

***Toward A Strategic Plan for Information Technology at
Penn State Altoona***

Recommendations to the Dean

By

The Strategic Planning Committee for Information Technology

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A number of faculty and staff, including Suzanne Kuhn, Tamisra Sanyal, Tim Leso, Bruce Muller, John Sjolander, Amy Uliano, Ronie Tanneyhill, Gary Grant, Craig Farrell, among others, attended and provided their counsel to the committee.

Toward A Strategic Plan for Information Technology at Penn State Altoona

At the end of the fall semester 2000, Dean William Cale announced a reorganization of the way information technology is to be managed on this campus. Central to this reorganization is the development of a strategic plan for information technology at Penn State Altoona. This strategic plan is to act as a road map for future development of computing and associated technology on this campus. It is this plan that the information technology staff is to implement.

In order to prepare this plan, a committee consisting of a mix of faculty and staff at the university was appointed.¹ The committee began meeting shortly after the beginning of the spring semester 2001 and has met on nearly every Friday afternoon during the semester from 3:00 to 5:00 pm. An attempt has been made to keep all interested parties informed about the deliberations of the committee and their participation has been actively solicited.

Orienting principles. As chair of the committee, L.A. Wilson II outlined the following principles to be followed in the operation of the committee:

1. The goal is to produce a strategic plan for information technology on this campus that reflects the consensus of views of members of the committee. If forced to a vote on any specific issue, everyone's vote will be publicly recorded. Bear in mind, however, that all actions of this committee are advisory to the dean.
2. Those referred to as "technical advisors" serve at the pleasure of the chair and should be expected to change as different areas of expertise are called for by the deliberation of the committee.
3. Those referred to in the organizational chart as "members" are to serve an initial 18-month term on this committee. One half of the six "members" will be asked to serve an additional 1-year term while the other half will leave the committee. Three new members will then be appointed to a new 2-year term. At the end of another year, the three remaining original members will leave the committee and be replaced by three new members appointed to 2-year terms. In this way, we will be assured of substantial continuity from year to year but provide opportunity for the introduction of new members to this committee. During the first meeting of this committee, members will draw lots to determine who it is that leaves the committee at the end of the initial 18-month appointment.
4. Future selection of members to this committee will be done in consultation with Division Heads, the chair of the Faculty Senate, the Faculty Senate's Information Technology Committee, and other interested faculty and administrators. The chair of the committee will recommend members for appointment by the Dean.
5. As chair of this committee, I will endeavor to keep the Faculty Senate's Information Technology Committee fully informed of this committee's deliberations.

¹ For a fuller description of committee membership, see the section on orienting principles that follows.

6. A plan without budget making authority is only an expression of good intentions. The plan this committee produces is intended to guide the expenditure of all funds on information technology on this campus.
7. There is no *a priori* assumption that all future information technology decisions will be centralized. Rather, this planning activity provides us with an opportunity to systematically consider how much of this should be decentralized and where it makes sense to bring more coordination.
8. Most budget and expenditure data will be stripped of personal identifying information. The committee is charged with establishing principles and decision-making criteria, not evaluating the worthiness of specific users of information technology.
9. Strategic planning is not a panacea that solves all problems. However, if you don't know where you are going, any road will get you there. This planning process provides us with an opportunity to determine where we want to go and lay out a systematic plan by which we get there.
10. The process that we engage in should be open and broadly shared with interested parties.
11. Please view all documents that I prepare for you as simply drafts intended to encourage discussion. Until we agree upon a report (or several of them) to the Dean, everything is a draft open to comment, criticism, and amendment. I have attempted to make this intention clear by labeling things as drafts and working papers. Share them with whomever you please.
12. To the extent possible, I will distribute all materials as e-mail attachments. Feel free to comment and suggest amendments to all documents that are prepared for the committee. Please send your e-mail comments to law21@psu.edu with a subject line "strategic planning." In this way, I can manage the commentary and share it with all members of the committee.
13. I will try to provide you with an agenda and pertinent documentary material several days prior to our scheduled meetings. In this way, you can be fully prepared to participate and we will not waste anyone's time. I don't believe that committees are a good context in which to write new material, they are best used to comment, consider, evaluate, and amend.

