



# Planning for Change: Engaging with HMC's mission

Harvey Mudd College Information Technology Plan

Draft 0.5

This is a “beta” version of the document, deliberately released in an incomplete state in order to solicit feedback and contributions from the HMC community.

**You** can help improve it.

<http://www5.hmc.edu/ITPlanning/plans.html>

## 1 Stylistic conventions.

Sections and paragraphs are numbered for ease of reference.

*Action Items are in italics, and are preceded by the plan year in which they should happen. For example: Year One. Build a comprehensive catalog of software.*

**Known lacunae are highlighted.**

## 2 Preamble

2.1 Harvey Mudd College did not have a formal information technology plan at the time that the College commissioned an IT Review in Summer 2007. The report from the IT review is a starting point for an information technology plan.

2.2 The current plan will lay out the strategic and tactical steps that the college wishes to take in the information technology arena over a four year period.

2.3 The plan will take an institutional point of view and is thus not a plan for the department of Computing and Information Services only.

## 3 Planning Process.

3.1 The planning process began in Spring 2008 with visits by the CIO to each of the academic departments as well as discussions with students and staff in a variety of situations, such as Friday Forum.

3.2 During the Spring Semester 08 the Computing Committee met on a regular basis and began the work of laying out some issues in academic computing.

3.3 In July 2008 CIS created a website to support the planning process (see <http://www5.hmc.edu/ITPlanning/>). The website provides access to plan drafts, a system for collecting comments on the IT Review and a system for collecting suggestions.

3.4 An IT Planning work group was formed in August 2008. Its task is to help develop early drafts of the plan and then to shepherd the plan through iterative public drafts.

3.5 The first public draft of the plan, version 0.5, will be released on November 14<sup>th</sup>.

3.6 This is draft 0.5 of the plan. It deliberately contains several kinds of gaps or lacunae: the intention is that the plan contain enough material to encourage community discussion, but not so much material that it shapes the outcome on all questions. In the current draft, sections that we know are incomplete are highlighted in green, and will be completed in future drafts.

3.7 During the latter part of the Fall Semester 2008, there will be multiple opportunities and multiple channels through which stakeholders can influence the shape of the College wide IT plan. Future versions of the plan will take account of community suggestions and contributions.

3.8 Many of the action items in this plan indicate work that needs to take place but do not indicate who (or what entity) should do the work. There are two reasons for this. First, some of the questions about who should do the work will not be answerable until we have answered questions about IT governance. Second, in many cases, we will need to establish small, fast-acting task forces that draw on expertise from across (and outside) campus. CIS will need to coordinate and participate in those task forces.

## 4 Themes

4.1 There are several themes running through this document:

- Information Technology Governance

- Information Technology Infrastructure
- Innovation
- CIS and services

Lacuna: themes may emerge and change as a result of discussion.

## 5 Information Technology Governance

- 5.1 The phrase “governance model” refers to “the structure and process of authoritative decision making across issues that are significant for external as well as internal stakeholders within a university” (Gayle, Tewarie, & White, Governance in the twenty-first-century university: Approaches to effective leadership and strategic management. 2003). A governance model tells us who makes and is accountable for decisions.
- 5.2 The current governance model for IT at Harvey Mudd College is focused almost exclusively on the Computing and Information Services Department. The main elements of the current model are: the CIO is tasked with management of the CIS department, and is advised by the Computing Committee, which consists of three faculty members and a student.
- 5.3 Many (most?) decisions about IT in the end constitute decisions about an infrastructure that affects everyone in the HMC community almost all the time and is the foundation of the organization's IT capabilities.
- 5.4 Decisions about information technology that have significant campus impact are currently made in three places:
- within CIS (for example, the decision to acquire Zimbra as an email application or the annual decision as to what software should go on lab images)
  - at the level of the Claremont Colleges Consortium (for example, the decision to deploy Jenzabar CX, decisions about wireless technology or the choice of Footprints as a IT trouble ticket system)
  - within HMC departments (for example, the choice within F&M to adopt EMS for event management, the choice within HR to adopt the ADP timekeeping system, or the choice within Computer Science of an alternative to Postini for spam filtering).
- 5.4.1 It is quite normal for IT decisions to be made at lots of different points in an organization. It is also challenging for the institution to coordinate IT decision making in order to develop a coherent and integrated set of technical choices for the organization. HMC needs to address this challenge and decide how it will control and coordinate IT decision making.
- 5.5 *Year One. Review IT governance (ITG) at HMC. The College should appoint a task force to identify the strengths and weaknesses of the current model. Begin to develop and deploy an effective ITG model that makes timely decisions, ensures high quality communication and establishes a robust Information Technology environment through inclusion as well as balancing institutional and local/departmental needs. Provide updates to the community regarding this initiative.*
- 5.6 *Year One. Identify IT key performance measures and begin to benchmark. Incorporate measurement and review in ITG.*
- 5.7 *Year Two. Continue to deploy the new ITG. Begin to assess the model by measuring such things as the ability of key ITG participants to describe ITG accurately, and the frequency of participation in providing input and decision making. Begin ITG participation in*

