

LIBRARY OF CONGRESS
MODERNIZATION OVERSIGHT

HEARING
BEFORE THE
COMMITTEE ON RULES AND
ADMINISTRATION
UNITED STATES SENATE
ONE HUNDRED SIXTEENTH CONGRESS
FIRST SESSION

NOVEMBER 7, 2019

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COMMITTEE ON RULES AND ADMINISTRATION

FIRST SESSION

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LIBRARY OF CONGRESS MODERNIZATION OVERSIGHT

THURSDAY, NOVEMBER 7, 2019

UNITED STATES SENATE
COMMITTEE ON RULES AND ADMINISTRATION

Washington, DC.

The committee met, pursuant to notice, at 10:03 a.m., in Room 301, Russell Senate Office Building, Hon. Roy Blunt, Chairman of the committee, presiding.

Present: Senators Blunt, Capito, Hyde-Smith, Udall, and Cortez Masto.

Also Present: Senator Fischer

OPENING STATEMENT OF HONORABLE ROY BLUNT, CHAIRMAN, A U.S. SENATOR FROM THE STATE OF MISSOURI

Chairman BLUNT. The Committee on Rules and Administration will come to order. Ms. Hyde-Smith, who also chairs the appropriating committee for the Library, and I think that is particularly helpful that you could be here with us for this today as well also as a member of this committee, so she is here as a member of the committee, but also on these topics, particularly valuable in the roles of appropriating.

We have been having with the Library, with the Smithsonian, with the Architect of the Capitol, these kinds of oversight hearings to fulfill that responsibility and be sure we are giving the agencies the help they need. We are glad to be here, of course, with the Librarian, Dr. Carla Hayden, with Mr. Bud Barton, the Library's Chief Information Officer, and Karyn Temple, the Register of Copyrights. I thank all of you for being here today. I think we want to talk primarily, at least I want to talk primarily, about modernization. We had a chance with Dr. Hayden at the last meeting to talk about the physical plant ideas of how to make the Library even more of an experience for people who visit there.

We want to talk about today more of how the modernization of the IT elements at the Library are coming together, and how all services are being benefited by that. The Library, of course, performs a lot of functions for us. Historically, one of those functions has been the Copyright Office. I think initially that was to be sure that the Library would be a clear recipient of that great treasure of the copyrighted documents that would become part of the Library's collection. But the Copyright Office has always been a part of the Library.

Today we are taking a different—a deeper look again into the Copyright Office and we are glad the Register is here with us, but

also IT and modernization generally. I think we are going to focus mostly on the Copyright Office and IT, and any discussions that you want to have about challenges you are having or successes you are having as you move in the direction of more up-to-date IT and more up-to-date protection. You know, cyber threats are real, and I think they are particularly real in some of the information that you are dealing with.

Dr. Hayden and I got to know each other well in 2016 when we were able to work together and be sure that she became the first librarian in a long time to be the Librarian of Congress. We have been pleased to be able to work together since then. Prior to the arrival of really all three of you in these current jobs, the GAO was very critical of the Library, the Copyrights Office's information technology.

The Government Accountability Office identified a lack of strategic planning, information and technology investment management, and weaknesses in information security, and privacy. They recommended that the Library hire a permanent chief information officer, which it did, and that chief information officer would professionalize and centralize the information technology needs at the Library, which hopefully we are going to find out today you are doing.

As Librarian, Dr. Hayden, you are ultimately responsible for the management and success of the Library as a whole, which includes the Copyright Office, but of course we look to the Register of the Copyright Office to be responsible for what happens there every day and have the kind of working relationship with the two of you that are essential to make that happen. Mr. Barton, glad you are here. I look forward to hearing about how you are taking this job and making it work.

Ms. Temple, we talked some last year in this committee. We had a proposal even to make your selection slightly different and maybe outside the normal selection process that had traditionally been by Librarian of Congress. That did not pass and so the Congress's view was this situation would continue to stay as it was. I think the staff of the Rules Committee has spent a lot of time with all three of you over recent months trying to be sure that this is working the way it needs to work. It is hard to talk about trade policy or lots of other policy without talking about the importance of protecting information and copyrights, patents, and other things. It is a very real topic.

We had our last review in March, as I mentioned before, of the Library what the Library was doing in other areas. Glad the three of you are here today to talk about this, and I am particularly pleased that Senator Udall could carve out the time to be here as part of this as well. Senator Udall, I turn to you for any opening statements you might have.

**OPENING STATEMENT OF SENATOR UDALL, A U.S. SENATOR
FROM THE STATE OF NEW MEXICO**

Senator UDALL. Thank you so much, Chairman Blunt, and you are a good friend and we have worked on a lot of issues together. Thank you so much for holding this hearing. The Library of Con-

gress is an important institution and I am pleased to see the committee taking an active role to make sure it is healthy and strong.

I want to thank all the witnesses that are here today, Dr. Hayden, Ms. Temple, and Mr. Barton, and I also have worked with Dr. Hayden a lot over the course of her tenure over there. I have really enjoyed developing a deeper relationship. First, I want to say the Library is an American treasure of immeasurable value. Its 170 million items include the world's largest collection of legal materials, films, and sound recordings. Its landmark buildings see 2 million visitors every year, and there were 114 million visits to its websites last year.

The Copyright Office is critical to music, film, and the publishing industry, worth over 1 trillion dollars every year. Copyrights are especially important in my home state of New Mexico where artists in the creative economy are a significant and growing part of our state's business activity. In addition to its public value, the Library is fundamentally essential to our work here in the Legislative branch. You know, some people may think members of Congress are ill-informed but imagine what this place would be like without the assets like the Congressional Research Service.

Online resources like Congress.gov help keep us informed and up-to-date with non-partisan, factual information. Like so many Americans, we rely day in and day out on the information provided by the Library of Congress to make important decisions. So while this hearing may not be carried live on cable news, it is this committee's job to make sure the Library is well-run, up-to-date and prepared for the future. Future generations will thank us.

Dr. Hayden, I know you and your team have been working diligently to modernize and grow the IT infrastructure of the Library of Congress and the Copyright Office. Digital technology is crucial to the Library's evolving operations. I am encouraged with the pace with which the Government Accountability Office recommendations have been implemented. I have worked on Federal IT reform on a bipartisan basis for many years and I know it is not easy. Big IT projects are tough enough in corporate enterprises, but Federal agencies face a much different budget process and unique organizational issues. Federal chief information officers have learned a lot of lessons and developed best practices in recent years.

I urge the Library and Copyright Office to seek out those best practices and work together for success. I look forward to hearing about the progress to improve the Library's infrastructure and operations, progress in improving accessibility of the Library's unique collections and historical artifacts like Thomas Jefferson's draft of the Declaration of Independence and the contents of Abraham Lincoln's pockets the night he was assassinated.

Tangible pieces of some of the most significant moments in our Nation's shared history can be both preserved and made accessible. Along those lines, I want to highlight one of the Library's ongoing initiatives, the Veterans History Project. Chartered by Congress in 2000, this ongoing effort collects and makes accessible personal accounts of American war veterans so that future generations can hear directly from veterans and better understand the realities of war.

With Veterans Day approaching, I will be interested to hear an update on the progress of that project during our question-and-answer time. Helping Native American tribes protect their historical and cultural resources is also a high priority for me.

Dr. Hayden, we have spoken about this before and I know it is a priority for you too. I hope we can keep working together on tribal engagement under the Music Modernization Act as well as the Library's language and other resources for tribes. I look forward to our panel's discussion today and I will yield back to the chairman.

Chairman BLUNT. Thank you, Senator Udall. Dr. Hayden, your full testimony will be in the record. You can deal with it however you want. I am also going to ask that my remarks and Senator Udall's and any comments, introductory comments any member the panel would like to make would go into the record without objection.

[The information referred to was submitted for the record.]

Chairman BLUNT. Dr. Hayden, we are glad you are here. We are going to let you testify on behalf of everybody and then everybody will get their share of questions, I am sure of that. Dr. Hayden.

**OPENING STATEMENT OF DR. CARLA HAYDEN, PHD,
LIBRARIAN OF CONGRESS, LIBRARY OF CONGRESS**

Ms. HAYDEN. Well, thank you, Mr. Chairman, Senator Udall, Senator Hyde-Smith. I welcome the opportunity to be here today to give you an update on the Library's modernization and especially the information technology and work with the Copyright Office. I want to thank the committee for its ongoing support of the Library in general and with the Library's IT modernization. Three years ago, in this very room during my confirmation hearing we discussed the many challenges and opportunities presented by the Library's technology and I am excited to be able to tell you today that we have significantly improved the Library's information technology.

The Library is a different organization from what it was just a short time ago and over the last few years we have stabilized our core IT structure, we have streamlined and strengthened our IT governance, and we have centralized and professionalized our IT workforce. That hard work has allowed us to close and implement nearly 95 percent of the GAO recommendations made in 2015 and we will keep working until we close 100 percent by the end of this year. Modernizing the Copyright Office is a top agency priority and we are making progress in upgrading the systems to register and maintain up-to-date records for creative works so that the systems are automated, integrated, and easier for the public to use.

Thanks to the generous support of Congress, the Library is now 1 year into a 5-year effort to design and implement a new enterprise-wide copyright system. To keep progress moving forward, the Copyright Office has now hired a senior technical advisor in place to help manage and plan IT modernization and also to enhance the collaboration between the Copyright Office and the agency's technology staff. In fiscal year 2019, the Copyright Office and the Office of the Chief Information Officer jointly engaged in user-experience outreach to stakeholders and launched development efforts for key components of the new system.

This fiscal year, the Library will release a limited pilot of the first fully digital copyright recordation system. We will also complete a prototype of a searchable records management system and begin the initial development for the next generation online registration system. I want you to know that I believe in my team leading this effort. Register Karyn Temple, Chief Information Officer Bud Barton, and I believe that together we will deliver a modernized copyright system. We are also completely overhauling the technology that powers every part of the Library.

The Chief Information Officer, Mr. Barton, is working with the Congressional Research Service, CRS, to implement a new research and information system and it will make use of the latest technologies. The National Library Service for the Blind and Print Disabled is completely rethinking how it delivers content to people with reading difficulties. The Law Library has completely digitized the U.S. statutes at large, and in collaboration with the Government Publishing Office, we have digitized the Congressional Serial Set dating back to 1817.

So by embracing user focused design and agile development, we brought out new products to millions of online users and we made enhancements to many of our services. Last, our digital strategy agency wide is leveraging technology to find innovative ways to reach more people.

With these efforts we are moving ahead with a challenging but achievable task of transforming the Library into a more digitally enabled agency. There is still a lot of work to be done but we have made great progress. I thank you again for inviting me to update the committee with my colleagues and we welcome your questions.

[The prepared statement of Dr. Hayden was submitted for the record.]

Chairman BLUNT. Great. We are glad you are here. We clearly are going to have plenty of time for us to ask multiple questions. I think we will try to stay in about 5 minute segments and just go back and forth. Senator Hyde-Smith is coming back in just a moment and obviously will be here for questions as well. Mr. Barton, would you share your progress? You started right—when, 2016 or was it 2015?

Mr. BARTON. September 2015, sir.

Chairman BLUNT. 2015 and that was in response to the idea that somebody needed to come in and be the chief information officer. Just in a couple of minutes sort of give me a sense of how far you have come from the day you walked in and particularly how far you have come since the Librarian took her job in 2016.

Mr. BARTON. Thank you for the question. It is a great opportunity for me to be able to reinforce the talent we have at the Library regarding IT and the professionalism displayed by the staff. As the GAO audit found, there was a lack of oversight and so they suggested that the Library hire a chief information officer. When I first came in, it was apparent to me that it wasn't the lack of talent or lack of capability. It was really a lack of vision, a lack of oversight on the IT organization.

The Library had been pretty much working in a siloed fashion, as I am sure we will discuss a little bit more throughout the hearing. Centralization was something that would help this. In other

words, making decisions about IT at the agency regarding strategic direction and then making sure that those decisions of the strategic direction didn't interfere with the individual service or business units needs to have specialized IT to perform their business mission.

