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Spring 2002
Welcome to the Spring 2002 edition of Connect!

As you will discover while reading this issue, the past six months have been a productive time for information technology at NYU. Software upgrades, enhanced resources, website redesigns, teaching and technology, and new arts technologies are just a few of the exciting topics addressed by this issue’s contributors. As always, we are proud that Connect is able to serve as a showcase for the many achievements of our talented community members.

As a side note, ITS is currently in the process of redesigning its main website (www.nyu.edu/its/). Interested Connect readers can help us by completing our online questionnaire at www.nyu.edu/its/, or by participating in our upcoming usability studies. To join these studies, please contact the ITS Publications Group at its.pubs@nyu.edu.

Have a safe and happy summer!

About Connect

Connect: Information Technology at NYU is edited and published by New York University’s Information Technology Services (ITS). Its scope includes information about computing, networking and telecommunications across NYU’s various schools, departments and administrative units, as well as developments in information technology outside the University.

Copies of Connect are available at the ITS Faculty Technology Center, the ITS computer labs, the ITS Client Services Center, the NYU Information Center and most graduate school offices. Copies are mailed to full-time University faculty, staff and researchers, based on mailing lists administered by the Human Resources Division.

If you are a full-time faculty member and do not receive a copy, please notify your dean’s office; full-time staff should notify their human resources representative. If you are not among these groups but would like a free subscription, send e-mail to its.connect@nyu.edu.

We welcome your comments about the articles in this issue, as well as suggestions for future issues. Contributions are invited for consideration by the editor.

Opinions expressed in the articles in this publication are those of the authors and not necessarily those of Information Technology Services or of New York University.
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Connect: Information Technology at NYU
Creating a collaborative environment in our university classrooms is not a new idea. From the birth of the modern educational system, educators and scholars have been actively looking for ways to transform teaching and learning from a solitary, individual-based endeavor into a productive, collective experience. The growth of the Web over the past decade, however, has placed new stock in the concept of collaboration. What tool could be more powerful for facilitating collaboration among students, instructors and scholars than a networked medium that, by design, is hybrid and participatory? And indeed, what skills could be more valuable in the present information economy than the ability to share information among a community of peers across time and space? These features of the Web have made it a popular tool for educators and scholars alike and have spawned renewed interest in the use of collaboration to enhance pedagogy.

Over the past year, the technology specialists at the ITS Faculty Technology Center (FTC)—Keith Adams, Richard Malenitza, Ethan Ehrenberg and I—have been working with instructors, faculty and scholars to promote the use of web-based technologies in teaching and learning. In the course of our work, the theme of using the Web to enhance collaboration has been a constant. As we have learned, however, the meaning of collaboration changes substantially from project to project.

While the use of web-based technologies often culminates in a course website or the hosting of a live chat online, to call these ostensibly similar results the same would be misleading. The form of the collaboration, the use of technology, and the degree of integration into the educational curriculum determine, to a large extent, the success or failure of an educational project. A whole set of intangibles drives the collaborative process; the use of web-based technologies often serves to highlight this fact.

In my own experience, integrating technology into a broader pedagogical process lies at the forefront of any discussion of teaching and technology. While I do not claim to have any definitive answers as to the best way to go about doing this, the approaches developed by projects supported by the Faculty Technology Center have addressed many of the issues raised by the use of web technologies in higher education. One example that I would like to discuss in detail here is a recent project pursued in collaboration with Dr. Kathleen Hull, an NYU instructor.

Dr. Hull’s project demonstrates the potential of rethinking collaboration in the classroom through the use of technology and supports recent research in higher education which claims that certain types of collaborative projects can produce powerful learning experiences for students. These collaborations challenge students to rethink the nature of the individual and of the collective and, in so doing, to consider how the full realization of an idea often depends on a supportive community or a social continuity of thought—a lesson that is particularly valuable at a research university such as NYU.

This past spring, Dr. Kathleen Hull presented a proposal to the Faculty Technology Center staff for her undergraduate course, “Utopian Thought of the 19th and 20th Centuries: the Search for an Ideal Society in the West.” She wanted to create a course website in collaboration with her students that would be an online Utopia, modeled after a series of micro nation websites...
mentioned in a report on cyber culture in the *New York Times*.

Dr. Hull wanted to take the idea of an online Utopia further and to adopt it for pedagogical purposes, but was uncertain of how to proceed while also preserving the course's original focus on the critical analysis of primary texts in Utopian thought. Could shifting the course focus from the traditional academic format of reading, writing and discussion to the collective production of an online space enhance the learning process? Furthermore, could students be trained to produce scholarly work in a medium other than the conventional thesis paper? What set of skills would students and instructors need to gain, and would the time and energy dedicated to gaining these skills come at the expense of more traditional academic activities?

In our initial conversations, Keith Adams and I assured Dr. Hull that building a website was feasible, but warned her that the hard part would be integrating it into the curriculum. After considering various options, we agreed that the finished website would be secondary in importance to the process of developing it.

Indeed, the idea of ‘process’ became the organizing principle of much of our future discussions. What could be a better illustration of the problems and possibilities of Utopian thinking than challenging students to engage with Utopian ideals and to struggle with implementing them in a group setting? The production of the website could serve as an important vehicle for this activity.

For our part, we would try to find ways to document our activities in order to better reflect on the project’s successes and failures and to develop a more formal understanding of collaboration in the educational process. Students would be asked to do the same as they devised a method for working together to produce the online Utopia.

The course readings, discussions and assignments would allow students to gain a broader understanding of Utopian thought throughout history and would inform their own class project. Together, academic and production-oriented activities would complement each other. Students would be asked to make arguments to the group for their vision of the online Utopia, predicated on the broader context of Utopian visions for collaboration and society building presented in the course readings.

Once the course structure was agreed upon, we were able to advise Dr. Hull on the possible avenues for pursuing her project. The course was organized around traditional classroom sessions and a series of lab sessions. The lab sessions would allow students to have direct access to multimedia software as well as an opportunity to share any computer-based work with their peers.

The website would tentatively be produced without course management software so as to allow students and Dr. Hull the most amount of flexibility to implement their vision. It would also be a publicly accessible site. This decision was based on Dr. Hull’s hope that the promise of publicity would motivate students to produce stronger academic work and create a public resource to further the academic study of Utopian thought. In addition, she wanted to take the class’ scholarly activities out into the public sphere. The public nature of the Web might, she hoped, make the issues of social criticism inherent in Utopian thought relevant to communities outside the University.

As the course progressed through the fall, we conducted a set of mid-semester video interviews with students. Our aim in doing this was two-fold. First, we hoped to use video as a focusing tool to review student reactions to collaborating on the website. Second, we also thought that, given student interest, the interview could be incorporated into the online Utopia.

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*Fig. 1 A vision of Utopia from Dr. Hull’s course: “Utopian Thought of the 19th and 20th Centuries.”*
Unfortunately, the students’ fascination with appearing on video took precedence over thoughtful, scholarly discussion. The positive result of the video interviews was a re-evaluation of the nature of the writing assignments planned for the course. We realized that the undergraduate students needed more narrowly defined assignments to force them to support their ideas about Utopia-building with more careful analysis of the thinking behind their own ideas in relation to classic Utopian texts. Furthermore, we began discussing other instructional opportunities for the use of video, including the notion of giving students an assignment to establish a script for a video essay.

Dr. Hull’s on-going attempts to reflexively document the collaborative process has allowed us to begin constructing a dynamic model for improving course pedagogy through reasoned feedback and managed reflection. In an example of this process at work, Dr. Hull was able to note that although lab sessions were initially effective in helping the students become familiar with NYU resources for multimedia production, they became less useful as the course progressed. She realized that class time provided valuable structure and focus for student interactions, but that the less formal framework of the lab sessions would be better utilized as an opportunity for students to pursue more focused and individualized work.

