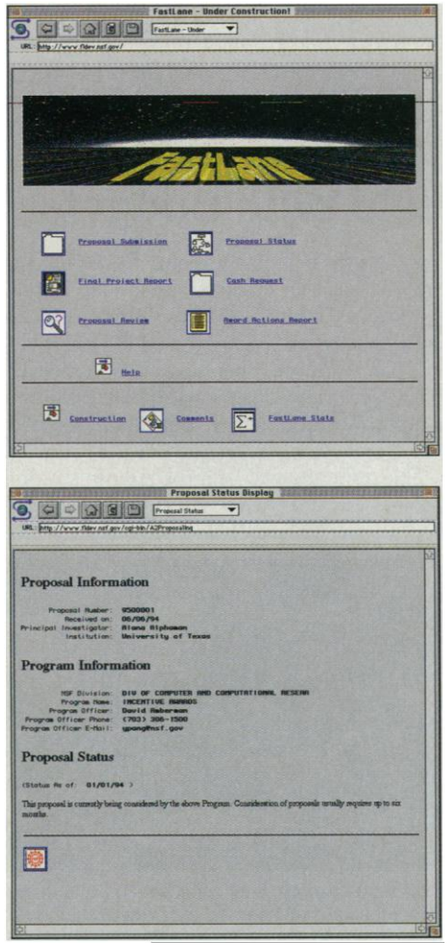
NSF Moves Into FastLane To Manage Flow of Grants

Some 10,000 times a year, researchers around the United States pick up the phone and call the National Science Foundation (NSF) to find out the status of their grant applications. Next month, scientists at 16 universities* will have a faster, cheaper alternative: Thanks to a pilot project dubbed FastLane, they will be able to dial up NSF through the Internet and learn more about their fate, including whether their application has been sent out for review and how reviewers have rated the proposal. FastLane will also enable grantees at the participating universities to use the network to transmit the nontechnical portions of their applications, manage the cash flow on their grants, and submit final reports on their research; reviewers, too, will be able to use the system to send in their comments.

The project, propelled in part by a new federal law designed to make government more efficient (*Science*, 6 January, p. 20), is NSF's most ambitious move so far toward electronic grant submission and processing. NSF officials hope the experiment will hasten the arrival of the all-electronic grant shop. "The goal is to find Internet-based solutions to all transactions between the agency and the grantee," says NSF's Bill Kirby, who will help to oversee the project. "The challenge is to keep the material in electronic form as it moves through NSF. And we don't want to just replicate the paper process—we want to improve it."

That goal is still a long way from being achieved, however—and not only for NSF. Both NSF and the National Institutes of Health (NIH) have been trying for years to devise systems for processing research grants electronically. But technical problems with hard-to-use software, balky transmission lines, and incompatibility with existing systems have slowed progress.

NSF has been tinkering with electronic grant handling since 1985, since ex-IBM official Erich Bloch arrived at NSF and was shocked to find the foundation's procedures were still wedded to paper. In 1986 NSF contracted with two university-based teams to develop software for electronic submissions of entire proposals under a project called EXPRES. The project handled a few hundred proposals in the next few years before NSF officials realized that they had bitten off more than they could chew. "You needed to be a data management type to operate the system," recalls Pamela Webb, assistant director of the office of research administration at the University of California, Los Angeles. "It was not geared to the average faculty member who was supposed to use it." FastLane is the next step in that process: While it is less ambitious than processing an entire application, NSF officials think it is a better way to prepare the community for full-service electronic grants processing.



More choices. A prototype of FastLane (*top*) offers researchers six options, including a check on the status of their proposals (*above*).

NIH is a more recent entrant into the world of cyberspace, although officials began toying with electronic grant transmissions as early as 1987. Several research universities recently participated in an electronic grant submissions experiment, called Automated Grant Application System (AGAS), but NIH encountered great difficulty in processing some of the electronic files. (NIH officials spent all night downloading one grant application, for example.) The experiment was ended last summer after an 18-month trial run.

