

Strategic Plan Instructional Technology and Information Systems

A strategic plan for a department within the College should detail how that area defines its role in the context of the plans and directions of the campus. Without getting into operational details or particular projects, the plan must address the role and levels of service, and the overall direction of the unit. Computer Services and CIR are both service areas, and they exist to facilitate the efficient and effective operation of the academic and administrative functions of the campus.

The purpose of this plan is two fold. First, it will provide the general framework for the development of a three-year plan. Both the Computer Center and CIR will be preparing operational plans, detailing tasks, projects and resources. These efforts will get their focus from this document. Second, a departmental strategic plan is probably the best means to clarify the general role and direction of these areas within the larger context of the College. This is an excellent way to attempt to make explicit the implicit assumptions about the role of technology on campus and to ensure that the campus and these technology providers are in alignment as to where we are headed.

A reasonable point of departure for a strategic plan for technology and information systems is the College's Strategic Plan. There is enough detail in the College's plan to provide insight into the campus needs that must be addressed. Some areas of the College's plan detail explicit requirements while others require that we take a step back and see where technology can provide the tools or infrastructure to enable other goals or plans. The Strategic Plan identifies these areas or tasks impacted by or dependent upon instructional and information technology:

Academic / Instruction

- ? support new pedagogical modalities
- ? foster communication and collaboration
- ? support learning communities
- ? provide basic computer skills
- ? provide a significant technological experience in each discipline
- ? support both synchronous and asynchronous learning where determined appropriate
- ? coordinate efforts to support the infusion of technology to the campus

Academic / Administration

- ? support data systems capable of providing management and planning information
- ? support advising (Degree Audit)
- ? provide timely enrollment data / analysis to assist in time to degree and maximize use of facilities
- ? support One Stop Services thru both in-place and virtual services
- ? enhance inter-office and institution to student communications

Technology

- ? provide on-going technology planning for the campus addressing:
 - o space
 - o staffing
 - o budgeting
 - o network infrastructure
 - o technological currency
- ? build an adequate support infrastructure

These tasks cluster around a few central themes. The purpose of this plan is to use these as a guide within the broader context of the current operations within Computer Services and CIR. From there we will outline the strategies we will put in place to address each area. Flowing from that will be the infrastructure pieces and resources we will need to be successful. These in turn can serve as the starting point for a multiyear rolling operation / implementation plan.

The Strategy

Support and foster innovation, improve communication, and enhance instruction:

Courseware / Instructional software: Perhaps the biggest success story of the past few years has been the introduction and adoption of Blackboard for instructional use. This package has been so quickly and widely adopted, and it provides so many benefits to instructors and students that its deployment on campus has become of strategic importance. It will be a part of hundreds of courses each semester. This can also serve as an effective way of creating learning communities and interest groups within and across academic areas. We can continue to expand upon this basic platform to provide other information and communication capabilities to the campus.

Classroom technology: We are committed to building and maintaining technologically current classrooms. The plan is to address this on two fronts. We will continue to roll out new multimedia equipped 'smart classrooms' every year and we plan to provide network access from all classrooms. We will continue to provide support and encouragement to faculty to extend the classroom outside the physical space thru the addition of network-based services.

Hardware/software tools: We have opted not to become a 'laptop campus'. Instead, we have built robust public computing facilities and we are committed to keeping these labs at or near the cutting edge of technology. This involves replacing the hardware every three years in our most active labs, upgrading software to newer versions as available, and providing robust network servers and services.

Distance learning space / distance learning tools: While distance learning does not play an important role in the College's strategic plan, it has a place in our plans both as we build partnerships with other institutions and in terms of offering different

pedagogical modalities and options to our current students. We therefore plan to build and maintain a usable “video conference” style facility to support synchronous instruction. In addition, we will rely on the courseware package in use to augment traditional instruction as a vehicle to provide fully asynchronous courses.

