An Interview with

CAROLYN L. MILLER

OH 466

Conducted by Jeffrey R. Yost

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Carolyn L. Miller 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.

Carolyn Miller took over as FastLane program manager from Fred Wendling and was succeeded by Craig Robinson in 2000.

Yost: My name is Jeffrey Yost from the University of Minnesota, and I'm here today on March 21st, 2012, with Carolyn Miller in Hyattsville, Maryland, and this is an interview for CBI's NSF FastLane history project. Carolyn, can you begin by just giving me a little bit of background about your education and your work experience prior to coming to NSF? So, what you studied and where you worked before NSF?

Miller: Well, I have a Bachelor's from Frostburg State University in political science, and found graduate work at the University of Maryland in mathematics. And I began working at NSF right after college. So I don't really have any other background, other than my work at National Science Foundation. When I initially began working at NSF, I was in what they call their management intern program, which gave us exposure to the different areas of administration within NSF as well as a few of the science offices. And at the end of my year as an intern, I got to select where I would work permanently, so I chose the computer division because it just appealed to me. At the time—we're talking 1977—so, at the time, it was all Hollerith cards, and they were just introducing CRTs. And everything's uppercase. So the use of IT at NSF was basically what you would surely call data processing—just keeping track of numbers, that kind of thing. And so, over the years that I worked with NSF, I worked on many different projects as the technology evolved. I worked on the reviewer system—the internal reviewer system— which allowed program officers to manage their reviews. I worked on the principal investigator system, which was used to track the history of the PIs through their careers within NSF. I worked on the proposal system, which tracked—which was a proposal processing system—from the time a proposal was received until a final decision was

made on it. I worked on the award system, which is the grants management system once they decide to fund a proposal, what happens to it after that. I worked on the financial system, I worked on the personnel system, the payroll system. I worked on all almost every system there. The only system that I didn't work on was the one in the early 2000s, Research.gov. I don't have much experience with that. So, from a technical perspective, I did FORTRAN, BASIC, and then we evolved into COBOL. I did a lot of COBOL. And then there was a period there in the late eighties and in the nineties when we did what they called 4GL, fourth-generation languages, which were typically system-specific. Like, we had an IBM system called Cross System Products, CSP, that we used, and some other programming languages like that. In the early nineties, I progressed enough in my career that I kind of stopped programming and did more project management kind of work where I worked with staff, both employees and contractors, in designing and developing computer systems.

Yost: OK--great. And when you arrived in 1977, do you recall what mainframe system NSF was using?

Miller: Yes. There was a Honeywell. We had just, at that time—NSF had had an IBM and they had just replaced the IBM with the Honeywell…I want to say 6400, but I'm not sure—I could be wrong on that number, but it was a Honeywell mainframe. And we went through—we had DEC digital equipment system for a while, we had HPs. We went back to the IBM mainframe in the late eighties or early nineties, and then, around the

time that FastLane was sort of coming in, we had had the IBM mainframe but we also were starting to go the minicomputer route.

Yost: OK. And I understand that when Erich Bloch became the director, there was a major push for microcomputers—is that right?

Miller: Well, when was he director? I can't remember now.

Yost: It would have been the mid-eighties, starting in 1984.

Miller: Yes, I guess that's when we went from the—when we went to the HP minis, and we had three HP minis for a while. You have to understand that at that point in my career, I was so far removed from the director that I just did what I was told.

Yost: In the late seventies and early eighties—you mentioned that there were different applications that you worked on for the computers. What were the systems being used for at that time?

Miller: Well, as I said, a lot of the work back then with data processing and so—it was mostly data processing, as opposed to information. And so it was used for a lot of number crunching. At the time, NSF did not store much about a review. All it stored was the proposal number and the ID of the reviewer who had reviewed it. That was it. And we had to keep track of that because we were required by the National Science

Board to report annually everybody who had been asked to participate in the review of a proposal at NSF. And so we had to keep track of what area of science the reviewer had participated in. And so the way we would do that would be through the proposal number. So we would publish this annual directory and it would say, 'Well, these are all the reviewers who reviewed in chemistry and these are all the reviewers that reviewed in physics,' and so on. And so that's what we used that for. In the early eighties, we began to use the system to help us in the review process. And I don't know how long you've been around. The NSF proposal processing room, in the late—well, up through the late seventies and even into the early eighties, when a reviewer was asked to review a proposal, it would get what was called a 'dear colleague' letter. And it was just a copied letter that just said, 'Dear colleague, I am attaching an NSF proposal,' and then go on to explain what they were doing. But there was nothing personal about it at all. And so what we were able to do, because we were already tracking the reviewer with the proposal number, is take the reviewer's address and proposal information and make a more personal letter to that person. So it had their name and address at the top and it would refer to the proposal number in the subject line of the letter. That was the beginnings of trying to make things more friendly to our research community. On the flipside, as PIs—they were getting personalized decline letters, but they were being done on a typewriter. And so we were able to kind of take the same approach and start automating our decline letters. And what we would do is, in the proposal processing system, when a program officer—well, I guess it would be a division director—would change the status to 'declined,' then that would trigger one of these letters being generated for the PI.

Yost: Do you recall when the PARS system was developed, and were you involved in that?

Miller: I do recall when PARS was developed. PARS was developed in the mid-nineties—well, early nineties. And no, I was not involved with PARS, because I was involved with FastLane by then. I was involved in the precursors to PARS.

Yost: Can you talk about that a bit?

Miller: Sure. OK, so in the eighties, there were a couple different tracks that we were taking, and I'll focus first on the reviewer track, because that was one that I was very, very heavily involved in. We were reaching the point where we could see that we could customize things a little bit for the reviewers. And so what we wanted to do then was make things easier for program officers, as well. And so what we did was develop what we called the reviewer system. And that was in the 1980s; that was done in COBOL. And what we did was work with program officers throughout NSF, bringing together what information requirements they had and then trying to see where we could automate it. And it was a broad spectrum of things that we were doing. Not only were we doing the initial letters that would go out to ask the reviewers if they would review, but we were tracking the reviews when they came back in, because part of the system was to send out a reminder letter at some subsequent point if the reviewer had not yet returned the review. [Phone rings and recorders temporarily turned off] We all set?

Yost: Yes.

Miller: OK. So, we were looking at much more than just the letters. We were tracking when the review came back in. This then gave the program officers, as well as other people at NSF, a lot of information, because now they could see how long did it take for a review to be returned—or was the review never returned. And they could—from a program officer perspective, we were able to generate what we call program officer reports, where they can see all the proposals that they were working on at any given time, and which ones the reviews had been returned from and which ones they had not. This then went on to develop what we called the panel system, because there were mail reviews or the ad hoc reviews, but then there were also panels, panels were a complementary part to the reviewer system. And so we were able to start generating what we called panelist reports, which would be a listing for the panel to see what proposals were being worked, what the status of their reviews were and so on. Then, at the end of it, of course, when you would make a final decision, the one thing that the program officers liked to do was send out thank-you letters to the reviewers. And so then they could do that at the end of the cycle, as well, and all of this was being tracked in the reviewer system. Now, at the time, we were not tracking ratings. And NSF had a very loosey-goosey rating system where an individual—maybe not a program officer, but probably at the division level—could pick whatever kind of rating system he wanted. And so, there were numeric rating systems, there were letter rating systems, and there were the more generic pass/fail kind of rating systems. And it would just vary throughout

the entire agency. And so when we first started developing the reviewer system, we didn't capture ratings at all. And then—so, people thought, 'Gee, it would be nice if we had the ratings, as well.' And this would help in a couple ways—one, it would help with the program officer reports, because they could just see the ratings of the review for a proposal in one place; and two, it would help the people who did our statistical analysis for the agency to see what was happening with the ratings of proposals—you know, how was it affecting funding decisions and that kind of thing. So…I might get my timing confused a little, because this was so long ago. So there were two things that came up— one was the unified rating system and the other was requiring the entry of ratings into a system. And, as you can imagine, those are two very volatile topics at NSF.

Yost: Do you recall roughly what year for each of those?

Miller: It would be in the mid- to late eighties. Maybe up through the early nineties. Now I do not know if you've done this, checked on this yet or not, but I turned over a lot of my paperwork to the NSF historian. And that person has a lot of this stuff—because I found the whole thing fascinating and I kept everything. You know, when we started the interview, one thing I said was that it's not so much—the problems are not the technology; the problems are the policy, and getting the policy to be consistent with the technology. And these two topics were ones that, in my career there—I saw the policy was the bugaboo. It was not the technology, it was the policy. And so I started keeping all kinds of stuff that had to do with policy decisions, because I found them to be much

more fascinating than the technology decisions. And so I turned over all my policy

documentation.

Yost: Is that to Marc Rothenberg or an earlier NSF historian?

Miller: I think it was Marc, mm-hm.

Yost: OK. Great.

Miller: And so, interestingly, if you go to that, you'll find there were petitions that NSF

program officers designed and sent to Erich Bloch, saying, 'We do not want to have our

ratings in the system,' and all their reasons why and everything. So it was really

fascinating to look at. And especially here, twenty years later, when it's kind of taken for

granted, you know? But the angst, at the time, was very interesting. So yes, so he has all

that information. So yes. And as I recall, they did send that petition to Erich Bloch, so it

would have been under his tenure [laughs]. So anyways, things settled down. I'm

oversimplifying this; because believe me, this went on for years, and there were all

kinds—I mean, it was just all kinds of meetings and debates and a lot of anger and stuff.

So I don't want to oversimplify it, but eventually they did agree to have the ratings put in

the system *and* they agreed to a unified rating system. Neither of those things were easy

to accomplish, believe me. But that's the result of what you see today. And, like with

the unified rating system—oh, my gosh. With FastLane, that [unification] was a big

impetus there, because what people used to do when they'd do it on paper is they'd, for

instance, X two boxes or they'd draw a line in the middle of two boxes and put an X there, or they'd say, 'Well, for this part it gets an 'excellent,' but on this part it gets a 'very good.' You know, on paper, you'd have all that flexibility. But when it went to an electronics system, they didn't have that flexibility. And so FastLane, even beyond requiring the entry of the ratings into the system, really pushed that—the consistency of the ratings.

Yost: And were program officers generally using computers themselves in the mid-eighties to late eighties, or was it staff?

Miller: It would vary. It would vary. I think that probably, the majority were staff, because I know that when we started working on FastLane, in my discussions with a lot of program officers, they were very resistant to it, it was another piece of work that they would have to do. It was a burden to them because they were so used to having their staff do it. So yes, I would say that mostly it was the staff that were doing the hands-on touching, key-stroking, whatever.

Yost: OK. Were you aware of or involved with the EXPRES project in any way?

Miller: What was EXPRES? Was that the thing out of Pittsburgh?

Yost: It was research at Carnegie Mellon and Michigan—

Miller: Yes, Carnegie—yes, yes, yes. Yes, yes, yes, yes. I was aware of it, I was not involved in it. But that was kind of the seed for what FastLane became.

Yost: What is the earliest remembrance you have of discussions about the project that became FastLane?

