

Information Technology - Strategic Plan - DRAFT

Executive Summary

This Information Technology Strategic Plan is intended to be a general guide, not a detailed blueprint, and to be revisited and adjusted periodically. It contains four broad goals and seven principles used to evaluate and adjust the goals and objectives over time.

Goals

1. **Communicate and Collaborate**
2. **Enable the Classroom**
3. **Coordinate Data**
4. **Solidify the Infrastructure**

Principles

1. **Align** IT with College priorities.
2. **Engage** the community as partners in progress, not merely recipients of services.
3. **Regard** IT as a moving target.
4. **Acquire** appropriate technology that is affordable and flexible.
5. **Consider** scope and opportunity costs.
6. **Balance** expectations with resources.
7. **Fund** at appropriate level of organization.

Introduction

Information technology (IT) underlies the diverse operations of a modern college. The small physical scale of a college such as Pitzer belies the comparatively wide scope of its academic enterprise. IT enables Pitzer students, faculty and staff to know about, communicate, and coordinate with each other. It enables the college to gather and organize information and communicate externally at local, national and global scales across complex systems of civil and academic discourse. Almost every group of people in the college benefits now, and will increasingly benefit over time, from more accurate, organized, detailed and timely data about itself and the groups with which it interacts.

Information technology is expensive. No college can afford all the technology that might, in some way, be beneficial. This IT strategic plan outlines a framework by which Pitzer College can obtain the most essential benefits of information technology by investing wisely in the priorities best aligned with Pitzer's mission and plans.

In the end, it is the learning community of people who make up Pitzer College who advance its mission. Information technology must give those people the time and facilities to do what they do best. In the words of Pitzer's Strategic Plan, information technology must support a robust infrastructure for learning.

History

Pitzer's 2010-2015 Strategic Plan called to "update and expand the College's computing infrastructure in support of curricula, teaching and learning, and assessment." In particular, to "Create an Information Technology master plan, similar to housing, facilities, and landscaping master plans, that will enable and support up-to-date instructional technologies, institutional research, paperless scheduling systems and record-keeping, and protection against power failures and security breaches."

Although many IT improvements have taken place since 2010, it wasn't until Oct 2013 that the Information Technology Task Force (ITTF) was constituted. Among several responsibilities, the ITTF has made the drafting of this IT strategic plan its highest priority.

The ITTF has faculty, staff and student representatives, nominated by the Faculty Executive Committee (FEC), Staff Council Representatives (SCR), and Student Senate. Aside from the Director of Information Technology, none of the task force members were chosen for his or her technical knowledge. This is fitting because to a large extent, technology itself, as complex as it has become, is the most adaptive part of the problem. Rather, the interaction of technology and culture, and the ability of technology to deliver benefits in context and to provide an infrastructure for the future of college education, matter more.

The first task of the ITTF was to gather opinions from the community -- what works, what needs improvement, what changes do we most need over the next few years? The ITTF has attempted to frame the desires and priorities expressed, less in terms of technical changes, but rather in terms of the benefits derived.

The ITTF hosted several focus group sessions to solicit opinions. Common themes emerged, largely centered around the need to facilitate academic and organizational communications and collaborations and to connect data silos and make business processes more efficient. Other discussions within the ITTF were necessarily more technical. The synthesis of these conversations, tempered by efficiency and narrowed to the practical, have resulted in this document.

Guiding Principles

Align IT with College Priorities

Overall priorities must be set by the community, here represented by the ITTF. This alignment will ensure that IT efforts are most effectively structured to serve the functional needs of the entirety of Pitzer College.

Engage the Community

Few IT projects are purely IT issues. Most projects cannot be successful without engagement of the campus community. This means more than simply consulting with the stakeholders.

Rather, IT must partner with the stakeholders to share the ultimate responsibility for success of the projects. The success of this Strategic Plan will be borne out in implementation.

Regard IT as a Moving Target

Technology and the consumerization of computing is changing rapidly. Our overall goals must be forward looking, and must be adjusted periodically to account for changes in needs or technology. In particular, a fixed 5 year plan for IT is insufficiently flexible. Rather, we will review progress and revise some goals and strategic objectives as needed every year or two.

Acquire Appropriate Technology that is Affordable and Flexible

As a liberal arts institution, Pitzer does not require cutting-edge technology in most areas, but its processes are complex enough even today to require more than commodity service. One key to this balanced approach is to engage the 7Cs where cost-savings can be realized or coordination essential, but to act locally where flexibility is needed. Innovation is sometimes thrust upon an institution, but strategic planning intends to provide capacity and flexibility for guided innovation. To paraphrase Einstein, technology should be as cheap as possible, but no cheaper.