Support for learning basic technology skills: This is a transitional period. Students are arriving with widely varying levels of competence in the use of technology based research and support tools. While the academic computing staff has offered various training sessions in the past, we have never been in the business of offering comprehensive evaluation and training for hundreds of students. It has been suggested by some that we undertake this role. This would be a substantial undertaking – requiring agreement on competency levels, a structure for student evaluation, and a well laid out curricula probably combining in person and self-paced instruction. This has never been Academic Computing’s role. Given the size of our entering class, these efforts may well require one or two full-time professionals. While it is clear that Academic Computing needs to be involved in the process, it is not clear that members of the academic computing staff should undertake these evaluation and instruction tasks. Therefore, we will not undertake any new efforts in this area without further discussion and direction.

Support academic department efforts to provide state of the art resources and relevant experiences:

Centralized staff but distributed responsibilities: The structure used to support academic computing on campus continues to evolve. When the staff was very small, it was centralized and largely consumed maintaining the infrastructure of labs and servers. As the staff has grown, we have moved into a mixed mode, where some of the professional staff have a campus-wide focus while others, even though they work for Computer Services, support groups of academic departments or special projects. Early indications are that this is providing better service (happy ‘customers’) and we plan to continue on this path for now. However, there are some cautionary notes. This approach requires on-going efforts to keep the group coordinated and functioning as a team. We also must guard against having some departments feel left out, or to miss campus-wide opportunities because we become too narrowly focused.

Dedicated funding for departmental projects and innovation: We will continue to use the resources provided by the SCAP program to support innovation and department projects. The current process of soliciting proposals from the faculty has been working well and will likely continue. The parallel process of supplementing these efforts with other funds to provide the infrastructure pieces, and to address larger academic projects has also been working well and will continue.

Governance structure to balance department needs and campus priorities: The Academic Computing Steering Committee existed for almost twenty years as an ad hoc group who met because they were interested in furthering the use of technology on campus. They were recently ‘voted out’ when the faculty decided that these efforts were

too important to be left to a non-governance group. Most unfortunately, during the past year nothing materialized to replace the old committee. The Computer Center is ready to work with the faculty to form this new group, to educate them in campus projects and the SCAP program, to bring them up to speed on issues affecting the campus and SUNY, and on the general direction of technology. The faculty must put forward an active, engaged group of individuals to serve on the technology committee. It is going to be a wild ride.

Provide effective, efficient and accessible administrative systems:

Virtual services / one stop services: The campus has been discussing ‘one stop services’ for years but for most of this period has lacked the will and focus to move the process along. The advent of browser based services provides an easy way to make information and transactional services available anywhere / anytime. The *my.newpaltz* website is an excellent beginning and we will build on these services, completing the collection of services that can be provided on-line – including such functions as course registration and add/drop, financial aid information and billing information. Two and three years out, we will continue to leverage these services by integrating these functions into the campus portal, and including new pro-active capabilities. In this way we can use both the web and e-mail to interact with our students and staff, advise them of changes, and highlight possible problems before they become serious.

Robust admin systems / accessible data: Our current administrative systems are a combination of systems developed in-house and packages purchased from commercial vendors. They provide a strong base on which to layer new capabilities, and some of our software tools, such as Oracle and ColdFusion, are very powerful and capable. However, as typical of ‘legacy’ systems, they were built over the past two decades with detailed, customized programs and the cost in terms of time and manpower to maintain and enhance these systems is high - minor changes take skill, major changes take months. There are several approaches we will take to address this.

- ? First – as noted above – there is a lot we can do on top of our current base, and we will employ these new PC-based tools to provide better and easier reporting and analysis.
- ? Second – we need to take another look at the comprehensive software packages adopted at the other SUNY campuses. A past review of Banner led us to conclude that in general we could do as well on our own. That was over five years ago, and Banner is now much more mature and complete. In addition to Banner, Oracle now has an administrative software package that is being adopted at a few other SUNY campuses.
- ? Third – we can build on the capabilities in our portal to provide a whole layer of capabilities tailored to students, faculty and staff. This will take several years, but we will move to an environment where all but the ‘back-office transactions’ can be performed by the end-user via the web.
- ? Fourth – we can tie our existing legacy systems into other software packages that provide web-based services. For example - over the next two years, we will be adding a document storage software package that can be tied into our student

records system for storage and retrieval of transcripts and to the SUNY system for capturing and indexing purchase requisitions.