Whenever I first arrived, I testified that my goal was to make sure the findings of the GAO audit were addressed in a way that didn't just check a box. I wasn't here to just make sure that we closed the audit findings. I was here to make sure that the root cause of those findings was addressed and in such a way that we were not put back into the same situation in a matter of years. Thanks to the support of Congress from a budgetary perspective, we have been able to address 95 percent of those findings.

I expect that we will close all of these findings by the end of this calendar year. We have submitted the evidence that is necessary to the GAO and are expecting back and forth conversations with them throughout the rest of this year on getting those closed. The progress we have made is significant and it covers every domain of IT.

The discussions I have had with the GAO, the team that was here, it was the first time that they have actually made that broad of a recommendation. The number of recommendations were significant, over 100 recommendations, and in every domain of IT, from security to finance to operations, every domain that there exists.

The biggest progress we have made is in security and I am very proud to say that at this point all of the major systems within the Library have now obtained what we call an authority to operate which means the security of those systems have been validated, tested, and compared to NIST standards, who is the body that we look to for establishing security standards.

Chairman BLUNT. On that topic, let me go to Ms. Temple before I run out of time here with my first questions. On the security topic, intellectual property is clearly one of the things that we are for good reason the most concerned about, one of the big targets of cyber-espionage and other things, do you feel good about where we are headed in terms of the security of the information entrusted to the Federal Government through you and your job?

Ms. TEMPLE. Yes, thank you for the question. Security is one of the most important aspects in our development of an IT system and I am very pleased that the Library has taken such a huge role in ensuring that the items that we receive in the Library are protected. Digital security—as we have kind of moved to digital technology, we receive a host of different types of works from feature films to important books to works that have not even been released to the public yet. Security of our system is a critical aspect of its development and so that is one of the things that we are focusing on as we develop with the Library.

Chairman BLUNT. You have worked in the office for some time, haven't you?

Ms. TEMPLE. Yes, I have.

Chairman BLUNT. What is the difference in the security either concerns or your sense of security now compared to 5 years ago or whatever number you want to give me?

Ms. TEMPLE. Yes. I would say that the main differences is the focus that we have been placing on security, acknowledging and recognizing how critical it is to the management of our IT system and really making sure that at every level security is considered as we begin developing the new system. I think the focus and prioritization of security is one of the main differences from where we were years ago.

Chairman BLUNT. Yes. I would point out before we go to Senator Udall that while you said you have worked there for some time, you had this job really as the permanently designated person for a relatively short time. If we are back into 2014 or 2015, somebody else was the Register of Copyrights at that time. Senator Udall.

Senator UDALL. Thank you, Mr. Chairman. Dr. Hayden, as part of the ongoing IT management and modernization plan, I am aware that the Library has implemented a new digital strategy by transitioning to a new tier 3 level data center. This investment is key to helping the Library deploy technology to expedite and expand digital access to the vast collection of books and media.

Last time you testified before this committee you stated that the Library was in the process of migrating applications to the new data facility. Your testimony today provides an update that you are moving forward to fully transition operations by the end of the fiscal year 2020 to support the Library's digital needs. Could you expand upon your testimony and discuss the progress of this move, including progress on migrating data to cloud services?

Ms. HAYDEN. As we mentioned before, we are looking at and making sure that we have a variety of storage capacities, and that includes the cloud, and also physical storage capacity as well because of the nature of the materials that we are storing. Some need to be onsite. Mr. Barton has been—and he knows that I have been very concerned and making sure that we are able to make that migration secure and also very effective without losing any data. If you wouldn't mind, Mr. Barton will give you the precise—

Senator UDALL. That would be great. Mr. Barton?

Mr. BARTON. Thank you, sir. The move out of the Madison Building of all of our, what we term the productions, the actual usable content, is supposed to be complete by the end of this fiscal year 2020. A lot of that content, especially the ones that are sensitive, needs to have security controls around it, will be maintained in this new data center that we have fitted out. That will be complete by the end of the fiscal year 2020.

We will also be migrating our non-sensitive, publicly releasable, the things that the general public reviews into the cloud in a lot of respects so that it is faster and less physically, from an equipment perspective that we have to worry about funding.

Senator UDALL. Ms. Temple can you update the committee on the progress of shifting copyright office data to this facility as well as to the cloud services, including the benefits you expect to see and the current challenges you face.

Ms. TEMPLE. Yes. I will defer a little bit to Mr. Barton in terms of the exact schedule, but I know that we are on track in terms of beginning to migrate our data over to the data center, some of our data. Some of our other data that will be housed in a cloud service as we are developing the new system as well. We are working

closely with the OCIO in terms of the schedule and timeline for that process.

Senator UDALL. Dr. Hayden, I understand that expanding access to make the Library's unique collections available to all users is a central part of the Library's strategic plan. The Veterans History Project of the American Folklife Center is one collection of particular interest to me, and with Veterans Day just 4 days away, I am sure it is of interest to my colleagues.

My office discovered that New Mexico had a low number of stories in the archives, especially considering the high percentage of active duty and veterans in our state. To change this, I set a goal for my staff to collect at least 50 stories from New Mexico veterans including at least one from every one of our 33 counties. Since July 1st, 2019, I am proud to say that my office has collected over 80 interviews.

I conducted a number of interviews myself. I can tell you it was a really eye-opening experience. I am especially focused on enlisting the help of other community partners around my state to continue collecting interviews and other materials from Hispanic veterans, Pueblos, Apache tribes, and the Navajo Nation. Can you update the committee on the progress of this project and how it fits into the updated mission and vision of the Library?

Ms. HAYDEN. Very pleased that you asked that question because I just returned from Rhode Island with Senator Reed and before that it was Senator Enzi in Wyoming collecting interviews and adding to the over 100,000 oral testimonies of veterans. The inclusion of the gold star families has been very important, and we are making sure that we work with congressional offices. We want to thank you for conducting the interviews.

You are so correct about the fact that it can get emotional and there are a lot of veterans who feel they don't have a story to tell but we try to make sure they know. People who have lost their loved ones can also contribute to the Veterans History Project and talk about that. So over 100,000 already and we are working to make sure that we reach out to the native communities.

We have added many oral histories and have a special focus in working with the National Museum of the American Indian on that project as well. It is very successful. It is something that we hope people will realize is so important in terms of stories to be told. In our new orientation center, we will have a special section for Veterans History Project and people that visit, those 2 million visitors, will all know they can record their stories, hopefully, very soon on their digital devices. They can do some of it now.

Senator UDALL. Thank you and just to let all members know that you do a really good job, I think, training us to do this. Thank you very much and we hope maybe you will visit New Mexico to take our recorded interviews back when we get ready to do that. Thank you so much.

Chairman BLUNT. Let me mention again, I think we will have time for at least a second round of questions but for your first questions, Senator Hyde-Smith.

Senator HYDE-SMITH. Thank you, Mr. Chairman, and thank you to our witnesses for being here today, I look forward to learning more about the modernization of Library of Congress and the Copy-

right Office because I know it is certainly vital to growth and expanding access to our Nation's wonderful collections. Your credibility, I think, is outstanding and it is just one of my favorite places here in Washington DC, I thank you for all your efforts.

Dr. Hayden, the effort to centralize IT across the Library has included transferring both people and resources from your individual service units, including the Copyright Office, to the office of the chief information officer to execute technology activities—and this could be for whomever wants to answer it. Can you explain how OCIO tracks and utilizes the funds appropriated for copyright modernization on behalf of the Copyright Office?

Ms. HAYDEN. I would like to start, and thank you for the question, about the—address the benefits of centralizing IT efforts and projects in the Library in general. That was one of the major challenges and major focus of the IT modernization effort to not have silos, Mr. Barton referred to that.

With centralization we can track fiscal expenditures and resources, we can track equipment, we can professionalize personnel as well, and also additional security. When you have a number of units dealing with security that is so difficult. IT centralization has allowed us to track all of our expenditures and keep a better view of enterprise wise, what IT is. But I am very pleased to be able to report centralization has been helpful in so many ways.

Mr. BARTON. Thank you for the question. We have two prongs that I would like to address on that. One is, overall from an IT funding management perspective, we are in the middle of implementing something that is called the technology business model. This is something that the Executive branch has been working on for several years, industry has been working on for several years. While we may not be as far along as some of the agencies that started this ahead of us, we have made great strides and we expect that by the end of this fiscal year we will have our tool in place that gets us down to a level of fidelity on where we are spending IT funding, that we can make much more informed decisions about what is working and what isn't working.

With regards to the Copyright Office, we have a regularly scheduled, every other week meeting with the Chief Financial Officer at the Library, Chief Financial Officer of the Copyright Office, and my IT funding manager and we go over in detail what the funding is being used for the copyright modernization effort, where it is being used and spent, contracts, personnel, and all of the resources that are involved in the IT modernization for the Copyright Office.

Senator HYDE-SMITH. Thank you very much.

Chairman BLUNT. Senator Cortez Masto.

Senator CORTEZ MASTO. Thank you. Welcome. It is great to see all of you, Dr. Hayden, Mr. Barton, Ms. Temple. I am a big fan of the Library of Congress and what you all do and your staff. Please know that. I am just sitting here talking to my wonderful colleague from New Mexico about the Veterans History Project. Count me in. If my staff are listening, we will be participating with you in the great State of Nevada.

We have some incredible veterans who I have met and have heard their stories. Believe it or not, there is a population of 140,000 Filipinos, many who are veterans, and I would love to cap-

ture their stories, if they are not captured, and so many more in the state. So we will be following up with you. Let me follow-up on the enterprise copyright system. That seems to be the topic this morning. I know that part of the goals for this updated system is to improve public record searches and simplify the process for registering copyrights. I think you mentioned, Dr. Hayden, in your testimony that portions of the program will be piloted in the spring of 2020. Is that right?

Ms. HAYDEN. Yes.

Senator CORTEZ MASTO. Okay. How do you—I guess the only question I have is how do you measure the success of the pilot programs?

Ms. HAYDEN. I have my colleagues here, but we have a Copyright Modernization Office. We also have regular tracking of progress, and we are about to have a critical path opportunity that we can overlay everything that is happening with copyright modernization. But I will defer to Ms. Temple to more—

Senator CORTEZ MASTO. Thank you. Also include whether the public will be able to provide feedback as well.

Ms. TEMPLE. Yes. Just to piggyback on your last statement, we think it is critical to have the public provide input and feedback as we develop our system. For the recordation system which will be piloted in the spring of 2020, we are going from a completely paper-based system to a digital system for the first time so that is something very exciting for us. We have established a group of companies and individuals who will participate in the pilot, but as we continue to, you know, iterate on the pilot and add functionality, we will be adding in additional individuals to participate, and during that process we will be getting feedback from them as to how the system works.

Is it as easy as we thought it would be? Are there changes that we may need to make? I think that is one of the benefits of the agile methodology in terms of the system development, that we will be able to quickly take that feedback and add onto the existing system and change it as the users provide feedback.

Senator CORTEZ MASTO. Okay. Thank you, I appreciate that. Mr. Barton, you mentioned before that one of the Library's biggest challenges is storage, and I know when I was over there visiting with some of your staff, we talked a little bit about that. Can you talk about what the Library is doing to address the current storage problem?

Mr. BARTON. We are taking several prongs of approach to the storage issue. One, as Dr. Hayden mentioned in her opening remarks, stabilization was the first phase. The second phase of the IT modernization was what we called optimization and then modernization. They weren't necessarily sequential. We are doing a lot of those activities in parallel. The optimization part of storage is making sure that where we need storage, we are using the right type of storage.

For example, if we are presenting information to the public, we want that information to appear on their computer screens instantly. That is going to have a different type of storage than preservation storage where we want to make sure something is here for posterity, in 100 years it is still available. That is not necessarily

something that needs to be retrieved rapidly in a matter of milliseconds.

So that would be a less expensive form of storage. That is one of the avenues that we are approaching, is making sure we are using the right type of storage for the type that is needed. The other part is looking at our options from the priorities of ownership. Cloud-based storage, if we would consider something that is less expensive for us to maintain because we are not in the position of having to replace the hardware. Making sure that we are taking advantage of all the options from a storage based perspective is a high priority for us to make sure that it is being done correctly and efficiently.

Senator CORTEZ MASTO. Thank you and thank you all for the testimony today. Appreciate you being here and all the good work that you do. Thank you, Mr. Chair.

