BREAKING DEFENSE | eBRIEF

Automation: Pulling DoD analytics into the 21st Century



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SITREP

After years and decades even of individual services being unable to share data at unclassified, classified, and secret levels, the long-standing goal of tearing down silo walls is at hand. The Defense Department through its Chief Digital and Artificial Intelligence Office (CDAO) along with the Army, Navy, and Air Force are heavily investing in data and analytics platforms to support a range of operational and business functions to include unit readiness tracking, contract management, and logistics, and even the Army's Next Generation Command and Control and counter-unmanned aerial systems.

They're each building robust data analytics architectures with centralized platforms and APIs to enable access and integration of data across disparate systems and applications. In the case of CDAO's Advana data analytics platform, it's now ingesting data from about 500 DoD business systems. These technologies are designed to automate manual reporting of tasks like inventorying parts in a motor pool so military commanders have real-time visibility to answer questions like: where is the materiel located, where can personnel be found, and what funding is still available.

Establishing enterprise-level data platforms and services to enable data sharing and integration across different systems and applications, and by automating data ingestion, processing, and analysis to reduce manual effort, empower users and enable the workforce to focus on higher-level, mission-critical activities.

These data analytics platforms employ a variety of commercial and open-source technologies to ingest, process, and analyze data, and provide a simpler way for users to access and visualize the data.

In this Breaking Defense eBRIEF, we examine these capabilities in more detail with an emphasis on the CDAO's Advana platform and the Army's Vantage program.

– *Barry Rosenberg*
Technology & Special Projects Editor, Breaking Defense

Military commanders need real-time visibility into where their materiel is located. In this photo, US soldiers assigned to the 704th Brigade Support Battalion, 2nd Stryker Brigade Combat Team, 4th Infantry Div., inspect M1126 Stryker combat vehicles in support of the southern border mission, Feb. 24, 2025, Fort Carson, Colo. (Army photo by Spc. Joshua Zayas)



ON THE COVER: Brave Partner is a U.S. Army Europe and Africa scheduled, directed, and led short notice action planning (SNAP) exercise, which includes live-fire training and is designed to demonstrate USAREUR-AF's operational reach, validate U.S. investments in North Macedonia, and increase readiness. (U.S. Army Reserve photo by Spc. William Kuang).

Providing the data analytics that answer the questions warfighters ask most

Topping the list of what commanders want to know is where their assets are and how much money they have at a particular moment – in other words, what's their status. Up until the recent advent of enterprise-wide data analytics platforms like the CDAO's Advana, the Army's Vantage, the Navy's Jupiter, and the Air Force's BLADE, answering that question has been a laboriously manual process.



Army Chief Data and Analytics Officer David Markowitz.

A huge amount of time is spent making situation reports, counting items and telling higher headquarters how many there are and how many will be delivered next week. The Defense Department employs scores of soldiers, sailors, airmen, and marines whose job is to do that all day, every day.

"It turns out that a vast amount of what the department is doing every day is trying to understand its own posture," said Army Chief Data Officer and Analytics Officer David Markowitz. "What if a commander can log in and see what everyone has in their unit, partner unit, and find where the closest thing is that they need? It saves so much churn and many hours for those people doing logistics and operations. Anything that can make that move into the 21st century and away from me getting on the phone, calling a guy, a guy walking down to the motor pool and counting what's on the shelf and then calling me back, it saves huge amounts of time and money. It allows commanders to make more responsive decisions and it saves those people the time of having to do that counting."

For example, if there's an aviation or equipment cross leveling event to happen – which is a theater and operational-level process that determines what materiel from one military organization should move to another with a higher priority – Vantage makes data analytic tools available to users so they can dig into the data to make that determination. This capability is of particular importance to Army Materiel Command, not just for its own situational awareness of inventory but in understanding coalition demand signals.