The Infrastructure

Robust ‘public’ services Plus Unique Department Based Services: Our strategy to focus on providing state of the art public computing labs, equipped with uniform software and adequate printing and scanning capabilities has served us well. The recent increase in resources (both staff and Tech Fee funds) coupled with the SCAP program and equipment replacement funds has enabled us to support the more unique requirements of academic areas thru department labs. This provides a good balance of capabilities – we can address unique requirements on top of a strong base. There are some pitfalls to be wary of as we roll out ‘department’ labs. We need to keep focused on maximizing the use of the resources available (avoiding the “me too” and the “that’s mine” traps). Provided we can do this, there is no need to change the current structure.

Robust network: The network is central to all of our plans. Virtually every service, feature or application that we provide depends on a robust, stable and available network. This year, we are replacing the ‘core’ – the backbone router. The new unit has dozens of 100mb fiber-optic connections and will support our move to gigabit connections during the coming two years. This year we will be upgrading most backbone connections to at least 100mb. In some cases, we also must address the intra-building connections. Several of our buildings are still running on old style shared connections. These will be migrated to a switched environment for better performance.

Centralized Directory: Another building block of the new environment is a single centralized directory service. We currently have faculty / staff accounts defined in possibly as many as four places – in the user file on ‘matrix’ for Unix accounts and e-mail, the directory on ‘the LAN’, the faculty file in the Blackboard course/portal system and the access tables for the student records system. Student usercodes are in two places, soon to be three when we provide network storage. This year, we need to carefully evaluate our options for a centralized service that can serve as the authority to validate users and the services they can access (e-mail, blackboard, dial-in, network storage, LAN accounts, library databases, etc.). By next fall, we need to have in place a directory service integrated into as many of these services as practical.

Campus-wide Portal(s): Blackboard has thus far been hugely successful as a courseware system, providing a vehicle for faculty/student and student/student communication, as an avenue to distribute course materials and announcements. In moving to Level 2 Fall 2001, we are adding basic calendar, resource access, campus announcement, and group level communications. We need to continue to add portal based services, at a minimum, providing integrated access to ‘one stop’ services as detailed elsewhere. Blackboard Level 3 is able to provide most of these services and we will most likely move to Level 3 in a year. Even so, Blackboard may not provide all of the features

that we want, so we may need to look into additional or add-on products to fill some of the requirements.

Network based services (Centralized Storage / Unified Messaging): As our use of technology in academic disciplines matures, there is an emerging need for a large centralized, robust, accessible pool of storage for students and faculty. We are now integrating large caches of images and media into coursework and projects. People need to store and access these files from the classrooms, the labs and their residence hall rooms. Currently, students are given no network storage space. We are planning to provide dramatically increased network storage for the campus, using our centralized directory to control access and privileges. In addition, on the administrative side, staff would benefit from a larger, more accessible storage infrastructure.

Our longer-range plans also involve moving into other areas of network-based services: unified messaging, document storage, workflow, further leveraging distributed printing, document sharing and e-mail. These are not strategic items, but they are becoming basic services and efficiencies and we should be keeping pace with what is generally available.

The Resources

Budget: The funds for technology come from several sources. Our ability to produce successes in academic computing and instructional technology are due in large measure to the Technology Fee. This provides the funds to hire staff, replace academic equipment at reasonable intervals, and support growth in classroom technology and library resources. A modest increase in these funds will enable us to keep up with the changes under way and enable us to keep pace with our peer institutions.