Chairman BLUNT. Mr. Barton, earlier when you mentioned moving from the Madison Building to the new storage facility, how much of that would be physically stored and how much of it is being digitized, moved to the cloud? However, you are doing that differently than was the case of few years ago?

Mr. BARTON. That is a great question, sir. We are attempting to get all of our analog written materials digitized in a way that they are accessible by the citizens of the United States and worldwide. That is right now. I would have to get back with you on the exact number of what is digitized and what isn't. It is a constantly growing requirement. When I first arrived, we were dealing with—we counted our content as 160 million items. As we testified today, it was 170 million items.

So 10 million items in less than 4 years on an analog basis. That is something that is going to be a challenge for us, and we are implementing a process where we look at what is the best way to make this happen. I know the Copyright Office has a really good story on storage that I don't feel qualified—

Chairman BLUNT. Well, Ms. Temple, let us hear that story.

Ms. TEMPLE. I think what Mr. Barton is alluding to is to our efforts to digitize our public records. One of the things that we were really excited to be able to release to the public last year or earlier this year, since we are still in 2019, was in March 2019, we did our final release of our virtual card catalog. On that we were able to give access for the first time to over 41 million images that were previously physical images where you had to come into the Copyright Office to be able to get access to those documents. Those were completely digitized and put into a digital database for people to be able to access from wherever they wanted to.

That is something that we are really pleased about. We are continuing to digitize the remainder of our Copyright Office records and that is one of the work streams that we do have for modernization this year. We are going to hopefully be able to pilot a public record system, a limited pilot public record system where will be able to add in the virtual card catalog records that are already digitized as well as the records that we are digitizing now, and then work on how we might be able to make all of those records in some way available to the public.

Chairman BLUNT. On the digitization project, do you do that with outside contractors?

Ms. TEMPLE. Yes, yes, we have contracted. We have been working actually with FEDLINK who has been assisting us on that and with outside contractors to digitize the additional records beyond the card catalog. We have about 26,000 record books that we are hoping to digitize and make the information from those records, the data like copyright registration number, author, or title available in a database so that people who want to come to our office, digitally or online, will be able to very easily search the copyright status of individual copyrighted works.

Chairman BLUNT. I know like in the Department of Agriculture, I used to be the top Republican on that appropriating committee, they have a number of CIOs and there are various entities around the country, but any big project has to be cleared by the central USDA CIO. Do you, on an outside contract on information, would that go through a clearance process at the Library as well?

Ms. HAYDEN. Yes. I can answer that. Also FEDLINK, that Ms. Temple referred to is managed by the Library and we manage that for contracting and services for other Federal agencies and libraries. Anything that is part of the centralization of the standards and the operation of any IT has a review.

Chairman BLUNT. Ms. Temple, as one of the agency leaders in the Library, does that process work quickly enough in your view? It certainly gives you a safeguard you wouldn't have otherwise. Does it?

Ms. TEMPLE. Yes, obviously all people within the Government would love to be able to work even more quickly than they do, but yes, I think we have an efficient process where what we do is work with IT OCIOs if it is an IT related project to develop the contract and send through to the centralized contract office within the Library.

So for the digitization side, which is actually more of a business side project, that also does—the resulting contract will go through the Contracting Office within the Library and we will work with them whether it is through FEDLINK or through an outside vendor to develop that contract and get solicitation out and approved, and then work with the contracting officer which will be in the Library's Contracting Office to make sure that that contract is operating smoothly.

Chairman BLUNT. I think initially the reason the Copyright Office was in the Library was as much as anything else to ensure the collection. One question I would have with all of this material out there, do you still have those kind of relationship, Dr. Hayden, that you need for best edition, for deposit requirements, so that you are getting for your deposit what you think is what the Library really needs to have in that eventually, now apparently, quickly digitized form as well as the other forms?

Ms. HAYDEN. The deposit requirement has allowed the Library of Congress to have one of the most comprehensive collections in the world and it is now the largest collection in the world. It is such a benefit to be able to have the opportunity to select from the deposit requirements and so we are very pleased. I just want to also take an opportunity to commend the Virtual Card Catalog Project

even though it is records and it is just to think of 41 million cards in catalog drawers. That was a major undertaking. Visualize a card catalog set with 41 million cards.

Chairman BLUNT. How often is the old card catalog cabinet used now?

Ms. TEMPLE. People still actually do come to the office to use it, but we are actually looking to, now that people are aware of the fact that they can access those card catalogs online, we are actually going to take advantage potentially of the space and save some space. Probably decommission the physical card catalogs and actually direct more people to go online as it is becoming more enhanced.

Ms. HAYDEN. People have quite a bit of affection for card catalogs. We even have published a book about card catalogs with a different ending.

Chairman BLUNT. Senator Udall.

Senator UDALL. Thank you very much, Mr. Chairman. When you last testified in March, Dr. Hayden, you and I discussed tribal concerns with the proposed rule for the Music Modernization Act that deals with the pre-1972 recordings. Since then, the Copyright Office has issued its final rule. The rule did not include a public domain exemption for pre-1972 tribal, cultural recordings because according to the Copyright Office it would exceed the Office's regulatory authority.

This question is for, I think, both you and Ms. Temple, are you working with tribes to continue addressing this issue, and if so, what are you doing and what can Congress do to assist your office with those efforts?

Ms. HAYDEN. We have several initiatives with making sure that we preserve and make available the cultural heritage of native cultures. We have the Federal Cylinder Project and that is where we are preserving actual, very fragile historic records dating back to the late 19th century. Then the Ancestral Voices Digital Collection and our Folklife Center is making sure that we provide access to the recorded sounds digitally and songs. We are very active in making sure that we are capturing and using technology to its great extent for that.

Senator UDALL. Great. Ms. Temple, will you give me your commitment that the Copyright Office will work with me and my Indian Affairs subcommittee staff on this issue? As Vice Chairman of Senate Committee on Indian Affairs, respecting tribal sovereignty is a priority for me so I look forward to working with you to resolve this issue. Would you give me your commitment?

Ms. TEMPLE. Yes, of course. During the process for the Music Modernization Act implementation of the regulations we did seek outside comments about issues, including issues with respect to tribal musical recordings. We have some specific provisions in our regulations that do address tribal musical works and are committed to working with you and the various tribes on ways that we can continue that partnership in the future.

Senator UDALL. You know, and one of the issues that they are raising, which I think is a critical issue, I think you know about this, but I think it is important for everybody to know about it. In the first half of the 20th century, anthropologists and sociologists

took a substantial number of tribal ceremony and religious event recordings without the consent of the tribes. Many museums and universities now hold these collections without tribal knowledge.

The MMA would require these institutions to make these recordings public, resulting in potential release of culturally sensitive information. That is the issue we are trying to focus in on and we want to work very closely with you on that. Thank you, Mr. Chairman.

Chairman BLUNT. Thank you, Senator Udall. Mr. Barton, I think the Librarian mentioned 95 percent of the 2015 GAO recommendations have been fulfilled. What were the business units that the 5 percent are largely congregated in?

Mr. BARTON. The 5 percent of the remaining comes out to be six recommendations. Two of them are nonpublic so they revolve around security and that would be a Library wide concern, not just a specific service unit. We have the IT funding. There is a recommendation on financing and that is an OCIO responsibility so that applies directly to the OCIO.

Chairman BLUNT. Let us be sure the three of us or anybody watching that we understand exactly what that means. How would that be followed up then if it relates to the OCIO? Are they not giving you the—are you not getting the information you need or the funding you need, or what do you mean, you mean that is up to somebody else?

Mr. BARTON. We are getting the funding that we need to close out these particular findings. We are in constant communication with the GAO and providing evidence on closing out the remaining six findings. I do not have any concerns about being able to meet that by the end of this fiscal year. I am confident that we will be closing—

Chairman BLUNT. Alright, let me let you finish the answer then. So what are the other beyond that? Do you have some specific units where there are more challenges than others in finishing up?

Mr. BARTON. Yes. We actually do not have any remaining challenges to close out. In fact it was part of the GAO audit. There were two findings that specifically related to the Copyright Office. Both of those have been closed as implemented and we are very happy to be able to report that. All of the remaining six are strictly within the purview of the OCIO and we are confident that those will be closed by the end of this calendar year.

Chairman BLUNT. Ms. Temple, do you have on that topic—is there anything that you are trying to get done in this calendar year that is a concern for you?

Ms. TEMPLE. No. As Mr. Barton alluded to, we are very pleased we were able to close out those last remaining two GAO recommendations. We worked closely with OCIO to do that. We are prepared to move forward aggressively on our modernization efforts.

Chairman BLUNT. The timeline that the two chief financial officers and the CIO and your folks that work with them are working on is one that you think is reasonable?

Ms. TEMPLE. Yes. Obviously, we do understand that our users and stakeholders would love to have a new system yesterday and so we do take that very seriously, but we are working very aggres-

sively. As was alluded to, fiscal year 2019 was the first year we actually got specific funding for the enterprise copyright system.

We have now had that 1 year concluded and now in fiscal year 2020, we are going to have three separate work streams working on registration development, public records development, and recordation system development all at the same time. We think that this is now going to be something that the public will really be able to see the progress more completely now that we are in the second year of our funding phase.

Chairman BLUNT. Okay. Senator Capito.

Senator CAPITO. Thank you, Mr. Chairman. It is always great to see you Dr. Hayden and thank you for your good work. I think you are doing an excellent job at the Library of Congress and in modernizing its operations just in the brief time I have been in here. But I wanted to talk about when I was chair of the appropriations subcommittee of the Legislative branch for 2 years, I went back and looked at some of the legislative language that we had in our Appropriation subcommittee report.

Our report in fiscal year 2016 recounted GAO's finding that, "a lack of central leadership and oversight at the Library resulted in duplicative overlapping and inefficient IT policies and investments." Again in 2017, a report noted that the IG's finding that the Library failed to have, "an organization-wide independent strategy for digital collection activities and that the goal of addressing a digital collection strategy was not including the Library wide strategic plan or its information technology strategic plan." Indeed, at that time, the Library was seeking funding for a digital collection management unit even though there was no comprehensive study.

I am not bringing these up to rehash problems of the past but to highlight how much progress has been made. Dr. Hayden, you have already implemented 95 percent and Mr. Barton just talked about the remaining 5 percent of the tasks. As we talk about this, Dr. Hayden, could you just kind of flesh out a little bit how this is impacting the public—how the public is benefiting now and will in the future from having access to the digital access to the Library's collections? How is this impacting Americans just in general?

Ms. HAYDEN. In general, what American and people worldwide will be able to do is have more access to the Library's collections digitally, they will be able to download photographs that are copyright free, and they will be able to have visual exhibits on their mobile devices, they will be able to record their veterans history projects and send them to the Library, they will be able to also use Congress.gov and get up-to-date, ready Government information that is available to all citizens.

The variety of opportunities that information technology provides in terms of opening up what we call the treasure chest of the Library of Congress are, you know, just amazing when you think about seeing Rosa Parks live exhibit that is going to open in December, her handwritten notes, and seeing Thomas Jefferson's draft of the Declaration of Independence. We have invited the public to help us transcribe letters to Abraham Lincoln by the People Project so they can actually be part of helping history come alive.

Senator CAPITO. Yes, I was going to ask you about the People Project.

Ms. HAYDEN. It has been wonderful. We launched it with the anniversary of the Gettysburg Address, and we had high schoolers come in. We found that the aspect of reading cursive writing gave us opportunities for intergenerational programs where you have more mature people reading cursive and the young people doing the computers. We were able to, of 27,000 letters to Abraham Lincoln that had not been reviewed in decades or seen by people—

Senator CAPITO. Were they written to him as President?

Ms. HAYDEN. They were written to Abraham Lincoln. The hook for young people was the fact that they were making something by transcribing. They were taking something that hadn't been read since 1864, available for everyone to see. All those 27,000 all were transcribed.

Senator CAPITO. So really without the digital access, a project like that—

Ms. HAYDEN. It could not have happened. The fact that we were able to and Congress has supported the IT modernization of the Library has had so many benefits in terms of making the Library more useful, inspirational for so many people. Then with a copyright modernization, you will have people who can search historic records. They can file on a Register online. People are buying cards online and now they will be able to register quickly, search the records, do different things with the entire copyright system. It will be an integrated system. So technology—and we really appreciate the support that Congress has given us. Thank you for that.

