VELGA B. STOKES

Assistant Manager
Computing and Information Technology Information Centers
Princeton University
Princeton, New Jersey

Linking Academic Systems with the Community: Current Activities at Princeton

INTRODUCTION

The fabled ivory towers of our storied past have crumbled, deservedly, I think, into dust. Today's colleges and universities are involved citizens in the lives of their communities. The institution as a whole and its individual members participate in community activities and support community needs. In Princeton, New Jersey, Princeton University too is viewed as having an important role in the surrounding community.

To set the scene, let me provide a few brief facts, as listed in the university's publication *A Princeton Profile:*

> Chartered in 1746 as the College of New Jersey, Princeton was British North America's fourth college. First located in Elizabeth, then in Newark, the College moved to Princeton (approximately 55 miles from New York City and 45 miles from Philadelphia) in 1756.
> The College was officially renamed Princeton University in 1896; the Graduate School was established in 1901.
> Fully coeducational since 1969, Princeton enrolls about 6,200 students (4,550 undergraduates and 1,650 graduate students).
> Today, Princeton's main campus consists of more than 5.5 million square feet of space in 135 buildings on 600 acres. The University's nearby James Forrestal Campus consists of a million square feet of space in four building complexes on 340 acres.
> The Borough and Township of Princeton in New Jersey's Mercer County have a combined population of 30,000. The University employs about 4,660 people, including approximately 900 faculty members. It is the largest private employer in Mercer County.

Though not a public institution, Princeton has always been very involved in the community. By virtue of its location in a relatively small community, Princeton is a major employer and, unavoidably, an influential resident. To support our community relations efforts, we have an Office of State and Regional Affairs that maintains contacts and works on issues of common interest with

our local borough and township communities, as well as with the state government and regional area groups. In addition to the centralized community contacts, many groups and individuals within the university work with the local community in a wide variety of ways. The Office of Computing and Information Technology attempts to play a part too, and it is that connection to the community that this paper will discuss first.

OFFICE OF COMPUTING AND INFORMATION TECHNOLOGY

Princeton's present Office of Computing and Information Technology came into being six years ago, in October 1986, when Ira Fuchs was appointed to the newly established position of Vice President for Computing and Information Technology. CIT, as it has come to be known, provides support to the entire university community, for both administrative and academic work, without infringing on the academic mission of the Department of Computer Science. As part of its computing-related responsibilities, CIT provides IBM mainframe-, UNIX-, PC-, and Mac-based computing resources; a campus network that reaches all buildings on the main campus and several off-campus sites; access to both BITNET and the Internet; and dial-out capability to other networks. Our support services include hardware installation and repair, consulting, documentation, training, local area network maintenance, programming, and software and hardware testing—a fairly full array of services designed to meet the university's needs. (Just for completeness, I will note that a number of noncomputing-related university services are also provided by CIT, for example, the telephone system, printing and mailing, campus video, the language lab.)

Before CIT, some similar functions were performed by an entity called the Computer Center, which named not only a building but also the staff within it. Our efforts to link to the community go back to the time of the Computer Center, when the Computer Center Education Series presented classes on computing topics. The topics of interest in those days were things like keypunching and Fortran and assembly language programming; the classes were open to all, and members of the community were frequent attendees. The classes were scheduled in the evening, after normal working hours, and we often found that university neighbors outnumbered university staff in the classes.

Our transformation from the "Computer Center" to "Computing and Information Technology" coincided with the computing revolution that removed computing from the esoteric realm of assembly language programmers running jobs on mysterious mainframes and placed it in the hands—and job descriptions—of nearly everyone on campus. As the university's computing needs changed, the jobs of the computing support staff changed, and some aspects of our interaction with the community changed as well.

The old, casual, all-welcome evening computing classes were among the first to undergo a change. With computing now part of everyone's job description, CIT staff had to focus their educational efforts on the suddenly greatly expanded needs of the rest of the university to learn how to use word processing, spreadsheets, and databases. Our evening lectures became daytime hands-on workshops, and the demand among university staff for this training

was so high that workshops were limited to university faculty, staff, and students. Some non-hands-on lectures continued to be given and were open to all, but they too frequently focused on more specifically university job-related tasks—administering Novell networks, for example—and were thus of less interest to the general community.

We do, however, participate with other university departments in sponsoring special lectures on computing topics by well-known "players" in the computing field, both academic and commercial, and we have had good community interest in a number of these events in recent years.

Several computing "users' groups" flourish on the Princeton campus, most with the lively involvement of both university staff and local community members. While CIT provides no financial assistance to the activities of the groups, the cooperation of our staff and townspeople in an activity of common interest benefits us all.

We host visits from community groups and from conference groups meeting in the Princeton area. Businesspeople are interested in everything from general computing topics to very specific items related to their field, and when appropriate, we try to put them in touch with university academic departments and resources.

In addition to striving to maintain personal contact, our community outreach efforts focus on facilitating access to electronic communication and information sharing.

