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EXPERT EDITION

Pathway to FADGI Compliance

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The push to eliminate paper continues – 65 years in

The first scanner connected to a computer made its debut at the National Bureau of Standards, now the National Institute of Standards and Technology, in 1957. It was the invention of a pioneering NBS techie, [Russell Kirsch](#), who died in 2020.

Ever since, the idea of moving away from paper storage for federal records has been part of the IT conversation in agencies across government. In particular, this has been at the forefront for those agencies whose mission leans heavily towards permanently storing records and sharing them with the public.

Now, going on seven decades later, digitization technology combined with cloud has begun to make that desire a true reality. The pandemic served to propel efforts forward – faster – so that both federal employees and the public could find, access and share critical records.

Ultimately, success hinges on always aligning the government’s standards and guidance with evolutions in technology, points out the Library of Congress’ Tom Rieger. “The way we did it five years ago is not the way we’re going to be doing it going forward because technology has changed in the last five years. And it’s our job to understand those changes in technology.”

Today, agencies are working to meet mandates and guidelines, established by the Office of Management and Budget (OMB) and the National Archives and Records Administration (NARA), to achieve digital recordkeeping and standardize practices governmentwide through the Federal Agencies Digital Guidelines Initiative (FADGI).

“We’re in the middle of the great transition, from where we were in the past – actually having paper records and managing paper records, printing things because we just didn’t trust the storage and the saving – to where we are now,” says NARA’s Lisa Haralampus.

How are agencies fairing on this journey? How can your agency most effectively tap into technology to help with OMB mandates? In this ebook, we share lessons learned at the Environmental Protection Agency (EPA), Government Publishing Office (GPO) and Library of Congress (LC) – and get the latest from NARA and industry experts at Kodak Alaris on digitization strategies. We hope this ebook helps your agency identify challenges and strategize to achieve your own pathway to FADGI compliance.

Vanessa Roberts
Editor, Custom Content
Federal News Network

FADGI in action: Library of Congress sets bar for digitizing historic records

BY JORY HECKMAN



The Library of Congress, among its responsibilities, is digitizing the wealth of historic records it holds – both to preserve them for future generations and to make them accessible to a larger audience online.

Tom Rieger, manager of the library's Digitization Services Section, said its contributions to the Federal Agencies Digital Guidelines Initiative (FADGI) for more than 20 years have helped federal institutions around the country figure out how to manage cultural heritage digitization.

"The challenge here is to do it correctly but not foolishly – on too good a specification for what's needed or not enough of a specification for what's needed. So we have to define exactly what that sweet spot is, and then figure out, for the rest of the community, just the best way to do that," Rieger said in an interview with **Federal News Network**.

Although the COVID-19 pandemic has made it harder for researchers and the public to access the library's resources in person, Rieger said the agency has an opportunity to make its records more accessible through digitization.

"If we can make this material available in good enough quality, and easy enough access for the world, we've done our job," he said.

Saving images from the Great Depression

Among its projects, LOC is working to digitize [Farm Security Administration photographs](#) from the Great Depression, including [Dorothea Lange's "Migrant Mother."](#)

"It's fabulous, it's one-of-a-kind, and it's in danger," Rieger said about these materials. "We are spending enormous amounts of time and effort to save that for the very last time we can, at as high a quality as we possibly can."

Rieger's section of the library develops all the standards and metrics for records digitization across the organization, as well as for much of the cultural heritage imaging community.

"The amount of digitization that we are doing today, as opposed to what we were doing five, 10, 15 years ago, is just stunning. We're now dealing with many, many millions of images a year that we're adding to the collections online and adding to internally accessible collections as well," Rieger said. "But it's an entirely different IT world today than it was back then. We have vastly better tools."

Library records under consideration for digitization go through a rigorous process. The library's curatorial division first submits a proposal for a digitization project that goes to a committee of senior executives, he said.

"They review a project proposal, which Digital Collections Management Services staff have helped them put together, to say, 'OK why is this important? Why do we want to do this? What benefit is this to people?' " Rieger said.

If the committee approves a project for digitization, it then heads to a technical analysis group, which conducts a feasibility assessment.

"That's where we get all the players in a room. Conservation will look at it and say, 'What do we have to do to make this camera-ready, to where it's safe to handle?' The lawyers will look at it and say, 'Do we have copyright clearance? Are there any other complications here?' The metadata people will look at it and say, 'OK, is the metadata ready for this or not?' And if the answer is no, we're not going to do it," Rieger said.