The course has raised new questions surrounding the use of web-based technologies to encourage classroom collaboration. While instructors have a long tradition of teaching analytical skills in response to older media forms like literary text, they have virtually no precedents for doing this in response to web-based media.

Dr. Hull’s ongoing documentation and reflection of the Utopia course’s development has forced us to consider the types of critical skills students need to develop with respect to web-based media. As a result, Dr. Hull devised an assignment in which students are asked to compare two websites on Utopian themes and to consciously think about what criteria would make this comparison possible. For example, what are the various genres of Utopias on the Web, and how can they best be evaluated from a scholarly perspective?

In terms of the collaborative process, students in the course had very little experience in thinking analytically about working with others to produce knowledge. In the classroom, students with more web production experience have, at times, taken charge of the process. Their experience, no doubt, benefits the class but, at the same time, restricts the development of a more group-based perspective on the design and production process.

Indeed, not all forms of collaboration are the same. If Dr. Hull’s course on Utopian thought provides any indication, people throughout the ages have had visions for the ideal society that have informed the many ways in which they have worked together and used technology. While far from conclusive, Dr. Hull’s experiment with producing an online Utopia provides a dynamic model for web-based collaboration in undergraduate education.

To learn more about this project as it develops, please visit the “Case Studies” section on the Faculty Technology Center website at: www.nyu.edu/its/ftc/projects/case_studies.html.

Tal Halpern is an Instructional Technology Specialist for ITS Academic Computing Svcs.; Dr. Kathleen Hull is an instructor at NYU.
Since the mid-1990's, businesses, government, and non-profit organizations have increasingly depended on their websites to serve as electronic "front doors" to products and services.

Statistics generated by website usage ("hit counts") are often cited as evidence of a website's popularity or effectiveness. These statistics can also be used to estimate how much time users spend at a particular site, whether they "buy" (or view) anything, and to provide some information on the effectiveness of the website design.

Websites are periodically redesigned to offer new services and improve user satisfaction. But before devoting the resources to design a new website or redesign an existing one, website owners, particularly those in education, increasingly rely on low cost, low-tech usability studies to test how "user-centered" the website design actually is.

What is Usability?

"Usability rules the Web," says usability expert Jakob Nielsen. "Simply stated, if the customer can't find a product, then he or she will not buy it." (Nielsen, Designing Web Usability, p. 9) The same goes for websites offering information and services. Techniques for studying usability were developed by software designers and manufacturers. Representatives of likely user groups are asked to perform common tasks for which the device or software was designed, while a study team records their comments and behavior. Testing is done at various points in the development process—the first test often provides a baseline for subsequent improvements.

Methodology at NYU Libraries

NYU Libraries recently completed three usability studies. The studies were conducted entirely by Libraries staff; the only expenses were staff time and small "thank you gifts" (NYU Bookstore gift certificates) given to subjects. Web usability experts advise that reliable results can be obtained by testing as few as 10 subjects (Nielsen, Alertbox, 3/19/00). Since students and faculty at NYU were to be our subjects, we had to apply for exemption from NYU's Human Subject Review from the Office of Sponsored Programs. (For more information on Human Subjects Review at NYU, see www.nyu.edu/osp/human.html; applications for exemption should be submitted well in advance).

In all three studies, we started by compiling a short list of the most commonly observed user activities performed on the website, gleaned from informal polls of public service staff and the archives of the "libweb" general comments mailform and Ask-a-Librarian FAQs. In most cases we added certain "desired" activities, such as attendance at instructional classes, knowledge of discipline-specific subject pages and tutorials, and awareness of advanced reference assistance provided by subject selectors.

Subjects were tested one by one; each test took about one hour. Three Libraries staff members took part in each session, one to ask the questions (a written copy was also provided), one to write down subject's comments and behaviors, and one to record the "path" through the website taken by each subject. Netscape's "history" file for the session was also saved and reset at the beginning of each new session. For the tests, we used the workstation in a small Library classroom with the same configuration as the public workstations in Bobst Library.
STUDY #1: EVALUATING THE LIBRARIES’ ONLINE TUTORIALS

An important service of every college and university library is “user” or “bibliographic” instruction. At NYU, Librarians skilled in pedagogy manage a program in which users are helped to develop research skills and information literacy. The “How to Use Bobst” section of the NYU Libraries website (www.nyu.edu/library/bobst/howto.htm) provides access to a number of web-based tutorials for this purpose.

How effective are these tutorials? In what format do users actually want to receive this information? These are some of the questions we wanted answered about the existing tutorials, followed by a sample of our findings.

1. How linear in nature should the tutorials be? How should the navigation in the tutorials be arranged to best suit the users?

FINDINGS: Most users didn’t like being locked into tutorials, but wanted a non-linear design structure.

2. Should the tutorials be primarily text-based, or should they be graphic- and multimedia-rich?

FINDINGS: There is too much text in most tutorials. The wording is unclear, and too much library jargon is used. Graphics are distorted and not clear.

3. How can we improve the usage of the tutorials?

FINDINGS: There is currently no motivation to use the “How to Use Bobst” section of the Libraries website. Make sure links to tutorials are put in more relevant places on the main website.

Results of this study are being incorporated into existing tutorials. New tutorials are being written based on these principles. Larger access issues will also be addressed in the redesign of the entire Libraries website (see below).

STUDY #2: REDESIGNING THE NYU LIBRARIES WEBSITE

Since 1995, the NYU Libraries website (www.nyu.edu/library/bobst/) has served as the primary access point to the Libraries’ popular electronic databases and electronic journals, online catalog, interlibrary loan requests and online book renewals. It also provides links to “general information” about on-site services at Bobst and other libraries: hours, contact information, locations, classes and events, policies and procedures.

In addition to a growing number of locally authored, discipline-specific subject pages and tutorials, special exhibitions complete the range of services provided by the website. Although our “hit count” looked good (over 2 million hits in the first three months of 2001), it was widely agreed that the six-year-old website...
design needed a substantial overhaul. We decided to begin with a usability test of the current site.

Here are some of the most consistent results. The results were used to develop principles for redesign that were incorporated in our RFP.

1. Many subjects scanned for words; they would not read blocks of text.
   **ACTION:** Break up essential information into chunks. Use lists, bullets and FAQs, rather than simply converting existing printed guides into web pages.

2. Most subjects had difficulty finding articles in electronic indexes and electronic journals.
   **ACTION:** Provide uniform access to electronic resources. An interactive “gateway” to such resources is planned.

3. Navigation hierarchies got in the way of many subjects, who looked instead for search boxes where they could enter keywords.
   **ACTION:** Improve results of “Search this Site” (Webinator) by adding meta-tags and rewriting pages to reveal key information. Use natural language; avoid jargon, such as “databases”.

The website is now in the process of being redesigned by an outside company. The new website will be ready for testing in Fall 2002. We will be conducting another round of usability studies at that time, before going live in Spring 2003.

**STUDY #3: EVALUATING A NEW WEBSITE—THE STERN VIRTUAL BUSINESS LIBRARY**

Bobst Library also serves as the library for the Stern School of Business. Librarians and staff in Bobst identified a discrete set of users whose specific needs in the areas of business and finance were not being adequately served by the current Libraries website. The final part of a grant-supported project to create a website tailored to the needs of these users was a usability study. Users were asked a number of questions designed to show their ability to use the new website (see image on p. 8) to find commonly requested information about business and finance.

