewed, and may not be entirely accurate. Nonetheless, such perceptions are important because they might be indicative of communications issues or reflect underlying concerns about technology at the College.

As mentioned earlier, a considerable amount of assessment data was collected through online surveys that were designed by the Technology Committee and administered using the web. Students, faculty, staff, and administrators responded to these customized surveys and were able to provide extensive comments regarding their perceptions of state of technology at the College. Please refer to Attachment C – Summary of Online Survey Results for an overview of how faculty, staff, students and administrators perceive technology at the College.

In addition to the assessment data that was collected through the administration of the online surveys, approximately 80 faculty, administrators and staff were interviewed either individually or in small groups from all areas of the College community.

A synthesis of the assessment data that was collected during the interviews was organized into four major focus areas:

**Instructional Technology**  
Instructional technology includes systems and services that support teaching, learning, and scholarly research.

**Organizational Structure and Governance**  
Organizational structure and governance entails institutional leadership, staffing, training and staff development, development of effective policies and procedures, strategies for communication, cross-functional work groups, planning for technology, etc.

**Administrative Information Systems**  
Administrative systems include applications that support core business services and operations of the College such as student registration, financial aid, payroll, budgeting, accounting, institutional research and so on.

**Information Technology Infrastructure**  
The College’s infrastructure includes networking services (email, internet, intranet, etc.), hardware platforms and servers, cable plant, support services, security devices, etc.

Please refer to Attachment D – Summary of Assessment Data for a recap of the key themes, issues and concerns that were raised by College personnel during the interview process.
Mission Statement for Information Technology at College of Marin:

The Technology Committee has adopted the following mission statement:

“The mission of the College of Marin Technology Committee is to guide, coordinate, and recommend technology planning that supports and enhances student success and institutional effectiveness.”

The Technology Committee looks forward to participation the College’s shared governance. As with all shared governance committees, its main concern will be to support student learning. The guidance, advice, and recommendations from the Technology Committee, however, will be limited to issues of information technology *per se*, and not to pedagogical methods.

Developing institutional plans for information technology is not a trivial endeavor. It is a challenge to identify opportunities, set priorities, identify and allocate resources, gain consensus, and to implement. Moreover, since information technology is constantly evolving and changing, the planning effort for technology must be a continuous and ongoing process by the Technology Committee.

Increasingly, the use of information technology is a differentiator among colleges and universities. Students, faculty, and staff expect their institutions to have comprehensive administrative information systems, self-service web-enabled applications, high-performance network access, responsive technical support, and instructional technology systems and services that support the instructional programs. Enhancing College of Marin’s status as an “Institution of Choice” by prospective students will require a number of improvements with respect to information technology.

Goals and Recommendations:

An Information Technology Plan for College of Marin provides the strategy to develop specific goals and objectives that:

- improve instructional technology and administrative information systems;
- improve business efficiencies;
- and provide improved services to students.

The goals and recommendations in the Plan are based on a 3-year period beginning Fall semester 2004 and continuing through Spring semester 2007. There are four major goals identified by the Technology Committee, all of equal importance:

I. Enhance the Capabilities and Support for the Use of Instructional Technology for Teaching and Learning
II. Develop an Effective and Responsive Organizational Structure to Support Administrative Information Systems and Instructional Technology
III. Enhance the Capabilities and Functionality of the College’s Administrative Information Systems
IV. Improve the College’s Information Technology Infrastructure
All four goals are interrelated and form the core of student success, as illustrated in the graphic.

Within each goal there is a set of recommendations that were individually prioritized. The priorities were determined by evaluating each recommendation against a standard set of criteria developed by the Technology Committee. The primary focus of each criterion is to support and enhance student success, academic programs, and institutional effectiveness.

Those criteria are:

1. Creates a student-friendly environment (i.e., easy for students to access, etc.).
2. Improves the quality of academic programs
3. Improves the efficiency of workflow systems
4. Improves accountability
5. Creates a community-friendly environment
6. Benefits student success
7. Aligns with the Board of Trustee’s goals
8. Relates to legal compliance issues (e.g., Ed Code, ADA, software licensing)
9. Supports the goals of Educational Master Plan
10. Most positive effects for students
11. Most positive effects for faculty and staff
12. Most positive effects for community

The resulting priorities are defined as: Critical, High, Medium, and Low.

In addition to a priority rating, each recommendation includes three items of information. A short summary statement provides a more in-depth explanation. Estimated costs and/or staff time are indicated. One or more resources are identified to help inform the decision-making process.
Recommendations in this plan propose the use of additional staff resources, referencing the use of consultants when appropriate. In these instances, the Technology Committee is resolute in identifying the most qualified, knowledgeable individual(s) with proven expertise in accomplishing a certain task. The Committee (or designated group) will have oversight of developing a statement of purpose, criteria, and methods of evaluation for selecting a consultant. The search will be open internally and externally for bid/selection. The Committee (or designated group) will have the discretion to make the recommendation to the President, where, if all things are equal, an internal applicant will take priority over an external consultant. As in the development of the Information Technology Plan, the committee (or designated group) will act as project liaison for the College.

It is important to note that many of the recommendations in the Information Technology Plan require the development of detailed implementation plans and timelines.
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Goal I: Enhance the Capabilities and Support for the Use of Instructional Technology for Teaching and Learning

A. **Recommendation: Assess the need for online resources that support instruction at College of Marin**

The College should identify and assess the future of web-based instruction for its community, such as online courses, hybrid classes, and supplemental materials. This should include consideration of faculty incentives and disincentives, student demand and expectations, national and local trends, effectiveness for teaching and learning, setting objectives for a certain percentage of faculty to have an online strategy to support their instructional effort, ability for IT to support, and other related issues.

**Priority:** High

**Estimated Costs:** Faculty and staff time to conduct the assessment and research

**Resource:** Academic Senate, Curriculum Committee, and Dean of Humanities and Instructional Technologies

B. **Recommendation: Assess the need for a student information technology literacy requirement**

Assess the need and develop a strategy to implement an information technology literacy requirement for students that will work in conjunction with the Library’s information literacy program.

**Priority:** High

**Estimated Costs:** Faculty and staff time to conduct the assessment, conduct research, develop instructional materials, etc.

**Resource:** Curriculum Committee and Library staff

C. **Recommendation: Assess the need for a faculty training program in the use of available technology resources at the College of Marin**

Work with the faculty and administration to determine how to support new and existing faculty to more effectively access and use instructional technology and other technology resources at the College, as an integrated program with Goal II – Recommendation C.

**Priority:** High

**Estimated Costs:** Will depend upon the number of faculty participating and the type of training offered. The San Mateo CCD has implemented a program like this.

**Resource:** VP Academic Affairs, Dean of Instructional Technology and Staff Development Program Administrator
### D. Recommendation: Improve communication with students about what technology resources are available to them

Provide students with more information about what technology resources are available to them – such as computer labs. It was apparent from the survey that many students do not know where computer labs are, what the restrictions are in labs, what tools or services a student might have access to in a specific lab, or the hours that labs are open and available. As part of this recommendation, it is important that a process be included to identify standards and improve communications from the students to the College.

**Priority:** High

**Estimated Costs:** TBD – improved signage, more information in the class schedule, etc.

**Resource:** Dean of Student Development and Special Services

### E. Recommendation: Conduct and maintain an inventory of existing instructional technology equipment and software.

An audit and inventory of existing equipment and software should be conducted to help ensure that faculty has access to the instructional technology that it needs. Based on this audit and inventory, a list of unmet needs can be developed and priorities determined so that as funds become available higher priority items can be acquired.

Computer hardware and software have become an essential part of modern academic life, therefore each department should have a line item in its yearly budget for hardware and software upgrades. Given the current difficult budget situation, departments should be encouraged to supplement these allocations with donations and grants of money and equipment to enhance their individual departmental capabilities.

**Priority:** High

**Estimated Costs:** TBD

**Resource:** VP of Business Services and VP Academic Affairs

### F. Recommendation: Evaluate the need and define standards for classrooms using advanced technologies.

Assess the need and develop requirements and standards for classrooms using advanced technologies. The College may determine that there are several different configurations for advanced technology classrooms depending on how the rooms will be used.

**Priority:** High

**Estimated Costs:** Faculty and staff time to conduct the assessment, determine best practices at other community colleges, and develop specifications for each type of classroom that is enhanced with advanced technology. Actual costs to implement -- TBD.