Senator CAPITO. Thank you. Thank you, Mr. Chairman.

Chairman BLUNT. Senator Udall.

Senator UDALL. I just have—first of all, just thank you all very much. Just one final statement. Senator Klobuchar, I know who is the ranking on this committee, is very interested in all of these issues. I know she has been working with you. I believe she is working on a piece of legislation called the Case Act which would help to reduce the cost and barriers to making a small copyright claim less expensive and you all are aware of that. But she and her staff are going to be working with you and I am sure she is going to be putting in questions for the record. Thank you very much, Mr. Chairman.

Chairman BLUNT. Thank you, Senator. Let's talk about the Case Act a little bit. I was in Missouri over the weekend and had a photographer in an event that I was speaking at say I hope you are looking at the Case Act because I can't afford to defend my work anywhere else. Obviously, you know, we want to create that kind of opportunity, but what are the challenges to that kind of opportunity, including the kind of additional staff you might have to have or the other challenges you would see.

I think Senator Kennedy is also one of the members of the Senate along with Senator Klobuchar that is interested in the Case Act. Why don't you tell me how you think that would impact what you do and if it is a responsibility that you can handle? If you could handle it, what would it take in addition to what you have now to be able to handle it?

Ms. TEMPLE. Yes, thank you. This is a long standing issue that the Copyright Office has analyzed and reviewed. We actually did a full study of a proposed small claims tribunal back in 2013 and issued a report to Congress actually recommending that Congress adopt legislation that would create a small claims tribunal within the Copyright Office.

So we feel confident that if the Case Act were to pass and be signed into legislation, that is something that we would be able to readily implement. We have our previous experience, for example, with the Music Modernization Act which was a historic piece of legislation that really did require the Copyright Office to work closely with OCIO to develop a number of online filing mechanisms as well as several databases in a series of regulations all within a statutory deadline of 6 months.

We were able to quickly, with the help of OCIO as well as our stellar team in the Office of General Counsel at the Copyright Office to get all of that done ahead of time. We were able to post a new website overnight at the time that the MMA was actually enacted. Given our history and experience with that recent legislation, we are confident that we would be able to meet whatever resource requirements would be needed to implement the Case Act if it was passed.

Chairman BLUNT. Do you see that likely to be largely a CIO assisted kind of operation where someone contacts you without coming to the office, they explain what their problem is without having an attorney or a visit or anything else? How would that work and how many more people do you think you need to have to manage that?

Ms. TEMPLE. For implementation of the regulations, we do not anticipate that we necessarily need to have any additional staff. We were able to do the regulation side of the MMA without additional legal staff. With the Case Act, you know, one of the main points of that provision is to streamline the process, so take advantage of digital technology, for example, video conferencing so that people would not need to come into the office if necessary for motions and hearings.

So we would work with OCIO on that to develop any necessary digital resources that would be needed to be able to have that access for the Case Act. The provision of the bill does require that we have three potential judges for the Case Act for the small claims tribunal as well as up to two additional attorneys and so we would just work with Congress to make sure that we have the resources to hire that staff. But we feel that that should be a relatively easy resource because there are many attorneys, I am sure who would be willing to participate in that tribunal process if that was something that was enacted into legislation.

Chairman BLUNT. Physically, do have space for those people?

Ms. TEMPLE. Yes. We currently have—

Chairman BLUNT. Put them where the card catalog used to be? [Laughter.]

Ms. TEMPLE. We kind of have identified potential areas for that. But we already have a copyright royalty board that hears issues related to our administration of the statutory licenses under the Copyright Act. There is a hearing room. We did work with the CBO

to support the Case Act and to determine how much it would cost if we actually got an additional hearing room or did not, and we could do either one. It just would depend on whether Congress would like us to have an additional hearing room beyond the one that we already have for the copyright royalty board.

Chairman BLUNT. I think in your other comments earlier you mentioned that you had designated or brought in an IT advisor to work directly with the CIO. Why did you do that and what do you think the benefit of that will be?

Ms. TEMPLE. The main reason we did that was to strengthen our communication in collaboration with OCIO. I think lawyers and the business side sometimes speak slightly different languages than the technologists and so we wanted to make sure, as we are really working on a number additional work streams for fiscal year 2020, that we had strengthened communication and collaboration to really effectively communicate with one another, make sure that the business needs that we have from the Copyright Office are easily translated to OCIO as they start doing all of these various development activities.

We think that that will be really helpful as we have all of the number of work streams that we are working on. We were very pleased that OCIO was willing to give us one of their top persons. This was an individual that actually came from OCIO. I think that that will really help to strengthen our communication and collaboration moving forward.

Chairman BLUNT. Good. I think internally too, taking full advantage of all the resources that the whole Library structure has is a good thing. I believe there was an effort made from 2014 or '15 to '17 for copyright modernization, largely independent of the internal structure that just did not work. About \$11 million spent and nothing was produced as a result of that. I think that was an example of what happens when you don't have the system you have now, of course, that system was just being put into place.

So I would also point out, you know, the structure here has grown up over time, intellectual property needs have grown up overtime, the desire for accessibility, and as you are doing now, more immediate accessibility to everything in this vast collection, including the copyright space has changed. The overall structure has not changed. In fact as I mentioned earlier, we last year we made an effort to—at least thinking that the copyright community had greater interest in maybe a different kind of procedure to choose the Register, but it turned out that that was not an effort that was successful between the House and Senate. I don't think it would be again.

So that makes it critically important that we make the current structure work. You got, between all three of you, vast resources that are probably always a little short of what you would like to do but are substantial, and how you make those resources work. I would also point out that this committee is the oversight committee for the Library, for Copyright Office—not the committee that will write copyright law, and that is often the case. You have a different kind of reporting responsibility for oversight and how you manage a lot of that responsibility.

We just had two of the previous chairman of the Legislative branch Appropriations Committee who are on this committee, and from the point of view of money available and how that money spent, have an incredible ability to not only ask the right questions but help you help us understand the answers. The responsiveness to this committee is really important. I don't think we have had problems with that.

Dr. Hayden, since you became the Librarian, you have been responding to questions from our staff and our staff have spent a lot of time particular on this modernization effort system-wide over the last couple of years and we intend to continue to do that. But, grateful to have your time. Dr. Hayden, do you have anything you want to say that we might have covered today and didn't that we need to be thinking about?

Ms. HAYDEN. Well, I just want to reiterate the gratitude that we have for the support and we want to encourage your continued input and feedback. We want to keep the discussions going and it is very helpful for us as we move along.

Chairman BLUNT. Thank you. Anybody else?

[No response.]

Chairman BLUNT. Well, thank you all for taking the time with us today, sharing your views. The record will be open for 1 week from today for others on the committee to ask questions. We ask you respond to those quickly.

[The information referred to was submitted for the record.]

Chairman BLUNT. The committee is adjourned.

[Whereupon, at 11:09 a.m., the hearing was adjourned.]

APPENDIX MATERIAL SUBMITTED

**Statement of Carla Hayden
The Librarian of Congress**

**Before the
Committee on Rules and Administration
United States Senate**

“Library of Congress Modernization Oversight”

November 7, 2019

Mr. Chairman, Ranking Member Klobuchar, and Members of the Committee, it is an honor to appear before you today representing the Library of Congress on the important subject of information technology (IT) modernization. I would like to start by thanking the Committee for its support of the Library and our efforts to modernize.

Three years ago, during my confirmation hearing in this very room, we discussed the many challenges and opportunities presented by technology at the Library of Congress. I am pleased today to tell you that we have significantly improved the Library’s IT.

The Library is a different organization than it was just a short time ago. Over the last few years, we have stabilized and optimized our core IT infrastructure. We have streamlined and strengthened our IT management and governance. And we have centralized and professionalized our IT workforce. Altogether, that hard work has allowed us to close as implemented nearly 95% of the IT recommendations made by the Government Accountability Office (GAO) in 2015, and we will keep working until we close 100%.

While we are doing that, we have also started to completely overhaul the technology that powers every part of the agency. For example, the Office of the Chief Information Officer (OCIO) and the Copyright Office are working together to develop a modern Enterprise Copyright System that will make it easier for your constituents to protect their creative works. Modernizing the Copyright Office is a top agency priority. I believe in the team leading this effort -- Register Karyn Temple and Chief Information Officer Bud Barton. I believe in their dedication and commitment to the Library, and I am confident that we will deliver a modernized Copyright system. The Chief Information Officer (CIO) is working with the Congressional Research Service (CRS) to implement a new research and information system to support Congress. He is working with the National Library Service for the Blind and Print Disabled to completely rethink how we deliver content and services to the blind and print disabled communities; and we now have an agency-wide Digital Strategy under which we are leveraging technology to find innovative ways to expand access to our treasures. Embracing user-focused design and agile development, we have also continued to enhance congress.gov, launched a public website for CRS reports, and built a new, more user friendly home for the Constitution Annotated.

With all these efforts, we are transforming the Library into a more digitally enabled agency. While there is still work to be done, we have made great progress, and I am confident that we now have the framework and expertise in place to continue building on the progress made.

Strengthening Library of Congress IT

In its 2015 audits, GAO made 107 total recommendations to improve technology at the Library, including 31 public recommendations, 74 non-public recommendations, and 2 recommendations focused on Copyright Office technology. The recommendations covered IT leadership and strategic planning; IT investment and acquisition management; IT security and privacy; support for mission-specific IT needs; and the importance of coordination across the agency to avoid unnecessary IT spending and duplicative activities.

To date, the Library has implemented and closed 101 of the 107 GAO recommendations, including 27 public, 72 non-public, and both of the Copyright technology findings. Initial evidence has been submitted to GAO for the remaining six findings, and we are working closely with them to achieve 100% closure.

IT Leadership, Governance, and Management

In September 2015, the agency hired a permanent Chief Information Officer (CIO). Shortly after my confirmation in the fall of 2016, I elevated that position to report directly to me, and empowered our CIO, Bud Barton, with the authority and responsibility for all technology at the Library, as recommended by GAO. Under Mr. Barton's leadership, his office has been working steadily to build a framework for IT management and governance that will ensure that technology meets the strategic needs of the Library now and into the future.

The agency has created additional policies, via Library of Congress regulations and directives, to strengthen IT processes and governance mechanisms integral to effective and efficient IT management. As noted in a 2015 Inspector General report, it was once possible for parts of the Library to bypass the agency's IT investment review process. The Library has since changed the IT governance process to ensure all IT investments are identified and reviewed by executive management prior to execution. In addition, approved IT activities are now monitored throughout the investment lifecycle, and we continuously track IT spending across all appropriations to capture the breadth and depth of our IT resources. These changes help ensure accountability internally, to the taxpayers, and to Congress.

Earlier this year, we realigned our IT governance structure to improve our ability to strategically prioritize Library IT projects and investments over multiple years. With this improved structure, the head of each major Library service unit, including the Register of Copyrights and the Director of CRS, serve on the top technology strategy board, giving each part of the Library a voice in the process. We also have empowered a robust IT Project Management Office to ensure best practices are enforced and that major IT projects are developed in a consistent manner across the agency.

Implementing effective governance ensures that IT activities are executed in a way that is repeatable and predictable for cross-agency partners, and addresses expectations from the Office of the Inspector General (OIG), GAO, and the Library's Congressional oversight committees.

IT Centralization

In November 2016, I addressed the need to strengthen our IT management by directing all technology activities be centrally coordinated through the Office of the Chief Information Officer (OCIO). Centralization culminated in October 2018 and represented a significant step to advance our work to address GAO's recommendations. With centralization, Library service units are able to focus on mission-specific operations, and we have a single authoritative source for technology that allows for a more efficient use of IT personnel and contract labor; reduces duplication in software, hardware, and overhead; and improves IT security.

A major part of IT centralization was the creation of an IT Partner Engagement Directorate within OCIO. This Directorate serves as the main interface between the office and the service units. Each service unit has a dedicated customer liaison who works directly with its leadership and staff to identify their specific IT needs and coordinate work across OCIO to ensure those needs are met.

IT centralization can be a challenging process for any organization accustomed to working under a more siloed approach. In the Library's case, it has been a necessary step to ensuring our technology services meet strategic agency objectives, while still providing good customer service to the service units, which remains paramount.