1. **Navigation:** We discovered that no matter what method was used, the desired information for each question was usually found in five minutes or less. Many subjects used the “Find” command on the toolbar and many used “Search this Site”.
   
   The subjects in this test proved to be willier and more creative searchers than we expected. Not only did they almost always find the answer, they often found it in a way we had not even considered. They found the answers their own way in spite of all our hard work to provide them with what we believed was an obvious path to the correct answer. Almost all subjects considered themselves to be advanced Internet searchers.
   
   **ACTION:** No action was taken because users always found the desired answers; they just did not find them in the ways that we had anticipated. The lesson here for information professionals is that they should stop assuming that there is a fixed set of “correct” solutions for finding information on the Web. The flexibility available with web technology has made searching for answers a more creative, forgiving and intuitive process—especially for users who are experienced web searchers.

2. **Language:** Library jargon can be a problem. Most subjects did not understand what an “e-journal” or a “library catalog” is.
   
   **ACTION:** The term “journals in electronic format” was substituted for “e-journal”. We are not prepared to come up with a substitution for “library catalog”, as there really is no other way to describe it and the term is so entrenched. Again, web designers and information professionals must be careful not to assume that users are familiar with terms of the profession. Every effort was made while constructing this website to avoid terms of the trade and to use as much natural language as possible.

3. **Fonts:** Some subjects found the type size too small for readability.
   
   **ACTION:** The font size on the website was enlarged, resulting in a much clearer, cleaner-looking site. We were surprised at the substantial difference this small detail made in the overall look and feel of the site.

4. **Color:** The color intensity probably should be brightened or darkened. Used links didn’t contrast well with unused links. Different computers and browsers made this less or more of a problem.
   
   **ACTION:** The color contrast in visited links was brightened and changed to a more contrasting color.
For more information on these studies, see the NYU Libraries Usability website at www.nyu.edu/library/bobst/usability/.  

**USABILITY BOOKS & ARTICLES**

**USABILITY WEBSITES**
www.useit.com/: Jakob Nielsen's Website, Ed. Jakob Nielsen. This website is a jumping off spot for many excellent sites dealing with usability testing. Of particular interest to readers may be www.useit.com/hotlist/, a list of websites recommended by Nielsen, and Alertbox, www.useit.com/alertbox/, Nielsen's biweekly column devoted to current issues in web usability.

www.usableweb.com/: Usable Web, Ed. Keith Instone. Links to information on usability testing and other web usability issues.


**ILLUSTRATION:**
www.nyu.edu/library/bobst/vbl/: The Virtual Business Library homepage.
In today's almost completely interconnected world, it's likely that everyone reading this article has had his or her machine infected at least once. With people and companies making things more automated daily, many of our everyday transactions take place online. What does this mean? Why does this matter? Well, it means that we are spending more and more time using our computers, and it matters because this makes us more vulnerable to contracting a worm or virus.

WHAT ARE WORMS AND VIRUSES?

Merriam Webster Online defines a worm as, “a usually small, self-contained computer program that invades computers on a network and usually performs a malicious action.” They define a virus as, “a computer program usually hidden within another seemingly innocuous program that produces copies of itself and inserts them into other programs and that usually performs a malicious action (as destroying data).” As you can see from these definitions, if you end up with either one, it usually results in trouble.

Those of you who have used and still do use Microsoft Word may be familiar with the macro viruses. At one point in time, if you shared a floppy disk with others, you were almost guaranteed to end up with a document that contained a macro virus.

Sometimes these viruses were destructive and sometimes they were just annoying; there was one strain of the macro virus that simply converted your documents into templates...not really destructive—you only ended up with a whole bunch of documents whose symbols were a file with an arrow instead of a typical document symbol—but definitely annoying.

Viruses can also display messages and other images, as well as take up space on your computer. There have been some viruses that have gradually increased the amount of space that they take up. If you don’t have a whole lot of space left on your drive this could be problematic; however in today’s world of gigabyte hard drives this is less of a problem. As noted by the company Trend Micro in their Virus Primer, “If the virus doesn’t contain a damage routine, it can still cause trouble by taking up storage space and memory, and downgrading the overall performance of your computer.” (www.antivirus.com/vinfo/vprimer.htm).

What makes viruses and worms a big concern, however, is the fact that they can destroy files on your machine, and, in certain instances they can destroy your entire machine, leaving you with nothing to do but rebuild from scratch. Not only that, but they can use your machine as their base of operations for going out and infecting or damaging other individual computers or entire networks.

To make matters worse, there are many cases in which you wouldn’t even know that you had a virus until someone told you that you had given them an infected file, or your anti-virus software all of a sudden started popping up alert screens on your computer.

WHEN ARE YOU MOST VULNERABLE TO A WORM OR VIRUS?

This is a big concern for many people, and rightly so. In order to protect yourself, you need to know when you are vulnerable. If you are not running some type of anti-virus software, you are in the category of the highest possible risk for getting infected. If your computer is connected to a network, if you dial in to an Internet service provider, if you share files with anyone or if you surf the
What are Virus Definitions?

Virus definitions are files that have information on certain behaviors, characteristics and signatures of various viruses. When downloaded into anti-virus software, these definitions allow the software to search the machine for specific attributes that match those contained in the definition. If found, the software is able to determine that the machine has that particular virus and either cleans it or, at least, notifies you that your machine is infected.

Web, you should definitely be running anti-virus software.

Students, faculty and staff at NYU are all entitled to free copies of Norton AntiVirus. The software is included on the NYU-NET CD—available at any of the ITS computer labs and the Client Services Center—and online at www.nyu.edu/its/software/. There is no reason why you should have a computer running without anti-virus software...in fact, to do so is downright susceptible if your virus definitions are not up to date.

Even if you have installed anti-virus software, you are still vulnerable if your virus definitions are not up to date. If the last time you downloaded virus definitions was on the same day you installed the anti-virus software, it’s as if you don’t even have the software installed. New viruses are released daily, so it’s very important for you to keep your definitions current. Most anti-virus software has the ability to automatically download the definitions while still allowing you to also perform manual downloads if you want or need to, so there really is no excuse for not keeping your virus definitions up to date.

You may also be vulnerable to infection if your operating system is not up to date. Many viruses and worms take advantage of holes or vulnerabilities in operating systems. If you are running a Microsoft OS, you have the ability to check for updates right from the “Start” menu. All you have to do is click on “Start”, then select “Windows Update”, and you will be brought directly to the updates website (http://windowsupdate.microsoft.com). On the upper-left section of the page you will find a link for “Product Updates”. When you click on this you will get a window telling you that Microsoft is customizing the product catalog for you.

Once you are there, you will see a section for critical updates and service packs—this is the most important section, so be sure to download and install whatever appears here. Also, keep an eye on the section for “Advanced Security Updates” and on the “Recommended Updates” for any software that you may be running.

There is a tool from Microsoft that will pop up an alert on your screen if a critical update is released. This tool is called the Windows Critical Update Notification tool. I would highly recommend downloading and installing this on your system so that you will be alerted as soon as any critical updates become available.

Historically, these updates have included fixes for many of the vulnerabilities within the OS and its components that have allowed viruses to spread. They have fixed vulnerabilities in Internet Explorer whereby malicious code included on websites using an <EMBED> directive is run when the user views the page. This vulnerability has caused buffer overflows as well as the transmission of viruses and worms. If you don’t keep your OS up to date you are leaving yourself wide open to an infection.

Who Creates These Things?

It used to be the case that worms and viruses were created by people who had nothing better to do with their time. Most often the intent was to do some type of damage, with the possibility of bringing fame to the creator. Now they are sometimes created by your everyday programmer as a “proof of concept” project. These individuals come up with a unique new method of propagation, and just want to prove that it can be accomplished. These individuals may innocently release the code to a newsgroup or website where someone else with a less then ethical nature may then take the code and release or implement it.