Working Paper #1
A Strategic Plan for Information Technology at
Penn State Altoona

Strategic Planning Committee for Information Technology

Charge to the Committee. To prepare a strategic plan for computing on this campus that ensures that our future choices of technology are informed and responsive to the academic future that we plan for ourselves.

Mission Statement². Information technology at Penn State Altoona exists to meet the communication, computing, instruction, and research needs of the faculty, students, and staff of the university. To this end, the college will seek to provide:

- Faculty with computing and information technology sufficient to meet their teaching, research, and service needs.
- Students with information technology that supports their learning in their chosen field of study and prepares them to continue their education within the university and/or enter the workforce.
- Administrators and staff with the technology that is required to support the educational mission of the university.

Stakeholders³ for the Strategic Plan. At the most general level, we can identify four general categories of stakeholders at the university: administrators, faculty, staff, and students (listed alphabetically). For these categories of stakeholders to have real meaning, however, they need to be placed in an organizational setting.

Table 1. Stakeholders for Strategic Planning

Organizational Setting	Admin	Faculty	Staff	Students
Classrooms		First*		First*
Residence Halls			First	First*
Faculty Offices		First		
Computer Labs		First*	First*	First*
Staff Assistant Offices			First	
Library	First	First		First*
Academic Affairs	First	First	First	
Computer Center	First		First	

² A mission statement is a declaration of organizational purpose. In writing such a statement, we need to answer the following questions:

- Who are we? It is important to ask a question about identity in order to help the organization draw a distinction between what it is and what it does (e.g., distinction between a railroad company and a transportation company).
- What are the basic needs information technology at Penn State Altoona exists to address? We need to realize that different stakeholders may have different views.
- How should we respond to our key stakeholders? Force attention on what the stakeholders values and what the organization does, or might do, to provide the stakeholders with what they value.
- What are our philosophy, values, and culture? Premise is that only strategies that are consonant with the philosophy, core values, and culture are likely to succeed.

³ A stakeholder is defined as any person, group, or organization that can place a claim on an organization's attention, resources, or outputs or is affected by that output.

Dean's Office	Second		Second	
Continuing Education	Second		Second	
Development	Second		Second	
Finance	Second		Second	
Athletics	Second		Second	
Admissions	Second		Second	
Business Operations	Second		Second	
University Relations	Second		Second	
Student Affairs	Second		Second	

Ultimately, the plan that is adopted is intended to include the information technology employed by all stakeholders at Penn State Altoona. The initial responsibility of this committee, however, is to focus upon those individuals and activities that directly affect the academic programs of the university, that is, the students and faculty on this campus. Those individuals and organizational settings containing a "first" are the stakeholders for whom this initial plan is intended. Those for whom a "second" has been noted will be the focus of attention once the initial plan is adopted.

Goal. To provide the information technology required by an academic environment in which students of the university are to receive an excellent education; faculty are fully supported in their professional development as teachers, researchers, and providers of service to the community; and staff have the resources to perform their responsibilities.

Benchmarks. In order for us to determine whether or not we have achieved the goals of this planning effort, we need to identify benchmarks we can use assess success or failure. These should include:

1. The information technology available to students, faculty, and staff of Penn State Altoona should be at least equivalent to that available to students, faculty, and staff on the University Park campus of the university.
2. The planning process should become institutionalized in order to withstand changes in personnel yet be sensitive to and responsive to changing needs of the organization and the information technology environment.
3. Those providing technical and managerial support for information technology on this campus should be sufficiently cross-trained in order to withstand changes in personnel without adversely affecting the information technology environment.

