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Accelerating the Future Leveraging AI for the Transformative Federal Acquisition

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Accelerating the Future Leveraging AI for the Transformative Federal Acquisition

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Abstract

The U.S. Department of Defense (DoD) has requested \$310.7 billion in funding for Fiscal Year 2025 dedicated to Procurement, Research, Development, Test, and Evaluation (RDT&E). This includes an allocation of \$167.5 billion for Procurement and \$143.2 billion for RDT&E. As the largest federal contracting entity, the DoD awards contracts across a wide spectrum, from major weapon systems to software development to food services.

To support these vast acquisition programs, the DoD relies on a skilled acquisition workforce equipped with the management, technical, and business capabilities needed to oversee these programs and activities from conception to completion. However, the rise of technologically advanced strategic adversaries highlights the need for the DoD to streamline its acquisition practices. Modernizing these traditionally time-consuming processes to include technologies like artificial intelligence (AI) is critical to bolstering acquisition professionals' efficiency and effectiveness.

To address these challenges, The MITRE Corporation and the National Defense Industrial Association's (NDIA) Emerging Technologies Institute conducted a joint research initiative. In October 2024, MITRE and NDIA ETI co-hosted a symposium on "Leveraging AI in Acquisition," which explored potential AI applications to enhance the defense acquisition workforce and their processes. Drawing on insights from the symposium and interviews with AI and acquisition experts, the research team identified key acquisition areas where DoD-developed and commercial AI could be applied, as well as the barriers to integrating AI within various federal acquisition phases. These targeted areas for AI application potentially include:

- Market Research
- Request for Proposal/Quote Creation
- Evaluation
- Contract Management

While the integration of AI holds significant promise for enhancing defense acquisition, certain critical functions must remain human-led. This research offers a range of recommendations to support the transition to a modern, AI-enabled acquisition system and offers strategies to address structural and cultural barriers.

Introduction

The rapid pace of technological change, evolving threats, and the complexity of global supply chains has created a sense of urgency to modernize the federal acquisition process. Traditional procurement methods, characterized by lengthy manual reviews, duplicative paperwork, multiple layers of approval, and inconsistent data management too often result in extended acquisition lead times. The Government Accountability Office found that the Department of Defense (DoD) took an average of 309 days to award complex service contracts due to administrative bottlenecks and fragmented information systems (U.S. Government Accountability Office, 2018). Such bureaucratic delays can lead to missed opportunities, increased costs, and diminished readiness in an environment where agility and responsiveness are paramount. Moreover, the DoD acquisition workforce is regularly described as overworked, with their workload having "doubled in the last couple of years" (Obis, 2024).

At the end of FY 2022, the DoD acquisition workforce consisted of 157,594 members, which includes DoD civilians and military personnel. The RAND Corporation states that the size of the DoD uniformed acquisition workforce is consistent with previous years; however the DoD civilian acquisition workforce decreased by roughly 28,000 from FY 2021 to FY 2022 with most of the cuts coming from the Army and Navy. The figures below outline the career fields—categorized by functional area—for both DoD civilian and military personnel acquisition professionals (Gates, 2024).



Conventional wisdom holds that contracting officers have little capacity to be creative and innovative due to a demanding workload that requires focus on executing daily tasks using traditional processes.

"PROGRESS WILL DEPEND ON THE RIGHT MIX OF EXPERTISE AND COMMITMENT ACROSS GOVERNMENT AND INDUSTRY"

Artificial Intelligence (AI) offers sets of tools to shift mundane work away from acquisition professionals to IT systems. For the purposes of this paper, AI includes several types of technologies, including machine learning, generative AI, retrieval augmented generation, multimodal, and robotic process automation. AI-driven analytics can automate parts of initial market research, generate draft solicitations, and identify performance trends across suppliers.

These technologies can also help acquisition professionals detect potential risks earlier in the process and provide data-driven recommendations that inform strategic human decisionmaking. A 2023 study conducted by Massachusetts Institute of Technology researchers found that using generative AI tools, such as ChatGPT, substantially raised productivity: the average time to complete controlled writing tasks decreased by 40% and output quality rose by 18% (Noy & Zhang, 2023). Not all agencies will benefit equally from AI's capabilities given differences in mission and because effective implementation depends on factors such as data quality, workforce readiness, organizational culture, and authority to operate these advanced tools within DoD systems.