*institutional budgetary processes. Provide updates to the community regarding ITG.*

*5.8 Year Three. Assess the effectiveness to date of ITG. Make course corrections as appropriate. Provide updates to the community regarding ITG.*

*5.9 Year Four. Continue regular assessment and provide updates to the community regarding ITG.*

## 6 IT Policy

6.1 HMC does not have a formal process for the development of policies that cover information technology. What policies there are have mainly been produced within CIS, although some, such as the acceptable use policy, or the copyright policies, are Claremont wide. There are lacunae in policy areas such as data access and classification, data retention and web policies.

6.2 Many of the action items in this plan will result in the development of policies. So the college needs a framework that will ensure that policies are vetted by the appropriate constellation of committees and stakeholders.

*6.3 Year One. Develop a catalog of policies relating to information technology which indicates what policies exist and which ones are missing.*

*6.4 Year One. Construct a framework for policy development and identify the steps that need to be followed in the evolution of a policy from the proposal stage, through vetting and approval. Identify which committees and groups should play a role in this process.*

*6.5 Year One. Begin testing of the framework and revise accordingly.*

*6.6 Year Two. Create a prioritized list of policies that need to be developed and begin the work of developing them.*

*6.7 Year Three. Policy development should by now be a normal and ongoing process within the college. Review how well the framework and process are functioning.*

## 7 IT Architecture at HMC.

7.1 Information Technology architecture” will be used loosely to refer to the whole collection of hardware and software that HMC uses to pursue its mission. “Architecture” puts an emphasis on how well the pieces of this collection work together. “Standards” refers broadly to both conventions (“MS Word is the standard word processing software”) and formal standards (“**iCalendar** is a standard ([RFC 2445](#)) for [calendar](#) data exchange”).

7.2 **Lacuna: need to give overview of current IT architecture.**

*7.3 Year One. Begin the task of developing campus IT architecture standards. Identify areas in which it is most important to agree upon standards.*

*7.4 Year One. Develop a list of the major application requirements that are core to HMC's mission. Identify how these requirements are currently being met. Begin developing a plan to meet these requirements in the future.*

*7.5 Year Two. Identify major applications that do not comply with standards. Develop a plan to ameliorate this situation.*

*7.6 Year Three. Begin implementing plans for standards compliance.*

*7.7 Year Four. Assess status of standards compliance project.*

## 8 Information Security.

8.1 Information Security has become a more pressing issue in recent years; it was ranked as the #1 and #2 issue in the Educause Top Ten IT issues survey for 2007 and 2008 respectively.

And of course there are a number of legal mandates, such as California's SB1386 and FERPA, that bear on security too. Although the focus is often on technology, it is important to look at the how people behave with respect to sensitive data too, whether it is stored electronically or on paper. At the moment, Harvey Mudd College has no specific policies regarding information security, almost no guidelines for security settings for equipment and no formal policies about access to sensitive data.

*8.2 Year One. Develop minimum security requirements for devices connected to the network.*

*8.3 Year One. Define "sensitive information" in the HMC context. Conduct a census of the location of sensitive information such as personal information or financial information. Include electronic and paper records in the census. Begin developing principles for information management, including definitions of roles with respect to data access, as a prelude to policies and procedures.*

*8.4 Year Two. Define and implement policies and procedures for information management.*

*8.5 Year Two. Identify systems or organizations that are not in compliance with security standards and begin process of bringing them into compliance.*

*8.6 Year Three. Assess and report on progress in information security.*

## 9 Identity Management.

9.1 "Identity Management" refers to the systems and procedures for managing information about people and, sometimes, machines or equipment. It is usually associated with authentication and authorization systems, but can provide the foundation for much more, such as preferences management and automated role based work flow. Identity management initiatives usually involve developing policies that identify which data will be regarded as the source data, stewardship responsibilities and data access rights. With a robust identity management arrangement, one can move on to true single sign on, improved online privacy and reliable directory information.