PRINCETON NEWS NETWORK

Since 1989, CIT staff have maintained a campus-wide information system (CWIS) called PNN, the Princeton News Network. Most, but importantly not all, of the information provided by PNN is Princeton University information covering campus events and activities, office and department listings, curriculum and course information, library information, university policies and procedures, and university employment listings. PNN is available in a public, non-logged-on format to anyone who can access the system, while dial-in access to the public version is also available. Some items of information, for example campus addresses, are not available on public PNN for legal reasons, nor is printing, but all other PNN information is available to anyone.

One of the main menu categories in PNN is "Travel and Visitor Information." Among the documents available—and these are among our important nonuniversity documents—are train schedules to New York, airport transportation schedules, airline toll-free telephone numbers, and directions for traveling to Princeton. For community members and visitors (and no doubt university members as well), the online version of the university's publication *Campus: A Guide to Princeton University* provides information about the university and its facilities, as well as a history of the town.

Among the most widely read items on PNN is the university's events calendar. The calendar is compiled for the university's newsletter, the *Princeton Weekly Bulletin* (the PWB for short), which is published weekly when classes are in session; its calendar is the closest thing we have to a complete university

events calendar. Whenever the calendar is published, an electronic version is sent to PNN and posted there. Usually the electronic calendar is available at least a day before paper copies have reached their destinations. The PWB is available in paper form at the Princeton community public library, and at least once every semester free copies are sent to addresses in the community (paid subscriptions are also available). For those community members who can reach the university network, the electronic calendar provides quickly and easily accessed information about university events. Most university events are open to the public, and community attendance is encouraged; the PWB calendar clearly marks those events that are not open to the public, as well as those events—concerts and football games, for example—that require the purchase of tickets. In addition to the weekly university calendar, PNN includes weekly and semester calendars from a variety of other university departments and organizations. For example, the Woodrow Wilson School of Public and International Affairs, which sponsors many lectures on topics of public interest, publishes a calendar of its events for the semester. The monthly schedules for the drama, music, and dance programs at our McCarter Theatre are also available.

The community newspapers that serve Princeton, New Jersey, do not appear daily. One is published as a weekly; the other appears twice a week. The university's newsletter appears weekly, except during summer recess and university break periods. As a result, the timeliness of PNN is much appreciated by readers who can use the system to see announcements of changes and cancellations that occur after paper publications have gone to press.

The local community (as well as the university community) is also an interested reader of the university's employment listing. Like the calendar, this listing of available jobs also appears in printed form in the PWB. The PNN version, however, is usually more current, since it does not have to meet the week-ahead deadline of the printed publication. It also includes all jobs available (the printed version, if space is tight, omits older job listings), and it provides more complete job descriptions than can be accommodated in the printed version. In addition, while the PWB version appears only when the newsletter is published (only once for all the summer months, for example), the PNN version is updated every week and is an especially valuable resource for community members interested in jobs at the university.

FUTURE DEVELOPMENTS

While we feel that PNN has been an extremely useful system for both the university community and the broader Princeton community, we are now actively engaged in moving toward a more global CWIS that is based, for the present, on the implementation of appropriate Gopher clients and servers. As this paper is being written, work on the project has just begun, and I expect that notable changes will occur by the time the paper is published. Several guiding principles have already been established, however, and they are worth mentioning in the context of this discussion.

It is our intent to continue making our CWIS freely and widely accessible, so that those who have been able to read information on PNN will continue

to be able to do so via any vehicle selected as the technology evolves. The information currently provided in PNN will continue to be included in our new CWIS, which is at present Gopher-based. We also plan to encourage other university departments and groups to establish their own Gopher servers, so that a broader range of university information can be made available to all. We are holding discussions, for example, with the university's Office of Publications/Communications, to see how we might facilitate inclusion of a greater number of university publications in Gopher. And of course Gopher's ability to reach online information resources around the world will extend access globally.

Another resource that is currently widely used, the university library's online catalog, with records of all library acquisitions since 1980, is available without logged-on access, as are a number of other university library-provided indexes and catalogs. For example, anyone can look at the Center for Research Libraries catalog; the Princeton data library catalog; the Early American imprints catalog; the monthly catalog of U.S. government publications; current serials about Latin America, Spain, and Portugal; and Princeton University manuscripts, archives, and special collections.

In addition, the library is experimenting with a "gateway" implementation that would provide access not only to the catalogs and indexes, but also to other library resources, including the circulation database to allow networked users to check whether a specific book is in the library or out on loan. As our plans for the transition to Gopher mature, we hope to include the library's gateway in Gopher, thus making it even more widely available to both the university and the local community.