The newest fear is that some sort of terrorist organization may latch on to these types of programs in an effort to do real damage. There have been many discussions about how potentially dangerous these types of programs are and could be if targeted at the right spot. A document was published in September of 2001 by the Institute for Security Technology Studies at Dartmouth College called “Cyber Attacks During the War on Terrorism: A Predictive Analysis.” You can find a copy of the paper at www.ists.dartmouth.edu/ISTS/counterterrorism/cyber_a1.pdf.

The paper discusses how we now have to be aware of vulnerabilities on our networks in the same way that we are aware of our physical vulnerabilities. With programs such as Code
Red and Nimda, there is the potential for the destruction of key parts of an infrastructure.

**INFAMOUS WORMS**

Nimda and Code Red were the worms that really caused the everyday user to stop and take notice. These worms were so widespread that they even gained news coverage. What helped both worms achieve their claim to fame was the speed at which they were able to propagate, and their pervasive means of doing so.

Nimda's ability to propagate via shared drives, e-mail, and web pages made it almost unstoppable. As an added bonus, with its network scanning 'feature', it had the potential to go on to cripple local networks. Nimda's attacks started with a scan, in an attempt to find machines that weren't up to date with their OS patches. Once a vulnerable machine was found, it was infected. The worm then searched its new host for e-mail addresses and proceeded to mail itself out to every address it found.

As a final insult, Nimda checked for a running web server and, if one was found, added code to the web pages being served that enabled its continued propagation onto the computers of users viewing those web pages. But, again, it could only infect those machines that were not up to date with their patches. The worm also copied itself onto any network shares that were set up on the machine.

To sum up, this worm infected multiple Windows platforms, ran a denial of service attack, provided outsiders with full access to the infected machines and gave out administrator privileges, and, to top it off, it was hard to get rid of and spawned itself onto other machines in the blink of an eye. Pretty bad, huh?

The story really started, though, with another worm named Code Red and its descendent Code Red II. This worm also had a speedy rate of propagation; however, there was a timing phase coded into this worm. It would scan for a while, looking for machines to infect, and then it would perform a distributed denial of service (DDoS) attack against the www.whitehouse.gov website. It also left a back door open on the infected machines, which made it easier for the second version and Nimda to follow in its footsteps.

**HOW CAN YOU PROTECT YOURSELF?**

When a virus or worm first appears, the anti-virus software developers may not yet have had time to create any protection against it. Nonetheless, the odds will still be in your favor if you have taken additional precautions to secure your machine. It's important to remember, though, that just because you are running anti-virus software doesn't mean that you are safe from all viruses.

Nonetheless, a first step in protecting yourself would be to get and install anti-virus software. You can also set up the software to perform scheduled scans of your drive in addition to automatically checking anything you download or attempt to access, such as a floppy or Zip disk.

Another step to take in protecting yourself is to carefully screen the e-mail that you receive. You should always be especially careful of e-mail attachments. If you receive a message from someone you don't know and it has an attachment with it, the smartest thing to do is to delete the message without opening the attachment. This is a very common way for viruses and worms to be transmitted, so it's better to be safe than sorry.

Another way of protecting yourself is to pay attention to anomalies in your computer's behavior. Some of these programs open a virtual door to your computer, allowing others to gain access and possibly use it for nefarious purposes. A good rule of thumb would be to scan your machine on a periodic basis, and especially if you notice it acting strange. By strange, I mean if windows start opening or closing by themselves, if your machine starts to turn itself off when you've never scheduled it to do so, or if unfamiliar files or folders appear and you didn't put them there.

Your best defense is a good offense. Be careful with what you download and install on your computer. Only download shareware or other software from reputable sites such as www.shareware.com or www.versiontracker.com. Be wary of software sent to you by people you don't know, and make sure to keep updating your virus definitions.

You can't be too careful nowadays, especially since more and more machines are being added to the Internet. You might want to check periodically with the anti-virus software sites to find out about the latest virus running rampant over the Internet. Symantec has a section entitled "Latest Threats" on their website (www.symantec.com) along with other useful information.

If you find that you still have a question after reading this article, we have a virus FAQ section on the security website that may already address your question: www.nyu.edu/its/security/virus-faq.nyu.

If you ever have any security-related questions, send us a message at security@nyu.edu, and we'll be happy to discuss it with you.

Surf safe!

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Tracey Lasco is Network Security Analyst in the ITS Network Services Department.
A n overriding theme across all of the arts relative to computing in the 1990’s is the emergence of the personal computer as an integral and integrated tool. At the start of the decade, the notion of a virtual artist’s studio (recording studio, video production studio, etc.) in a personal computer that could be available to every student seemed a worthy, if distant, vision. Shared use, however, was made possible by the ITS Arts Technology Group within Academic Computing Services, providing students with access to personal computers and arts-related software.

These days, access to artist’s workstations is increasingly provided by departments and by individual students themselves. Further empowered by the ubiquity of the Internet and the ease of use of the Web, one might wonder whether a sort of plateau in arts computing has finally been reached. Are there new technologies on the horizon that are as technically and economically challenging today as personal computers seemed ten years ago?

The answer to that question is best predicted by examining some of the recent advancements in arts technology in the context of the unique and specific needs of the discipline.

DIGITAL ART AND THE REAL WORLD

Speaking very broadly, most academic computing is an attempt to replicate some aspect of the real physical world in a virtual world so that it can be subjected to further study. Examples might include simulations in the physical sciences, statistical analysis in the social sciences, and conceptual analysis and synthesis via writing and research in humanities scholarship.

This reflects each discipline’s non-digital process. Even without computers, scientists or humanists construct mental models that capture and reflect the reality they find in the world. Results ultimately have to be reported of course, but most of the action remains in creating and manipulating a reflection of the world within the computer.

Artists face a different challenge. The traditional artist creates an alternate reality in his imagination that he then extends into some kind of physical manifestation. For the digital artist, the computer serves as a sort of cybernetic dream-space, a place of imagination where the artist can create an alternate reality. But the discipline demands a channel for digital art output that is equal to the virtual object. What artists now seek are new ways to extend their virtual creations into the physical experiential world. Moving the virtual into the physical is likely to be the overriding theme in arts computing this decade. This challenge will be addressed in a number of ways in the coming years, and some of the initial responses are noted in the following sections.

ARCHIVAL QUALITY FINE ART OUTPUT

Business quality color printing has long been affordable and over the years prices have continued to drop even while resolution has improved. Unfortunately, most of these devices have not been suitable for use by fine artists because the materials used are not of archival quality. There is an expectation that fine art photography and art prints will resist visible fading for well over 100 years, whereas some business quality color output is lucky to last a year.

In recent years, however, archival-quality color digital printing has become affordable and even somewhat commonplace. Devices such as the $900 Epson 2000P bring art-quality output to individual artists. Using six inks, rather than the traditional four-ink CMYK system, the 2000P can print a typical 11" x 17" area and a maximum area of up to 13" x 44". Using a Micro Piezo ink jet technology, the printer offers 1440 x 720 dots per inch. And perhaps of greatest importance to artists, the
Fig. 1 This piece was created by Eun June Gonzales, an NYU ITP student.

A prayer bowl for the cyber age, physical computing technology is used to sense the presence of worshipers and correspondingly modulate the video imagery in the bowl.

LightJet creates an apparent 4000 dot per inch photo-print by using red, green and blue scanning lasers to individually expose 300 continuous tone dots per inch using a 36-bit color space. The LightJet can directly expose traditional photographic papers of up to about 50" x 120" in size while bypassing typical large-scale darkroom problems.