Miller: That became FastLane? OK. So, that would have been around 1992 or 1993. And at the time, I was very involved with the reviewer system, the PI system, the institution systems. The proposal system I was less involved with. And so because I was involved less with the proposal system, I was not drawn in initially to the very early FastLane stuff—because, as I recall, one of the things that they wanted to do with the beginnings of FastLane was have a way for PIs to check on the status of their proposals. And I—at that point in my career, I was not actively involved. I think that's when they were working on PARS, in fact. And that was not one of my projects. So I was aware of it, but I was not involved in it.

Yost: Was Connie McLindon the principal driver of—?

Miller: Yes.

Yost: The project?

Miller: Yes, she had been very involved—as I recall, she was very involved with the EXPRES project. And it was her and some other guy who I can't remember.

Yost: Fred Wendling?

Miller: Mm-mm. It was a program person. And I can't remember who it was. So, yes. So, from the IT perspective, there was Connie, Jerry Glaser, and Fred Wendling. I'm assuming those are all names you've heard before, right?

Yost: Yes.

Miller: Yes, so the three of them, I think, were the ones that, in their discussions, and with this program person, who I—gosh, it's going to drive me crazy, now, who it was— they were the ones that really, I think, in their talks, were the brainstorms of what became FastLane. And so what they did was—and again, this—because I was not directly involved yet, but—

Yost: What was your position at that time?

Miller: I was a project leader, but I was the project leader for the reviewer system and the PI system. Those were my—well, the panel system, but I kind of think of that as part of the review system. I'm assuming that you understand what was going on in the IT

world, at the time, was that the idea of the Web and…of course I can't remember what he called it, but the thing that Marc Andreessen developed at the University of Illinois—

Yost: Mosaic.

Miller: Mosaic, yes—was coming about. And so whoever this program officer was, was involved with that, and so then they had the EXPRES project. So they were all just kind of talking and thinking up ideas, and one of the things that always affects anything in government is money. And so, in the germ of this idea was to do things to make life easier for the research community. They were not so focused, at the time, on making life easier for people at NSF. It was more on the research community. And so, by focusing on the research community, they could use this other pool of funds to fund it. And has anyone talked to you about the difference in the color of money?

Yost: Yes.

Miller: So if it was focused on the research community, then they would access to this other pool of funds. So they trying to think up ideas for the research community, and so they came up with something that would let the PIs look up the status of their proposals. Now, the Mosaic thing was kind of happening at the same time, and in fact, the earliest FastLane project, if you want to call it that, was a dial-in system. Did they tell you that?

Yost: Not that I recall, can you?

Miller: No one's mentioned the dial-in system?

Yost: No to my recollection, but regardless I'd be very interested in you explaining it.

Miller: Boy, you need to go back to Fred Wendling then and ask him. Is he still at NSF?

Yost: Yes, we did a very long interview with him.

Miller: Well, so the first thing was—because again, this Mosaic thing was just on the cusp of being out there. And so their first idea was to have an 800 number that PIs could call. They could type in some required information—I don't know what, their proposal number and a PIN—and they could hear the status of their proposals. That was the very first thing. And there—we actually did a fair amount of work on that.

Yost: And this was an automated system?

Miller: Well, they wanted it—yes, yes, yes. There would not be a human being on the other end; it would be automated. Yes, that is correct. And yes, so that was the very first idea. Now, that never saw the light of day, but they did spend a lot of money on it, trying to get it to work. But there were just a number of roadblocks in the way, that—it never came to fruition.

Yost: And that would have been before the actual FastLane project started in 1993?

Miller: That—no, that *was* the first FastLane project.

Yost: OK, it [automated dial-up proposal status system] was considered part of it.

Miller: It was considered—it had the FastLane name attached to it, absolutely. Yes. So, they saw—this group of people: Connie, Gerry, Fred and this program officer—saw that this had a lot of potential, and so they decided to—they did two things. One was they identified what the initial FastLane projects would be. And then they said, 'We need someone to run this.' And so—and I cannot remember. There were six. There were six initial FastLane projects. I'm sorry, I need to include the finance division. They were working with Al Muhlbauer in the finance division, also. Have they mentioned his name?

Yost: I believe so.

Miller: OK. So they were working with Al, also, in the finance division. And so they came up with what they called the six projects. Have you heard about the six—?

Yost: Yes.

Miller: OK, good. So I don't need to tell you what they are. OK. So they came up with the six, and they said, 'We need someone to run this.' And so again, because they focusing outward—

Yost: And it was those four that you mentioned that came up with those six modules.

Miller: Six, yes. Then they said, 'Well, then we need someone to run this,' and so they—because they were using program funds, they could have a program manger come in, bring in an IPA or someone like that to come in and run the program. And so that was Dave Garber. And so that was in—I think Dave came in, in 1994. You can verify that, right?

Yost: Yes.

Miller: OK, so Dave came in and then they started working on it, and I was, again, very peripherally involved, because some of the projects they were working on used the data in the systems that I was responsible for. And so I would work with them trying to set up these data interfaces for them. So that was my involvement. Then, in the spring of 1995, something happened and Dave left. And so they needed a FastLane project manager. And that's when I got involved.

Yost: OK. And was Fred still active with the project?

Miller: Yes. Oh, it was still the same group of people. It was those four—Al Muehlbauer, Connie, Gerry and Fred. And Dave Garber had been the overall program manager, and then he left and they needed someone—they said, 'Let's bring Carolyn in.' So that—

Yost: Where were things at when you came in?

Miller: Things were—OK, so for the original six projects, they were all in different levels of development. Some were still just ideas, some had moved along pretty far. The proposal status thing was probably the thing that was the furthest along, and that was the one trying to do this telephone thing.

Yost: Was there resistance among program officers for researchers to be able to have access to proposal status information, any resistance from them that you're aware of?

Miller: I do not know, at that immediate time, because I was so new to it, I had—again, it had been something that—at staff meetings, I would hear people discussing, but it wasn't anything that I had been involved in. But I do know that in the ensuing years, yes, that that was an issue with the program officers with 'how much information do you let them see, and when do you let them see it?' Absolutely. And again, it gets back to that whole policy thing versus the technology. Yes. But at that exact moment—you know, I can't say, because it was something that I had not paid attention to, and I just—I don't know is the answer.

Yost: And when you came on as the project manager, was there already an external

advisory group?

Miller: Yes, absolutely.

Yost: And did you have direct involvement with this group?

Miller: Yes.

Yost: Can you talk about this group?

Miller: Yes, absolutely, sure. So when I came on, they had the six FastLane projects.

And they had—I think they had two advisory groups. They had the external one and they

had the internal one. And so I got real chummy with them real fast. The idea with the

external advisory group was that they were supposed to come to NSF on a periodic basis

and give us feedback about what was going on. And I guess the same thing with the

internal—the program officer group—POAG it was called, Program Officers Advisory

Group. I can't remember what the external one was called. My experience with them

was that the people that were on those groups tended to be people who were very

enthusiastic about what was going on and really wanted for the system to succeed. And

so, in general, they were not naysayers, and they were not people who were going to put

impediments in our way. They were the ones who were willing to bend over backward to

accommodate whatever it was we were trying to accomplish. I know the external group they had put together—and they had specifically wanted groups of different kinds of institutions. And so they wanted some big institutions, they wanted some small ones, they wanted some historically black ones. They wanted community colleges, they wanted one or two Native American colleges.

Yost: And schools from EPSCoR states.

Miller: Yes, the EPSCoR ones. So, they wanted a good mix to make sure that they were targeting—making sure they were targeting as many groups as possible and not leaving anyone out.

Yost: And did that group include primarily sponsored research officers?

Miller: Yes.

Yost: Were there any PIs?

Miller: There were. There were some PIs on it, but it was primarily Sponsored Research Office personnel. And at that time, the PIs were perfectly happy to let the sponsored research offices take the lead. They—I'm not going to say they were dragged along kicking, but they did not see, this is just my perspective in remembering the dynamics of the meetings and the decisions—did not see themselves as the leaders. They saw the

sponsored research offices as the leaders. And then they would just kind of go along with what the SROs wanted.

Yost: In those early days, do you recall any feedback from the external advisory committee that influenced the ongoing development of the project, or prioritization of initiatives in the project?

Miller: Oh, absolutely. Again, the biggest one was the proposal status thing. That was so important to them, to get that so that they, the sponsored research offices, weren't having to continually call NSF and find out what was going on. And to get that into the hands of the PIs, that was a big one. Do you know what the six projects were? Because I can't remember all of them. If I knew what they were, I could tell you some more. I know there was the cash reimbursement, the status…there was the proposal cover sheet. The proposal cover sheet was one.

Yost: I don't have the list in front of me.

Miller: Well, anyways, so, the cash reimbursement one—that one was kind of held off to the side, because that was between the business offices and our finance offices. So sponsored research and the PIs were not as interested in that, and so they didn't have much input on that. But the proposal status one was big, and the cover sheet one was big.

Yost: And when you say it was big—

Miller: It was important to them. They had a lot of input on it, is what I mean. So, to get

the proposal status thing and the proposal cover sheet working, we needed to have a way

for them to access the system. And when I came into the project, they had this idea of

PINs. And what they were doing is—originally, they were having the—they had the

thirty participating institutions and the groups of sponsored research offices and the

groups of PIs that were working together. And I remember they just had a spreadsheet

with their names on it and their PINs. And if someone didn't remember their PIN, then

they would call up somebody—me, probably—and you'd look up on the spreadsheet and

you'd give them what their PIN was [laughs]. And that was like, 'OK, this is not going

to work.' So, when I came in, I had this stuff dumped on me, and they were under some

very tight deadlines. The proposal status thing was a big one—because they thought that

would be an easy win. They thought, you know, 'We already have the PARS system.'

'We already have the status.'   'We can just throw something out there and get it out there

real fast.' And like I said, they had this telephone thing—this telephone idea, as well.

So, we did some more work on the telephone one, but we just realized that it was not the

technology—to transfer between an automated phone system and a data processing

system just did not work well, at that time. And so, like I said, I know they spent a lot of

money on it, but it never did go anywhere. So we focused more on the online one, and—

you know, now that I think about it, I think another reason why the telephone one was

there was because there was concern that not all institutions would have access to the

internet—because they wanted to make sure that everyone had a fair play at getting their

proposal statuses. So there was the 'big access to the internet' conundrum, and making

sure that we didn't put something out there that was make an unlevel playing field if you didn't have access to the internet.

Yost: Did surveys go out, or was research done—?

Miller: I don't remember that, so I don't—well, I should. I'm sorry, let me take a step back. There was a guy named Bill Kirby. Have you heard his name?

Yost: I don't recall that name.

Miller: There was a guy named Bill Kirby, and he was doing a project to help research how far we could go in FastLane. And he had a contract with somebody, and they were doing that kind of work. They were looking at the infrastructure of the universities and what the concerns would be, and so on. You might want to go back to Fred again and ask him to get that information. I know it's there. Ask him, 'What was Bill Kirby working on with regard to FastLane?' Because Bill was off on the side, doing this other work, and he had this contract with this group that was providing us with surveys and studies to help us make our decisions for FastLane. I do remember that. And when we used to travel out and talk to people, Bill would go with us. So, he was reasonable well-involved in it.

