

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION
Transcript of National Archives History Office
Oral History Interview
Subject: Ken Thibodeau
Interviewer: Jack Kabrel
Date: October 14, 2016

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MR. KABREL: This is Jack Kabrel. Today is Friday October 14th, 2016. I'm conducting an oral history interview with Kenneth Thibodeau. This interview is part of a National Archives and Records Administration's History Office Oral History Project. Welcome, Ken, and thank you for your time today.

MR. THIBODEAU: Glad to do it.

MR. KABREL: We'd like to tap into your expertise about the history of the Electronic Records Archive (ERA) project. Can you please provide a brief overview of your career in one or two minute or so—the arc of your career with the National Archives?

MR. THIBODEAU: It had different phases. I was hired originally by the National Archives in 1975 in what was called the Machine-Readable Archives Division, and I stayed there for three years until I was offered the position of Records Manager at the National Institute of Health (NIH). That was 1978, and I stayed there for ten years. It was a great place to work, but after ten years, I kind of got to the position where I couldn't think of anything else major I wanted to accomplish there.

By pure coincidence, I learned that NARA was deciding it needed to ramp up its support for electronic records, and so I applied for the job of the Director of the new division they were creating, which was the Center for Electronic Records. I got that job at the very end of 1988. I was in that position until 1995 when I actually went on detail from NARA to the Department of Defense to head their Records Management Task Force. While I was there NARA reorganized, and I came back and was put in the position of Deputy Director for Modern Records Programs. I was in that position for basically three years until 1998 when I started the ERA Project and then became Director of the ERA Program Management Office a couple years later and stayed there until—it was late 2008.

I made a commitment to the Chief Information Officer of NARA that I would stay with ERA at least until it was operational, and then when it became operational, the next major thing we faced was deploying the second system to support the George W. Bush Presidential Library. That was such a big thing, because we had to do that right; I decided I would stay on until we had that running. Then I reached an agreement with the Chief Information Officer that I would withdraw gradually, so we took part of the ERA program, which was the research component, and created a separate organization called the Center for Advanced Systems and Technology, which was IT research. The original idea was that operation would eventually be expanded to become the computer engineering aspect of NARA. The CIO retired, and her successor did not agree to that. I stayed in that research position until I retired at the end of 2010. That was my career at NARA.

MR. KABREL: That early part of your career when you first came into NARA—can you talk about how everything that led up to actually being involved in the ERA helped you to prepare for the ERA? Everything including your education as well as your experiences in and out of NARA?

MR. THIBODEAU: Essentially my entire career led to ERA in that, when I was doing my dissertation research as a grad student, I wanted to do some statistical analysis. At that point there were no statistical packages available to do time series analysis, which is what I wanted to do. I decided to learn computer programming so I could write my own program. I took some computer science courses and then found that fascinating, so I wound up getting a couple postdocs in Computer Science and Quantitative Methods.

I had, kind of a split personality, because I really love history. The thing about history is, it never ends. The more you study, the more complex questions you have to ask about history. Ultimately there's always a subjective element in your interpretation of history. However, with computers, you either get it right or you don't. The program works, or it doesn't work. I like that aspect of computers. It was kind of sort of playing for me, because it was well-defined and very logical. Then, the National Archives posted the position in the Machine-Readable Archives Division, and I thought I can get to watch history happen in the federal government and pursue my love of computers at the same time.

It worked out very well, because once I came on NARA, I was assigned to work with all the, or many of the big science agencies and my doctorate's actually in the history of science, so it was a pleasure. My responsibility is what we called pre-accessioning, which is to get the permanent electronic records from the agency into the National Archives. I worked so much with NIH that eventually they decided they wanted to hire me. One of the Records Manager's responsibilities at NIH was oversight of office automation. I was still very heavily involved in computers at NIH, and obviously when I came back to NARA as head of the Center for Electronic Records, still a total focus on electronic records—there was a bit of change, because—it was very strange for me.

NARA did not expect division directors in the National Archives to be involved in budget, and my management training is that two basic things of management are staff and budget. It was very clear the center was under-resourced, and I was able to learn through various contacts that the agency really didn't intend to put a lot of resources into it. I decided you're the manager; that's your responsibility to make sure you get the resources, and we were able to, in that five or six years, to get the budget from about one million to over three and a half million, and we were able to expand our productivity tremendously. In terms of preservation work, we expanded our productivity by over 1,000%; even got a government-wide award for doing that, and—

MR. KABREL: If I may interrupt and ask a question—at this point, one of your jobs was to drag NARA into the future?

MR. THIBODEAU: Yeah. [Laughter]

MR. KABREL: How did you go about doing that?

MR. THIBODEAU: You have to have a certain amount of patience. You have to also respect other people's position and perspective. My total experience with NARA is, it's an under-resourced agency, and it's full of people who are very dedicated to what they're doing and are competent professionals. However, their viewpoint is very much conditioned by not having enough resources to do their job and

not having the training to go about it. One thing I would fault NARA on for my entire career is, they never really recognized that when you promote someone to a management position, management is a different profession, and you really need to train people to be professionals in that area and generally they don't. They just think management's a personal capability. First thing at NIH, as soon as I got into a supervisory position, they put me in a management program—a development program—that lasted several years. I had some schooling in how to work in an organization and work with people to convince them that your needs were valid and that they should support you.

I was able to find people in various parts of NARA including budget and obviously the people I worked for and I was able to convince them to support me and support the increase in the budget. It wasn't always easy, because, for example, the first year I was there it took more than six months to figure out what the budget of my division was, because no one expected me to want to know that. Most other division directors in the National Archives—their budget is mainly staff and archive supplies like boxes and folders, which are centrally purchased, so they really didn't have much cause to be worried about budget. In the computer operation, you had to pay for your computers, you had to pay for your contracts and all that. So it was very important.

After nine months at NARA, the head of the National Archives calls me down to her office and says "You've got \$50,000 in your budget, and I haven't seen one word on how you plan to spend it. I want a plan in two weeks." I really wanted to ask, "How would I have known this money was in my budget?" I bit my tongue, came back within two weeks with a plan, and was told, "Oh, well, I decided I need that money to buy more shelving for paper records." I had several experiences of that in NARA. You don't get mad; you don't express your anger. You figure out a way to go back and work with them and get their support elsewhere, and it was much more important to get the support in the Congressional budget to ask for real increases rather than diversion of \$50,000 here and there. That was an absolutely essential element in the ERA program, because we knew from the get-go that we were going to need a lot more money than NARA had ever dreamed of getting for electronic records.

MR. KABREL: And the time period we're talking about would be about what?

MR. THIBODEAU: This period was 1988, or 1989 actually, through—I think we achieved the three million dollars around 1992 or 1993. Then things literally went to hell, because of the *Armstrong vs. Executive Office of the President* litigation that we got absorbed in after the Federal government lost the case. For several years, basically, all our money went to handling court orders that came down in that case.

MR. KABREL: Let me just backtrack to 1988. NARA had a mindset of a culture of paper?

MR. THIBODEAU: Yeah.

MR. KABREL: How were you able to convince those who believed in the culture of paper that electronic records were here, and they're coming, and we should address that to the tune of three million dollars a decade later?

MR. THIBODEAU: Patiently would be the word. You know, step-by-step you make your case, and for example when I came, I learned that they were still using technology that had been set up in the early 1970s. By 1988, that was really obsolete technology, but NARA had not had the resources to keep up with the time. It was very labor-intensive. They had to write a separate program for every single file of electronic records that came in, which was labor-intensive. Because of the cutbacks during the Reagan

Administration—they only had about 13 staff I think—and they were only bringing in a few hundred files a year. You're just losing ground constantly.

So I said, you know, we really need increases in productivity, and the only way we're going to get that is through automating using current technology. I told the staff early on that we've got to ramp up to where we're handling thousands of files a year, and once we get there, we're going to raise the target to tens of thousands of files. They looked at me like you're crazy. We're never going to get there. Four years later, we were—we actually brought in ten thousand files, and the only way I learned about it was the end of the year when I saw the statistics. We had developed the capabilities to do that, so it wasn't traumatic for the staff, because we had developed two systems in the meantime, one to handle preservation, and one to handle accessioning, which like I said, thousand-fold increase in productivity. The staff didn't have to do what they used to do with paper and rulers. They got the computers to do that work. We did it sort of piecemeal. I think I was very lucky in the sense that Trudy Peterson who was then head of the Office of the National Archives was one of the exceptions at NARA. She had had an early period of working in the Machine-Readable Archives Division. She knew that we really had to get on top of electronic records, and she was supportive, and I think that—the people above her liked me, because they had hired me. The two of us were able to work gently with them to get incremental increases over those four years.