Consider Scope and Opportunity Costs

In evaluating large projects and priorities, we must consider how a project may help or hinder other goals. It may make sense to narrow the project to finish it quickly, or it may make sense to broaden it to enhance its ability to strengthen the overall infrastructure.

Balance Expectations with Resources

Most IT resources are spent on operations. Progress on the goals and objectives for improvement will depend on resources available. Therefore priorities and phasing are critical, and expectations must be realistically aligned to resources available to the college over time.

Funding at Appropriate Level of Organization

Funding IT related projects should take place at an appropriate level, depending on the scope and competing priorities. For example, purchasing software to be used in a class is not so much an IT decision, but an educational decision by the professor to enhance the pedagogy in the best way possible. Funding for a data warehouse would affect the entire campus and should be considered at a higher level.

Goals

Goal 1. Communicate and Collaborate

Rationale

Our college work processes may seem cumbersome, especially with respect to IT. On the business and administrative side of the college, they work better within an office and less well across offices. To a degree, this is a manifestation of scale and silos. And many people feel they do not have the skills to use the tools to their best effect. These objectives aim to make our day-to-day processes more effective. Apparently seamless communications technologies flood faculty, students and staff with unsorted information as they also mask cultural divides with respect to use.

Vision

Professor Smith smiled at the face on the other end of a skype connection. Dr. Ali would visit Pitzer next semester; the two of them were working on a joint series of seminars on the influence of micro-lending on health management in rural Malaysia. Professor Smith had drafted outlines of the first three seminars, using the cloud file service Pitzer provided. Dr. Ali could access the documents securely even without a Pitzer account, so they were both editing the same document in real time as they discussed the details. Professor Smith had already sent a link to some colleagues, and was glad it wasn't necessary to send any email updates as the material changed.

Dr. Ali asked about arrangements for the trip. Professor Smith was able to easily find the information on the redesigned Pitzer website, including human resources forms for travel, forms for housing, an interactive map, and information on requesting network accounts for visitors. And it was easy to verify that the GIS software they needed for the seminars was already installed in the rooms they wanted to reserve.

After the skype session, Professor Smith made sure to reserve the auditorium. To send out announcements, Professor Smith logged onto the new announcement system and posted the dates, titles and blurbs about the upcoming seminar series. This system was certainly an improvement on email! People got the announcements and reminders the way they wanted -- email for some, RSS for others, even facebook and twitter for those that preferred. Of course anyone could just check for events on the web, since they were all there, and so easy to just add an invite to your personal calendar. One didn't have to consult an inbox to remember when something was happening, and coincidentally, email was easier to manage.

Objectives

- **Ease file sharing.** Improve ease of access and findability. Reduce the need for email attachments and improve the flow of work and collaboration related to documents.
- **Improve Communication Modes.** Better use of email and other-than-email, e.g. announcements, sales, events. Email could be moved to the cloud which would benefit

from use of cloud storage and links rather than attachments. Announcements and event notifications should use optional non-email channels. However, the technical issues are much easier to solve than cultural adoption.

- **Improve intranet.** Improving our intranet, with Communications driving, would help with cross-office communications on the web.
- **Improve training.** Training may involve online sites (e.g. lynda.com), seminars by IT staff, seminars by office staff, cross-office tips posted on the web, and so forth.

Objective	Initial Priorities
File Sharing	A. Acquire cloud file sharing service, with collaboration tools
Communication Modes	A. Investigate system for Want Ads B. Investigate system for announcements
Intranet	A. Make IT site more service-oriented B. Work with Communications on cross-site searching
Training	A. Expand IT offerings B. Investigate commercial offerings

Collaborators

Communications for intranet, whole campus culture for use of intranet and email changes.

Goal 2. Enable the Classroom

Rationale

Faculty and students have concerns about educational technology centered around the ease of use and reliability of computers and projectors in the classrooms. Outside of the classroom, there was some interest in streamlining the functions of already-existing software, most notably Sakai. More sophisticated use of educational technology, such as lecture capture, adaptive learning, analytics, games, or simulations, are not currently in high demand by faculty at Pitzer. Faculty interest will likely change over time as technology improves and incoming students become more familiar with these techniques. Flexibility is important, and IT staff need to stay aware of trends in higher education, so they may support faculty in exploration. It would be premature, however, to invest substantial resources in much beyond that.