Yost: And were there any major concerns that were expressed within the external advisory committee, about certain aspects of FastLane, that you recall?

Miller: There probably were, but they're not coming to me right now.

Yost: What about the internal advisory committee—how large was that?

Miller: I don't remember.

Yost: Do you recall—what was it, primarily program officers, or support staff?

Miller: It was primarily program officers. There were a few support staff on it, and there were division directors, but it was primarily program officers.

Yost: And do you recall any kind of feedback they were providing?

Miller: You know, I—

Yost: A long time ago.

Miller: I don't remember. I mean, I remember working very closely with them, but I don't remember specifics. But you know, like I said, that—there was so much angst at the time. Program officers—well, first off, they didn't believe. They weren't believers, and so they were like, 'How could you possibly ever have someone submit a proposal electronically?' They weren't big computer users—like I said, primarily it was their staff who'd been using computers up to then, and so they didn't like the idea that they were

going to have to use this system to do their work. They thought that that was, you know, the clerical staff's responsibility, not theirs. Theirs was to be thinking and making decisions, you know? Not using their fingers. So there was a fair amount of resistance among the program officers. And so, I guess, if anything, what I would say is that, as the early systems were being developed, because we had a hard time getting the program officer buy-in, the program officers probably didn't have as much influence as they could have had if they had participated more actively.

Yost: And in those early days, was there the idea that there eventually would be what became eJacket—that the focus would be on the research community and that side of FastLane first, but down the line—?

Miller: Yes. Yes, there was—although we did not necessarily call it that, but yes. And if you go back—if you can get access to some of our IT long-range plans from the late eighties and the early nineties—you will see that in those plans. You know, especially with Connie McLindon and Fred—articulating what the office of the future would be like. And it may not have come out exactly like that, but you can see that they were visionaries, and they could see that that was the direction that we were headed in—yes. If you go to those long-range plans, you will see that—the IT long-range plans, not the NSF ones.

Yost: And Connie was involved with funding advanced computer science research DARPA before she came to NSF. Did that seem like this was influential to how FastLane developed—?

Miller: You know, I was so low down in the chain, it was not something I would have been aware of—I did not even become aware of funding as a part of my job until I took over FastLane. Up until then, I never—the money was just always—I was always told, 'Here's your pot of money. Figure out what you're going to do with it.' So no. it was just not in my radar at all.

Yost: And Tom Weber authored an early report about FastLane. How long was his involvement in the project, and what did he work on?

Miller: Hmm. Let's see. Tom was around in the mid-nineties—no, wait, the early nineties. Early to mid-nineties. I—you know, again, by the time I got involved, Fred was the division director. And so Tom's tenure was over and he had gone back to his division.

Yost: And when you came on, Compuware was a contractor on FastLane?

Miller: Yes, they were.

Yost: Can you discuss how you interacted—you and other staff members interacted with the team from Compuware? And do you know how many Compuware people were involved—we know Rich Schneider was one of the principal programmers—I interviewed him. But do you have an idea on how many Compuware workers were involved in the early days?

Miller: Oh, I don't know how many. So what happened was, when they were dreaming FastLane, they knew that it was going to be a big project, and we had three main contractors and the time, and they wanted all of them to have a chance to get in on the ground floor with FastLane. And so they were each given a piece of the pie.

Yost: Do you recall the other two?

Miller: One is Capgemini and the other was AMS, American Management Systems. And so, for whatever reason, Compuware kind of grabbed the ball and just took off running with it. And so they ended up getting more and more of the FastLane work. So there was Paul Arnest—was very involved. Judy Ruttenberg. What was the name you said?

Yost: Rich Schneider.

Miller: Oh yes, Rich. He's a nice guy. And—

Yost: And Paul and Judy were both from Compuware?

Miller: Oh, they were all Compuware. Gianangelo. I can't remember his first name…Al. Al Gianangelo? Those were the four primary people that we worked with. I think Paul and Judy were kind of like the program managers for Compuware. And then—but Al was—he was the database person, but he was brilliant. And he—so, even though he wasn't in a management position, he had all these really great ideas. So, with those four—so, I came in and I became the project manager. And I was the COTR on the contract. I worked very closely with all of them in directing the contract; and what we had, at the time, were task orders. And so we'd come up with an idea, and—the idea being, among these three contractors, we would give the proposal to all of—not proposal, the request for proposal—to all of them. They would come back and tell us how they would do it and how much it would cost and how long it would take, and then we would—this would be a mini-competition between the three. But as I said, over time, for some reason, Compuware had just started running with the ball and getting more and more of the task orders. And AMS and Catgemini were getting less and less. And then—

Yost: And was the money for this development—was it still coming out of—?

Miller: The program funds?

Yost: The program funds.

Miller: It was being split. And so, what our budget office was telling us was that, if it was new and it was outwardly focused, we could use the program funds for it. But if it was to maintain an existing system—and existing meaning if we had put it into production the year before—or if it was inwardly focused, then we had to use the administrative funds. And so the money was being split, which made my job harder, because now I had—before, it was all program funds, and so I didn't have to worry about keeping track of it; it was all there. But now, all of a sudden, I had to worry about, as we were spending the money, making sure that it was being used for the correct thing; and then, on the flipside, on the auditing side, making sure that they had indeed used it for specifically designated purposes and nothing else. So it got complicated.

Yost: And the DIS funds were quite limited, is that correct?

Miller: Oh, we had limited…*never* have enough money. *Never*. It's gotten even worse today. I'm glad I'm not there.

Yost: Was security a consideration in the early days?

Miller: Not the way—no. I will say this—not the way it is today. And there are a couple reasons for that. Obviously, the—you know, this whole concept of hackers and cyberterrorism and stuff just wasn't a part of our vocabulary back then. The use of the internet for important data transmissions hadn't really happened yet. I mean, I know

banks were doing stuff, but that was on very closed networks, and so you can't really compare it to what we were doing. So, the policy had not caught up with the technology, and so the policy on security was almost nonexistent. You know, I'm not going to say it was completely nonexistent, but it was very close to it. And so a lot of the early stuff that we did in FastLane was our own thinking of what is responsible security, and not because there was any knowledgeable cyber-guru telling us what to do. You know, we really had to kind of—

Yost: Social Security numbers—were you—?

Miller: Oh, yes. Yes. Well—all right. So, let's go back to NSF in general. Since time immemorial, NSF had been asking the PIs for their Social Security numbers, right? And so, when we came along with FastLane—

Yost: It's certainly not unusual.

Miller: We didn't even give it a second thought.

Yost: And it would help ease identification?

Miller: Yes, I mean, I have memories of—you know, when they would have panel meetings, they would have the proposals at the panels, right? And they would have the cover sheets, and all the panelists were seeing the PIs' SSNs, right? And no one thought

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anything of it. And like I said, I have memories of walking by panel rooms when a panel finished, and sitting there in the door waiting to be picked up for the trash were the stacks of proposals with all the PIs' SSNs on it, and again, no one giving it the least thought—because again, technology wasn't there, and having someone's SSN back in the seventies didn't mean anything. Not the way it does today. It didn't mean—so what if you had someone's SSN? There wasn't anything you could do with it. So—yes, so we just picked up where the paper left off. And in fact, that was one of the things—and again, talking about the human factor side of it, was taking the paper system and making it electronic. A lot of times, people's first thought was, 'Well, just make it look like the paper.' And so if you go back to the early things of FastLane, they just looked like the paper. You know, there wasn't any creativity or human design put into it at all; we just took the paper form and put it on the screen. And so, of course, the SSN went with it.

Yost: And was the policy office involved in these systems, and was that Jean Feldman?

Miller: Yes. Yes. Yes. And we always worked very, very closely with the policy office. Always. And we—and again, it gets back—I cannot say it enough, how it was the policy that made life so difficult; it was not the technology. And so, from a technology design perspective, we might have an idea, but we had to work very closely with Jean and…trying to think who else. Who was it? Bob Hardy—to make sure that what we were doing fits. And of course, policy had to do the same with us, because they might want to try something, and they had to make sure that it fit with us as well. And we worked very, very closely with them. I mean, Jean and I were—you know, if we

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weren't in meetings with each other all day long, we were on the phone or emailing each other all day long.

Yost: The internal group you mentioned…

Miller: POAG?

Yost: POAG. And that was different from FIIG?

Miller: Yes, it was.

Yost: And then there's also FIRCOM?

Miller: Right. Oh my gosh.

Yost: Can you assess those different groups and the roles they played?

Miller: Oh, man. OK, so FIRCOM would have been the FastLane Internal Review Committee. FIIG would have been the FastLane Internal Implementation Group. So, as I recall, FIRCOM was more of a—I'm using this as an analogy. They would have been like the National Science Board. They would have been up here at a very strategic level, trying to direct the directions that FastLane was going in. That would have FIRCOM. FIRCOM, of course, because they tended to be the people higher up in NSF management.

They were the ones we wanted to make happy, because they controlled the money. FIIG might have been the—what's the word I'm looking for? It came after POAG. I think they might have had POAG first, and then we moved on to FIIG. And that was the internal implementation group. And what that was is when we realized that in order to get things going internally, we needed people who were going to tell us what was the best way to implement something. And so that's when this FIIG came about. See, you have a better memory than me.

Yost: We've been studying this for a while.

Miller: I know you have. You have the benefit of all the talking with everybody else. When I was working on things that had brought ramifications, what I realized was that you could not just think about what you were going to—what it was going to do. What you had to think about was, how were you going to get people using it? And that if I was working on a specific project, then to get it implemented, I would have to have a plan as implementation. And that's what I would use the FIIG people for, was 'These are the things that we have to do. This is the order we're going to do them in. These are the groups of people that are affected by any given step.' You know, this was our publicity plan. A good example of that was, when we were implementing the standardized review ratings—that would have been something that FIIG would have been very involved in. Because it was not just a matter of saying, 'Oh, OK, so starting tomorrow you can only use PDF,' and you were done. There was a huge publicity campaign that would have to be conducted. You know, we had to decide, 'What do we do with the old ratings? How

do we convert them?' You know, not just getting agreement on how to convert them, but then the timing of when you would convert them and so on. And so that would be something that I would have worked with FIIG on, was coming up with how I was going to get from here to there.

Yost: And the policy for standard ratings obviously came before FastLane became mandatory in October 2000? Or could it? Because some people were still sending in paper until October 2000 and could they write non-standard things on paper reviews?

Miller: Again, my memory is so foggy on this. There was…I can't even remember now. I do know we were working on that OD with Jean for months and months and months. So they had to use FastLane for the proposal form submission for the reviews and for the post-award changes. Was that all in one memo, do you recall? Have you seen that memo? We should have brought it; you could look at it. I do know this: when we implemented the reviews on FastLane, the ratings were not standard yet. What I don't recall is when they were required, that it had to be standardized. I do know this—that I spent a lot of taxpayer money writing a review system that allowed multiple kinds of reviews, and then spending more tax money to say, 'Nope. Not going to allow multiple types of reviews; we're only going to allow this set.' So the original FastLane allowed multiple types of ratings. The one that came about a couple years later then tightened down on that. But we spent a lot of money, originally, accommodating the program office's need for different kinds of ratings.