"The metadata has got to be ready in order for us to approve a project to go into production," he continued. "Now, that doesn't mean we'll say, 'No, go back to square one.' We just say, 'Come back to us when you have got this piece together.' Because if we image things without having the metadata, you'll never find it."

To keep digitization standards in line with the tools available, FADGI's Still Image Working Group published a draft third edition of its [Technical Guidelines for Digitizing Cultural Heritage Materials](#) in June 2022.


"The way we did it five years ago is not the way we're going to be doing it going forward because technology has changed in the last five years. And it's our job to understand those changes in technology and, in some cases, actually make that technology adjustment to build it here ourselves or contract with experts around the country, around the world, who can actually help us improve the science and technology involved in this," Rieger said.

Keeping pace with technology in records digitization

The evolution of FADGI guidance, the first version of which came out in 2010, reflects advancements in technology, Rieger said.

"If you look at the state of technology 12 years ago, we didn't have anywhere near the sophistication of tools to work with. It's the cameras. Back then, we were dealing with, at the very best, maybe 60-megapixel cameras. That's not bad, that's fine. Today, we're dealing with 150-megapixel cameras that are vastly faster at capturing the image, transferring the image," he explained.

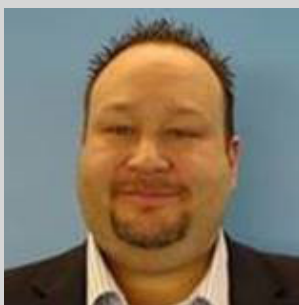
The updated guidelines include a total rewrite of the metadata standards and also a new method of measuring color, which is universal no matter the application.

"When you put things in various forms — like you're putting it on the web, or you're putting it out for publication — you're going to be in a different color space, as they call it," Rieger said. "The results might not be what you expect them to be using the old methods of doing this. So we're learning, we're refining. These are not the way things could have been done 10 years ago, but they're the way they should be done." 

"The amount of digitization that we are doing today, as opposed to what we were doing five, 10, 15 years ago, is just stunning."

— Tom Rieger, Manager, Digitization Services Section, Library of Congress

Understanding FADGI: What agencies need to know in the shift away from paper records



Joseph Odore
Global Portfolio
Marketing Manager,
Kodak Alaris

Agencies, in an effort to reduce storage space and improve access to documents, are taking steps to wean themselves off paper records.

The closure of agency facilities during the COVID-19 pandemic underscored the need to make critical federal records available in a

digital format.

Even before the pandemic, the National Archives and Records Administration and the Office of Management set goals for agencies to phase out paper as part of their records management procedures. Under OMB Memorandum [M-19-21](#), NARA and OMB require agencies to convert all new permanent records to electronic formats.

By the end of this year, NARA will no longer accept paper records from agencies for permanent archiving by the agency.

Value of leaving paper records behind

Joseph Odore, global portfolio marketing manager for Kodak Alaris, said agencies will see significant benefits by shifting to electronic records.

"Digitization really removes the dependency on paper in general. Older processes require storage, and trying to retain paper is a challenge. One, it requires space. Two, if you need to retrieve data, it's very inefficient to retrieve data when it's in paper form. Most documents will end up in a filing cabinet, and somebody has to walk up to a filing cabinet and try and search for documents," Odore said.

Electronic documents, such as invoices or contracts, are easier to search or reference. They're also easier to share or send, he said.

"When you have it digitized and accessible in a system, you can have information at your fingertips in a matter of seconds, as opposed to a matter of minutes, hours, days or even weeks," Odore said.

"It's key for efficiency to use a sheet-feed scanner that can scan in volumes but also optimize the image quality within the device to stay within the specifications."

— Kodak Alaris' Joe Odore

In meeting the goals of M-19-21, agencies have a series of standards to follow to ensure they're preserving documents in their original state.

OMB and the Library of Congress in 2007 created the [Federal Agencies Digital Guidelines Initiative](#). FADGI provides a set of standards agencies should follow when it comes to scanning, processing and cleaning up digital scans of hard-copy records.

"The whole standardization is to really to keep everybody on a very consistent scale in terms of how documents are scanned and retained," Odore said.

