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DeepDives

AI Data-Driven FOR RESILIENCE

INSIDE:

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From the editor's desk

Sarah Sybert, Managing Editor

Unlocking the Power of Data and AI in Government

Federal agencies are turning to data and leveraging AI as a critical asset for resilience, response and innovation amid rising cyber threats and natural disasters.

Data is no longer just a byproduct of operations; it's the foundation for smarter decisions, faster recovery and stronger digital defenses. Agencies are harnessing data-driven technologies to protect communities, secure critical infrastructure and implement AI.

Leaders agree that effective AI starts with well-prepared data and are evaluating how to implement AI at scale, better manage data and support increasing adoption of the technology.

Last year, communities were impacted nationwide from devastating natural disasters from wildfires and hurricanes. Federal leaders leveraged geospatial information systems powered by AI to deliver real-time damage assessments, accelerate recovery and improve communication with residents.

Strong data governance is also important for strong cybersecurity. Federal cyber leaders emphasized the concept of "data dominance" as a proactive, strategic approach to meeting compliance requirements and staying ahead of threats.

By fostering collaboration, enhancing data literacy and rethinking how data tools are deployed, agencies are building a more secure, agile government ready for the challenges of tomorrow.

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Silvia Oakland,
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Data Plays Big Role in Government Natural Disaster Response

Federal agencies are leveraging GIS, combined with AI, to improve natural disaster response efforts, communication and efficiency.

BY SILVIA OAKLAND

Government agencies are leveraging AI and geospatial information systems (GIS) to aid in natural disaster response. The tech is reducing duplicative spending, breaking down communication siloes and increasing efficiency.

California's most recent wildfires that swept through many neighborhoods the past few months is perhaps a prominent example for where data systems worked behind the scenes to support recovery and response efforts.

California Congressman and Chairman of the Bipartisan Task Force on Artificial Intelligence Jay Obernolte spoke with GovCIO Media & Research during an Esri conference about how the state is using AI and GIS to perform emergency services to those affected by the wildfires.

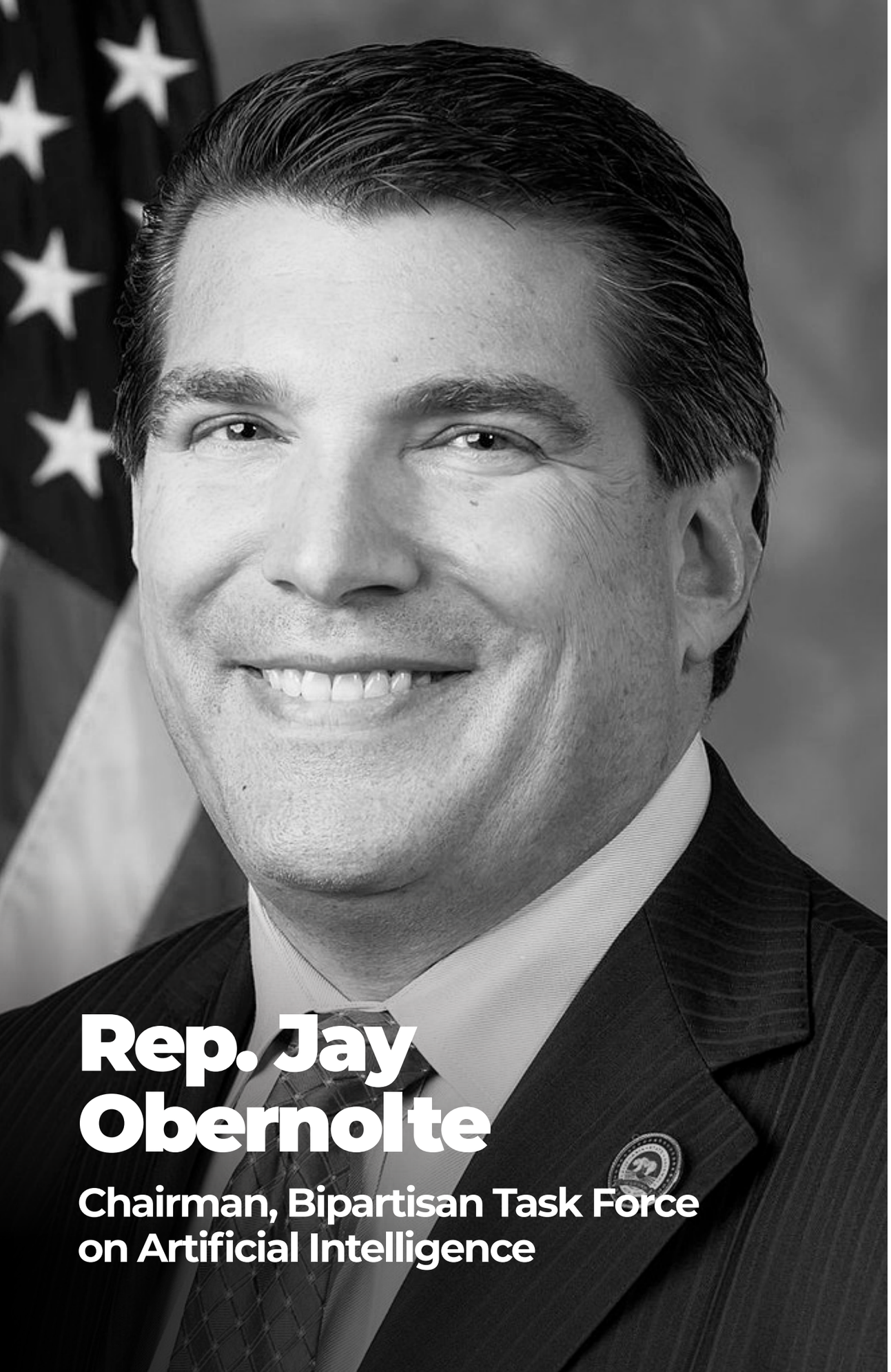
According to National Oceanic and Atmospheric Administration data, the nation has sustained 403 weather and climate disasters since 1980. Overall damages and costs reached or exceeded $1 billion, with a cumulative total cost of these events exceeding $2.915 trillion.