MR. KABREL: Interesting. What was the size of your staff?

MR. THIBODEAU: When I got there, there were seventeen full-time employees (FTE) including four vacancies, and I looked at that chart, and I thought, good, I can bring in some computer people, because we didn't have any professional computer people on the staff. We had archivists and archives technicians, but my first day on the job I lost those four vacancies. That was a quick lesson that I've got to really pay attention to resources and do whatever I can to get additional staff.

Also, as soon as I got to know the staff, the archives technicians were the people who were writing the computer programs, and they were pretty routine programs where you just changed a few things for differences in each of the files that came in. I thought they understand what a computer program is, and they're doing their jobs very effectively, so I worked with personnel to get their jobs reclassified as computer programmers. As technicians, they basically couldn't get beyond a five, but as programmers they could go to, in a career ladder up to a GS-11. When that got through, it really motivated the staff, and I'm happy to say that a couple of those people who were fours and fives when I came in subsequently went on to become 13's and 14's in technical positions in other agencies. As a manager you've got to make sure your staff understands that you support them, and you want them to have good careers even if it means leaving. That was part of the secret of being able to improve productivity and get people to change the way they did their jobs without feeling threatened.

MR. KABREL: Can you take us from 1988 and address the changing technological advances that led us up to ERA?

MR. THIBODEAU: The first one was actually inspired by the National Archives of France, because I met my French counterpart and went over to see their operation. They had developed this system—engineers had developed it where instead of having—the first thing you do in digital preservation is, because in those days you could not trust any digital media; they're very fragile. They're very sensitive to temperature and humidity changes, even to airborne chemicals. So the first thing NARA did and still does is, when you get something in, immediately copy it onto a physical medium that

you can trust for some number of years. That was the program that people were writing to make those copies, and then you do 100% review byte-by-byte to make sure the copy is a perfect copy. If you have lost something, you know exactly what was lost. The French had a system that did exactly that, and they explained their system.

I came back and said, "Okay, we're going to get a system like that." There weren't any. You couldn't buy one, so we contracted to develop one. I have always been fascinated with structured data, and so the second step in the accessioning was once we got the copy, they would do a dump, which would be to print the contents of the files out onto paper, and then the archivist would sit down with a ruler and look at the data and see if it matched what the data was supposed to be. If the first nine characters of every record should be a Social Security number, you check if everything in the first nine columns of the first 30 records are numbers. If the next field is supposed to be a name, you check if they look like names. They were doing this manually.

I pointed out to them, what you're doing is a statistically invalid routine, because there's no guarantee that if the first 30 records are okay, the next several thousand are also okay. It's not a random sample. So we developed a computer program which would do exactly that; you tell the computer what the data's supposed to look like, and then tell it to read the data and see if it conforms. We could get very precise on that, because we could not only say is it supposed to be numbers? Is it supposed to be letters? If you had a two-digit or two-byte field that's supposed to be states, is it one of the 50 recognized two-letter codes for states? If you have fields that are dates, is the data actually within the date range that the agency told you it should be? If you have a field that codes for occupation, you also feed it all the codes and say, "Do you find any codes in this field that aren't in the code book?" We were able to know a lot more about the accessions that were coming in, because we automated that. Those two perceptions at least for structured data and in all cases for the physical survival were without question basic requirements we were going to build into the ERA system.

MR. KABREL: And was the coming technology able to help speed along that process?

MR. THIBODEAU: Oh, yeah. In fact, we were disappointed, because we did find one company that had a system that was a lot like the preservation system we wanted, except they'd have to make a number of adaptations, because we were more demanding than most of their customers. They just decided—they loaned us the system for six months that we actually used and said, "Yeah, we love it, but here's the things we need," and they just decided they didn't want to make any changes.

We had to go out with an open competition, which actually wound up being extremely lucky for us, because within three months of awarding that contract to a company in New York called Mueller Media Conversions, NARA assigned to the Center the responsibility for handling the consequences for the government's losing the PROFS case. The PROFS case, which was named after the IBM system that was in use in the White House, was an attempt to keep the Reagan White House—to force them to keep their back-up tapes in the PROFS System. That was the system that Olive North had used to create his notes that he had shredded on paper. The plaintiffs were savvy enough about what was going on in the White House to realize that he may have shredded the paper, but he probably has no access to the back-up tapes and most, if not all, of his notes are probably still on the back-up tapes. The Federal government fought that; it was in the court for four years and two weeks. Before the end of the first Bush administration, the court reached its decision, the Federal government lost, and NARA was saddled with over 15,000 volumes of digital stuff coming out of the White House, mostly computer tapes, but also hard drives taken out of people's computers and some other weird media.

What nobody knew in the public was that when the Clinton administration came in, there were no working personal computers in the entire executive office of the government, because we had taken all the hard drives from the National Security Council as part of the settlement of that lawsuit, and in the meantime, the FBI was doing an investigation of the allegations that people in the Bush White House had illegally looked into Bill Clinton's passport files as a student to try to dig up political dirt on him. So they seized all the other hard drives in the White House.

When the Clinton people came in, they were back to ink on paper, because they didn't have any computers to use. That transfer of all that stuff from the PROFS case, when Trudy Peterson became the Acting Archivist, she decided we should handle it, because even though the responsibility of NARA would have been in the Office of Presidential Records those people had no experience and no capability to deal with electronic records. Responsibility was transferred to us, and that became our life for more than three years. That was so much bigger than everything the National Archives had accumulated in 30 years.

MR. KABREL: So how did you solve the problem of the hard drive and back-ups?

MR. THIBODEAU: It was horrendous to tell you the truth, and my wife who also worked for NARA can tell you for three years every day we'd be walking in from the garage at Archives 2, and I would say, "You know, I have to say this out loud—I hate my job; I do not want to be here. I'm wasting my life, and the only reason I'm staying here is to protect my staff, because if I weren't dealing with the lawyers and the judge, they'd have to be."

It was kind of amazing, because when we got that stuff, I had no one in my entire division who had the clearance to touch National Security Council (NSC) records. They're all classified. We had some people with some low-level clearances, but nothing approaching what we needed. I actually asked NARA, "Can you temporarily assign some people from the Declassification Division who have the necessary clearances to work with us until I can get some clearances for my staff?" I was accused of playing a game. I thought, how is this a game? You've assigned us responsibility for these records, and I have no one who's legally able to deal with them. My request was turned down flat. Fortunately, since this was the White House, NARA's oversight agency in that area—the CIA—worked with us. They were very helpful to us. They allowed us to configure a system, which we literally threw together, to copy the NSC tapes, but the system was configured so that there were no printers, and there was no ability to display data from the tapes on the screen. We could never see what the data was that we were handling, but the computer could tell us if it had managed to make a copy.

First it has to tell us if it can read it physically, then it makes a copy, it does the comparison, and it would tell us if the copy was 100% successful. We were fortunate, because Mueller Media—I actually called them up and said, "You've got this set of requirements to develop a preservation system for us, but I need you as soon as possible to just configure stuff that we can copy tapes in-house, because at that point we were using an outside computer service bureau that there is no way we could send classified records to them, and I wouldn't trust presidential records of any kind being shipped back and forth from the National Archives to a contractor. Mueller Media came through and got us a cobbled-together system within a few weeks, and the CIA was able to certify that nobody can see any data that's on these tapes.

It was astounding the work the staff did, because we encountered a lot of problems, and they couldn't see the data, so they couldn't know what the real problems were. They could kind of figure out what the nature of the technical problems were.

One really strange example is, we were preserving stuff on 3480 tape cartridges. A lot of the NSC's files were on old tape reels, and in principle a tape cartridge could handle about 60% more data than a reel of tape. We were finding cases where, when we're copying stuff from a tape, we'd get an error message that'd say the cartridge is full. Okay, why is it that with 60% capacity, you can't copy the whole tape onto this cartridge? This stumped us for a while, until finally one of the staff said, "You know, I vaguely remember reading a few years ago that on the tape cartridges, the gaps between files are actually—where there's no data; it's just a gap so that the computer knows I've ended one file—is bigger. It turned out that on the tapes from the NSC, they were back-ups of emails, so there were a lot of very, very small files and a whole lot of interfile gaps. That was the reason we couldn't make the copies.

The staff had this kind of expertise that really came into play, and we were able to successfully copy everything to 99.996% of perfection. Where it wasn't perfection was for really dumb reasons. It turned out the National Security Council was using tapes that should have been discarded years ago; tapes that had been read so often that there were portions of the tapes that were transparent, so there was obviously no data on that part. There were tapes that had broken and been scotched taped back together. They didn't have the money to go out and buy new reels of tapes, which you're talking about a \$13 item at that point. We did our job, and the court was able to dismiss the case in the Federal government's favor.