IT Infrastructure and Security

We are grateful for the significant congressional support we have received to stabilize the Library's IT infrastructure. In FY 2017, the Library requested and was approved for a three-year investment to upgrade our data center operations. We are aggressively moving forward to fully transition operations by the end of FY 2020 from the current, aging facility to a hybrid hosting environment that will dynamically support our digital needs, using both a new state-of-the-art data center and the Cloud. In FY 2018 and FY 2019, we built out the new hybrid hosting infrastructure and have begun to migrate core applications. This new approach will provide a more robust and flexible foundation for our technology. It will likewise be more scalable, ensuring our data capacity can grow as we do.

In addition, we have made significant IT security improvements, including closing and implementing major IT security recommendations made by GAO. We have increased coordination across our IT systems security officers, unifying them into one central office rather than dispersing the function across the service units. We have implemented multi-factor authentication for all users, enhancing security protections for access to sensitive Library resources. We have also implemented several cybersecurity enhancements to heighten the detection of threats, thwart

denial of service attacks, protect against malware and enable continuous monitoring so that issues are prevented, and if they occur, quickly identified and resolved.

Modernizing the U.S. Copyright Office is a Top Agency Priority

Copyright Office IT Modernization

The creative community and other users of the Copyright Office deserve a modern, efficient copyright system. The Library, including the Copyright Office and OCIO, are committed to providing all the necessary resources to ensure this modernization effort is a success. Thanks to the generous support of Congress, the Library is now one year into a five-year effort to design and implement a new Enterprise Copyright System (ECS), which will include recordation, registration, and searchable public records components.

In FY 2018 and FY 2019, OCIO and the Copyright Office solicited user experience feedback to inform the design of the new system; made progress in developing an online Recordation system that will for the first time allow users to record information related to copyright ownership using a digital platform; and launched development for a new Public Records system to allow the public to effectively search for information across the entire database of current and historic copyright records.

We are on track to release a Recordation pilot in the spring of 2020. It will be the first component of the ECS released to a population of limited users. In addition, a proof of concept for the Public Records system is scheduled to be released in late FY 2020, and development of the next-generation Registration system is anticipated to go into full scale development later this fiscal year, as well. Using agile software development, the ECS is being built to simplify and automate the online registration process for copyright customers beyond what is currently possible in the existing electronic Copyright (eCO) system.

In addition to ECS projects, copyright.gov has recently been refreshed to unveil a new visual design, improved navigation, security and performance enhancements, and new content and web tools. We released the Copyright Virtual Card Catalog online in FY 2018, and upgraded it in FY 2019 to provide the public easier access to more than 40 million digitized copyright records.

All of these projects have required the close collaboration of OCIO and the Copyright Office during a challenging time of organizational change. Under the leadership of Register Karyn Temple and CIO Bud Barton, the offices have jointly formed a Copyright Modernization Governance Board to act as a modernization steering committee and to facilitate the coordination necessary to accomplish a system transformation of this magnitude. The Copyright Office, with its expertise of both copyright law and its internal systems, provides required business features to OCIO. OCIO then uses its expertise to develop technology solutions to support those features for the Copyright Office.

We are applying lessons learned from GAO and the Library's Inspector General to ensure projects are aligned with the Library's IT governance, project management and development processes. At the direction of Congress, the Copyright Office and OCIO collaborated on the release of a Modified Provisional IT Modernization plan in September 2017. This plan establishes an overall IT modernization strategy for improving user services, and led to the creation of the Copyright Modernization Office (CMO) within the Copyright Office in early 2018. The CMO represents the business interests of the Office, advocating for and optimizing outcomes that deliver on Office's internal and external customer priorities.

Collaborative efforts will continue as modernization goes forward. In fact, I am pleased to announce that the Copyright Office has hired a former OCIO development chief as a senior technical advisor reporting directly to the Register. This advisor will help plan and manage Copyright IT modernization and enhance collaboration between the Copyright Office and OCIO on IT matters, as needed.

Copyright IT modernization will result in a set of systems designed to support specific business functions important to users. Ultimately, the newly developed systems will be cloud-native and will leverage agile development concepts. As new Copyright Office applications are continuously developed, they will be enhanced incrementally through multiple iterations to ensure the Office can maintain a suite of IT services that will facilitate its ability to deliver quality, scalable services for the creative community and American public for years to come.

U.S. Copyright Office Work on Organization, Business Processes, and Change

As the Copyright Office overhauls its technological systems, it is important that it also evaluate and optimize the organizational structures and human resources that utilize these systems. Full modernization requires a multi-pronged approach to review and evaluate not only current processes and workflows in each division, but also the current organizational structure and culture of the Copyright Office itself. The Copyright Office has brought in outside experts to assist with these activities, and will continue to do so as modernization progresses.

First, in FY2018, the Copyright Office engaged the Office of Personnel Management's Human Resources Solutions division to conduct an organizational analysis and redesign. This process, which should be completed in early fiscal year 2020, will provide detailed findings and recommendations on how to achieve more effective operations, including recommendations for staffing levels, position management improvements, and organization restructuring options. The Copyright Office intends to use the resulting analysis to better align the Office with newly automated processes resulting from modernization. Going forward, this work will be helpful in building annual staffing plans, in justifying budget requests for staffing, and with succession planning.

Second, to prepare the organization for modernization initiatives in the coming year, the Copyright Office has contracted with an outside consultant to document current business processes and workflows in each division, working with managers and staff to think creatively about how

processes can improve operational efficiencies and workflows. A third initiative involves organizational change management, which is part of the Office's strategic plan. A contractor is on-board to support the Office's ability to adapt to change by building its internal capability and skills to improve communication, break silos, build trust across the organization, become a result-driven organization, and empower employees.

Modernization and Innovation across the Agency

The Library of Congress, as the pre-eminent repository of knowledge for the nation, relies upon technology to serve Congress and its constituents every day. CRS leverages Library technology to provide custom service on demand to nearly every congressional office and standing committee. Digital content on Library web pages are viewed 500 million times per year. The Copyright Office uses technology to manage hundreds of thousands of registrations each year. The National Library Service for the Blind and Print Disabled relies on technology to circulate over 20 million copies of braille and recorded books a year. Technology even allows Library staff to respond to more than a million reference requests a year from Congress, the public, and other federal agencies.

Expanding Digital Access to Library Collections and Programming

We are moving forward in significant ways to increase user access to our materials. OCIO is working with Library Services to begin planning the next generation Integrated Library Services system. New collections management, inventory, and library service platforms will take an integrated approach to managing the full lifecycle of digital and physical collections, replacing a number of legacy home-grown and licensed stand-alone software applications in the first major overhaul in over a decade.

The Library has created a Digital Strategy Office to partner with Library units on creating innovative digital projects to inspire the general public. This new office has launched a successful crowdsourcing transcription project, "By the People," which allows public contributions to and interactions with digital collections while at the same time helping the Library to make its data more discoverable. Just last month, it was announced that the Library is receiving a \$1 million grant from the Andrew W. Mellon Foundation to explore how our collections can be combined with cutting edge technology to experiment with Big Data and inform other digital research. Our innovative "LC Labs" team will lead this effort.

More than 7 million new items were made available online in FY 2018, among them are the papers of Benjamin Franklin and Presidents Theodore Roosevelt and Woodrow Wilson, and Library staff responded to more than 103,000 reference requests online, including queries handled through the "Ask a Librarian" web page.

OCIO has supported these initiatives, and many more, through the redesign of LOC.gov. The redesign has utilized agile development with continuous integration of content onto the new platform. A hub for dozens of programs, LOC.gov provides access to the Library's unique subject

matter expertise and millions of digitized items including photos, videos, audio, books, newspapers, maps, and more. New designs have also graced our online exhibitions and catalog, providing improved accessibility and an experience optimized for mobile device users.

Legislative Information, the Law Library, and CRS

Millions of users rely on the Library's web properties for legislative information. These users now have access to more information than in years past with the release of a new congressional committee schedule on congress.gov and a new public website containing every currently published CRS report - over 7,200 published products. And to celebrate Constitution Day this year, we unveiled a new website for the Constitution Annotated – the 3,000 page compendium of how the Constitution has been interpreted over time – that allows users to easily search and browse the full text online and from their smart phone.

OCIO has adopted principles of agile development and continuous delivery for congress.gov, with new content and improved functionality delivered every few weeks. Between FY 2017 and FY 2019, OCIO collaborated with CRS, the Law Library, and congressional staff and stakeholders to complete over 40 major releases of congress.gov that included new features, design enhancements, and performance improvements. With the support of Congress, the Library looks forward to further improving the site to better support Congress and expand public awareness of the legislative process.

Recognizing that Congress and the American people are increasingly using electronic resources, the Law Library is similarly embracing digital services. It has completely digitized the U.S. Statutes at Large – the official print version of U.S. Law – and added metadata to make the collection more discoverable. The Law Library has also started a large multi-year effort, in collaboration with the Government Publishing Office, to digitize and make accessible volumes of the U.S. Congressional Serial Set dating back to the first volume published in 1817.

The Library continues to invest resources into delivering information to Congress. With FY 2019 congressional funding, OCIO and CRS have worked together to complete a pilot for a modernized authoring and publishing tool, known as the Integrated Research Information System (IRIS). The full system is expected to be complete by the end of FY 2024. IRIS will leverage the latest advances in web-based technologies to provide more efficient service to Congress and support innovation in CRS operations, while continuing to protect the security and confidentiality of congressional data. The modernized system will change the model for producing CRS products from a paper-based approach to a digital-first approach, as well as support additional platforms for which there has been a growing demand in Congress, such as service via mobile devices. We look forward to continuing to engage with Congress as we boost CRS' ability to provide timely, objective, nonpartisan and confidential research to Members and staff.

Preparing the National Library Service for the Blind and Print Disabled for the 21st Century

The National Library Service for the Blind and Print Disabled is modernizing its technology to meet the needs of Americans who are blind, visually impaired or print disabled. In 2017, the National Library Service launched a new homepage with enhanced accessibility features for the visually impaired. The Braille and Audio Reading Download (BARD) mobile app, which launched in 2015, continues to grow in use. There are now more mobile app users than users of the original BARD website. With the support of Congress, OCIO will work to support BARD's scalability in FY 2020 by beginning a three-year effort to move BARD to the cloud.

This year, OCIO has been working closely with the National Library Service to enhance several systems that support their mission. A multi-disciplinary team collaborated to upgrade the BARD's infrastructure to support increasing user demand, make its front-end user interface more intuitive for print disabled PC users, and improve overall system performance.

Looking to the future, the National Library Service is implementing an ambitious plan to convert braille and talking book materials to modern digital formats and to take advantage of new technologies, such as voice recognition and artificial intelligence, to provide more books to more eligible patrons at a lower overall cost. We look forward to continuing to work with Congress and stakeholders in the blind and print disabled communities as the National Library Service modernization takes shape.

In Conclusion

In closing, the Library has made significant progress in righting our technology ship since 2015, and we are dedicated to accomplishing the work that lies ahead. We have a well-designed roadmap in place to enable the agency to be truly user-centered and more digitally enabled for Congress, researchers, and all of your constituents visiting our websites at home. We are optimizing our information technology to support a more agile technology landscape that can adapt to each business unit's needs, and we are strongly committed to advancing critical modernization projects within a IT centralized framework, including the essential services of the U.S. Copyright Office.

I thank you again for your continued interest and support for the Library of Congress, and for inviting me to update the Committee on these topics.

**Suggested Opening Remarks for Senator Cindy Hyde-Smith
Senate Rules Committee hearing on Library of Congress Modernization
November 7, 2019, SR-301**

- Thank you, Mr. Chairman.
- It is an honor to be here today, and I am grateful for the opportunity to learn more about the ongoing modernization efforts at the Library of Congress and Copyright Office.
- Modernization is vital to the Library's vision of expanding access to the Nation's collection, and to the mission of the Copyright Office to promote creativity and administer the nation's copyright law.
- A successful outcome to the modernization effort requires continued collaboration between the Library's Chief Information Officer and the Copyright Office.
- Congress has invested significant taxpayer dollars toward these efforts already, and I know everyone in this room shares the common goal of a modernized Library of Congress and Copyright Office that together meet the needs of all users.
- I commend you, Mr. Chairman, for having this hearing to continue this important dialogue, and I look forward to the testimony of our witnesses.
- Thank you again, Mr. Chairman.

