

An Interview with

JEAN FELDMAN

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Conducted by Jeffrey R. Yost

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Jean Feldman Interview

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Abstract

With support from the National Science Foundation (Grant No. 0811988, “Designing and Using FastLane: Distilling Lessons for Cyberinfrastructures”) CBI researchers Jeffrey Yost and Thomas Misa conducted oral history interviews with 70 NSF staff members as well as numerous additional interviews during 29 university site visits. An overview of the project is available at <www.cbi.umn.edu/oh/fastlane/> and a complete set of 643 publicly available interviews is at <dx.doi.org/10.13020/D6RG6B>. Here on the CBI oral history database is a selection of notable NSF staff including Joseph F. Burt, Jean Feldman, C. Suzanne Iacono, Constance McLindon, Carolyn L. Miller, Paul Morris, Andrea T. Norris, Erika Rissi, Craig Robinson, Mary F. Santonastasso, Rich Schneider, Frank P. Scioli, Beverly Sherman, George Strawn, and Frederic J. Wendling. Topics common to many of the interviews include the design and development of the NSF’s FastLane computer system, interactions with users, e-government initiatives, grants management practices, peer review, and NSF policies and practices. These interviews span a wide range of NSF staff, from program officers to senior managers.

Jean Feldman was NSF’s chief policy officer and provides a clear window into the relations between NSF policy and the development and evolution of FastLane.

Yost: My name is Jeffrey Yost from the University of Minnesota. I'm here today on April 22, 2011 with Jean Feldman at the National Science Foundation. Jean, can you begin by giving me a little bit of your background, educational background and work experience before coming to NSF?

Feldman: I'd be happy to do that. I have been with the federal government since 1987. My experience working prior to NSF was for the Department of Defense, for both for the Air Force Office of Scientific Research and what was then the Army Medical Command. They changed the name so I'm slipping; Medical Research and Development Command. And so I have done policy for the research components of DOD in the same kinds of capacity. Air Force Office of Scientific Research is very much like NSF. In fact, we have a number of joint activities with the AFOSR, so they're the basic sciences. Army Medical obviously does biomedical research for the Army and so I got to have a chance to take a look at the biomedical research policy side of the house. So when I came to NSF in 1992, it wasn't a difficult challenge in terms of research policy because I had been doing that for a number of years already. But it was moving from a DOD to a civilian agency and that is very, very different. So I have now been at the foundation since 1992 and have been in various positions within the policy office. I arrived as a Grants Policy specialist, then I moved to Deputy Head of Policy, then I moved to Acting Head of Policy, and I've been Head of the Policy Office since the late '90s; so a long time.

Yost: Do you recall what year you moved to become deputy?

Feldman: Oh, heavens. I could get those tapes for you but it's been a long time. But I've been doing this job for a very long time. In your history of FastLane, you know I'm certainly a logical person to speak to as I have worked with my colleagues in the Division of Information Systems in designing electronic systems for both internal and external use, that meet the policies and requirements of the National Science Foundation.

Yost: When you arrived in '92 did NSF have any presence on the web?

Feldman: Yes we did. We had documents that were on and available electronically. In '92 we had a huge presence in terms of all of our funding opportunities. But at that time they were still much in the paper mode. We did paper documents, paper forms, and the publications we put out were primarily, at that time, still in a paper mode. When you wanted something from NSF you asked for it in paper.

Yost: Announcing new programs . . .

Feldman: Yes, absolutely; all of our funding opportunities. While they may been available in some electronic form in the early '90s that wasn't certainly the predominant way at all. So to access them, it was still very much a paper environment at that time.

Yost: Were you ever aware of a research project called EXPRES?

Feldman: Yes, I have heard of EXPRES but when people think of FastLane they think of it as our first entree. It was not. We had some in the late '80s. Jerry Stuck (I'm not sure if you've heard his name) came up with a number of those activities. And we're kind of, let's see what's out there. Let's see what might be able to be done in terms of moving into a real electronic process or set of processes for the National Science Foundation. So yes, I am aware of some of things they tried in the late '80s with those kinds of projects.

Yost: When you arrived in 1992, what kinds of discussions were going on with regard to the possibility of an electronic grant submission system, do you recall?

Feldman: Back in those days; we had, as I alluded to before, all of our proposal preparation guidance was in paper. And we had a paper forms kit that we put in the back of our document, and we said here's the forms that you need to use. And so the very first things that we tried to do were to make even those more electronic; just even from a fillable perspective. But the reality is, it was around '93, '94 that I really started getting engaged more into those discussion of maybe we could be doing this electronically. And at the same time in the early '90s, we were exploring use of sending out award letters electronically. And we were way; I mean, worlds; we were so far ahead of any other federal agency in that regard. Even our colleagues at NIH took many, many years later to get engaged in a process that NSF had been doing. It was in slow baby steps at that time that we started exploring these, because whatever we did we wanted to do well and we wanted to make sure the community was ready for. We were also one of the first agencies to require electronic submission, and that was in 2000. So we have been requiring folks

to submit; and that was well before any other agency even thought of doing something like that. But we wanted to make sure those years of '94 to 2000, that we worked out all the kinks and that the community itself was ready to do that. When you have 26 grant making agencies of the federal government, the constituency groups and our customer groups are so different. Some could not have considered that. Obviously, we're working with colleges and universities and it was right at that time. So in '93, '94 was when I was really getting involved in those discussions about proposal preparation systems for NSF.