At HMC, something like the following is the current scenario. Much student identity data is stored in the CX system; some staff and faculty data is also stored in CX (for mailings etc); employee data is stored in ADP (faculty, staff, working students) with some duplication of the information in CX; some student identity data is stored in the portal; photographs (a form of identity data) are stored in several places; usernames (another form of identity data) are multiple and vary with application or service (eg file storage vs email); some data relevant to student identity is stored in Sakai (non-final grades, for example); some data relevant to faculty and staff identity is also stored in Sakai, as well as in EMS. On the information side (both general public and on-campus), the LDAP based online directory is not regularly maintained and there is no understanding or agreement about stewardship roles with respect to directory information.

**Lacuna: Give overview of what is happening nationally in the Identity Management arena.**

*9.2 Year One. Begin the process of developing an Identity Management strategy for HMC.*

*Identify which systems will be regarded as the official source record. Begin to outline how identity information will be managed in those systems. Research how single sign-on solutions could be developed.*

*9.3 Year Two. Finalize an identity management plan for HMC. Identify vendors and software needed for the project. Define time lines and budget for the project.*

*9.4 Year Three. Assess progress of work on Identity Management.*

## 10 Computing Labs.

10.1 There are a number of computing labs on the HMC campus that receive different levels of computing support. Some, like those managed by CIS, are well funded and enjoy a predictable budget. Other labs have been dependent on grant funding for initial setup and equipment renewal. To date, “ownership” of the lab has been the primary determining factor in how it is managed and funded. And much of the emphasis is on lab location: if a student or faculty member wants to use such and such a piece of software, they should visit such and such a lab. But one could imagine other models of management and funding, and other models of lab setup.

**Lacuna: give examples of other models.**

10.1.1 *Year One. Conduct a census of computing labs on campus and inventory the equipment in them. Develop a plan for baseline institutional support of labs that are essential to the mission of the College, independent of “ownership”. The plan should address ongoing equipment maintenance and equipment life cycles. Vet the plan appropriately with all constituencies.*

10.1.2 *Year One. Investigate new technologies that allow for “virtual labs”. If appropriate, begin to develop a plan for deployment of virtual labs at HMC.*

10.1.3 *Year Two. Identify funding and begin deployment of lab support plan.*

10.1.4 *Year Two. Identify funding and begin deployment of virtual lab technology.*

10.1.5 *Years Three and Four. Solicit feedback and review progress of lab support program. Make course corrections as necessary.*

## 11 Classrooms

**Lacuna: we need a description of the current state of services to classrooms, including reference to CIS audio-visual services. But we also need to address the whole picture of services in classrooms, which will require input from CIS (audio-visual, network), F&M (white and black boards, facilities services, renovations), faculty and students.**

## 12 Instructional Technology.

12.1 The phrase “instructional technology” can be used to indicate the intersection between digital technology and instruction (teaching and learning). It can cover a wide range of topics, from basics like learning how to use digital presentation tools such as Microsoft Powerpoint to more complex things like developing or using discipline specific tools. It also includes infrastructure or “enterprise applications” -- a learning management system such as Sakai or a portfolio system.

12.2 HMC has little in the way of dedicated staffing for instructional technology. The results are predictable: faculty carry a large burden of self-education in this arena; there is little awareness of national and international developments and the central IT staff are mostly ignorant about what faculty are doing (or not) with instructional technology.

12.3 **Lacuna: connect this section with Fletcher Jones grant and with the campaign plans for a new classroom building and new programs.**

12.4 *Year One. Develop a plan for a new instructional technology group within CIS. Identify funding sources and begin implementation of the plan. Consult closely with faculty regarding needs in this area.*

12.5 *Year One. Develop job descriptions for the positions in the instructional technology unit. Ensure that the job descriptions are attuned to academic needs by vetting them with the appropriate faculty committees, such as the Teaching and Learning Committee, the*

*Computing Committee, and departments.*

*12.6 Year One. Identify ways in which the staff of the instructional technology group can collaborate with faculty and IT staff in academic departments. Begin building partnerships with distributed IT staff in order to allow academic departments to achieve their goals more efficiently.*

*12.7 Year Two. Continue implementation of plans for instructional technology group. Assess and report on progress.*

*12.8 Year Two. The instructional technology unit should participate in at least two grant applications to support instructional or research technology efforts.*

### 13 Research Computing.

13.1 At an institution like HMC, the phrase “research computing” can cover a very wide range of topics. Moreover, there are likely to be discipline specific needs in research computing, not all of which are common to all research initiatives. Currently, HMC does not have any policies that articulate how the college will meet the information technology needs of research activities.

