Issue Brief

DOD's Emerging Digital Workforce:

A Follow-on Report to the DOD's Hidden AI workforce

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Executive Summary

The U.S. Department of Defense (DOD) is on the precipice of digital transformation. However, digital transformation requires digital talent. This report summarizes recent DOD digital workforce trends as a follow-up to our 2021 report, *The DOD's Hidden Artificial Intelligence Workforce: Leveraging AI Talent at the U.S. Department of Defense.*[1] We expanded our definition of AI talent to include data, analytics, software, and AI, referred to here as the "digital workforce," to be more aligned with Department needs and current related workforce planning efforts.

Since our initial report, we find evidence of continued divergence in approaches across military services on how digital talent is defined, identified, developed, assigned, and promoted. Conducting 25 interviews across DOD components, we identified five trends regarding the state of DOD's digital workforce:

1. *Across the DOD,* **digital talent career fields and specialized experience identifiers lack common criteria and are inconsistently applied**, *creating missed opportunities to leverage this much-needed talent.*

2. **Prioritizing the ability to identify digital talent varies within and across organizations**, *which affects the DOD's ability to understand force readiness related to data, analytics, and AI capabilities.*

3. **Digital talent teams are increasingly experimenting with ways to bring in and keep those with data analytics talent**, *but there is no centralized way of sharing lessons-learned and best practices.*

4. *Services are in alignment that* **there is a need to prioritize and invest in training for universal data/digital "fluency,"** *however; there is less alignment on defining fluency and on the availability and scale.*

5. **Inconsistent organizational ownership of digital talent** *makes service-level comparison and coordination an increasingly difficult challenge.*

We also find that each service's approaches are at different levels of maturity. However, regardless of approach, all services share common challenges related to people, processes, and technology.

Still, we see reason for optimism if the DOD incorporates lessons-learned from ongoing efforts to systemically tackle these challenges. We hope the insights provided here help inspire leaders to empower and enable their digital talent to succeed in a data and AI-enabled world.

Table of Contents

Introduction

This paper is an update to a [CSET and MITRE 2021 report](#) on the state of DOD's data, analytics, software, and AI workforce (which we refer to collectively as the "digital workforce"). Within each service there has been much activity related to digital talent since our initial publication, but this activity has not been actively monitored and reported on at an enterprise-wide level. We believe this is a lost opportunity for sharing best practices and supporting service-level digital workforce planning efforts.

Given the importance of DOD's access to digital experts to meet its mission, it is essential that each service have effective recruitment and retention strategies to meet digital skill requirements. However, this type of skills-based planning requires better data than what is currently available. We provide this update as a way to bridge this information gap until more enterprise-wide analytics and coordination is available.

Three motivations guide this update:

1. Determining the degree to which individual services are working with current digital education and workforce efforts at the Office of the Secretary of Defense (OSD) level, whose goal is to harmonize digital readiness across the enterprise. Advancement of data- and AI-enabled capability deployment is a strategic goal for the Department, as stated in the 2020 Data Strategy[2] and 2018 AI Strategy.[3]

2. Documenting the status of and progress against service-level efforts regarding digital workforce identification, recruitment, assignment, development, management, and advancement ("talent management"). Each service continues to proceed independently on digital workforce initiatives, working within existing processes and organizational cultures. While it is a service-level responsibility to man, train, and equip the workforce, it nonetheless creates challenges to assess DOD digital force posture and its impact on mission effectiveness. It also results in each service having different levels of maturity in their readiness, which in turn could make joint and interoperable technology and missions more challenging.

3. Taking advantage of the current opportunity for DOD to coordinate and spread knowledge as individual services experiment, pilot, and take risks to effectively recruit and retain digital talent as a strategic priority.

Research Methods

For this update, we define "digital" talent as data, analytics, software, and AI talent. Although we implicitly included this talent in our previous study through a broad definition of "AI workforce," here we explicitly call it digital talent to be consistent with the updated focus of the Department.[4]

To gather data for this update, we spoke with uniformed and civilian personnel across the enterprise about their organization's data, analytics, software, and AI talent. We selected a sample of leaders, practitioners, and change agents that could speak to new and ongoing initiatives related to recruitment and retention for this talent, including identification, development, assignment, management, and promotion.[*] We also asked about the challenges their organization faced related to leveraging and retaining this talent, and how their organization was addressing these challenges. A list of discussion topics is provided in Appendix A.