Yost: You mentioned Jerry Stuck. Are there other individuals that were driving forces, reasons why NSF was ahead of other agencies with electronic systems?

Feldman: Yes. Fred Wendling was very involved, back in those days. Carolyn Miller; she has since left and retired, was heavily involved back in those early days. From the DIS perspective, we have some colleagues here that electronically have done every. John Jehoviak [?] did every award system the National Science Foundation had. He recently retired back in December of 2010. But also Joanna Rohm [?], who's now Deputy Director of Budget, Finance, and Award Management was engaged back in those days of our move to go electronically.

Yost: Was Connie McLindon as well?

Feldman: Yes, Connie McLindon and the Office of Information Resource Management. She obviously would be the office above Division of Information Systems. So yes, that is

another name that probably was engaged in that process. And obviously, from the very beginning, the name always associated with getting NSF to that first push, was Erich Bloch who was a prior director of NSF. He's the one that said NSF needs to go in this direction; let's get computers on every desk. That's what it took from this side. Without his first steps we would never have been able to take those bigger steps later.

Yost: In the early '90s, what about internal systems? Everyone by that point, I assume had a computer on their desk.

Feldman: Yes, by the time I got here that was the case.

Yost: Was there a network that was being used for that purpose?

Feldman: Yes, if you want the technical side of that, I would rely on my colleagues from Information Systems [DIS] to give you those.

Yost: Okay. Do you recall roughly the year and the type of discussion when the FastLane project was taking form? Where you first started participating?

Feldman: It was '93, '94, '94 the year we usually always refer to as the start of FastLane [is] 1994. Again, baby steps; you know, in those days things were always voluntary. We had key groups of people that we worked with that volunteered, essentially, from institutions that were our testers in the university community. When we had issues we

wanted to work out with the Federal Demonstration Partnership I don't know if that's come up in the discussions that you've had to date, but they've always been very much a laboratory for us to go through some of the challenging issues. Not only is it the research administrators, which are typically used to communicating from our end; but it was also the researchers themselves participate in the FDP as well. And so you got, in one meeting you were able to solicit, "What do you think of this?" Or, "What are the problems if we do that?" So it was a great laboratory for NSF to test some of things out. And NIH has had a similar path in that regard.

Yost: What types of reactions, when these ideas were first presented at FDP meetings were you getting?

Feldman: Very mixed, obviously. There was always an air of excitement that we are doing something new. We are doing something that no other federal agency is doing in those early years. And yet at the same time, frustration. A lot of frustration because it's not that they didn't want to engage, it's that they had problems on their own campuses of having the infrastructure from their end to do what we were trying. There was also very much a sense of 'we've always done it this way, why do we have to change now?' But I think that was the minority. I think with anything that's new you're going to find a full mix of people in their reaction; you're going to get the full range of reaction. But again, I think the overall sense was 'this is something that the National Science Foundation should be doing in its role in the research community.' It's a natural leader in this regard.

Yost: In terms of policy, were there any things that you saw as challenges in moving from paper to electronic?

Feldman: (Laughs.) A whole bunch!

Yost: Can you elaborate on that?

Feldman: Yes. There is just a lot because I think one's natural reaction is to say we're going to take what's paper and we're just going to electronify it. But in many cases moving it from paper to electronics doesn't make sense. You really have to look at the process itself and make sure that; wait a minute, just because we did it in paper, is that, now that we're moving to this next step, the way that we want to do it in electronics. And some of the biggest challenges that the foundation faced in terms of getting community buy-in were things like a concept of an electronic signature. In those early days, we required every PI and every co-PI to sign a paper cover sheet, as well as, of course, the authorized organizational representative. That presented a ton of challenges when you were moving to electronics. And in those first years what we did was have them submit a proposal electronically, and then submit a signed paper copy; and paper copy that had to be married up with that. That was tremendously painful and so the foundation explored various options and it was through these tests, and it was through the conversations that we had with the Federal Demonstration Partnership, where we were able to streamline that process and completely eliminate tens of thousands of pieces of paper, and tens of thousands of PI signatures on a cover sheet because we felt that the infrastructure was in

place at the institutions for them to take responsibility for that and for the foundation. So that's just one small example, but the effort there; I mean, as you can imagine, being a researcher yourself; the proposal's done, the PI's gone working on something else, but they would have to be tracking this individual down to get a paper signature. It was just a nightmare; really was a nightmare. And then we tried faxing them in; and that was a nightmare. So it really was through these trials and tribulations that we were able to demonstrate that just because the paper process did it that way, is not where we should be moving in the future. And so we were able to make changes in that regard.