Yost: And when you came on as the project manager of FastLane, who all was on the FastLane team on the DIS side?

Miller: Hm. I don't know what you mean by 'FastLane team.' At the time—

Yost: Who spent time working on FastLane within DIS?

Miller: OK, so this is my memory of it—that there was Connie, Fred and Gerry up here, and Jerry Stuck—kind of was part of that team, as well. So it was them over here kind of directing things. There was Dave Garber, who was the program officer or project manager, and then contractors. There were no other DIS staff involved, other than—

Yost: So Bev Sherman wasn't involved then—

Miller: No, she was not involved at that time. But the only way we were involved was if they needed data from us that we worked on the interfaces. OK. So then, Dave leaves, I come in, and Fred realizes, 'You know, this is a bigger project than just one person.' And so he said, 'I'm going to give you Dan Hofherr to work with you on this.' And so it was me and Dan, initially. Now, what happened was then we started implementing stuff in FastLane. This all happened very quickly from the time that I stepped in and— because they were under some tight deadlines to get stuff up. And once we started implementing it, then we realized, 'You know what? We need more staff here.' And so

Bev Sherman came in to help. She came in…no, I can't remember her name now. It will come to me. Another woman came in—

Yost: Was it Evelyn Baisey-Thomas?

Miller: No, it was not Evelyn. It was the woman that died. This is terrible, because I can see her…well anyways, it was the woman that died. Did they tell you about the woman that died? It was very sad. It was her…and then I got funding to start a Helpdesk. We had a FastLane Helpdesk. They really helped a lot. And I needed so much help that what they started doing was bringing in people from the divisions as what they called rotators or interns, and they would come in and work for me for three months or six months— which, in hindsight, was really great for both, because they would come and they would get exposure to FastLane and get positive feelings about it and then take it back to their divisions, where they would then help the divisions to accept it better. And at the same time, they were helping me with stuff that I needed. No, but on—in the spring of 1995—

Yost: And so the support staff from all the different divisions?

Miller: Yes, I would just post an announcement saying, 'Hey, I need FastLane help. Can you come for three months or six months,' or whatever. But in the spring or 1995—no, it was me and Dan Hofherr. That was it.

Yost: OK. And can you talk a bit about the origin of the FastLane Helpdesk, and was there a systematic way to capture information or data in the early days of it?

Miller: No. Absolutely not. Now, you have to remember that I had no helpdesk experience. I had no—my training up to that point had been a project leader for managing internal projects. And now all of a sudden, I had this whole world opened up to me. And the—so I had Bev Sherman and—oh my gosh, it's going to drive me crazy. So no one mentioned this other woman? She was doing it, she was great. And those two were kind of like the FastLane Helpdesk. And then the people that I could bring in from the foundation to work on it—and it was just—

Yost: But no contractors?

Miller: No, no contractors, and it was just mushrooming; it was ridiculous. So, again, we got the money because they're going to help the PIs who call in and their peers who call in. So we got the money to start a FastLane helpdesk. And so we had three people— I can't even remember who the contractor was now—that came in and we start to have the FastLane Helpdesk, and…no, there was absolutely no system to it at all. We were able to—I mean, it was mostly tracking stuff on paper. Going back to the original part of FastLane, where people were going to call in with proposal status, and the idea was that you'd have the PI and you'd have the PIN—and originally, NSF was controlling the PIN, and I said, 'You know, this is not going to work. We need to develop a system so that the sponsored research offices can control the PINs themselves.' And so we ended up

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diverting some funds from proposal status just to get an administrative system up there so that the sponsored research offices could control the PI PINs rather than us control them. Now part of the problem, unfortunately, at the time was that they were still SSN-linked. And so we would have to feed the PI into the system first, before the sponsored research office could then put a PIN out there for them. But it was better than having NSF control the PINs. So we worked a lot with that FastLane advisor, the external group, to get that sponsored research office application up. That became a big focus. We knew we couldn't put proposal status out there without that being in place. And so we did get a primitive system up; it wasn't perfect by any means, but it at least gave them a span of control as far as the PINs go, so people weren't calling us. But then what it meant is that all the sponsored research offices were calling us, because they couldn't get—like I said, the PIs had to be out there first, before they could do it, and so we had to have the data interface between our PI system and that—oh, it was awful. So that—getting that going—made us realize that we really needed that Helpdesk that people could just call in and work with us on making sure that the PIs were out there. In addition, the institutions had to be out there. You couldn't just create an institution. You know, so the institutions had to be out there. The…at that time—OK, I remember now. Two things happened. So we're getting proposal status out there. Well, then there were two other groups of people who I think had visionaries in their offices, as well. And they wanted to kind of ramp up the use of FastLane. So the people in the graduate research fellowship office contacted us. Susan Duby, does that name ring a bell? Susan Duby? I think that's her name— contacted us and said, 'You know, we think FastLane would be ideal for the graduate research fellowship applications.' And we're like, 'Oh, that has potential.' And so there

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were some, and then there were the small business people, the SBIRs. And they thought—you know, there's stuff that, because the SBIRs were more limited—you know, the proposal—the exact amount of money they could ask for in their phase ones and that kind of—it was very structured. And so, we said, 'that's a really good thing to kind of get out there and get some experience with, as well.' And so we worked—we did the graduate research fellowship and the SBIRs, as well. And so, again, very outwardly focused. And seeing that we're going to—that we needed this Helpdesk to help them, as well.

Yost: The SBIRs presumably might have needed more help because there wasn't the infrastructure of the sponsored research offices to those proposers?

Miller: Absolutely, they didn't have the infrastructure. And a lot of times, they didn't even exist as institutions. But it was a good learning thing for us, because it made us realize that not—you can't put one-size-fits-all out there. You know, we had to really build in a lot of flexibility. In fact, again, getting back to this policy thing—one of the first policy things they said was, 'Well, the person who—the PI has to be a separate person from the sponsored research office.' And so initially, we designed FastLane that way. Well then, when we went to SBIR and they said, 'Oh no, the PI and the sponsored research are usually the same person.' And we're all like, 'Uh-oh, well nobody told us this.' You know, and so we had to go back and rethink what the rules were that we were putting in place, to make sure that it did fit as many proposers as possible.

Yost: In terms of the electronic documents with proposals, can you discuss what was going on with regard to how that would be done using PDF, and what challenges there were?

Miller: OK. Right. So, when they first—so, when they were first doing the proposal submission, they said—they called it proposal forms, because it could not accommodate the body of the proposal, but it just would accommodate the standard NSF forms. And so we worked on them for a while and got them pretty well done. Can I tell you a funny side story there?

Yost: Sure.

Miller: I'll tell you, the things from FastLane that are most memorable are our mistakes, not our successes. But we remember our mistakes and we look back at them and we laugh at them. I always say, 'What was I thinking?' So, when I had stepped into FastLane—and again, I was—you know, I kind of inherited it kind of halfway done, and so there were a lot of decisions that had been made, that I didn't know why those decisions were made, and I would just kind of go along with them. And so Bill Kirby was working on the budget form—and working with Rich Schneider, in fact—and they were working on the budget form, and one of the things, in talking with the PIs, that they said they do on the paper budgets, is they might put something on the budget line, but they would have an explanation for whatever, and they would write things in the margin or something like that. And so Bill and whoever, the PIs he was working with, decided

that they would have a note thing that you could put on budgets. And so Bill, working with Rich Schneider, would put the budget form online; but on every line item, there was a little button called 'notes.' And you could click on 'notes' and then you could type in a note to do whatever. Actually, one of the things where I probably wasn't working as closely with Jean Feldman as I should have been—because, again—I was brand new to the project and I kind of inherited it; they were already working on it when I came in. So the original budgets for FastLane had notes. And so now, working with Jean Feldman, and we're talking about the length of the proposal and how long they're allowed to be. And we were saying, 'Well, you know, blah, blah, blah, blah, blah, blah. But we don't know how many notes a PI's going to add.' And she was like, 'What are you talking about?' You know, but like, 'Well, you know, they can put notes on their budgets.' Well—you've met Jean, right?

Yost: Yes.

Miller: She's like squeals. 'You can't do that!' We're like, 'We can't?' So anyway, so we had to take away all of them—which again, it's kind of—I can say they spent a lot of money accommodating the notes. And so they went back to, 'You can only have the pure budget.' And again, PIs were upset, because they were used to writing notes.

Yost: Yes, it's really not really a change from paper. But I guess the notes could be longer than they could fit on the paper.

Miller: Right. But the PIs were no longer allowed to write notes on their budgets.

Yost: Very interesting.

Miller: So, yes, that was a little funny side story there. So we did get it down to forms, and then we had the body of the project description, as it was called. And we were trying to decide how to do it. So we met with someone from Adobe, and I don't remember the person's name, but I bet you Fred Wendling would remember. And we talked with them and we said, 'We think Adobe—the PDF format—is the way to go, but people probably don't have Adobe Acrobat.' I mean, this was—it was brand new. It wasn't even called Acrobat back then; it was called Adobe Writer. So, we worked out a deal with Adobe where they would sell Writer to the institutions really, really cheap and that they would let us let people download Reader from the FastLane website. And at the time, that was a very new concept. I mean, I know you can do it all over the place now; but at the time, that was unheard of. And so—you know, I think that in recognition, you should—I mean, Adobe was very, very accommodating as far as that goes, in letting us let people download the Reader from FastLane and selling Writer very, very cheaply to the research community.

Yost: Even with it being cheap, were there still issues in using a proprietary system?

Miller: Yes, yes, yes. Yes, there was. And so, we said, 'All right, we will have Adobe Writer on one of our servers. And for those people who don't have Adobe Writer, they

can send it in, we'll turn it into PDF on our server, and send it back to them.'   And now another project is coming to me—the final report. The annual and the final reports, that was another one—because we used the Writer for that, as well. Yes. And so, we really tried to accommodate—again, the span of the universe as far as rich institutions and poor institutions and so on. The Adobe—the PDF—it was the ideal solution, but it was not easy to implement at all. And I'm fairly confident that they still struggle with it today, the realm of fonts that are out there and getting a PDF file, and the person looking at it doesn't have the particular form from their machine and that kind of thing. So we always struggled with that. Here we are, almost ten years out, and—ten years. Fifteen years out. And that still hasn't been resolved completely, and I don't know if it ever will be, as long as—you know, the scientists need that flexibility to make their project descriptions look the way they want it look. We shouldn't have to tell them that they're limited, as far as that goes. And so I think that that problem will always be there, unless they can get them to ship in their fonts with their project description. There was a lot of discussion about pictures, about video, color—not, obviously, just the science itself, because that was at the time when NSF—the policy was really starting to clamp down on the size of proposals, because people were giving all these supporting documents that they wanted to include with their proposals—and then thereby getting by the size restrictions. So yes. So there was a lot of discussion on that.

Yost: We've discussed the initial external review committee, but there was also an active effort to visit universities as well as hold sessions at NCURA and other meetings. Can

you talk about the outreach efforts for FastLane—who was involved in that, and how those presentations were developed?