We interviewed more than 25 individuals across 16 organizations representing the Army, Navy, Air Force, Marine Corps, Space Force, and Coast Guard. This included both uniformed and civilian personnel, ranging in rank from Captain to Colonel and from mid-career professionals to senior leaders. We also targeted individuals on digital teams such as in software factories as well as those in research centers and known innovation offices, covering a range of organizations that employ digital talent. We conducted these interviews between October and December of 2022.

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[*] We selected interviewees through a multi-tiered approach: talent on known digital teams, task forces, and software factories, talent in offices leading and overseeing digital transformation, and talent identified in news articles and DoD press releases as leading digital workforce efforts. We engaged participants using established connections, referrals, and cold outreach to ensure broad coverage.

Divergence in Digital Talent Management

Our research suggests that since our initial report, services have continued to diverge in their approaches to identifying and leveraging digital talent. Five trends, identified here, illustrate how these workforce approaches are taking shape in different ways.

Trend 1. Across the DOD, digital talent career fields and specialized experience identifiers lack common criteria and are inconsistently applied, creating missed opportunities to leverage this much-needed talent.

There is currently no DOD-wide, unified approach towards building the career pathways of the DOD digital workforce. This holds for military officers, military enlisted, and civilians; none of these populations have a clear or consistent approach to digital talent management.[5]

In our interviews, we observed a general shift away from advocating for new, uniformed career fields. There remains a continued acknowledgement of the need to create career pathways, even if not a formal career field, yet there is no consensus on what an alternative approach would look like and how that could be accomplished. Reporting from the DOD supports this view; for example, the Air Force is looking into a "tech track," and the Army is looking to create a new technology specialty code for warrant officers, but few details have been decided.[6]

In the absence of transformational DOD initiatives to address this question, we did observe some incremental progress. On the uniformed side, the DOD community is largely leaning into digital talent identification through the creation of Special Experience Identifiers (SEIs) or the equivalent. This includes longstanding specialty identifiers for operations research analysts (Navy), but also newer specialty identifiers within the operations research and related career fields or functional areas (Air Force and Army).

Moreover, many of the interviewees stated that efforts to create opportunities to cultivate uniformed digital talent continues to focus on officers over enlisted personnel. A few notable exceptions were the Navy's new robotics rating for enlisted sailors (although the rating is anticipated to be no more than a few hundred billets), the Air Force's MIT AI Accelerator, and the Army's Data Warfare Company and Software Factory.

In addition to incremental progress, we also observed some setbacks. Some efforts to create an AI-related career field for uniformed personnel have stalled since our 2021 report. For example, the Marine Corps' plans for an AI career field have remained on

pause for over two years. Likewise, while the Space Force (USSF) touted a move toward competency-based identification and assignment of personnel in their *Guardian Ideal*,[7] signaling a shift away from career fields, that effort has also paused in lieu of traditional Air Force occupational series.

On the civilian side, we noted uneven progress to identify and manage digital talent across services. For example, several interviewees noted research labs and Naval warfare centers had more sophisticated identification and tracking efforts for data and AI-related civilian personnel, since they serve as large employers of civilian technical talent. However, these efforts were specific to only that organization. While a new occupational series from the Office of Personnel Management (OPM) was introduced for data scientists in 2021, a planned series forthcoming for AI remains to be codified. That said, interviewees noted use of the new data scientist series was low and recruiting challenges for those roles remain. We learned that several organizations planned to continue use of existing occupational series and position descriptions, such as operations research analysts, and then employing creative tagging or hashtags for positions specific to data, analytics, and AI.

Trend 2. Prioritizing the ability to identify digital talent varies within and across organizations, which affects the DOD's ability to understand force readiness related to data, analytics, and AI capabilities.

Consistent with our original 2021 study and related to Trend 1, we found that data-driven approaches to systematically identifying digital talent are increasing, but their pacing differs across services. This applies to who is being identified and how identification occurs within and across services—active versus reserve components or military versus civilian personnel—**and** also which digital skills are the primary focus. For example, while interviewees within the Army emphasized the need to identify, develop, and retain data and software talent over AI talent, the Navy was far more focused on AI talent, while the Air Force was focused on both software and AI-specific skills. In contrast, the Marine Corps and Space Force, which are smaller in size, discussed the importance of access to technical expertise more broadly, including through contracting out that talent.