We also wrestled a whole lot over the years with this concept of PDF attachments and uploads. [It] was a very challenging process, but yet, over the years we were able to come up with a very good solution where the foundation essentially converts the files for [submission]; and that was not immediate. You know it took years to get to that point. It took years for us to be able to have the technology where we did it; turned it back to you; the PI or the individual says this is good; and then we're good to go. There were a whole bunch of these challenges that you say, "Oh gosh, we did that." But there was a lot of pain along the way to get us to that point where we were ready to do that.

Yost: Was there concern that different institutions, different colleges and universities, and other research organizations were at different points with adopting computing and networking resources?

Feldman: Absolutely.

Yost: Can you talk about that discussion?

Feldman: Throughout one of the key principles that go throughout NSF policies is the concept of equity. And we were very much aware that some institutions were further along. The ESPCoR program demonstrated that some states are not as far along. A lot of that has obviously changed; which is why we had a period between '94 and 2000 when we said you know what? Until our community is ready to go, we don't want anyone to be disadvantaged, either for those that are submitting electronically or for those submitting in paper; to those that are not. And so that's why it took quite a number of years for us to make the jump, because we wanted to make sure that the institutions were ready; we wanted to make sure that the technology was there and universally available. And even in 2000; and even to this very day, when you look at our Proposal Procedures in our Grant Proposal Guide, we have one aspect that still remains in paper and that is the capability when the PI believes that the reviewer has to see what it is in paper, because they don't feel comfortable that it can be presented in a electronic way that will not disadvantage them. We give the PI the opportunity to say, "I think you need to view this in paper." So that's how much we view equity. Now, NSF may look at it and say anybody can view that on their computer screen and they will not be disadvantaged. But we still provide to this very day that flexibility because equity and making sure that no one is disadvantaged has certainly been a strong principle that we've never wavered or deviated from. We also give to this very day the capability to someone to say, "I cannot do this electronically" and

obtain a waiver. We get about maybe less than five a year, so it's not heavily used but the capability is there nonetheless, just in case.

Yost: The different components of FastLane, as the research community used it, were rolled out in different components . . .

Feldman: Right.

Yost: . . . and I understand that one logic to that was to get buy-in. Were there also policy considerations that were at play with the prioritizing of the different components?

Feldman: You know it's interesting, we started with the topics first, which one argues why would you ever do that? And in retrospect we might not have done it that way now. But the reality is that one of the things that we absolutely -- and we called them modules - - absolutely did was to insure that they were ready and had been extremely well tested before anything was released. There are 30 different parts. People think FastLane and they think of one system but it's not; it's many different systems. So we definitely started with the topics first but we also, during that time, assessed where the community was on that particular area. So for example, some of the financial functions came last because we really felt number one, those were riskiest. We wanted to make sure the communities and those part of the communities and their financial systems were ready to make the transition over to an electronic media.

Yost: Can you discuss, in the early stages of FastLane, the organizational aspects of getting feedback to the designers and developers, both from the policy office as well, as best as you can speak to other areas of NSF as well as external partners.

Feldman: Well we had, as I said, the policy office has grown since then and we have included other people in the process. But in the early years it was essentially just me, and I would [work] very closely with the leadership of FastLane; and they very heavily involved policy throughout the design to make sure, of course, that policy was driving the system; the system wasn't driving policy. And so there were tremendous interaction between myself and folks like Carolyn Miller, Dan Hofherr. Dan was involved for many years in these activities. We literally would sit down. We also have a systems office in the Division of Institution and Award Support, which has been in various offices in BFA (Budget, Finance and Award Management) over the years. But they also [were] heavily involved to make sure that from an electronic standpoint, we were appropriately implementing the business rules that we had in place in those electronic systems. We also heavily worked with that group of FastLane testers that we rolled out, as well as the Federal Demonstration Partnership, in gauging their opinion and their perspectives. Having that test group, if you will, has served as a format that has been used by other federal agencies. NIH has the NIH Commons. They have a Commons working group, just as we had our test group, where anything they do before they even gauge the broader research community, they get with that group and say this is where we're going; this is how it might function; give an opportunity to test -- heavily test -- before it's even rolled out. And usually, we're not even talking about test group and then implementing, you

know; often it was like okay, we'll voluntarily let people use it now, and go out broader. But we really wanted to make sure and spend a tremendous amount of time and energy to make sure that things were ready before they were issued and to ensure full compliance with NSF policies and procedures. So there was a whole lot of engagement with the community in those early years; and continues to be, as we move now to the next generation of FastLane / Research.gov. There were opportunities for folks even on the outside, externally to NSF, to really fundamentally change our policies by demonstrating to us; wait a minute, but this step that you impose, it just seems like a small step from your perspective but that step in the process is incredibly burdensome on an institution. It will then have to do fix additional steps. So we used that kind of feedback not only to make FastLane the best thing it could be, but also to make sure our policies were the best they could be, when made in an electronic form.

Yost: What was the actual mechanism at these FDP meetings for getting the word out and getting feedback; were there presentations?

