

The Road to Federal AI Adoption Starts with Infrastructure

Civilian agencies' AI initiatives are driven by policy, mission needs and data surges — but to succeed in their AI endeavors, they must ensure they have the compute, storage and network capabilities in place.

The [National Artificial Intelligence Initiative Act of 2020](#) intends to accelerate the federal government's AI research and application to advance the nation's economic prosperity, national security and leadership in AI. This legislation calls on coordinated programs across the government to do so, including the development and use of AI systems in civilian agencies.

The act aims to also prepare the U.S. workforce for the integration of AI systems, and civilian agencies are working to do just that — adopt, integrate and operationalize AI systems for workflow efficiency. In doing so, they're experiencing barriers with infrastructure, cost, lack of ROI and data overload. Thanks to a recent partnership between ViON and NVIDIA, federal agencies can adopt the tools they need through a hybrid AI infrastructure-as-a-solution that scales, with the cost resiliency to keep moving forward.

Civilian Agencies Are Adopting AI

As mission requirements grow, AI policy emerges and technology matures,

civilian agencies are exploring AI and machine learning capabilities to help manage and make use of vast amounts of data. In fact, a recent Deltek [report](#) on the federal AI landscape found that identifiable federal spending on AI reached \$1 billion in FY 2020, up 50% from FY 2018. This makes AI one of the fastest growing emerging technology investment areas.

The report also found that agencies are using the General Services Administration's multiple-award schedule and NASA's Solutions for Enterprise-Wide Procurement V Government-Wide Acquisition Contract to purchase AI and ML goods and services more than any other contract vehicle. In return, AI use cases can be found all over the civilian landscape. AI is being used to maximize the [government fleet](#) and asset uptime using predictive maintenance from sensor data and [natural language processing](#) to analyze technician records, and to increase drug safety through the application of natural language processing on package labeling through the Food and Drug Administration's [FDA Label](#) program. GSA created

Contributors:

■ Judson Graves

Director, Analytics Solutions, ViON



the [Solicitation Review Tool](#) which uses AI to help agencies evaluate and improve solicitation compliance, and NASA is helping fight wildfires with its [Scalable Traffic Management for Emergency Response Operations](#) project equipped with AI-based tools.

And while agencies continue to leverage AI tools and platforms for various mission needs, they're still researching ways to do so more efficiently. The National AI Initiative Act created national AI research institutes at various civilian agencies, and the Department of Energy is tasked with researching the application of AI to large-scale simulations, the application of large-scale datasets and the development of hardware and computer architecture. The DOE's Argonne National Laboratory recently [received](#) \$3 million in funding for two interdisciplinary projects that will further develop AI and machine learning technology to tackle massive data sets or create better outcomes where little

data is available. Yet, to move beyond the R&D phase, civilian agencies must assess whether their infrastructures are mature enough for AI readiness, and it's proving to be a challenge for full AI adoption.

The Barriers to AI Infrastructure Adoption

An ESG report found that agencies are still experiencing skill gaps within the AI lifecycle, have inadequate processing power and storage capacity in the infrastructure stack, and are faced with tight budgets and aggressive timelines. While agencies may be exploring the use and adoption of AI, [60% of organizations](#) take at least four months to see value from AI investments – and one in three organizations cite infrastructure capabilities and cost as barriers to AI success.

Infrastructure change is inevitable as agencies accelerate AI adoption, because existing legacy infrastructure doesn't satisfy the unique demands of AI development. Traditional CPUs, for instance, are not optimized to deliver the performance AI workloads need. "We're also seeing agencies struggle to move AI models into production from development," said Judson Graves, director of analytics solutions at ViON

Corporation. "They're in need of a more powerful AI infrastructure for processing, storage and network."

Yet, as agencies look for the right infrastructure, they're still challenged with cost — 35% of organizations cite the cost of IT infrastructure as the greatest barrier or challenge they experience with AI projects. As IT leaders attempt to scale complex AI workloads the same way as they do traditional workloads by buying more technology with the same storage supporting their mainstream workloads, they're building infrastructure for just one specific AI workload. Ultimately, this leads to overburdened IT, delays from moving massive amounts of data to separate environments and wasted capital.

The amount of data federal agencies produce and consume is also driving the need for AI, but makes adopting the right tools challenging. Data gravity, or the idea that large datasets attract applications, processing power, services and more data, is driving workloads from the cloud back to on-premises environments. "Agencies aren't able to meet scalability and elasticity expectations," Graves said. "They're experiencing unpredictable performance, and need a solution that

can scale while managing the amount of data they're bringing in." What agencies need is a hybrid approach to AI infrastructure — one that is as flexible as the cloud and as powerful as on-premises deployments.

Breaking Down AI Barriers

AI models are data-intensive. There needs to be an on-premises infrastructure when going into production, but moving massive datasets in and out of the public cloud can be technically challenging and expensive. That's why 36% of federal agencies are turning to external AI-focused solution providers to help with the selection, implementation and/or management of AI infrastructure.

"That's what ViON and NVIDIA have partnered to provide," Graves said. "The NVIDIA DGX A100 on-premises AI infrastructure solution replaces legacy infrastructure silos with one platform for every AI workload. It's a seamless, one-stop-shop for agency AI priority needs."

"It's the best of on-premises and cloud worlds. Leveraging an AI solution that brings all complex AI workloads onto a single, one-stop-shop for AI development and production." Graves said.



Hosky Communications Inc.
3811 Massachusetts Avenue, NW
Washington, DC 20016

- 📞 (202) 237-0300
- ✉️ Info@FedInsider.com
- 🌐 www.FedInsider.com
- 📱 [@FedInsiderNews](https://www.facebook.com/FedInsiderNews)
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ViON
196 Van Buren Street, Suite 300
Herndon VA 20170
Contact: [Justin Ciaccio](#)

- 📞 (571) 353-6000
- ✉️ info@vion.com
- 🌐 www.vion.com
- 🌐 [@vion-corporation_2](https://www.linkedin.com/company/vion-corporation_2)
- 📱 [@ViONcorp](https://www.instagram.com/ViONcorp)



NVIDIA
575 Herndon Pkwy., Ste. 130
Herndon, VA 20170-5282

- 📞 (877) 7-NVIDIA
- ✉️ info@nvidia.com
- 🌐 www.nvidia.com
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