Covering every type of content

FADGI includes standards for text and still images, as well as audio-visual materials, and a four-star system to evaluate how accurately a scanner can create an exact replica of hard-copy documents.

"It's all about keeping documents in their true original state. ... There may be stamps, special watermarks, little tidbits of information. Most scanners try and filter that information out or look at it as an artifact it tries to remove because it doesn't really flow well with the pure image quality of having really readable text. But when it comes to permanent archiving, that information might be key to that document, so you don't want to lose that in terms of a permanent archive," Odore said.

NARA and OMB, under M-19-21, are directing agencies to maintain a FADGI 3-Star level of preservation for permanent records archived by NARA.

"It doesn't have [to be a] pure photogenic reproduction, but it's really designed to make sure that the text is readable and the background is in its original state," Odore said.

"Digitization really removes the dependency on paper in general. Older processes require storage, and trying to retain paper is a challenge."


— Kodak Alaris' Joe Odore

Because FADGI upholds a high standard for controlling image quality, he said it also affects the productivity of document scanners.

"What would normally be fed at 100 pages per minute could actually be reduced down to 80 pages per minute because there are so many different things that need to be done on the hardware side to support that," he said. "It's key for efficiency to use a sheet-feed scanner that can scan in volumes but also optimize the image quality within the device to stay within the specifications."

Once a physical record — such as a book, manuscript, map or photographic print — has been scanned, agencies under FADGI still have to manage the storage of these digital files.

Agencies should keep permanent records uncompressed, but for everyday public or interagency use, Odore suggested that agencies compress files so that they're easier to transmit and share.

"While there may be some loss in data, although not physically noticeable to the human eye, there are things that will get removed in there. And that's ideal for day-to-day use or image accessibility via different systems," he said. 

*Listen to and watch **Federal News Network's** [conversation with Kodak Alaris' Joe Odore](#).*

NARA sets image quality standards amid ‘great transition’ to electronic records



BY JORY HECKMAN

The COVID-19 pandemic demonstrated the need for agencies to make the shift from paper to electronic records. The pandemic led to the temporary closure of federal facilities and resulted in a backlog of requests for largely paper-based records. Some agencies are still addressing those backlogs.

Lisa Haralampus, director of records management policy and outreach at the National Archives and Records Administration, said the pandemic accelerated the move to electronic records across the federal government.

“It was a driver far better than policy, but the consequence of the government’s posture is that we do see electronic records management happening more and more,” Haralampus said in an interview with **Federal News Network**.

Even before the pandemic, NARA and the Office of Management and Budget set goals for agencies to phase out paper as part of their records management procedures.

Under OMB Memorandum [M-19-21](#), the latest in a series of joint memos, NARA and OMB require agencies to convert all new permanent records to an electronic format. By the end of this year, NARA will no longer accept paper records from agencies for permanent archiving.

“The vision of all those memos is how you make the federal government fully digital, so that you can gain access, move at the speed of business, so that you can take the information you have, share it, use it [and] reuse it,” Haralampus said.

Agencies that meet the goals of M-19-21 will improve the effectiveness and efficiency of their operations by making their records more accessible, she said.

Midway along the path to full records digitization

“I think we’re in the middle of the great transition, from where we were in the past – actually having paper records and managing paper records, printing things because we just didn’t trust the storage and the saving – to where we are now. There is a feeling of trust that we know we can do it. We can use cloud storage. We’ve got the space, we’ve got the tools. How do we get to where it’s actually fully digital?” she said.

The pandemic, however, also stalled some agency efforts to digitize their records.

Haralampus said there’s been discussions between NARA and OMB about whether the M-19-21 deadline needs to be moved because the pandemic impacted physical records management to a large degree.

"The government's posture is changing. We see agencies returning to offices. We're about to do more physical records management. So we want to be there right now and capture that momentum to push records that are currently in analog format to digital format," she said.

Michael Horsley, electronic records management and policy analyst at NARA, said M-19-21 sets digitization standards based in part on the Federal Agencies Digital Guidelines Initiative (FADGI).

"We've taken the initiative to say, 'We're adopting and promulgating these standards that are based on well-known image science, and we're saying it's good enough for electronic records to serve the evidentiary and legal aspects,'" Horsley said.

Adapting FADGI to your mission needs

FADGI outlines the steps organizations should take when it comes to scanning, processing and cleaning up digital scans of hard-copy records.