13.2 As with other areas, research computing is undergoing major transformations, thanks to initiatives like the NSF cyberinfrastructure initiative. HMC will need to decide what kind of node in the cyberinfrastructure it wishes to be.

*13.3 Year One. In consultation with the relevant faculty committees and departments, articulate the information technology needs of the college in research computing.*

*13.4 Year One. Develop plans to begin addressing research computing needs.*

*13.5 Year Two. Implement plans to address research computing needs.*

### 14 Administrative Computing.

14.1 By “administrative computing” we refer to “enterprise” systems such as the Datatel financial system and the CX student information system, but also to the computing needs of administrative departments and to the computing needs of administrators within academic departments.

14.2 Many of the enterprise administrative systems are chosen and maintained within the context of the Claremont Consortium. So decisions are not easily made by HMC alone. Nevertheless, as our IT review pointed out, we must leverage the consortium as much as possible, and therefore stay engaged with the other colleges as much as possible.

14.3 The computing needs of administrative departments have become more pressing as automation and use of specialized software become more common.

14.4 **Lacuna: insert action items. Needs to be informed by discussion with administrative users.**

### 15 Desktop Computing.

15.1 By “desktop computing” we refer to client systems distributed around the campus and intended for use by a small number of individuals (often one), but not intended to provide services traditionally associated with servers (such as, for example, a web server). The category includes laptops and desktop personal computers.

15.2 As with computer labs, the college has invested most consistently in desktop computing via the CIS department which gives priority to faculty and the labs it controls when the time comes to “acquire and retire” computers. The result is one in which some people enjoy excellent desktop computers and others use older machines, and this is mostly independent

of real computing need.

- 15.3 Computers for staff and for many departmental labs have often been obtained by “trickle down” from the labs that CIS manages.
- 15.4 The default for many computer systems serviced by CIS is to have them “locked down”, that is, no administrative access is provided to the user. This can be problematic, especially in the case of “power users”.
- 15.5 *Year One. Perform an inventory of all desktop computing on campus, including information on the age of each piece of equipment. Identify a “standard baseline installation” and measure how far the campus is from achieving it.*
- 15.6 *Year One. Devise a system for regular “acquire and retire” efforts that ensure the provision of adequate computers on all desktops. Identify funding for this program.*
- 15.7 *Year One. Develop a clear set of policies and procedures for support of desktops, laptops and mobile computing devices. Address the question of providing administrative access to users as needed.*
- 15.8 *Year Two. Implement the hardware renewal program.*
- 15.9 **Lacuna...**

## 16 Student Computing.

- 16.1 **This section needs to focus on support for student activities, including activities that are not normally classified as “work”, such as games.**
- 16.2 **Discuss labs and their function.**
- 16.3 **Discuss printing issues. Refer to Print Task force report.**
- 16.4 **Describe current level and types of support for students.**

## 17 HMC website.

- 17.1 The HMC website currently runs on the Cascade Content Management System, which was purchased and deployed about two years ago. There are also parts of the HMC site that are not run through Cascade.
- 17.2 The Cascade product was acquired and installed, but no plans were made for ongoing management of the system, and/or regular refreshes of the site.
- 17.3 Some have expressed a concern that the current site is very focused on admissions and recruitment, so that it is a less useful information resource for other constituencies (faculty and current students for example). Most college web sites struggle to some degree with the problems of having multiple audiences, such as parents, alumni, students, faculty and staff, with varied information demands. This problem is not well solved by the current instance of the HMC website.
- 17.4 *Year One. Create a Web Advisory Group (WAG) charged with guiding and developing the HMC web presence. It is expected that the WAG will work closely with the departments, the Campaign Committee and other site users to come up with a better solution to the problems alluded to above. Devise processes for bringing issues to the WAG and for communicating decisions out to the community.*
- 17.5 *Year Two. Review progress of the WAG and fine-tune as appropriate.*
- 17.6 **Lacuna**

## 18 Sustainability Issues.

- 18.1 The HMC Sustainability Policy Statement states:

“the College will seek to:

- Reduce the rate at which it contributes to the depletion and degradation of natural resources,
- Increase its use of renewable resources, and
- Incorporate concepts of sustainability into the academic and daily affairs of the College.”