Source of the Budget for Which We Are Planning. There are three broad sources of funding that *could* be employed for the plan that we are charged with developing. These are:

- University funds budgeted on an annual basis (01-042-59, 142-44AA, 142-59AA, 632-20AA, and 632-25AA).
- University funds dispersed on a "one-time funding" basis.
- Funds generated through use of the Student Activity Fee (001-02AA)

Special consideration must be given to the uses to which the Student Activity Fees are placed as we must honor a commitment to students to use these moneys in direct support of activities central to their instruction. It would seem that only a limited number of individuals/organizational settings noted in the stakeholder table would be eligible for use of these funds. I have noted with an asterisk stakeholders which would appear to be appropriate candidates for use of these funds.

***Working Paper #2
Information Technology Infrastructure at
Penn State Altoona⁴***

Strategic Planning Committee for Information Technology

Description. The campus network of Penn State Altoona is a series of 10MB/s or 100MB/s ethernet segments in each building connected through either a hub or switch whose purpose is to aggregate network traffic onto a link to the campus backbone, which in turn connects to the rest of Penn State's network through a high speed connection. This backbone consists of three network switches and a Cisco router located in the basement of Port Sky. There are three types of link connecting buildings and the backbone each with different bandwidth capacities and transmission characteristics. A current goal is to match those building with the heaviest network usage with higher capacity connections to the backbone.

The three types of link connecting the building switches to the rest of the campus network are ATM, 10MB/s ethernet and gigabit ethernet. Those buildings connected by 155MB/s ATM links are connected to a main ATM switch which is in turn linked via a 155MB/s ATM connection to a 3Com Switch 1000 which serves as the concentration point for buildings connected by 10MB/s ethernet connections. The 3Com switch is in turn connected to a P880 switch serving as the connection point for those segment of the network connected via gigabit ethernet connections (currently only Smith and CLRC). The P880 is connected via a 10MB/s line to the Cisco 7200 Router which also serves as the connection point for 10MB/s ethernet connections from the campus modems, residence halls, campus wireless and mobile ports and the T1 (1.5MB/s) connection to the Downtown center. The router also serves as the connection point for the T3 (45MB/s) line connecting Altoona to the rest of Penn State's network via University Park. Currently the Penn State Altoona Department of Information Technology (DIT) is upgrading the links to those buildings with the highest demands for network services and recycling the equipment from the previous link to upgrade the connections to other buildings currently with lower speed connections.

Responsibility for the maintenance of the campus network is divided between the Office of Telecommunications (OTC) at University Park and the DIT. All network segments connecting to one of the three switches in Port Sky are maintained by DIT while the router, the connection from the router to the P880 switch and the network segments all directly connecting to the router are maintained by OTC. This division of responsibility is a result of negotiation between OTC and DIT with OTC maintaining some portions of the campus network as a result of contracts with

⁴ The Strategic Planning Committee for Information Technology met with Craig Farrell (Manager of Network and Administrative Systems, Penn State Altoona) for a presentation on the existing infrastructure on this campus. James Kerlin (Director of Education Outreach Services in the Center for Education Technology Services in Computer and Information Systems at University Park) participated in this meeting and addressed the question of the comparability of the infrastructure described for this campus and that found at University Park.

In a subsequent meeting, a draft of this paper (L.A. Wilson II) and commentary on it by Craig Farrell and Victor Brunden formed the basis for discussion. What follows is a product of the Farrell presentation, commentary from Kerlin, Farrell, and Brunsden, and observations of Committee members.

other administrative departments within Penn State (e.g. OTC maintains the residence halls as per their contract with Housing and Food Service).

Assessment. T3 lines are currently the highest capacity connections between campuses in Penn State's statewide network, so the T3 line connecting Altoona College with University Park provides the same level of service enjoyed by the Hershey, Behrend and Harrisburg campuses and is superior to the T1 service received by most of the Commonwealth Colleges. At present, the capacity of this connection is sufficient to handle all network traffic to and from the campus for the next few years.