RAPID PROTOTYPING TECHNOLOGY

Originally developed to support the industrial design sector, rapid prototyping technology is a cluster of hardware and software that uses digital plans to directly build a physical object. With the ability to bypass expensive and time-consuming machine shop fabrication, industrial designers can freely experiment on their computers while benefiting from the feedback and verification one can only get from handling and fitting together corresponding physical parts.

Currently leading the pack is the 3D Printer from ZCorp. The 3D Printer allows an artist to use a 3D modeling package to design a sculpture or other object, and then to "print" that object, creating an artifact that can be directly finished and shown or used as the first step for traditional molds and metal casting techniques.

The 3D Printer works by making repeated passes with an inkjet-like mechanism to spray a binder over very thin layers of starch- or plaster-based powders. After each pass, a new thin layer of loose powder is spread over the previous layer and the object is incrementally built up. Once the object is finished, the excess powder is blown off using compressed air. Objects can be up to 8" x 10" x 8"—or up to 20" x 24" x 16" using the largest and most expensive industrial model—with resolutions as fine as .003" per layer.

The fully formed object can also be further treated with infiltrants that can toughen the material for fine sanding, or even render the material rubbery and flexible. For artists directly creating objects rather than casts and molds, some 3D Printers can also inject CMYK-based dyes to create fully saturated color objects.

Artists are also often interested in creating 2D objects cut from flat materials. Such objects may be components for a larger construction, parts that fit together to make puzzle-like pieces for flat art, or something as
simple as engraved text on signs. Laser cutting devices such as those from Universal Laser Systems can cut and engrave sheet materials including acrylic, plastic, rubber and wood to create forms up to 32" x 18" in size.

Use of such a laser cutter is safe and simple. Using a popular package such as Adobe Illustrator, the artist merely creates a 2D design with color codes to mark those contours which are cuts and those which are engraved marks. The software driving the laser cutter takes that file as input and does all of the work. The operator of the laser cutter, however, must first mount the materials and adjust the focal length, speed, and resolution of the laser-cutting beam.

**Physical Computing and Robotic Art**

For some time, artists have been integrating computers into gallery spaces and other installation spaces. Thanks to improvements in the packaging of electronics and in computing power, it is now possible for artists to cross over into the realm of engineering and to embed computer chips and custom circuits into art objects.

Recently NYU Tisch School of the Arts’ Interactive Telecommunications Program (ITP) has underscored this trend by creating a required Physical Computing track. Prof. Tom Igoe notes:

Physical computing takes the focus of computing away from the computer and puts it on the person. Working with microcontrollers (small single-chip computers the size of a postage stamp), simple sensors, motors, lights, and other tools, students learn to think about interaction problems by starting with the body. They look for ways to capture more of the range of physical expression, and tackle the problem of interpreting expression to produce appropriate responses from a computer, device or installation.

In a similar vein, artists are melding computers and machinery to create robotic art. An event called Artbots ([www.artbots.org](http://www.artbots.org)) is bringing together artists from Columbia University’s Computer Music Center, the Madagascar Institute, this author, and various other artists/robot builders from across the country to create a one-day robot talent show on May 25th. The robots will operate autonomously as they draw pictures, play music and otherwise perform in real time for a public audience.

**Networked Performance Spaces and Telepresence**

The Fall 2001 Connect reported on a number of multi-site performances between NYU and various other collaborating universities ([www.nyu.edu/its/connect/archives/01fall/galanter1.html](http://www.nyu.edu/its/connect/archives/01fall/galanter1.html)). Since that story ran, another significant Internet2 performance took place in collaboration with the University of California at Irvine. “Songs of Sorrow, Songs of Hope” was created as a response to the events of 9/11, and not only used high quality projected video and audio to link two sets of performing musicians at two locations, it also integrated video art and live dance as additional elements from afar. (See: [www.nyu.edu/education/music/internet2/](http://www.nyu.edu/education/music/internet2/)).

Internet2 technology has already proven to be a compelling medium for cultural exchange, but there are more innovations to come. In future events we expect to see the use of extended sensory information to interact with both the virtual and physical worlds. The movements of dancers at one site may be mapped into the modulation of sound at another. Computer vision technology may allow virtual actors and musicians to interact with their real world counterparts. Using advanced haptic interfaces, the sense of touch can literally be extended over thousands of miles.

For digital artists, personal computers are a starting point, not a destination. The extension of the virtual into the physical is becoming for today’s artists as natural as the extension of ideas into paint in former years. 1

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14 Connect: Information Technology at NYU
Just before the start of the Spring 2001 semester, ITS eServices upgraded NYU’s Blackboard online learning system. Overall, no one has noticed, and that’s just what we were hoping for!

The Blackboard learning system makes it simple to create and manage an online companion to any course. Instructors can maintain an online grade book, display multimedia files, and even schedule the release of virtual "handouts" or homework in advance. With features such as threaded discussions, live chats, online syllabi, calendars and announcements, Blackboard helps faculty keep in close communication with their students, and helps students learn more from each other.

Blackboard’s appeal to the NYU community is clear. When the Blackboard system was originally deployed at NYU in Spring 2000, it hosted just 30 faculty members. Within a semester, this number jumped to 200. We have seen, on average, an additional 150 faculty start using it each semester since, for a cumulative total of over 1,000 faculty and almost 1,500 classes. With such a sustained positive response, it quickly became clear that we needed to make sure that the system could handle as much of a load as NYU was interested in throwing at it.

Our original system ran on a single computer, a Sun E3500 running Blackboard 5.5.2, with a Level 1 license and a dedicated local MySQL database. The upgrade moved this to a two-tiered machine architecture running the latest version of Blackboard (5.5.1), and increased our license to Level 3. The most immediate impact of the upgrade has been improved speed and reliability for all Blackboard classes.

The application now runs on three separate Sun E250s with two CPUs and two GB of memory each. Incoming connections are allocated to one of the machines by round-robin load balancing. On the back end, two Sun E450s with twelve CPUs and twelve GB of memory provide a high-availability Oracle database in place of the previous MySQL database.

The future impact will be even greater and much more obvious. The increase in our licensing level grants us access to Blackboard’s proprietary application program interface (API), which will make it possible for us to implement customizations to the system. A number of customizations are already under consideration. We are reaping the benefits of the API by being able to adopt customizations written at other universities and by third-party vendors.

In the past, the lack of an intuitive tool for including equations within Blackboard has prevented this application from being attractive to our math and science faculty. To improve this situation, we are currently testing an equation editor plug-in which allows both students and faculty to easily share and modify equations directly in an online course.

Other extensions under consideration include one that would allow Blackboard courses to be downloaded and synchronized to handheld devices, and another that would allow for the integration of external electronic resources, such as those acquired by the NYU Libraries, directly into the courses.

We will also be customizing the administrative interfaces to the Blackboard system over the next few months. Blackboard provides a user-friendly graphical interface for administrative management of courses and students. However, there has still been significant manual work required during the beginning of each semester to create courses and to make sure that enrollments are current.

For the Fall 2002 semester, we will be integrating Blackboard’s database with University data sources to automate the process wherever possible. This will result in a shorter lag between the time a faculty member requests a course and when the course becomes available for use. In addition, student enrollments will be automatically updated according to drop/add data provided by the Registrar’s office, eliminating the need for instructors or teaching assistants to contact us with additional student names after the initial course creation. We are also working to improve the user interface to Blackboard from NYUHome.

As we move forward, your suggestions for improvement are particularly solicited. Please drop an e-mail to nyublackboard.admin@nyu.edu.