"Agencies really need to follow what's in the regulations and use FADGI as a reference tool to inform a larger part of the process," Horsley said.

Haralampus added that FADGI standards, in some cases, exceed the records digitization standards NARA is setting for agencies.

"FADGI does more than NARA needs so that's why we're writing our standards — to pull out the pieces that will apply to agencies," she said.

NARA's first round of guidance to agencies, she added, covered the digitization of paper-based text records and photographic prints. Those records make up the vast majority of agency records.

Records digitization requires more than a one-size-fits-all approach. FADGI standards set a high baseline for image quality, which is critical for archiving permanent records, Horsley said.

"FADGI does more than NARA needs so that's why we're writing our standards — to pull out the pieces that will apply to agencies."

— Lisa Haralampus, Director of Records Management Policy and Outreach, NARA

"To a relative degree, we're able to capture what the human eye can see. The rule of thumb is that the experience digitally should be the same as you sitting down at a reference desk looking at the object in front of you," he said.

On the other end of the digitization spectrum, NARA worked with FADGI to create an entry-level mass digitization standard for "modern textual documents," Horsley said.

"Imagine your laser-printed paper that has a completely white background and has black text. There's not a lot of subtle color gradations in there. A lot of devices were failing because they weren't meeting kind of an arbitrary standard but a standard that was fairly high," he said.

Horsley said FADGI standards make sense for capturing the details in original, historical documents.

High-end versus day-to-day digital demands


By setting other standards for modern textual documents, NARA is trying to "balance two worlds" when it comes to records digitization, he said.

"We've tried to make it more accessible to a wide range of imaging projects, so that it's not just left in the realm of the high end, museums scanning a

Rembrandt painting. We use the same principles,” he said.

NARA and OMB, under M-19-21, are directing agencies to maintain a FADGI 3-Star level of preservation for permanent records.

“To a certain extent, I can’t predict if it’s going to be future proof, but FADGI 3-Star allows you greater ability to employ, in the future, artificial intelligence tools,” including optical character recognition, Horsley.

“We’re not demanding OCR, but we found that a FADGI 3-Star and above opens up a whole new world of being able to apply things because the initial quality is good enough, and then you can expand off of that.” 

“To a relative degree, we’re able to capture what the human eye can see. The rule of thumb is that the experience digitally should be the same as you sitting down at a reference desk looking at the object in front of you.”

— Michael Horsley, Electronic Records Management and Policy Analyst, NARA

Shift to digital records underscores need for agencies to have a strategy in place



Jennifer Nnanna
Public Sector
Business
Development
Manager, Kodak
Alaris

A shift from paper to electronic records is underscoring the need for agencies to implement a broader digitization strategy.

A joint memo from the National Archives and Records Administration and the Office of Management and Budget, [M-19-21](#), requires agencies to convert all new

permanent records to an electronic format. And come 2023, NARA currently plans to stop accepting paper records for permanent archiving.

But beyond these deadlines, agencies should also think more broadly about how a digital records management strategy can improve mission delivery, said Jennifer Nnanna, public sector business development manager at Kodak Alaris.

The federal government is spending millions of dollars and considerable effort every year creating and storing paper records, Nnanna noted. Meeting the goals of M-19-21, she added, will not only reduce those costs but will improve agency efficiency through easier access to records.

“Agencies are all over the map with regards to digital maturity. When most people of hear this, they assume a massive budget undertaking. But the reality is that the right technology, paired with the right process,

does not have to be that overwhelming from a funding standpoint,” she said.

Taking the time necessary to hit FADGI milestones

Although agencies have until the end of the year to comply with the year-end deadline, Nnanna said NARA and OMB have made it clear agencies should take the time to have a clear digitization strategy in place, rather than rush to meet the deadline.

Nnanna said M-19-21 compliance is “essentially an honor system,” and that NARA “doesn’t have the infrastructure to be hall monitors.”

NARA and OMB, in its guidance, have outlined several broad categories for exceptions to the M-19-21 year-end deadline. Those include cases where replacing analog records with electronic systems would be burdensome to the public or if the cost of digitization exceeds the benefit.

Nnanna said agencies who meet the goals of M-19-21 will improve the effectiveness and efficiency of their operations by making their records more accessible.