The PROFS case had a double impact on us, and it was another case where NARA doesn't appreciate the importance of budget. We absorbed several million dollars of work from that case, and we didn't get any money to cover it. It got so bad that in the third year, at the end of the first fiscal quarter, I had to issue a stop work order to my staff, because we had run out of money handling the court case. I'd say, "You can't do any of our regular work that involves spending money like sending a tape to the computer center to be copied, because they charge us for that, and we're out of money. We can't do it."

That did get NARA's attention, and they had in the meantime cut my budget but they—at least at that point they restored some of the funds so we could keep working. Again, it reinforced the primary responsibility is to make sure you can get the resources you need to do your job, which is something I carried into the ERA program from the very beginning.

The other big lesson was, up until that case, NARA's focus on electronic records was entirely on Federal records. The only electronic records that had ever come to a Presidential Library was a data file of donors to President Carter's campaign, which weren't even Federal government records. That was a deeded gift. When we saw what came out of the Reagan and first Bush White House, clearly, Presidential records were going to be the big thing in the future, because as I said, that transfer from Reagan and first Bush was bigger than everything NARA had accumulated since 1970 in electronic records.

That was really how the ERA program got started, because I was Deputy Director for Modern Records Programs, which was not a very challenging job. I was getting bored. I also had tremendous loyalty back to the Center for Electronic Records, and so I got together with Bob Chaddock who was an engineer on the staff, and the most impressive engineer I've ever worked with, who was in the Center for Electronic

Records. He had done incredible work on the PROFS case in helping us to succeed in dealing with that. We said things are not going to work the way they're going and NARA's got to realize that it has to buckle down. It has to get resources for electronic records, and it has to do things differently than it's been doing up to now. The two of us agreed that we would develop the case for that, and we were both—

MR. KABREL: And what time period was this? Was this post-Reagan and Bush 41?

MR. THIBODEAU: Yes, this was 1998. And we both actually felt that we might wind up losing our jobs, because we were going to tell NARA that they were on the verge of really screwing up. But we thought, we both really care about this, and so we're going to do it. It wound up—I think it was August of 1998—I asked for a meeting with John Carlin, the Archivist, in which I presented him with three bar charts.

The first bar chart covered the history of accessions of electronic records from 1970 to 2004. 2004, when the Bush and Reagan stuff came over. It had shown our increase from a few hundred files a year up to 10,000 or so a year, which is very impressive, because that 10,000 bar was way above everything that came before it.

The second bar chart added one more bar to that, which was what had come over from Reagan and Bush. That bar was so high that everything else almost receded into the X-axis. The only thing that got a little bit above the X-axis was the 10,000 files, which was obviously—this is huge compared to everything we had dealt with before.

The third bar chart added our projection of what we could expect out of the Clinton White House. We actually had projected based on what we could learn from NARA staff who were working with the White House, coming out of Clinton, there'd be something. Now let me give you a figure—for first Bush and Reagan, it was roughly a quarter of a million files of electronic records. Our projection for Clinton, because we didn't have as good data as we'd like to, but our projection is going to be somewhere between 10 and 40 million.

I went to Carlin with the lower estimate. That third bar chart had the 10 million, which made all the Bush and Reagan stuff go back into the X-axis. I said, "The problem with this, Mr. Carlin, is if you take the systems we have in the Center for Electronic Records, and you expand them 100 times, which means we need 100 more staff, because those were all PC-based, and you have one person per system," I said, "You will encounter critical mission failure, because the first thing you do with digital records is, you copy them onto media that you trust. But with a volume of 10 million files, before we finish copying them, the tapes we're using will exceed their lifespan, and we're going to have to start recopying before we finish the first copy. This is just not going to work."

And John—I guess a lightbulb when off—at that point, authorized me and Bob to constitute the Electronic Records Archives (ERA) project, because I said the other problem we have is, we can't tell you right now what would be a solution. There was nothing in NARA's past that was sufficient in terms of technology, and we don't know anyone else in the world who's dealing with this. We need to do some research about what are the possibilities.

So the first ERA project is actually pure research. Is it possible to build a system that can expand every four or eight years by several orders of magnitude, and do the archival work?

John was really savvy on it—he was so impressed by that presentation that he took my three bar charts and had them blown up into posters. He went up on the Hill for his 1999 budget hearing, and he starts by saying, “Gentlemen, before I talk to you about the money we need for ’99, I’m giving you a head’s up that in 2000, I’m coming back, and I’m going to be asking for \$100 million for electronic records.” He showed them the three bar charts. This is why we need this money.

That was savvy, because if he had just gone in and said, “I need a 100 million dollar increase,” which is like 25% of NARA’s budget at that point, that would have been a huge problem. By doing it this way, we had a year in between to inform the Congress and the OMB of why we needed this money. I think that was a good way to go, and we wound up getting the money. Does that answer your last question?

MR. KABREL: Yes that does, actually. It’s quite fascinating to learn what one individual, whether it be yourself or John Carlin, can do to an entire program like ERA.

MR. THIBODEAU: Yeah. As I said, Chaddock was—I was just so lucky he was working for me, and it was interesting, because when he applied for the job as a computer engineer working for us several years earlier, the Branch Chief wasn’t even going to interview him. I just said to her, “You’ve got to interview this guy.” He came in, and we did a joint interview, and as soon as he left the room, the Branch Chief just turned to me and said, “Well clearly we’ve got to hire him. Thank you for forcing me to interview him.”

He’s a just absolutely solid engineer, but also an engineer who knows how to work in organizations. He had worked in the Department of Defense before he came to us. He knew how to build up organizational context, so when Carlin authorized the research program, and he actually diverted about a million dollars of money from other operations to support the research program, I said, - - Bob, you’ve got to go—first of all, see if you can find someone else in government who’s got a big system that maybe we could—obviously we’re not going to copy anybody else’s system, because there’s no other archives—but we can learn about things about big systems that could be valuable to us.

We also knew that there were aspects of what NARA needed to do that were not only beyond the state of the art of the technology, but that even computer science couldn’t give you a clue of what you should be doing. They said also be looking around at the research the government is doing to see if there’s lessons we can learn from existing research. And—

MR. KABREL: Did you look outside the government?

MR. THIBODEAU: No, not at that point. You start close to home, because we figured if we can find a government agency that’s doing something that could help us, we can probably get them to give us some advice for free as opposed to, you go outside the government, and you’re going to have to pay for it, and you’re immediately in acquisitions channels. That takes longer than just talking to colleagues in the government.

Bob contacted several agencies and had to come back to me and say, “Ken, the only system I found that’s on the scale we’re operating is over at NASA, at Goddard. It’s basically irrelevant for two reasons.

One is, even though it’s handling huge quantities of data and huge numbers of files coming in constantly, it’s one datatype. It’s all stuff coming down from one satellite, whereas at the National Archives, you’re dealing with every possible type of file you can imagine, because somebody in the

government has it, and there are places in the government that has computer stuff that nobody else in the world has. A fundamental requirement for NARA is tremendous diversity of data types.

And he said, "The second reason why it's not applicable to us is, the cost of that system is bigger than NARA's budget nationwide for everything we do. We couldn't find a model, but fortunately Bob found a research program called Doc-T that was "distributed object computation testbed," which was a collaboration between the Defense Advanced Research Projects Agency and the Patent and Trademark Office.

Defense's real interest was in distributed computing, because they're a worldwide organization; they could see the value in being able to have computational needs met in systems that are spread across the world, but they function as if they were a single coherent system. They wound up collaborating with Patent and Trademark, because Patent was going to complete automation, and it's a—the patent system alone is a huge recordkeeping system, which has very complex data in it. You get not only text but mechanical drawings, mathematical equations, and chemical formulas. Already at that time they were getting entire genomic sequences being filed as patents.

They provided a good test corpus of unclassified records that could be used in this research. Bob immediately saw this could be a good ally of NARA, because the Patent Office keeps its records for 70 years. They have a digital preservation problem, because if you're going ten years or more, you've got the preservation problem. They weren't addressing that aspect, so we went to them and said, "If we give you a little more money, will you look into the long-term implications of how you keep these patent records readable and authentic over decades?" Their reaction was, "Yeah, if you give us more money, we'll extend the contract to do that."

That's how we got in contact with the San Diego Supercomputer Center, which turned out to be very lucky for us, because once the scientists and engineers out there understood our problem, they got really interested in it to the point where a couple years later one of them said to me, "You know, Ken, you don't give us much money at all, but you give us the most complex problems we're facing." I thought, well this is wonderful, because engineers love problems.