Senate Committee on Rules and Administration
Library of Congress Modernization Oversight
November 7, 2019
Questions for the Record

Chairman Roy Blunt

Government Accountability Office 2015 Recommendations:

1. Please provide an update on how the Library of Congress is identifying and eliminating overlapping and duplicative information technology investments.

Over the last few years the Library has made great progress centralizing IT activities and decreasing duplicative and overlapping IT services. GAO agreed with the Library's solution and progress that was made. Thus, at the end of fiscal 2018 GAO confirmed that their recommendation to address such matters was closed as implemented.

In general, the Library has taken a number of steps to address the issues. With IT centralization, responsibility and oversight of all IT specialists and operations across the Library was shifted to the Chief Information Officer (CIO). With centralized governance and project management, there is now better transparency into IT projects and the ability to ensure that efforts are aligned and coordinated. With centralized IT security, there is now one clear authority to ensure IT security and vulnerabilities are understood and acted upon efficiently. Where possible, the Library has begun to leverage standardized tools and platforms, rather than maintain a range of technologies to do similar jobs. Better transparency into IT investments has allowed the consolidation of IT contracts, saving time and money. For example, 25 Oracle support contracts were merged into one, reducing the cost for the Library by more than \$1.8 million dollars a year.

The Library is continuing to find efficiencies and will be adjusting operations further as opportunities arise. For example, the Library currently maintains three separate IT related service desk contracts – one each for the general Library, CRS, and the U.S. Copyright Office. As the contracts end, the Library will be merging those services into one joint contract.

At the strategic level, the Library has implemented a new IT governance framework that helps prevent duplicative IT activities. The governance model ensures that IT planning for the Library is aligned with overall strategic planning; the roadmap for digital transformation and prioritization for high level IT investments is set by the Library's executive leadership; and IT-related processes are overseen effectively and transparently.

2. Please identify the methodologies the Library of Congress is utilizing to ensure changes made in response to the GAO recommendations become permanent, both at the Library of Congress overall and at the U.S. Copyright Office.

To address the IT recommendations made by GAO and the Library's Inspector General, the Library has completely revamped how information technology is managed and controlled both for the Library overall, and for the Library's service units, including the U.S. Copyright Office. Those

changes have been codified in Library regulations, Library organizational structures, and the policies and procedures established for IT at the Library.

All technology activities have been fully centralized under the Library's CIO, with a Library of Congress Regulation enacted to promulgate the roles and responsibilities of the CIO, ensuring that the CIO has full authority over all Library IT. Library regulations have also been crafted to stipulate the Library's IT governance structure, IT planning and investment management, enterprise architecture, IT project management, and IT security.

The new governance structure is carefully designed to reinforce the strategic approach for IT planning and oversight called for by audit recommendations. As envisioned with IT centralization, the new governance bodies are structured to ensure that service units have a leading role in defining the business needs and mission requirements that must be met by Library technology. The overarching prioritization of IT activities is reserved for the Library's Executive Committee – which is charged with maintaining a strategic agency-level view. The specifics of implementation are left to the CIO and the Library's technical staff.

Following government best practices, Technology Business Management (TBM) is being implemented to ensure transparency and strategic coordination for all IT investments. An Enterprise Architecture structure and standardized application development practices have been established. A centralized, Library-wide Project Management Office (PMO) has been created within the Office of the CIO (OCIO) to enforce the Library's project management and system development processes and ensure that major IT projects are consistently and effectively planned and managed.

IT security has also been unified under one Authorizing Official (AO) – the Deputy CIO – to ensure that a senior level official possessing an information technology and IT security background has a holistic view of the agency's systems and applications. That centralized authority ensures that focus is maintained on ensuring that the IT security standards recommended by GAO and OIG, as well as government best practices, are fully maintained.

3. Please confirm both the Library of Congress' and U.S. Copyright Office's support for centralization of information technology systems and platforms.

The Library of Congress and the Copyright Office are committed to working effectively within the centralized IT model.

4. Please provide specific examples of how the Library of Congress and the U.S. Copyright Office is supporting information technology centralization.

With the support of Congress, the Library has invested significantly in the centralization of information technology over the last few years. In late 2016, the position of the CIO was elevated to the Library's Executive Committee as a direct report to the Librarian of Congress and all Library IT activities were ordered to be centralized into OCIO. As noted above, to implement that change, the Library has completely revamped how information technology is managed and controlled both for the Library overall, and for the Library's service units, including the Copyright Office. Those changes have been incorporated into Library regulations, Library organizational structures, and the policies and procedures established for IT at the Library.

Since January 2017, the Library has completed three iterative re-organizations of OCIO to enable effective and efficient centralized management of Library IT, including the creation of a special IT Directorate focused on partner engagement across the Library. Library IT staff have been realigned according to their skill-sets and functional responsibilities, breaking silos and reducing duplicative work. IT investment planning and financial management have been streamlined, and upon enactment annual appropriations for IT services are expected to be shifted to reflect IT centralization for fiscal 2020.

To ensure that the goals of IT centralization, including the more efficient and more strategic use of technology across the Library, are maintained moving forward, in January 2019, the Library adjusted its IT governance structure. This new structure empowers the Library's executive leadership to ensure that IT operations and planning are aligned to meet the mission and goals established in the Library's Strategic Plan, Digital Strategy, and service unit Directional Plans.

The Copyright Office adheres to all centralized IT policies and procedures and leverages centralized resources in support of the delivery of IT including IT governance, project management, systems development using the Agile development methodology, IT service management (i.e., centralized IT service desk), and IT acquisition management.

The Copyright Office has established the organizational framework and structure to effectively support centralized IT. In October 2019, the Librarian announced that the Copyright Office has hired a former OCIO development chief to serve as senior technical advisor. The new senior advisor reports directly to the Register, helping to plan and manage copyright IT modernization and enhance collaboration between the Copyright Office and OCIO on IT matters. The Copyright Office has also established the Copyright Modernization Office (CMO), which provides product management, business analysis, and requirements-gathering support across the entire Office in support IT modernization activities; CMO works closely with OCIO under the centralized IT model. The CMO works with the Copyright Office business units to identify appropriate product owners who work closely with OCIO development teams on a daily basis.

Status of Modernization at the Library and U.S. Copyright Office:

1. Please provide the status of the three major modernization projects in the Copyright Office: registration, recordation, and public records.

In anticipation of OCIO development activities that will begin this fiscal year, the Copyright Office has been documenting the features it would like to see in a new registration system through a variety of means, including public engagement and internal staff input. The Copyright Office provided information from these efforts to OCIO for its development efforts. In turn, OCIO is using some of this information to commence an initial effort to develop a prototype of registration submission for a digital, non-fiction literary work. OCIO estimates a production-ready prototype will be available by the end of 2020, with the intent of inviting limited public testing to obtain feedback for a development effort that will continue through September 2024. Registration staff are also working to develop question-based decision trees that capture useful and necessary information in new ways, as well as methods for evaluating proposed alternatives through usability testing prior to development.

The project to automate the current paper-based recordation workflow is well underway. A limited public release of a pilot version will be launched in the first quarter of calendar year 2020. It will include external (public) facing features and internal (staff) features. User feedback from the limited pilot will inform subsequent iterative design and development activities as well as the desired feature sets for future public releases. The pilot will be rolled out in phases beginning in fiscal year 2020.

The systems development project to modernize the online Copyright Public Record System was initiated in September 2019. The system is intended to provide a highly searchable, scalable, web-based catalog that integrates registrations, recorded document records and acquisitions records. A proof of concept limited public pilot is planned for the end of 2020.

2. Please provide the status of workflow modernization in the U.S. Copyright Office.

The Copyright Office initiated its Business Process Reengineering (BPR) project in July 2019. BPR allows the Office to examine its current processes, determine if they are effective, and adopt new methods and processes to reduce operational costs and improve business efficiencies. The Office engaged a contractor for a one-year performance period, and has worked with them to identify processes for review. Interviews with affected USCO divisions are underway. BPR sessions have been completed with the Receipt Analysis and Control Division (RACD) and the Copyright Acquisition Division (CAD). The Office of Public Information and Education (PIE) and the Administrative Services Office (ASO) are currently involved in their BPR sessions.

3. Because workflows are being modernized at the same time as information technology systems, how will the information technology systems reflect modernized workflows? What efforts are being made to ensure outmoded workflows are not incorporated into new technology systems?

The Copyright IT modernization effort is not adapting technology to simply automate existing Copyright workflows. The Library is using industry-best practices, including Agile development and user experience design, to build a custom solution that will fully support the complex and unique mission of the Copyright Office today and for the future. The Copyright Office and OCIO have engaged in an extensive collaboration including conducting in-depth information gathering from the copyright community, the public, and Copyright Office staff to ensure that technology needs are understood and incorporated.

A five-year roadmap has been developed for the creation of the Enterprise Copyright System (ECS) with copyright functions, processes and workflows taken into consideration. It also includes a BPR effort to identify opportunities for efficiencies. While the Copyright Office BPR is still underway, the ECS is being developed iteratively as a set of shared services used across the enterprise, as well as sets of services that are designed to support specific Copyright Office business functions, such as recordation and registration. That modern approach allows for the incorporation of changing business functions throughout the development effort and ensures that services can be updated in an efficient and cost-effective way to accommodate future Copyright legal responsibilities or structural changes.

As a major IT program for the Library, the ECS will be maintained under continuous development by OCIO, through the Library's DevOps processes. That methodology will ensure that the ECS is regularly updated to keep up with technology changes and evolving business needs for the Office and the copyright community. These are well-established software development practices that the Library uses on many of its other Enterprise systems including loc.gov and congress.gov, both of which have new releases every few weeks.

4. How will modernization be beneficial to all users of the Library of Congress's services?

The Library of Congress has a national mission to engage, inspire, and inform Congress and the American people with a universal and enduring source of knowledge and creativity. As established in the Library's Strategic Plan, the agency is making a concerted effort to be more user centered, digitally enabled, and data driven. To be successful, the Library must have a technology foundation that is robust, flexible and scalable for future needs.

The Library's IT modernization efforts will ensure that Congressional staff have access to the information Members need to make timely decisions; that the Copyright Office can meet its mission to promote creativity and free expression by administering the nation's copyright laws and providing impartial, expert advice on copyright law and policy for the benefit of all; that the blind and print disabled will be able to access braille and audio books; and that the historic collections of the largest library in the world can be used in new and innovative ways to spur knowledge and imagination.

5. Other than a reduction in appropriations, what could delay or prevent timely completion of the current workflow and information technology modernization projects at the U.S. Copyright Office?

Developing modern IT systems for the Copyright Office and improving its complementary work processes is one of the most significant operational undertakings the Library and the Copyright Office face in the near term. Modernization is a sweeping, multi-year initiative, the end result of which will be to reimagine and reengineer how the public interacts with the Copyright Office, from submitting registration applications, to recording ownership and licensing information, to accessing Copyright Office data and records.

As with any complex and technologically sophisticated development effort, there are a number of risk factors that are being tracked. For example, Copyright Office subject matter experts and OCIO development staff must continue to work seamlessly together; the Library must be able to dedicate the technical resources – both staff and infrastructure – needed to maintain the pace of development; under an agile, user-centered design approach, effective public outreach and feedback are critical; and of course the program must have continued support from stakeholders inside and out of the Library.

However, at this time, there are no known issues that will delay or prevent the timely completion of the current Copyright Office workflow and IT modernizations projects.

Support for Information Technology Modernization and Centralization

1. **Please describe how the General Counsel's office and Chief Financial Officer's offices in the U.S. Copyright Office are both collaborating with the Library of Congress and also facilitating information technology modernization?**

The Office of the General Counsel (OGC) within the Copyright Office works closely with other Copyright Office and Library components to ensure that Office IT updates appropriately reflect the needs of the Copyright Office to fulfill its mission responsibilities and are fully consistent with applicable copyright laws, regulations, and agency practices.

Copyright OGC is the division primarily responsible for advising the Register on the legal interpretation of the copyright law, the formulation and promulgation of regulations, and the adoption of legal positions governing policy matters and the practices of the Copyright Office. 37 CFR 203.3(c). In this role, Copyright OGC regularly advises other divisions on legal issues associated with IT modernization, including providing background legal support to Copyright Office product owners, to ensure they in turn are fully supported and empowered to make decisions with respect to product requirements.