Miller: Well, let's see. So what happened was, in the very early days of FastLane, we would go—our first outreach that I was aware of was to the NSF regional conferences. And then, I guess, through the external groups, they wanted us to come to the NCURA and the SRA meetings and talk about FastLane at those, as well. And so those were our first outreaches, and what we would do is—well, first, when FastLane didn't really exist yet, we would just talk. But once FastLane—once we started having systems that people could use on FastLane, then what we realized would work best would be if we had actual FastLane sessions at these conferences. And so what we started coming out a day or two early and having FastLane sessions where people would sign up for them, and have these training sessions before the conferences—and sometimes even during the conference—although we would also always talk at the conferences, especially about our plans for the future, and get input from the people as far as that goes. Once we started having these training sessions, then the universities started saying, 'Gee, we'd like it if you came and visited us personally.' And so we started doing that; we started going to—you know, universities would invite us, and again, because it was external funds, we could use the program travel funds to go to the institutions. And then, the EPSCoR states—the EPSCoR program started wanting us to specifically visit EPSCoR states, and they would then give us even more funds to go to the EPSCoR states. So yes, so we had put together a band of traveling people who would go around to the different universities; and that

would be me; Bev Sherman; Dan Hofherr; Florence Rabanal was a big help in those; and, of course, Jean.

Yost: And Evelyn?

Miller: Yes, and then Evelyn. Yes, she joined about two years into the project. She wasn't there at first; and then one day she came to me and she said, 'You know, I'd really like to work on FastLane.' I'm like, 'Great.' I'm like, 'We can always use more help.' Yes. And Evelyn became a really great trainer. In fact, that was what she was really, really good at. She was very good at talking with people. And Jean…and I guess John Jahoviak, a little bit. But it was really important to have someone from the policy office with us; because quite often, the questions were not technical, they were policy questions. And so it became really important to have a policy person there. And so Jean quite often attended these sessions with us. And then I think what happened over time is that the travel just got to be kind of—well, it was extensive, and then, plus, FastLane became so ubiquitous that we couldn't possibly go everywhere, and so then they came up with these video sessions—you know, the technology kind of caught up, and they were able to do it in other ways.

Yost: And can you talk about the hardware side, the servers, and—I understand, in the early days, it was tough to anticipate load factors during crunch times.

Miller: I don't remember the size of the early machines. I know they were Microsoft

SQL servers, and I know they were on NT-based machines. And then, over time, we

realized that they weren't cutting it, and so we had to go out and buy bigger machines,

and we moved on to—I can't remember now. What was the next generation after NT?

Whatever they're on today, and then we went from Microsoft SQL server to Sybase SQL

server. Now, why did we end up with Sybase SQL server? We ended up with Sybase

SQL server because we needed a server—we needed a database server that could

interface with the mainframe. And Sybase had a product called DB Gateway. And DB

Gateway then could interface between the mainframe and the SQL server. And so all our

data could be on the mainframe and we could feed it down to the SQL server or the

reverse; it could be on the SQL server and we could migrate it up to the mainframe. And

that's why, today, it's on Sybase SQL server. Now, the—so, as far as load goes, the first

time we did the fellowships, that was our first—the first fellowship deadline, that was our

first experience with a really big deadline. And what we had done was, when you would

go to submit your application, we would go through and check to see if you had all the

pieces there. And then, if you did, we'd let the application go. That was not a smart

thing to do, because that—going out and checking in twenty different places—put a huge

load on the system. And so, as we were approaching the deadline—you know, and as I

used to always tease, I said, 'Oh, these college seniors are just our PIs in training, and of

course they're going to wait till the last minute, because that's what PIs do.' They all

waited till whatever the day was, November first, November second. Even—they may

have it ready, but they wouldn't submit it till the very last minute. And so all these

people were trying to submit. It was not the work—it was not their work that was

bogging down the system, it was all these checks to go out and see if everything was there. And it was just basically locking up the system. And so we learned from that. We learned that you need to—we needed to rethink how we would keep track, was something ready for submission and how we went about locking the databases to get things ready. Now, I'm not saying that the machine, the machine probably wasn't big enough anyway, but it was really our approach to it that caused the problem. And so what happened there, of course, was that we had to extend the deadline. And I can't remember how much they extended it by, but we ended up doing that a couple of times in a row before we got it right.

Yost: And was it Tom Willingham that was on that side of things, working?

Miller: Yes, Tom probably would have been the system administrator at that point. We had…Louis Fidel was the original FastLane administrator. And he had gone off somewhere else, I can't even remember where. And so Tom had been our Unix administrator, and so he came on—Unix, that's the operating system. He came on and then became the FastLane administrator. Right. And he was great, because he didn't have a life, basically. He got to keep those machines running.

Yost: And Craig Robinson came on the project—can you talk a bit about him and his role?

Miller: Yes. Yes. OK, so what happened was, time had gone on and I was wearing two

or three hats, and FastLane had grown immensely from where it had been these six

original projects to now, it was this full suite of—just about everything that NSF had to

do with its external community, all the way from the pre-proposal stuff, the whole

proposal processing system, the post-award management system, the whole financial

system, the graduate research fellowships. We had this whole—the honorary awards

were being done on FastLane. You know, so basically, almost anything—the final

project reports—anything that anyone needed outside NSF that required the passing of

data was being done from FastLane; and then, internally, we now has PARS, we had

eJacket—you know, the reviewer system within the institution. So then we had these

systems that it was interfacing with on the inside, and…yes. So… I was wearing several

hats—I was a branch chief, I was the FastLane project leader. Actually, I think I had two

branches, at the time. So…oh, I know, I was acting division director, that's right—

because Jerry Stuck went off on a year's sabbatical with somebody; I can't remember

who now. He'd gone off, and so I was the acting division director; I was the branch

chief, and I was the FastLane [project manager?], but it was too much. So we decided

that we would hire someone else. And it took us a while, but we finally found Craig.

And it was really funny, because I had gone to a—I was at an NSF—no, no, no, it wasn't.

It was…there were these conferences that NCURA sponsored, specifically on electronic

research processing, I can't remember what they called it. But I was at one of those

conferences and I was doing a FastLane session, and Craig came up and introduced

himself. He was so interested in it that he had signed up for the FastLane session. So I

was very impressed by that. So yes, so we basically just hired him from the telephone

interview. But he just turned out to be a really wonderful asset. So he came in, and so he was able to become the FastLane project leader so that I could be the branch chief and get out of the more day-to-day stuff and do more of the branch chief-type stuff, worrying about budget and more strategic stuff, whereas he could do the day-to-day operations.

Yost: And he also brought in the perspective of a research scientist.

Miller: Yes.

Yost: Did that background have an impact?

Miller: Absolutely, yes. That was—yes, absolutely. That really helped a lot, because he really understood—I mean, even though we had the research scientists that we talked to, it wasn't like—we could be at a meeting discussing something and then he could say, 'Oh, well when I would do that—' You know, XYZ. And so you had that immediate feedback on whatever it was you were discussing and how that might impact the researchers. So having him there was wonderful. Yes. And then when I—I went on maternity leave in the spring of 2000, and he was able to—then he had done such a great job that he was able to just step right in and take over for me—which I thought was great because that way I could enjoy my maternity leave; I didn't have to worry about how things were being handled back at the office.

Yost: Can you discuss the origins of eJacket, and how that evolved in its early days?

Miller: All right. So, around 1996, 1997, 1998—in that timeframe—so, we recognized that we were getting in all this material electronically, and all we were doing was printing it out to put it in the proposal jackets. And so we said, 'You know, there's got to be a way to keep it electronic.' And so we did a proto—I'm going to call it a prototype, because it got abandoned. We did a prototype electronic jacket, and we called it Electronic Jacket; we did not call it eJacket. And it was using the technology we had back in the mid-nineties, which is not the technology that they had when they put eJacket together back in 2003, 2004, whenever they were putting it together. So it was somewhat rudimentary. And, as is typical when you are going, as I said earlier, from paper-based to electronic—what they were kind of doing is trying to make it still look like the jackets. And so when you would look at it on the screen, it would have the tabs of what the folder tabs would have been, in the electronic jacket. And you would just go through them and you could kind of flip through and see what was on each page. The prototype also was only for looking at—you could not change anything in it. And so, again, it—like I said, we were just trying to get the experience of, what would it be like to have this electronically? You know, the idea being that if you had it electronically—even if you had the paper one there, you would still get the latest and greatest tier, and also that you could send it to other people to give them a chance to look at it without having to take the take the time for the paper one to make its rounds, even though you couldn't change it. So that was the prototype, and I don't even know if anyone's mentioned it to you, because I don't think that there are people there today that would even remember it.

Yost: No, the prototype hasn't come up. I think just the discussion of current system.

Miller: Yes. The current eJacket, right. And this was—we called it Electronic Jacket, and it's very different from the current eJacket, but we learned a lot from it and that's the important thing of a prototype. We learned what was going to work and what wasn't going to work. One of the things that we learned, that kind of came about from this prototype, was the concept of redaction—because, in working with the IG's office—and that was another user that we had to take into mind as we were developing FastLane stuff, was the IG was definitely going to be a user of our system and we needed to make sure that it fit their needs, as well. And so we had to—especially keeping—well, I'll focus just on the reviews. When the reviews were coming in, we had to do two things— one, we had to allow the IG's office to be able to redact—to take things out that were inappropriate for the review. And those were things that they didn't even want the program office to see. And then, we also had to have a way so that the program office could take out stuff that was OK for someone in NSF to see but that they didn't want the PI to see. And maybe the reviewer might have made some remark that would identify who he or she was. So, it's OK at NSF for someone to redact—that they didn't want the PI to see it. And so that was one of the outcomes of the Electronic Jacket project, was learning—figuring out how we were going to redact it—not just how you were physically going to do it, but how you were going to keep track of who's allowed to see what. And, of course, you always had to keep the original somewhere; you don't want to lose it completely. So that's a good example of one of the things that we learned from that project.

Yost: And was there an internal advisory group that you were working with that—?

Miller: On the electronic jacket?

Yost: Yes.

Miller: There probably was. It was probably the FIIG or the POAG; it was one of those two groups. It was all internal, so it wasn't something where we were reaching out to the external community on it.

Yost: Right. Do you recall any concerns or major issues that program officers had with the early system?

Miller: With the electronic jackets?

Yost: Yes, electronic jackets.

Miller: Probably the biggest concern was the—well, there are two concerns that are kind of the same. One is what they called the conflict of interest, which is where a program officer shouldn't see—let's say you're on rotation for the University of Virginia. Well, when you come in, you say, 'I will not work on proposals from the University of Virginia.' Then, there are your own proposal that you've submitted to NSF in the past.