That developed into a very productive research activity. I think we extended the funding of that by like 3%. And we got some allies in the computer field, and I thought you know, PR value, just having National Archives be seen in company with Defense Advanced Research Projects Agency (DARPA) and the San Diego Supercomputer Center gives us credibility in the technical field that there's no way we could accomplish that on our own.

After a couple years, I said to Bob, "DARPA has been kind enough to us that they've extended this contract twice just for us, because their research is done. We need to find another partner that will be willing and have the vested interest in working with us over the long term." So Bob started looking around and started cultivating a relationship with the National Science Foundation (NSF), and parallel to that, thanks to contacts I had in the Defense Department, and some contacts he had, we also developed a relationship with the computer science program at the Army Research Lab.

With the National Science Foundation, it took over two years to actually get an agreement with them, and the way Bob and I worked, he would do all the legwork to set it up, and then I would go and meet with my counterpart, and we'd have a nice meeting in which we agreed to be partners, and we would shake hands. Then the official stuff would follow, the interagency agreements.

He sets it up with the cyber infrastructure program at NSF, and I go over to meet with my counterpart, and it's a very good meeting. This guy was one of these computer scientists who just loves challenges, and so I thought this was going to be fun working with him. After we shook hands, I said to him, "You know, if we're going to be partners, we need to be able to be up front with us, and if we have any kind of problems in our partnership, we need to be able to put them on the table and work them out." He said, "Well certainly." And he gives me this look and says, "Well Ken, but is there something that's troubling you right now?" I said, "It's just one little thing. Why did it take so long to get this partnership?" He said, "Well that's easy. Think about it, Ken. Advanced cyber infrastructure—National Archives—there's no way these two things have anything in common."

The only rationale we could figure out of why you guys wanted to work with us was, you were actually a front for the intelligence community, and we've been burned by them before, and there's no way we're going to allow that to happen again." And I said, "Okay, but what changed your mind?" He said, "Oh that was easy. As soon as you told us how much money you had, we said oh, there's no way they go that low."

That became a very good partnership. We were able to keep our contacts with the San Diego Supercomputer Center, and even when people from there moved to other institutions, we were able to ride other NSF programs to keep that contact alive. We still maintain this model we had set up with DARPA that we would fund at most 10% of the cost of the research to have them address the archival issues, and in addition to not having to pay for a full research project ourselves, we didn't have to worry about developing the competence to manage computer research, because all of our partners already had programs that did that. We didn't have to develop any overhead at NARA to do that as well as any knowledge about how to do it.

We relied on people who had been in the business for decades, and that proved very valuable to us, but it also—the more partners we had in government—the more people who were recognizing their long-term problems were important problems. When we go to the White House to say we need money to deal with this, they start looking at who do we ask if these guys are credible? When they turn around, it's oh, most of the major players in this field are collaborating with the National Archives. Clearly there's something real here. We wound up getting a really good reception at the White House.

In fact, one of the things Bob and I decided early on was, let's not only work with other agencies; let's ride their coattails in the sense that, look at where the government is investing money in computer research, because there's a good chance that that's where the government's going to be going in the future. Then if we know about it ahead of time, NARA will be better prepared to deal with the new technologies when they start using them.

It was fairly easy to do that, because for decades the White House had produced something that used to be called the Blue Book until the second Bush administration. The Blue Book was the government got all the big agencies that were investing in computer research together and said, "We're going to come up with one plan for the government's investment in IT research, because we're not going to have NASA and Defense spending money on the same thing. We're not going to waste money that way. We're going to coordinate all this." That document would tell you every year where the government's three billion dollars in IT R&D was going, and we would just look at that and say okay, where are the ones that seem most relevant to NARA's interest? We would form partnerships that way.

By doing that, we started asking questions of people at the White House about that process, and they eventually invited us to become observers on the committee that developed that plan, which was nice, because you get a lot more insight when you sit at the table than you do just from the final report that comes out. After a couple years, the White House decided, we really like NARA being here, because unlike everybody else—they're trying to get resources for their own mission—like us, NARA has a government-wide perspective. Even though we're a tiny agency, since there were similarities in the way we look at the whole situation, they eventually made us a full-fledged member of the committee that established that budget, so we got to vote equally with the Department of Defense, NASA, NIH, Department of Energy—all the big guns in IT research.

That gave us credibility that, like I say, you couldn't get that by yourself no matter what you accomplished. To have the powerhouses in the computer field in government, to be one of them is just a really good position to be in. It developed even beyond that, because there were times in the second half of George W's administration, when the White House actually asked us to co-sponsor events with them, events on computer science research, which again, tells the world these people are significant players in this field. I think that kind of stuff helped when it came time to go to the Hill and ask for money. It also helped with OMB that if we're working with the science and technology policy office in the White House in this area, we have credibility when we're asking for money for computers. So that was a good thing.

MR. KABREL: Yes, and it also lets the community understand that we're no longer just a paper organization. We're thinking far ahead as well.

MR. THIBODEAU: Oh yeah. It gave us contacts outside the government as well, because the White House gets big guns like Bob Kahn, one of the co-inventors of the internet—they get people like that to advise them. So we get in contact with people like that, which further helps, because they have contacts. It puts you in a very good network.

MR. KABREL: This gives us a really good background so far, Ken. I'm going into ERA; is there anything else you'd like to say about this part of it before we start getting into the Xs and Os of the ERA?

MR. THIBODEAU: That's a good question, because what this brings us to is, after our first year and a half of research, what we asked the San Diego Supercomputer Center to do for us is, can you figure out a conceptual architecture for a computer system? This is not an implementation. We're not talking about what equipment or software. What are the design principles you use when you start to actually work out the details? Can you figure out an architecture for a system that we have to anticipate is going to be constantly growing by orders of magnitude in terms of data volumes, but also a system that has to be able to evolve over decades? No matter where technology goes, we've got to be able to keep up with it, both in terms of having a very effective and efficient system, but also being able to take the stuff that's coming from other systems around the government.

They articulated what was a very elegant conceptual architecture within about 18 months and I asked Reagan Moore, the head of that research team, to come in and brief NARA management on this proposal. The context that I went to Carlin to ask for the briefing was that we now think this is possible, and we'd like to bring in a world-class computer scientist to explain to you why it is possible to build the kind of system that NARA needs. John agreed to that, and so I forget what John called the committee of all the office heads at that time, but anyway, he agreed to have Reagan come in and brief them. The result of Reagan's briefing is they all agreed, yeah, we should move this from research into actual system

development. That lit the transition from ERA as a pure research project into a system development activity. That would have been about 2000.

MR. KABREL: Before we get into that next step, tell us how important John Carlin was in this whole process?

MR. THIBODEAU: Actually it was kind of interesting, because there's this personal story here. It was clear to me in both his case and his successor Alan Weinstein that the well had been poisoned before they got to NARA, that they did not see me as an asset. In fact, in the case of Weinstein, in his Senate hearing for confirmation, he was saying things about ERA that were very misinformed, and in listening to it I thought—and I know who misinformed him—it was no one in NARA. I have enough contacts around, after twenty-some years, enough contacts in the government to know where he was getting this line. I thought, in both cases, I've got to convince these gentlemen that they really can use me to the advantage of this agency, because I'll do whatever I can.

Like most archivists at NARA, I believe in the mission, and the first time I had a meeting with Carlin, it confirmed my suspicion. His body language was very distant. He kept his distance until I did that briefing with the three bar charts, and then he quickly realized that the situation was the way I described it, and that I was a person who could help him do that. I just told a lot of friends of mine, I don't care that he came in, even if he wanted to fire me, he's the guy who got me my first hundred million. Once I had convinced him of the case, there was no question of his support. He was really very solid. I certainly regretted his leaving NARA. Once he had overcome some initial bias based on third-hand data, we had developed a very good working relationship, including the point when John decided to start a new push to improve the records management for electronic records throughout the government.

I recommended a former Air Force captain who had worked for me when I was in the Pentagon, that I thought was the guy who will do the job for you. John interviewed him and immediately decided, yeah, I could use a lot more like him, because having been former military he's going to get the job done. This was Daryl Prescott. Daryl did get 19 other agencies to work with NARA on what are the requirements for managing electronic records. Then he shepherded that requirements document to become a standard issued by the object management group.

So John—I'm just saying this to illustrate how we wound up being a pretty good team—John with his background as a former government executive and a Governor of Kansas knew how to work in a big government organization, in terms of working with the White House and working with Congress to get resources. If we had had someone without that background at that point, I don't think we would have been so successful. John had a real executive's mentality, and he had the ability to act on it. With Weinstein it was kind of funny, because as I said, I listened to his testimony, and I thought I've got to really correct the misimpressions that he has. I waited a little while once he came on, because I figured I need to get to know something about this man and how I should approach him.