**Resource:** Academic Senate
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<th>Description</th>
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| G.      | **Recommendation:** If a new ERP system is acquired, evaluate its capability to meet the needs of the College in the area of instructional administration | If the College proceeds with the procurement of new administrative information systems, ensure that the applications being considered will support instructional administration functions e.g., catalog maintenance, curriculum management, and enrollment management.  
**Priority:** High  
**Estimated Costs:** Staff time to review and analyze capabilities of selected systems from vendors such as Datatel, SCT, Oracle, Peoplesoft, Jenzabar, to meet the needs of the College in these areas.  
**Resource:** Curriculum Office, Dean of Enrollment Services, and the Director of IT |
| H.      | **Recommendation:** Increase computer equipment and digital projection capabilities in computer labs. | Increase the number of workstations, upgrade computer hardware and software and provide digital computer projection capabilities in selected computer laboratories.  
**Priority:** High  
**Estimated Costs:** TBD  
**Resource:** Instructional Equipment Committee |
| I.      | **Recommendation:** Establish more open computer labs for students access | Assess the opportunities for various instructional labs to operate as general purpose and as "open lab" facilities while still ensuring a measure of ownership and control by specific departments.  
**Priority:** Medium  
**Estimated Costs:** Potential costs may include additional software licenses to provide more applications for students to use in an open lab, increased technical support needs within the labs, and possible hardware upgrades to support new software applications.  
**Resource:** Academic Senate and VP of Academic Affairs |
| J.      | **Recommendation:** Implement a student helpdesk capability | Evaluate the potential of implementing a student helpdesk function that would be staffed by students who are technologically advanced. The objective is to provide increased technical support and resources to those students who have questions or problems using technology in their coursework. It would be helpful to provide an automated Help Desk application to track requests and develop a searchable knowledge base to facilitate problem resolution. The IT staff will be an essential resource to ensure that this student helpdesk can be successful.  
**Priority:** Medium  
**Estimated Costs:** $5,000 to $10,000 for server and software. Other ongoing costs TBD.  
**Resource:** Dean of Student Development and Special Services, ASCOM Leadership and the Director of IT |
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<th><strong>K. Recommendation: Encourage innovative uses of technology to support teaching and learning</strong></th>
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<td>Encourage and support at least three new projects during each of the next three academic years that entail innovative uses of information technology that support teaching, learning, and scholarly research.</td>
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<td><strong>Priority:</strong> Medium</td>
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<tr>
<td><strong>Estimated Costs:</strong> $10,000 to $15,000 for each year</td>
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<td><strong>Resource:</strong> Dean of Instructional Technology and Staff Development Program Administrator</td>
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<th><strong>L. Recommendation: Expand instructional technology training and support for faculty and staff</strong></th>
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<td>Evaluate and expand the onsite and online instructional technology training and support capabilities for faculty and staff, as a subset of Goal I – Recommendation C. Improve communication with faculty with regard to instructional technology – increase faculty participation with the Technology Committee, publish newsletters, conduct symposia and workshops on advanced uses of instructional technology, and other related activities.</td>
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<td><strong>Priority:</strong> Medium</td>
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<tr>
<td><strong>Estimated Costs:</strong> TBD</td>
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<tr>
<td><strong>Resource:</strong> Dean of Instructional Technology and Staff Development Program Administrator</td>
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Goal II: Develop an Effective and Responsive Organizational Structure to Support Administrative Information Systems and Instructional Technology

A. Recommendation: Conduct an organizational assessment to determine required support for technology.

Conduct an organizational assessment to develop an optimum strategy for the support of technology across the entire College. Some of the questions to consider are:

- What is the appropriate level of staffing for the IT department to support College goals?
- What are the minimum service levels that the College can expect from the IT department after any organizational changes have been made?
- Should the College centralize the lab technicians and merge them into the IT department?
- Are academic departments best served by a decentralized IT staff that consists of a designated technician located in each building or supporting a group of departments? If so, then these individuals should be empowered to respond to all calls for assistance with any type of computer in his or her building or area, should be furnished the necessary equipment (pager, cell phone), and should be formally recognized for his or her contributions
- What level of staffing is required to develop, provide and evaluate the technology training necessary to support faculty, staff and administrators? Where should these resources report within the College organization?
- What level of resources are necessary to develop and maintain College web resources including the College site, self-service applications for faculty, staff and students, the intranet, and other related resources? Where should these resources report within the College organization?

Priority: Critical

Estimated Costs: It is recommended by the Technology Committee that a consultant be used to conduct this assessment. TBD

Resource: VP Business Services

B. Recommendation: Establish an effective information technology advisory structure to develop and maintain a Strategic Plan for Technology.

Establish the Technology Committee as a formal standing committee within the College. Redefine its charge, purpose, role and responsibilities as necessary to make it an effective advisory body for all College technology issues. The membership of the Technology Committee should reflect a shared governance structure. The Technology Committee should be responsible for:

- Developing, maintaining and updating the Strategic Plan for Information Technology
- Work with faculty, staff and students collaboratively and through a shared-governance process to recommend priorities for technology initiatives and projects to the Administration
- Evaluate and recommend “best practices” for the deployment and use of technology at the College of Marin

The College needs to develop policies and guidelines for the technologies being used by faculty, staff and students – such as acceptable use, information access, security (please refer to Attachment B – System Information Security Plan which was developed by a separate ad-hoc committee for additional information), equipment roll-over/reallocation (See Goal IV – Recommendation C), accessibility, spam, internet, email, backup/archiving, course development and ownership, posting...
class materials, rights and restrictions, purchasing and licensing, software upgrades, and other related areas. The Technology Committee should develop draft policies and guidelines that can be reviewed, discussed and adopted using a shared-governance process.

**Priority:** High

**Estimated Costs:** Staff time and commitment to participate on the Technology Committee and assist them with planning and the development of draft policies and guidelines.

**Resource:** President’s Cabinet

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### C. Recommendation: Expand the existing and implement new training programs to enable the staff of the College to more effectively use the technologies that are available to them.

There is a widely recognized need for more technology training for all employees at the College of Marin. The existing workshops that have been offered on Microsoft Office have been very well received, but attendance is frequently poor. If additional training is offered, the management team must support it and encourage their staff to attend and participate. As part of this recommendation it is important to include processes to evaluate and assess the skill levels of each staff member so that individual training profiles could be developed and then training programs designed to target the specific needs. As identified in Goal II - Recommendation A, additional resources will be required to develop and deliver the training that is specified in this recommendation. Examples of training needs include:

- Orientation for new employees
- Desktop and office productivity tools
- Email – how do I access College of Marin email from off-campus or home?
- Mitel telephone system – if I have it, how do I use its features effectively?
- HP System – What student information is accessible and usable for faculty, counselors/advisors, etc?
- Great Plains Finance System – What information is there, how do we access it, etc?
- Desktop backup – What is the procedure for backing up critical files from the desktop?
- Shared Folders on the network – How to set up and use shared folders.
- College of Marin Intranet – what is there, how do I access it?

**Priority:** High

**Estimated Costs:** TBD

**Resource:** IT Department with assistance from Staff Development Program Administrator
Goal III: Enhance the Capabilities and Functionality of the College’s Administrative Information Systems

A. Recommendation: Conduct business process analyses to improve business operations and work-flow

Conduct business process analysis workshops to identify opportunities for streamlining work-flow and business routines. Please refer to Attachment E - Business Process Analysis: A Tool for the Pursuit of Operational Excellence for a detailed description of business process analysis (BPA). Some specific processes that need improvement include:

- Faculty contract processing
- Hiring procedure
- Student refunds
- Student application for admission, registration and payment of fees
- Review and streamline usage of paper-based forms with the intent to reduce and eliminate ones that are not essential as identified in Goal III– Recommendation D.

Priority: Critical

Estimated Costs: $20,000 to $50,000 depending on level of need for resources to assist College staff and conduct BPA training to enable the staff to become self-reliant and capable of conducting BPA without assistance.

Resource: President’s Cabinet

B. Recommendation: Procure new administrative information systems

If the bond initiative passes, begin a process for the procurement of new administrative information systems (also referred to as Enterprise Resource Planning systems – ERP), including required hardware/servers, support, training and implementation assistance. As part of this effort, the needs of each department - Admissions and Records, Student Services, Financial Aid, Finance, Human Resources, Payroll, Office of Instruction, Facilities and Plant Operations, Curriculum Committee, Information Technology -- will be assessed. The student responses to the online survey highlighted that students want web-based access to:

- Real-time online applications for admission and financial aid
- Print unofficial transcripts
- Real-time online registration and the ability to add/drop classes
- Pay fees online via credit card or other ecommerce method
- Schedule appointments with counselors
- Access course outlines and syllabi

Priority: Critical

Estimated Costs: $4.4 million to $7.46 million over five years including hardware, applications software and database licensing, servers, maintenance, implementation assistance, training, etc. See Attachment A - ERP Systems: 5 Year Total Cost of Ownership for an estimated budget based on a 5-year total cost of ownership model.