“Agencies are all over the map with regards to digital maturity.”

— Kodak Alaris’ Jennifer Nnanna

That access to records also applies to members of the public, as underscored in the 2016 case, *Robinson Jr. v. McDonald*. The case involved a veteran, Leroy S. Robinson Jr., seeking access to the original paper records he submitted as part of his application for benefits from the Veterans Affairs Department.

Robinson argued that VA was denying his claim in part because the agency was missing documents from the records he submitted.

He submitted a request to examine the documents in his original paper documentation, but VA told the court that documents had been “scanned and uploaded” and the original paper file was no longer available for review.

The court determined Robinson had a right to inspect the paper source documents in VA’s possession. It said the ruling also applied in cases where VA converted documents into electronic records for storage in the Veterans Benefits Management System and Virtual VA databases.

Clear need for strategy established

The case showcases the importance of an agency having a clear document management strategy that considers capture, storage and retention, Nnanna said.

“There’s quite a bit of work to do, to ensure the agency is setting up for future digitization in a strategic and efficient fashion,” she said.

Having a robust records management system is also critical for agencies that provide benefits in the aftermath of a disaster, like the Federal Emergency Management Agency, Nnanna said.

“With a records management system, where things are digital and you can easily find this information, it could literally cut down the amount of fraud and a lot of different things that are happening,” she said.

Nnanna said the M-19-21 mandate pushes agencies to think about a broader digitization strategy that requires careful planning and execution.

Key elements of that strategy include agencies maintaining a comprehensive records management program, naming a senior agency official for records management and providing annual training to staff.

“Without a detailed roadmap of when, where, how an agency is headed in its digitization journey, the odds of landing it and successfully taking care of it are unlikely,” Nnanna said. “You need the proper documentation and process efficiencies, as well as cost management.

An agency’s records management strategy should also consider a broad range of records.

Although a majority of agency records are subject to temporary retention standards, Nnanna said roughly 5% of all documents are permanent records that need to follow the stricter archiving standards.


In those cases, agencies are expected to comply with standards that stem from the Federal Agencies Digital Guidelines Initiative.

“If you had a coffee stain on a document, they want that original coffee stain to be on that document as well,” Nnanna said.

Agencies should ensure they invest in future-proof digitization tools that can handle both day-to-day records compliance and archival requirements, she said.

“There’s quite a bit of work to do, to ensure the agency is setting up for future digitization in a strategic and efficient fashion.”

— **Kodak Alaris’ Jennifer Nnanna**

“If an agency is worried that we’re going to buy this piece of equipment, and we’re only going to use it for FADGI, no, you’re not. You can implement that into your day-to-day practice.” 

Listen to and watch **Federal News Network’s** [*conversation with Kodak Alaris’ Jennifer Nnanna.*](#)

FADGI in action: Library of Congress sets bar for digitizing historic records

BY JORY HECKMAN



The Government Publishing Office produces a range of government documents, from U.S. passports for the State Department to official publications for Congress.

But GPO is also in the business of providing public access to government documents online through its [GovInfo website](#) – and the number of digitized records on that site is growing.

“We’re all about public access. It’s our key strategic initiative to find this material, then digitize it and make it available through GovInfo,” Laurie Hall, GPO superintendent of documents, said in an interview with **Federal News Network**.

GPO Supervisory Analyst Suzanne Ebanues said the agency has made congressional hearings available on GovInfo since 1994 but is now working on digitizing a collection of over 9,000 hearings that occurred before then.

“We’re all about public access. It’s our key strategic initiative to find this material, then digitize it and make it available through GovInfo.”

– Laurie Hall, Superintendent of Documents, GPO

“We have to prioritize. We started off with filling in the gaps in GovInfo. GovInfo didn’t start until 1994, so we’re kind of [going] backwards,” Ebanues said.

Older hearings scheduled for digitization include a June 1979 House Science and Technology Committee hearing on the Three Mile Island nuclear plant disaster and a 1977 hearing about the proposed relocation of GPO to a site on New York Avenue in downtown Washington, D.C.

Steady focus on digitizing more and more older files

GPO is also working with the Law Library of Congress to digitize the U.S. Congressional Serial Set collection, which is comprised of House and Senate documents and reports.

Volumes include committee reports, presidential communications to Congress – such as State of the Union addresses – treaty documents and federal agency materials, like annual reports. GPO is currently digitizing volumes of the U.S. Congressional Serial Set that range from the 15th to the 103rd Congress.

