Compute With The Pack

InfoTech 1991

Wednesday, Sept. 11th, 12:00-4:30
Thursday, Sept. 12th, 9:00-4:30

University Student Center

NCSC aids research, education

Supercomputing Center offers quicker and cheaper way to do research

By Tracey Neal
Staff Writer

The North Carolina Supercomputing Center offers triangle universities a quicker and cheaper way of research, according to Jim Brooking, an employee of the center.
The center opened in August of 1989 in Research Triangle Park. The state funded the building of the center in 1987 and bought the Cray supercomputer for $20 million.
"NCSC is a resource for research in education for North Carolina educational facilities and it is fostering economical development," said Brooking.
Supercomputing is the use of high-speed computational machines and methods to explore leading-edge applications of mathematics and science.
The supercomputer uses computational science to gain understanding of problems. In computational science, equations are drawn from theories and built into the computer as models. The computer then simulates them.
A report from the U.S. Senate extols the powers of supercomputers. "It is hard to understand an ocean because it is too big ... a molecule because it is too small ... nuclear physics because it is too fast ... and the greenhouse effect because it is too slow," the report says.
"Supercomputers break these barriers to understanding. They shrink oceans, zoom in on molecules, slow down physics, and fast-forward climates."
By using the supercomputing center, a company can save money and time on experimentation.
Solving environmental problems is one use of the supercomputer. In order to solve the problem of the pollution in Los Angeles, an environmental scientist can set up models simulating what would happen if automobiles were prevented from running for one week in the L.A. basin area. The computer would then analyze the information and present the results.
Out of all the users of NCSC, the university system makes up the largest percentile, with N.C. State University ranking first in amount of user time.
For academic use of the computer, there is no charge. College students taking courses that relate to supercomputing can use the supercomputer, and graduate and post-doctoral students can use the center for research projects by having a faculty sponsor make an application to NCSC's Allocation Committee.
NCSC will have a booth setup at Infotech for answering questions. For more information on using the center, call Bruce Loftis at 248-1124.

Lab improves graphics capability

By Mark Schaffer
Staff Writer

A new computer lab at N. C. State University is on the cutting edge of technology.
The department of marine, earth and atmospheric sciences (MEAS) in the department of physical and mathematical sciences set up the new computer lab this summer to aid undergraduate majors in the use of computer graphics workstations. The lab also serves to enhance understanding of weather processes and forecasting techniques.
The lab is located on the sixth floor of Jordan Hall.
The NEXTLAB is made up of 15 SUN SPARCstation II computers served by a SUN 4/370 networked together by Ethernet transceivers.
Each computer can individually run its own software and also pull data from the server to plot meteorological maps that allow students to analyze and interpret the data. These capabilities open new possibilities in teaching, while enhancing the ability for users to explore previously impossible combinations of data display and information.
The lab supersedes the traditional hard-copy sources of data collection with computerized databases. The system provides a Macintosh-like menu driven system for access to real-time satellites, NEXRAD radar and numerical model output from the National Meteorological Center in Washington, D. C.
Many software applications are being developed for laboratory exercises and as teaching tools for weather analysis and forecasting. Also, considerable work has been done to render data into third- and fourth-dimensional graphics. These developments can greatly add to the understanding of how storms form and allow for better forecasting of severe weather.
There are currently about 100 undergraduates in MEAS, and students on every level of study are using the lab. The NEXTLAB educational software applications for each lab exercise are being developed at two different levels whenever possible. One level will be suitable for introductory/non-major students and the second level will be suitable for junior to senior level meteorology students.
Steve Chiswell, a graduate student in meteorology, set up the lab this summer and has been working on a number of 3-D applications for the data that the lab receives. He will be at Infotech showing off some of these 3-D programs.
Steps are being taken to make the system data available throughout the NCSU campus over Ethernet.
Once a server is set up by the College of Engineering, users at workstations can query for weather reports and forecasts from across the nation. In addition, maps containing radar summaries and other information may be displayed. The service should be on-line by the end of September.