ResNet charges have provided the initiative but not most of the funds to support the wiring of the residence halls. This summer we completed Gage and we are really feeling the pressure for having Bouton and Shango with only dial-in Internet access. Bouton is coming off line soon and we must wire Shango, even though it will be a difficult job. As of this fall, most residents will be ResNet users, and we should make the student's life easier by simply folding the ResNet fee into room rent. We will then have all connections live in all of the rooms from the first day of classes. We can use the modest additional revenue to defray some of the wiring costs, and down the road to add new services and improve support.

The regular state budget allocation for Computer Services has not changed markedly in recent years. Fortunately, sharp decreases in hardware costs have enabled us to keep pace with many of the increases in software and some network expenses. The evolution of the network continues to be an annual expense. Having wired the campus, we are now upgrading the pieces. First the backbone (as discussed above) and soon the older network gear in the buildings. This is a process that never stops. We will spend the next few years simply following the trend as fast as funding allows us to progress – moving from shared connections to switched, from 10mb connections to 100mb and then gigabit speeds. Images, sound, streaming media all tax the network, and we must keep upgrading out

‘intranet’ to support these new services. On the other end, our Internet connection speed has doubled twice in two years and will do so again next year. Here too, costs are coming down, but unfortunately demand is rising faster.

The SCAP program remains a steady supply of funds to support academic projects and innovative uses of technology. The amount of money is modest, but that keeps the strain on the staff of continuously adding new functions somewhat manageable.

Classroom technology keeps improving and the requests for ‘smart’ classrooms grow in excess of what we can add each year. We need to work with the Registrar and the Academic Deans to devise a manageable three-year plan to roll out new technology into classrooms at a faster and coordinated rate.

Equipment

Faculty / Staff Equipment: Traditionally, Computer Services has been responsible for purchasing the equipment for our servers and the network infrastructure. As the PC era descended upon us, departments and Deans have had to find ways to fund general faculty and staff equipment as well as specialized research or lab equipment purchases through regular operating budgets or other funding sources. Cabinet approval was given to design a model for centrally planning and administering hardware and software upgrades across the campus. We must develop this model in the coming year and work toward adopting a more sane, efficient and predictable model for faculty and staff equipment replacement.

Classrooms / Labs: The Technology Fee has been able to provide the funds to keep up with technology changes in the labs, and to roll out new technology into the classrooms. We are faced with the problem of the growing base – the number of academic PCs and the variety of software continues to inch up. The number of technology-equipped classrooms is also growing at a good pace and this equipment is very heavily used. If we are to keep on at least a four-year replacement cycle, the annual cost for upgrades and replacements will continue to grow. This means that a modest increase in the Tech Fee is desirable at this point, and this fee should be reviewed every two years to ensure that our facilities remain current and reliable.

Administrative Systems: The centralized facilities in HAB60 are on a less aggressive replacement cycle than the academic labs. Equipment cost decreases have made it possible for us to replace our primary systems on a reasonable schedule and push the middle-aged equipment out into secondary roles. The funds in the regular Computer Center budget will be adequate to continue in this manner.

Network: The College never opted for the million-dollar campus-wide network project. Instead, we have been doing things incrementally using operating funds. Bringing every building on line has been a slow process, and it has left us with several generations of network gear spread across the campus. This is typical of the gradual, evolutionary nature of technology deployment here. The problem is that the relatively low level of funds assigned to this purpose has the campus moving ahead at too slow a pace. We are only this year planning to replace the infrastructure in JFT, which is still using the thick cable

Ethernet backbone of a decade ago. We are drawing funds from regular Computer Services and Telecommunications budgets for these projects. We should address dedicating a modest increase to these funds to enable us to improve our network infrastructure on a more timely basis, or there will be a growing imbalance between what we are providing on the student / residential side (funded thru ResNet and Tech fees) and what we have available to faculty and staff.

Software

There are several layers of software in use across the campus. At the basic level are the PC operating systems, Internet and office tools. Without being heavy handed about things, we have been migrating toward a manageable suite of software tools. We will continue to try to narrow things down, and will pursue opportunities to provide campus-wide licenses for software and upgrades where financially viable.