Max Whitney is an Information Technology Specialist for the eServices Department in NYU’s Information Technology Services.
NYU Blackboard is Information Technology Services’ (ITS) instance of the web-based course development, delivery and management system currently licensed from Blackboard, Inc. Its principal features include web browser compatibility, a navigable course template interface, use of text and multimedia content, threaded discussion, chat rooms, file sharing, student grading, test authoring and assessment tools, and secure access control. Faculty-created courses are accessed by course-enrolled students through the “Academics” channel of NYUHome.

In the Spring 2001 edition of Connect, I reported on a survey of faculty use of NYU Blackboard and on some of the growing pains experienced in Fall 2000; www.nyu.edu/its/connect/archives/onspring/DooganBlackboard.html.

As reported in Max Whitney’s article in this issue (p. 15), there have been significant improvements in NYU Blackboard’s performance and capacity since that time due to the acquisition of a new NYU instructional technology system and the upgrading of our Blackboard software.

The improvements to NYU Blackboard included the addition of application program interface (API) capabilities (sets of routines, protocols, and tools for building software applications). These capabilities have provided ITS programming staff with the means to integrate multiple software applications, making Blackboard even easier to use.

Significant enhancements of several core Blackboard features have improved the functionality of these nifty tools and increased the pedagogical utility of online learning. Time release of content allows faculty to set rules and specify dates for content availability. Content publisher course cartridges and third-party plug-ins such as an equation editor and chemist toolbox are now available.

There have also been significant enhancements to the grade book and assessment features, including new sorting options, improved calculation and grade weighting, and improved midterm and final grade reporting. Placement and timing features have also been added. Another significant advancement in Blackboard is the ability to build better learning units to create a sequential or non-sequential learning path around a particular lesson or chapter.

To support faculty development of online components for classroom-based NYU courses, ITS Academic Computing Services offers the following enhanced resources:

- All requests for an NYU Blackboard class site can be easily submitted via an online application form at www.nyu.edu/its/accounts/.
- An NYU Blackboard demo site, new FAQs, and other support documents are available at www.nyu.edu/its/blackboard/.
- Our Faculty Technology Center (FTC) staff has been increased to provide individual or department-based training for faculty, administrators and students; to plan and project manage the development of customized web-based or NYU Blackboard-based instructional sites; and to assist in the production of web-based curricular materials. For more information contact the FTC staff at 998-3044 or at its.ftc@nyu.edu. Visit our website: www.nyu.edu/its/ftc/.  

Vincent Doogan is the Director of ITS Academic Computing Services.
WHAT'S THE SPSS 11 STORY?

In response to faculty requests, ITS has now made SPSS Version 11 available to the NYU community. Researchers can use the ITS site license to upgrade to Version 11 on their own computers; for more information on upgrading, visit www.nyu.edu/its/software/. Over the summer of 2002, SPSS 11 will also be installed on all PCs at the ITS computer labs. Please note that there is no Version 11 for Macintosh.

The NYU Computer Store sells SPSS 11 at a reasonable student price but most Version 10 owners probably don’t need to spend another couple of hundred dollars to move from Version 10 to 11. Unlike the researcher’s site license, which is an annual license that costs $100 the first year and $30 each year thereafter, the student’s one-time purchase does not include upgrades.

Versions 7, 8 and 9 of SPSS were fairly similar—they all had the same modern feel and look. The major enhancement in SPSS 10 was the new Data Editor (see my article, “New Data Editor in Version 10 of SPSS,” available online at www.nyu.edu/its/socsci/Docs/SPSSv10ed.pdf). SPSS 10 was a substantial improvement over Version 9. The innovations in Version 11 compared to Version 10 are not as significant as the previous upgrade. The Version 10 user won’t notice much of a difference. Unless you’re interested in Linear Mixed Models, there are no changes that would make most Version 10 handouts outdated.

SPSS 11 will run on any OS (Windows 98, 2000, NT, etc.) and machine that is currently running Version 10. XP, however, is happier with Version 11.

NEW TO SPSS VERSION 11

The new procedure “Restructure” is found in the Data pull down on the menu bar. This allows the user to move between the different data schema needed by various statistical procedures, e.g., “Analysis of Variance” and “Inter-rater Reliability.”

<table>
<thead>
<tr>
<th>skater</th>
<th>rater</th>
<th>score</th>
</tr>
</thead>
<tbody>
<tr>
<td>John</td>
<td>US</td>
<td>5.6</td>
</tr>
<tr>
<td>John</td>
<td>Russia</td>
<td>5.2</td>
</tr>
<tr>
<td>John</td>
<td>France</td>
<td>5.2</td>
</tr>
<tr>
<td>John</td>
<td>Canada</td>
<td>5.3</td>
</tr>
<tr>
<td>Ivan</td>
<td>US</td>
<td>5.4</td>
</tr>
<tr>
<td>Ivan</td>
<td>Russia</td>
<td>5.7</td>
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<tr>
<td>Ivan</td>
<td>France</td>
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<tr>
<td>Ivan</td>
<td>Canada</td>
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<tr>
<td>Pierre</td>
<td>US</td>
<td>4.8</td>
</tr>
<tr>
<td>Pierre</td>
<td>Russia</td>
<td>5.2</td>
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<tr>
<td>Pierre</td>
<td>France</td>
<td>5.3</td>
</tr>
<tr>
<td>Pierre</td>
<td>Canada</td>
<td>5.6</td>
</tr>
</tbody>
</table>

Fig. 1 One schema for rater data—one line for each rater’s score for each skater.
Let's use the example of rating figure skaters using four raters from the U.S., Canada, Russia and France. A "Two-Way Analysis of Variance" requires a spreadsheet with one line of data for each rater's judgment of each skater (see fig. 1).

The "Inter-rater Reliability" procedure, on the other hand, requires the data to be in a different format with one line of data per skater (see fig. 2; see also Bob Yaffee's article, "Enhancements of Reliability Analysis: Application of Intraclass Correlations with SPSS/Windows v.8," available online at: www.nyu.edu/its/sosce/Docs/intracls.html).

Moving between these two schemas is quickly done using the new "Restructure" command.

Today we often store data in relational databases we've designed as "normalized", with no repeated fields. This normalized design has many advantages, one being the knowledge that the database may be redesigned without having to re-input data. The Restructure Wizard gives us the functionality to structure our data for any analysis by configuring our data in many array schemes. Along with my old favorite, "Aggregate", "Restructure" will be a powerful data programming tool in my toolbox.

The SAVE parameter "KEEP" has been available to syntax users in previous versions of SPSS. When saving, the "KEEP" parameter permits saving some, not necessarily all, of the variables in a data set to create a smaller, more manageable data set.

Say you start your analysis with a dataset made up of 60 items forming 5 different scales. First, you analyze the 60 items—missing values, reliability. Next, you compute the 5 scales. Now you want to create a dataset to save without the items—only the demographics and the scales. The 60 separate items are no longer important.

In Version 11, in the pull-down menu "File", the "Save" file now gives the user the option to select variables to be saved (see fig. 3).

The Database Wizard opens up the world of relational databases to SPSS programmers. The SPSS Database Wizard makes writing SQL for retrievals possible for non-SQL programmers, though a bit of reading about relational databases is useful. Pull-down menus allow the SPSS programmer to retrieve from the Microsoft Data Access pack (especially Microsoft Access); Sybase 11 and 12; Infomix 7.3+, 9.14: Infomix 2000 (9.20); UDB (DB2 6.1 and 7.1); SQL Server 2000; Oracle 8.06; and Oracle-8i Releases 2 and 3 (8.1.6, 8.1.7). See the Spring 2000 Connect article in which I discuss using SPSS as a conduit into and out of Microsoft Access (www.nyu.edu/its/connect/archives/oospring/l0prestidatabases.html).