Resource: VP Business Services
C. Recommendation: Improve communications across the College regarding information technology and resources

Implement a communications plan that enables the College community to better understand and have access to the available applications, systems, tools, technical resources, support services, documentation, information, training opportunities, and other resources.

**Priority:** Critical

**Estimated Costs:** $3,000 to $5,000 annually

**Resource:** Director of IT and Staff Development Program Administrator

D. Recommendation: Reduce usage of paper-based documents and forms which are causing operational inefficiencies

Develop a project plan to greatly expand the effort to make College forms and documents available online through the college’s intranet, web site, etc. Many individuals complain that the College of Marin has too many paper documents and forms. At a minimum, the College should convert most of them to Adobe Acrobat pdf’s and post them to a website. Longer term, some of the high volume/usage forms should be converted to be able to be filled out online and submitted to the appropriate office – part of this initiative might be to implement an accepted form of digital signature. This project could be accomplished as part of the recommended business process analysis efforts.

**Priority:** High

**Estimated Costs:** Will require an investment of staff time to convert forms, establish standards, training, etc. but could provide significant cost reductions by decreasing the use of paper, improving operational efficiencies, saving filing space and provide potential labor savings for staff.

**Resource:** President’s Cabinet

E. Recommendation: Improve access to financial and budget information for managers

Review the current implementation of the Great Plains software to improve the ability of key users to access financial information in a timelier manner. Provide online access to budget and fund availability information to appropriate managers. If new administrative information systems are acquired, then it will not be cost-justified to fund additional licenses. However, since it will take more than a year to acquire and implement a new finance system, it is recommended that an alternative strategy be developed to provide the management team accurate and timely budget and fund availability information.

**Priority:** Medium

**Estimated Costs:** $3,000 – $15,000

**Resource:** VP Business Services and Director of Fiscal Services
### Goal IV: Improve the College’s Information Technology Infrastructure

#### A. Recommendation: Develop and implement standards for information technology systems at the College.

Develop recommended standards for all information technology access points based on type of usage. This includes workstations (desktop and laptops) based upon type of usage that include hardware configurations, operating systems, software tools and applications (such as word processing, spreadsheets, presentation and graphics software, document and file management, multimedia, etc.), security (please refer to Attachment B – *System Information Security Plan* which was developed by a separate ad-hoc committee for additional information), email, spam, anti-virus, printing capabilities, access to the College intranet, etc. For the instructional area, these standards should be developed with the participation of the faculty to ensure that the technology they need is being included.

**Priority:** High

**Estimated Costs:** Staff time to develop and publish the standards and conduct/update equipment inventory for faculty and staff. Based on the inventory an assessment of the number of workstations not meeting the standards can be determined and costs estimated.

**Resource:** Director of IT and Technology Committee

#### B. Recommendation: Evaluate the broader use of site/enterprise licensing to reduce software costs

Evaluate the cost-benefit of pursuing campus/enterprise licensing for software for administrative and instructional use. In order to assist departments to maximize the use of limited funding, standardize systems, and to avoid legal issues with licensing, a recommended list of discount hardware and software suppliers should be developed maintained and made available to department chairs at the beginning of each semester. Information related to guidelines and restrictions involving such purchases should also be included.

**Priority:** High

**Estimated Costs:** Staff time to inventory applications in use, assess current release levels, and to determine the need for upgrades and/or new applications. There may be potential cost-savings for the departments by buying upgrades and licenses in bulk.

**Resource:** VP of Business Services and Director of IT
C. **Recommendation: Evaluate and implement guidelines for the development of plans for the upgrade, maintenance, reallocation, and replacement of information technology systems and equipment.**

Maintain an inventory of information systems, create guidelines to track and monitor where equipment is not meeting the minimum standards. The resulting guidelines and standards should be updated regularly and widely distributed to all department chairs, faculty and staff. A cascading plan will enable older technology resources to be reallocated to areas that require fewer capabilities.

**Priority:** High

**Estimated Costs:** TBD

**Resource:** Director of IT and Technology Committee

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D. **Recommendation: Complete the rollout of Microsoft Exchange across the College community.**

Improve communication capabilities across the College by completing the implementation and rollout of Microsoft Exchange to all faculty and staff. Conduct an assessment of the College’s email services to ensure a unified and consistent email strategy, improve access for all employees, reduce spam and provide easy access to mail services from anywhere:

- Provide Exchange email accounts for ALL staff, administrators, faculty (both full-time and part-time), and ensure access to all members in shared governance
- Provide easy-to-understand documentation for accessing email remotely, archiving, rules, conference room scheduling, etc.
- Improve SPAM filtering at both the Exchange server level and at the desktop. Provide guidelines and/or "how-to's" for users to configure SPAM and junk mail filters at their desktops
- Promote the use of Outlook Calendaring across the College to facilitate scheduling of meetings
- Upgrade to MS Exchange 2003

**Priority:** High

**Estimated Costs:** Staff time to complete the installation and roll-out, develop and publish procedures and how-to’s; in addition if an upgrade to Exchange 2003 is considered a new server and licenses may be required – estimated costs less than $10,000

**Resource:** Director of IT
E. **Recommendation:** Develop a plan for the College to be compliant with Section 508 of the Americans with Disabilities Act.

Develop a plan for the College to be compliant with Section 508 of the Americans with Disabilities Act. This should include but not be limited to the College of Marin website, faculty web pages, WebCT, and other online course usage.

**Priority:** High

**Estimated Costs:** Staff time for review of appropriate sites, faculty and staff training for those using the web in support of instruction and modifying, as necessary, existing web resources.

**Resource:** Alternate Media Specialist

F. **Recommendation:** Make improvements to the Help Desk to provide more responsive services to faculty and staff.

In general, the College needs more technical support resources than it currently has. The IT department has several positions that are vacant and should be filled based on the organizational assessment in Goal II – Recommendation A. There is a need for additional staff support for the Help Desk that has extensive knowledge of the technologies being deployed at the College. More training for the end-users and easy to understand documentation could reduce the number of minor calls to the Help Desk.

Develop, implement, and maintain service level agreements that define the level of response that users can expect when requesting technical assistance.

**Priority:** High

**Estimated Costs:** TBD

**Resource:** VP Business Services and Director of IT

G. **Recommendation:** Develop policies, procedures and/or guidelines for information systems.

The College should develop clearly articulated policies, procedures and/or guidelines that support the delivery and use of information technology systems.

**Priority:** Medium

**Estimated Costs:** Staff time to review existing process and develop such policies, procedures and/or guidelines.

**Resource:** Director of IT and Technology Committee
H. **Recommendation: Provide support and service for Macintosh and other non-Windows workstations throughout the College.**

Many faculty and staff expressed concern that the College currently has little support available to those who choose to use Macintosh or other platforms. The College needs to develop an approach for support of these users. The options might include:

- Contract with a local 3rd party vendor for appropriate support services
- Provide specialized training for selected individuals either within the IT department or academic departments to be able to support Macintosh computers and other platforms
- Hire a new technical staff member who would be responsible for supporting Macintosh and other platforms across the College
- Evaluate the possibility of using students who have the appropriate knowledge and skills to provide some of this support – establish student internships

**Priority:** Medium

**Estimated Costs:** The least expensive option will be to identify one or more existing staff who can be trained and give them the responsibility for providing the necessary support services. Estimated costs: $10,000 to $15,000 plus increased workload for these individuals.

**Resource:** Director of IT, Technology Committee

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I. **Recommendation: Conduct a post-implementation assessment of the Mitel telephone system.**

Assess the performance of the College’s Mitel phone system and identify opportunities for taking advantage of the system’s functionality. This assessment should also include the determination of need for additional training and the standardization of telephone station equipment across the College. Many staff are confused about how their telephones work and what functionality they may or may not have. In addition, Security expressed concern about receiving 911 calls from empty offices.

**Priority:** Medium

**Estimated Costs:** Staff time and effort to work with ProLogic, the vendor who provided the system, to conduct the assessment. Estimated costs – nominal if the system is covered under a maintenance agreement.

**Resource:** Director of IT
J. Recommendation: Expand the capabilities of the College network and improve access for both instruction and administrative services.

Conduct a comprehensive network assessment to identify potential issues in the areas of performance and bandwidth, security – both internal and external, connectivity to all required classrooms, offices and other locations at each campus and determine what improvements are necessary.