Aside from variations in focus areas, and examples of promising pockets of digital talent identification of civilians at research labs, we did see at least one positive practice for identifying uniformed officers with advanced digital skills. Service-level websites that function as "talent marketplaces" exist today that help to manage officer career assignments and also allow them to (voluntarily) self-identify digital skills that get added to their electronic personnel records. This is in addition to having their

postsecondary records and related special identifiers mentioned in Trend 1 that can then be queried. That said, although useful, these are not seen as mature enough to capture the entire digital talent ecosystem. Nor are they systemic or consistent enough to readily assess DOD posture for digital talent.

Importantly, we heard that adding to the confusion and divergence was the inconsistent organizational approaches to a critical lexicon, including using common terms such as "data," "digital," and "AI" interchangeably and without consistent definitions. We believe a lack of a common lexicon for data, analytics, and AI competencies and work roles exacerbates the services' different approaches to data, analytics, and AI talent identification.[8] This also presents an opportunity for top-driven standardization.

Trend 3. Digital talent teams are increasingly experimenting with ways to bring in and keep those with data analytics talent, but there is no centralized way of sharing lessons-learned and best practices.

Since our initial report, we observed the formation of both new and improved digital talent teams applied to a wide range of missions. This includes:

Figure 1: Digital Teams across the Department of Defense

	AFRL's **redForce,** the Air Force's first AI factory, working in partnership with industry for rapid AI acquisition and deployment.
	Army's **Data Warfare Company** seeks to operationalize AI on specific projects in the Army.
	Army's **AI Integration Center (AI2C)**, the Army's first AI factory, working in partnership with CMU and employing a cohort training model.
	Navy's AI task forces, 8 groups that span different theaters and AI applications (e.g., Harbinger, Hooper, Task Force 59).
	Air Force's operations research analyst modernization study, which includes a new construct for deploying teams
	United States Special Operations Command data science support teams to the United States Special Operations Forces community

Source: Author compilation of interviews and publicly available documentation.

These service-level teams are in addition to the digital teams at the OSD level. For example, the Defense Digital Service (DDS) is a well-established rapid response team that includes engineers, data scientists, product managers and designers working with the Chief Digital and Artificial Intelligence Office (CDAO).

Supplementing this approach, the DOD is continuing with its long history of running data- and AI-related (including software coding and hacking) challenges and competitions. Recent competitions include the launch of Dragon's Lair, a competition in which soldiers from across the Army pitched their innovations to a panel of civilian tech experts and military leaders.[9] Another joint-service competition was Central Command's Innovation Oasis, whose goal was to "improve operations or enhance the quality of lives of our troops."[10]

Such growth and experimentation are encouraging and offer signs that the digital workforce challenge will be met with innovative approaches. These groups, by the very nature of their diverse composition, show that they are aware of the need for breaking silos and sharing lessons learned. For example, the Air Force found that operations research specialists were better served as being an operational career field, and that being placed on teams instead of one-offs would enable greater success in advancing data-driven decision-making. Ideally, such lessons would be identified, documented, and shared across the DOD, where each service could evaluate the utility of replicating a specific initiative.

Trend 4. Services are in alignment that there is a need to prioritize and invest in training for universal data/digital "fluency," however; there is less alignment on defining fluency and on the availability and scale of such education.

There has been an observed rise in opportunities for general data and AI education and training across the services. For example, services are embracing the CDAO's senior executive AI training. Services are also starting to offer access to courses for those who wish to upskill on their own time (such as the Army's Data 101 course or online courses offered through the Air Force's Digital University).

"We need a base level of data literacy for everyone in order to become critical consumers of data. Honestly, it's a national security concern"

-Interviewee

However, the availability of and enrollment in these opportunities remains uneven. One reason relates to

Trend 2 and the uneven prioritization of digital talent. For example, DOD must decide how to integrate the necessary digital workforce training into the existing demands on a servicemember's time. Other difficult questions center around what a suitable baseline for universal fluency looks like, and what the right balance is between upskilling data and digital talent in-house versus supplying that needed talent through civilian contractors. Yet another unaddressed issue is the inconsistent usage of the terms "data fluency" and "digital fluency" and the lack of a clear definition for each. The USSF, for example, is focused on digital fluency, while the Army focuses on data fluency.

The answers to these questions are complex and vary based on local conditions and the changing workforce environment. Some answers may emerge as service members complete their data and digital training. For now, the impact of such training remains to be seen.