(<http://www.hmc.edu/about/administrativeoffices/officeofthepresident1/sustain.html> accessed on 10/24/08).

There are many opportunities in the information technology arena to introduce sustainability concepts. For instance, much could be done to ensure that computers are only powered on when they are actually in use, by developing technical systems to do this and educating people about the importance of making use of them. Similarly, one could adhere to a purchasing policy that emphasized sustainability.

18.2 ESW/MOSS has agreed to provide some draft sustainability principles for discussion and which can be used to develop action items for this plan.

18.3 Year One. Study the feasibility of implementing policies and procedures that ensure the college adheres to these sustainability principles.

18.4 Year One. Begin implementation of sustainability procedures when ever and where ever possible.

18.5 Year Two. Review progress on sustainability. Identify possible improvements.

## 19 IT Budget.

19.1 The IT budget at HMC is concentrated mostly, but not entirely, in CIS. The CIS part amounts to about \$2m annually.

Lacunae: need a discussion here of the context for IT budgeting at small colleges, with reference to the IT Review and Educause Core data.

We also need to attempt to capture rough numbers for IT expenditures outside of CIS. This should include personnel, hardware and software expenses. Again, it is normal to have IT expenditures located in different cost centers, but if we are to get an institutional perspective we should try to have a sense of how much we are really spending on IT. The whole point is to figure out whether the College is spending appropriately on information technology.

## 20 Innovation

20.1 The College needs to identify strategies that will foster innovation in the use of technology to support teaching, learning, research and administration. We need to allow for experimentation and testing, and promote a culture of testing

## 21 CIS

21.1 The CIS department has been the main vehicle for institutional investment in information technology, so IT staff and resources are concentrated in this central unit. The department in its current

21.2 Organization

21.2.1 CIS is currently organized into five units: Administration, Data Services, Network and Systems Group, User Support Group and Educational Technology. [See <http://www5.hmc.edu/CISOrg/index.html> for current organization chart]

21.2.2 Until recently, there were no units devoted to instruction or research support, both of which are core parts of the HMC mission. There was, for instance, no dedicated staff support for Sakai users (as opposed to staff support for the Sakai server and application). It is hard for the faculty to do innovative things with instructional technology without staff experts with whom they can partner. [Lacuna: Connect this discussion with section 11 on instructional technology]

### 21.3 Infrastructure

21.3.1 “Infrastructure” is used here to refer to the collection of network equipment, servers and software that CIS manages. The HMC infrastructure is delicate in many ways. For example, if we somewhat arbitrarily define a critical incident as one that prevents 28 (about 10% of the staff and faculty FTE) or more people from doing their work (or other activity that is important to them), then the CIS infrastructure is regularly prone to critical incidents. (A partial log for several months in 2008 is listed in table 1):

21.3.2 *Year One. Conduct a comprehensive review of the IT infrastructure managed by CIS. Produce an inventory of all servers and network equipment. Identify systems that are no longer needed or which can be consolidated.*

21.3.3 *Year One. Introduce change management and security practices that will serve to ensure better performance from the IT infrastructure.*

21.3.4 *Year One. Consistently track critical incidents and identify any patterns. Identify the root causes of critical incidents and take action to eliminate or mitigate them.*

21.3.5 *Year One. Identify appropriate benchmarks for services and begin measuring benchmarked services. Report regularly to the community regarding this effort.*

21.3.6 *Year Two. Implement plans to reduce number and variety of server systems.*

21.3.7 *Year Two. Review and refine change management and security practices.*

21.3.8 *Year Two. Continue eliminating root causes of critical incidents.*

21.3.9 *Years One, Two and Three. Communicate progress in infrastructure improvement by regular updates to the HMC community.*