Part of this assessment should include the development of a plan to begin to securely deploy wireless networking in classrooms and offices to evaluate the benefit and usage by faculty, staff and students. The College should consult with faculty to identify several locations on campus where wireless will be installed for use by faculty and students to pilot the technology and evaluate its use. Expand wireless access based upon demand and need across the College.

Provide easy to understand procedures that describe how to remotely access the online resources and services available on the College network – such as email, the College intranet, web site, library and research services, etc.

To assist the IT staff to more quickly and easily install software updates and enhance their ability to manage desktops remotely, “push technology” should be deployed. There are several approaches that can be used to do this. To take advantage of this technology, current operating systems such as Windows 2000 or newer will need to be standardized across desktops.

Currently, very few users are backing up their workstations to an alternate media to allow them to recover files in the event of a problem with their desktop. The College should either provide detailed instructions to all users about how they can backup their local files or evaluate the cost/benefit of implementing a College-wide backup/archival strategy.

Develop a plan to migrate to an “edu” internet domain name for its web presence and email services. The College currently owns “collegeofmarin.edu.”

Priority: Medium

Estimated Costs: If a network services vendor is used to conduct the assessment, the estimated cost is $5,000 - $10,000 depending upon scope.

Implementation of wireless networking in a typical classroom or office area will vary depending upon a number of considerations - such as composition of walls, size of room, number of concurrent users, etc – but is estimated to be $1,000 - $2,000 for the 802.11x access points required.

Resource: Director of IT
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Attachment A

ERP Systems: 5 Year Total Cost of Ownership

This attachment provides a more detailed cost-breakdown for the 5 year cost of ownership to acquire and implement a complete set of new administrative information systems. Please refer to Goal II, Recommendation B.

<table>
<thead>
<tr>
<th>Item</th>
<th>Low Range</th>
<th>High Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Software ¹</td>
<td>$100,000</td>
<td>$500,000</td>
</tr>
<tr>
<td>Application Software ²</td>
<td>$600,000</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Procurement Services ³</td>
<td>$120,000</td>
<td>$150,000</td>
</tr>
<tr>
<td>Implementation Training/Consulting ⁴</td>
<td>$800,000</td>
<td>$1,200,000</td>
</tr>
<tr>
<td>Project Management/Consulting ⁵</td>
<td>$450,000</td>
<td>$600,000</td>
</tr>
<tr>
<td>Staff Backfill ⁶</td>
<td>$480,000</td>
<td>$960,000</td>
</tr>
<tr>
<td>Hardware / Operating System’</td>
<td>$250,000</td>
<td>$350,000</td>
</tr>
<tr>
<td>First year Software Maintenance ⁸</td>
<td>$154,000</td>
<td>$330,000</td>
</tr>
<tr>
<td>First year Hardware/OS Maintenance ⁹</td>
<td>$55,000</td>
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<tr>
<td>Years 2-5 Software Maintenance ¹⁰</td>
<td>$696,946</td>
<td>$1,493,458</td>
</tr>
<tr>
<td>Years 2-5 Hardware/OS Maintenance ¹¹</td>
<td>$248,908</td>
<td>$348,467</td>
</tr>
<tr>
<td>PC Work Station Replacement Cost ¹²</td>
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<td>$450,000</td>
</tr>
<tr>
<td><strong>TOTAL COST</strong></td>
<td><strong>$4,404,854</strong></td>
<td><strong>$7,458,925</strong></td>
</tr>
</tbody>
</table>

**Assumptions:**
- ERP vendors (such as SCT, Datatel, Oracle, Peoplesoft, etc) typically base their pricing on enrollment size, FTES and annual general fund operating budget. In determining estimated costs for ERP software the figures published on the California Community College Chancellor’s Office web site were used. It is assumed that College of Marin has a $40 million general fund budget.
- Estimated Application Software costs reflect list price and does NOT include any discounts that might be negotiated.

**Footnotes:**
1. Pricing on Database software is typically based on the number of processors running on the hardware servers. Prices have a wider range depending upon the RDBMS selected. Typically Microsoft’s SQL Server will have a much lower per/CPU cost than will say Oracle. Pricing is based on an overall estimate of between 7-10 total CPUs distributed over multiple servers including the production (Live) server, development/training server and web self-service server.

2. Pricing on application software includes the cost of the following applications:
   a. Finance System – General Ledger, Requisitioning, Purchasing, Accounts Payable, Inventory, Fixed Assets, Accounts Receivables
   b. Student System – Admissions, Registration, Academic Records, Degree Audit, Financial Aid
   c. Human Resources and Payroll Systems
   d. Portal Application
   e. Work Flow Tools
3. Procurement services will vary depending upon the number of vendors selected to provide product demonstrations and includes:
   a. Assistance in Development of an RFP
   b. Evaluation of RFP responses
   c. Business Process Analysis Workshop
   d. Planning, scheduling and Conducting Vendor Product Demonstrations
   e. Assistance with the preparation of Demonstration Scripts and Evaluation Tool.
   f. Coordinating a Best and Final Pricing Document and Analysis
   g. Contract Negotiations with Selected Vendor or Vendors

4. Implementation Training/Consulting is typically charged on an hourly rate with rates ranging from $200 - $300 per hour depending upon the resources needed and the vendor selected. Pricing is based on typical hours recommend by the ERP vendors for training and implementation of the applications that are included in the proposal. This figure includes estimated travel costs.

5. Project Management/Consulting is based on level of service and hourly rates. Depending upon the level of project management this amount will vary. Project management services were estimated using 36 months for the project duration. The ranges represent different levels of services and hourly rates for those services. This figure includes estimated travel costs.

6. Staffing Backfill estimates are based on having to covers for between 2 – 4 FTE to support the project. Annual cost per FTE was $80,000 and backfill is planned for 3 year period.

7. Hardware/OS is based on a minimum of 2 environments being supported one for Production (Live) and the other for Development/Training/Testing

8. First year software maintenance costs are based on 22% of software cost. Year 2-5 maintenance is based on a 5% per annum increase from year 1.

9. First year hardware/OS maintenance costs are based on 10% of hardware/OS cost.

10. Year 2-5 Software Maintenance is based on a 5% annual increase.

11. Year 2-5 Hardware/OS Maintenance is based on a 5% annual increase.

12. PC replacement costs are based on replacement of 300 PC Workstations at a cost of $1500 per workstation.
Attachment B

College of Marin System Information Security Plan

This Information Security Plan describes College of Marin’s Systems safeguards to protect covered data and information that includes but is not limited to all confidential student and employee confidential information. These safeguards are provided to:
- Ensure the security and confidentiality of covered data and information;
- Protect against anticipated threats or hazards to the security or integrity of such information; and
- Protect against unauthorized access to or use of covered data and information that results in substantial harm or inconvenience to any student/employee

This Information Security Plan also provides for mechanisms to:
- Identify and assess the risks that may threaten covered data and information maintained by the College of Marin
- Develop written policies and procedures to manage and control these risks;
- Implement and review the plan; and
- Adjust the plan to reflect changes in technology, the sensitivity of covered data and information and internal or external threats to information security

Identification and Assessment of Risks to Student/Employee Information

College of Marin recognizes that it has both internal and external risks. These risks include, but are not limited to:
- Unauthorized access of covered data and information by someone other than the owner of the covered data and information
- Compromised system security as a result of system access by an authorized person
- Interception of data during transmission
- Loss of data integrity
- Physical loss of data in a disaster
- Errors introduced into the system
- Corruption of data or systems
- Unauthorized access of covered data and information by employees
- Unauthorized requests for covered data and information
- Unauthorized access through hardcopy files and reports
- Unauthorized transfer of covered data and information through third parties

College of Marin recognizes that this may not be a complete list of the risks associated with the protection of covered data and information. Since technology growth is not static, new risks are created regularly. Accordingly, the College of Marin IT department will actively participate and monitor advisory groups for identification of new risks.

College of Marin believes the College of Marin IT Department current safeguards are reasonable and, in the light of College of Marin IT Department current risk assessments, are sufficient to provide security and confidentiality to covered data and information maintained by the System. Additionally, these safeguards protect against anticipated threats or hazards to the integrity of such information.

