

## **Research Funders' Conference on Electronic Grantmaking: Conclusions and Next Steps**

### ***Executive Summary***

The Burroughs Wellcome Fund hosted some 60 representatives of grantmaking organizations, from the federal government to small foundations and local nonprofits, in a June 5-6, 2002, conference on electronic grantmaking. The conference featured one and a half days of presentations and discussions on how to implement e-grantmaking, the benefits of implementing it, and the challenges it presents for grantmakers, recipients and others involved in the process. While the conference focused on e-grantmaking activities of research funders, the lessons learned apply across all types of funding organizations. Conference participants also agreed to continue the discussion.

Electronic grantmaking, or e-grantmaking, includes the following processes:

- Creating and submitting grant applications via the Internet
- Reviewing grant applications electronically
- Notifying recipients whether their proposals have been funded
- Award activation and management during the term of the award
- Following up after grants have been awarded to determine the outcome of funded projects

Electronic grantmaking holds the promise of speeding up the process, reducing administrative costs, and improving post-grant feedback and evaluation. Ultimately, these benefits should help funders be more effective and efficient in achieving their goals.

However, e-grantmaking technology can be difficult and expensive to implement, may require a substantial change in culture and processes on the part of everyone involved (applicants, the funder's staff, and reviewers), and for some funders it may simply cost more in time and money than it saves in efficiency and effectiveness.

Nonetheless, the participants agreed that e-grantmaking shows promise in increasing funders' effectiveness and is worth further consideration. Participants agreed to next steps including: starting an e-mail discussion list, organizing further meetings on e-grantmaking topics, and forming a consortium to negotiate potential access to the federal government's electronic grantmaking systems.

### ***Existing Systems***

There are a number of electronic grantmaking systems in use by various funders; the most subscribed to are the federal government's. The National Science Foundation's (NSF) FastLane electronic grant application system is arguably the most advanced of these systems.

#### **FastLane**

FastLane was introduced in 1995, but principal investigators applying for NSF funds were not required to use it until in October 2000 – an important consideration. Dr. Alan

M. Jones, a biologist at the University of North Carolina at Chapel Hill who addressed the conference and praised FastLane, said he didn't start submitting his NSF grant applications electronically until it was required.

Among its benefits, FastLane helps prevent mistakes in Dr. Jones' application by providing online budget calculators, ensuring that he enters the correct information in the appropriate place in the application by presenting a limited menu of choices, providing a checklist of items needed, and making his application-in-process available to collaborators and his university's sponsored research office. FastLane also stores an applicant's personal information online, so it doesn't have to be re-entered with each new application. Dr. Jones also praised FastLane's high-quality technical support and its abundance of server capacity and bandwidth to handle peak-demand periods just prior to application deadlines.

Additionally, Dr. Jones said, FastLane forces applicants to fit the parts of the application into small, discrete categories, preventing them from "waxing poetic" in a grant application. At this point, FastLane appears to be a well-tested, mature e-grantmaking system. No doubt many principal investigators and university sponsored research offices are familiar and comfortable with the system, because of the leading role NSF plays in funding research.

#### Federal Commons

A broader ranging system is under development by the National Institutes of Health (NIH) and will eventually be part of a government-wide effort dubbed the "E-grants program," which encompasses the former Federal Commons system. According to the E-grants Program Management Office, the E-grants program will be a single point of entry for potential grant recipients. J.J. McGowan, director of extramural activities at the National Institute for Allergy and Infectious Diseases, reported on the Federal Commons Initiative and the activities of the NIH.

#### Private Systems

There are numerous private e-grantmaking systems in operation, from simple systems that involve submitting PDF documents electronically, to complicated, database-driven applications. Some foundations are already tying into federal systems; some have purchased and installed proprietary software systems; and others have hired software engineering consultants and built their own systems. Many funders are still administering the entire grantmaking process primarily with paper and with no computer technology more complicated than a word processor, spreadsheet program, and laser printer.

### ***Implementing an E-Grantmaking System***

#### Getting started

All of the conference panelists who had implemented e-grantmaking systems discussed the importance of up-front planning and considering all the needs, and potential needs, that an e-grantmaking system might be called upon to meet.