"From deadly wildfires in California to devastating floods in North Carolina, disasters have wreaked havoc across the U.S. … They shook millions of lives and caused billions of dollars in damage," World Wildlife Fund Author Daniel Vernick wrote in an article about the rise of natural disasters. "There is no question that the intensity and frequency of extreme weather — often resulting in disasters — is increasing."

Emergency response personnel in California following the 2025 Palisades wildfires.

Photo credit: Billy D. Marchese/Shutterstock

According to the state's Department of Forestry and Fire Protection,



California wildfires have burned 57,768 acres of land and destroyed 16,251 structures as of March 10.

"Traditionally, [residents] would have to wait for someone from Los Angeles County to do a damage assessment on their home … which could take days or weeks," Obernolte said.

The state used GIS to create real-time mapping tools, provide essential support to first responders and inform residents with actionable data. Interactive maps can display fire perimeters, evacuation zones and other critical information.

"It uses satellite imagery and AI algorithms to detect which homes were destroyed and which ones weren't. And if you layer that on top of the LA County assessor's parcel map, homeowners could actually see exactly what was going on, and that's a really beneficial use of that technology," Obernolte added.

Data Systems Help Drive Efficiencies

The National Aeronautics and Space Administration (NASA) and the U.S. Geological Survey (USGS) are using GIS to break down siloes between emergency response efforts during natural disasters.

Hurricane Helene, a catastrophic category four storm last fall caused widespread flooding and damage across Florida, Tennessee, Georgia and North Carolina. A North Carolina Office of State Budget and Management (OSBM) report on the state's recovery efforts at the end of last year estimated damage and needs of $59.6 billion from the state alone.

NASA's Disaster Response Coordination System Program Manager Josh Barnes said during the Esri event that his agency was able to avoid duplicative response efforts during the hurricane by leveraging the tech.

"We don't want to be poring through data and imagery to find landslides when USGS is doing it already," said Barnes. "We fold in under their response effort to make sure that we were being complimentary with what they were already doing."

USGS National Geospatial Program Emergency Response Coordinator and Geospatial Information Response Team (GIRT) Chair Xan Fredericks said reducing duplications not only saves money, but also could lead to more successful emergency response efforts. Fredericks added that communities impacted by natural disasters have limited resources, and agency collaboration can relieve strain on the communities.