In the instructional area, things are much more in flux, and software choices are often discipline specific. As departmental plans develop, we need to avail ourselves of any opportunities to share software licenses, PC labs, or skills. We also have to ensure that when we undertake projects, we commit not just to their implementation but also to their on-going support.

The same issue applies to software application packages. Our plans call for a network storage system, image/document storage, the integration of the Blackboard system with the ID card services, etc. They all incur annual support costs, and these tend to rise every year, even when budgets do not.

Staff

Academic Support: For the past two years, we have split the academic support staff into one group with campus-wide responsibilities (servers, public labs, general faculty support) and another more focused on providing dedicated support to smaller groups of departments. This approach seems to be working well, but as a consequence two areas have come up short. The School of Business has plans to provide state of the art technology to its undergraduate and MBA students. They are planning for additional labs some of which will house unique servers and corporate style data analysis and e-business software. If these plans come to fruition, it will not be possible to provide adequate support without adding at least one staff member dedicated to this program.

Across campus, the School of Education has yet to come to grips with integrating technology into the curriculum. However, given the huge impact technology is having on primary and secondary education, it is only a matter of a year or two before there is a technology explosion in this area and an additional staff member will be needed here as well.

Administrative Computing Support: The College migrated to a relational database almost 15 years ago and has managed to survive thus far without a full time Database Administrator (DBA). When we had only a pair of databases, and they were basically closed, mainframe based systems, this was possible. This is no longer the case. End-user

access to student, applicant and financial information is becoming more commonplace. Data manipulation and modeling to look at room utilization and course scheduling are a part of the College's strategic plan. There is also an explosion of databases. Our packages for telecommunications billing, room scheduling, and problem tracking all have their own databases. In addition, across the campus, users have literally dozens of private and shared Access databases, many of which duplicate some of the data in our centralized databases. To avoid chaos, we need to focus on keeping pace with change, providing users database access and training, and enhancing end-user reporting capabilities and skills. And beyond this, there are issues of performance tuning and security and privacy that are going untouched. This requires a full time professional.

As discussed earlier, the campus Portal is going to be a major avenue for interaction within the campus community and the primary way to deliver services and disseminate information. Integrating our administrative systems into the portal will be a significant undertaking and will involve skill in using a suite of state of the art software tools. It is also a task that does not end, as the functions supported thru the portal will continue to expand over time. The skills required to successfully complete this task will also be required to support and integrate our existing and planned network based applications. This layer of integration and support is above and beyond everything we are currently providing. None of our existing administrative computing tasks are going away. We could contract out all or part of the initial 'back-end' integration. This will be expensive, but will enable us to roll out the system quickly. However, having no in-house support will prove to be very expensive as these capabilities change and evolve. So even if we contract much of the initial work, we will need an additional programming line to support on-going growth and maintenance.

Instructional Resources: At this point the level of support required from this area is not clear. They are poised to provide a host of important services in support of the instructional mission of the campus – classroom technology, facilities supporting multimedia preparation and integration into courses, etc. However, this technology is rapidly evolving, and the unique scanning and editing capabilities of a short while ago are now becoming commonplace features of today's high-powered PCs. We need to remain current, so the pressure will remain on the staff to keep their skills sharp and the facilities adequate. However, there is a limit as to how fast the campus can adopt new technology. So it is not clear when or if another professional will be needed in this area. What is clear is that as we continue to roll out classroom technology and specialized computer integrated systems for various departments, an increased burden is falling on the technician in this area to keep everything running. By next year, a second technician will be required to provide adequate, timely response for maintenance and new projects.

System / Network Support: A mainframe used to fill HAB 60. In its place are 36 servers (at last count) running any of six different operating systems. As we add new applications, especially significant ones like streaming media, user storage, and document storage, the number keeps inching up. We simply cannot keep adding system support personnel. The approach we plan to take here is two fold. First, we will try to consolidate the servers and eliminate some of the variety in an effort to stretch the current number of

staff. Second, we will look for other ways to provide the needed manpower and skills, perhaps utilizing the staff at ITEC or outside vendors to provide niche support for certain specific servers or applications.