For instance, e-grantmaking systems can make it easier to produce reports on funding activities for senior administrators and board members. In addition, e-grantmaking systems can make it easier for voluntary health agency development officers to give reports to contributors, informing them of how the funder paid for research conducted in the contributor's state. Therefore, it is important to evaluate how the data collected will be used.

When considering an e-grantmaking system, another item to take into account is how much "legacy data" – old information already in your computer system – you may want or need to transfer into the new system, as well as how the e-grantmaking system may interact with your financial systems.

Beyond these considerations, much attention should be given to the users of the system – grant applicants, sponsored research offices, third parties, reviewers, and funding organization staff members.

**Applicants:** The lessons that Dr. Jones presented in his overview of FastLane (above) should be taken to heart in designing an e-grantmaking system. Among the key strengths of FastLane are its ability to encourage the right answer, to handle simple calculations itself to prevent applicant errors, sufficient capacity to handle peak demand periods, and experienced technical support personnel available over the phone.

Within the application process it is important to consider file formats, graphics and special characters, multiple browsers and operating system support, and security. File formats should be as universal as possible and easy for applicants to use. There are a wide variety of graphics applications, so funders should monitor the products used and provide guidance. Recommendations for transitioning to an electronic system included beginning on a volunteer basis, providing lots of notice and information on the new system, and ensuring proper support for the system. Once the e-grantmaking system is implemented, to improve its usability, periodic applicant surveys are useful tools to obtain feedback.

An additional concern of some funding agencies is access to the Internet, which may be difficult for some applicants, particularly those in countries with limited access. Requiring electronic submissions could bias grant funding away from otherwise deserving recipients.

On the other hand, e-grantmaking has several benefits. In the research arena, most applicants are accustomed to working in an electronic environment when conducting research, analyzing data, and preparing manuscripts. Preparing and submitting grants in this environment is a logical extension of such activities. Applicants can also work virtually up to the deadline when submitting, since transmission speed is much faster than the postal service or even overnight mail. Perhaps even more important, electronic systems speed application processing, reviewer assignment, and application review. If notification is electronic (email), applicants find out more quickly about their scores,

critiques, and ultimate funding status. Some systems even allow new awardees to activate their award on-line.

**Sponsored research offices:** At a large university, like the University of North Carolina at Chapel Hill, the sponsored research office (SRO) may end up dealing with dozens of e-grantmaking systems, each of them different, said Robert Lowman, who heads up the sponsored research office at UNC-Chapel Hill.

Other shortcomings Lowman sees in current e-grantmaking systems include an inability to deal with diagrams and illustrations well, and sometimes insufficient capacity to handle peak-demand periods immediately prior to application deadlines. He was also frustrated that some e-grantmaking systems have no mechanism for ensuring that the SRO is involved; principal investigators who win funds on their own without SRO approval may have bypassed internal approvals or broken university regulations. At a minimum, Lowman would like SROs to receive an e-mail when an applicant first begins an application, and another e-mail when the application is submitted.

A friendly user interface is important in e-grantmaking systems, as is the capacity for people within and outside an institution to collaborate on a proposal. One major flaw in some e-grantmaking systems is requiring an applicant to fill out the grant application in a certain order, rather than allowing pieces of it to be completed in whatever order the applicant wishes.

According to Lowman, there are two primary electronic research administration systems used by degree-granting institutions: COEUS, created by the Massachusetts Institute of Technology, and GAMS, created by North Carolina State University. Both are based on EDI (electronic data interchange) technology, a widely used and well-understood standard for electronic information exchange that predates the Internet. Presumably it would be useful if e-grantmaking systems could interface directly with these research administration applications.

**Third parties:** In addition to collaborators and sponsored research offices, some funders require applicants for certain types of grants to submit third-party information, such as letters of recommendation. A major advantage of receiving third party information electronically is that it can easily be combined with the applicant's proposal, eliminating the major expense of copying and collating additional items into the application. It also provides the funding organization with an electronic copy of the entire application for archival purposes. Systems can be designed to provide feedback to the applicant on the status of the third party submission, making it easier for the applicant to follow-up on missing information in a timely fashion.