Vision

Professor Smith and Dr. Ali just made it to the class in time, ready to give their first joint presentation. Professor Smith had not taught in this classroom before, but no matter, the computers and AV equipment all worked the same way. Professor Smith turned on the

computer, projector, and started in on the first half of the lesson, using slides stored in the cloud. However Dr. Ali preferred to use a personal laptop, which had already auto-connected to the high-speed wireless network. It took just a few seconds to plug into the available connectors and Dr. Ali was ready to present. Both Professor Smith and Dr. Ali were able to interact directly with the class because the equipment was oriented in such a way that they did not have to turn away from the students in order to use it.

Objectives

- **Standard operation of classroom technology.** Inventory classroom technology and spaces, create guidelines for improvements as funding allows. Consider using the Learning Space Rating System (LSRS) from Educause.
- **Reliable classroom technology.** Track any outages and issues, encourage users to report problems, look for ways to improve reliability, possibly through monitoring, education, or physical changes.
- **Keep abreast of higher education trends.** Interest in educational technology may increase as freshmen become more technically experienced. IT staff must remain knowledgeable enough to run workshops and to aid faculty experimentation

Objective	Initial Priorities
Classroom Operation	A. Inventory classroom technology B. Assess classroom spaces C. Design standards D. Use standards when remodelling
Classroom Reliability	A. Track issues/outages, encourage reporting B. Make technical fixes as possible
Educational Technology Trends	A. Professional development for IT Staff B. Consulting and workshops for faculty

Collaborators

TLC, Faculty, Media Services, APC, Facilities

Goal 3. Coordinate Data

Rationale

The academic and administrative focus groups uniformly mentioned the difficulty of creating, finding, or analyzing consistent data (e.g. student and alumni data and some operational financial data). The existence of data silos ranged from closely held spreadsheets to differently

supported databases, sometimes with data that should be replicated but in fact was not properly synchronized. In this situation different offices used different input procedures for the same data, and reports were cumbersome to obtain if the data needed to be extracted and interpreted by another office. Further, some data entry is still done on paper, either for historical reasons, or because physical signatures are required.

Vision

Sandy pulled out his phone and looked up his advisor, Professor Smith, in the online directory. Yes! Dr. Smith had office hours now, so Sandy walked over to ask a question about classes next year for his independent major in environmental poetry.

Professor Smith quickly called up Sandy's records, including classes, grades, overall degree progress, fellowship applications, study abroad experience, and co-curricular activities. It was easy to see which general distribution requirements Sandy had met, as well as which courses remained to be taken in his major. After a brief discussion they settled on a plan. This left them with ample time to talk about another concern on Sandy's mind -- what to do over the summer. Professor Smith brought up a possible internship at an independent press, as well as a volunteer teaching position at an ecological education center. Professor Smith also suggested that Sandy go to the Career Services Center for further assistance. Professor Smith entered a reminder in the portal to check next semester that they were still in agreement about Sandy's classes, and the plan was on track.

Professor Smith heard stories from some of the more experienced professors about the old days, and how complete information about a student was so time-consuming to assemble. In some cases, they even kept paper records! Well, that was then. When Dr. Ali came to visit, sure there were forms to fill out, but everything was quick and automatic. Of all the necessities -- a stipend, a place to live, computer accounts on all relevant machines using the same password, proper entry into the online directory, card access to the proper buildings -- most things happened pretty much in real time.

Time to walk Dr. Ali over to the Pit Stop for some coffee and conversation. At least some of the old traditions were worth keeping.

Objectives

- **Bridge existing silos with data warehouse for reporting.** Build a system designed for reporting and analysis of historical trends, separate from (but relying on) the current systems designed to handle transactions.
- **Improve agility of data entry, workflow and access.** Reduce motivation for data silos. Make it easier to collect and share data.
- **Bridge existing silos with near real time sync.** Improve data integration architecture so that data flows in real time.

Objective	Initial Priorities
Data Warehouse	A. Inventory data sources and stewardship B. Investigate data warehouse options
Data entry and workflow	A. Explore options for central identity management, possibly with 7Cs B. Explore options for central management of data entry forms, workflow, and processing
Synchronize data	A. Explore options for data integration architecture, possibly with 7Cs

Collaborators

Dean of Faculty Office, Registrar, Advancement, Admissions, Financial Aid, Human Resources, Institutional Research, Study Abroad, Student Affairs, and all offices that currently input data or require reports.

Goal 4. Solidify the Infrastructure

Rationale

Internal operations are the foundation that support all the other services valued by users. Internal IT capabilities and processes need to be less reactive and more robust.

Vision

As Sandy sat down for class, he logged onto the network and checked the IT Status Page. Ah, the network problem in his dorm this morning was fixed already. He had been quite surprised by the outage, because he couldn't remember the last time the network was slow, let alone down. Fortunately, IT noticed quickly, notified the community, fixed the issue, and was already back to their normal routine.

