

Feds Growing Many AI Gardens, Reaping Uneven Yields



The Federal government is cultivating artificial intelligence (AI) technology gardens across major agencies, but varying mission requirements and funding streams for those efforts are producing strikingly uneven results.

Some of the AI development and deployment efforts at defense agencies – which see AI as a critical technology to keep pace in great-power competition with China and to give warfighters every technological edge on the battlefield – are devoting billions of dollars to the task and producing outsized results.

At most Federal civilian agencies, however, AI investment streams and development results are much less visible. While agency tech leadership is publicly vocal about the promise of AI and other technologies to derive maximum value from their vast storehouses of data, the deployment of AI for critical functions still appears to be more of an aspiration than a priority.

In addition to mission requirements and available funding, the uneven pace of Federal AI adoption stems from other hurdles: the lack of available workforce talent, the issue of data readiness, and the absence of a forceful push from the top levels of government.

Despite the ups and downs of AI adoption progress across the Federal government, increasing interest and action by policymakers and legislators are building momentum that will hasten the pace of development in the coming years. In other words, the smaller AI gardens throughout government need more tending before they can produce important yields.

Here's an overview of the conditions of AI adoption in Federal agencies, a look into the policy drivers likely to change the AI development equation, and guidance from experts at ViON and Dell Technologies Federal, who help agencies work their way through the process of mining greater data insight.

State of Play – Department of Defense

Based on public data, Federal government spending on tech development and deployment is rising sharply, with the Department of Defense (DoD) leading the pack.

Government-wide spending [research](#) released by Deltek earlier this year tracked about \$1 billion in total “identifiable Federal spending” for AI in Fiscal Year (FY) 2020 – up about 50 percent over two years – and showed DoD accounting for about two-thirds of the government’s AI spend in that period.

Spending devoted to AI is still uncertain for FY2022, as regular appropriations for Federal agencies have not yet been approved by Congress. We do know, however, that spending trendlines look steeper based on agency budget request data and spending figures already surfaced in House and Senate legislation.

- Deltek [figures](#) that the Pentagon’s FY2022 budget request lists \$4.3 billion for programs with AI and machine-learning (ML)-associated components;
- The Senate’s FY2022 appropriations [framework](#) released in October 2021 features \$500 million for AI programs across all military branches, plus \$100 million for DoD to help recruit, retain, and develop talent to advance use of AI;
- For DoD’s most visible AI effort – the Joint Artificial Intelligence Center (JAIC) – the House [offered](#) spending legislation earlier this year to provide \$186 million for FY2022;

- Defense Secretary Lloyd Austin [said](#) DoD is making AI a “top priority” with plans to invest \$1.5 billion in AI projects at the Defense Advanced Research Project Agency (DARPA) over the next five years. He said DoD had about 600 active AI projects across the department, up “significantly” from a year ago.

State of Play – Non-Defense Agencies

For non-defense Federal agencies, reliable data on AI and related spending is often much harder to track, simply because most agencies do not track those projects as separate budget lines. However, anyone who has made the rounds to recent events where agency IT officials talk about AI – or its ML and robotic process automation (RPA) precursors – has learned that AI-related efforts are at least sprouting at most agencies.

Among civilian agencies, three stand out from the rest with their AI development efforts. Two of them – the Department of Health and Human Services and the Department of Veterans Affairs – have appointed chief AI officers.

Beyond this, the Department of Homeland Security is [seeking](#) small business partners for AI work, and [collecting](#) public feedback to inform its next steps after piloting use of AI technology in customs and border protection and transportation security.



A small sampling of other recent developments includes:

- The much-discussed appeal of AI for cybersecurity applications to analyze network log data and enable better cyber threat hunting;
- The State Department **working** AI goals and applications into its new Enterprise Data Strategy;
- The Commerce Department **collaborating** with the space industry to apply AI tech and sensors to space monitoring efforts; and
- The U.S. Agency for International Development **looking** to AI for its next round of technology deployments to accomplish its missions more effectively.

Policy Drivers

The White House, Executive branch agencies, and Congress are active on several fronts that can provide the policy momentum necessary to move AI development and deployments to the next level. Among them are:

- Sweeping recommendations **issued** earlier this year to the White House and Congress by the National Security Commission on Artificial Intelligence (NSCAI) for “winning the artificial intelligence era.” The report implores the U.S. to “act now to field AI systems and

invest substantially more resources in AI innovation to protect its security, promote its prosperity, and safeguard the future of democracy.”

- **Legislation** that would create a new National Science Foundation (NSF) Directorate of Technology and Innovation to speed up the development of AI technologies that are vital to protecting national security.
- The White House Office of Science and Technology Policy and NSF in June **launched** the National AI Research Resource Task Force to provide recommendations for establishing a National AI Research Resource providing compute and data resources to researchers across all scientific disciplines.
- The ongoing work of the General Services Administration’s AI Center of Excellence, which works with Federal agencies to develop their AI capabilities.

A Bigger Policy Push

Federal AI development and deployment have yet to benefit from a top-down push from the White House in the form of executive orders and other binding directives that mandate broader movements toward use of the technology, open pathways to increase funding for additional AI work, and dramatically accelerate progress.