Currently, Copyright OGC is spearheading a regulatory review to streamline and improve the Office's administration of its functions. Where changes are required, Copyright OGC promulgates updates through rulemaking proceedings under the Administrative Procedure Act (APA). For example, with respect to changes specifically prompted by IT modernization, Copyright OGC has assisted the Register in adopting an interim regulation for Recordation Modernization, and has provided notice of changes to the fee structure for filings of recorded documents to encourage the provision of additional material into the public record. In FY20, this rule will be updated to allow certain remitters to participate in the pilot electronic recordation system. Copyright OGC has also initiated a general request for public comment on ways to improve registration practices under the future enterprise copyright system (ECS).

Meanwhile, Copyright OGC has completed rulemakings to provide greater efficiency for users and the Office while the existing IT system remains in place. For example, in fiscal 2019, OGC issued five final rules to improve administration of the registration system, including implementing new options to allow online registration of groups of works with a single application and fee. Two additional proposed rules issued in fiscal 2019 would extend group registration options to additional categories of works.

In addition, if requested by the Register, Copyright OGC attorneys participate in interdepartmental working groups with Library leadership and staff, including the Library's Copyright Modernization Governance Board and biweekly meetings with the Chief Financial Officers of the Library and Copyright Office, as well as review of modernization-related documents in collaboration with other divisions.

Like the OGC, the Copyright Office's Office of the Chief Financial Officer (OCFO) works across the Copyright Office and with multiple Library components, coordinating especially closely with the Library's Financial Services Directorate (FSD), which is headed by the Chief Financial Officer of the Library. OCFO's role is to serve as advisor to the Register on budgeting, user fees,

appropriation, fiduciary assets, and other financial management matters. OCFO ensures the Office's finances are aligned with the Office's strategic goals, and stewardship and reporting of royalty fees, user fees, and taxpayer-funded appropriations is consistent with law, regulation, agency directive, and best practices in federal financial management. The Copyright Office CFO is a member of the Copyright Modernization Governance Board and she and her staff serve on numerous other working groups across the Library to facilitate agency-wide efficiencies.

The OCFO provides subject matter expertise for IT modernization as well, regularly meeting with OCIO, CMO, FSD, and both Library and Copyright Offices of the General Counsel to resolve financial questions or provide input for planning purposes. OCFO and OCIO coordinate modernization spending plans and the reporting of plan status. In addition, OCFO, the Library's CFO, and OCIO's Director for IT Financial Management jointly host a bi-weekly meeting on the financial status of the Office's IT modernization. The meetings, which are widely attended by subject matter experts from across the Library, focus on using Library-wide resources to resolve roadblocks to meeting the Office's modernization goals.

2. Please describe the following: 1. How the Copyright Modernization Office at the U.S. Copyright Office demonstrates its commitment to providing timely feedback and business requirements to the Chief Information Officer; and 2. Examples of how the Copyright Modernization Office is leading modernization in the office.

1. The Copyright Modernization Office (CMO) is leading a USCO-wide working group to facilitate the gathering, analysis, validation, and management of a comprehensive set of business and functional requirements. This group will translate business and functional requirements into OCIO prescribed formats. Additionally, the CMO collaborates closely and continually with OCIO to plan for and address modernization priorities, review the status of active projects and ongoing activities, identify and remove obstacles, and manage risks. To further aid in the modernization effort, the Office recently hired a Senior Advisor of Operational Policy and Special Projects to work as an IT advisor, reporting directly to the Register. We are fortunate in that this senior advisor comes from OCIO, and this arrangement will help enhance the existing collaboration between the Copyright Office and OCIO.
2. The CMO provides direct project management to the BPR, data management, and organizational change management projects in support of modernization. The CMO is uniquely positioned to provide an enterprise-level perspective across all Copyright Office functions.

Modernization at the Library

1. What obstacles are being encountered regarding modernization and centralization of information technology across the Library of Congress? At the U.S. Copyright Office?

From an agency perspective, the biggest obstacle for IT modernization and centralization has simply been the sheer scale of work happening over a short period of time. In just three years, the Library has completely revamped how information technology is managed and controlled. Efforts

have been begun to completely overhaul the technology that powers nearly every part of the organization, including the Copyright Office, the Congressional Research Service, the National Library Services for the Blind and Print Disabled, and the full scope of traditional Library operations as well.

That work has required the full support of Library leadership, close collaboration across Library service units, and the ongoing prioritization of IT resources. It has also required the continuous maturing of IT processes and procedures, and an active change management effort to help Library staff adapt.

There are other large and significant Library IT modernization activities being executed at the same time as Copyright Office modernization that could have implications for the Copyright Office, including the OCIO-led data center migration project and the replacement of the Library's Integrated Library Services system (ILS/Voyager). Identifying and accounting for the dependencies between these parallel yet related activities presents unique project planning and execution hurdles. The need to maintain legacy IT systems while modernizing presents potential resource obstacles. The ongoing cycle of end user computing equipment replacements, software upgrades, and IT security enhancements could also impact the pace of Copyright Office modernization.

Additional issues that may affect modernization under the centralized IT model include the need for effective contracting services and scheduling. While respecting the centralized framework, the Copyright Office has needs that affect legal rights and responsibilities of copyright authors and users; it is important that due attention be given to IT modernization that supports the Office's administration of the Copyright Act. Furthermore, managing the impact of modernization on the Copyright Office workforce is also critical to prevent impediments from becoming roadblocks. Concerted efforts have been made to establish and maintain effective communication channels and governance structures to identify, track, and mitigate these impacts with staff.

As the Copyright Office noted before to Senator Tillis, copyright IT modernization is an ambitious and technologically sophisticated undertaking. Rather than adapting technology solely to existing workflows and structures, the Copyright Office and the Library must create a system that is able to accommodate possible future legal responsibilities and structural changes for the Office that Congress deems necessary.

2. What are the challenges for the Librarian, the Chief Information Officer, and the Register as they lead change across the Library of Congress, information technology office, and U.S. Copyright Office respectively?

The biggest challenge OCIO has faced in leading the change necessary to centralize and modernize technology at the Library has been shifting planning and development efforts from a siloed annual approach to a multi-year strategic agency perspective. While a new IT governance structure and IT planning and development processes and procedures have been put in place, OCIO is continuing to work with partners across the Library to mature that framework and ensure that IT efforts are aligned to meet the mission and goals established in the Library's Strategic Plan, Digital Strategy, and Service Unit Directional Plans.

The Copyright Office faces the same key challenges that many other similarly situated federal agencies face. Its first challenge is to build toward an innovative end result without substantial interruption to ongoing work. Related to this, the Office must see to the well-being of people performing these critical functions while we are all simultaneously focused on both innovating and operating. Now that the Office has successfully begun the work of IT modernization, it is incumbent upon the Office to keep its attention on it until successful completion. Having the necessary resources to complete this work is also imperative.

The Library is intently pursuing key modernization projects to support enterprise agency infrastructure and the mission-driven needs of specific service units like the Copyright Office, which is a key internal customer. The agency has made great strides to modernize over the past four years and now faces a critical time of transition not only internally but also in its growing capacity to become a more digitally enabled, user friendly organization in the eyes of the public. Congress' feedback and direction has been critically valuable to the agency during this time of change. The Library looks forward to continuing to work with the Rules Committee and its dedicated staff to raise awareness about the agency's progress with Members of Congress and other stakeholders who have an interest in a modernized Library of Congress.

3. How important is modernization overall at the Library of Congress? At the U.S. Copyright Office?

As noted above, the Library of Congress has a national mission to engage, inspire, and inform Congress and the American people with a universal and enduring source of knowledge and creativity. As established in the Library's Strategic Plan, the agency is making a concerted effort to be more user centered, digitally enabled, and data driven. To be successful, the Library must have a technology foundation that is robust, flexible and scalable for future needs. The Library's IT modernization efforts will ensure that Congressional staff have access to the information Members need to make timely decisions; that the Copyright Office can meet its mission to support the creative sector of the U.S. economy; that the blind and print disabled will be able to access braille and audio books; and that the historic collections of the largest library in the world can be used in new and innovative ways to spur knowledge and imagination. In short, modernization is crucial to the Library's work and service to Congress and the public.

For the Copyright Office, copyright modernization is its top priority. While the activity demanding the most management attention and oversight is the overall modernization of the Copyright Office and IT modernization in particular, the need to provide an uninterrupted transition from current state to future state also requires effort from the office. The Office views the smooth transition from one set of systems to the next to be the foremost objective of the coming years.

4. How does the Library of Congress prioritize modernization across the business units? At the U.S. Copyright Office?

The Library has implemented an IT governance structure that is intentionally designed to provide an agency-wide strategic perspective for IT planning and oversight. As envisioned with IT centralization, the governance bodies are setup to ensure that service units have the leading role in

defining the business needs and mission requirements that must be met by Library technology. The overarching prioritization of IT activities is reserved for the Library's Executive Committee – which is made up of the major service unit leaders including the Director of CRS and the Register of Copyrights and charged with maintaining an agency-level view. The specifics of implementation are the responsibility of the CIO and the Library's technical staff.

As the highest level of governance for technology at the Library, the Technology Strategy Board (TSB) sets strategic priorities for the development and use of IT based on the Library of Congress Strategic Plan and Library of Congress Digital Strategy; and ensures that Library IT investments are fully transparent and properly aligned with strategic objectives and business needs. The TSB is co-chaired by the Principal Deputy Librarian of Congress and the CIO with Executive Committee-member participants.

In general, the Library weighs the size of a project, its benefit to the mission and goals of the agency, and available resources when prioritizing IT projects. The highest priority for modernization efforts is given to projects ordered by Congress, followed by those for which specific funding was requested and those with an agency-wide enterprise effect, and ultimately projects requested for specific business needs.

5. How is the Library of Congress and the U.S. Copyright Office moving away from a monolithic, one-time modernization “event” to an ongoing and iterative process?

As noted above, OCIO is using industry-best practices, including Agile development and user experience design, to build the Copyright Office a custom IT solution that will fully support its complex and unique mission today and for the future. The ECS is being developed iteratively as a set of shared services used across the enterprise, as well as sets of services that are designed to support specific Copyright Office business functions, such as recordation and registration. That modern approach allows for the incorporation of changing business functions throughout the development effort and ensures that services can be updated in an efficient and cost-effective way to accommodate future Copyright legal responsibilities or structural changes.

As a major IT program for the Library, the ECS will be maintained under continuous development by OCIO, through the Library's DevOps processes. That methodology will ensure that the ECS is regularly updated to keep up with technology changes and evolving business needs for the Office and the copyright community. These are well-established software development practices that the Library uses on many of its other Enterprise systems including loc.gov and congress.gov, both of which have new releases every few weeks.

6. How committed is the Library of Congress to using agile development and other modern development processes?

The Library has been using modern software development processes, including the Agile methodology and user experience design, to successfully develop complex IT systems for over a decade. The results are evident today in some of the Library's most popular digital products,

including congress.gov, which brings together and coordinates all legislative data from the House, Senate and other legislative branch agencies, and loc.gov provides access to the Library's vast collections for over a hundred million online visitors a year.

In 2016, OCIO adopted an Agile first software development lifecycle (SDLC) and formalized its commitment to Agile methodology by creating an Agile Transformation team which has focused on developing Agile documentation and standards. The Agile Transformation team also provided agile training to stakeholders across the Library. Those processes have been so successful that upon review, GAO invited the Library to serve as a member of their Agile Experts working group.

Agile development has allowed OCIO to receive timely feedback and adapt to the unique needs of the service units within the Library. Overall, the Library is committed to maintaining an IT infrastructure that is responsive and efficient. To meet that commitment, OCIO will always leverage the best processes available, including Agile development, DevOps, and user experience design.

7. Does the Library of Congress and the U.S. Copyright Office commit to transparency and openness with its congressional oversight staff at the Committee on Rules and Administration during and after the modernization process?

Yes. The Library and its service units, including the Copyright Office, are committed to transparency and proactive communication both internally and with the Library's congressional oversight committees, including the Committee on Rules and Administration.

