Briefings

edited by CONSTANCE HOLDEN

Super Network Authorized

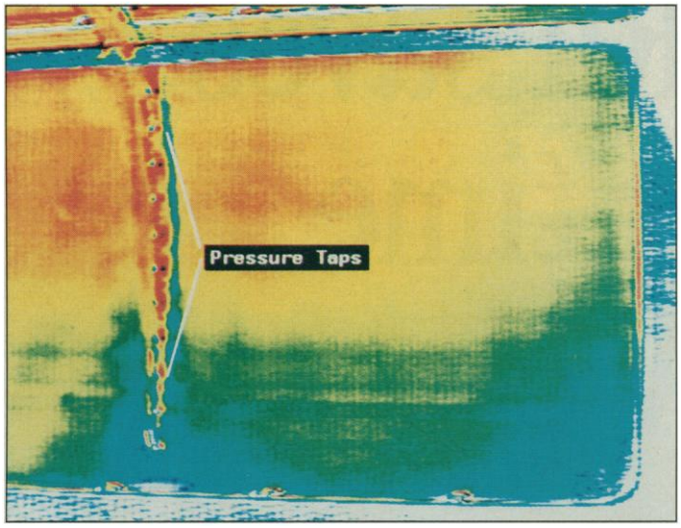
A "superhighway for computers" is how enthusiasts describe the high-speed computer network that late last month received authorization from Congress, culminating more than a decade of planning and lobbying by supporters such as Senator Albert Gore (D–TN). A turf dispute between the Senate's energy and science committees nearly derailed the bill at the eleventh hour, but it finally cleared both houses on 22 November. It is now sitting on the president's desk, and Administration officials say it will be signed soon.

The bill—called the High-Performance Computing Act of 1991—permits up to $3 billion to be spent over the next 5 years on the National Research and Education Network (NREN) and asks the President's Office of Science and Technology Policy to serve as interagency coordinator. It also creates a permanent White House advisory committee on high-speed computing.

There is no new money in this bill, according to congressional staffers, but it serves as an "expression of intent" to expand high-speed data links already supported by the government. Congress, in fact, has already approved more than $85 million for NREN in 1992. Most of that is in the budgets of the National Science Foundation and the Defense Advanced Research Projects Agency—about $30 million each.

The goal is to connect research centers, universities, and industry labs in every state to lines capable of transmitting 1 gigabit (1 billion bits) of data per second by 1996. The network will enable researchers to trade complex databases, such as those used to create graphics, and permit people anywhere in the country to log into and use special processing equipment. The NREN will also serve as an R&D test bed and, sponsors claim, will keep the United States ahead of other nations in the development of computer networks—always a good selling point on Capitol Hill.

Paint That Reveals



Air pressure has everything to do with an aircraft's ability to stay aloft. The usual way of measuring it involves riddling a wing or tail surface with hundreds of holes containing pressure sensors. But aeronautical engineers may soon have a better, cheaper, and more colorful means of taking such readings—via a pressure-sensing paint developed by chemists at the University of Washington. The paint works by indicating how much oxygen—a well understood pressure indicator—is around. Without oxygen the paint's key chemical additive, platinum octaethyl porphyrin, absorbs solar ultraviolet radiation and reradiates the energy as light. But oxygen molecules absorb the energy. Ergo, the less light emerging from the paint, the higher the air pressure. In this image of an airplane's surface, recorded during a NASA research flight, the vertical line of blue points marks conventional pressure sensors. But the paint, with computer-enhanced video imaging, provides gap-free coverage of surface pressures (which rise as the color ranges from orange to violet). Aeronautical engineer Blair McLachlan of NASA's Ames Research Center in Mountain View, California, is one enthusiastic researcher: "Everybody and their brother will want to use this stuff," he says.

SSC Magnets Upgraded

It took no small effort for high-energy physicists to persuade the government to pay for the Superconducting Super Collider (SSC). Now the trick will be to persuade scores of mutually repulsive protons to line up in a millimeter-wide beam and whirl around a 54-mile ring without falling off course. Two years ago, SSC designers realized that the task will require bigger and more expensive magnets than they originally proposed. Last month, the first prototype of the new model was completed by magnet builders at Fermilab in Illinois and Brookhaven National Laboratory in New York, and it performed according to plan.

The designers expanded the aperture for the particle beam from 40 millimeters to 50. That will improve the "margin," says Thomas Bush of the SSC Laboratory in Texas, which means the magnet can take a higher electric current before its superconducting ability breaks down. Brookhaven's Erich Willen adds that this will improve the reliability of the magnets and the stability of the particle beam.

Bush says General Dynamics and Westinghouse are now working on plans for mass production of the 50-foot magnets, which they hope to start churning out in 1994. Once the manufacturers decide on a final design, they have to produce 8000 of them—costing up to 15% more than those proposed initially.

Japan Fellowships Going Begging

In these hard times, you'd think that every opportunity for research support would be snapped up as soon as it is announced. But two Japanese-sponsored fellowship programs for American biomedical and behavioral postdocs "have been terribly underused," says David Wolff, chief of the research and awards branch at the Fogarty International Center at the National Institutes of Health, which administers the fellowships. Wolff isn't exaggerating. Last year, there were only three applicants for the fellowships, and for various reasons none actually went abroad. This year there were also only three, but it appears that two will actually make the trip.

The fellowships—one supported by the Japan Society for the Promotion of Science and one by the Japan Science and Technology Agency—have some attractive features. They provide up to 2 years of salary support (approximately $3,000 per month) plus relocation, travel, and research support. Ten fellowships are available, but that number could grow if there are more takers.

So why the lack of interest? Philip E. Schambra, director of the Fogarty center, speculates that postdocs may feel that a foreign fellowship won't "give them any particular advantage over those who have stayed behind." Wolff adds that many postdocs fear that spending time out of the country will take them off the research career track, making it harder for them to get a job on return. But he adds that those who have been in the program thus far have reported they found the experience valuable.

The deadline for applying for next year's program is May 10.