Date	Incident	Duration
10/23/08	Cognos (reports) system down	?
10/21/08	POP service on Thuban failed, affecting email users on Thuban server	Approx 18 hrs
10/05/08	Alice file server outage	at least 10 hours
09/21/08	CINE wireless outage	2.5 days
09/07/08	Ongoing outages CINE, due to features of DHCP database	intermittent interruptions for a few minutes, several times a day
09/07/08	Disk array outage, affected Odin and Charlie;	at least twelve hours
07/13/08	Mailbox-01 stopped delivering messages for about 6 hours (on a Sunday)	at least six hours
05/07/08	ACLs of some DHCP addresses for wireless had not been added to Apache ACLs, required service restart.	?
05/07/08	DHCP server out of disk space; wireless network outage.	1 hour
03/26/08	DNS Server outage (Thuban disk died)	1.5 hours

04/04/08	Network switch in East Dorm needed power cycling	15 minutes
	two Alice outages in February & March	

Table 1. Partial log of critical incidents March – November 2008

## 21.4 Services

21.4.1 The IT review calls for CIS to develop a catalog of services. This is a required first step to developing clear agreements about service levels

21.4.2 *Year One. Construct a complete catalog of services provided by CIS.*

21.4.3 *Year One. Evaluate the catalog of services with a view to rationalization and clarification. Make recommendations for streamlining services.*

21.4.4 *Year Two.*

21.4.5 **Email and Calendar.** The 2007 IT review recommends developing the business case for an installation of the Exchange/Outlook combination. It also points out that Apple and Linux users will be less well served by that option. A full Exchange/Outlook installation tends to drive in the direction of other Microsoft products (eg. Exchange requires Active Directory and works better with Sharepoint and IIS than it does with, say, Apache). These are not, in themselves, reasons not to look at the business case for Exchange: they only complicate that case.

However, we should also ask whether it is necessary for the College to be its own email and calendaring provider. It is now becoming common for Colleges to consider discontinuing email as a service delivered locally, at least for students, though in some cases email has been discontinued as a local service for faculty and staff as well. Examples include USC (students), Indiana (students on both Google and Microsoft), Macalaster College (students, faculty, staff), Claremont McKenna, Pomona and Arizona State. The most common options are Google Apps for Education or Microsoft [Live@edu](http://live.com). This trend is clear and is perhaps an appropriate response to the realization that the delivery of an email service can be regarded as a commodity without a special relationship to the academic mission. On the other hand, there may be reasons a college would want to continue to be its own email provider, from a desire to integrate with other systems for example, or dissatisfaction with the levels of privacy offered in an outsourced option.

21.4.5.1 *Year One. Identify the email services (CIS Zimbra, CS dept service, Gmail, Yahoo etc) currently in use at HMC. Catalog the clients that are being used, and the extent to which calendar and groupware functionality is being used.*

21.4.5.2 *Year One. CIS should establish a representative team drawn from across the campus to conduct a careful analysis of the pros and cons of contracting with a third party such as Google or Microsoft for email services. Obtain information from Colleges that have already taken this step (including some of the Claremont Colleges). Obtain input from faculty, students and staff. Publish the results of this analysis and ensure that all stakeholders are aware of the recommendations.*

21.4.5.3 *Year Two. Implement the Year One recommendation regarding email services.*

21.4.5.4 *Year Three. Assess the email system, including user satisfaction surveys.*

21.4.5.5 *Year Four. Continue to assess and make recommendations regarding next steps*

*for email systems.*

**21.4.6 The listserv system.** The listserv system plays a key role in the life of the HMC community. There are currently more than 1500 lists on the system, most of them in active use on a daily basis. Although the listserv system is functioning well, it is built on software that is a little out of date, and does not allow for easy distribution of system administration tasks or the archiving of lists. [is that correct?]

*21.4.6.1 Year Two. Assess the current listserv system and its implementation. Is it efficiently run? Publish the results of the assessment and make recommendations.*

*21.4.6.2 Year Three. Act on the Year One listserv recommendations.*

**21.4.7 Mobile Computing Support.** Mobile computing devices (phones, net tablets etc) are now becoming more common and more useful. They are expected to become ubiquitous. They also bring serious challenges in two areas: security and support. As mobile devices are used more and more to access sensitive data, they are more of a security vulnerability. And the sheer range of mobile devices available make it very difficult for CIS staff to be familiar with them all, or even with a large subset.