So what they would do in the past was, if a rotator was coming in, then they would go through their proposal files, get all the paper proposals, whether that person was the PI on them, and lock them in a safe. So they were available if someone needed to see it, but the person who controlled the same would make sure that the person seeing it was appropriate. So with the electronic jacket, how would you handle that? Because it might be that—let's say that you had a grant from NSF, and now you're coming as a rotator, so they replace you as the PI on the grant. So it's an act. The grant people still need to be managing. But, because you were a PI on it—again, in the old days, they would have just taken that grant folder and put it in the safe so they would have access to it but you couldn't see it, because in that grant folder were the names of all your reviewers and everything. So with Electronic Jacket, that became an issue, how to handle that. And then, like I said, this other thing that is similar to it but not exact the same, would be the recusals or—you know, maybe there's a proposal from your wife. You know. So just things that you should not be doing. So those were two big issues that came up. And then of course the redactions was the other one, making sure that people didn't see stuff they weren't supposed to see. It used to be—and I was not involved in the eJacket project, so I can't say for sure—but when there was the paper jacket, there used to be what they called the left side of the jacket and the right side of the jacket. And one side was public and the other side was not public. And so, if you had something under the Freedom of Information Act, you could let the public side go but not the other side. And so, that whole thing kind of came into discussion when we were working on the electronic jacket. And again, in the prototype, we had the left and the right sides specifically marked that way. I don't think the current eJacket does that.

Yost: The design to mimic the paper system—was that based more on creating a system that would become quickly user-friendly, people would understand or policy-based—?

Miller: Familiarity.

Yost: Familiarity, or was it also policy that they be kept straight or consistent—?

Miller: No, just familiarity. Yes. And you know, and it takes a lot to think outside the box and get beyond that into what makes sense from a functionality perspective. People get very used to their forms.

Yost: There was an interagency group—I was wondering, were you involved at all in that, and did you have any liaison working in communicating what was going on with FastLane to other agencies within the federal government that benefit from it?

Miller: Yes. Yes, I was involved in that, and of course I can't remember…I can't remember what the group was called. I remember we used to meet out at LMI, Logistics Management Incorporated. And we would meet however often we would meet, I can't even remember. Monthly or something. And there were two parts of the meeting. One was talking about what we were doing and where there would be commonalities and benefitting from other people's lessons and that kind of thing. And then the other part of the meeting was—they called it EDI, Electronic Data Interchange. I think that's what it

was. And they—this was almost like the precursor to Grants.gov, but they wanted to have a standard data interchange for strings of data that, in the group we were in, had to do with research. And so another part of those meetings would be on coming to agreement on what the EDI format would be. Has anyone mentioned the EDI stuff to you?

Yost: A little bit, but anything you can add would be very useful.

Miller: There were numbers associated with them; I can't remember what the numbers were. But one was like the EDI data string for the proposal. Then there was another EDI data string for the review. Then there might have been another EDI data string for PI information, that kind of thing. And—like on the proposal one, I remember that working within our group, we had our own needs; but then there was a bigger group, because there were groups like Department of Transportation and Department of Education who also were doing grant proposals, but they weren't doing research. And so they would have their own needs that were a little different from ours. So we did—and in fact, we spent a fair amount of money setting up the EDI proposal. And so the idea would be that institutions could have their own interface, so they could make it however they wanted to look; and the PI in the sponsored research office would put together the proposal in their interface, turn it into an EDI data string, send that data string over to us, FastLane would get it and then take that data string and turn it into a FastLane proposal. And then once it was a FastLane proposal, then they could interface with the FastLane system to do everything else. Now, the EDI never did get the project description, but it did get all the

data. And we did implement EDI submissions. I don't think it's still out there today, but you can see that it was kind of the precursor to Grants.gov—because the idea with Grants.gov was to have this standard interface that people could use. So I don't even know if people even talk about EDI anymore. I'm certain—well, I shouldn't say that. I'm sure there are groups out there in the world that do EDI, but not NSF as a research institution.

Yost: It's big within companies. Essential for efficient logistics.

Miller: I would say—right. Banking probably does it, you're right. Manufacturing probably does it, constructing probably does it. And I know—and I'm pretty sure that the health industry—I don't know if they do it but I know they want to do it So that was my work with that interagency group. And we did actually…I know, working with ONR—because there was a time when we thought that we could serve—we could be like a service provider and let the other agencies use our systems, and then we would pass the data on to them. And we worked very closely with ONR for a long time on that, but I don't believe it ever got off the ground. That was with a guy named Brad Stanford, I think was his name.

Yost: Would you characterize it as a lot of cooperation—

Miller: Yes.

Yost: Or was there some rivalry also?

Miller: No, no. No, no, no. There was no rivalry, no. No. No. It was a lot of cooperation. I think that the people who were in that group, who—let's see, it was NIH, NSF, ONR, AOR and AF—OSR…and one other. I guess there was the Education—Energy. Someone who did research; I can't remember now. No, they—you know, as I recall, we worked very closely together, trying to come up with something that would fit everyone's needs. It was very challenging, though.

Yost: Yes, there are different elements to the different agencies, so to make a common system essentially work with all seems a great challenge.

Miller: Oh, I know, we—yes, we worked. I know, it was with Education with the people that did the graduate…it has something to do with student assistance. But it wasn't the FAFSA. It wasn't that.

Yost: Shifting gears back to users and uses. Do you recall any specific redesigns with FastLane, and if they were influenced by feedback—any examples of feedback influencing changes?

Miller: Oh, yes. Oh, I can come up with lots of those.

Yost: Please. All you can—

Miller: These are some of my favorites. Again, so much of this is the policy-versus-technology problem. So, we worked with the policy office and with the division of grants and agreements on post-award processing. And we went through the grants manual and said, 'OK, so this is the list of post-award processing actions that can be done.' There was some pre-award processing also, but mostly it was post-award. So, for instance, the classic example is the no-cost extension. And so we thought, 'Huh. That's a no-brainer. Go onto FastLane, identify yourself, say that you want to do a no-cost extension for your grant, and—' I'm sorry, it was the institution grantee-approved no-cost extension, not the NSF-approved one. The grantee-approved no-cost extension. Because the NSF didn't have to do anything. So I'm working very closely with policy and with grants and agreement, and so I'm like, 'OK, what's the policy on this?' And so you go to the policy manual and it says that, within thirty days, you notify NSF that you intend to take your six-month grantee-approved no-cost extension. Fine. So we spend all this time working very close with them, come up with a system so the grantees can go in and submit their grantee-approved no-cost extensions up to thirty days. So we do that. Well, it works until someone comes in and tries to do it in twenty-nine days, and they're not allowed to. All right, so what are we going to do? So we talk to the policy office—'Well, what would you do if someone did that?' 'We'd let it go through.' 'All right, how about twenty-eight days?' 'We'd let it go through.' So—and again, I'm oversimplifying, but this takes—these discussions take place over a long period of time and require a lot of angst and trying to get people to come along to where it is today, where there's no time limit. Your grant could be expiring tomorrow and you could go in today and get your

grantee-approved no-cost extension. So we designed it one way, based on what they told us; but, in reality, the policy was not—it was in the policy manual, but the way they actually operated was, there is no time requirement. And it seemed to—I mean, they don't care, as long as you—as long as it's done. In fact, you could go in and do a no-cost—and it might have changed since I retired—but you could go in and do a no-cost extension up until your grant has final closeout. After that, you can't do that. So that's a good example of how we designed it one way, found out that it worked a different way, and then had to go in and redesign it.

Yost: That's good. Any others?

Miller: Oh, yes. So another one was the PI PIN. And so, again—you have to remember, when I came in, I kind of inherited it, that they were going down this PIN track. Well, after a year or so of this, two things happened. One is that PIs didn't like having to call their sponsored research offices to get their PINs. And two was, we could see that, for the long term, these PINs—four numbers—were not going to make security happy. So we said, 'OK, you know, we need to change this somehow.' And so we went out and we started talking to people, we worked with FIRCOM. It wasn't so much a FIIG issue, because it was more external—although it was certainly a Helpdesk issue, because they were always calling up the Helpdesk, asking them—so, you know, I mean this is one of those things where I really felt like I did my due diligence, because I can track back—we started talking about it in 1999, then there was a new GPG coming out that fall—in the fall of 1999. And so Jean Feldman and I really—we worked on that very closely

together, trying to make sure—because there was always the FastLane section in there saying that it had been PINs. And then we said, 'Sometime in the next year, we're going to shift from PINs to passwords,' and that PIs would be able to change their own passwords. And—you know, every conference we went to—everywhere we went, we got the word out that we were going to this password system. So, in the spring of 2000, I said, 'OK, well you've got to start getting the word out to people.' I'm sorry—I wanted to start reaching people individually. I'd been doing all this publicity, but now I wanted to start reaching people individually. When FastLane had first begun, I had had a very primitive mailing list of my contact with FastLane, the sponsored research offices. And as FastLane grew, I just would add people to this mailing list. I am not a particularly technical person when it comes to mailing lists, and so I'm just using the mailing lists that our mailing server provides us. Well, it had a limit of a thousand. So actually, after I reached a thousand, I started doing another one, so I ended up with three FastLane mailing lists. It was about a thousand people on each list. So, in February of 2000, I said, 'OK, I'm going to—' And I worked with Jean—very closely with Jean. I came up with an email that we were going to send to these people, because it was getting pretty imminent; we were going to implement it in April. So I said, 'OK, we can give them two months notice that this is coming.' So we send out this email—oh, my gosh. It was like it was the first time that they'd ever heard it. And the sponsored research offices, in particular, were very upset, because they were losing control. And so they started writing us back, and I—again, being—not not being the knowledgeable person that I am, I didn't BCC them. And so, when they would do 'reply all,' it would go to everyone on the mailing list [laughs]. And, at the time, the way our mail server worked is if you did a

'reply all,' it would have to come back to NSF, get all those one thousand names, and then sent it out to them. And so—and actually, Tom Willingham was our email administrator at that time. I just remember in some meeting—'Mail was really slow right now.' And I didn't put two and two together right away. But it finally—you know, digging into it, we finally realized that we were the ones that caused that mess. And everyone and their brother had an opinion on the password. And it finally got to where people were writing me, saying, 'Take me off this mailing list. I never want to see another piece of FastLane mail.' So, anyway. So we finally—in April, we implemented the passwords. And what we had to do was we had to—we couldn't do it all at once, so we had to roll it out. And I can't remember how we chose to roll it out—but it was a big learning curve for the sponsored research offices, because they had to go from having control to not having control. And some of them still wanted to keep track of their PIs' passwords, but we told them, we said, 'We don't even know what the passwords are, because they're totally encrypted and we don't—we can encrypt in but we can't encrypt out. We don't even know what they are and we can't find out what they are.' Now, again, here we are, eleven years later, and I think that people just kind of accept it now and don't even give it a second thought. But at the time, it was a really big thing for them—and also for the PIs, because the PIs didn't want to have—they didn't want ownership either. They were like, 'I like being able to just call up my SRO and find out what my PIN is,' you know? Related to that was the whole idea of being able to create yourself as a PI—because in the early FastLane, we had—you had to be on our PI system in order to get access to FastLane. And so, as time went on—you know, and especially when we got to the point where you were required to use FastLane for proposal

submission—you had to have a way to create yourself, or your sponsored research office

had to had a way to create yourself. And actually—and as I think about this, this was

something that went back to that interagency group, because we talked about it there—

how to have a way for people to create themselves without violating the privacy of other

people—because with my name, Carolyn Miller—if I wanted to go in and create

myself—if you're internal in NSF and you want to put Carolyn Miller on a PI data base,

you would do a search first and see what other Carolyn Millers are already out there and

see if I am one of them and then make a human decision that 'yes, I one of them, and then

tell me what my PI ID is;' or say, 'no, you're not,' and then create a new one. And so, by

shifting that to external, it was a real conundrum on how to allow someone to do that,

given that if you submit a proposal to NSF, that's private. We do not publicize people

who submit proposals to NSF. If you get an award from us, it's public; but just the fact

that you've submitted a proposal is not public. And so it was very, very challenging, and

we never did come up with a solution to it. And it creates problems even today, because

you can go out and put yourself out there and voila, you're a brand new person. And if

you are a PI with a history, and you're a brand-new person then, if you were to submit

another proposal, the program officer working your proposal would have no idea that you

had these other proposals at NSF—which may work for you or against you, depending on

the status of those proposals. Right?