Senator Amy Klobuchar

1. The Office of the Chief Information Officer is working with the National Library Services for the blind and print disabled on improving several of its support systems, including upgrading the Braille and Audio Reading Download (BARD) programs. Ensuring that those who cannot read printed pages have access to modern braille and talking book devices is among my top priorities.

• Can you provide details on the progress that has been made on upgrading these support systems?

OCIO and NLS are working collaboratively to upgrade and modernize NLS' legacy IT systems, including the BARD service, to ensure that those who cannot read standard print material are never without access to modern braille and talking book devices. OCIO and NLS have worked together to establish a Technology Roadmap, which aligns business proposals, charters, funding requests, directional plans, timelines, and roles and responsibilities.

Given that NLS anticipates a doubling of its patron base over the next five-to-seven years, BARD modernization is central to NLS' future service to its patrons, and is the main focus of collaboration with OCIO at this time. Simply put, BARD must be cloud-based, scalable, user-friendly and secure for NLS to continue to meet its mission. Over the last year, important progress was made with the initial steps necessary to establish BARD in the Cloud, including the design and completion of the cloud-based architecture and a modern IT security approach for BARD. This initial work allows testing to take place to validate the planned approach before public-production commences. In fiscal 2020, this work will continue, as OCIO, NLS, and the Library's General Counsel work to identify the best digital rights management environment in which to invest.

To help inform modernization efforts, at the start of fiscal 2020, NLS began a two-state pilot program for easing the requirement for reading disabled individuals to have medical doctor-based certification. By conducting this limited, but important, pilot program NLS is obtaining valuable data as to how quickly reading disabled patrons – likely the largest new patron base in years to come – will sign up for BARD. The pilot program will also help determine the additional capacity and bandwidth requirements for BARD. Currently the fiscal 2020 budget request contains an initiative for BARD modernization.

Other current OCIO-NLS collaborations include the Braille Development Learning Management System, the NLDB-2 (Network Library Database), PICS-2 (Production Inventory Control System), PIMMS (Patron Information Machine Maintenance System), the Next Generation Talking Book Player, XESS-2 (an excess book redistribution management system), WebReads (a reader enrollment and circulation system), MARSLM (the data management system for NLS data), AAA (a single sign-on system for all NLS systems) and Duplication on Demand (which provides duplication services of audio books and magazine cartridges to network libraries).

It should also be noted that OCIO is in the process of establishing a new Accessibility Section, in close consultation with NLS subject matter experts. The section will help ensure that all Library IT activities lead by example in terms of making sure the information vital and necessary to a functioning and thriving democracy and citizenry is always accessible and usable by *all* Americans.

• ***Additionally, what progress has been made on NLS' pilot program to provide refreshable braille eReading devices?***

NLS has made important progress on its pilot program to provide refreshable braille eReading devices to NLS patrons, and plans to continue that effort throughout calendar year 2020 if provided the necessary resources through appropriations.

Building from the knowledge attained from a previously-issued RFI and from the Perkins School for the Blind/NLS eReader Pilot, NLS concluded an acquisition process in July 2019, which resulted in a multiple award contract with two vendors who specialize in providing the piezoelectric technology in its native state—the same technology that has been used in refreshable braille devices very successfully for over

30 years. By awarding these contracts, NLS has minimized the risks posed by the technology and is able to ensure that it has a reliable, tested and proven technology on which to base a new braille eReader offering.

The contracts include non-recurring engineering and development to design and test the hardware (form factor, materials used, etc.) and software used in the devices. This ongoing prototype development process is expected to take nine to twelve months. Upon completion, NLS will deploy the 2,000 units already purchased with FY18 and FY19 base funding. This funding will also address training, distribution, maintenance, technical support, inventory management and control, and related issues at the network library level, as well as training, technical support, and functionality at the patron level.

To date, both vendors have provided NLS with updated project timelines and provided on-site preliminary design presentations. Device design schema and metadata specifications have been finalized with both vendors as well. NLS is scheduled to receive prototype devices at the end of January 2020. Following analysis of those prototypes, that aforementioned initial delivery of 2,000 pilot devices to NLS is scheduled for April or May 2020. The official pilot is scheduled to begin in June 2020 and end in December 2020. Invitations to pre-selected libraries inviting them to participate in the pilot will be received in the near future.

This pilot is intended to fine-tune operational issues, including staff and patron training, inventory management and control, technical support, device interface requirements, media distribution, maintenance, and related logistical and programmatic issues. Implementation will build on 75 years of NLS and network library infrastructure and experience distributing talking book machines through its Machine Lending Agencies and regional libraries throughout the United States and its territories.

Following an initial review of the pilot then in progress, additional funds previously requested in the fiscal 2020 CBJ will purchase a second tranche of eReaders at the end of FY20. Thus, refreshable braille devices procured with FY20 funds will be used for new, steady-state deployment of the eReaders and a national eReader program roll-out by NLS in FY21. NLS is ready to add this important technology to its menu of services: it has confidence in the proven technology now contracted for; looks forward to implementing these pilot devices; and anticipates with great excitement, the opportunity to double its eReader capacity at the end of FY20.

Additional funding requests are expected to build NLS' inventory of this exciting new device eagerly awaited by NLS' braille readers. Use of eReaders will decrease program costs for NLS, the USPS, and NLS' network libraries and will allow for exponential increases in accessible content for NLS patrons.

2. Reports indicate that there has been internal disagreement over the roles, responsibilities, and jurisdiction of the modernization efforts. The Library's testimony states that "The Copyright Office, with its expertise of both copyright law and its internal systems, provides required business features to the Chief Information Officer, who then uses the Information Office's expertise to develop technology solutions to support those features for the Copyright Office."

- *What are the challenges associated with the Office of the Chief Information Officer and the Copyright Office working together to ensure that the modernization is successful?*

OCIO and the Copyright Office are committed to Copyright IT modernization, identifying effective means to communicate both progress on modernization projects, activities, and obstacles, and maintaining a shared vision throughout the entire multiyear modernization effort in order to realize the envisioned ECS result without substantial disruption to ongoing work. Both Offices understand that the efficient achievement of modernization while minimizing disruption requires close coordination of multiple work streams, including the need to maintain ongoing operations while technical development, business process reengineering, and system implementation activities proceed.

The Copyright Office and OCIO have committed significant resources to achieving the necessary coordination, including transferring a technical subject matter expert from OCIO to the Copyright Office to advise the Register, through multiple working groups, and through daily interaction between OCIO and the CMO as they collaborate on gathering and translating business requirements to transform them into next-generation systems. The Copyright Office has also contracted with experts in change management, to support the well-being of Copyright employees as they continue to meet the daily demands of ongoing operations while transitioning to new processes and systems. And finally, now that we have successfully begun the work of IT modernization, it is incumbent upon us to keep our attention on it until successful completion.

3. In June 2019, Dr. Hayden released the Visitor Experience Master Plan (VEMP). This plan is guided by the need to streamline visitor pathways, consolidate destinations, centrally locate Jefferson's Library, reprogram select spaces, program underutilized space, and improve circulation. The elements of the plan work in concert to democratize educational access and allow visitors to explore with ease and interest, engage with the Library's collection and resources, and develop lifelong connections with the Library. Congress has committed to a public private partnership to provide the approximately \$58 million in total required for this project. Congress will appropriate \$38 million in total funds to be matched by \$20 million in private funds raised by the Library. As of September 2019, the Library has secured \$11 million in private funds.

- *Can you provide an update on the Library's work to raise the remaining private funds? Do you anticipate encountering any issues raising the remaining private funds?*

Beyond closing on the current \$11 million in private pledges, the Library has identified interested potential donors to support this initiative and is working with leadership volunteers

to raise the remaining funds. In November, the Library shared an update to its Madison Council, its primary philanthropic network, as a first step in readying its members to support the plan. Members of the Madison Council have offered to host the Librarian in San Francisco, Los Angeles, and New York to support the Librarian's vision. With consistent appropriations and support for the plan from Congress, the Library does not anticipate any issues raising the remaining private funds.

4. **The Library has begun planning the next generation of Integrated Library Services systems, which will replace a number of legacy software applications. As a part of this process, the Library has created the Digital Strategy Office which will partner with service units to create projects to inspire the public. Most recently, this office created the successful crowdsourcing transcription project, "By the People."**

- *Over the long-term, how do you envision this office integrating into the operations and workflows of other service units and into the Library as a whole?*

The Digital Strategy Directorate (DSD) in OCIO was created to elevate digital innovation throughout the Library. DSD led the Library wide effort to craft the Library's Digital Strategy, and is leading the effort to implement that strategy. DSD supports integration of digital innovation into the Library as a whole by forming policy and plans for digital transformation, collaboration with Library service units to implement those policies, and, through the LC Labs unit, hosting investigations and experimentation to push the Digital Strategy forward.

The integration of the Digital Strategy into service unit operations and workflows involves planning and collaboration in a number of directions. A Digital Strategy Directional Plan, adopted in September 2019, arranges this digital transformation into six elements: vision, experimentation, culture, capacity, governance, and platforms. DSD will handle the first four elements, articulating the Library's vision for user-centered digital transformation, exploring opportunities and reducing cost through lightweight experimentation, enabling meaningful transformation, and expanding the ability to use technology to achieve our mission. The final two elements, governance and digital-enabling platforms (including software, tools, and services) are led by the OCIO Directors of IT Governance and IT Design and Delivery.

The cross-unit Digital Strategy Working Group formed for the purpose of creating the Library's Digital Strategy continues to be active, participating in decisions and assisting in integration of the Digital Strategy throughout the Library. We envision that this group will integrate the Digital Strategy into the Directional Plans of each unit, describing the digital initiatives necessary to accomplish service unit goals. The DSD is also beginning to be integrated into the operations of other service units, including work dedicated to expanding digital collections in many formats and making those materials accessible and usable.

In addition to this administrative work, DSD will further integrate into the Library as a whole through its mission of experimentation and innovation. The DSD is dedicated to growing institutional capacity for digital initiatives, and even in its current start-up phase has already

begun this work by collaborating with staff in several service units to investigate the opportunities and challenges for digital scholarship and initiatives. The LC Labs unit will continue to partner with other service units around the Library to facilitate experiments and digital initiatives.

DSD has intentionally been created with a lean staffing model to necessitate collaboration with internal and external partners. One of the office's key priorities in the current fiscal year is developing and launching an internal communications strategy to promote incorporation of the Digital Strategy into service unit plans or practices. Additionally, at the current time, the LC Labs unit is working to build a system for initiation and prioritization of these partnerships, involving both service unit requests and IT investment process referrals.

- ***Given the success of projects such as "By the People," is the Library considering expanding the charter of the office to facilitate the production/creation of even more projects?***

DSD is tasked with implementing the Library's Digital Strategy and elevating digital innovation throughout the Library. As such, DSD purview includes not only the successful "By the People" initiative but also a wide range of other initiatives aimed at improving access to and engagement with Library collections and services. In parallel to the Library's ongoing investments in IT modernization, the aim is that the DSD's portfolio will continue to expand and encourage a culture of continuous learning and capacity for innovation while engaging with meaningful metrics and measures of results. The implementation plan for the current fiscal year includes surfacing a research agenda for digital innovation throughout the Library, including possible "moonshots" – ambitious, any-thing-is-possible thinking.

DSD's LC Labs unit was specifically created to facilitate, and manage, projects like "By the People." Projects may move beyond the experimentation and inquiry phase into pilots and programs. Some of these projects may become permanent programs, housed in other units at the Library, while others (like the Viewshare service) will be responsibly retired. In fiscal 2019, LC Labs conducted pilot programs for two experiments: the congress.gov browser extension (in partnership with the Law Library), and the hosting and promoting of web archive data set derivatives with the Digital Content Management Section of Library Services. The Library has recently expanded the DSD staff size to enable more of these projects to be brought into fruition.

- ***What future projects are being considered by the Digital Strategy Office?***

LC Labs is collaborating with staff from across the Library and outside stakeholders to begin experiments with new technologies such as augmented and virtual reality, computer vision, natural language processing, and machine learning. The office is currently investing in experiments involving cloud computing with cultural heritage collections (partly grant-funded), machine learning and artificial intelligence, digital scholarship services, scanning of 3D objects, and creative computing in the use of Library collections.