Information Security Plan Coordinator

The Director of Information Technologies has been appointed as the coordinator of this plan and it is his responsibility to assess the risks associated with unauthorized transfers of covered data and information implementing procedures to minimize those risks to the College of Marin.
Design and Implementation of Safeguards Program
(Employee Management and Training)

References of new employees, working in areas that regularly work with covered data and information (Cashier’s, Admissions and Records and Financial Aid), are checked by the Personnel Office and/or manager of the area. During employee orientation, each new employee in these departments will receive proper training on the importance of confidentiality of student records, student financial information, and other types of covered data and information. Each new employee is also trained in the proper use of computer information and passwords. Training further includes controls and procedures to prevent employees from providing confidential information to an unauthorized individual, including “pretext calling” and how to properly dispose of documents that contain data and information. Each department responsible for maintaining covered data and information is instructed to take steps to protect the information from destruction, loss or damage due to environmental hazards, such as fire and water damage or technical failures. Further, each department, responsible for maintaining covered data and information, will be responsible for staff training to help minimize risk and safeguard covered data and information security.

Physical Security

College of Marin has addressed the physical security of College of Marin IT covered data and information by limiting access to only those employees who have a business reason to know such information. For example, personal student and employee information, accounts, balances and transactional information are available only to College of Marin employees with an appropriate business need for such information. Loan files, account information and other paper documents are kept in file cabinets, rooms or vaults that are locked each night. Only authorized employees know combinations and the location of keys. Paper documents that contain covered data and information are shredded at time of disposal.

Information Systems

Access to covered data and information via College of Marin’s computer information system is limited to those employees who have a business reason to know such information. Each employee is assigned a user name and password. Databases containing personal covered data and information including, but not limited to, accounts balances and transactional information, are available only to College of Marin employees in appropriate departments and positions. Account and password information is only provided after receipt of documentation from the appropriate college supervisor. College of Marin will take reasonable and appropriate steps consistent with current technological developments to make sure that all covered data and information is secure and to safeguard the integrity of records in storage and transmission. College of Marin IT Department requires that all servers must be registered before being allowed through College of Marin’s System’s firewall, thereby allowing College of Marin IT Department to verify that the system meets necessary security requirements as defined by College of Marin IT policies. These requirements include maintaining the operating system and applications, including application of appropriate patches and updates in a timely fashion. All firewall software and hardware maintained by College of Marin IT will be kept current.

Management of Systems Failures

College of Marin IT Department has developed written plans and procedures to detect any actual or attempted attacks on the College of Marin System systems and has an Incident Response Policy that outlines procedures for responding to an actual or attempted unauthorized access to covered data and information.
Selection of Appropriate Service Providers

Due to the specialized expertise needed to design, implement and service new technologies, vendors may be needed to provide resources that the College of Marin System determines not to provide on its own. In the process of choosing a service provider that will maintain or regularly access covered data and information, the evaluation process shall include the ability of the service provider to safeguard confidential information. Contracts with service providers may include the following provisions:

- An explicit acknowledgement that the contract allows the contract partner access to confidential information;
- A specific definition or description of the confidential information being provided;
- A stipulation that the confidential information will be held in strict confidence and accessed only for the explicit business purpose of the contract;
- An assurance from the contract partner that the partner will protect the confidential information it receives according to commercially acceptable standards and no less rigorously than it protects its own confidential information;
- A provision providing for the return or destruction of all confidential information received by the contract provider upon completion or termination of the contract;
- An agreement that any violation of the contract’s confidentiality conditions may constitute a material breach of the contract and entitles College of Marin to terminate the contract without penalty; and
- A provision ensuring that the contract’s confidentiality requirements shall survive any termination agreement.

Continuing Evaluation and Adjustment

This Information Security Plan will be subject to periodic review and adjustment. The most frequent of these reviews occur within the College of Marin IT Department, where constantly changing technology and evolving risks mandate increased vigilance. Continued administration of the development, implementation and maintenance of the program will be the responsibility of the Director of IT who will assign specific responsibility for College of Marin information technologies implementation and administration as appropriate. The Director of IT will review the standards set forth in this policy and recommend updates and revisions as necessary. It may be necessary to adjust the plan from time to time to reflect changes in technology, the sensitivity of student/employee data and internal or external threats to information security.
Summary of Online Survey Results

**Students**

- In general (74%), consider themselves to be experienced or very experienced computer users
- In general (77%), think that the college provides suitable access to computers, the Internet, and application software
- Ordinarily use a particular computer facility (e.g., lab, library) and have little/no insight into the use of other computer facilities
- Usually see each computer lab as devoted to particular groups of students and specific disciplines
- Agree or strongly agree (84%) that they have suitable off-campus access to computers and the Internet
- Are somewhat divided about whether the computer that they access while off-campus is superior to the computers that are available on-campus
- In general (76%), think that they have access to a computer system that meets their needs
- Use a wide variety of application software, including Microsoft Office™, WebCT™, various graphics packages, etc.
- Agree or strongly agree (86%), that they have access to email accounts
- Agree or strongly agree (87%), that course materials should be available online
- Are interested in more online courses, including those that involve WebCT™
- Are very desirable of college services (e.g., registration) that are delivered through the College of Marin’s web site
- Are somewhat divided about whether the College of Marin is effective in using information technology to improve communication across the college community
- Students want support for Macintosh computers
- Are unsure about the availability and location of computer resources at the college
- Want computer labs to be open more hours, in the evenings and weekends
- Want greater access to computers and appropriate application software
- Summary of student comments from the survey:
  - Student services need automation in areas of transcripts, registration, payment of fees, scheduling counselor appointments, course outlines, etc
  - Need more “smart” classrooms
  - Computer labs need to have consistent and uniform hardware and software
  - Need labs to be open more hours; especially evenings and weekends
  - Need access to Word and Excel in the Library
Faculty

- In general (81%), consider themselves to be experienced or very experienced computer users
- Expressed mixed views about whether there was suitable access to the Internet from their offices and classrooms
- Expressed mixed views (45%) about the suitability of resources within the Technology Resource Center
- Did not necessarily agree that they had suitable peripherals (e.g., computer monitors, printers)
- Expressed concerns about access to suitable training, email services, and application software
- Did not necessarily view themselves as having adequate off-campus access to electronic resources (e.g., student information, email)
- Showed a measure of disagreement (33%) about the current telephone system’s ability to meet their needs
- Significant interest (73%) in making course materials (e.g., syllabi) available online
- Showed a measure of disagreement (35%) about their access to application software that enables them to do their job efficiently and effectively
- Expressed some preference (23%) for using their own email system (e.g., AOL) instead of the College of Marin email system
- Expressed mixed views about who they contact when they have questions or concerns about information technology
- Expressed mixed views about the responsiveness of technical support

Summary of faculty comments from the survey:

- Faculty want and need easy access to computers
- More training is needed for technology issues such as how to access email, student information from both on and off-campus
- Need more communication and online support from IT for “how-to’s”, FAQ’s, detailed instructions, etc
- Want support for Macintosh computers
- Need laptops for shared access, especially for part-time faculty
- Need an organized and consistent system of support services for training and technology needs, such as online tutorials and IT or local experts available by email or telephone
- IT consistently received praise for resolving problems, but many noted that the response is not always consistent.
### Staff
- In general (79%), consider themselves to be experienced or very experienced computer users
- Expressed a strong view (94%), that they have suitable access to the Internet from their offices
- Expressed some mixed views about whether they have access to suitable computer peripherals, office-campus email services, and application software
- Showed limited belief (8%) that there is suitable off-campus access to electronic work files
- Expressed concerns about access to suitable training, email services, and application software
- Showed a measure of disagreement (40%) about the current telephone system’s ability to meet their needs
- Showed a measure of disagreement about their access to application software that enables them to do their job efficiently and effectively
- Expressed little preference for using their own email system (e.g., AOL) instead of the College of Marin email system
- Expressed mixed views about who they contact (e.g., 78% call the Information Technology Department, 71% contact a peer) when they have questions or concerns about information technology
- Expressed concerns about access to suitable training, email services, and application software
- Showed mixed views about the responsiveness of technical support routines
- Voiced concerns about whether the college is using information technology is being used in an effective manner to support various business processes

### Administrators
- In general (91%), consider themselves to be experienced or very experienced computer users
- Expressed a strong view (96%) that they have suitable access to the Internet from their offices
- In general (86%), felt that they had access to a suitable computer system
- Expressed concerns about off-campus access to work files, student information, and email services
- Showed a measure of disagreement (41%) about the current telephone system’s ability to meet their needs
- Indicated mixed views on who they contact when they have questions or concerns about information technology
- Expressed concerns about access to suitable training, email services, and application software
- Expressed mixed views about the responsiveness of technical support routines
- Expressed strong disagreement with the position that the college was using information technology in an effective manner (e.g., business processes, student services, communication across the college community)
### Summary of Assessment Data: Administrative Information Systems

- Overall, the college’s administrative information systems (e.g., registration, financial aid, payroll, accounting, etc.) are increasingly being described as unable to support the institution’s needs. None of the applications are integrated or easy to support. There is considerable frustration among students, faculty, and staff with respect to the existing technology. A procurement process to replace the college’s enterprise application software should be started as soon as possible.