While link capacity within Altoona College varies between 10MB/s and 1 GB/s, this does not directly translate into comparable variation in service as received by the student, faculty, administrator, or staff end-users. An upper limit on the bandwidth provided to a user is determined by the type of network interface card (NIC) in their computer. The quality of service an end-user enjoys is therefore a function of the NIC in their computer, the type of link from their building to the backbone (as the various types of links aggregate network traffic in different fashions) and the amount of network traffic the link and the campus backbone is currently handling. For example, under certain conditions, a user connected via a 10MB/s ethernet link to the campus network who is the sole user of that link may perceive a level of service comparable to or superior to a user connected via a 155MB/s ATM link who shares the link with a great many other users.

In addition DIT is implementing Virtual Local Area Network (VLAN) technology in the campus network to divide the physical network into smaller networks defined by software configuration. Such an arrangement helps to reduce unnecessary traffic and to speed up connections between machines on campus that frequently must interact with each other. The implementation of this is currently experimental and will proceed as data on network traffic becomes available.

Availability of funding has kept DIT from simply up-grading all links to a 1GB/s capacity. It was observed that this incremental up-grade policy has the salutary affect of protecting the campus from excessive investment in an ever-changing technology. It should also be noted that for some of the buildings on campus, there is insufficient network traffic to warrant installation of a gigabit ethernet connection.

Recommendations. Prior investment in the up-grading of infrastructure technology has been based upon the availability of one-time funds. We recommend a careful assessment of existing and planned investment in this technology so that a prudent level of future funding can be determined. To achieve this assessment, we recommend:

1. The goal of the DIT should be to provide 100 MB switched to each desktop while providing a GIG uplink.
2. DIT should provide this committee with a schematic of each building at Penn State Altoona, identifying the architecture of the existing infrastructure.
3. DIT should provide this committee with use data by which the actual user demand may be assessed.
4. DIT should provide this committee with a detailed plan for the systematic achievement of the 100 MB desktop standard.
5. DIT should provide this committee with cost estimates of the technology called for in this plan and a recommended time table for implementation.

Working Paper #3
Information Technology Laboratories at
Penn State Altoona

Strategic Planning Committee for Information Technology

Description. There are approximately⁵ 26 information technology laboratories (labs) at Penn State Altoona. These vary from open-access labs located in the Computer Center to limited-access and dedicated function labs such as the robotics lab and the nursing lab. Some of these labs have large numbers of computers (e.g., 38 workstations in open-access CLRC) while others have very few computers (e.g., 3 workstations in the nursing lab). Some labs are Windows-based while others make use of Macintosh computers. Some have the latest hardware and software; some have very old machines with out-dated software. See Appendix I for a full listing of the hardware and software currently available in the existing labs.

Labs are generally either dedicated (discipline-specific) or are general purpose. The general purpose labs often have programs and/or materials available on one of the campus servers that can be accessed by remote users in the labs themselves.

Assessment and Discussion. There is considerable variation in the currency of hardware and software available in the various labs at the college. Some of this variation is welcome as some of it reflects the differences in application across disciplines and perspectives of the faculty. Some of this variation, however, reflects a failure to stay current in pedagogically desirable technology. There is no single objective standard by which one can fully identify the variation which is necessary and desirable and that which is to be overcome through careful planning. Instead, we must rely upon the faculty who make use of these resources to identify the hardware/software configurations that make most sense of their specific application.

As noted above, there are also variations in the degree to which the various labs are open or are dedicated to specific disciplines. Factors that have promoted (and will continue to promote) the use of general purpose labs are:

- Licensing issues. Many of the software applications require expensive licenses based upon the number of machines employing the software. In situations where applications are not required in large numbers or are not required to be available only in specific locations, it can be advantageous to have such software available on a central server and made available across the network.
- It distributes the burden of student use of information technology across the campus.
- It encourages student traffic to more remote locations on campus (e.g., the new nursing complex).
- The need for general purpose computing facilities that are available to the campus community in general (this includes students, staff, full time and part-time faculty).