The initial public release of this collection began in September 2001, but Ebanues said the project remains ongoing and will take at least another five years to complete.

“There’s at least 15,000 volumes of the serials, so it’s going to take us a long time. But it’s got really cool stuff in it. There’s an exploration of the valley

“We talk regularly with the Library of Congress. They share their digitization plans with us, and we share ours to see if there’s any way we can communicate.”

**— Suzanne Ebanues,
Supervisory Analyst, GPO**

of the Amazon in Brazil from the 1850s that the Navy Department undertook. You find state constitutions, like the constitution of Iowa from 1846,” she said.

Ebanues said GPO’s digitization is primarily done by outside vendors, but the agency does have the capability to digitize records for an agency or agency customers.

GPO also worked with the Office of Federal Register to digitize its entire collection and the Library of Congress to digitize every issue of the Congressional Record.

Providing records to libraries nationwide

Through its Federal Depository Library Program, GPO has been sending federal publications to libraries across the country for 150 years. As part of that program, the agency is currently working with Utah State University’s library to digitize more than 1,000 World War II pamphlets and records.

“We’re going back and working with these libraries and with other federal agencies to digitize runs of this material – old material that nobody knew was there,” Hall said. “There’s some real gems there.”

Once digitized, those records will be available on the GovInfo website. “A lot of that material is probably in the NARA collections, but it’s not as easily accessible to folks. Our key thing is for public access,” she said.

GPO also participated in the development of the Federal Agencies Digital Guidelines Initiative (FADGI) guidelines, along with the Library of Congress.

“We talk regularly with the Library of Congress. They share their digitization plans with us, and we share ours to see if there’s any way we can communicate,” Ebanues said. “If we’re planning to digitize an agency’s material, we can also reach out to them and see if they want to participate.”


Digitizing above and beyond the FADGI baseline

GPO is required to digitize its records to a FADGI 3-Star level, but Hall said the agency does “a little bit above that” and scans to a 400-pixels-per-inch standard because some federal publications contain small print.

“We want to be sure that is clear and as readable as possible. We have digitization masters in an uncompressed JPEG 2000 format that’s safely in the archival side of GovInfo, so that if we need to reproduce a PDF, we can,” she said.

While GPO has a long history of digitizing government records, other agencies facing the year-end deadline to submit all new permanent records to the NARA in an electronic format may be less familiar with best practices for digitization.

“We have found that it is definitely better is to spend more time prepping the tangible publications so that you don’t end up sending things to the vendor to be digitized that are incomplete, and that you have to go back and waste time trying to find a replacement copy,” Ebanues said.

“It’s really helpful to do a test batch, if you’re using a vendor to do your digitization. That way, you can ensure that they understand your requirements before they get too far into their workflows and have set up workflows that don’t actually meet the requirements. We also spend a lot of time doing quality assurance on any digitized images and metadata that we get from a vendor. We have found that way that we get the best quality product that we put into GovInfo.” 

Modernizing FADGI: How agencies can digitize federal records at scale



Matt Doolittle
Global Portfolio
Manager for
Document
Scanners, Kodak
Alaris

Agencies face a major year-end deadline to phase out paper as part of their records management procedures.

The National Archives and Records Administration, along with the Office of Management and Budget, are requiring agencies under OMB Memorandum [M-19-21](#) to submit permanent

records in an electronic format.

Agencies, as part of their mandate to digitize paper records, are expected to follow the standards under the [Federal Agencies Digital Guidelines Initiative](#). FADGI outlines the steps organizations should take when it comes to scanning, processing and cleaning up digital scans of hard-copy records. Matt Doolittle, global portfolio manager for document scanners at Kodak Alaris,

“Document management professionals will help you be sure that you’re getting the standard applied correctly. Not all images need to be FDGI-3 compliant.”

— Kodak Alaris’ Matt Doolittle

said FADGI standards set a high baseline for image quality, which is critical for archival purposes.

“It doesn’t matter whether the images came from a device from manufacturer A, B or C, or from agency X, Y or Z. All of those [records] coming into the archive and storage will be consistently good quality, so that if we want to look at them again in 50 years or 100 years, we’ll have a good basis to start from,” Doolittle said.