Computerized mapping aids N.C. scientists

By Hunter Morris
Staff Writer

The ancient art of mapmaking, which took a giant leap forward with the development of computer-generated mapping a generation ago, will become easier and more efficient, thanks to an N.C. State University professor.
Dr. Hugh Devine and his assistants in Recreation Resources Administration have applied microcomputer technology to such different fields as cartography, archaeology and environmental studies.
The microcomputer is replacing the minicomputer that was used to build the first geographic information systems, or GIS.
One example of their work is a map of the NCSU campus.
Devine is the director of the GIS Research Facility. The facility was created to develop GIS for uses in forestry.
GIS applications are used with computer aided drafting (CAD) to create maps that are no longer archival documents, but dynamic and highly efficient tools for the environmental professional, Devine said.

See **GIS,** *Page 3*

New system to reduce paperwork

By Jim Ludlow
Staff Writer

The Accounts Payable Purchasing System (A.P.P.S.) will streamline the way N.C. State University pays bills and purchases goods.

A.P.P.S. is a group of computer programs that will allow all accounts payable and purchasing functions to be executed on computer.

"The university has to purchase everything from toilet paper to animals," said Linda Allred, assistant director of Systems Procurement and Operations. "Everything you see around campus except the food on your tray and the supplies at the bookstore came through purchasing."

The two major components of the system are the purchasing module and the accounts payable module.

With the purchasing module, departmental users will enter their purchase requests into the system from their work stations. The request will travel through the system electronically for department- and college-level approval and then to the purchasing department for issuance.

See **PURCHASE,** *Page 4*

Wednesday, Sept. 11

Buying a Computer
Brown Room
1-2:00 p.m.
Debra L. Mann, Computing Center
Tips on purchasing a computer. An explanation of university purchasing procedures for departmental purchases. Description of campus resources available to departments to assist them in making their computer purchasing decisions.

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Electronic media and remote services
Senate Hall
1-2:00 p.m.
Tracy Casorso and Frank Molinek, NCSU Libraries
An update on computer resources at the NCSU Libraries, including the NCSU Digitized Document Transmission Project and available CD-ROM services.

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Visualization environment at NCSC
Senate Hall
2-3:15 p.m. Ray Idaszak and staff, North Carolina Supercomputing Center
Discussion of visualization industry trends and how the NCSC is meeting these challenges for its users. A look at the visualization facilities available at NCSC.

Meeting of departmental support people
Senate Hall
3:30-4:45 p.m.
Sarah Noell and Susan West Klein, Computing Center
The Computing Center is interested in meeting with those of you who provide computer support to your department. A discussion of the types of support available from campus support organization. Questions are welcome and encouraged.
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Thursday, Sept. 12

Local area networking in NCSU administrative units
Senate Hall
9:30-10:30 p.m.
Brian Kemerait, Management Information Resource Center
Overview of the status of administrative local area networking at NCSU with a focus on the existing Novell NetWare Network. A look at the methods being used to integrate the Novell environment with the existing TCP/IP environment. Questions are welcome and encouraged.

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Computers, meteorology, and broadcasting
Senate Hall
11 a.m.-12 p.m.
Greg Fishel, WRAL-TV
Overview of the different elements in the day of a broadcast meteorologist with emphasis on the science of meteorology, the various means of data collection (radiosondes, satellite pictures and radar) and the use of computer models in making forecasts. A few interesting aspects of broadcasting are mentioned as well, including chromakey. Questions are welcome and encouraged.

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NEXTLAB at NCSU
Senate Hall
1-2 p.m.
Steven Businger, Marine, Earth, and Atmospheric Sciences
NEXTLAB is a state-of-the-art computer facility for use in both research and instruction. It allows 3-D rendering of data fields and has an X11-based, Macintosh-like drawing program. Meteorological data plotted by UNIDATA software can be placed in the drawing program for analysis and interpretation. These capabilities open new possibilities in teaching, while enhancing the ability for users to explore previously intractable combinations of data display and manipulation.

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Computerized mapping for data analysis and display
Senate Hall
2:15-3:15 p.m.
Hugh Devine, Recreation Resources Administration
Overviews of Geographic Information Systems (GIS) technology with an emphasis on microcomputer based systems. GIS functions, programs and systems cost; applications in the biological and social sciences and facility management. A look at low-cost systems that could be employed in individual departments. Description of the research activities of the GIS Research Program and the Computer Graphics Center.