⁵ This number is "approximate" due to the definition of what constitutes an "information technology laboratory." For purposes of this report, an information technology laboratory is defined as a university-owned computer dedicated to the teaching and research needs of students and faculty that is available for use by a class of individuals (e.g., all students, students in nursing, students in a specific drafting class) rather than dedicated to a specific faculty member or student.

Factors that have resulted in the creation of dedicated labs include:

- Many of the applications of information technology require specific configurations of hardware to permit the software to run effectively or efficiently.
- Some labs require the use of additional technology that must be connected to the computers. Examples of these applications are found in the robotics and nursing labs.
- The existence of a dedicated lab provides a focal point for the identity of some disciplines.
- Many software applications do not permit deployment from a central application server.
- Pedagogical considerations place a premium on students being able to work together in one location.
- The bandwidth consumed by serving out applications across the network from a central server is quite substantial and defeats the objective of providing high-speed internet access to desktop machines.

There do not appear to be common standards for the deployment of IT hardware in the various labs across the campus. In particular, there do not appear to be standard configuration of hardware and software within lab classrooms, let alone across lab classrooms intended to support similar disciplines. It is also not clear that there is a match in the disk drive capacities of instructor and student computers.

In the past, funding for information technology needs has come principally from general purpose funds—the university’s budget. During the past three years, for instance, there has only been one request for external funds that has brought equipment for general classroom or laboratory use to this campus.⁶ In the future, we believe that the faculty will need to take a more active role in seeking funding for laboratory use.

We recognize that it is not always easy to make a distinction between information technology (generally defined here in terms of hardware, software, and connectivity issues) and terminal equipment and technology (instruments to which information technology may be connected). Both may be based upon digital technology. However, it is the view of this committee that a shared responsibility exists for obtaining the funds required to purchase terminal equipment and technology.

Current university policy does not charge F&A (indirect) against equipment costing more than \$5,000 and having a useful life greater than two years. As a result, there is no return of indirect that could be used to entice faculty (or others) to write proposals that will have general benefit to the university (rather than specific benefit to the faculty member).

Recommendations. The recommendations listed below reflect the deliberation of this committee with the invited participation of those faculty who make greatest use of the lab facilities. The intention of the committee is that the following policies provide guidance in the future development of all information technology laboratories at Penn State Altoona.

1. The decision about whether a lab is real or virtual shall be determined by the faculty

⁶ This was a NSF-funded project in which approximately \$60,000 worth of equipment was purchased for the physics lab.

of the program(s) whose teaching the lab is intended to support in consultation with the respective Division Head(s) and academic administrator(s).⁷

2. The decision about whether a lab is open or closed shall be determined by the faculty of the program(s) whose teaching the lab is intended to support in consultation with the respective division head(s) and academic administrator(s).
3. It shall be the responsibility of the faculty, programs, and divisions to identify the technology required for the instructional use of information technology laboratories. The computer center staff should be consulted during the deliberation about appropriate technology but it is the choice of the faculty, programs, and divisions involved whose preferences should be honored. In addition:
 - A minimum standard configuration of hardware (including disk drives) and software should be established within lab classrooms that insures that the instructor and all students have access to common platforms.
 - A standard configuration of hardware (including disk drives) and software should be established across lab classrooms that are intended to support similar disciplines.
 - Disk drive capacity of instructor and student computers must match the pedagogical demands of the disciplines using the teaching labs.

Appendix 3-I provides a description of currently available technology in each of the IT laboratories. There is also presented an up-date on the acquisition of zip drives for the labs and a replacement plan that had been suggested some time ago.