The Issues and Decision Points

This plan as outlined above is based on a group of decisions and choices made either explicitly or implicitly over the past several years. There have been no sweeping changes and none are planned. We are planning to make significant progress, but nowhere save in a small handful of departments will we approach being 'cutting edge'. This plan would not be complete without a closer look at some of our choices to put into relief what we are planning to do and what we are not.

Ubiquitous Computing or Targeted Departments

Although we have a very strong base of services generally available to the campus, the fact is that we have the resources to provide state of the art technology and support to only a small number of departments. As particular departments push forward with their plans, they lay claim not only to large chunks of our current resources, but also to support staff and the annual costs for maintenance and upgrades. Since resources are limited, this means that we cannot even promise that everyone will 'get their turn' because, in fact, we will run out of resources well before that point. There are ways out of this situation, but they would require us to focus on aggressively integrating new technology across the institution, and this in turn would require that we restructure how we allocate resources. In the absence of major changes, we will always have significant disparities in computing capabilities.

Basic Skills or Institution-wide Infusion

While we have come to recognize that basic computer and information technology skills are required of our students, there is currently only a partial structure in place to address this requirement. There is a stated goal of having every student engage in a relevant experience within their discipline, but there is no focus or commitment to take this any further – to integrate technology throughout a student's learning experiences. Only a few departments are planning a more comprehensive infusion and reliance on technology. On one hand, the success and wide adoption of the Blackboard learning platform will in general increase our student's ability to use a basic set of tools and techniques for academic purposes. But in general, we do not have courses across the College (or sometimes even within departments) build upon a common set of tools or capabilities in an organized way. Currently, changing the teaching and learning process is not even an item for discussion.

The Model for Faculty Computing and Support

As general knowledge and competence in the instructional and research uses of the Internet and PC based tools has become more widely adopted, we have moved away from a 'faculty development center' model of support. In its place, there will be a mixture of resources. The Teaching and Pedagogy Center may well provide the proper environment for small group training and experimentation. Instructional Resources is filling in with

several services providing equipment loans, scanning, digitizing, and video editing. Lastly, the professional staff assigned to departments can play a significant role in working with individuals on particular projects and ideas. This is a good pool of resources, but it will likely be difficult to assess how effectively these resources are being used.

The Model for Providing PC Resources

As mentioned above, we will be working on a plan to centralize the purchase and replacement of faculty and staff computers. If adopted, this will likely provide a better distribution of resources, as well as modest cost reductions. It will also make the task of supporting office PCs somewhat easier. There are clearly some trade-offs in this approach and we will have to do a very good job in devising a plan that meets the needs of the campus. At least some of the money to purchase equipment centrally will be coming from funds previously allocated directly to departments and deans. They will be giving up some local authority and discretion in exchange for what will likely be more frequent and predictable upgrades.

Technology Initiatives

While it is not practical to become a 'laptop campus' requiring all students to own their own systems, there are some less aggressive changes we can undertake which may provide some significant benefits to the campus. First - faculty use of computing is very well established, and most are now integrating some aspect of a technology based service or capability into their courses. It is time to consider the costs vs. benefits of moving toward a 'laptop faculty'. Laptops cost more and tend to have a shorter useful life, but they will allow faculty the freedom to carry their PC from the office, to the classroom, to the library, and then home. This level of convenience can have a significant impact in how readily network based resources are integrated into the curricula. Coupled with the adoption of laptops is the move toward a wireless campus. We will be experimenting with adding wireless networks to a few locations, but currently have no plans to deploy this technology across the campus. In a couple of years time, wireless networks and handheld PCs will likely become commonplace. Think not? - look at the cellular phone.

These two related issues are at the heart of the question of how quickly we want to adopt new technologies and whether they are strategic to our mission or significant only in the context of not wanting to fall behind our peer institutions. It is a matter of degree and some campus-wide discussion, perhaps initially at the Deans level, is appropriate.