Improved reading from current versions of SAS data files and SAS portable files. The "Open" command under "File" now provides for a larger choice of SAS file types.

The "Ratio Statistics" procedure provides descriptive statistics for ratios.
between two variables. This new procedure allows you to designate two scales and a grouping variable. It calculates the ratio and describes the ratio over the grouping variable. For example, using the car data provided by SPSS, we can calculate the ratio of horsepower over car weight and designate the grouping variable country of origin. We get an analysis of the ratio by country of origin (see fig. 4 and fig. 5).

**Summary**

SPSS Version 11 has the same feel as the previous version. New users will not notice the changes. However, the additions of functionality to the new version are useful and seem to be aimed at making the intermediate to advanced SPSS user's programming tasks easier.

For more information about SPSS, visit [www.spss.com/spssbi/spss/whats_new.htm](http://www.spss.com/spssbi/spss/whats_new.htm).

Frank LoPresti heads the Statistics, Social Science and Mapping Group of ITS Academic Computing Services.

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**"Robust Regression Analysis: Some Popular Statistical Package Options"**

An excerpt from an article by Robert A. Yaffee, March 2002

NYU Information Technology Services; ACS Statistics, Social Science and Mapping Group

Robust regression analysis provides an alternative to a classical regression model when fundamental assumptions are unfulfilled by the nature of the data. When the analyst runs his statistical regression models and tests his assumptions, he frequently finds that the test results are not up to standards required for model validity. The analyst can either transform his variables to conform to those assumptions or resort to robust alternatives to classical regression model building.

In most cases, it may be difficult for him to transform the data to satisfy all of the assumptions. Robust regression may be the only reasonable solution. In this article, alternative robust regression options within popular statistical packages—including STATA7 for Windows, S-PLUS6 for Windows, E-Views, and LIMDEP7—are considered.

The full article can be found at the ITS Statistics, Social Science and Mapping Group website: [www.nyu.edu/its/socsci/Docs/RobustReg2.pdf](http://www.nyu.edu/its/socsci/Docs/RobustReg2.pdf). Many other documents by Statistics Group members can be found at: [www.nyu.edu/its/socsci/statistics.html#Publications](http://www.nyu.edu/its/socsci/statistics.html#Publications).
In the last issue of Connect, I wrote: “Stata, by Stata Corporation, is one of the top statistical programming packages. It is often ranked number two by research institutions behind SAS.” I concluded with the complaint, “Since Stata commands are typed in by the user, you must know something about the syntax before starting, so the new Stata user will have to read a bit more than the new SPSS user” (www.nyu.edu/its/connect/otfall/lopresti.html).

How wrong I was. Recently, I became aware of StataQuest. To quote a comment from the Stata technical group found at www.stata.com/bookstore/quest.html:

StataQuest consists of software and a user’s guide. The StataQuest software is a special version of Stata for the undergraduate, introductory statistics market. In addition to Stata’s command interface, StataQuest features a menu interface and a fully integrated spreadsheet data editor. All necessary functions for a first course in statistics are included and accessible through the menus.

The software is accompanied by a user’s guide which covers the essentials of setting up, inputting, analyzing, and presenting data at the beginning and intermediate levels.

StataQuest may be bought as a student version of Stata for $40. Go to http://stat.tamu.edu/StataQuest/sq.pdf for a manuscript which serves both as a tutorial and as a reference manual.

Users who already own full versions of Stata7 may install StataQuest on top of Stata for free to get the helpful menu interface. To download and install StataQuest, start up Stata7 and at the command prompt, enter:

```
net cd http://www.stata.com
net cd quest
net install quest1
net install quest2
net install quest3
```

If your computer is connected to the Internet through a proxy server, first enter:

```
set httpproxyhost proxy.nyu.edu
set httpproxyport 8000
set httpproxy on
```
WHAT'S NEW AT THE ITS STUDENT COMPUTING LABS?

Robyn Berland
robyn.berland@nyu.edu

ABOUT THE ITS STUDENT COMPUTER LABS

In a technological environment where change is a part of our everyday lives, the four ITS student computer labs continuously strive to offer students up to date and reliable access to technologies that facilitate and enrich their academic lives. Academic Computing Services, the academic technologies group within Information Technology Services, maintains the four student computing labs, which house approximately 360 computers divided almost equally between Windows and Macintosh operating systems. The ITS student computer labs are open throughout the academic year, with hours of operation that occasionally reduce or extend to meet demand (check www.nyu.edu/itsjlabs/ for the most current hours).

Each computer lab has a manager who supervises from two to five full-time lab technicians and a staff of student assistants. It is the mission of the staff to maintain the integrity of the technology and to assist students who are unfamiliar with the computer desktop configurations and the NYU-NET resources available to them (e.g., the Blackboard Course Management System and the NYUHome portal). Lab managers and their staff strive to offer computer desktop configurations that are dependable, consistent from semester to semester and from lab to lab, and comprehensible to students.

In addition to providing for students’ needs, the labs also work to satisfy the technology course requirements of NYU faculty. Lab managers meet with interested faculty and their departmental representatives on an ongoing basis to ensure continued and relevant support. For information about academic services geared toward faculty, call the Faculty Technology Center (FTC) at 998-3044 or peruse the FTC website at www.nyu.edu/its/ftc/.

Each semester, ITS offers a variety of orientation classes to the NYU community, including “How to Use a PC/Macintosh Desktop Computer at an ITS Student Lab.” For a full listing and schedules of course offerings, visit www.nyu.edu/its/classes/.

To speak with a lab manager, contact:

- Tisch Hall Lab (Windows)
  John Bako
  998-3406
- Third North Lab (Windows & Mac)
  David Beard
  998-3447
- ITS Multimedia Lab (Mac)
  Robyn Berland
  998-3396
- 14 Washington Place (Windows)
  Jamil Hamilton
  998-3458

SHARED LAB RESOURCES

All current students in degree or diploma programs have access to the ITS student computer labs. A new OneCard swipe system has been installed at the front desk of each facility, and all persons entering the lab must swipe their NYUCards.

“Express” service is available at each lab’s complement of 5 Minute Stations. All four labs have networked computers—new file servers, network switches and cabling—that provide 100Base-T communication.

Each desktop computer has: a web browser; Telnet and FTP applications for transferring files across the network; RealMedia and QuickTime players for downloading audio and video files; and additional helper tools...

Robyn Berland is the Computer Lab Manager of the ITS Multimedia Lab at 35 West 4th Street, 2nd Floor.
additional, course-specific applications may be installed for individual departments—as requested through the Lab Manager—if they are licensed copies and do not interfere with the normal workings of the desktop configurations.

On the Macintosh platform, special focus is on multimedia applications: image editing with Adobe Photoshop and Illustrator; desktop publishing using PageMaker and Quark; Web publishing with Macromedia Dreamweaver and Flash; interactive movie creation with Director; Video Editing using iMovie; and Audio Editing using SoundEdit 16. Flatbed scanners are available to capture graphics and text. Firewire ports on each computer allow video to be captured directly from a firewire capable digital camera. Firewire hard drives can also be used.

**INDIVIDUAL LAB INFORMATION**

Over time, the four student computer labs have developed their own personalities in relation to their student client base, the specialized and unique resources available within each facility, the complexity, hours of operation, location and size of the facility, and the personality and skills of the lab manager and lab staff.