Sandy logged off of facebook and prepared for class as his professor walked in. Professor Smith was smiling. Which might seem odd, since Professor Smith's laptop was stolen while returning from a trip abroad. The laptop had some data from the trip that would be impossible to replace, but the important folders were synced to cloud storage, so backup was automatic. There might have been some copies of restricted student data, but that didn't matter, since the laptop disk was fully encrypted. Professor Smith stopped by IT to pick up a loaner laptop until a permanent replacement could be arranged, and now Professor Smith had retrieved class material from the cloud and was ready to teach.

Meanwhile Sylvia, the IT Director, grinned as she headed off to a budget meeting. The IT staff

seemed relaxed these days, and the small outage this morning was handled quickly, both in terms of communications and technical response. The automatic monitor and notification systems had proven their worth, yet again.

Budget meetings had become routine, with new programs having funding for hardware maintenance and replacement cycles built in. For this meeting, Sylvia will present the results of the recent security audit. IT security was good, but of course security is never perfect. A few sensible recommendations could be implemented for modest cost, but one recommendation related to disaster recovery was expensive, particularly in opportunity costs. Sylvia wasn't convinced the reduction of risk was worth the expense, but she knew that was a decision for upper administration, not her. As long as they understood and accepted the risk and costs, she was happy with a decision either way.

Objectives

- **Prepare for disasters and recovery.** We need to recover data and operational capabilities after disasters, with timeliness depending on the nature of the emergency, without excessive spending.
- **Mitigate information storage risks.** Build proper safeguards to minimize the chance of information loss or inappropriate information disclosure, particularly involving laptops, network or cloud storage.
- **Improve network security.** Evaluate methods to prevent, detect, and respond rapidly to intrusions.
- **Monitor availability and function.** Minimize outages by closely monitoring services in an automatic fashion.
- **Monitor performance and trends.** Monitor trends in service levels to anticipate future needs.
- **Improve testing of upgrades and patches.** Automate testing so that upgrades can be done more efficiently and without unanticipated consequences.

Objective	Initial Priorities
Disaster Recovery	A. Assess critical services B. Assess scenarios and risks C. Develop plan consistent with risk tolerance and affordability
Information storage risks	A. Develop policies for availability of data B. Develop policies to prevent inappropriate release of data.
Network security	A. Central log management B. Improve intrusion detection C. Assess vulnerability scanning

Monitor availability and function	A. Automatic monitoring of services
Monitor trends and performance	A. Track performance of services over time
Automate testing	A. Improve efficiency of regression testing for development and patch installation

Collaborators

ITTF, Cabinet, others for guidance and funding. But mostly internal IT projects.

Future Considerations

Strategy implies choice. Understanding what we have not chosen adds clarity to what we have. The items below would all be beneficial to Pitzer, but compared to the chosen goals above, their initial priority is lower due to the lower current importance and state of our readiness. As the plan is re-evaluated in future years, we expect at least some of these items to increase in priority.

- Research support. Apart from incidental advice, we are not proposing central support for supercomputing, discipline-specific support or expertise, specialized data storage or analysis, or special hardware.
- Online education. We certainly support a Learning Management System (LMS), currently Sakai, and hardware in the classrooms, but we are not proposing any significant investment, beyond perhaps occasional experimentation, in online platforms, lecture capture, or learning analytics.
- Mobile. Mobile, like any alternative display, makes data maintenance challenging. Aside from existing specialty apps (e.g. JICS GO, the current mobile portal from Jenzabar), it would be best to concentrate on underlying data access and maintenance issues first, and leave multiple user interfaces (including mobile) to later development.
- Expanded teaching labs/classrooms. Computer capacity in classrooms may need to be expanded, but the first priority is to make the current classrooms function at a high level.
- High performance video recording and streaming.
- Lecture capture systems that would (semi-)automate recording, indexing, searching, playback
- Virtual Desktop Infrastructure (VDI). VDI would have many advantages for mobility, maintenance, and licensing, but requires a substantial up-front investment in hardware and technical efforts.
- Big data and analytics. This goes beyond initial data warehouse steps, to include items such as click-stream analysis from the LMS (currently Sakai).
- Significant new funding. IT does not have resources to make large, good-quality changes quickly. However, the IT budget ultimately competes with all other spending. This recommendation should be revisited periodically, but currently we accept the rate of progress inherent in the current IT budget. We do expect to need additional spending on a project basis, but this should be proposed and approved for each project specifically.

Appendix A. IT Task Force Members, 2013-2014

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