Last fall, NIH conducted a more modest test, called AGAS-LESS (Limited Electronic Submission System). It featured the transmission by two universities of a few pages of administrative information that accompany the scientific meat of the proposal, which is then sent in on paper. Its goal was to determine how much information NIH needed to assign proposals to the proper study section for review. NIH officials hope to learn from NSF's experience with FastLane and expect to further modify the system by next summer.

The false starts can be hard on researchers. "I can't believe that we're not further along," says Cedric Minkin, a cell biologist at the University of Southern California, who participated in NSF's EXPRES project and in AGAS-LESS. "I think the biggest hang-up is getting everybody [in government] to agree on a common approach and then to start using it. And a lot of scientists are still reluctant to use computers. My generation [Minkin is 53] wasn't trained on them, of course, although it's not hard to learn."

NSF officials are hoping FastLane will overcome some of these problems and eventually provide the basis for an all-electronic system of grants management. Toward that end, NSF and NIH are part of a larger federal effort, coordinated by the Department of Energy, to develop national standards for electronic commerce. A draft of those standards is under review and due out in December.

For the moment, the biggest impact of FastLane is expected to be a reduction in the number of phone calls between applicants anxious to know where their grant proposals stand and NSF project officers. NSF officials hope to cut down that phone traffic by 25% by the end of the year. "When I call NSF," says Michael Grutzeck, a geochemist in the Materials Research Laboratory at Pennsylvania State University who has an application pending before NSF, "I'm usually trying to find out how the reviews went. You need practically all 'excellents' [the highest of 5 ratings] to have a chance for funding. Ideally, FastLane would post each rating as soon as it was sent in, and if I saw any 'fairs' I'd know it was time to start working on a revision."

In a related goal for FastLane, this year NSF also hopes to handle 3000 electronic reviews—5% of its annual total of 60,000 mail reviews. Until the entire cycle is automated, however, the electronic reviews will be more of a convenience for the community

* Participating institutions include: Arizona State, Delaware State, MIT, New Mexico State, Ohio State, Penn State, Purdue, Santa Rosa Community College, Southern Illinois Univ., Texas A&M, University of California–Berkeley, Univ. of Chicago, UCLA, Univ. of South Carolina, Univ. of Washington, and Virginia Tech.

than a significant timesaver for NSF.

Even if FastLane meets its goals, however, electronic grantsmanship must still overcome concerns about equal access, adequate security, and the system's ability to reproduce accurately what has been transmitted before it can be widely adopted by the government. There's also the question of control. "An earlier prototype of FastLane allowed faculty to push a button to transmit material to NSF," recalls Julie Norris, the Massachusetts Institute of Technology's director of sponsored programs. "That left us [the MIT administration] out of the loop. Now it says that, when they are done, the proposal is ready to be submitted to the appropriate institutional channel."

Given these problems, officials who are trying to move research agencies into the electronic age warn that the process could still take time. "Part of my job is to pour a lot of cold water on the idea [of electronic grant processing]," says Nicholas Suszynski, chief of the information systems branch for NIH's Division of Research Grants, which handles 40,000 applications a year. "We can do some things, but there's an awful lot that we still can't do. And anybody who says we can do it all is kidding themselves."

–Jeffrey Mervis

SCIENCE IN THE COURTS

Bendectin Case Dismissed

The birth defects lawsuit responsible for changing the standards for admissibility of scientific evidence in the courtroom was defeated last week by the very rules it helped to set. Relying on a 1993 U.S. Supreme Court decision that requires judges to think like scientists in deciding what scientific evidence is admissible in court, a three-judge panel from the 9th U.S. Circuit Court of Appeals in San Francisco ruled that the plaintiffs' evidence in the lawsuit known as *Daubert* v. *Merrell Dow* was not valid, effectively throwing the case out of court. The *Daubert* case is one of some 200 in which the 1993 decision has been applied, and legal experts say the ruling has generally led courts to be more skeptical of unconventional scientific evidence.

The *Daubert* case was brought in the mid-1980s on behalf of two children whose birth defects were allegedly caused by the morning-sickness drug Bendectin. To try to prove that the drug was responsible, the plaintiffs' lawyers brought in eight expert witnesses who attempted to refute multiple published epidemiological studies that concluded Bendectin does not cause birth defects. They based their testimony on test-tube and animal data, as well as a reanalysis of the existing epidemiological studies that, they claimed, disproved the conclusions of those studies.