Feldman: Oh, yes.

Yost: And was it to committees within the group or was it the whole group?

Feldman: Well there is an electronic research administration committee. That actually came in later years, so; I mean the FDP has been around; and it started [as] the Florida Demonstration Project in the late '80s; then became the Federal Demonstration Project;

and then the Federal Demonstration Partnership. But there have always been related committees where we could say this is what we want to do and this is how we're proposing to do it. Maybe even have some; what was the predecessor to PowerPoint? Transparencies. Those transparencies where we would show; look at; this is how we're going to do things. And again, this is the second step because we had already had that working group; that FastLane set of user group already giving their input. So this was the going out even more broadly and saying okay, it's already been through that initial group, now we're trying to get your perspective on this change. And again, these kinds of things have resulted in some pretty fundamental changes in not only just making it electronic, but how we do business, as well, by getting their input and buy-in.

Yost: There hasn't been a lot of documentation that we've uncovered on the early years of FastLane, but we do have a list of the schools that participated and the external advisory committee. What we don't necessarily know is *who* from those; what types of people from those universities. Was it exclusively the Sponsored Research Office personnel or were there also faculty members?

Feldman: They were engaging their faculty. I mean, certainly (pause).

Yost: But they were the liaison.

Feldman: Yes. In those earlier years there were clearly not as many faculty that came to FDP but now, I mean, there are tons of faculty. It's more than half the participants are

faculty members. But they would go back to their institutions and then solicit feedback so that we were getting not just Sponsored Projects Office, not just authorized organizational representatives, but PIs' perspectives on this process. And obviously; I mean I can guarantee you that when we made that move away, and eliminated PI signatures, it was just as much the input from the PIs. [They] said this is crazy; there's no value added to this part of the process but the amount of hours just to get all these signatures; and heavens, some of these PIs aren't even from our institution. So they'd be FedExing those to the other institution to get a signature. So yes, the full process had to be engaged on those kinds of decisions because everybody was involved in the process. From the departmental administrator who had to fill it out for the PI, to the PIs, to the Sponsored Projects Offices, to the VPs for Research who were often the authorized organizational representatives at their institutions. So it really was not just Sponsored Projects that we were engaging.

Yost: Were there other organizations and meetings that were providing feedback, such as NCURA?

Feldman: Oh yes. We have the ability -- and have for a number of years -- to solicit feedback and have regularly. I've got speeches from the '90s where we would go out and we regularly had a FastLane update as part of our NSF update. And that was a tremendous vehicle. Not only the National Council of University Research Administrators but the Society of Research Administrators. Then you have COGR, Council on Governmental Relations; those tend to be the major research institutions in

the U.S.; and those are represented through the Vice Provost for Research and the head of the sponsored projects function. We have engaged them for many years; so we engage our little heart out. So by the time we are ready to implement something, even if it's not something people particularly like, they're not taken by surprise by it. And that's why in 2000 when we made this move [to FastLane] the community was like, enough already; let's just do it. So the community was ready because we had done so much paving and getting them ready over the many years of those development processes.

Yost: I read in your bio that your office is responsible for checking or authorizing all the new content that goes up on the NSF website, is that correct?

Feldman: I am the NSF Clearance Officer and so in addition to any program announcement or any program solicitation that goes out the door, I have to sign off on it. I, or someone if I'm away, delegate, is responsible for that.

Yost: Did that include instructions and the wording on the forms in FastLane?

Feldman: Absolutely. And, in fact, that is a vital part of the process is to ensure; and that was not something that was initially even thought about. She thought well, we'll give the overall high level policy instructions, and then we'll create these technical instructions; well those are different from policy. They're really not and over the years we became more and more involved in those as well because they could be changing policy just by the technical instructions that they gave out to the community. So, yes, we clear all of

those documents and have for a number of years now. We have run the whole clearance function, which is a lot more than program announcement solicitations. So it's a vital part of the policy office function.

Yost: I understand from interviewing Fred Wendling that there was a critical meeting where the idea was proposed to Neal Lane. Do you recall if you were at that meeting?

Feldman: I'm not sure which meeting he's talking about. I've been at so many meetings; so I may have been; I may not have been. I know I was involved in a number of meetings where Neal Lane made the decision to go, yes; but there was actually more than one. So I'm not sure which one specifically Fred is talking about so it's best not to comment.

Yost: What factors were involved in the decision to finally say we're ready to set October 2000 as the mandatory date when FastLane ceases to be just optional or used within a few pilot programs, to this is going to be NSF-wide and really kind of push things along by making that deadline?