Ready, set, scan

To meet governmentwide goals under [M-19-21](#), agencies are preparing to scan a large quantity of records.

“We might have been producing hundreds of images a day for some other projects, for some from very culturally significant documents. When we’re starting to look at normal business documents, we’re in the thousands or tens of thousands of documents a day that need to be digitized, meeting these high-quality FADGI standards,” Doolittle said. “It’s an order of magnitude larger challenge when you’re talking about doing that much volume and meeting these standards.”

Agencies saw the last update to FADGI standards in September 2016, which focused on preserving cultural heritage materials. But another update is coming into focus.

Doolittle expects new FADGI guidance later this year that will focus on how agencies should digitize business documents.

"The traditional FADGI guidelines had all sorts of things for historically significant documents, which were being applied to paper that was printed on laser printers. It wasn't really a great match," he said. "In FADGI 2022, they're adding modern textual records, which will help us as vendors create better products that can be used in the market and will help people that are scanning large volumes of paper to be able to do that in a way that's appropriate for those kinds of documents."

Agencies that meet the goals of M-19-21 will save money by reducing paper storage costs, Doolittle said. The mandate will also ensure a consistent level of image quality across all permanent federal records.

Achieving a baseline digitization standard across government

"What it's really doing is it's forcing all of the agencies to come up to a certain level of standard. It's surprising when you when you talk to people, you find that many people are on different parts of the spectrum of document imaging," he said. "You'll have very mature, well-controlled agencies that have professional archivists and document managers, who know their processes and are using modern technology. You'll find also, if you talk to enough people, there are some people that are not quite there."

NARA and OMB, under M-19-21, are directing agencies to maintain a FADGI 3-Star level of preservation for permanent records.

"We know that the images that come off of that are going to be what we're going to need to do really good extractions for optical character recognition. If we want to mine all of these documents for real meaning and data in the future, that's where we're going to need," Doolittle said.

"You'll have very mature, well-controlled agencies that have professional archivists and document managers, who know their processes and are using modern technology. You'll find also, if you talk to enough people, there are some people that are not quite there."

— Kodak Alaris' Matt Doolittle


To ensure scanners are calibrated to capture a large volume of FADGI-compliant images, organizations typically run a target scan against the Device Identifier Composition Engine (DICE) standard at least daily, then run that scan through quality assurance software.

"It will evaluate every aspect of the components of that target and make sure that they meet the criteria that is defined in the FADGI guidelines," Doolittle said. "If all that's good, it gives you a green checkmark that says go ahead and continue scanning for the day. Or it'll tell you what aspect of the target is not being met. Then you can either clean the scanner, which is usually the problem, or make other changes that you would need to get those images back in compliance and repeat the process."

Aside from having the right tools and technology, agencies need to ensure they have staff with the right training and subject matter expertise to ensure a smooth rollout of digitization efforts, he recommended.

"Document management professionals will help you be sure that you're getting the standard applied correctly. Not all images need to be FADGI-3 compliant," Doolittle added. "There are still plenty of types of work that you can scan in a more traditional imaging workflow. And if you do that work upfront, you're going to save yourself a lot of time and expense and hassle later on."

Although agencies are expected to reduce costs by reducing paper record storage, he said agencies should have a strategy in place to store large, uncompressed digital records.

"It's important to be sure that you've got the storage you need, you've got the bandwidth in your network, and that the workflow that you're sending it through can handle those size of images because we've never had this size of image and volume of data going through those back-end systems before. Do the planning up ahead, and then be sure that you tested to be sure that it works when you actually go live." 

Listen to and watch **Federal News Network's** [*conversation with Kodak Alaris' Matt Doolittle.*](#)

EPA establishes digitization centers to transition away from paper records



BY JORY HECKMAN

The Environmental Protection Agency plans to open two centers that will help the agency meet a governmentwide goal to digitize records.

Jeff Wells, director of EPA's Office of Enterprise Information Programs, said the agency will open one of its National Digitization Centers (NDCs) in Edison, New Jersey, in the fourth quarter of fiscal 2022.

EPA intends to open the second facility, in Kansas City, Missouri, in either December or January.

"Having more ready access to our records, being smarter about how we manage our records, it's going to enable us to make better and more data-driven decisions," Wells said in an interview with **Federal News Network**.