Moreover, addressing these questions will help steer the future of critical DOD functions, such as for requirements generation and for acquisition. In 2022, Congress mandated training specific to AI acquisition.[11] In addition, there is some acknowledgment within the DOD that there needs to be enough in-house knowledge to successfully manage projects, write requirements, and intervene when commercial vendors overhype product capabilities (often citing AI or other integrated technical components that may offer little or no benefit to performance).

Box 1. Digital Fluency Across the Department of Defense

How much knowledge is really needed, especially for operational systems? One interviewee shared an example - there is already robust failure training for F35 pilots: they know what an indicator light means and how to respond. One level of literacy would teach pilots to look for signals and ask questions of the system to ensure that operation is taking place within the expected envelope. Another level of literacy would teach pilots, as well as acquisition personnel, test and evaluation personnel, and others, how to recognize faults in the AI training system before the aircraft ever gets off the ground (e.g., if the real world doesn't match the training data). This level of understanding takes much more training, and development of that training, applied to specific missions.

Trend 5. Inconsistent organizational ownership of digital talent makes service-level comparison and coordination an increasingly difficult challenge.

Data, analytics, and AI talent are being identified, tracked, and managed by services, but how, where, and to what extent this activity is happening varies significantly. The mapping below demonstrates our understanding of current centers of gravity for data, analytics, and AI talent by each service in the DOD. A synthesis of data gathered suggests these ownership differences are the result of where initial efforts began.

Figure 2: Current Centers of Gravity for Data, Analytics, and AI Talent

Air Force	**Space Force**	**Army**	**Navy**	**Marines**
CDAO/CIO/A9/ MIT-AI Accelerator/ A1/AFRL	CTIO/S1/ STARCOM	HRC/AFC/ G1/ARL	Commands/N1/ ONR/NWIC	DCI

Source: Author compilation of interviews and publicly available documentation.

While it is understandable that efforts may have been rooted in different constituencies across services, what matters is how ownership of these efforts have evolved and to what extent all stakeholders with manpower and personnel equities in digital talent management are included. Who, or what, is driving efforts, and is actively engaged in those processes, could impact how digital talent is being identified and assigned going forward. For example, if the service's headquarters personnel group (X1), Manpower and Reserve Affairs (M&RA), or human resource command units are driving efforts, that could take shape very differently compared to service-level Chief Data Officers (CDOs)/CDAO or functional communities.

In other words, piecemeal and inconsistent ownership appears to be adding to the divergence in service-level approaches to digital talent management. We emphasize that a one-size-fits all in ownership, similar to approaches to digital talent management, may not make sense given differences in force mission, structure, and culture. However, it is important that there is coordination with all stakeholders to enable clear communication and ownership for harmonization of approaches at the OSD level.

Convergence in Digital Talent Challenges

While the maturity of efforts across services to attract, recruit, identify, track, promote, and retain digital talent is diverging, services are experiencing similar challenges relating to effectively managing their digital talent. As we did in our 2021 report, we describe these workforce challenges in terms of people, processes, and technology.

People

AI deployment in the DOD is still early, so there is a lack of consensus across the department on how to use it for mission success.

While interviewees in 2021 included comments like "my leadership can't even spell AI let alone understand it," many 2022 respondents were concerned about having leadership support the right opportunities for operationalizing AI.

In part, this is due to misaligned incentives. For example, similar to challenges associated with DOD software acquisition and deployment, traditional planning, budgeting, and contracting processes are tied to outdated notions of "programs of record" based on physical goods.* This translates to mixed levels of prioritization of investment in data and AI-enabled capabilities, along with the needed investments in talent. It also makes it challenging to collect the necessary data to steer a robust conversation on what skillsets are needed or what combination of skills would work best to operationalize AI and related technologies.

It follows that proposed solutions for identifying and assigning digital talent vary by organizational mission, culture, and available personnel. For example, some interviewees voiced concerns that if a separate career field were to be created for technical talent, then others would assume that they themselves would not need to be data fluent, understand and consider responsible use cases, and appropriately make or trust data-driven decision analytics. In effect, they were concerned that a data analytics and AI rating would lead to a false sense of reduced responsibility for others developing their own data fluency, even though there are both cyber career fields and DOD-wide mandatory annual cybersecurity awareness training.

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* While we acknowledge this ties into the ongoing discussion about "defense innovation" and "acquisition reform" we do not get into this discussion here. We simply note it is inextricably linked, and affects the incentives related to prioritizing and investing in data- and AI-enabled systems.