- Users are clearly asking for an integrated, enterprise solution that enables a variety of online services for students, faculty, and staff. Moreover, the applications should be web-based and highly available. The student comments included in the online survey highlighted that students want web-based access to:
  - Real-time online applications for admission and financial aid
  - Print unofficial transcripts
  - Real-time online registration and the ability to add/drop classes
  - Pay fees online via credit card or other ecommerce method
  - Schedule appointments with counselors
  - Access course outlines and syllabi

- Replacing the existing administrative information systems is an essential element for resolving some significant issues relating to student accounts, academic transcripts, and other functions.

- The implementation of an integrated enterprise administrative computing system will help the college avoid “silos” of disparate information, repetitive data entry, and paper-intensive tasks.

- A modern enterprise administrative information system will also enable the college to provide a variety of web based self-service functions to students, faculty, and staff. Students will be able to go online to register, pay tuition/fees, purchase their books, and check on the status of their financial aid award. Faculty will have easy access to student records, class rosters, enrollment management tools, etc. There will be simple web-based capabilities for staff to process electronic purchasing requisitions, review individual leave balances for vacation and sick of vacation hours, and view the status of their departmental budget.

- A new integrated administrative computing system will also help reduce duplication of effort and streamline many currently labor intensive business processes.

- The maintenance of the College’s existing student information system has become difficult because of substantial customization of the original Santa Rosa Junior College student system which was installed in the 1980’s and therefore an inability to implement the updates that have been released by Santa Rosa Junior College since then. Moreover, the College of Marin does not have the resources that are needed for the implementation of these modifications. Increasingly, many institutions are shifting such responsibility to their chosen ERP software vendor (e.g., Datatel, PeopleSoft, Oracle, SunGard/SCT).

- The Hewlett Packard 3000 system in the data center have been declared obsolete by Hewlett-Packard. Maintenance for such hardware will be discontinued after 2006.
the fact that it usually takes three years to implement a new enterprise system, it is important for the college to make immediate plans for the replacement of its core platforms.

- There are substantial opportunities for improvement with respect to business processes and workflow. Rather than labor-intensive manual operations, the college can make significant gains by streamlining many of its functions. Appendix B contains a white paper that explains the use of business process analysis in order to enhance operational performance.

- The lack of functionality within the college’s administrative computing systems has led to many workarounds and “shadow” systems. For example, MS Excel® spreadsheets are used in several departments to keep track of budgets. From an enterprise standpoint, it is difficult to ensure the ongoing success and accuracy of such diverse, ad-hoc solutions.

- In order to address immediate functional needs, the college is moving forward with its implementation of Great Plains (for financial services) and SAFERS (for web-based financial aid). At some point, the college should determine how such applications fit within an overall College-wide strategy.

- The lack of integration among various systems is an ongoing issue. Data is not consistent among many offices due to the use of shadow systems, extensive use of paper documentation, etc.

- Some perceived problems in the area of administrative information systems might be resolved by ensuring improved communications across the college community. For example, many users do not know about the intranet applications, how to use remote access for getting email, etc.

- There are substantial opportunities for improvement with respect to the timely availability of information. Almost all interviewees, for example, want real-time access to budget balances, enrollment reports, etc.

- There is a need for a variety of new reports and a flexible, easy to use set of tools to allow end-users to develop their own reports to allow them to make informed decisions.

- Almost all interviewees said that the college uses far too many paper forms. In fact, there are a multitude of multi-part documents that are completed by hand, filed, mailed, re-keyed into various computer systems, etc. Business process analysis can be used to help streamline various efforts, eliminate unnecessary work, and reduce errors.

- On a departmental basis, there are opportunities for the college to address needs for specialized information technology. In Media Services, for example, there are applications that will assist the staff with the management of its equipment inventory. In Plant Operations, as another example, there are online systems that will help manage projects, work orders, etc. As a final example, the Counseling Department can implement online testing that will enable streamlined services for students and staff.
### Summary of Assessment Data: Instructional Technology

- Several excellent instructional computing facilities have been developed over the past few years. Several academic departments should be commended for their initiative in using instructional technology. There are opportunities for improving the use of the existing resources by students and faculty. The college should evaluate alternatives about how to optimize its use of instructional technology.
- Several faculty expressed the need to ensure access to more “smart classrooms” throughout the college.
- Collaboration is needed among various support organizations. For example, there should be agreement about how to support Macintosh and other non-Windows based computers, network connectivity, etc.
- Clarity is needed with respect to technical support for faculty. There should be training for faculty related to the technologies in use at the College, procedures/strategies for maintaining the software used within labs, troubleshooting system failures, installing new equipment, etc.
- A number of processes that are related to instructional administration (e.g., catalog maintenance, curriculum management, enrollment management) could be resolved with new systems and/or ancillary applications.
- An audit and inventory of existing equipment/software is necessary to help ensure that faculty have suitable systems available to them (e.g., computer, monitor, mouse, printer, applications, operating system).
- The college should consider the use of students who can assist with routine tasks (e.g., technical support, monitoring lab usage). Such an arrangement might enable enhanced technical support services without any major investments.
- Given the increasing pervasiveness of digital technology, the Media Services department needs support with respect to the transition from analog systems and content.
- It is not clear that the college has an effective strategy for deploying faculty websites, online instructional materials, distance education, etc.
Summary of Assessment Data: Information Technology Infrastructure

- Many individuals expressed a concern that the College does not have a unified and effective approach to email usage. Communications are hampered by the fragmented approach now in place for email. Users are unsure about how email attachments should be handled; they are unable to send/receive certain types of documents.
- Many users expressed frustration with the large amount of spam that they receive in their College email.
- The efforts to enhance email services should be done in conjunction with a review of directory services and calendaring functions since several components of the mail system are interrelated and must be examined in a holistic manner.
- There is frustration with respect to restrictions placed on the network that dictates what devices can be connected and where; users perceive a measure of inflexibility that is not desirable.
- Users report instances of poor network performance and reliability and do not know why.
- The College’s HP 3000 servers are close to the end of their life-cycle. It is important that a strategy to replace them be developed.
- It is not clear that many users understand how to access and use remote access to network services.
- The information technology staff is limited in its ability to maintain desktop environments. As a result, there are a multitude of different versions of operating systems and applications installed.
- Collaboration is needed with respect to the development, implementation, and maintenance of standards for personal computers, software, network connectivity, etc.
- Many users reported that technical support was handled in a rather ad-hoc manner -- by whatever method they could devise to get help. The college should consider the use of service level agreements as a starting point for ensuring prompt and effective responses to various issues. Some interviewees are not aware that the college provides help desk services.
- The college’s new Mitel phone system is functional, but users report an inability to make use of its features (e.g., voice mail). It is not clear whether the issues relate to switch programming, user training, hardware incompatibilities, or other factors.

Summary of Assessment Data: Organizational Structure and Governance

- Although the Technology Committee is not yet a formally approved standing committee within the College’s governance system, it is anticipated that it will be shortly after the beginning of the Fall semester.
- The IT department has vacant positions and is under-staffed to meet the expectations for service and support required by the College community.
- There were frequent requests for additional training at all levels within the College for the technologies that are being used. In addition, the need for online documentation and “how-to’s” was mentioned often by those interviewed.
Attachment E


Introduction:

Thousands of books and articles have been written about how to improve the performance of organizations and their people. Bookshelves are full of material about total quality management, re-engineering, learning organizations, balanced scorecards, change management, and so forth. Tom Peters, Stephen Covey, James Deming, Peter Senge, Spencer Johnson, Geoffrey Moore, et al., are extremely popular authors around the world.

In addition to the general themes that relate to organizational performance, many colleges and universities have specific interests in how information technology can enhance their efforts. They seek answers about improving the work of students, faculty, and staff. They want to know how to exploit the power of computers, software, the Internet, video conferencing, and other technologies. How can such resources help improve teaching, learning, research, and administrative services? As a corollary, what steps should be taken to avoid having expensive systems that contribute very little -- or that create enormous headaches?

This article is about business process analysis (BPA) -- a tool that colleges and universities can use in their pursuit of operational excellence. Specifically, BPA is a systematic framework for understanding issues, identifying opportunities for improvement, and executing a game plan that enhances organizational performance. Moreover, BPA helps enable the proper utilization of information technology. So, rather than being confused about the use of computer systems within an institution, there is clarity about how electronic resources can complement the efforts of students, faculty, and staff.