The DoD has explored efforts to integrate AI into various acquisition-related workflows. Some agencies, such as the Defense Logistics Agency, have employed AI to optimize inventory management vis-à-vis supply chain forecasting and demand planning, so that future acquisition decisions are informed by accurate, data-backed predictions (DLA, 2020). The Air Force has also explored AI tools for personnel and resource management (Bistarkey, 2024). In late 2024, the Army announced a pilot program, where they will be experimenting with a generative AI tool that was created to assist with multiple acquisition activities (U.S. Army Public Affairs, 2024). Recent legislation is also supportive of efforts to make use of AI tools to support the acquisition workforce, including:

- The 2021 National Defense Authorization Act (NDAA) encouraged DoD to leverage AI and machine learning in acquisition programs to increase speed, reduce costs, and enhance decision-making.
- Section 237 of the 2025 NDAA directs the secretary of defense to establish a pilot program to evaluate the utility of using Al-enabled software to optimize depots, shipyards, or other manufacturing facilities run by DoD as well as contract administration for DoD, "including the adjudication and review of contracts managed by the Defense Contract Management Agency."

The ability of DoD to incorporate new AI tools in its acquisition workflows depends on dedicated resources and leadership commitment. But it also will be shaped by its people, whose collaboration with industry and leadership across hierarchies will be the foundation of success. There is widespread recognition that DoD's acquisition processes take too long and contracting officers have a heavy workload. There is an inherent risk to technology development and deployment in how the Department approaches acquisition. Progress will depend on the right mix of expertise and commitment across government and industry, who are all working to advance the digital transformation of how the acquisition workforce buys hardware, software, and services.



In October 2024, the National Defense Industrial Association Emerging Technologies Institute (NDIA ETI) and the MITRE Corporation partnered to host a one-day symposium, where representatives from industry, academia, and government gathered to examine the opportunities and challenges of integrating AI in acquisition. To supplement the findings of the symposium, the authors conducted a series of interviews with AI and acquisition experts. Both the event and interviews informed the key takeaways of this paper.

Use Cases in Acquisition

Al will have the biggest impact by assisting humans in sifting through large amounts of data to reduce administrative burdens and enable more strategic decision-making. Al-enabled tools are regularly developed in the commercial sector to streamline mundane tasks associated with procurement, contract management, and data analysis.

Al appears likely to enable humans to delegate more and more routine tasks. When considering where to apply AI, DoD leadership and staff should target areas with the lowest cognitive load and mature AI technology, leaving tasks demanding the highest attention span for human experts to maximize return on investment. There is an abundance of use cases for both pre- and post-award contract management.

Although widespread adoption is still pending, early movers in federal acquisition have seen tangible benefits based on initial applications. By relying on AI to handle routine tasks, such as pre-screening vendors, checking contract compliance, and generating initial market intelligence reports, professionals can focus on complex negotiations, supplier relationships, and strategic planning. As AI tools become more robust and interoperable with existing systems, and as agencies continue to invest in data governance and workforce training, the federal acquisition environment will evolve into a more agile, data-driven ecosystem, delivering better value, reduced timelines, increased efficiency and improved mission outcomes.

Points of AI Integration

There are numerous examples of capabilities from companies serving all segments of the federal acquisition life cycle. The following are some illustrative examples of these capabilities and where they can be applied based on company-provided information and market research (Figure 1).





Figure 1 - Acquisition Life Cycle's Al Integration Points

Planning

The planning phase encompasses several areas where AI can be leveraged to increase efficiency, transparency, and effectiveness. NetImpact Strategies, renowned for its innovative solutions, states that in using AI's "newfound ability to harness data-driven insights revolutionizes the requirements development process, enabling agencies to make informed decision and set the stage for successful procurements" (NetImpact Strategies, 2024). Some examples of companies that are providing AI services and tools with potential application in this phase include:

- ACQBOT: Offers an array of acquisition-related AI tools including requirements articulation, market research reports, statements of objectives, performance work statements, and several other features related to the planning phase and other acquisition processes and phases.
- *IBM*: Offers AI-driven analytics to help agencies define requirements and plan acquisitions.
- Deloitte: Provides AI tools for market research and needs assessment.
- Accenture: Uses AI to assist in strategic planning and decision-making processes.

Solicitation

Development of the solicitation package is one of the most important phases of the acquisition life cycle. Al can be leveraged to help generate many different facets of a solicitation. Much of solicitation generation is a repetitive templatized process. There are several different Al tools that can help to supplement this process and reduce the burden of the more tedious and repetitive tasks, such as the development of Sections I of a solicitation.

- Hazel: Offers a suite of tools including the capability of writing solicitations with an AI copilot.
- *SAP*: Offers AI-powered solutions for automating solicitation documentation.
- Oracle: Provides AI tools for streamlining the creation and distribution of solicitation documents.
- Coupa: Delivers Al-driven procurement solutions to optimize the solicitation process.



Evaluation

In this phase AI can be used to help supplement the evaluative analysis based on the evaluation criteria and solicitation developed in the previous stages. Leveraging AI in this phase must prioritize impartial analyses conducted in a way that removes any bias a human would provide. Some of the companies providing tools for this phase include:

- Binoloop: Provides Tally, an Al-powered tool that provides intelligent, impartial, and regulation-compliant analysis powered by Al.
- Palantir: Uses AI to analyze and evaluate proposals, offering insights and data-driven decision support.
- SAS: Provides advanced analytics and AI tools for evaluating bids and assessing vendor capabilities.
- Booz Allen Hamilton: Offers AI solutions for risk assessment and proposal evaluation.