US Soldiers assigned to 1-77 Field Artillery Regiment, 41st Field Artillery Brigade, conduct preventive maintenance checks and services on their nine newly fielded M270A2 Multiple Launch Rocket Systems at a motor pool on US Army Garrison Bavaria, Grafenwoehr, Germany, Dec. 16, 2024. (Army photo by Spc. Hunter Carpenter)

Another example of how Vantage is expected to deliver easy access to enterprise-level data is by ending the burden of point-to-point system requests between multiple apps to share data. Said Markowitz: "We want to stop all that. It's data, it lives above, it's an enterprise asset that's shared through APIs under some form of common schema [with] easy, automated access way to get to it."

Building a data analytics platform that scales

To accomplish those improvements in productivity, Army Vantage leverages an Amazon Web Service cloud with authority to operate on US Army unclassified (NIPRNet) and classified (SIPRNet) networks. It uses a Software as a Service model compliant with DoD Impact Level 5/6 that includes management of both controlled unclassified information (CUI) in unclassified national security systems and classified data up to the secret level. In May 2025, Army Vantage transitioned from Army PEO Enterprise to the Army Office of the Chief Information Officer.

The other enterprise data platforms across the DoD operate similarly, and CDAO's Advana now ingests data from about 500 DoD business systems, according to the CDAO Advana official. This includes data analytics related to: logistics, readiness and global force management, acquisition lifecycle management and procurement, and executive design support.

The backstory of Advana began about six years ago as an answer to the DoD's inability to make progress on its financial statement auditability. The result was a platform to handle what's called a "universe of transactions." This is a yearly recording of all financial transactions throughout that relate to inventory, property, and payroll. That work is ongoing but led to the same universe-of-transactions capabilities being applied to logistics.

"[They] built, in my opinion, a world-class data analytics platform to solve that particular problem," said the CDAO Advana official. "About 2 1/2 years into that journey [they] realized that once you build the data infrastructure to bring different data formats from different accounting systems to one place where you can store them, put them in memory and apply different algorithms [and] machine learning against them, it doesn't care if it's accounting data or logistics data or personnel data or anything.

"Building on that foundation, it expanded to more areas because the infrastructure was there and it had a repeatable process. As you can imagine, the Department of Defense has many large IT transactional business systems, transactional operational systems that are recording huge amounts of data across the entire department. If you want to look across a dozen or a hundred of them, you have to get all that data to a place where you can read it into memory on the same cluster. In order to do that, you have to build a fairly robust pipeline that can move a lot of data around. Because Advana had built a large proportion in order for audit support, we repurposed the tool and made it more generalizable and continue to connect to bigger and bigger systems.

"That accelerates the audit because in order to do a good audit, you not only need the financial data, you need the contract data, billing data, invoices, the inventory, and all those tend to live in supply systems, contract writing systems, and other systems. They're not necessarily financial management systems. Being able to reconcile those is a huge part of that.

"Then that gives commanders and others the opportunity to see what their most important questions are, and often their most important questions when they're doing programmatic and operational things are where is my stuff, where are my people and how much money do I have at this particular moment."

The roadmap for Vantage and Advana

For the Army's Vantage, Markowitz noted that they've built their initial shelf of data analytics capabilities.

"What's next is to make sure our commands have an easy customer relationship with that shelf and [it] gets improved [with] better product identification on it. [We want to] make sure commands can make their own shelves internally within a command so they have products that they can manage locally without having to come back to Big Army, which gives them more local freedom, [and] to nominate activity that might be local back to the enterprise level. [We want to] make sure that process flows smoothly so that we can continue to grow at speed as we go through this next year."

Another major area of work that the Army plans for Vantage is to take the next steps on Zero Trust cyber security. The Army and all DoD organizations are mandated by the DoD CIO office to implement a Zero Strategy that meets 91 minimum target-level goals and 61 advanced activities to accomplish 100-percent cyber security of their information technology infrastructure by the end of fiscal year 2027 – Vantage being one element of the Army's IT infrastructure.

One of the Army's efforts under Zero Trust is to move beyond system-to-system sharing of data to enterprise-level sharing through Zero Trust principles of identity management of users and devices using role-based or attribute-based access, along with proper data tagging.