Feldman: Well certainly a huge assessment was the volume of proposals that were coming in electronically voluntarily. That data point right there told us a lot about how the community was using it; which segments of the community were using it; and what types of institutions were; whether there was a broad spectrum of our proposal and awarding community. So that was a huge aspect of it. We also needed to make sure that the principal parts of the system that were necessary for the proposal preparation

function; because that's just one piece of it but there were some related systems [that] had been up, running, and were ready for use. And we also a year, two years before, were really engaging the community on when they thought the foundation should make that step. And so, ironically enough, there was one directorate that asked for a waiver from the electronic requirement. I have to laugh because it's the Directorate for Computer Information Sciences and Engineering (laughter) and I thought that there was some; but that was not granted and the decision was made by Neal Lane to go. We're ready; I mean we had given him; and we're talking it had been so many years of testing. We're not talking a system that was developed, six months later you're going and looking at the; we're talking six years. So I think there was sufficient data to demonstrate and really, the community was using it without us even telling [them to]. So there was a real sense that we are ready to go. And for some communities, there really was a lot of hand holding in addition, to make sure that even though we required it, we really reached out -- our Small Business Innovation Research folks -- the small businesses. They tend to even now need a lot of assistance. We also made sure that we did it for our research portfolio, first. So we've got fellowship programs that are very different, so everything didn't go required right away. That was for our research portfolio.

And I think even now, like I said we've got some customer groups that; we have a program in the Office of Polar Program for artists and writers who, you know, computers aren't necessarily their thing so we still make sure to this very day that there's a lot of support for them, so that they are able to do. The reality that the NSF FastLane system is relatively easy to use and so, you know, but the decision for Neal Lane was an easy one.

We were able to demonstrate that not only were we ready but the community was ready. And even in that first year when we still had that ability to ask for a waiver, there were so few -- less than 10 -- because the community was ready.

Yost: Ten institutions; research institutions?

Feldman: No, 10 individual PIs. We're talking it's not even on the scale because they were ready. The community was ready, their institutions were ready, with this technology; a web-based technology. Because the web had been used, at that point, for such a significant amount of time that they were ready to use that.

Yost: You mentioned the irony that CISE was asking for a [waiver]; was there a rationale or justification associated with that?

Feldman: They said their community wasn't ready. (Laughter.) I'm just going to leave that alone and say no more. That was the justification. They said this was going to cause huge amounts of community concern and consternation in the computing community and that they didn't think they were ready. And I don't think that that, at that time, was; obviously, he didn't grant it so he was not sold by that argument.

Yost: Was there significant discussion about the different types of computing systems that were being used and the different operating systems and how that might impact? And can you discuss that?

Feldman: Well I mean; again, that starts to border on the technology side. But I will tell you this; from a policy perspective, we wanted to make it platform-neutral. I mean, obviously, we have lots of Mac users; Linux; I mean all these different systems. So our questions were from a policy perspective, can those same users use it and the proposal look the way they thought it was going to look when they submitted it. Those were the discussions from our end; as well as not requiring anyone to buy proprietary software. We felt very strongly that you shouldn't be going to one that is just; you have to buy that one to use our system. We felt from a policy perspective; obviously, they had many more considerations from an information technology perspective but our drivers were basic; to make sure all of the systems that were currently in use -- and many of them still remain today in use -- were accommodated through FastLane and to make sure we weren't making someone go out and buy something special just to submit a proposal to the National Science Foundation. That was very strongly felt.

Yost: As I understand, that was solved fairly early on but in the first year or few years, there was a need to have PDF conversion software and it wasn't available.

Feldman: Yes, and that was something we solved a little later on. I will tell you, just after going through; because I also have done our conversion and transition to what is still a very small part of our portfolio, Grants.gov, that the web-based approach continues to be, even as we've moved with technology, much better than that forms-based approach that Grants.gov, for at least research proposals. And so we tried in those early days to

make that sell, and were unsuccessful. But there are 26 grant making agencies and we do various kinds of things. And for an agency like Housing and Urban Development, who before Grants.gov didn't get one proposal in electronically, and overnight were able to get them all in electronically. That approach works for some agencies. But those, yes, the technology and the types of technology that we selected, even when we implemented it, still didn't solve that PDF conversion problem. And that solved so many problems when we started converting those files for people. I mean, the rejection rate was a lot more significant than it is now. I still get e-mails of all the proposals that won't print properly, and they're like nothing compared to what they were when PIs were converting them on their own.

Yost: One thing that came up in one of our other interviews was the issue of *where* the money was coming from to fund FastLane. At that time, DIS' budget was pretty small; it was based more on maintenance. As we understand it, money came from research to help fund FastLane and it was in the same category of money that was used for assessment of programs. Was there a policy involvement or policy standard in terms of how things are classified as appropriate for research [or] administration?

Feldman: Very much so. And budget, that; you would speak to someone on the budget side for how that's all done because they look very closely at that. And also legal, in that we have uses of our funds and whether one color of money is more appropriate than the other. GC [Office of the General Counsel] was very heavily involved in that as well.

Yost: One of the so-called carrots to get buy-in from especially the PI community, I understand, was the ability to check proposal status. Were there any changes in policy with regard to that from the paper-based days, or was that something that it was just doing something automatically that they could get the information by making a phone call or sending an e-mail before?

