Solving the Defense Department’s Data Problems

DOD's chief data officer emphasizes evidence-based decision-making, aligning data management efforts with DOD business leaders and building industry pipelines to drive government data science.

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Historically siloed organizations within the Defense Department have made managing its data on a department-wide basis a challenge. But there are some solutions, according to DOD's chief data executive.

Three documents largely dominate DOD Chief Data Officer Michael Conlin's world, and they frame how DOD can solve its data problems, including the National Defense Authorization Act (NDAA), the National Defense Strategy (NDS) and the President's Management Agenda (PMA).

The common term that connects these documents is common enterprise data, which Congress in the NDAA for fiscal year 2018, said, "The defense business enterprise shall include enterprise data that may be automatically extracted from the relevant systems to facilitate Department of Defense-wide analysis and management of its business operations."

The NDS specifies precisely what to improve by leveraging common enterprise data to "reform the defense business enterprise for improved affordability and performance," Conlin told attendees at the FCW Citizen Engagement Summit in Washington, D.C. Wednesday.

The PMA then provides the standard to measure the implementation of common enterprise data efforts. That standard is to "be as efficient and as productive as an equivalent commercial sector organization," Conlin said.

Common enterprise data challenges start early in the process of determining what counts, or should count, as common enterprise data, Conlin said.

"If the NDAA says there's this thing called common enterprise data, we had better go create it. We had better get it," he said.

Another challenge arises out of the overlap between DOD's business mission, which is under Conlin's purview as common enterprise data, and its warfighting mission, all of which is not. For example, the spaces of logistics and supply chain, cybersecurity and IT occupy the overlap between the business and warfighting missions.

"You can't conduct war without cybersecurity or IT," Conlin explained.

Navigating what Conlin calls “competing equities” between different missions, mission stakeholders and between owners of siloed data presents a challenge, but one that Conlin has experienced before in the commercial sector. (Conlin assumed his role as DOD’s first chief data officer in July 2018 after a career as a technologist in the commercial sector.)

What does present a daunting challenge is the scope of what could fall under the common enterprise data umbrella.

“We have two systems of record, which is a red flag for everybody that’s in IT, for registering defense business systems," Conlin said. "One of them, the one we use for budgeting purposes, says that there are 1,800 registered business systems in the defense business enterprise."

“That’s crazy talk,” he added.

Despite the fact that 1,800 registered business systems for things like finance, human resources and real-estate management sounds extremely high, it was an organic result of these business units running independently in the past.

Now, with common enterprise data brought to life by the NDAA, the NDS and the PMA, Conlin and the DOD’s data management operations personnel must figure out how to collect, sort and leverage the massive amounts of data within the defense business enterprise to reach the right data that will inform DOD leadership how to optimize affordability and productivity to reach commercial levels of efficiency.

That’s where Conlin’s experience comes into play.

Patterns and Anti-Patterns

Referring to dealing with the sheer quantity and siloed nature of DOD’s data, Conlin said, “The good thing is I’ve done this before, so I knew what to do and what not to do.”

Conlin identified seven pairs of patterns and corresponding anti-patterns. The pattern side of these pairs helps DOD achieve its data management goals. The anti-pattern side may seem logical, but are ineffective or otherwise undesirable things to do, according to Conlin.

Patterns

Identify decision-makers who want to improve performance.

Define data stories; solve for domains.

Carefully select and curate data.

Develop a data first ecosystem.

Start with the problem you want to solve.

Make better decisions, more often.

Recognize that better is better.

Anti-Patterns

Build out a big data analytics platform

Define an all-encompassing data architecture.

Build out a big repository of all the data.

Extend/enhance an application-first ecosystem.

Start with the data you've collected.

Implement science fair projects and data for data's sake.

Strive for nirvana.

Many of the patterns involve connecting data management efforts with specific people and goals at a more granular level, and many of the anti-patterns involve broader strokes.

The last pattern-anti-pattern pair exemplifies this difference. In the last pattern, "recognize that better is better," any improvement in data management operations represents a step forward, Conlin said. This incremental progression contrasts with the strive for nirvana anti-pattern that seeks a more holistic approach to data management at the expense of discrete improvements, however small.

Recognizing the difference between the two sides of Conlin's dichotomy is merely one step toward improving DOD's data management operations.

The Future of DOD Data

Conlin outlined two important challenges facing DOD's data efforts moving into the future: culture and talent.

"We have a culture of experience-centric decision-making. Some people like to call it instinct-centric decision-making. People like to talk about gut feel. In the commercial sector, we learned that gut is a really great way to go broke," Conlin said at the summit.

Data fratricide, or different people and units bringing their own data into decision-making processes and trying to one-up their respective data, presents another culture problem that a common enterprise data repository helps alleviate.

“Nobody gets to bring their own data to the fight anymore,” Conlin said.

Planning at the macro level and prioritizing the near term over the medium and long terms round out the list of cultural challenges that need to be addressed moving forward. In addition to the cultural challenges of adapting DOD to 21st century technologies and processes, talent is crucial.

Conlin explained the unique combination of skills and experience that comprise an ideal data scientist, including computer science — specifically Python or R, math and statistics and domain subject matter expertise — is the "scarcest talent on the planet," Conlin explained.

Conlin emphasized DOD’s efforts to recruit industry experts and develop internal personnel to execute the common data enterprise efforts and data management effort in general.

“Industry is where the art of the possible is created every single day with data science," Conlin said. "That means we need to place our people with industry to get that practical experience with the art of the possible and bring them back in."

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