With the expansion of online information resources, Princeton is facing the paradoxical need to limit access to some of the resources. I have mentioned that we already deny access to campus phone book information on public PNN; as we move to Gopher, limitations on this information must continue. It may be possible, for example, to provide office telephone numbers for staff or e-mail address information for everyone, but student dorm address and phone number information can be available only to identified (that is, logged-in with university accounts and passwords) members of the university community. Other kinds of information are restricted by contractual agreements: we make Clarinet news available only to the university community, and, similarly, several library indexes are contractually restricted to the university community. And, of course, an overriding security consideration is the National Science Foundation's prohibition on anonymous access to the Internet, so that our implementation of access to online information resources must be strictly controlled to allow, for the public, "read only" access, without the ability to "do" anything else. With PNN, for example, anonymous users cannot print information, save it in a file, or send it to anyone else—any of these actions would require an opening in the tightly closed "box" that public PNN runs in, and would endanger system security.

K-12 OUTREACH

A second major community outreach area involves the local schools. The university supports K-12 education in a variety of ways; some of the more visible

include presenting Outstanding Teacher awards every year at our commencement, hosting conferences for teachers, sponsoring essay contests among area schools, and allowing high school student participation in university classes.

CIT frequently hosts visits by classes ranging from first graders to high schoolers. Even first graders, of course, are now experienced with computers (many in the Princeton community say they have computers at home), and they enjoy our demonstrations of exchanging e-mail with colleagues in California, and making artistic masterpieces with MacDraw, and going home with an instant newsletter describing their visit—complete with a digitized photograph of the visitors. High schoolers have a different interest, and frequently want to hear about what careers are available in the computing field. We cheerfully devote time to such visits because we feel that familiarity with computing is essential to the future of all those in school today; the responses of our visitors indicate students are increasingly exposed to and comfortable with computers—and they are pleased to learn more about what computers can do.

Our summers frequently include some more formal school contact efforts, with seminars sponsored by various organizations and agencies as well as special summer classes for small student groups.

The most recent of our information-sharing projects has been our work to provide Internet access to the Princeton Regional Schools (PRS). Begun in response to National Science Foundation efforts to broaden the availability of databases on the network not only to colleges but also to elementary and high schools, the project has been encouraged by the Vice President for Computing and Information Technology, Ira Fuchs, and has been supported by a variety of CIT groups working cooperatively with an enthusiastic group from the PRS system. JvNCnet, at the time a part of CIT and now an independent network service provider, had connected several school districts in New Jersey and Connecticut, and was instrumental in providing the network connection for PRS. CIT's Network Systems group was involved in establishing the connection. Our Advanced Applications and Technology group provided space on one of their machines and set up special disks and folders for teachers and students to make Internet access and resource use quick and easy.

When the PRS project was first suggested, some CIT staff expected that contact with the university community would be the goal of the teachers and students. In practice, however, we have found that teachers and students at all levels are most interested in communicating with their peers. For this reason, the access to e-mail provided by the project is a major benefit for the schools. Teachers discuss issues of common interest with other teachers; students find electronic pen pals in distant schools.

In response to our better understanding of what the PRS project participants really wanted to do, CIT staff provided software and instruction enabling teachers to easily access Netnews—focusing on the K-12 discussion groups of particular interest to them. The instructions also identified "Interesting Places" (Rutgers University Info, for example, and the Library of Congress), as well as the Princeton information in PNN and the wide world of information that becomes accessible with Gopher.

The coordinator of the PRS project praises CIT assistance especially for getting teachers started with the right software and pointing them toward some of the more interesting materials available over the network. Our making e-mail accounts available on one of our machines until PRS had appropriate equipment in-house has also earned the gratitude of those involved in the project. At present, teachers and students are actively using Internet resources on 35 new Macintosh systems received as a grant from the state; a recent workshop for staff on using the Internet included 30 teachers but unfortunately was not able to accommodate many more who wanted to attend. PRS now has a Gopher, FTP server, SMTP mail service, and may have a Chat server. The mail server handles more than 100 active accounts including those belonging to teachers and students, with more added weekly.

Several CIT staff are still actively working with PRS. Discussions are being held about the establishment of a Gopher users' group that would include both university and PRS members.

A couple of unexpected developments have followed our work with the PRS project: a Princeton University student is writing her senior thesis on the use of the Internet as a K-12 learning tool, and the Educational Testing Service (ETS), a locally situated but internationally known institution, has become interested in what PRS is doing. In addition, PRS is still researching possible grant funding to expand Internet access to homework centers that are being set up around town. Thus, while the project has made significant progress in the course of less than a year, it is still in the beginning stages when we consider possible future enhancement and expansion. We at CIT will do what we can to aid its growth and development.

CONCLUSION

As we consider the variety of our community contact efforts, we see that our intended goal is always the sharing of information. For centuries, information was stored in isolated treasure houses—frequently those mythic ivory towers of academe. The keepers of the treasure allowed access to very few. We are now at the very edge of a new age that is using technology to build information roads and bridges and to open doors (on sometimes rusty hinges) to make the information that is gathered and safeguarded by the few available to all. Our efforts now represent the first small steps along the paths that will widen into new information highways. We cannot yet foresee the new landscape that will result from the electronic web that has begun to cover the world. But we know that the present is the result of past revolutions, and this beginning technological revolution in information sharing will shape the future as forcefully as the printed word and television have shaped the present.