4. In the event that a program faculty (or program faculties in the case of shared facilities) is unable to arrive at an agreement over issues surrounding the establishment and maintenance of a teaching lab, the affected Division Head(s), in consultation with the program faculty and the academic administrators, will be responsible for making the decision.
5. General funds, external grant requests written by faculty, and gifts should all be viewed as sources of support for the acquisition of terminal equipment and technology.
6. A system of incentives should be developed to encourage faculty and staff to prepare requests for external funding for the acquisition of technology that will be placed in classroom or laboratory settings in support of our instructional mission.
7. Altoona College policy currently states that 9% of the 10% of returned indirect⁸ should be available to the investigator(s) preparing a proposal. This committee recommends accrual of the remaining 1% in a fund that could be employed in developing an incentive system designed to reward those who successfully apply for external awards that seek to purchase equipment or otherwise benefit academic programs rather than individual teaching, research, or service activities.

⁷ There are three academic administrators on this campus: the Dean, Associate Dean, and Assistant Dean.

⁸ Indirect is only charged on proposals that are submitted somewhere outside of the university. Return of indirect is only experienced when the full indirect rate is charged.

Working Paper #4
Information Technology Classrooms at
Penn State Altoona

Strategic Planning Committee for Information Technology

Description. According to the Registrar's Office (see Appendix 4-I), among our total of 54 classrooms, there are currently nine technology classrooms at Penn State Altoona. The conversion of Cypress 111 to academic instructional use and the planned development of Holt 109 as a technology classroom will bring that number to 11 for the 2001-2002 academic year. According to the Registrar, the following are technology classrooms:

- Cypress 109
- Cypress 110
- Cypress 111 (expected conversion to academic instruction)
- Cypress 112
- Cypress 113
- Eiche 129
- Eiche 131
- Force 207
- Holt 109 (planned development as technology classroom)
- Science 117
- Smith 102C

In addition to this number, Instructional Services report three other classrooms to be technology classrooms:

- CLRC 165
- Force 208
- Holt 202

The Registrar's Office considers these latter three classrooms to be computer or information technology laboratories. In addition to these latter three laboratories, the Registrar's Office identifies another six computer or information technology labs: Holt 202, Holt 203, Holt 204, Arts 115, CLRC 201, CLRC 202, and CLRC 203.

A technology classroom is defined, for purposes of this report, as a classroom in which the following resident technology is available:

- Wired for access to the internet
- Computer
- External disk device
- Data/video projector
- A switching device permitting faculty to make use of laptop computers

It should be noted that these classrooms are also used as general purpose classrooms by faculty not taking advantage of the technology.

To supplement the 13 technology classrooms, there are four "technology carts" that can be installed in virtually all other classrooms⁹. These carts are equipped with a laptop computer with network card and a data/video projector.

Of the twelve "technology classrooms" as defined by Instructional Services, 12 are Windows-based, none are Macintosh-based, and one has both platforms available.

Assessment. There are some minor problems associated with faculty use of the technology classrooms—problems that could probably be addressed through more complete documentation for use by faculty—but the technology itself appears to be current and generally adequate. There has been some concern expressed about the availability of switches that would permit faculty employing Macintosh computers to more easily make use of these classrooms.

The more difficult question has to do with the desirable number of technology classrooms that should exist on the campus. While there is agreement that all classrooms should have internet access, it is not clear whether every classroom should have a full complement of technology permanently installed in it. At approximately \$21,000 per technology classroom (including the cost of a dedicated computer), a more desirable and cost-effective alternative may be to emphasize the use of the technology cart and episodic classroom installation. However, due to the movement implicit in cart technology, this approach may result in higher maintenance and replacement costs than that associated with a fixed installation.

Presently, a technology cart can only serve one classroom per day. This limitation arises from the time that is required to configure the computer for a specific faculty member's needs and the installation of the cart in a specific classroom. With currently available staff, there simply is not enough time between classes to permit Instructional Services staff to install the technology cart for a class.