**The ITS Third Avenue North Lab** is located at 75 Third Avenue—the southeast corner of Third Avenue and 12th Street, Level C3. The Third Avenue North Lab provides extended support during regular semesters by staying open 24 hours a day, 7 days a week. There are 110 computers available in this facility: 50 Power Macintosh G4 computers with 100 MB Zip drive (a floppy drive can also be borrowed from the front desk); and 60 Windows computers with floppy and Zip drives. Proximity to the ACS Statistics, Social Science and Mapping Group also makes this a perfect place to work for students who need help using statistical and mapping applications. A scanner is available to capture images and text, and Photoshop and Flash have been added to the application suite. On the Macintosh side, two FinalCutPro video editing stations are available by reservation.

Each station has a DV Deck (DV and mini DV) and an NTSC monitor. Firewire devices may be used on these stations if they are recognized by the Mac OS. The software suite includes FinalCutPro, iMovie, Premier (limited support), Peak, SoundEdit 16, Cleaner EZ and Photoshop. Students may reserve up to six hours of editing time but must use an entire six hour block before adding more hours.

**The 14 Washington Place Lab**, downstairs between Mercer St. and Green St. on the south side of the street, tends to be used by (but is not limited to) students majoring in the Computer Sciences. The student staff reflects this community and tend to be Computer Science majors themselves. The sixty new Dell computer workstations have 1 GHz processors, 256 MB of RAM, floppy drives, 100/250MB zip drives and 15 inch flat panel displays. Every computer workstation has the full complement of Windows software applications. 14 Washington Place is open Monday-Friday, 8:30 a.m. to 11:30 p.m.; and Saturday, 8:30 a.m. to 5:30 p.m.

**The ITS Tisch Hall Lab**, at 40 West 4th Street, Room LC8, offers a new thirty seat hands-on computer classroom. Each Dell computer workstation has a 1 GHz processor, 256 MB of RAM, a floppy drive, a 100/250MB zip drive and a 15 inch flat panel display. Two presentation modes are available: LCD front projection; and a SmartBoard rear projection system. The SmartBoard...
converts the screen to a touch screen environment, freeing the instructor from mouse and keyboard. Both presentation modes include a computer that mirrors the classroom workstations. Instructors who wish to reserve a classroom can contact John Bako, the Lab Manager.

The classroom is available for general student use when classes are not in session. The classroom schedule is posted at the lab’s front desk. The Tisch Hall Lab has approximately sixty-five Gateway 450 MHz computer workstations. Every workstation has the full complement of Windows software applications. During the first 2002 Summer Session, the lab will be closed for renovation. When it reopens, it will be totally revamped—including the computer workstations. During this time interval, students may use the 14 Washington Place and the Third Avenue North Labs.

The Tisch Hall Lab extends its hours over the course of the semester. At the beginning of the semester, the lab is open Monday and Tuesday, 8:30 a.m. to 1:30 a.m., Wednesday-Friday, 8:30 a.m. to 11:30 p.m., Saturday, 8:30 a.m. to 5:30 p.m., and Sunday, noon to 1:30 a.m. Then, starting approximately six weeks into the semester, the lab remains open overnight from Sunday at 12:30 p.m. to Wednesday at 11:30 p.m., from 8:30 a.m. to 11:30 p.m. on Thursday and Friday, and from 8:30 a.m. to 5:30 p.m. on Saturday. Then, from approximately the 12th week of the semester (four weeks before finals) until finals are complete, the lab remains open from noon on Sunday until 5:30 p.m. on Saturday.

The ITS Multimedia Lab, located in the Education Building at 35 West 4th Street, Second Floor has seventy-five G4 533 Dual Processor Macintosh computer workstations with 17 inch flat panel displays, 100/250 MB Zip drives and CD-RW drives. The lab is divided into three rooms, each of which has a complement of flatbed scanners and a laser printer. Multimedia Room II is a hands-on classroom with twenty-five workstations and an LCD projector with its own computer workstation and VCR. The classroom schedule is posted daily. To reserve this classroom contact Robyn Berland.

In addition to the seventy-two multimedia workstations throughout the lab, there are also three FinalCutPro editing stations. These Macintosh G4 Dual 800 processor video editing stations have 22 inch Cinema Displays, 100/250 MB Zip drives and DVD-R/CD-RW drives. Dubbing between VHS and DV is available by reservation. Firewire devices recognized by the Mac OS may be connected to the computer. Students may reserve up to six hours of editing time but must use an entire six hour block before adding more hours. The software suite includes FinalCutPro, iMovie, Premier (limited support), Peak, SoundEdit16, CleanerEZ, iDVD and Photoshop. The ITS Multimedia Lab is open Monday-Friday, 8:30 a.m. to 11:30 p.m., Saturday, 8:30 a.m. to 5:30 p.m., and Sunday, noon to 11:30 p.m.
WHAT IS WORKFLOW?

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In the Fall 2001 issue of Connect, Marilyn McMillan, CITO, announced that NYU had entered into an agreement with Oracle Corporation to license a suite of Oracle software products for use throughout the University. One of the products included in the agreement was Oracle Workflow.

Workflow is a web-based software tool that automates and streamlines business and administrative processes according to a specific set of rules that an organization defines. Information of any type can be routed for review, approval or rejection to anyone inside or outside an organization, and each person in the process is provided with all the data they need to take action. The software allows you to create, view or modify business processes; add, remove, or change activities; or set up new relationships among different activities.

Since all processes are automated in an online environment, the amount of paper generated and the manual processes required are both significantly reduced, thereby increasing productivity. In its simplest form, Workflow permits you to direct information from one user to another with review, approval or rejection steps along the way, but it also permits you to model more sophisticated business processes.

Any e-mail or Internet user can be made part of the Workflow process and access the application via the Web. They can track requests and check on the status of their work by viewing their personal lists of things to do, which include all necessary supporting information. Security can be set up internally (within Workflow), external-
ly, or in both places. Within Workflow, data security and access to information are based on roles that are set up in the system. Multiple levels or roles are available according to the needs of a particular application. Reports can be created to monitor activities, view transactions, or analyze process flow.

Developed in close collaboration with the Budget Office, the Budget Modification Request System, or "BudMod", as it is commonly known, is the University's first Oracle Workflow application. BudMod went live on April 2, 2002, replacing the paper-based system that involved filling out forms, forwarding them to various levels for review and approval, and waiting up to three weeks for the process to be completed. It is expected to make the process of moving money from one chartfield to another considerably faster and easier. BudMod is currently available to Fiscal Officers and their staff.

This new application routes, tracks, approves and denies budget modification requests according to a predefined set of business rules. When requests are submitted, the system determines whether the automatic approval requirements have been met and then routes the requests accordingly. The designated reviewers are notified of requests that require their review for approval or denial; if the reviewers do not take action on the request within a specified time limit (five days, at present), a reminder is sent to them.

The requestor is notified of every action taken on the request and can track the request throughout the entire process. Notifications appear in the reviewer's Worklist and the reviewer is alerted by e-mail when there is a new notification. A budget journal entry is created upon final approval of the request and the entry is posted through the normal nightly process. An audit trail is maintained for each budget modification request, but only for the current submission process of a request; if a request is denied and a revised request is submitted, a new audit trail is started. Requestors may view records of all their submissions in their Worklist History or by creating a report using the Inquiry function.

Workflow can be an excellent solution for paper-based systems. It streamlines and accelerates many business and administrative processes while giving you the flexibility to change your business rules whenever necessary. It significantly cuts the time it takes to process transactions, and ultimately improves the productivity of the workforce. Workflow can be your first step towards a cost-effective, automated paperless operation.

If you have questions or would like to learn more about Workflow, please send e-mail to Keith Amparado at: keith.amparado@nyu.edu.

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