When I finally thought I could formulate a message that I think he'll be able to appreciate, I asked for a one-on-one meeting with him. I started with my spiel, and within two minutes he cuts me off. He goes, "Ken, just stop talking." He said, "Now I don't know anything about computers, but I have three sons who do. I know that what you're doing is absolutely going by the book," which was the absolute truth.

I mean, I don't know if he knew the details behind it, but when Carlin authorized us to start the development, the first thing we did was go out and order all the Institute of Electrical and Electronics

Engineers (IEEE) standards about systems development, and we hired a contractor as a management company that was incredibly expert in this area, especially in, not only in systems development in terms of the technology, but also in how you do it in government, because we have no experience with this.

We're going to bring in people who know how to do it, and we're going to look at the textbooks that tell you how to do it. Somehow, one of Weinstein's sons, based on his reporting of what he had learned of how we were going about it told him, "They're doing it the way you should do it." So he says to me at this point, "Since you're doing this the way you should, I figured out that my responsibility is to get you money, and I'm going to do that." So Alan became a very good supporter as well and got us a few hundred more million. That worked out very well.

MR. KABREL: So now, take us into that next step of actual hands-on development of ERA. You have some money, we're going forward. What do we do next?

MR. THIBODEAU: I had spent a year at the Pentagon. Basically, for me, it was R&R. In handling the PROFS case as I mentioned, it was miserable for me. I was totally burned out after three years of that, and I needed to get away from lawyers and judges. I considered retiring, because they were offering a buyout at that point, and I talked to one of my best friends who had taken an earlier buyout, and he said, "Well the one lesson I would tell you, Ken, is don't retire unless you know what you want to do in retirement." I said, "I'm so burned out, I don't even know who I am anymore, much less what I want to do." He said, "Well, the last thing you want to do is retire." It happened that I was talking to some people in DoD.

DoD came to a point where they realized that as a result of personal computers, they had lost institutional control over their records. It had devolved to the desktop. They started out this initiative—the Records Management Taskforce—to figure out a way to manage electronic records. The department could actually be in control, not the individual at the desk. I found that a very interesting activity, and so I got to know the people and talked to them. I thought I could go over and do some studies for them. That would be relaxing for me, then I'd get recharged, and be able to come back to NARA. When I said this to them, their response immediately was, "Oh good, we need a director." I said, "No, no, I don't want to direct. I just want to come over and do some...." "No, no, no, we want you as director." So I wound up being the director.

When I got over there, I was introduced to a methodology the department uses called Integrated Process and Product Development; IPPD. It's a very flexible methodology, but it has two fundamental canons. One of them is that when you're developing a new system—and DoD had first developed this just after World War II for the manufactured weapons systems like airplanes and tanks—you need simultaneously to define the process that you're going to use as well as the product that comes out of that process. That's canon number one. Canon number two is you involve all your stakeholders throughout the entire process. My experience at NIH had prepared me for that where, if you're developing a computer system, you especially have to have very rich communications with your users, because you really need to understand their use. I saw too many computer systems at NIH that did things for people, but they were so short of their potential that it was sad. Or some I saw where they had this computer system they used until they got into a crunch, and then they wouldn't even bother turning the terminals on. They'd go back to their typewriters, because they knew how to deal with short deadlines using typewriters.

The records management branch at NIH eventually became essentially a front-end for system development where if you know someone's records, you know what their business is, and you have a good inkling of how they're going about their business. We would use that knowledge to work with the clients for the technologists to develop their requirements in a way that would really optimally tap the potential of the technology, because we also understood a lot about the technology, which the end-user didn't, and they couldn't—a lot of times they wouldn't be stating requirements, because they didn't realize technology could help them with that.

As I found with a lot of archivists, archivists don't think in systems terms. The way they express their needs is often meaningless to computer people who they think in systems terms all the time. I've been convinced my whole career that you can't—if you want to have a really good computer system, you engage the people who are going to use it. You engage them thoroughly. I brought that method into NARA, and NARA was fine with us doing it. We created integrated product and process teams for all the major aspects of the system. Also because of all your stakeholders, we started early on to engage the entire community.

For example, I sent staff out to every region of NARA, and we asked the managers in the regional offices, "Would you identify some of your most important customers and ask them to come in and meet with us so that we can understand their perspective of what they would like NARA to do for them?" We did similar things in Washington, and also as we went along, we had two major drafts of the ERA requirement documents. We published notices in the Federal Register that said, "We have these drafts; if you're interested in commenting on it, we'd love to hear what you say. We've posted the draft on our website; you can just download it, and any comment you care to give us, we'd love to get." So we exposed ourselves to the whole world so that we could get some feedback. We also sponsored a couple conferences where we told government people in the Washington area, "Come on in. We'll tell you what our plans are, and we'd like to hear your reaction to those plans. If you're interested, we'd really be glad to send staff out to your agency to talk to you more specifically about your needs."

Obviously targeting records managers is a major component there. We also had a conference we called Industry Day where we told the IT industry if you think you might be interested in a contract with NARA, come on in. We'll give several talks about what we're planning on doing, and we'd like to hear from you. If you're interested, we will agree to have you come in one company at a time in a private session where we'll sign a non-disclosure agreement that we won't tell anyone what you told us. You can tell us how you think you could help us with our problem. We had probably 20 companies come in one-on-one to talk to us in that mode.

That gave us a very good sense of what the industry thought they could do for us and what they couldn't do. Until we finalized that requirements document, we had this very extensive dialog with NARA staff, with agency people, with people in the public and with the IT industry so we had an integrated perspective on what ERA should be like and could be like. I think that was really essential. It probably unfortunately led to one major mistake we made in that, when we actually awarded the contracts, because I believe in user engagement, we insisted that we keep the NARA staff engaged.

Well, once you've got a contract, you got problems with having people outside the government involved, because it's confidentiality that's required under acquisitions. We kept NARA teams or created new teams in place to work with Lockheed and Harris so that they would fully understand what we were trying to do.

The problem we had is neither we nor Lockheed adequately managed that interaction to the point where—there's a phrase in IT where a lot of users want to pave a cow path. My engineers came back to me in ERA and said, "Ken, they're not paving the cow path. They're mechanizing the cow." They got so far into the weeds that we shouldn't have gone into that level of detail. We should have stayed at a higher functional level. Unfortunately, for me, my engineers were split. Some of them thought, well this is fine. Others thought, no, the system's going to get bogged down on all these tiny little details, which it did. That's why we had the one experience of the three-month delay and a 25% cost overrun.

MR. KABREL: Can you explain that a little bit further?

MR. THIBODEAU: From my perspective, the biggest mistake I made early on was the first Project Manager I hired who was a very bright and very articulate young man who was an archivist, and I thought this is good. He's been trained as a project manager, but he has experience as an archivist, so he really knows NARA's business.

A few months after hiring him, he came in and said, "You know Ken, you're doing this wrong. You're trying to develop a system to preserve electronic records, and all the advice is, that's not a business process. You need to automate an entire process, and the process begins with record scheduling." Because nothing comes to the National Archives except off schedules, pretty much. I thought, well, there's that school of thought, but there's also a lot of recent government publications that say don't do grand designs.

Grand designs fail, just the way the FBI failed on three attempts spending millions of dollars—billions actually—trying to automate its case files. I thought if we go into record scheduling, we're expanding the scope of ERA so much and making it so much more complicated, because then you've got to involve more units of NARA, that really didn't want to do it. I said to him, I thought the guy's smart and aggressive, and if you can convince NARA's management that we should do it, that's what we'll do. And he succeeded in convincing NARA's management.

In that first go-around, we were not developing an electronic records system; we were developing a system to automate the process of scheduling and appraisal. The problem that came up is this, there's an old saying, "Converts are the worst kind." We had several of the appraisal archivists who were on that IPPT who basically wanted every last detail of the way they did things in paper replicated in the computer system.

My thinking, originally, is you automate the—I'm forgetting the form number, but - - the form on which agencies develop their records schedules. You fix it so that the agencies can create that form online, submit it online. The approvals can all be done online. But the staff insisted that at every step on the way, we want this automated; we want this button in this part of the screen; we want this business rule imposed by the computer as opposed to having a staff member looking at the schedule and saying, "Well this is the problem with what you're proposing. Have the computer recognize as many problems as possible, and automatically flag them."