The Evolution of Processes within an Organization:

It goes without saying that change can be difficult. Over time, organizational processes become engrained -- almost ritualistic. Work routines can evolve into the continuance of doing business as usual. Tasks are not always completed in an optimal manner; they are simply handled according to past practice.

Although new business needs might emerge, they are rarely accompanied by a meaningful reconsideration of an organization's existing processes. Instead of rethinking the situation, new routines are added to the mix. Multiple layers of effort emerge. Workarounds are developed. Soon, there is complexity instead of simplicity. Over time, many processes are not really adjusted or tuned; they become a confusing array of activities.

The unmanaged evolution of processes is sometimes described as the “Christmas Tree Syndrome.” Initially, a beautiful assortment of ornaments, garlands, and lights are placed on the tree. Over time, though, more decorations are added without regard to the overall effect. Eventually, there is a mess. The decorating continues until the tree is overburdened; collapse is inevitable. Instead of elegance, there is chaos and dysfunction.

Colleges and universities are certainly not immune to process issues. Many institutions have cumbersome routines for matriculation, advising, financial aid disbursement, purchasing, hiring, and so forth.
Difficulties with business processes are frequently magnified by the use of information technology. Computer systems have a tendency to amplify the success (or failure) of underlying work routines. Efficient organizations become more efficient. Inefficient organizations, though, can become more inefficient. Information technology is not a substitute for poor management or ill-conceived operations. Instead, information technology magnifies the characteristics of an organization.

People, Processes, and Tools:

It is said that almost any business system involves three major components: People, Processes, and Tools. That is, getting something accomplished requires human beings who know what to do -- and have the resources to get it done. Ideally, the three components are blended so that tasks are completed in the most efficient manner.

Sometimes, though, the recipe fails. The various components do not come together very well. For example, the heavy use of enterprise software without implementing proper work routines across organizational boundaries is bound to create problems. Unfortunately, a number of colleges and universities have suffered through multimillion dollar ERP projects that were not successful.

The point of this discussion is that BPA is a tool that can help institutions develop the proper "recipe." There can be a thoughtful analysis of how various components should come together in order to achieve the right outcomes.
The Value of BPA:

What is the value of BPA? What can colleges and universities gain as a result of carefully examining their work routines? Below, is a list of benefits that frequently emerge:

- Better services for students, faculty, and staff
- Streamlined operations and timelier completion of assignments
- Greater efficiency and better use of everyone’s time
- Lower operating costs
- Enhanced understandings of organizational tasks, assignments, and working relationships
- Reduced “firefighting”
- Identification of opportunities for significant improvement -- not just marginal change
- Repeatable success and more predictable outcomes
- Clarification of priorities
- Alignment of business processes with institutional objectives
- Improved collaboration and fewer organizational silos
- Error reduction
- Elimination of unnecessary work
- Performance assessments that are based on objective data and not just anecdotal information
Understanding the Components of BPA:

BPA is actually a generic term that entails a variety of alternative components. There is no single methodology or rigid approach. Instead, BPA involves an assortment of tools that organizations can use to improve their performance.

One of the most helpful tools associated with BPA is business process mapping (BPM). Essentially, BPM involves the creation of block diagrams so that organizations can visualize their work routines. The premise is that one picture is worth a thousand words. Having a graphical representation of business processes enables everyone to understand what is really happening and how operations can be improved.

Typically, BPM is performed as part of a workshop. First, a facilitator helps the participants create a block diagram of an existing process within an organization. Such a diagram enables everyone to recognize the strengths, weaknesses, disconnects, bottlenecks, and redundancies associated with existing work routines. In addition, business process maps can help institutions understand the proper use of information technology.

Frequently, the creation of a business process map is an eye-opening experience. Workshop participants begin to grasp the full meaning of their work routines. Problem solving discussions usually unfold as everyone recognizes opportunities for improvement.

Finally, the facilitator helps the workshop participants create a diagram that depicts an “ideal” business process. In addition, the participants identify action plans and concrete initiatives.

In effect, business process maps are “blueprints” -- design documents that define work flows, roles, tasks, etc. As a result, colleges and universities are able to develop thoughtful systems; they can avoid cobbling together a collection of disjointed activities. BPM lends itself to the pursuit of operational excellence because it enables organizations to diagnose, problem solve, and innovate. BPM is a prompt, flexible, and systematic approach to understanding issues, identifying opportunities for improvement, and crafting new ways of doing business.

Below, is an example of a generic business process map.
A Closer Look at BPM:

Again, BPM involves the diagramming of business processes. For colleges and universities, such processes can include registration, purchase requisitions, budget development, hiring, payment of tuition/fees, financial aid disbursement, travel requests, payment of parking fines, etc.

As an example, let us assume that an institution wants to map its process for advertising a job opening. It is likely that the diagram will include the following components:

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Boundaries</td>
<td>Process Boundaries define the scope of the work that is being considered. In particular, various tasks are said to be either <em>within the process</em> or <em>outside the process</em>. The creation of a position description might be a task that is <em>within the process</em>. The eventual enrollment of a new employee for health benefits, on the other hand, might be <em>outside the process</em>.</td>
</tr>
<tr>
<td>Suppliers</td>
<td>Suppliers include all those who provide initial input into the process. So, for example, a supervisor who completes a requisition form for a new employee can be considered a supplier.</td>
</tr>
<tr>
<td>Consumers</td>
<td>Consumers include those who receive the output from the process. Those who are seeking employment and read the job advertisement can be considered consumers.</td>
</tr>
<tr>
<td>Process Start</td>
<td>The Process Start is an event that triggers the beginning of various tasks. The submission of a requisition form for a new employee can be a Process Start.</td>
</tr>
<tr>
<td>Process End</td>
<td>The Process End is the concluding event. The eventual publication of the job advertisement in <em>The Chronicle of Higher Education</em>, for example, can be a Process End.</td>
</tr>
<tr>
<td>Tasks</td>
<td>Tasks are individual units of work that comprise an entire process. Thus, the creation of a position description can be a task within a process for advertising a job.</td>
</tr>
<tr>
<td>Connectors</td>
<td>Connectors are used to illustrate the flow of work among and within various workgroups. So, a connector can help diagram the routing of various documents from the finance office to the human resources office.</td>
</tr>
<tr>
<td>Workgroups</td>
<td>Workgroups includes all organizations and individuals who perform tasks within the process.</td>
</tr>
</tbody>
</table>
Below, is a simple example of a map that illustrates the process of advertising a job opening.