Feldman: It was bigger than that. I know it seems like a small thing but we literally; the policy were standardizing the various parts of the submission and review process and making sure that where and when a PI could be told that a status had changed. That's where the policy implications came in. But you know, for those agencies that did not have status checking, the time and effort that was saved by electronifying this is [very large]. You would not believe how many faculty members called multiple times a day -- a day -- A DAY -- and you're like, it's still the same day that you called the last time. But I mean for many, this is their lifeline. So being able to now say everything we have is out there on that web, in terms of what we're allowed to tell you. And again, that's where the call; where can we tell them when something is changed? When can we just keep it the same status because we're not allowed to reveal any more information? When can we start releasing review documents? Those are the kinds of things that the policy had to really get involved with; and standardize because it wasn't as much standardized across the foundation as it is now. So that's where our involvement is. But in terms of the biggest single saver of time, that was a huge one because it just made us say everything we got is out here. You don't have to bother calling us because it's out there and it's up to date as much as we can tell you at this time.

Yost: Moving from the grant submission and the research institution side to the internal, can you talk about your involvement and the policy office's involvement with the early planning and launch of E-jacket for declines?

Feldman: For use with proposal declinations?

Yost: Yes.

Feldman: Well yes, we were obviously heavily involved in that process as well as our colleagues in the Office of the General Counsel and throughout that whole process we were extremely heavily engaged. We wrote what was *the* set of procedures for foundation use on E-jacket for declinations, as well as E-jacket for awards. We had to go through every data element in that system one by one. We had to really work with programs to make sure that the rollout was effective and efficient. We had to involve the people from our records retention; part of the foundation that's in the Division of Administrative Services, to make sure when can we get rid of something; when do we have to keep something. We had to make sure that the electronic system handled all the documents necessary to be included in an electronic system. We had a heavy role. And I think throughout the years it became very clear; and we have a very strong relationship, working relationship, with the Division of Information Systems. They don't want to do policy. (Laughs.) They want to implement the business rules. So they would rather be able to look and say, that's a policy [issue]; that's policy made that call; policy made that

call. So throughout the year our relationship is only strengthened because it really does take the two sides; policy / information systems. And really, the input from the users out in programs to make for a very efficient and effective system, internally, in terms of processing declarations. Obviously, you've seen the funding rate. You're a PI, so you know that the numbers across the foundation for many years were at the high level of 30 percent and then started going down. To get the declarations electronified was a huge first win and really, we wanted to make sure that worked well before we moved to awards; which took a considerable amount of time after we did dec's to make happen.

Yost: As I understand it, because they're different areas of science and technology, there's different ways divisions and programs do things.

Feldman: (Hearty laugh.) Yes.

Yost: How were those worked out to create a standard E-jacket system and how were you and your office involved in those discussions?

Feldman: Writing policy at the National Science Foundation is sometimes like art, you know, it's got to be carefully crafted. We absolutely understand that there are many things in this building that are very driven by the discipline that is in question. And the way they do things in the social sciences where rules are guidelines to be followed is very fundamentally and profoundly different than an engineer or a mathematician where a rule; I mean without rules, it doesn't work. So in crafting policy -- and this has as much to

do with just the policies we put in our policy documents, as well as how we develop electronic systems -- is we try to make, number one, we try to make the rules as flexible as possible to allow for those nuances between the divisions. Heavens, even in a directorate, you will find things fundamentally different between each of the divisions in that directorate. So again, we try to write them flexibly. We try to make sure that those things that we really do care about are clearly articulated in the policy document. We've moved to a lot more system enforcement of the things that we really consider near and dear. But when you look to our policies you will see a lot of 'normally,' 'generally,' 'in more cases' so that we can; when it's appropriate we give that flexibility. But when we believe that something has to be done we enforce it electronically and make it clear why we've done it that way.

Yost: What are some of the key things that have been necessary to have system enforcement?

Feldman: Well, externally, obviously PDF attachments. We've also been moving to system enforcement of a lot of the newer policy requirements that we put out there. You've got a post-doc online B1 of our budget; you've got a post-doc mentoring plan. No post-doc mentoring plan, no submission. You can't submit. We just added for proposals submitted or due on or after January 18, 2011, a new data management plan requirement plan. Can't submit it without a data management plan; it won't even let it get in this building. So those are examples. We're also looking at how we can extend that. There isn't a one-size-fits-all at NSF. There are research proposals; there are instrumentation

proposals; there are conference and workshop proposals; there are fellowships; there are centers. All of them, the proposal preparation requirements are slightly different. So taking a 'here's what we're going to compliance check and if it doesn't meet these it doesn't come in' [stance] is not as easy as it sounds. We also give a lot of flexibility to programs where appropriate to devise a funding opportunity to make the proposal meet the needs of that program. So that's where our clearance comes in to say have they done something that just doesn't make sense. Those are the big things. The only other thing that really has to be in there -- and this is kind of funny -- you have to have a zip code for where the place the project is going to be performed. That's a relatively new requirement and we were validating that against this little organization called the U.S. Postal Service. Well it turns out that there were a lot of campuses that were making up zip codes. They would take the five, and they would make up the four and it didn't match with the U.S. Postal Service; we didn't let it be submitted. I've had to go out and do outreach: don't make up zip codes. Because we had a pretty high rejection rate on that. But in terms of stopping something before it comes in this building, we do that in a very small number of cases. Do I see that growing? Absolutely. Because the lessons that we've learned, at least with post-doc mentoring and with the data management, are that it shouldn't come in here if it doesn't have some very serious requirement that we're very serious about [meeting].