Recommendations. The following recommendations have arisen from the deliberations of the committee:

1. All classrooms on campus should be wired to permit Internet access by faculty.
2. All faculty should be guaranteed access to the technology required to support their instruction. This criterion may be met through some mix of fully supported technology classrooms and technology carts. The mix of technology classrooms/technology carts that is required should be determined through a survey of the pedagogical needs of the faculty.
3. In determining the pedagogical needs of the faculty, we need to recognize that a substantial portion of the demand for technology arises from the students and their needs to make classroom presentations.
4. We should distinguish between several levels of use in estimating the demand for technology. Among these are:
 - Faculty who have fully integrated technology into their teaching. "Fully integrated" is taken to mean that a faculty member uses technology in each day's teaching. This may range from the regular use of Powerpoint presentations to analytical or simulation programs.

⁹ Currently, the Birch complex is not fully wired for Internet access. This summer, a wireless system is being installed which will permit Internet access from those classrooms.

- Faculty who would fully integrate technology into their teaching if they knew for certain that they would have access to the necessary technology in their future teaching of classes in which they integrated the technology.
- Faculty who make episodic use of technology in their teaching. Examples of this level of use would be occasional demonstrations of applications during teaching.
- Episodic use of technology by students. Examples of this would be found in the presentation of reports or projects.

A desirable mix of technology classrooms/technology carts must take these various types of demand into consideration.

5. Given the substantial cost associated with fully equipped technology classrooms, we should consider a variety of technology solutions. These could include a combination of:
 - Full technology classrooms. Equipped with fixed installation of computer, disk drive, data projector, and switching device. Typically installed with a podium.
 - Partial technology equipped classrooms. A permanent installation of a data projector with accommodations for faculty installation of laptop computer (personal or departmental).
 - Technological accessible classrooms. These classrooms are fully wired for Internet access. Our understanding is that nearly every permanent classroom on campus meets this standard.

Working Paper #5
Faculty Office Computing at
Penn State Altoona

Strategic Planning Committee for Information Technology

Description. Every full-time faculty member at Penn State Altoona who wants a computer to support his or her teaching, research, and/or service has one. There are 131 Windows and 45 Mac computers among the faculty. The kind and capacity of the computer on a faculty member's desk varies widely, however: some faculty have currently available technology while others have technology that is as much as six years old.

Assessment. The staff of the computer center has done an excellent job of dealing with faculty requests and have attempted to address equity and distributional issues associated with an ad hoc and demand-driven allocation system. The committee commends them for their laudable efforts on behalf of the university community. However, there are important equity issues associated with the current distribution of computing resources in faculty offices.

There are elements of the current system—particularly the emphasis that has been placed upon satisfying discrete and diverse faculty requests—that should be continued in the future. It is unfair, however, to place the staff of the computer center in the position of distinguishing between a reasonable request and one that is unfair, unreasonable, and/or exploitive. For this reason, we believe that the current system is in need of the remedial changes recommended below.

The committee recognizes that the rapid evolution of both computer hardware and software makes benchmarking a desirable configuration for faculty computers very difficult. In on-going consultation with the staff of the computer center and knowledgeable faculty, this committee with endeavor to stay abreast of changes in technology which require revision in the definition of a standard configuration.

Recommendations. The following recommendations have arisen from the deliberations of the committee:

1. A faculty computing account should be created which funds the acquisition (both initial and replacement/upgrade) of computers to be placed in faculty offices. This is the fund that computer center staff should routinely use when dealing with faculty computing.

In consultation with this committee, computer center staff should identify a configuration of a computer that is expected to meet the computing needs of most faculty at Penn State Altoona.

2. A second account, under the direction of the division heads, should be established to fund requests for technology which exceed the standard configuration noted in point 1.
3. Upon the third anniversary of their current desk-top computer, every faculty member will be eligible to be considered for purchase of a new one. This new computer will be expected to meet the most current standard configuration.
4. Should faculty, in consultation with the computer center staff and division head, decide that a different hardware configuration better meets their computing needs, an attempt

will be made to accommodate their preferences within the constraints of the cost of the standard configuration. If the desired hardware exceeds the cost of the prevailing standard and if the division head agrees with the additional request, the division head can authorize expenditure of a separate fund under the direction of the division head.