**Diagram #3:**

```
Supervisor  Vice President  Finance  Human Resources  Advertisers

Process Start

Complete New Employee Requisition  Review and Approve Requisition  Approve Position Control Status

Finalize Rank, Level, Salary, and Position Description

Enter Position into ERP Computer System

Write Job Announcement

Publish Job Announcement

File copies of all documents

Review and Approve all Documents

Y  Y  Y  Y

Process End
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On the surface, the business process map presented in Diagram #3 seems quite simple. There is no apparent complexity with respect to the publication of job announcements. Under the surface, though, there might be a myriad of chaotic routines. For example, in addition to entering data into an ERP computer system, the human resources staff might also maintain a number of electronic spreadsheets, paper files, etc.

BPM can help institutions perform “gap-fit” analyses. That is, appropriate adjustments can be made in application software so that work routines are properly supported by information technology.

Many institutions have developed business process maps for their matriculation processes. The results, in some cases, have been extraordinary. The maps revealed duplicate efforts, disconnects, out-of-sequence procedures, tedious manual operations, massive amounts of paperwork, etc. As a result, students trudged around campus trying to navigate their way through admissions, advising, testing, registration, financial aid, fee payment, and other offices. Faculty and staff accomplished miracles by working very hard … but not efficiently.

In addition, many private companies have an extraordinary focus on operational excellence. They include Federal Express, Dell Computer, Wal-Mart, Southwest Airlines, Wells Fargo, and Circuit City. Such firms pride themselves on having crisp, succinct, and simple business processes. There are very few “moving parts” or complexities within their operations. They consistently move in an expedient manner from Process Start to Process End -- and they do so without any complications. They do more than work hard; they work smart.
Ten Keys to Success:

What are the most important things for colleges and universities to keep in mind as they use BPA? Are there any guidelines that will help them in their pursuit operational excellence? Below, are ten keys to success:

<table>
<thead>
<tr>
<th>Ten Keys to Success</th>
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<tbody>
<tr>
<td>1. <strong>Have a Vision ... But Think Incrementally:</strong></td>
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<tr>
<td>Try to develop a broad institutional commitment to business process analysis, but understand that success is the result of well-executed steps. It is important to focus on a few great things rather than a multitude of good things. Most institutions pursue three or four BPA projects per year.</td>
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<tr>
<td>2. <strong>It's About the People:</strong></td>
</tr>
<tr>
<td>Gain conspicuous high-level support from institutional leaders. Identify an executive sponsor who will be the “champion” for each BPA project. Ensure that there is a project manager who will drive the day-to-day efforts. Engage key stakeholders, process owners, et al. Identify early adopters and leaders; do not overlook those who can offer constructive criticism. Ensure that there is a rich blend of teamwork and individual performance. Establish cross-functional work groups and an overall advisory committee for each BPA project.</td>
</tr>
<tr>
<td>3. <strong>Work on Things that Really Matter:</strong></td>
</tr>
<tr>
<td>Capture the commitment and imagination of the institution by working on important business processes. Help people feel that their efforts are worthwhile and that something significant will develop. Avoid projects that have marginal value.</td>
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<tr>
<td>4. <strong>Focus, Focus, Focus:</strong></td>
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<tr>
<td>Stay on task. Be disciplined. Ensure that tasks are completed on time. Try to keep everyone’s focus on the desired outcomes. Keep a sense of momentum; build confidence by celebrating successes. Avoid “scope creep” -- the expansion of a project into new areas.</td>
</tr>
<tr>
<td>An especially important thing to remember is that form should always follow function. Unfortunately, discussions about business processes frequently evolve into lengthy conversations about organizational structures, roles, responsibilities, etc. As such, there is insufficient focus on the actual results that must be achieved or the business processes that need to be optimized. As a general rule, attention should center on desired outcomes and an objective plan for achieving them (function). Then, there can be discussions about organizational structures and work assignments (form).</td>
</tr>
<tr>
<td>5. <strong>Overcommunicate:</strong></td>
</tr>
<tr>
<td>Do not just communicate, make a commitment to <em>overcommunicate</em>. Help everyone understand what is happening, when things will occur, who is involved, the results that are expected, and the reasons behind various efforts. Publish newsletters, status reports, etc. Recognize those who contribute to the project.</td>
</tr>
<tr>
<td>6. <strong>Provide Resources:</strong></td>
</tr>
<tr>
<td>When something is needed (e.g., productivity tools, compensation time, outside consulting), make it available.</td>
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<tr>
<td>7. <strong>The Alignment of Information Technology:</strong></td>
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Generally, the introduction of information technology should occur during or after the completion of BPA (not before). Computer systems should align with the design of thoughtful work routines.

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<th>8.</th>
<th><strong>Ask the Right Questions:</strong></th>
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<tr>
<td>BPA, by definition, is about change. It is something that can cause disruption, anxiety, and defensiveness in almost any organization. Issuing top-down edicts, though, rarely resolves such problems. Instead, it is important ask helpful questions that enable people to solve problems and overcome obstacles.</td>
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<th>9.</th>
<th><strong>Seek Help:</strong></th>
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<tbody>
<tr>
<td>Many organizations find it hard to handle BPA projects on their own. Frequently, they are too close to the issues and have difficulty finding the right perspectives. Outside facilitators can provide guidance and help eliminate institutional roadblocks.</td>
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<th>10.</th>
<th><strong>Recognize the End of the Road:</strong></th>
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<tbody>
<tr>
<td>Declare victory at the conclusion of a BPA project. Make sure that everyone’s efforts have a sense of finality; avoid tacking on additional tasks that cause people to think that the project will never end. If necessary, start a new BPA project to deal with additional opportunities that arise.</td>
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</table>
Overview:

In the future, how will information technology be used within community colleges? What should we anticipate? What are the events and developments that will need our attention? Are there opportunities to seize? Are there risks and disruptions to be avoided?

What is our perspective with respect to information technology? How will we recognize success when it occurs? What is our common view of achievement?

The purpose of this document is to consider the future of information technology within community colleges. In particular, the focus is on instructional computing, administrative computing, and technological infrastructure.

Looking Forward:

Today, many students will have their own computer. In the future, though, their devices will not look anything like today’s laptops or desktop systems. Instead, the equipment will be very small; devices will fit within pockets and purses. Much of the technology will probably be embedded within cell phones and personal digital assistants.

Students will also have ultra-thin, inexpensive 8.5” x 11” electronic tablets with built-in wireless networking. The devices will have a variety of features (e.g., handwriting recognition, speech recognition, email, instant messaging). The tablets will be used as “E-books.” They will be a primary tool for learning, research, teaching, writing, communicating, and collaborating. E-books will be a standard device for acquiring, organizing, and sharing information. They will provide web access, multimedia presentations, productivity tools (e.g., word processing), data mining, and so forth.

Traditional textbooks will become obsolete. Students will visit web sites to download customized reading material. The content might include case studies, white papers, excerpts from textbooks, notes from instructors, news reports, etc. Such digital information will enhance the ability of students and faculty to annotate and bookmark their material. In addition, they will be able to perform sophisticated searches for words, phrases, and concepts. Text-to-speech and other audio functions will assist those who have impaired vision, and those who do not speak English.

The cost of accessing and delivering information will plummet. Today, the average price for a textbook is more than $60. E-books will provide greater functionality, superior convenience, better learning experiences, and financial savings. There will be technology lounges where students can meet, go online, and collaborate on group projects.

Departments and divisions will have all of their information on web sites. Faculty will be thoroughly familiar with web authoring tools and sophisticated courseware. They will use the Internet to enrich learning experiences with multimedia content. The role of the instructor will change. He/she will not always be seen as a subject matter expert. After all, students can access the Internet and quickly discover more information than an instructor might possess. Increasingly, faculty will help students understand how to gather data/information from a variety of sources. Then, instructors will lead students to a higher level of knowledge -- gaining a perspective on the meaning of information that is acquired.

Several difficulties will emerge with respect to curriculum and instruction. For example, there will be pressure to quicken the pace of learning experiences. Students will be in a hurry to complete their education and apply their knowledge. At the same time, instructors will want to ensure that students take enough time to absorb new material and understand its significance.
"Hybrid" courses will be the primary mode of instruction. There will be a mixture of distance education and classroom activities. Increasingly, instruction will be modified to accommodate differences in learning styles, students’ goals, personal circumstances, etc.

Multimedia classrooms will be pervasive. Almost all facilities will have a computer, data projector, document camera, and sound system. Instead of using white boards as part of a lecture presentation, electronic "smart boards" will help instructors and students engage in interactive learning experiences. Colleges will reach out to subject matter experts at distant locations. Such an arrangement will involve interactive video and audio. The presenters might be government leaders, scientists, artists, writers, sociologists, et al.

Faculty will have access to an Information Technology Center (ITC). There will be extensive resources to help them learn how to use information technology within their courses. Such assistance will include:

- Formal classroom training
- One-on-one assistance
- Best practices in instructional technology
- Courseware development tools
- Lab facilities for the research and development of new instructional technology
- Assistance in the design of curriculum and instruction

Knowledge management capabilities will be incorporated within a college's infrastructure. Internet searches will be based upon ideas and concepts rather than keywords. Searches will involve the delivery of knowledge instead of data. Sophisticated taxonomies, indexes, and electronic agents will organize and capture relevant information. Contributions to knowledge management systems will be handled very easily; appropriate documents and folders will be automatically found on a variety of network-connected devices. Additionally, there will be considerable use of data warehouses in order to enhance access to relevant information.

Community colleges will use an extensive collection of Internet technologies to help students access online resources. There will be electronic portals that enable views into many college services. Networks will be ubiquitous; there will be seamless access to a college’s systems from practically anywhere. Wireless systems will be pervasive. Security will be enhanced through the use of virtual private networks and digital signatures.

A common Help Desk will be used throughout colleges; there will be a single point of contact for installation, repair, training, etc. Service level agreements will be implemented in order to enhance technical support.

Ongoing strategic planning processes will be needed to ensure continuing success with information technology. Community colleges will need to be increasingly thoughtful and proactive about seizing new opportunities, providing services, avoiding unnecessary risks, and so forth. And, community colleges will be continually challenged to keep abreast of the complexities of information technology. Such a challenge is extremely important, given the extraordinary use of electronic systems in our society. A community college that wants to be an "Institution of Choice" needs to understand its best opportunities for the advancement of learning, teaching, and service. In particular, there must be a systematic ability to use information technology in meaningful ways.