I had actually gone to NARA management early on and said, "Look, I fully believe in engaging the staff, but we have to do this carefully, because once these—up at that point, there's no automated support whatsoever for appraisal and scheduling. Nothing. These people have no concept of what it's going to be like, and I guarantee once we automate something, they're going to start looking at their work very differently, and within a year or two they're going to want changes." Management bought that and said,

“Yes,” but they never communicated that to the staff. We got hung up on these details. One example of that—we never had quite as much money as we needed, but we had good funding. Early on, Lockheed came to me and said, “You said in your requirements document you want a rules engine.” A rules engine is a piece of software that you can feed business rules into, and you say, “If this happens, stop the process, or if that happens, tell the person who’s doing it that that’s wrong, and they can’t go further until they fix it,” and stuff like that.

They said, “But we’ve looked at what you’re trying to do in this first increment, and there’s only two business rules that need to be built into the system for the first increment. It will cost us a quarter of a million dollars to buy a rules engine, but we could code those two rules for a couple thousand. Just hard-code them. So it’s your choice, Ken. What do you want to do?” I said, “Well, I don’t have enough money, so let’s hold off on the rules engine till we get down the road and we have a lot of rules.”

Lockheed never came back to me and said, because of what the appraisal archivists were demanding, that they wound up with several hundred rules that they hard-coded, which of course means whenever the user thinks well, no, you didn’t get it right, and then they’ve got to go back and rewrite software. So that was what really was driving up the costs on that first increment. Like I said, if I had it to do over again, I would not have let the pitch to management occur. I would have said nope, we’ve developed the system to preserve electronic records, because that is a sub-process. Even though there’s a business decision before it, the decision is simply, this is permanent, and here’s when it should come in, and I can implement that, as we had done in our accessioning system.

MR. KABREL: How come you took a secondary role in that and didn’t push for the preservation to supersede anything else?

MR. THIBODEAU: It goes back to what I said early on. I respect other people’s positions. Unless I’ve concluded that there’s something wrong with the person or they’re dumb or extremely biased or there’s some issue, if you come with a credible background to me, and you show signs of intelligence, I’m going to respect you. I don’t necessarily think I have the answers to everything. In fact, as a manager, your responsibility is to get the best out of everyone who works for you. And one of the worst mistakes you could possibly make is to think you know better than the people who work for you, because no matter how smart you are, collectively they have more intelligence than you do.

It doesn’t mean groupthink; it just means—and especially in the IT area—even if you’re a top-notch computer engineer or scientist, when you get into management, you can’t keep up with the technology as well as the people beneath you who are actually dealing with it on a day-to-day basis, because management’s a different kind of activity. If you’re smart, you rely on the smart people who work for you. It’s one of my fundamental principles. I don’t necessarily endorse it, but I thought I’m not necessarily smarter than other top managers in NARA, so I’ll let him make the case.

MR. KABREL: Could you ever imagine at the time that the preservation aspect may be in jeopardy?

MR. THIBODEAU: No. Because it would be delayed, but we had planned five increments of development, so it would be the second or possibly the third. It wasn’t completely pushed aside, because the architecture had to provide for preservation. The basic system architecture that Lockheed had actually reflected very well the concept that San Diego had come up with in terms of a system that was capable of evolving over time and of handling an amazing variety of different data types. It’s just that we weren’t using that capability of the architecture in the first increment.

MR. KABREL: Do you want to visit the contracts or selections of 2003, 2004 between Harris and LMC?

MR. THIBODEAU: There's not too much I can say about that award because of acquisition rules. There's so much that's confidential. We followed the FAR, the Federal Acquisition Regulations, for how you conduct that kind of a competition, and so everything the competitors tell you including the identity of the ones who didn't get the contract—all that's confidential. We had a team of people from around NARA evaluate the proposals and make the recommendations. There were actually some of the companies that had come in and talked to us one-on-one that we were disappointed didn't submit proposals, because we thought they had a really good grasp, but they decided it wasn't in their business interest. We decided to do the competition, because what we're doing was so new and different. GAO had recommended that we do that, and we thought yeah, that's good advice, because it'd be good to see two different approaches within the limited timeframe. You're not going to have two systems developed, you're just going to have two contractors work on it for a year to see who can do the best job. In the course of that competition, both companies had strengths. I think in retrospect, to put it globally, Harris would have been probably more sensitive to NARA's needs, but Lockheed came forward with a richer panoply of what they were offering us in terms of technical capabilities and corporate resources that were behind it. And I think the competition was a very good thing, not only for what it did in itself, but it also gave NARA staff more exposure to what might happen so that again, they were well informed about what the future might bring.

MR. KABREL: Before getting into the ERA system development with Lockheed from 2005 to 2011, we'll go into the early phase and then the mid to late phases or whatever that you were a part of. Tell us a little about the selection of the NARA team at this point. How did that occur? How did we know who was going to be a good fit or who we should hire or who we, or what needs - -?

MR. THIBODEAU: And you're talking about the team that was the staff of the ERA program?

MR. KABREL: Yes.

MR. THIBODEAU: Early on when we first started, my first three or four hires, we actually didn't have a lot of candidates, because within NARA, I think there was a lot of skepticism that this thing would actually really happen, so people weren't applying. There was an early opening I made for a communications person, because as I'd said, we realized from the very beginning, you've got to have communications with all your stakeholders.

Frankly we had no one apply for that position who really had a background in communications with stakeholders, and so we just took the person who looked best among the candidates, but it wasn't what we would have liked. After that, especially after we got our first hundred million, then there wasn't a problem of recruiting people. My priorities had to be in the hiring that we needed technically strong people, because that's where NARA was weakest. Also because I thought it was better to do what we did do, which was have the NARA offices send their staff on rotation to us for three months, six months, or a year so that they would go back to their units being able to explain to their colleagues what was going on and furthering this thing. We were fully engaged with NARA; we weren't off somewhere doing our own thing.

MR. KABREL: So various units within the National Archives would be on three-month details?

MR. THIBODEAU: Three to six, in some cases a year, depending on what the Division Director or Branch Chief was willing to agree to. Some of those people who came we wound up hiring permanently, which was nice, because we had already worked with them for a while and knew their capabilities. Also, I didn't want to build up the overhead too much, so, immediately, once we were authorized to go ahead with development, we hired a contractor to handle a lot of the program management aspects so that we could bring in people when we needed them. They didn't have to necessarily be permanent employees or civil servants. We got that contract with ICE, which was Integrated Computer Engineering. We got some top-notch talent who had a lot of experience in major systems development so that we could hit the ground running.

MR. KABREL: So very interesting to know. Getting into the early phases of Lockheed Martin, I'm not sure exactly how long you stayed with the National Archives, but would you speak a little bit about those early—that early phase and the mid-to-late phases if you can?

MR. THIBODEAU: Well, I stayed through the first two increments. The first increment was designed for the Office of the National Archives, and it's major functionality was in support of appraisal and scheduling. The second increment was designed to be the system for the George W. Bush Presidential Library, and obviously we learned lessons as we went along. As I said, we had this problem of not properly shepherding the users, so they got too far in the weeds on the first go-round. But I can't say that embarrasses me in the least.

When you look around the Federal government, at places like the FBI, the IRS, the Census Bureau, any number of others that spent, in each case, more than a billion dollars on computer system development, and it went down the drain. They had nothing in the end. We had a seven-year development in which in one year we had a 25% cost overrun and a three-month delay in delivery, which is in comparison to those other efforts for an organization that had never done this before, we did very well.

Obviously—and actually some of the best engineers we had early on on the management contractor told me, "What you're trying to do, if three years from now you get a system that you can turn on and it doesn't crash five or six times an hour, you will have done very well." These were people with experience in big systems, and we had a system that had problems when we did turn it on, but it still handled the basic workload.

We learned a lot of lessons in that first experience. We had a major problem with Lockheed in that they didn't clue us in early enough that they were slipping in schedule. When they finally came in and said they were going to be three months late, it was like pulling teeth trying to get the details out of them. I said, "Okay, you're saying you can't meet the requirements. What percentage of the requirements can you meet?" It turned out to be a very small percentage. They should have alerted us early on that that kind of stuff was happening, because then we could have worked together to hopefully solve the problem.

It wouldn't have been all that easy, because doing things in government is complex, and for example we had a Contract Officer at the time who did not understand the difference between contracting and contract execution. For example, he was furious at me, because I allowed my engineers to meet with Lockheed's engineers without his presence, because that's a contract negotiation. No, no, no, the contract's in place. What the engineers are doing is fulfilling the contract, and my engineers are there to guide so that we're making sure that Lockheed's doing what it's supposed to do. We're not renegotiating the contract. That's one of the complexities of being in government. Different Contract

Officers play that game in different ways, and ours was a real old-school, the contractor-is-the-enemy attitude towards things, which made life more difficult than it should be. Anyway, we got through that and we got a system that worked.