Digital talent in the services remains without a clear career pathway with promotion potential.

Related to the above challenge, our 2021 report chronicled in detail the lack of clear career progression and opportunities to leverage AI and AI-related skills after obtaining relevant education and training and experience. Unfortunately, our 2022 discussants cited many examples of how this fundamental challenge persists given the limited progress in prioritizing this talent:

- "The best people are getting out in a year, [they are] motivated to learn new skills. Big Army is like 'you're dead to me.'"

- "We lose more people with technical talent when they show up in a command and the command has no idea how to use them. We conducted surveys on retention and [determined that] people stayed not because of money, but because of the quality of work."

The lack of promotion potential, and relatedly, of recognition and prestige for digital talent was also evident in our findings. In addition, we heard concerns that the emerging digital workforce is not being appropriately leveraged. Taken all together, these challenges could have significant implications for digital talent retention and morale, especially if the work is not meaningful. For example, one interviewee stated:

- "[An individual] was participating [in important digital talent work] and then got yanked away to do other tasking because it came time for him to become a department head or his career would be put at risk. The community chose to put him as a department head [despite the fact that] he was willing to put his career at risk [to continue in the previous role]."

In our 2021 report, we also identified "rockstar" change agents, uniquely qualified and positioned to address obstacles that originate from appropriate identification and leveraging of DOD's existing cadre of AI talent. However, in our 2022 discussions, we heard multiple accounts of instances where "rockstar" junior officers left or were leaving service because of a lack of opportunity. This indicates the possibility that the absence of these rockstars presents a fundamental risk to the progress of DOD becoming a data and AI-enabled enterprise.

Encouragingly, we were provided at least one account of a service attempting to better understand these challenges. This organization had conducted their own retention survey and gap assessment related to digital talent, although it is unclear how much the results are influencing current and planned talent management reforms.

Gaps in mentorship opportunities and inconsistencies in leadership further affect the growth of a vibrant digital workforce.

The data, analytics, and AI practitioners we spoke with both in 2021 and 2022 repeatedly stated that the loss of "champion" senior leaders for digital projects, and of career mentors for digital talent who leave the traditional career path to take on digital projects, are key issues. In fact, such losses often precipitated further departures. Some of what we heard illustrate this:

- "I also lost my mentors when moved to working in tech. Isolated from peers, they don't know or understand what I'm doing as that's not success to them. My mentors who were supposed to help me have shifted to sponsor or encourager. They love what I'm doing but don't know how to guide, lead, or give advice. They don't relate. Losing mentors was most challenging for me. I haven't had a new mentor in 3 years."

- "The people who stood this up had a compelling reason, but [X service] moves people around. The champion left and the person replacing him changed the scope based on new priorities."

In this gap, several interviewees mentioned grassroots efforts they organized to help create community and mentorship opportunities:

- "One thing I do here is [host] an informal discussion group... it's a mentorship opportunity. We bring in department heads and provide a place for people from across projects to network and learn. Some collaboration and problem-solving [gets done] there too. [It's about] Connecting people. Helping others understand and get ownership instead of remote work in isolation."

Processes

One prevailing concern is that adjusting billets to hire digital talent would result in fewer numbers of other personnel available to address mission needs.

- "Every time we talk about standing up a new community, all [the] other communities get nervous because billets will be transmuted into this community from billets of the old community. And a community is built very jealously. No one wants to give up [their billets] to build a new thing... [there is] billet anxiety that we will lose billets from an old community... [only] when it stops being one-offs, [and becomes] a permanent thing, it's easier on the communities

involved. [But the risk to get there is] you don't want to lose billets only to show they were not needed in first place."

Many respondents made the case that existing communities do not want to give up billets for new career fields, as force end-strength is not expected to increase over time. Even increasing manning for existing, relied-upon series such as operations research systems analysts (ORSAs) came only after dedicated coordination and collaboration among stakeholders. One respondent noted that even the robotics rating for Navy enlisted personnel was "a fight." Interestingly, some participants noted less concern in this regard for civilian digital talent. One possible reason is that there are fewer barriers related to end-strength limitations for civilians.

While civilians do not face billet anxiety, they may face billet algebra. For example, recoding a billet to a new series is a major obstacle that could take years. Many do not bother to go through the process of recoding, instead choosing to fill-in whatever billet is funded and available—further diffusing the possible identification and differentiation of digital talent. Another barrier comes from the time it takes to recruit and onboard talent with digital skills, even with the use of direct hiring authorities. To speed up on-ramping, one command in the Army put together a hiring guide authority kit which details the legal hiring authorities the Army can use as well as methods to use them appropriately.