Soldiers assigned to Logistics Support Vessel Eight dock into Koror, Palau, and begin offloading a Patriot minimum engagement package assigned to D Battery, 1st Battalion, 1st Air Defense Artillery Regiment, 38th Air Defense Artillery Brigade in support of exercise Tenacious Archer 25. The exercise sharpens the brigade's ability to operate across multiple domains, reinforcing U.S. Army Pacific's commitment to regional security and stability. (US Army photo by Capt. Frank Spatt)

Regarding future capabilities for Vantage, Markowitz also envisions applications in the Army's Next Generation Command and Control (NGC2) program, as well as counter-unmanned aerial systems.

"As we are fielding new capability for Next Generation C2 and looking to accelerate that across our divisions and with our pilot divisions like 4th ID, there's a lot of question about what level of echelon do we start to provide automation assistance with. There's a large question of aerospace/battlespace management at the lower echelon given counter UAS proliferation. How do you get all that friendly information? How can you see an adversary?

"It's a large amount of data [and] several classification issues we need to think through. Where do you want to do this work and how do you share the information because part of our move for Next Generation C2 is to make [data] sensitive but unclassified [like] CUI to share with our allies. But a lot of our ingest systems, unlike detection, are by their nature classified. How do we get minimal data packages so that we can support operations, both have the best type of sensors out there, protect those sensors capability, but provide what they can see to our soldiers and commanders so they can make the right decision and possibly then share that with our coalition partners."

For Advana, what's next is modernization of certain elements of the architecture along with additional modularity that will make it more efficient at scales larger than they are today. The CDAO wants Advana to triple in size in terms of the amount of data that flows through it without tripling the staff that work on it, according to CDAO.

After setting itself up to scale, the next most important goal is to improve the parity of the user experience and the tools across different classification levels – unclassified, secret, and top secret – so the tools used on the platform each look and work in similar ways, according to the CDAO official.

As Advana modernization continues, the CDAO wants it to better interact with other decision tools in the Defense Department. The goal is to build a data backbone that will allow more tools to plug into Advana such as Maven Smart System, an element of the National Geospatial-Intelligence Agency's Maven artificial intelligence program provided by Palantir that provides battlespace awareness, contested logistics, and joint fires and targeting for Combined Joint All Domain Command and Control.

"We send hundreds of tables [to them] back and forth every day, but how can we do that across the entire suite of other less-modern tools so that they can consume the data from us and immediately add value to their users at essentially very low to no cost to them," said the CDAO Advana official.

"The most important thing is that Advana is not a proprietary solution," he said. "It is a collection of commercial off-the-shelf and open-source technologies that we configure. We have vendors that help us do that, but we own the intellectual property and we own the data. We are not in some proprietary system where Advana could be replaced by other vendors' systems and then you'd have to replace the data or build it again. That's one of the most important reasons why Advana has been successful as it does not rely upon proprietary commercial stack and we have configured each of the pieces and own them as the government."



CDAO's Advana now ingests data from about 500 DoD business systems to conduct data analytics related to logistics, readiness and global force management, acquisition lifecycle management and procurement, and executive design support. (CDAO graphic)

VIEWPOINT FROM BOOZ ALLEN

"CO-CREATION" BOOSTS COMMERCIAL TECHNOLOGY FOR DUAL-USE DEFENSE APPLICATIONS

Many commercial companies have developed advanced technologies that could find widespread application within the Defense Department with a foundational boost.

This is the strategy that Booz Allen has used as the prime for the Chief Digital and AI Office's (CDAO's) Advana program since 2019. Approximately 80,000 Defense Department users presently take advantage of the data analytics platform, with recent discussions of Advana becoming a Program of Record.

Breaking Defense addressed these subjects with Graham Evans, senior vice president in Booz Allen's Defense Technology Group.



Graham Evans is a senior vice president in Booz Allen's Defense Technology Group.

What's product co-creation and how does it help warfighters solve their problems and execute missions?

Evans: The R&D budget in the United States commercial ecosystem in areas like AI, quantum, and 5G dwarfs that of government departments. Technology companies that are primarily commercial entities – many with dual-use applications – often do not have a federal practice. And when they do, it'll be limited and they'll be focused on just a handful of things.