Then, the big thing on the horizon was the Bush White House (43), because we probably had poorer data from that White House than any prior administration in terms of what was coming. We were just based on looking at what had happened prior to that, we were extrapolating it's got to be above 100 million. One of the problems was, they were under several lawsuits about missing emails. There were—I think one of the lawsuits asserted there were five million missing emails, and there was a problem, because a lot of Bush White House people were actually using computers at the Republican National Committee rather than government computers to do government work.

The White House lawyers were very sensitive, and what kept happening was any time we found anyone who would tell us what would be coming, so that we could actually plan realistically, as soon as the lawyers found that out, they cut off dialog. It wound up being pretty ironic, because just a few weeks before the end of the administration, we had a kind of showdown meeting at the White House, and we had our lawyers, Justice lawyers, our technical people, White House technical people all sitting in a room planning for the transfer.

President Bush waltzes into the room and casually says, "Well, what's going on here?" People explained to him what this meeting was about, and he said, "Yeah, can you believe it? We're being sued over the loss of five million emails. What's five million emails? We're going to give you 300 million." That was the first number we had out of the White House from the President's own lips. That was two weeks before we had to go live. Fortunately, our guess of something in the nature of 100 million was at least within the right order of magnitude. It turned out after we eliminated duplicates there were only like 283 million. But close enough for government work.

MR. KABREL: So that was a real test for you then, for ERA?

MR. THIBODEAU: Actually it was a test in many ways, because Presidential Libraries in many ways had often been considered a thorn in NARA's side. Each library tends to be pretty independent, because the people who run the libraries are connected with the former President. That gives them a leg up. Also the Office of Presidential Records had had the experience where NARA would develop a computer system, basically develop it for the Office of the National Archives, and then hand it to the Presidential Libraries and say, "Here, use this." Well, because of the differences in the law, the Presidential Records business process is fundamentally different than the National Archives business process. They don't do records schedules. They get one accession every four or eight years, and it's huge. Then nothing practically ever gets added to it. It's a very different business process, and they've been burned in several cases where they were just handed a system that was not appropriate for what they needed to do.

So, in our case, they were very skeptical. Their experience was, we were developing this system for the National Archives, which we were at the time. They expected once again that they'd be at the back end of things. I was fortunate, because I had hired an archivist Ken Hawkins, who had no background in electronic records. He was an absolutely solid archivist in terms of archival knowledge and understanding NARA's mission and a lot of the holdings and all that, and really good communication skills. I assigned him to work with Presidential Libraries.

After a couple years, he and I were chatting about the situation. He said, "Now Ken, don't tell anyone else I told you this, but a lot of my friends, they are frequently expressing sympathy that I have to work with the Presidential Libraries people. What they don't know is once you get to work with them, it's really a pleasure." Once they realized that we really wanted to help them, and it took a while to convince them of that, but once they realized we're really here for you, they were very good to work with. They also realized as Sam McClure used to say, with what's going to come over from the Bush White House, if you can't deliver a system to us, we're dead. There's no way we can handle that. Absolutely there's nothing they could do. He said, "On the other hand we also are quite aware that if you do deliver a system we're dead, because we're going to have so much work." And we had to appreciate that.

There's no precedent for handling this kind of volume in Presidential Libraries, you haven't had a system that really is designed for your workflow. You've had some things cobbled together that help you out, and—but we really took them to heart and we're going to give you something that really helps you. They were skeptical. I don't blame them. They had good grounds for being skeptical, but we were able to work together.

There was a really funny incident that happened very late in the game. Eight months before the end of the administration, a couple of the Lockheed engineers asked for a meeting with me, and I thought well, this is unusual, because usually I'm just meeting with Lockheed managers. Normally they don't allow their engineers to come in a room without a manager present. This group of three engineers came over to talk to me, and their pitch was, "You're facing a huge problem just getting the stuff from the White House into the ERA system. If you do it the way NARA has always done it, which is they write it out on tape, and then you bring the tapes in and load the stuff on your system. That's going to take years at the very least, just because of the physical process, plus you've got this inventory management problem of all these tapes that are coming out of the White House, coming to you, and you've got to make sure you know what every one of them is and what stage you're processing it is."

Having been in the PROFS case with 15,000 volumes there were times where, where is that particular tape? Have we dealt with it? Have we not? That kind of problem comes up all the time. That's going to be a nightmare. The big issue was taking years to do that, because the Presidential Records people were telling us, "Look, you have to assume that a half hour after Obama is sworn in, we're getting requests for Bush records, and those requests are either coming from President Bush or his close associates, or they're coming from the current White House, or they're coming from the Congress, and we've got to be in position to respond to those requests. Years isn't going to do it."

The engineers went through a couple other scenarios; here's a way you could do it; here's a way, and this is why they fail. Okay, we have a potential solution for you. Okay, what's that solution? We get the White House to allow us to go into their computer center and attach our servers to their system, and we just, using the system bus, copy the stuff over to our servers, and when a server gets full, we dis-attach it and ship it to West Virginia, and as soon as you attach it to the ERA system, the stuff is available. In the meantime, we've got a second server that's loading up and their plan was let's have three of these so that there could be one's at the White House, one's at the ERA system, and one might be in transit. You've got that, it's musical chairs with one extra chair so no one ever falls on the ground. I thought, yeah, technologically that makes sense. It's certainly a lot quicker than any other option.

If I were running the White House computer center, would I let some other agency come in and attach stuff to my system bus? Absolutely not. I'd throw you out of my office. I thought, technologically, it's so

superior to any other option that it's worth trying. I contacted the Office of Presidential Libraries and said, "I need you to set up a meeting between Lockheed engineers and White House engineers." "Oh no, that can't happen. They don't know how to deal with people at the White House. We have to deal with these people year after year, decade after decade. We have good working relationships, so we don't want this screwed up. We'll take their questions." I said, "No, you can't do that." "Why not?" I said, "Because first of all, you would have no clue of what they're saying in response. And secondly, you wouldn't be able to formulate any follow up questions, because this is entirely technical matters." Well, I finally convinced them that Lockheed engineers can go to the White House on one condition. They come down, and we give them the ground rules for their behavior when they go over there and we go with them.

So I sent the Lockheed engineer down to the Presidential Libraries to meet with the Deputy Director, and what she didn't know and I didn't adequately appreciate was this engineer had previously worked at NSA. He knew government. He knew national security, and he also was very good at conversation. After her meeting with him, there was no question. "Yes, I'll take him over to the White House, and we'll have this meeting." I still don't know how he did it, but he convinced the White House to allow us to attach our servers to their system bus. Not only that, they gave us a room so we could have our equipment and our people in it so we wouldn't have to worry about being in conflict with their people either over motion or space or anything. Then, not only that, but when we started operations, the Lockheed engineer said, "Ah, their system bus is really too slow. We can't move the stuff as fast as we'd like to." They agreed to upgrade the system so that we could copy the stuff more quickly.

The result of all that was we were able to transfer 300 million files from the White House to NARA and get basically item-level control over all that stuff within eight months. In those eight months, we encountered 65 million problems, and we solved all but 50,000 of them. The 50,000 we couldn't solve were cases where our system detected malware, and I had our security engineers from NARA, from the ERA program, and from Lockheed look at a couple of them, and their conclusion was that it wasn't actually viruses; that what was there was a trace of a virus that the White House system had actually eliminated, which makes sense, because if they hadn't eliminated it, it would have caused real problems for their system.

We couldn't take the chance with those 50,000 cases of bringing them up and see if it's just a trace as opposed to real malware, because if it crashes our system we're in trouble. We said we're going to set those aside and when things aren't as hectic, we'll look at them. 50,000 out of 65 million isn't too bad and getting item-level controls. By the end of that period, the 23 archivists in Presidential Libraries who would use the system were issuing on average 1,000 queries a month. Which tells me the system was really useful to them, because you don't issue 1,000 queries if you're not getting results that are useful.

Most of those queries were iterative in that, if you get a request from the Congress, "I want everything from the Bush White House about this particular event," what you want to do is make sure you give the Congress everything they ask for, nothing they didn't ask for, and nothing that would be subject to executive privilege. It's a tightrope to do that. The archivists would typically sit down and put in the query, "I'm looking for stuff about this event," and get back a couple hundred thousand hits. They could start looking at them and saying "Well, this stuff is relevant, and that isn't." Then they could reformulate their query to get a smaller set.