"If we can avoid that duplicative effort, we're really saving the resources … we're not sending more people into the field to take those hotel rooms or put [more] stress on the infrastructure," said Fredericks.

Data Supports Critical Infrastructure Security

Other agencies like the National Nuclear Security Administration (NNSA) are using GIS and automation to secure critical infrastructure and reduce spending.

The cloud-based GIS platform ArcGIS Online, for example, enables users to create interactive web maps, analyze data and boost collaboration.

NNSA Geospatial Information Officer and Lead Analyst in the Office of Emergency Management Tonya Jeppesen said real-time and near real-time analytics from ArcGIS Online have enabled watch officers to focus on threats that could impact critical infrastructure.

Jeppesen said the ArcGIS Online dashboard's real-time monitoring helped protect the Department of Energy's Pantex nuclear power plant during wildfires in Texas in 2024.

"There was a fire that came within 30 miles of the Pantex infrastructure. With the new dashboard system, we would be able to provide that information … that would allow them to make decisions in a more efficient and necessary manner," said Jeppesen.

With spatial and predictive modeling, Jeppesen and her team have been able to examine wind data, fire locations and sizes, terrain information and other classification data that helps connect the pieces for protecting nuclear plants.

"[Our team] has completed an analysis that's going to not only show where the fires are in near real time, but also predict the movement of the fires based on [geospatial data]," said Jeppesen. "We're looking at how to protect our facilities, how to protect our assets and how to protect the employees that reside in those institutions for [all our resilient infrastructure]."

Photo credit: Gorodenkoff/Shutterstock

“[Satellite imagery and AI algorithms help] to detect which homes were destroyed and which ones weren’t. And if you layer that on top of the LA County assessor’s parcel map, homeowners could actually see exactly what was going on [during the California wildfires].”

— Rep. Jay Obernolte, Chairman, Bipartisan Task Force on Artificial Intelligence

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DeepDives

Preparing Data for AI

How government and organizations can structure, store and share data to ensure it's ready for effective and responsible use by AI systems.

ENABLE STORAGE AND ACCESS

Make your data easy to access, update it regularly and ensure it's consistent in how it's stored and retrieved.

DEFINE USAGE CLEARLY

Include clear, machine-readable licensing terms so AI systems and developers understand how the data can be used.

USE STANDARD FORMATS

Store both data and metadata in structured, machine-readable formats that AI systems can easily ingest

PRIORITIZE QUALITY AND TRUST

Validate your data for completeness and accuracy. Flag outdated or low-trust sources.

DOCUMENT YOUR DATA

Provide detailed metadata, explain what the data is, where it came from and how it should be interpreted.

KEEP IT FRESH

Regularly update and maintain datasets to keep AI results relevant and accurate over time.

Source: U.S. Departmet of Commerce Office of the Under Secretary for Economic Affiars

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PARTNER INTERVIEW

THUNDERCAT TECHNOLOGY

NetApp

Data Swamps and Lakes: What it Takes to Implement AI

NetApp leaders explain how to transform data into actionable insights as agencies and organizations race to adopt AI.

Kurt Steege
Chief Technology Officer, ThunderCat Technology

Cecile Kellam
AI Technical Solutions Specialist, NetApp

What are some of the common obstacles in AI implemention?

Kellam I recently heard an estimate that we're generating 400 million terabytes of data a day, and of that, 80% of that is unstructured data. So how do you make sense out of that much data?

Even once you have access to all that data, the real power of generative AI is knowing what data is relevant to input into these AI models, so you get the intended outcome. How do you know what data is relevant for that? You have to have visibility into the different data sources and be able to apply data services so that you put structure around all that unstructured data.

Steege When you're dealing with the volume of data that Cecile was talking about,

“We’re evaluating how we can make these generative AI and agentic AI projects as quick, efficient and powerful as possible for our customers.”

— Cecile Kellam, AI Technical Solutions Specialist, NetApp

and then you talk about generative AI, you’re making more data. Using old terminology, data begets data, begets data, begets data.

What NetApp aims to do is take that data and view that information within context, so that you can apply the right tool to that data. What agencies need is an enterprise data plane, where they collect as much usable information as possible. The data doesn’t always have to be centralized, but the way to find that data does.