Yost: Right.

Miller: For instance, the program officer needs to know that you have other proposals there, because if—let's say that you have three or four declines in your history and now you have another proposal—he was the one that asked the same reviewers who reviewed your declines to review your next proposal. So he or she needs to go in and see who the earlier reviewers were, to make sure that they get different reviewers. And so, if you go in and you're new, then they don't have that benefit. So it's a problem. I don't know the solution to it. I worked on that with FastLane; and even in my subsequent time at NSF, I worked on it and—you know, I don't know what the solution is. You know, we used to generate—we'd bring in summer interns and we'd generate reports where names looked alike and we'd asked them to go in and look them up and see if they were the same person or not. And then, if they were the same, we could merge them—we do have a merge utility. So we could merge them together; but we're taking half a million people. It's an ongoing problem. Another thing that we had to retool was—again, one of the early FastLane applications was the cash request. Great little utility, are you familiar with it?

Yost: A bit, yes.

Miller: Well, it's really nice. It lets the institution go in and they can see their balance, they can see how much money they have, and then they can do a cash drawdown. In the early days, before people got real familiar with the internet—and remember that when you did your cash drawdown in the early days at NSF, it would hit the FastLane server; it would go up that [DV] Gateway to the mainframe, because that's where the financial

system was; make the cash drawdown; set the money aside to go to your bank account that night; then come back down, go through the gateway to the SQL server, and back to you. And so it would take a little while for all that to happen—not a terrible amount of time; five, ten seconds—you know, depending. Well, people would click—they would hit 'submit' more than once, and—the thing with FastLane is that the things are asynchronous; and so, say you'd asked for $500,000. You'd click again; another $500,000. Click again, and another $500,000. And so what we realized was that this was happening, and so we would have people in the finance department who, in the evening—I guess really, in the morning, before the cash things would move out—the first thing they do is go down and read the cash requests and make sure there weren't any duplicates. And then—well, while they were doing that—I mean, we fixed it up fairly quickly. Then what we had to do was put in a patch that, if the request for the same amount of money went through within a specific amount of time, we would just ignore it. [Phone rings.] I turned it off here, but not there [laughs].

Yost: Just ignore it. We only use the audio to create a transcript.

Miller: So, that was something that we just had to learn. I mean, it's interesting. Again, we're talking—1995, 1996 was when that went up. I'll just leave the phone on over there. And it's interesting, because today, when you go to use the internet, people just accommodate that—you know, they'll either give you an error message saying, 'No, we—' Or they'll put a warning up, which we did. We also put a warning up, 'Don't do that again.' But it wasn't something that we had initially anticipated. So that was

another interesting one. Certainly, the SSN issue is something that I think they still struggle with, where—we initially put SSNs out there, because that's what you did. And then the whole cybersecurity thing came along, and we had to start taking SSNs down. The problem is that they are so—they're just so ubiquitous in our system that they're still there. We can't—we tried getting rid of them. We tried—again, just a prototype, just to see what would happen. We picked, like, one or two institutions and said, 'Well, let's just try to get rid of SSNs at these institutions.' And our software—it just—we were so concerned that it wouldn't—there were ones there that it wouldn't match up, or the duplicate problem. There would have been too many hanging ones, ones that were left over where we wouldn't have known what to do with them. But we gave up. And so, buried in the system are still the SSNs. They are still the link that holds the original stuff together. Now, if there are new systems coming along, they don't put SSNs in them. But in the original ones, they are there and the unfortunate thing about SSNs is that they are handy. Everybody knows what their SSN, and ninety-nine percent of the time, they're unique. Not always, but most of the time they're unique. And so it's their handy way to grab hold of a distinct individual. You know, so it's unfortunate that they've had to go this other way, because now I'm going to guess—this is just a guess-that the data's not as clean as it once was. Not that it was always all that clean, but it's not as clean as it was. So—let's see, what else was interesting about FastLane? The panel system—did you have any questions about the panel system?

Yost: Yes, I'd be very interested in what you have to say on the panel system.

Miller: The panel system was very interesting. The FastLane panel system?

Yost: The FastLane Panel system.

Miller: Have you been on an NSF panel?

Yost: No, but a colleague on the project has—repeatedly. I've been an ad hoc reviewer and I've spoken with a number of PIs and NSF program officers about the panel system. Primarily, our data thus far is from the panelists and program officers.

Miller: Yes, so let me give you the historical perspective on it, OK? So, again, around 1997, 1998—so, FastLane is still kind of in its infancy, but we're seeing that more and more information is coming in electronically, and we're like, 'You know?' So we had the electronic jacket prototype, but we're like, 'You know, what can we do to help the community with all this information?' And so—this was really—Jerry Glaser's the one who really helped give birth to the panel system, although I don't think he gets credit for it today. But I do remember sitting in and meeting with him, and him saying, 'You know, let's—we give all these reviews, and what can we do to help the reviewers of our proposals?' We have all this information electronically, and so…it was me and him and George. Do you know George's last name? Have you heard that name before?

Yost: I don't think he's come up.

Miller: OK. Again, ask Fred. Fred will know George. So Fred might have been there, as well. But anyways, we said, 'OK. We're going to do something for panels.' And so that was the birth of the panel system. And, at the time, Florence Rabanal was on detail to me with FastLane, who comes from the program office. Have you talked with Florence? No. And so we said—so Jerry kind of gave me and Florence the running orders; said, 'Go do something with panels.' So it was very interesting, because it was definitely an out-of-the-box kind of experience, because nothing had ever been done before. And so it wasn't like where you would take the review and they were coming in on paper, and so now we're going to turn them electronic. We had to totally come up with new ideas of 'how can we take this and make it useful to the panelists? And Florence especially was very, very instrumental in all that—you know, because she came from the program world, working with the program officers and with some panelists— you know, just talking and talking and talking. How do you run a panel meeting? What do you do? Because I knew nothing about panels up to that point; they were not electronic at all—other than I generated some panel reports for them. Beyond that, I didn't really know anything about panel meetings. And so we got the funding—and again we were able to get external funding, because it was for panelists—and come up with the panel system. And personally, I think that the panel system is one of the best things to come out of FastLane, because it didn't exist at all before, and there was absolutely nothing; and now you have this collaborative software where the panelists can come in and be informed of so much and share so much at the panel table that they never had before, or that they would have had to be taking handwritten notes for—and to have the stuff at their fingertips, you know? If you're discussing a proposal and you're the lead

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discusser and you want to quote something from one of the mail reviews, you can just

click on it and there it is on the screen, and everybody can see what you're talking

about—rather than before—you know, the staff at the meeting would have had to pull up

the review and find out what part they wanted to discuss and—I think it just totally

revolutionized, like I said, how informed the panelists are at the meetings. The panel

system that's out there today probably does not look anything like the original panel

system, but that's because Florence and I were kind of—we were just kind of having to

take what people were telling us, and envision how it might work. And it wasn't until

people started using it and saying, 'Oh, well this is nice, but…'—you know, and asking

for other things, that it was able to evolve into the system it is today. But I think that the

panel system, in particular, is just one of the things that I think makes FastLane so

wonderful—that it takes not all, but a lot of the information that's coming in from

FastLane and puts it into a package that is very useful.

Yost: Yes, the PIs we've spoken to have generally raved about it and how it improves

the panels.

Miller: Oh, good, I'm glad to hear that, yes. Well, that's definitely one of my pride and

joys. But if you want to get more information about the early history of it and how we

came up with what we did, Florence Rabanal would be the person to talk with. Now,

interesting, another thing that really helped when we were putting together the panel

system is on the financial side, because—the panelists involve money. And at the time,

when they were putting—well, a couple of things. One was just putting—you know, the

panel, now, was so easy compared with how it manually used to be in how it's the

panelists' responsibility to go in and put their banking information in and all that stuff;

whereas before, some support staff person would have to track down the panel—get all

that information, and it was just a real pain in the butt. And now it's all automated. But

one of the biggest things is that when the panel was over, the panelist has to sign a piece

of paper attesting to his or her presence, or whatever. But it's that signature that then

releases the funds; and if they don't sign it, they don't get the funds. And what would

happen is people would leave early or just walk out and forget to sign, and so then the

program office was left with how to get this person's signature. And so now that it's

electronic, it's just not a problem. And even if the person doesn't sign when they're

there, they can still go back to their home office and sign from there. And so, as far—so,

the flow of the finances is just so smooth now, compared with what it had been prior to

that. Now, interestingly, with that, one of the challenges that we had with the panelists

was the banking information—because, you know, of course in the early days it cut a

check; but when it became all electronic, it's like, 'OK, no checks; it has to be direct

deposit.' And so we had to have a way to get the latest and greatest banking information.

And that was a real challenge back in the late nineties—not so much today, but back in

the late nineties. And I guess—and I somehow remember Al Gianangelo being involved

in this. But getting a contract with somebody who would send us the tape—they

probably do it electronic—actually, I think it is electronic these days. Yes, because

would do a download to get the latest and greatest banking information, but we would

have to go out and buy a tape or something from someone who put it on our system, to

get all the banking information. But it's up-to-date. We had the same thing with the ZIP

codes, because, again with FastLane, ZIP codes are very important. A lot of times, they'll do—if they have staggering deadlines, it might be by ZIP code. And so we always have to update the latest and greatest ZIP codes, which is a challenge because the postal service doesn't care what NSF is doing with ZIP codes, and they'll just go out and change ZIP codes willy-nilly. Another challenge related to that was the congressional districts—because Congress, of course, cares about what kind of NSF funding is going to their district. And you know—I'm glad I'm not there right now, because with all this redistricting going on, I'm sure it's a mess trying to figure out what institution has moved from this congressional district to that congressional district. So glad I don't have to do that anymore. But we found a company that would try and match ZIP codes to congressional districts—not a perfect science, but they would try and match them. And then we would buy that and then we wrote a program that it would go through, and if it had the ZIP code, we'd change it to that congressional district—something that, before FastLane, just wouldn't have been a problem. And the thing is that when a PI goes to put an address in FastLane, it has to have a valid ZIP code on it. That's why our ZIP codes have to be current—because if the PI moves to someplace that didn't have a ZIP code before and now it has a ZIP code, or if the ZIP code changed, we need to make sure we're ready to recognize it.

Yost: So were you the manager of the early implementation of eJacket?

Miller: No. No, the current—no, I did Electronic Jacket, which was the prototype; never went anywhere. No, I didn't have anything to do with eJacket. That was Maureen Miller.

Yost: Oh, OK. What were you involved in—in your latter years with NSF, was it different aspects of DIS work at that point?