5. Requests for second computers (typically a laptop) and most peripherals will be evaluated by respective division heads and funded through the account under division head control.
6. The Information Technology Committee (ITC) of the Faculty Senate may be called upon for technical advice and recommendation should disagreements arise between a faculty member and a division head concerning either the configuration of a faculty computer or the acquisition of a second computer or peripheral equipment.

Working Paper #6
Administrative Computing at
Penn State Altoona

Strategic Planning Committee for Information Technology

Description. When Penn State Altoona became a college in 1997, budget authority was given to the manager of each of the administrative departments of the college. These departments include: Academic Affairs, Business Services, Finance, Continuing Education, Student Affairs, Admissions, Athletics, Development, and University Relations. A lump sum budget was given to each of these managers, one element of which was to be devoted to their computing needs. In speaking with these various managers, it has become clear that the amount of money devoted to meeting the computing needs of a department has varied substantially from year to year, depending upon competing claims upon the budget and significance of the need to replace, expand, or supplement computing resources. In the words of one manager, in one year they may need to purchase more paper for the photocopying machine while in another they can devote this money to purchasing a computer, peripherals, or other equipment.

Challenges to Planning. There are at least two elements of this organization of administrative computing that make preparation of a strategic plan for administrative computing a particularly difficult task. First, the lack of a line item for computing in departmental budgets makes it difficult to track expenses over time and to view the budget as an expression of the policy of a department. Second, in the case of small departments with few computers we encounter a variety of problems associated with small numbers: there is little stability or predictability in funds associated with computing from year to year.

However, taken together, the number of computers assigned to administrative staff (271) substantially exceeds those assigned to faculty (190) of the college. An up-dated inventory of academic and administrative computers shows somewhat similar profiles: 85% of faculty computers have been purchased since January 1998 while 90% of administrative computers have been purchased since that date.¹⁰ Some 26% of faculty computers have been purchased or ordered during 2001 while 25% of administrative computers have been purchased or ordered in this same year. The largest discrepancy exists in 2000 where substantially more computers were

Year	Academic Computers	Administrative Computers
2001	47 26%	65 25%
2000	44 25%	89 34%
1999	35 20%	45 17%
1998	25 14%	38 14%
1997	20 11%	20 8%
1996	8 4%	7 3%

¹⁰ Amy Uliano has provided a relatively current inventory of academic and administrative computers which I have up-dated to reflect all purchased and ordered computers as of November 13, 2001.

ordered for the administration than for the faculty. Otherwise, the pattern of purchase appears to be relatively comparable for academic and administrative computing.

Assessment. The staff of the computer center typically consults with administrative managers to identify their computer needs. This part of the system seems to be working quite effectively.

A review of the computing resources currently available to administrative staff appear to be equal to or superior to those currently available to the faculty. Consequently, we believe that an adequate amount of funding exists within the administrative departments to meet their existing computer needs.

Recommendations. The following recommendations have arisen from the deliberations of the committee:

1. A cost center devoted to administrative computing should be created within each administrative department of the college. This strategy will retain the discretion of budget managers but also permit the future documentation of each department's expenditures on computers.
2. Each department should anticipate that future computing needs will be accommodated through their current budget¹¹. It has become a truism of information technology that the same amount of money provides significantly greater computer power in future purchases.
3. Only extraordinary changes in computing environments should give rise to justification of one-time funding for information technology. Routine and predictable demands for administrative computing should be excluded from requests for one-time funding.
4. Future hires of administrative staff should incorporate the cost of a new computer in conceptualizing the cost of new positions.
5. Department managers should use the same three to four year replacement cycle used for academic computing in decisions to up-grade computers.

¹¹ One budget manager acknowledged using funds originally intended for computing to meet student demands for additional services. The recommendation of this committee is that this department should make a request to the dean for an adjustment in permanent budget justified in terms of the demands for services rather than computer needs.