What are some use cases where AI is being successfully adopted?

Kellam We’re seeing a lot of adoption and use cases like predictive analytics to forecast crime or reduce the impact of natural disasters. On a more day-by-day basis, agencies are using chatbots and virtual assistants to automate mundane tasks and enable humans to focus on higher value activities.

Steege Digital assistants are helpful to individuals where English is not their native language. They can access basic services without agencies having to use translators for the different languages and dialects. We’re also seeing a lot of use cases in financial fraud detection and veteran’s health care.

What trends in AI are you excited about in the coming year?

Steege One of the big trends we’re seeing is agentic AI, where users can create agents that will work on their behalf and feed information to them while they’re working on other things.

Digital twins also enable users to create virtual replicas of physical assets, systems or processes. They can then leverage AI to analyze data, predict outcomes and optimize performance. It will be interesting to see on the West Coast after the fires and the East Coast with areas often affected by hurricanes.

With AI and digital twins, cities can move from simply reacting to what is happening to forecasting disasters at sub-kilometer precision and enabling cities

to preemptively act before disaster strikes.

Kellam At NetApp, we're taking accountability across the tech stack, starting at the storage layer, to drive to improve speed and efficiency. We're evaluating how we can make these generative AI and agentic AI projects as quick, efficient and powerful as possible for our customers.

That is what we are going to see from a lot of these different components within these AI projects. We'll see a lot of innovation around how we can power these projects and produce better results faster.

Photo credit:
metamorworks/Shutterstock

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Cyber Leaders Call for ‘Data Dominance’ to Drive Compliance

Officials emphasize how data dominance and sharing best practices help agencies meet critical cyber compliance goals.

BY SILVIA OAKLAND

A “data dominance” mindset can help agencies quickly and efficiently meet federal cyber compliance requirements, according to federal leaders speaking on a panel at the CyberScape Summit in Bethesda, Maryland.

Panelists noted the concept as one where having strong data governance can create immense cybersecurity advantages in pursuit of complying with 2021 memos on improving government’s investigative and remediation capabilities related to cybersecurity incidents and on zero trust.

A 2023 Government Accountability Office (GAO) report noted only three of the 23 agencies had reached the necessary logging requirements outlined in the memo. GAO also cited key challenges hindering agencies’ abilities to fully comply with M-21-31: lack of staff, event logging technical challenges and limitations on information sharing.

Staying to the Left of Threats

Jeff Hyacinthe, associate chief data officer under the Assistant Secretary for Policy, Management and Budget in the Office of the Secretary at the Interior Department, said that a data dominance approach means organizations should analyze data through a proactive lens.

“I want to put the emphasis on the proactiveness as opposed to the reactiveness that historically in a cybersecurity context has been viewed as kind of like policy compliance,” said Hyacinthe. “[Proactiveness] is really getting at the heart at driving it into security operations and those workflows.”

Hyacinthe is working across his agency with employees who may view certain technologies and capabilities as singular tools specific to their

Photo Credit: Invision Events

environment to determine if the tools could scale to help other employees perform their tasks more quickly.

He added, “I’m always a strong proponent for assessing your tools and seeing where you need to make reinvestments or where you can reuse things across parts of an organization.

Increasing Communication and Collaboration

Darren Death, who serves as CISO, chief privacy officer and deputy CAIO of the Export-Import Bank of the United States (EXIM), said focusing on the administrative details can help eliminate cybersecurity risks. Death added that IT officials should prioritize soft skills — like communication and understanding the enterprise — to improve security decisions.

“If you aren’t actually communicating and understanding what the business unit is doing, what the HR is doing, if you have things classified, you’re probably going to make security decisions that are going to cause issues,” said Death. “You’re going [to see] that lack of trust [with employees].”

Justin Ubert, division chief for cybersecurity and operations at the Federal Transit Administration, said his office is partnering with the agency’s CDO to increase data literacy. Ubert said he’s not trying to reinvent the wheel as he asks for help and expertise from his agency counterparts.

“Figure out who you can partner with and break down those silos,” said Ubert. “That’s the way we’re going to tackle this. It’s going to be a whole of effort across multiple areas to get better efficiency.

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— Justin Ubert, Division Chief for Cybersecurity & Operations, Federal Transit Administration