A comparable model would be President Biden's Cybersecurity Executive Order issued in May 2021. The EO has put in place a series of deadlines for agencies to meet in order to begin the transition to zero trust security architectures and reach a common security baseline within three years.

Experts Weigh In

David Kushner, Executive Vice President at AI infrastructure provider ViON, and AI Ford, who directs AI Alliances for Dell Technologies Federal, offered their real-world guidance on policy inputs that can stimulate more AI work at Federal agencies, and why some are moving more quickly than others.

"Any time you combine a shortage of resources with a highly valuable outcome, top-down policy support is critical to prevent stasis and delayed adoption," Kushner said. "Agency leadership needs guidance, support, coverage, and creative thinking to succeed in the global AI community."

"If we lack experts, create programs to train them. If we lack physical resources, pool funding to acquire them. If we lack planning, develop best practices to provide a roadmap. We need to encourage trial and error in AI, not a wait-and-see approach many agencies seem to be stuck in," Kushner said.

Ford generally agreed with the need for stronger policy inputs, while underscoring the need for more funding and ideas for agencies to work with.

"While policy or a top-down approach could be of use, the most beneficial [action] would be a common repository, or sharing of ideas, and not a specific technology route that may limit creativity," he said. "There's not a lot of redundancy in agency mission, therefore, a top-down approach could limit creativity. We believe more funding for agencies to explore more AI use cases would be a better route."

What's holding many agencies back, Kushner added, is the larger question of resources.

"Most of the reluctance we've seen from Federal agencies committing to building actual AI practices as opposed to just purchasing services with AI features built into them has been a lack of confidence that the outcomes are worth tackling the challenges in complexity and specialized skillsets required to make production-level AI systems a reality."

- Dave Kushner, Executive Vice President, ViON

"The truth is, these concerns are well-founded," Kushner continued. "There are very real challenges around finding and retaining the resources needed for successful AI programs. But, the benefits far outweigh those challenges."

Trust Hurdles

Adding to agency concerns about resources are some lingering trust hurdles associated with AI tech – not necessarily related to the nature of the technology, but with perceptions of its promise.

"We've encountered trust issues primarily during the transition from a sandbox demo to a production implementation," said Kushner. "Many commercial providers promise incredible outcomes without delving into issues like model drift and deployments at scale."

"Currently, it's up to service providers and consultants to act as a buffer between private and public sector AI efforts," he said. "It would benefit private sector vendors to be more open and realistic about the requirements of maintaining and improving AI systems."

Providing open-source tools is one route to achieve that outcome, Ford said.

“AI is finally becoming a trusted use for technology today. The reason for this is that the private sector has open-sourced many of the tools and techniques that the government can take advantage of and match to their use case. Dell Technologies is a big proponent of publishing many of our tools and techniques and we have seen a giant uptick on the number of agencies utilizing the specific tools we've developed to get to AI Ops quickly.”

– Al Ford, AI Alliances, Dell Technologies Federal

Get Going

For agencies not far along the AI adoption path, Ford and Kushner offered some frames of reference to accelerate progress.

“Many agencies have decades of data that can be mined using AI to create better citizen services for everyone. Cutting through that data is now possible with today's AI technology,” Ford counseled.

“AI systems are generally driven by data, not outcomes,” Kushner explained. “To this point, log data has been the most readily available trove of actionable training for ML algorithms. The data tends to be internal to Federal systems, accessible, and kept for long periods of time.”

“The next use cases will be driven by other data reserves that have been difficult to access up to this point,” he continued. “We're seeing more agencies use new methods of image, video, and audio retention to feed AI systems moving forward. There are hundreds of incredibly valuable use cases to explore.”

When asked about Federal agency use cases already being put into practice, Ford detailed ongoing wins with AI in perfecting COVID-19 detection. “We have worked with three different groups that are bringing rapid and more accurate testing for COVID,” he said, with the result being that “within a few seconds, technology has been proven to determine if the COVID virus is present with greater than 99 percent accuracy.”

“Some Federal agencies have seen success getting started in AI by choosing a smaller use case and expanding from that point,” Kushner added. “For example, identifying a simple outcome to apply a predictive model to, like using profile/location user data from web traffic to present the most likely links and activities the user is looking for.”

The Next Push

The biggest remaining questions revolve around what will spur AI growth among Federal agencies, and where that direction comes from.

Kushner suggested that government can take a page from industry's playbook and realize the risks of a go-slow approach.

“The focus should primarily be on global competitiveness,” he said. “Private sector companies recognize the risk they face from competitors if they drag their feet on AI, and the Federal Government should think in terms of global risk with every AI solution they refuse to undertake.”

Ford pointed to the need for speed, and not waiting for optimal conditions.

“Don't wait for data consolidation and preparation to be complete before starting to work with algorithms and test hypotheses,” he advised. “This is critical in reducing time to deploying AI. We see some projects delayed or slowed due to working on data, when in fact, these steps can be done in parallel.”

Ford said, “Don't wait for AI to be perfect before implementing into AI Ops. There are tools available to help with this, for instance, Dell's AI Ready Solutions take the guess work out of implementing the infrastructure that helps you get to answers quickly.”

Feds Growing Many AI Gardens, Reaping Uneven Yields is underwritten by Dell Technologies Federal, NVIDIA, and ViON.