Electronically receiving third-party materials also solves a newly recognized problem – the vulnerability of paper communications to Postal Service disruptions, as tragically demonstrated in last year's anthrax scares. In addition, electronically receiving information can also allow people in remote areas to submit information in a more timely

fashion. That said, there are at least three major issues related to dealing with third-party submissions electronically.

First, if third parties are not inclined to use electronic communications, or not comfortable, is it reasonable to force them to use it? In general, applicants have little control over someone else's actions or preferences. In instances where users are uncomfortable with technology, requiring electronic submission of the information may hurt the applicant. Some organizations have solved this by accepting both electronic and traditional paper input, and then converting the paper input to an electronic form by scanning the document in as a digital file.

Second, some conference participants were concerned about security and authentication of electronic third-party submissions. While some participants talked about using digital signatures to ensure authenticity, this requirement might make submitting information electronically too time-consuming for someone whose motivation is minimal to begin with or who might balk at the added expense. Authentication of signatures is also an issue if funding agencies require signatures from the institutions approving the application. On the other hand, participants noted that the problem of authenticity has always existed – official stationery is easy to come by and signatures can be forged. E-grantmaking systems are not necessarily more vulnerable than paper-based systems. A related issue involves the authentication of such items as publication reprints; given copyright laws, they may be difficult to obtain electronically.

And third, some funders noted that recommendations submitted electronically – without the traditional paper accoutrements of official stationery – may have less impact on reviewers. This means that if third-party information is submitted electronically, or converted to electronic form, all third-party information for all competitive grant applicants should be handled the same way.

**Reviewers:** Funding organizations depend on reviewers, often volunteers, to evaluate grant applications and help make funding decisions. But organizations vary widely in how they prepare reviews, how many reviewers they use, how they handle the review process, and how they make the final decision on an application. Organizations vary based upon their size and budget, their historical practices, their culture, and the culture of their reviewers, among other factors. This makes it difficult to draw any broad themes regarding e-grant reviewing. But conference participants did present a number of interesting and useful ideas.

Traditionally, funders have spent enormous amounts of time and money sending paper copies of applications to reviewers. Typically, the applicant bore the cost of producing copies of the application – which can run into hundreds of pages – and the funder bore the cost of shipping or mailing applications to reviewers. Some organizations now simply put copies of the applications on a CD-ROM as a PDF (Adobe Acrobat) file. Others have reviewers download the applications from a secure Web site. Many reviewers seem to prefer reading applications on paper instead of on a computer screen, in part because of paper's portability. Many conference participants were concerned about putting on a

reviewer's shoulders the sometimes considerable expense of printing long grant applications. One compromise is putting all applications for a review committee on one CD-ROM or providing secure access to all applications on the funder's website, and providing each reviewer paper copies only of those applications specifically assigned to him/her to critique.

Some organizations have reviewers provide their comments, critiques, and scores to the funder via a Web-based application. Internal review systems can summarize scores and check for conflicts of interest. Such features provide valuable assistance to review committee chairs and staff. In general, participants were committed to making the review process as easy and convenient as possible for their time-pressed volunteer reviewers.

**Staff:** Also important to consider in any e-grantmaking plan are the technical sophistication and size of the funder's staff. Will the funder be able to handle system administration and technical support in-house, especially during times of peak use, or should these functions be contracted out?

#### Too many choices?

One of the most pressing concerns for all research funders is whether each funder should have a unique e-grantmaking system, or whether there should be an effort to adopt a common system or common standard for data, perhaps piggy-backing on the government's "E-grants program" effort. One major outcome of the conference was a determination to become more involved in discussions about the government's efforts in this arena and the possibility of looking at some kind of common system. Obviously, such a system might present major design challenges, but it might also be much easier for principal investigators and others to use, ensuring that potential applicants are not scared away from a funder's e-grantmaking system. As noted above, sponsored research offices are already finding themselves dealing with dozens of distinct e-grantmaking systems.

No matter what system is being implemented, it is important to obtain feedback regularly from applicants and reviewers to help refine the process and to improve the experience for all participants.

#### Nuts and Bolts

The choices for a funder deciding to implement an e-grantmaking system are, essentially, build or buy.