But the lower courts found the plaintiffs' evidence inadmissible based on the Frye rule, the 70-year-old standard which says that, to be admissible in court, scientific evidence must be obtained by methods that are "generally accepted" in the scientific community. The courts reasoned that the animal and test-tube data were superseded by the human epidemiological studies, and they rejected the re-evaluation of those studies because it had not been published or otherwise subjected to peer review.

The plaintiffs appealed to the Supreme Court, which decided that Frye is too rigid. It lifted "general acceptance" as the sole rule governing admissibility of scientific evidence, instead requiring judges to use a more flexible set of considerations, similar to those used by scientists, to decide whether evidence is scientifically sound. The high court then sent *Daubert* back to the 9th U.S. Circuit Court of Appeals, which followed the new guidelines to conclude once again that the evidence was inadmissible.

Plaintiffs' attorney Barry Nace calls the decision a "slap in the face" for the Supreme Court. He says the high court intended to allow a wider range of scientific testimony to be brought in front of the jury for scrutiny. "The purpose ... was not to preclude people having their day in court," he says. But Charles Fried, attorney for Dow, calls the decision a "straightforward application" of the Supreme Court decision.

Others not necessarily aligned with Dow say the Supreme Court's ruling has tightened standards for admitting evidence. When the decision was announced, "there was legitimate concern that there was a lot of license provided to lower courts to either admit or exclude evidence," says Washington attorney Richard Meserve, who filed a "friend of the court" brief in the Supreme Court case on behalf of the American Association for the Advancement of Science (*Science*'s publisher) and the National Academy of Sciences. But those fears have proven unfounded so far, says Bert Black, vice chair of the American Bar Association's section on science and technology. "The Supreme Court was telling trial judges to look more closely at evidence ... to determine whether it is really scientific or not," says Black. "That is by and large what is happening."

–Marcia Barinaga

INSTITUT LAUE-LANGEVIN

Critical ILL Back From the Dead

After a nearly 4-year break in its operations, the world's most powerful source of neutrons for research, the nuclear reactor at the Institut Laue-Langevin (ILL) in Grenoble, France, started up again last week. The hiatus was caused by the discovery of cracks in the reactor's cooling system in 1991, which prompted a complete overhaul.

The restart came as an enormous relief to the ILL staff, which had been struggling for more than 2 years to complete the difficult overhaul against a background of budget feuding among the facility's three main funders—France, Germany, and the United Kingdom. "It's great. There's a completely different atmosphere," says ILL Director Reinhard Scherm.

The reactor, which first started up in 1971, supports research in physics, chemistry, biology, and materials science. Its closure was a major blow to neutron beam research. Just before it shut down, about 2000 scientists visited ILL each year and 800 experiments were carried out annually on the more than 30 instruments clustered around the reactor.

The discovery of cracks in metal grids that diffuse the reactor's heavy water coolant came at a difficult political juncture for ILL. The United Kingdom had just asked that its contributions to the lab be reduced to below those of France and Germany—all three countries were then contributing equal amounts—and for a while ILL's future looked very bleak. In the end, however, the three partners agreed to a 15% cut in ILL's overall budget, and the United Kingdom's share was reduced by the largest percentage. ILL was forced to trim staff, and the number of instruments was limited to 25. But the partners did agree to go ahead with a complete refurbishment of the reactor, to be carried out largely by ILL staff.

This was completed last July at a cost of $33 million, from within ILL's normal budget. Researchers then had to endure a frustrating 6-month wait for the results of a public safety inquiry and a decree from the French government, signed by three ministers, before France's nuclear safety authority gave the go-ahead on 3 January. The reactor went critical 3 days later. With the future of the U.S. Advanced Neutron Source in doubt as budget cuts hang over the Department of Energy (see p. 164), ILL is looking forward to a long reign as the world's premier source of neutron beams. "Technically, it could last 25 years more," says Ekkehardt Bauer, head of ILL's reactor division. "We have rebuilt all the active parts—it's virtually a new reactor."

–Daniel Clery