*21.4.7.1 Year One. Develop a plan for supporting mobile devices. Vet the plan with stakeholders then disseminate it widely. Ensure that support plans do not function as an obstacle to innovation in the mobile computing arena.*

*21.4.7.2 Year Two. Assess the impact on IT services of supporting mobile devices and make recommendations accordingly.*

*Years One – Four. Regularly scan the technology horizon to identify new mobile technologies that could be of use or interest to HMC. Disseminate information about these technologies and arrange for people to test them where feasible.*

**21.4.8 File Storage Systems.** There are currently two servers dedicated to file storage “Alice” and “Charlie”, running the Microsoft Windows operating system. Each provides file storage, acts as an application server for windows applications and functions as a print server. During 2008, each service has suffered numerous outages, which have had significant impact on both academic and administrative activities. For example, students have been unable to complete assignments on time and administrators have been unable to access essential documents for hours on end.

The level of Windows expertise in CIS is somewhat limited (one person is considered “the expert”).

The situation with file storage needs to be addressed as quickly as possible.

*21.4.9 Year One. Examine the pros and cons of consolidating file servers and recommend a path forward on this question.*

*21.4.10 Year One. Examine the pros and cons of providing multiple services (eg. Print, application server and file storage) on a single machine.*

*21.4.11 Year One. Design a robust enterprise file storage system that the HMC community can rely on (99.99% uptime ought to be the goal). Vet the design with stakeholders and outside experts. Once the design and technical specifications are approved, implement the system as quickly as possible.*

*21.4.12 Year Two. Try to achieve better integration between file storage services and other systems, such as the Sakai service and the Zimbra email service.*

21.5 Lacuna: Sakai

21.6 Lacuna: Wireless service

21.7 Lacuna: Work order/ticket system service

21.8 Lacuna: Administrative systems (CX, Cognos..)

- 21.9 Lacuna: Faculty and Student portal
- 21.10 Lacuna: Cascade Content Management system, CIS role
- 21.11 Lacuna: Programming/development of tools and applications
- 21.12 Lacuna: Hardware Support policies
- 21.13 Lacuna: Software Support policies
- 21.14 Lacuna: Service level expectations
- 21.15 Lacuna: Data center and server systems
- 21.16 Lacuna: Network infrastructure
- 21.17 Lacuna: support for non-Cascade web development
- 21.18 Lacuna: investigation of new technology
- 21.19 Lacuna: staff professional development
- 21.20 Lacuna: Printers and copiers. Connect this to Print Task Force report
- 21.21 Lacuna: PCs for Faculty program
- 21.22 Lacuna: Organizational effectiveness at CIS
- 21.23 Lacuna: Audio-visual services
- 21.24 Lacuna: Measuring the quality of technical support.
- 21.25 Lacuna: Disaster recovery and business continuity
- 21.26 Lacuna: Fletcher Jones award and Parsons Labs

21.27 Project Management.

21.27.1 Although some individuals and some projects have put elements of project management in place, there is currently no overall project management system in place at CIS. Examples of projects that are currently being carried out by CIS include “internal” projects like developing a disk to disk backup system and “external” projects like developing a better requirements tracking system for Humanities and Social Sciences or installing new A/V equipment in Sprague. There is no system for accepting project proposals from around campus. There are no formal systems for evaluating project proposals, no procedures for setting priority or determining what resources should be devoted to the project, and no system for evaluating the outcomes of projects.

*21.27.2 Year One. Define what kinds of activities need to be regarded as projects. Develop and implement policies for project acceptance and management at CIS. Ensure that stakeholders have real input into the choice of projects and setting priorities. Regularly publish information about the status of projects and regularly solicit proposals for new projects. Ensure that the project proposal system is sufficiently agile to meet the needs of the College.*

*21.27.3 Year Two. This will be the first full year of the project system. Assess progress and make course adjustments as necessary.*

*21.27.4 Year Three. Assess the project system while continuing to use it. Publish results of assessment.*

21.28 CIS Relations with other departments.

As the IT Review suggested, the College needs to foster true partnerships and coordination between CIS and other campus and consortium entities. As the IT review also pointed out “many clients of CIS seek better, more frequent, and more accessible channels of communication with that group.”

CIS needs to “get out and about” and begin to work in partnership with other campus entities on shared projects.

Lacuna: Say more about what well coordinated work relations ought to look like

21.28.1 *Year One. Identify opportunities for partnership with campus departments and begin articulating principles for shared management of projects.*

21.28.2 *Lacuna: Need to identify other action items and indicators of progress in this area.*