Building a custom system, by hiring programmers or a firm that specializes in engineering Web-based applications, ensures that the e-grantmaking system more clearly meets the unique needs and demands of the particular funding organization. However, this choice is likely to be more expensive than buying or leasing a system that's already been developed. In addition, building a custom system puts the costs of future system upgrades, technical support, and other ongoing costs firmly on the funder's shoulders.

Buying a system or leasing a service is likely to be cheaper, but it may result in a system that does not quite do everything the funder wants, or does not do it in quite the manner

the funder would prefer. Even when buying a system, the funder may require some customization. By participating in a common solution, the funder also has more impact on the broader electronic solution than if a custom system were implemented. Nonetheless, costs for ongoing upgrades and maintenance are likely to be cheaper with the buy option. In addition, if a funder buys a system used by many other funders, it's more likely that principal investigators, sponsored research offices, and other users will be familiar with the system. In turn, the funder benefits from the best practices shared by other participating funders.

Beyond the considerations of build or buy, it's important to ensure that there are enough technical and human resources to support the system, especially during periods of peak demand – typically in the days and hours leading up to an application deadline. First, it's important that the system have enough server capacity and bandwidth available to be responsive even when demand is high. For funders encountering a high level of demand, it may be easier to manage this by outsourcing servers and bandwidth to a company that can offer variable amounts depending on demand, rather than the funder hosting the application itself and having to pay for bandwidth and server capacity that only gets used for short periods of peak demand.

Secondly, it is important to develop procedures ahead of time on how to deal with support and special issues that arise, such as system downtime near deadlines and missed deadlines. The types of support provided (such as frequently asked questions on the website and phone support) and hours of availability should be publicized. Those agencies with electronic experience emphasized the need for phone support especially at the beginning. All users should be educated on the system.

And finally, it's important to have backup capacity for servers and data, whether it's backing up the e-grantmaking system itself, or files kept on an organization's internal computer network.

### ***Beyond Writing Checks: Further Considerations***

E-grantmaking and e-research administration have the potential to allow funders not only to make grantmaking more efficient – reducing costs and speeding up the process – but also to make funders more effective as organizations. Knowledge management is, roughly, the process of capturing information and making decisions based upon the information gathered. By taking the grantmaking process electronic, funders capture much more information about their activities and have the potential to better measure how effective they are at accomplishing long-term, strategic goals.

By capturing information not only about projects that are funded, but also the outcomes of those projects (which may require feedback from principal investigators, who may need incentives to provide that feedback), funders can measure how well they're investing their research dollars and what kinds of outcomes funder-sponsored research is producing. That in turn means that senior administrators and board members may have

better information on which to base decisions on funding priorities and other difficult issues.

The first step to knowledge management is capturing grantmaking information in electronic systems where it can be analyzed and combined with other data sources, and the most direct means of doing that is to implement an e-grantmaking system.

### ***Next Steps***

The conference participants agreed to a number of important follow-up steps.

First, one of the participants – the Dreyfus Foundation – agreed to host at least one, and possibly more, e-mail discussions about e-grantmaking. That listserv will ensure that the discussions and collaborations begun at the conference continue into the future. For additional information on how to register for the listserv, please send an email to [info@bwfund.org](mailto:info@bwfund.org).

Secondly, participants agreed that further conferences are needed to discuss various aspects of e-grantmaking.

And third, participants agreed that they would form a consortium to discuss possible collaboration with the National Science Foundation's FastLane system and the planned Federal Commons system. Such collaboration could solve the problems principal investigators and sponsored research offices face in trying to navigate a multitude of unique e-grantmaking systems.

*A special thanks to the Planning Committee of the Research Funders' Conference on Electronic Grantmaking for their contributions to the conference and the paper. Committee members include Marcia Baker, MA, of the American Heart Association, Gerard L. Brandenstein, MBA, MS, of the Camille and Henry Dreyfus Foundation, Maryrose Franko, PhD, of the Howard Hughes Medical Institute, Patricia C. Hinton, MA, MS, of the American Heart Association, T.J. Koerner, PhD, of the American Cancer Society, Bernadette M. Marriott, PhD, Melanie B. Scott of the Burroughs Wellcome Fund, Mercedes V. Talley of the W.M. Keck Foundation, and Debra Vought, MS, of the Burroughs Wellcome Fund.*