The centers will help EPA scan and digitize its vast trove of paper records. Wells said the agency's paper record archives would reach 26 miles in length, if stacked together.

Expanding access to data while driving down costs

In addition to more accessible records, EPA anticipates that its digitization efforts will reduce

costs too, Wells said. EPA leases space from the General Services Administration to store some of its paper records.

"The quantitative benefits are really the fact that we're going to be reducing costs by centralizing our digitization activities," he said.

Those cost savings are already coming into focus. Since the start of the pandemic, EPA has spent tens of thousands of dollars less on paper, Wells said. That's because employees don't print as much while working from home.

"It's propelled us toward that digital world where we're not producing or adding as much to that 26-and-a-half miles of paper records," he said.

Employees at EPA's digitization centers will be trained to adhere to Federal Agency Digital Guidelines Initiative (FADGI) standards.

"When you digitize something, it's not like just running it through the copier. There are very exacting standards that we need to meet, and we needed to establish procedures and processes to achieve those," Wells said.

“Having more ready access to our records, being smarter about how we manage our records, it’s going to enable us to make better and more data-driven decisions.”

– Jeff Wells, Director, Office of Enterprise Information Programs, EPA

Aligning EPA efforts with guidance

The Office of Management and Budget and the Library of Congress in 2007 created FADGI, a set of standards agencies should follow when it comes to scanning, processing and cleaning up digital scans of hard-copy records.

The FADGI “standards are pretty exacting, and so you need to have really strong scanning procedures and protocols in place, as well as machines that can actually achieve the standards of granularity to meet these standards,” Wells said. “We’ve designed and equipped our NDCs with the equipment that can achieve these standards, and there’s actually not a lot of equipment out there that can. We had to do a lot of work just to identify the right equipment that could.”

To improve employees’ access to records, EPA created a new agency records management system that leverages artificial intelligence to assist users with identifying the correct records schedule for the records they put into the system.

“The AI will look at the content, actually be mindful of the office or the program that the person works in, and suggest a couple of records schedules for that particular record,” Wells said. “It won’t let the user submit a record without assigning proper metadata,

and that’s something we’ve never done before. We think that’ll provide enormous benefits, in terms of making the record itself more valuable, not to mention more discoverable and findable when we want to retrieve it.”

EPA, he added, uses machine learning to automatically populate as much of the metadata as possible.

Embracing cloud for records storage

Once records are digitized, the agency is also using cloud technology to reduce its overall storage costs. Agencies, under FADGI standards, should keep permanent records uncompressed, which results in large file sizes.

“Slamming that much data anywhere is a pretty enormous amount of information. We believe that by moving that to the cloud, we’re going to reduce our storage costs,” Wells said.

These efforts are also part of EPA’s ongoing work to meet the mandate from the National Archives and Records Administration and OMB set to phase out paper records.

Under OMB Memorandum [M-19-21](#), NARA and OMB are requiring agencies to convert all new permanent records to an electronic format. By the end of this year, NARA will no longer accept paper records from agencies for permanent archiving.

EPA, as part of its efforts under M-19-21, went through an agencywide transition to electronic signatures and developed a strategy to ensure the agency wasn’t keeping records beyond their required retention period. The agency also ran an inventory of its paper record holdings.


Wells said records digitization will increase access to information, which is mission critical for EPA’s role as a regulatory agency.

Accelerating efforts in response to the pandemic

The COVID-19 pandemic and the closure of federal office buildings demonstrated the need for digital records, Wells said. Digital records are also an essential foundation for EPA's hybrid work environment.

"It increases the amount of information readily available to employees and improves our employees' ability to share it," he said. "It's actually available, not only from my desktop, but from my desktop anywhere, whether I'm working remotely or working in the office. I don't need to be onsite to access that record. That leads to the idea that it's going to be much more accessible and discoverable, and much more rapidly, than before."

Wells said the benefits of records digitization are clear but added that EPA still needs to communicate these changes and benefits to its workforce.

"It's always the human element that's going to be the most difficult. It's a culture change. One of the things that I think we're going to find more challenging than anything, but it's also one that I'm most excited about trying to tackle, is people getting used to the idea that they have much, much more access and availability to records than they've ever had before." 

"When you digitize something, it's not like just running it through the copier. There are very exacting standards that we need to meet, and we needed to establish procedures and processes to achieve those."

— EPA's Jeff Wells