As a DoD direct service provider, we work with these commercial and dual-use companies and expand upon their IP and technology as the foundation to deliver specific mission impacts. That way, the military and federal government at large get the benefit of all that technological innovation that's taking place – both at Booz Allen and across the commercial industry. U.S. industry has the best software engineering talent in the world, but it's not directly connected to the Pentagon. For us, it's a way to square that circle.

We get to work with these companies to jointly create technologies that are faster, cheaper, and more reliable, and then have a continuous R&D refresh because their budgets are such that they're able to invest a lot of capital into these technology focus areas.

Tell us how co-creation accelerates outcomes for the warfighter.

Evans: When I was in Afghanistan with the U.S. Army Human Terrain System, there was an Army joke about technology that it was yesterday's technology at tomorrow's price. Nothing ever really seemed to work the way you wanted it to.

With co-creation, we flip that on its head. It allows us to bring the latest technology at the best available price and make that available to the warfighter. We do that by working with U.S. commercial innovation to make certain that DoD always has the best. In many use cases, commercial technology will mostly meet the requirement. It just needs a direct provider to add that last 15-20 percent technology layer to it so the tech can operate on a government network.

How do you partner with these companies? They find you or you find them?

Evans: It is a little bit of both. For example, we recently made an announcement and investment in Shield AI focused on autonomy and their Hivemind enterprise product, a development platform for autonomous systems. This is a perfect example of us looking for each other.

They were looking for a way to accelerate the delivery of their technology into the department. We were looking for an 80-percent autonomy solution, which is what Hivemind was, and wanted to build the next 20 percent to make it work for specific platforms that maybe Shield AI didn't originally have in mind.

It was a perfect marriage and that's one reason I think that ultimately that deal came together so nicely, because we both needed each other's strengths to deliver a complete technical outcome for the government.

What are you hearing from DoD customers regarding their needs in areas like data readiness, AI/ML, and rapid infusion of commercial technology, especially as it relates to Advana?

Evans: The Advana program at CDAO is a great example of those elements. So how have we helped commercial technology companies like Databricks and Palantir scale? Advana is one of the largest federal implementations of Databricks. Databricks is a data platform technology that was primarily developed for the commercial sector, basically giving tools to engineers to make it easier to do massively scalable parallel processing of data. We used Databricks as the foundation to create one of the Defense Department's largest and most successful data platforms. And that's Advana.

What the government needed was access in a single location as a single source of truth for their enterprise data. Think logistics, manpower, acquisition, finance.

For example, let's say during the Afghanistan evacuation a few years ago they wanted to know where all their tanks were. That was a three-week or more data call that they had to go through to figure out where they had tanks that were ready and where they potentially needed to go. Where their people were located within the region was another data call; where their munitions were located was another data call.

Advana takes the different sources of enterprise data from different sources of truth in order to provide a single pane of where my stuff is, what condition it is in, how much it costs, where my people are – from about 3,500 different business systems within the DoD to answer these types of questions.

If you think about it, a tool like Databricks isn't going to innately understand the business of the DoD. It's going to provide the underlying infrastructure, the compute power, the tools in which to take that data and make sense of it.

But it still took Booz Allen technologists with the mission expertise, business expertise, and understanding of the department's inner workings to be able to map that information to a common, let's call it an ontology, which effectively are the nouns and verbs of the Department of Defense so that an analyst who's non-technical can understand what that data is describing.

That's where Booz Allen adds unique value. Industry leaders like Databricks and Palantir bring world-class capabilities to the table to provide a strong and adaptable foundation. But defense missions come with distinct requirements, as we've said, whether it's operating in secure environments, connecting with legacy systems, or meeting mission-specific workflows.

Booz Allen uses advanced technology and mission understanding to tailor, extend, and operationalize these systems for real-world mission impact. That's the technical advantage we bring as developers, engineers, and architects who build end-to-end solutions. We identify where enhancements are needed, create custom components, and modify platforms to deliver the speed, security, and relevance defense users need. That's what Advana represents: a modern, mission-aligned data platform that brings together the best of commercial innovation and defense-grade engineering — purpose-built by Booz Allen to empower decision makers across the DoD.

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