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New roles for vendors, computer support organizations, and users in the world of networked computing
Senate Hall
3:30 - 4:30 p.m.
William E. Willis, Engineering Computer Operations
The spread of networked computing increases the need for consistency and inter-operability. These requirements affect the roles of hardware and software vendors, training and help desk staff and end users. As users increase their knowledge, they will demand to exercise their taste in selecting their software. Our systems must provide consistent support and appearance while allowing users to choose their applications.

GIS

Continued from Page 2

According to Devine, GIS database systems combine graphic and non-graphic information into a single system which can be used in many ways. Maps made by the GIS Research Facility are based on aerial photographs, satellite imaging, existing hand drawn maps and maps that are in the existing GIS-CAD database. The information collected by the GIS database can be anything from geological formations to postal addresses.

Early applications of the technology at NCSU used minicomputers to develop large GIS databases for the National Park Service and the Forestry Service.

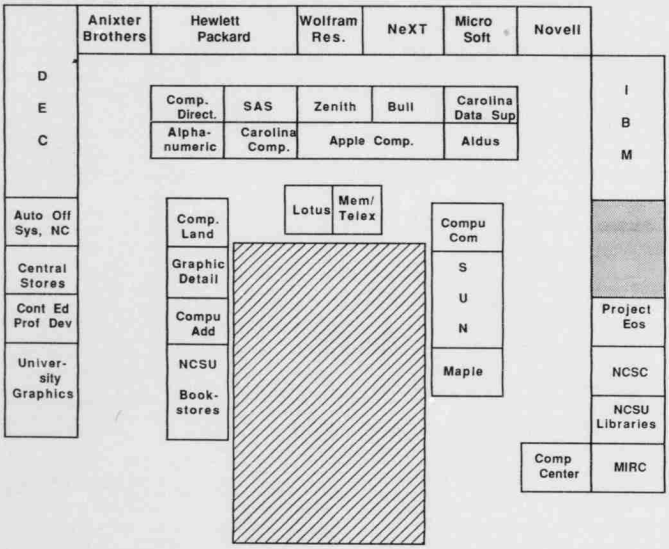
But Devine said the professionals for whom the systems were developed are not using them because of the difficulty of using minicomputers.

Five years ago, Devine and his co-workers started developing GIS applications and databases that could be used on the more available microcomputers. Since then, they have used a variety of GIS software packages to develop databases and maps that help to solve various environmental problems in North Carolina.

They also teach students and environmental professionals how to use GIS as an efficient tool in the workplace.

The GIS Research Facility is involved in many projects other than teaching, including using GIS databases to find suitable habitats for a species of woodpecker in the Croatan National Forest, documenting archaeological dig sites for the National Park Service and performing watershed research.

They are also involved in a project at Oregon Inlet in conjunction with Dr. John Fisher and Dr. Margery Overton in the department of civil engineering.



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The Vendor show is located on the second floor of the Student Center. The north and south galleries both have registration tables at their entrances. Visitors may enter through either gallery and circle around through the ballroom and then out through the other gallery.

Presentations are either in the Senate Hall or the Brown Room. The Senate Hall is located on the third floor, the Brown Room on the fourth floor.

Purchase

Continued from Page 3

From their work stations, users will also be able to edit their requests and check their progress through the system. Users and the purchasing department will be able to communicate by messages sent through the system.

The accounts payable module will give users the ability to view invoices, credit memorandums and checks. Users will have the ability to schedule and issue checks through the system. Users will also be able to use a vendor data base. This system will contain information such as the addresses, phone numbers and performance of approved vendors.

The vendor database can keep track of those with whom the university is doing business. For example, the database has a record of how many vendors are owned by minorities.

The commodity database will contain commodity descriptions and the codes used for them in the request procedure.

A.P.P.S. will save the university paper, time and money.

The old system used a request form stuffed with multiple copies and carbons that was expensive and cumbersome. A.P.P.S. should eventually be paperless.