Yost: That there's some explanation in the box and the program officer's and the supervisor's deciding hey, is this valid?

Feldman: That's correct. So we have done that. Internally, however, we implement a lot of business rules in the system about what kinds of documents have to be in a proposal and if one of those isn't in there, and they try to "Program Officer Recommend," they can't, if it's a required document. We fully use electronic signatures and only people with that level of authority as designated in our system can do certain kinds of things. And that's increasing, as well; those kinds of enforcement mechanism are really now being seen as 'when they're appropriate to use' because we're serious about that requirement. It's enforcing them. Another thing that we're doing, non-proposal related -- well it actually does related to proposals -- is the project reporting. That's another huge enforcement vehicle but we've started with the community. For many years, if you didn't submit a final project report, you couldn't get money, Jeff; money from NSF. But we've been changing that and now if you've got an outstanding annual report, final report, it will shut you and any co-PI on that project down from anything; not just future funding. You can't do anything; you can't transfer that; we administratively shut you down. And that's been an extremely effective vehicle for getting project reports in. These project reports are very important to our process and they document the results. So that's another thing that we've electronified and started enforcing electronically.

Yost: Can you talk briefly about policies with panels and if there were any significant changes with policies brought with the interactive panel system?

Feldman: Interactive panel system; we looked at just about every aspect, and it made us step back and even made us look at our process in general. Who can write a panel

summary? Who should be writing a panel summary? How can they make changes to a panel summary? When do you cut them off from making changes to the panel summary? How are the forms presented to them electronically? How do they know that it's reviewed by both broader impacts and intellectual merit? I mean we have looked at every single aspect of that process; and especially things that you wouldn't think of, our conflicts folks have been heavily involved in those discussions. We heavily enforce the confidentiality aspects of those functions. We've spent a lot of time. We are looking at even the kinds of review letters that are sent out; or Request [for] Review letters; trying to do baselines there. Every aspect of the E-jacket, whether it's an award letter, a declination notice, you know we've looked at that process. The panel part of it's huge because there are many issues of moving from paper to electronic when it came to how our panels function. And so we took a step back and have looked at all of those. And it's been; it was a good experience to do that because it's made us step back and say, okay, we've done it this way in paper for how many years but maybe in electronic that doesn't make sense anymore.

Yost: Can you think of any; of the most significant changes that were made from a policy standpoint in that transition?

Feldman: Well I think it would just be literally the documentation of how the panel supports its decision. Because in the paper world, they literally would; somebody would send in something well after a time frame but it didn't matter then because there was no enforcement. But how these panels function and how they document what they do, to me, was one of the largest things. And really a recognition from a very high level, who writes

a panel summary? And who should be writing a panel summary? And those were things that we clearly articulated and made changes; and senior management reviewed. It was important enough that senior management reviewed every one of those pieces of documentation and said yes, this is how this piece should function.

Yost: The introduction of E-jacket for declinations came years before that for awards. Were there special policy considerations that were involved in adding awards to E-jacket?

Feldman: Oh, yes. Because then it starts getting to because then it started involving the aspect of the relationship to obligation of money. And that, a whole financial aspect added a level of complexity to the process that was vitally important. I think just in general, the conversion even from declinations, when we did those, was the whole concept of that up to that point, program officers were heavily involved in using the electronic systems that we had, but division directors were not. And so you added an entire; because every proposal action; 'program officer recommend,' 'DD concur' and that process heavily, heavily; by division directors, done in a paper environment and they were not used to going into NSF systems at all. And so that was a fundamental change because they would sign off on the paper and then they would make an administrative staff member go in and actually record it. We said, no. Whoever is making the decision has to sign in that decision. So that, actually, was one of the most fundamental changes that was made was the fact that you really need to engage a group of people that have not been engaged. With the respect to the award process, also there is a whole bunch of

additional information that we would capture for any award that we make, in terms of documentation, that you wouldn't capture if it [was] a decline; or if the decision was to decline. So we had to examine each of those pieces; where they appeared on the screen; which ones the program officer had to look at versus which ones they could delegate to support staff. Those kinds of decisions were vital. The program officers often were used to handing off to support staff certain parts of that process. We then had to install a second order signing process that they were not used to doing because at the end of the day we had to have their electronic signature that everything was good. Because the administrative staff could change things so the program officer actually has to come in and do one additional sanity check to make sure everything is well documented and reflects what they believe the record for that award action should look like. Between the additional things that needed to be documented for an award and the financial aspects of making an award are a part of the reason why awards took so much longer.