Miller: OK, so what happened was, when I went on maternity leave in the spring of 2000, Craig Robinson stepped in and took over. And then, in July of that year, the branch chief of another branch left NSF. With FastLane—I had been on FastLane for five years there, and I was just really burnt-out. I had been working more than fifty, sixty-hour weeks; and traveling; and I was having twins and I just knew that there's no way I could keep with FastLane and keep up my home life. And so then when Larry left, I called up Fred. I said, 'Fred, we know Craig's doing a great job in my old job. Why don't you let me take over Larry's job, and you can make Craig the head of FastLane?' Well, actually it was the branch, the head of that branch. So Fred thought that was a great idea. So I got out of FastLane. Woo-hoo! So my involvement in FastLane was for five years: from the spring of 1995 to the spring of 2000.

Yost: And I understand in 2002, it won the presidential Quality Award.

Miller: I guess. Actually, in 1999, it won the—it won some award. We got to go up to New York. Do you have that on your—?

Yost: I'm sure. We have a full list of awards and accolades of FastLane.

Miller: Yes, yes. That was the first award we got, was that one from 1999.

Yost: So are there any areas, topics I haven't covered, questions I haven't asked, that you think are useful to understanding FastLane and its history?

Miller: Yes, there are. Can we turn this off?

Yost: Sure.
[Restarted recording]

Miller: A couple other things that I worked on that you didn't mention in any great detail—the annual project report and the final project report. Now, again, back in the mid- to late nineties, there was a big push to totally revamp that system. And we worked with Chuck Hertz and Tom Baerwald on that. And so what they were trying to do was take a paper-based system and turn it into FastLane and, at the same time, try to accommodate NSF changing requirements as far as what was wanted in those reports.

Yost: So, capture more useful data?

Miller: Or different data, yes. You know, politics. You know, where your areas of interest are. Change over time. That and another thing, as well. And so it was a huge group of internal people. Now, it was not my project. I was the technical person. You know, I was providing the FastLane support. A lot of the earlier FastLane projects had started in our division, and we kind of owned them. And then we got input from the rest of the foundation, or the external community. This one was different in that we were there in an adjunct role, but it was an NSF project kind of owned by Chuck Hertz and Tom Baerwald. And we were there just supporting it. So it had a different flavor because of that. And so they were running it very much from a scientific need perspective—and then trying to figure out what technical things could then support better, accommodate that. And they have all kinds of idea about how the PIs would go in and fill in their reports and be able to attach PDF files at different stages and that kind of thing. And I think that the project got too big. And they were just trying to be all things to everybody. And in fact, it was so big, but it wasn't big enough. It did not accommodate the education—the fellowship grants and those kinds of things. They still couldn't use it; it was more for the research grants and the conference grants. It could not accommodate them. But it was very challenging, because it—they wanted places for the scientists to be able to answer a question, then you had—they wanted to do it online; but if you were a mathematician, you would need a mathematical font, you know? Or a physicist might, or a—you know, they needed different kinds of fonts that we just couldn't support. And so the idea was that this information would come in, be on a database so that NSF could then come in the back door and harvest it—and that eventually, especially for the final project reports, that it would become public. And so

then the public could harvest the information, as well. But you know, again, I haven't

been involved in it in a long time, but I don't think it ever achieved that. Are you aware?

Is there anything out there that the public can get to any part of the final project report?

Yost: I don't think so—but concerns about intellectual property remain a barrier. That's

still a big issue—

Miller: Right, right, yes. But that—when they were designing it, that was a big thing,

was there's all this information—of course, NSF's big thing is to share. There's all this

information. We need to make it so that people can get to it. And that's why they

wanted it more database-oriented, rather than PDF-oriented, so that it would be shareable.

But unfortunately, I don't think it reached what they wanted it to do. Do you use—have

you, like, filled in any annual progress reports on there?

Yost: Yes.

Miller: And how did you find it? And a lot of the PIs, when they first—they thought it

was very burdensome—because it was very—you know, you answer this question,

answer that question.

Yost: Yes. I found it alright. I've only done annual and final NSF reports on FastLane.

The one thing that I've heard both from the community, and my reaction to it as well, is

that you go through the different questions and you sometimes answer one with

information that you realize, 'Well, that's better to have in this later answer.' So you end up doing some cutting and pasting and rewording to get it in shape—but it's not too burdensome in my opinion.

Miller: Yes, exactly.

Yost: And so, in that sense, just creating one narrative, like in the paper-based days, there was quite a difference.

Miller: Was more—yes. But again, I think they had those different questions because the idea was that they could then—they were harvested in a different way.

Yost: Yes, so the NSF can—or, if one day, it becomes public, others—can harvest it in more useful ways on a database than if it is just one document.

Miller: Yes. So that, unfortunately, was one part of FastLane that I don't think has been as fruitful as they had hoped. But I'm sure that can change over time. But yes, the intellectual property thing was a big concern. The other thing that I wrote down was the Federal Cash Transaction Report, which—I don't believe it's called that today, but I can't remember what it is called. But back when I would have done it, it was the FCTR. And that was—to me, that was an ideal use of FastLane. Are you familiar with it? It's a business office function.

Yost: We've interviewed less on the post-award side, but talked to some about it.

Miller: That's correct. So the FCTR, Federal Cash Transaction Report, which again, if you look at today, has a slightly different name, is a business office function. And what it is—so you know that NSF allows institutions to do cash drawdowns.

Yost: Yes.

Miller: So let's say that you're—so, Ohio State University, you have a hundred and twenty grants with NSF; and of those hundred and twenty grants, then you have a pocket of, let's say, two hundred million dollars. So, you're not allowed to earn interest on your grant money, so you only take as much money as you need to pay your bills today and tomorrow and maybe the day after. And so you do a cash drawdown one or two times a week. When you do your cash drawdown, you draw from your big bucket of money. So, because we're letting you do that every three months, you didn't have to tell NSF how you spent that money. And that's called the Federal Cash Transaction Report. And what you have to—so, let's say that in that three months, you drew down fifty million dollars. Well, now you have to come back in tell us that fifty thousand went to this grant and thirty-five thousand went to that grant. You have to tell us all the grants that that money went to in the past three months. And so, like I said, I think it was an ideal use of FastLane. And so what we did was we created the report electronically. And so you'd go in by institution, and it would have all the grants listed in some particular order that the institution could have drawn down money on. But it has some other things as well. It

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has your closed-out grants. It has a lot of stuff on it besides that. And then that report is released. We try to release it, like, within a week of the end of the quarter. And then the institution has a month or so to fill it in. And so with FastLane, you can either go in online and see it or you can download it as an Excel spreadsheet. And then if you have it as a spreadsheet, you can pass it around to people or whatever. And so then they have a month to figure out how they allocate that fifty million dollars. And then, when they're done, like I said, they can either type it in online or they can upload the spreadsheet again. And so that required sort of techno—kind of out-of-the-box thinking. Rich Schneider's one of the ones that helped us with that, when they would upload it back, picking apart the spreadsheet and putting things into it in the right place. When they do upload the spreadsheet, they can then look at it in FastLane just as if they had typed it in in FastLane. And so then it goes in, and they can have it up there; but whenever they're ready, they then submit it. Just because you've uploaded it doesn't mean you submitted it. You have to actually submit it. And the nice thing is that, both in the spreadsheet and online, there are real-time edits, so that you—it's not like you're going to get to the end and then find out you made a mistake—because it will tell you right away if you've gone over—you know, if you've made some kind of mistake. And so then, when you want me to go upload it, everything should—the bottom line should be zero. And it goes up to our financial office, and then they have three days to review it. And so they would get notification that it's committed, and they have their internal side of it that they read through and do whatever they do. And they can either reject it or accept it. If, after three days, it hasn't been rejected, then it's automatically accepted—which is nice, because then the burden is on NSF to do something, and not the business office. And then once

they accept it, then all the data gets thrown into our database, and everything gets updated. So, to me, it's just that—like I said, it's just an ideal use of FastLane technology and has just made life so much easier; both for our financial people, because now they don't have to go in and keystroke in all those paper reports they used to get in, and for the business offices, because it's so automated for them; and because the edits are real-time, their reports are very, very clean. And so it helps them. They have a handle on where they're at. It helps NSF because we know where we're at, as well. And I think— you know, I mean that system—I'm not going to say it hasn't changed at all, because I know it has. They changed the name of the report. But the concept basically works the same way. It works essentially the same way it worked when we originally implemented it. So—and then the last thing I wanted to mention was the review form, because I wanted to talk about changes. So, when we initially implemented FastLane in 1995, 1996, there was the NSF review form. And I can't remember when, but I'll say 1997 or 1998, NSF changed the review criteria. I don't know if you remember that. Have you been around that long?

Yost: I finished my doctorate in 1998. My first NSF grant went in in 1998. And reviewed for NSF first several years later.

Miller: Oh, OK. So you would have gotten it in the review form. So, aside from FastLane, the National Science Board and the powers that be decided they wanted to change the review criteria for NSF grants. And so it was a major, major deal. And again,

you can go to the NSF historian to find out all the stuff that went on with that, because

that was the one where they added the criteria of diversity and—

Yost: Broader Impact.

Miller: The Broader Impact and all that stuff. OK. So we have FastLane over here with

the old review forms. And now we have this new review form. And so, again, pre-

FastLane, these people could have just said, 'OK, as of July first, you start using the new

review forms.' And away they go, right? Not anymore. So now, we have these new

review forms, and so now we and FastLane have to accommodate them. Well, now we

had to separate it into these separate questions. And so that's a database change, right?

And not only that, but we had to make sure that the old ones were still going to be

readable, right? And we knew that there was going to be a point where both types of

review forms were out. And so, when you were coming into FastLane to do your review,

we had to make sure that the right screen came up for you, depending on which review

form had been sent to you.

Yost: Oh, wow, that sounds administratively burdensome.

Miller: So it was quite a challenge, going through that. And that then was a classic

example of when I would use the FIIG, the FastLane Internal Implementation Group—

because here was a change—I couldn't control the change, but I had to control how it

was implemented. And so I worked very closely with FIIG, and of course very closely

with the policy office, because we had to make sure that our dates were all lined up and everything. And to get that transition accomplished and—I can't remember who I worked with, but it was some program person. I just remember saying, 'You know, you need a program person to lead this effort from a—' So, you know, part of the thing is that I do not like people saying, 'The computer made me do it' or 'DIS made me do it.' We don't make you do anything. People tell us and then we have to follow what they— so I wanted this to be a program-initiated thing, not a DIS-initiated thing. So I—and I can't even remember who it was, but I worked with some wonderful program officer who led the charge to get that whole implementation accomplished. And that problem would still be today. If they change anything now—but especially with the eJacket, you need to make sure that you are accommodating all the old forms plus all the new forms, and knowing which one falls in which category—making sure you're displaying it properly.

Yost: OK, well, great. Thank you so much for your time—this has been extremely useful.

Miller: So that's all I have to say. Like I said, if you ever wanted to get together a bunch of people and have us sit down and talk, that would be fine with me.

Yost: Sure, and I might have a follow-up email for verifying something as we write this history up.

Miller: OK.