This is actually a basic problem with keyword searching or string searching in computers, that it is very high on precision in the sense that, if you ask for everything about X, you're going to get everything

about X. The problem because of the vagaries of natural language, is you'll be lucky if you get 50% of what's really relevant, and that's called recall. It's like when NARA was doing the discovery on the tobacco litigation, the lawyers discovered there 23 different ways that tobacco is spelled. If you get TI back, is that the Tobacco Institute, or is it Texas Instruments? It's that kind of problem—they're not technical problems; they're language problems. We had designed this system to allow this kind of iteration. You find something that you say, no, that's not really what I want. We make it easier for you to reformulate the question, and it goes back and gives you a better set. The fact that they were doing on average each person about 1,000 a month told us this system is working. That's my greatest pride from my entire career in NARA that I was able to put the George Bush system in place, get it working and doing what they needed to do their jobs.

MR. KABREL: Is that the way the system runs today?

MR. THIBODEAU: It's really from feedback from them that they were happy.

MR. THIBODEAU: I don't know, since I left in 2011. I haven't really kept abreast of it. And the top personnel in Presidential Libraries have all left since then too. Although I hear, because I talk to Meg occasionally and a few other people from NARA, that things are still going well.

MR. KABREL: Ken Hawkins is actually still doing the Presidential - -, so he's doing that today. So apparently he does enjoy himself.

MR. THIBODEAU: That's good. I have talked to Ken, but probably over a year ago. And that's going to be déjà vu all over again in the sense that our projections early on, where with Obama you're talking about billions of records. I had thought we would reach a limit, because there's only what, 3500 or so employees in the Executive Office of the President, and so how many emails can each employee generate or read? That was before any White House started using social media. The Obama people came in and immediately started using social media, which means you're getting millions of responses. So I wish them well. I hope they can modify that original design to handle the additional volume and to help them with automating their work as well.

MR. KABREL: Is there anything more you want to say about the ERA system before we get into the final stage, which I'm looking at as a what worked well and what didn't work well in retrospect—is there anything more you want to say about this and maybe take us up to the time you left in 2011?

MR. THIBODEAU: Well, I think I've basically told you in terms of the ERA system itself, the main things that I think worked well and the ones that didn't. I think keeping people engaged through the whole process is essential. I think if we hadn't done that, we would have failed in what we were trying to do. I'm very comfortable, and I'm still—one of the reasons I retired is I wanted to get back to professional work rather than management work, and so I'm still very heavily involved in digital preservation.

With the hindsight of being out of NARA for six years now, the system architecture is a good architecture for preservation. I was just at the International Council of Archives Congress in Seoul last month and was asked point blank, "Doesn't ERA have preservation problems?" I said, "Well of course it has preservation problems, but it has the same preservation problems the whole world does. This is a moving target, and you've got to have a system that moves all the time to deal with that. Fortunately we have a system that basically can. I mean, more work has to be done to realize the potential in an actual implementation, but that will always be the case until technology stops changing.

The only thing I didn't mention is, what's really a huge issue in ERA is NARA's corporate culture. NARA has always amazed me, because I've been familiar with NARA since the mid-70s. The personnel change entirely, but the corporate culture at least had not changed by 2011. We actually had on our program management contractor staff an expert in—I forget what the exact field is—facilitating business processes in an organization, getting people to work together optimally. She used to do a briefing about passive aggression in NARA and backstabbing and all that kind of stuff. She was good enough that when she was doing this briefing to NARA staff, they'd be sitting there laughing. At the end of the briefing, they would say yeah, you've really described us exactly the way we are. This woman is amazing that she can communicate, and these people aren't insulted, because they recognize it's not an individual problem, it's a corporate culture problem.

I said before, NIH was an incredible place to work. I got some major assignments at NIH from the director and the top management, like figure out the impact of the Privacy Act on NIH grant programs, which at that point was an 11 billion dollar a year program. Or design local area networks for NIH, which is an interesting assignment to give a records manager. When NIH gave you an assignment, they gave you support and they gave you whatever resources they could to support your assignment.

When I went to the Pentagon, my friends from Defense were amazed that I'd do that. They said, "When a military officer is assigned to the Pentagon, after that they get an assignment that's considered cushy, because working at the Pentagon is considered as bad as being on the battlefield. And it's because it's something they call Pentagon Wars that everybody over there is out for their own turf."

One thing I learned being over there is, I'd rather have people in my face every day of the week than on my back once a month. If you're in my face, I know what your problem is, and there's a chance we can work it out. If you're stabbing me in the back, I don't even know you're unhappy. And so many people do that at NARA, and so many people—I mean, it may be different today, but at least by 2007 it was true. There were people who had no competence whatsoever in the field of computers but thought they knew better than me and my staff.

MR. KABREL: Why do you think that that was such a way with, or is such a way with the National Archives, that corporate mentality?

MR. THIBODEAU: The old description—and this was not mine; this was a description that was around for decades—NARA is an agency of self-employed professionals. I mean, there's a good part of that, and there's a bad part of that. The good part is, NARA has very dedicated professional staff who work very hard. There's tremendous levels of competency and expertise in that staff. But in an environment which has always been resource-deprived, there's a basic sense that no one else understands what I'm doing, and certainly no one else knows as well what I'm doing. It pervades the organization.

There's a distrust—it's just—you have to assume it's there all the time, no matter what people tell you to your face. Like I say, I find it fascinating, because I don't understand it. When I came back to NARA after ten years at NIH, I really didn't worry about it my first three years, because Machine-Readable Archives was a world to itself, and we had very little dealings with the rest of NARA. I didn't really experience it, and we were in a building five blocks away from the National Archives. When I came back, people started telling me about passive aggression. My reaction was, I can understand that as a concept, but I just have no idea how you go about being passively aggressive. Three years later, my God, I'm doing it. I've become part of this culture. This is the way people behave. It's self-defeating in a lot of

ways. It's obviously very defensive, but you can do so much more if people could really collaborate and trust other people.

One very good example of this—when we brought in our computer—ICE—to help us with the setting up the program management office, they were doing everything by the books, largely following a DoD model. In terms of what are the particular competencies you need independent verification and validation and testing, security—all these special disciplines that only occur when you're doing system development, and we spent the better part of a year figuring out what this office should be like, and then I brought them into John Carlin's management group to brief them on, "this is what we need to have." Instead of a reaction that, okay, these are top-notch professionals telling NARA how to staff up to do this right, the reaction was, oh, this is just empire building. Which caught me off guard, because I had to say, well, in a sense it is, because I'm asking for like 25 more people, but I'm asking for them, because these experts that have a lot of experience have told me, have made the case, this is what you need. Several, not all of them around the table—fortunately not Carlin—they didn't hear that. They heard, oh, they want more staff. It's sad, but ...

MR. KABREL: Yeah, that does sound counterproductive, unfortunately, and sometimes it's difficult to get out from under it. Like you said you were becoming a part of that environment.

MR. THIBODEAU: Yeah. I'm fortunate, because I'm fairly thick-skinned, so it hardly ever bothered me personally. But you have to be aware of it, because it affects how you operate.

MR. KABREL: Do you have any regrets with your time at the National Archive?

MR. THIBODEAU: There's a certain sense, you know, 22 years was too long to spend there, but now that I'm out of it, having helped NARA get over the PROFS case, like I said, get the case eventually dismissed in our favor; having gotten NARA to really take electronic records seriously to acquiring and investing hundreds of millions of dollars in it, and even though it's probably still a paper mindset, there was a huge difference between when I arrived in '88 and '98 in terms of accepting electronic records as a reality—a real challenge and a reality we had to deal with. It was a huge conversion in that period of time. So I'm glad to have been helping NARA to move along that way.

MR. KABREL: Where do you see NARA - -? Where do you see ERA 2.0 going? Or where would you like it to go in the future of ERA?

MR. THIBODEAU: Well, if I had any influence, the future would be more in the original direction of actually implementing preservation capabilities, and in my concept, preserving electronic records goes all the way to delivering them to people 10, 20, 50 years from now. In electronic records, you cannot divorce access from preservation. You do preservation to provide access, and you have to presume that people are going to want access to current technology. They don't want to use obsolete technology. That remains a challenge that the longer we delay addressing that, the harder it's going to be. We'll be playing catch-up.

MR. KABREL: Okay. Is there any last words you'd like to say here, Ken, about your time or thinking of any other stories you'd like to impart that you maybe forgot?

MR. THIBODEAU: I think I've probably depleted my stock for now. [Laughter]

MR. KABREL: Well, it's been wonderful chatting with you, I appreciate your time today, Ken. You're a value to the National Archives, and now everybody will know it.

[END RECORDING]

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