"'Billet algebra' can't be solved with a calculator, and 'billet anxiety' can't be solved with a Xanax. "

-Interviewee

Managers don't have the performance incentives or accountability structures to enable and empower their digital workforce.

Echoing findings from our 2021 report, we heard repeatedly that key decision-makers in middle-management represented a barrier to digital transformation. This obstacle stems in part from systemic disincentives where leaders are groomed to take command and must successfully check a pre-defined set of "boxes" to be promoted. This in turn leads to attitudes and behaviors that perpetuate a culture of limited risk-taking, limited value for digital skills or data-driven capabilities, limited thinking outside the box, and limited autonomy granted to more junior digital talent.

The current paradigm for career fields, assignments, and promotion therefore has the unfortunate result that managers lack incentives to support digital solutions, investments, and processes that threaten existing and clearly defined requirements, project timelines, and budgets. As stated by our interviewees:

- "There is a disconnect between mid-level leaders and what I'm saying. Senior leaders are more than ready to toot [the AI] horn. O5-O7s are not willing to accept the risk. At the Field, MAJCOM level, the frozen middle is where it stops. It's not that they don't understand, they're not willing to accept risk. The military is a meritocracy."

- "This current assignment will not get me promoted. There is no bonus pay, no merit-based promotion. Yet I am having impact for the enterprise...But the incentive isn't there to capitalize on that. Even if I get a great eval, there's only one chance to be promoted. You get a 13 second consideration. It all comes down to 4 blocks on senior rater comments."

- "Champions at the top want change... Siloed staff too. [But the frozen middle] hopes for a status-quo organization, hopes for innovation sheriffs that are not interested in new or risky ideas. This is the [X service's] model. They are responsible, the Field grade leaders at O4-O5. The champions outrank them but don't have the authority or power over people to inspire change. [So there is a] breakdown. The Middle is like, 'no that's not what got me here or will get me there.'"

Technology

Data and technological infrastructure often fall short of requirements to support a digital workforce.

Our 2021 report referenced numerous accounts of insufficient data infrastructure as being a key limitation to cultivating digital talent and to employing AI capabilities. Unfortunately, respondents continued to highlight this reality as an enduring critical challenge. These issues span the data lifecycle, such as access to integrated data pipelines and barriers to access across classification levels. Access to cloud-enabled capabilities, coding, and data analytics tools did appear to improve, but this was not true in all organizations. As stated by our interviewees:

- "[X service] put together crash teams dedicated to data engineering and data as a product. The human capital plan for me started in 2016 so we were lucky and have had more years of runway. But other datasets were not so fortunate."

- "The biggest gap is [X service]'s investment into high quality data. If don't have data, we can't have models that do fancy things. We have to invest in the boring stuff."

- "The DOD network does not have technical empathy. It's designed for security not usability."

Seemingly simple activities remain challenging. We listened to accounts where laptops were unable to connect to enterprise networks for months, let alone connect to resources necessary to build capabilities. Other staff were given mandates to develop digital projects, but were unable to secure the data necessary to do the work. For example, one interviewee noted:

- "We did a barrier analysis, looked at officer survey results about retention, intentions, and influences. A striking result was that our [specialty code], much higher than for [X service], listed data access and IT as a major influence to leave. This talent pool wanted to make a difference and [found it] very frustrating to see it, but can't do it."

There is an overload in technology-related priorities that must be addressed, which consumes both available investment and digital talent.

Too many competing priorities can diminish even the best of intentions. We heard of multiple pilot programs and transitions currently occurring in the talent acquisition and management ecosystem. Examples include the deployment of the Integrated Personnel and Pay System – Army (IPPS-A) and other IT/data integration updates, pilots related to remote work, and updating the scope and policies surrounding promotion boards (ironically one group is experimenting with using machine learning to replace promotion boards). All of these investments have benefits for the future digital warfighter. However, while we do not comment on the trade-off of these prioritized investments, or on how these investments are prioritized, we note there is only so much investment funding and human capital to go around.[*]

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[*] We note that having multiple technology investments is not in itself an issue. The issue is when these investments are competing for limited resources without a clear return on investment. If these investments were appropriately evaluated, and if those evaluations were used to inform future investments, that would help ensure workforce-enabling technology investments were appropriately targeted. However, as noted in elsewhere in this report, this is not the case.