Yost: One thing that I've heard from most of the program officers that I've interviewed is that the switch from paper to electronic also involved switching a lot of the work that was done by [support] staff to the program officer. Has the policy office been involved in writing and rewriting what the roles were for different types of support staff?

Feldman: Well, first of all (pause) policy in OGC was largely involved in determining who had to look at what. So yes, we were extremely involved because things like I just said they previously delegated, we said no. You can't delegate that. A program officer has to go it; they have to review this screen. That, by definition, made us extremely involved

in what could be delegated, what can't be delegated; what has to be looked at, what doesn't have to be looked at; from every level from program officer to division director. And so, by definition, yes, we're usually who they're pointing the evil finger at when they say well, I didn't have to do this before, now I have to do it. Well, we looked at that data element and we felt that it's fundamental to the decision. Something simple like recoding international implications; they're the ones that best know that so they have to fill that out. Things like human [subjects], vertebrate animals, our certifications are tied to what the program officer is saying. They weren't necessarily doing that in the past. We said no, you're making a certification that this is in compliance with all of our policies related to the protection of human subjects and vertebrate animals. And only *you* can make that certification so, yes, we've been involved in that process, as well.

Yost: You've also been very involved with interagency work, as I understand from your bio. Can you talk about how that relates to electronic grant submissions and management systems?

Feldman: Sure. I've been extremely involved, interagency-wise. So currently, I lead a working group of colleagues from federal research agencies; Army SF-424 R&R, that's the standard research application and that is what is currently used for tens of thousands of proposals and grants.

Yost: Is that Grants.gov?

Feldman: It's Grants.gov. So every agency was required not to mandate use of Grants.gov but to require the option of using Grants.gov. So NSF wanted to very much make sure we took a leadership role in that, and so I lead the task group that developed the SF-424 R&R. It's in its second full revision process and I still lead that group. It is vitally important to the foundation because we want to make sure that the information we need in our proposals is contained in what's in the SF-242 R&R. So that's been years of development work, years working with colleagues from the other research agencies. When you see the tens of thousands of proposals that are coming in, using the SF-424 R&R, it's really very exciting to have been a part of that. I should also say that this has potential to continue over time, and as we look at other next steps of where we might go electronically certainly those federal-wide standards are extremely important. I should also note that there is no other group for the other forms families of Grants.gov that are currently in existence and updating. They look to research and say you're the poster child for how this should be done. We get huge numbers of proposals using the vanilla SF-424. There isn't a working group in existence to maintain, to update that particular forms family, so that's very important.

I also currently lead an interagency task force under the National Science [and] Technology Council's Research Business Model's Subcommittee that developed a set of research terms and conditions that are used for most of the major research agencies of the federal government. So for the first time now, since about the same time, we fully implemented those a few years ago; there is now a standard set of Terms and Conditions that you'll get for NIH, or DOE, or EPA, or Commerce. I still lead the group that

developed those. My latest interagency effort was to develop; so we've got applications, terms and conditions, and the latest was I lead a task group to develop the research performance progress report. That was signed by the head of OSTP (Office of Science and Technology Policy) and the head of OMB (Office of Management and Budget). In April of 2010 agencies were required to implement or have an implementation plan by January 2011; and there are about 12 agencies already that have submitted their plans; that's on the NSF website. So, yes, interagency has been a huge part of what; and I think it's a large part just because "Research R Us" at NSF and we feel like that's what we do. Other agencies, even when they have research as a function, like our colleagues at NIH, they're part of a much larger organization called Health and Human Services. We're an independent agency so that leadership role is natural for us. And whatever we do in research grants, we want to be involved in. So it's been a very vital part of the job I have as head of Policy at NSF.

Yost: Moving back to E-jacket for a moment, what ongoing advisory committee work is there to evaluate changes and modifications and new iterations of the system?

Feldman: Well there is something called the Requirements Review Board that meets regularly that goes over any change. We brief any change even if it's a FastLane system, E-jacket, awards system, and there are designated representatives from each of the directorates on that group. In terms of prioritization they come up with things and system needs that they think; and enhancements that they would like to be made; or fixes of bugs; those kinds of things. And then there is a higher order of group called Policy

Mandates where when we say; and so we brief that to them, and letting them know this is why this is at this level of priority and this is what that change is going to be. So, yes, there is a very active group that works with the Division of Information System on enhancement changes to our electronic systems. They've also been adding any changes now to Research.gov that's on that, as well.

Yost: And finally, are there topics I haven't covered, questions I haven't asked that you think are important to understanding the way FastLane and E-jacket developed and how the policy office has been [involved]?

Feldman: I think you've been very broad and your questions have enabled us to cover a lot of ground. I never thought it would take an hour and a half. I thought you'll be gone in 15 minutes. But I hope what I've had to say has been useful, and as you're reading over this if something's not clear or you want to ask follow-ons, please feel free to contact me. Do you have a card?

Yost: I have yours.

Feldman: Yes. Because if I can think of something after this is over I'll send you an e-mail and say you know what, I think maybe we should have covered this.

Yost: Well thank you so much. This has been extremely helpful.

Feldman: My pleasure.