Conclusion

The ability for the DOD to lead and succeed in a data and AI-enabled world will not come without effectively recruiting and retaining the necessary data, analytics, software, and AI ("digital") talent. However, efforts to comprehensively assess this workforce across the Department have been minimal. While our initial 2021 report sought to capture a sense of the current state, much has transpired in just the last two years that has not been systematically captured.

To better aid senior decision-makers in the human capital planning space, this report provides an update on efforts across the Department to adequately and effectively identify, recruit, develop, assign, manage, and promote their workforce (referred to as "talent management"). Our interviews revealed considerable progress since our 2021 report in prioritizing digital talent, but also that large challenges remain.

Promisingly, we found that services are working on efforts to advance digital talent management, creating new special identifiers for select groups, deploying digital talent teams, and providing access to data and AI education. However, we also found that less progress has been made in accurately and holistically identifying, assigning, managing, and promoting digital talent.

We also continually heard that challenges in people, processes, and technology continue to limit, if not pause, progress. For example, we heard multiple instances where inertia and systemic inflexibility in personnel identification and management, billet anxiety, and cultural or other traditional barriers to creating new career fields limit services in what they can do and their ability to scale best practices.

It is our hope that this report can aid efforts to effectively recruit and retain the necessary digital talent. For example, one benefit of this work was our ability to identify a community of digital-talent-management enthusiasts across services. Each participant in the study was offered the opportunity to connect to other participants in order to build a larger network and, without exception, each was eager to be included. We hope that our findings provide additional momentum and encouragement for DOD human capital strategists at the OSD-level and service-level to work collaboratively on addressing the needs of the DOD digital workforce.

Authors

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Acknowledgments

Appendix: Interview Protocol

CSET-MITRE DOD Data, Analytics, and AI Workforce Study

[*Note: Consent and Discussion Topics Sent Separately as Read-Ahead*]

[*Read consent form sent to interviewees, noting confidentiality, non-attribution unless explicitly permitted, voluntary participation, and study objectives. Answer any questions.*]

[*Study overview: The June 2022 stand-up of the Chief Digital and Artificial Intelligence Office (CDAO) creates a unique opportunity to design policies that effectively identify and leverage data, analytics, and AI talent across the Department of Defense (DOD). This study will provide an overview of new and ongoing service-level initiatives related to technical talent recruitment and retention, including talent identification, training, assignment, management, and promotion. It will also provide recommendations to CDAO to coordinate, convene, and harmonize best practices and approaches at the Department-level.*]

Questions for Interviews

1. Background question on interviewee(s): Please identify your current title and role and provide some background on yourself.
2. Are you seeing a push toward identifying, developing, and/or leveraging data and analytics talent in your organization?
   a. If so, are you seeing a push for general skills development or career data talent?
   b. At what level (junior, mid, senior) are you seeing any emphasis on cultivating and building technical talent?
   c. [*If hear emphasis on people, process, or technology, prompt for additional information about connection to talent*]
3. Are you seeing a push toward identifying, developing, and/or leveraging AI talent in your organization?
   a. If so, are you seeing a push for general skills development or career data talent?
   b. At what level (junior, mid, senior) are you seeing any emphasis?
   c. [*If hear emphasis on people, process, or technology, prompt for additional information about connection to talent*]

4. Are you seeing an emphasis on any of these talent groups over the other in your organization?
5. [*Given response in Q2-Q4*] What initiatives related to the development and/or management of data, analytics, and AI workforce are you aware of at your organization?
    a. What is the current status of those initiatives?
6. Do today's decisionmakers now have the right awareness, mindset, or initiative necessary to identify and develop the talent necessary for success in building this workforce?
    a. If not, what do they need to know?
7. Are you working with the CDAO on any talent initiatives? If so, what?
    a. Are you working with other organizations or services?
8. What are your organization's plans for the future related to data, analytics, and AI talent management in the next 1-5 years (e.g., identifying, assigning, training, managing, and promoting this talent)?
9. In what ways do you rely on partner organizations outside of FFRDCs, UARCs, industry, and academia to access talent with the needed data/analytics/AI skills?
10. What have been the biggest barriers to success in these and previous data, analytics, and AI talent management initiatives?
    a. For example, technological infrastructure, data quality, skills gaps for more advanced tools (whether on the operation side or on the decision-maker side)?
11. How have you overcome these barriers/challenges?
    a. Have they affected current initiatives? If so, how?
12. King for a day: What would need to be done to overcome these challenges?
13. Do you wish to opt in to share your information (name, affiliation, and email) with other interviewees contacted through this process with the goal of helping foster a community of like-minded leading edge talent management enthusiasts? [Note, only the aforementioned information would be shared with others who have themselves also opted in, and opting in is completely voluntary with no penalty for not participating.]

Endnotes

[1] Diana Gelhaus et al., "The DOD's Hidden Artificial Intelligence Workforce," Center for Security and Emerging Technology, September 2021, https://cset.georgetown.edu/publication/the-DODs-hidden-artificial-intelligence-workforce/

[2] "Executive Summary: DOD Data Strategy," Defense.gov, September 30, 2020. https://media.defense.gov/2020/Oct/08/2002514180/-1/-1/0/DOD-DATA-STRATEGY.PDF

[3] "Summary of the 2018 Department of Defense Artificial Intelligence Strategy: Harnessing AI to Advance Our Security and Prosperity," Defense.gov, February 12, 2019. https://media.defense.gov/2019/Feb/12/2002088963/-1/-1/1/SUMMARY-OF-DOD-AI-STRATEGY.PDF

[4] See CDAO designation memos: Establishing CDAO: "Memorandum on the Initial Operating Capability of the Chief Digital and Artificial Intelligence Officer," Defense.gov, February 1, 2022, https://media.defense.gov/2022/Feb/02/2002931807/-1/-1/1/MEMORANDUM-ON-THE-INITIAL-OPERATING-CAPABILITY-OF-THE-CHIEF-DIGITAL-AND-ARTIFICIAL-INTELLIGENCE-OFFICER.PDF Recognizing CDAO as the PSA for all things data, analytics, and AI: "Memorandum on Role Clarity for the Chief Digital and Artificial Officer," Defense.gov, February 1, 2022, https://media.defense.gov/2022/Feb/02/2002931807/-1/-1/1/MEMORANDUM-ON-THE-INITIAL-OPERATING-CAPABILITY-OF-THE-CHIEF-DIGITAL-AND-ARTIFICIAL-INTELLIGENCE-OFFICER.PDF. We note software talent management at the OSD level falls to OUSD/R&E but is still generally included in defining "digital" across the services.

[5] We note at the OSD level the recent establishment of "work roles" as an alternative to occupational series which, once coded onto military and civilian billets, will ultimately provide an ability to uniformly analyze the digital workforce similar to the cyber workforce. There are 11 data, analytics, and AI work roles and 6 software roles that are analogous to the 54 cyber work roles established through the NICE Framework. For more, see "The Workforce Framework for Cybersecurity (NICE Framework)," NIST, November 8, 2019 (Updated May 8, 2023). https://www.nist.gov/itl/applied-cybersecurity/nice/nice-framework-resource-center/workforce-framework-cybersecurity-nice.

[6] See Jon Harper, "Air Force chief contemplating new 'tech track' and military occupational specialties for data experts," DefenseScoop, February 13, 2023. https://defensescoop.com/2023/02/13/air-force-chief-contemplating-new-tech-track-and-military-occupational-specialties-for-data-experts/ and Davis Winkie, "New MOS and formations could come to Army spec ops in tech-savvy era," ArmyTimes, Jul 28, 2022, https://www.armytimes.com/news/your-army/2022/07/28/new-mos-and-formations-could-come-to-army-spec-ops-in-tech-savvy-era/.

[7] "The Guardian Ideal," United States Space Force, 17 September 2021. https://www.airandspaceforces.com/app/uploads/2021/09/21SEPT-USSF-GUARDIAN-IDEAL.pdf

[8] Noting DOD published a data stewardship guidebook in September 2021 with data work roles and associated qualifications, although this instructional was only active for one year.

[9] Alejandro Licea, "Army's 'Dragon's Lair' Opens to All Military Services," Defense.gov, October 20, 2021. https://www.defense.gov/News/News-Stories/Article/Article/2817569/armys-dragons-lair-opens-to-all-military-services/

[10] "CENTCOM Innovation Oasis." U.S. Central Command, https://www.centcom.mil/VISITORS-AND-PERSONNEL/INNOVATION-OASIS/

[11] "S.2551 - AI Training Act," Congress.gov, July 29, 2021 (Updated: October 17, 2022), https://www.congress.gov/bill/117th-congress/senate-bill/2551