Source Selection and Award

In this phase it is important to distill all the applicable information, analysis, and subject matter expert inputs to support fair decision-making processes and then make an award. Examples of tools available to support this phase include:

- Lazarus AI: Provides a tailored integration of AI capabilities to support award decisions.
- *Microsoft*: Provides AI tools for contract management and award decision support.
- Amazon Web Services (AWS): Offers AI services for automating contract award processes and compliance checks.
- *Google Cloud*: Delivers AI solutions for optimizing award decisions and ensuring transparency.

Post-Award

This phase has several repetitive and tedious tasks for which AI could be leveraged. AI can help in the analysis of contract milestones, analysis of work completed and adherence to the contract, and to help gain insight into where program improvements can be made. Several companies offer AI tools to help with this phase, including:

- ASI: Provides multiple AI tools and solutions to support processing modification back logs.
- Icertis: Offers many AI tools, including contract maintenance and contract analytics capabilities.
- Salesforce: Uses AI to manage contract performance and vendor relationships.
- ServiceNow: Offers AI-driven solutions for post-award contract management and performance monitoring.
- *C3.ai*: Provides AI applications for monitoring and optimizing contract execution and compliance.

These companies are just a sample of the AI service offerings that can be integrated into various stages of the federal acquisition life cycle to enhance efficiency, accuracy, and decision-making capabilities.

Next, we look at how AI can be embedded in each phase of the acquisition life cycle in more detail, along with initial estimates of the level of human oversight needed. Further analysis is needed to validate these estimates.



Detailed AI Integration Analysis

Applications within Acquisition Life Cycle

The following tables are designed to illustrate functions within the acquisition life cycle where AI is well suited, and descriptions of the expected benefits and potential oversight anticipated.

Needs	Identification	and	Regi	uirements	Definition

Example Acquisition Function	Benefit(s)	Potential Oversight
Automated Requirements Generation	Assist in drafting clear and precise requirements by analyzing previous contracts and identifying common patterns and language	High
Stakeholder Analysis	Map and analyze stakeholder interests and influence, ensuring that all relevant parties are considered in the requirements definition process	Medium

Acquisition Planning & Strategy

Example Acquisition Function	Benefit(s)	Potential Oversight
Market Research	Identify potential vendors, assess market trends, and predict future needs. Natural language processing can be used to extract relevant information from industry reports and databases	Low
Request for Information (RFI)	Automate data extraction and evaluation, retrieving relevant information based on key criteria. Create more efficient workflow management by automating mundane tasks (e.g., scheduling, document management, and reminders)	Low

Solicitation

Example Acquisition Function	Benefit(s)	Potential Oversight
Demand Forecasting	Predict future demand for goods and services based on historical data, helping agencies plan more accurately	Low
Bid Matching	Match agency needs with potential suppliers by analyzing supplier capabilities and past performance data	Medium



increasing consistency	Fair and Reasonable Price Determination	Assist in evaluating proposals by scoring them against predefined criteria, reducing human bias and increasing consistency	High
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Evaluation and Source Selection

Example Acquisition Function	Benefit(s)	Potential Oversight
Past Performance Analysis	Predict the likelihood of a vendor's success based on historical performance data, helping acquisition teams make more informed decisions	Low
Risk Assessment	Assess the risk associated with different vendors by analyzing financial health, past performance, and other criteria	Medium
Matching FAR Clauses to Contracts	Suggest the appropriate FAR clause(s) for a given contract	Low
Cost and Schedule Risk	Assist with forecasting the financial and other resources needed in the acquisition of an end item within defined parameters	Low

Contract Award

Example Acquisition Function	Benefit(s)	Potential Oversight
Contract Optimization & Negotiation	Suggest optimal contract terms and conditions by analyzing similar contracts and outcomes. Support the generation of fair and reasonable price determinations	Low
Fraud Detection	Detect anomalies and potential fraud in contract awards by analyzing patterns and flagging suspicious activities	Medium
Contract Writing	Reduce wait times for contract awards, allowing organizations to adapt quickly to new opportunities and requirements	High

Contract Management

Example Acquisition Function	Benefit(s)	Potential Oversight
Performance Monitoring	Monitor contract performance data analytics, alerting managers to potential issues	Low



Automated Reporting	Generate reports on contract performance, compliance, and financials, reducing administrative burden on contract managers	Low
Determination and Findings (D&F)	Assist with generating the necessary written approval documents needed for an authorized official to take certain contract actions	Low

Contract Closeout

Example Acquisition Function	Benefit(s)	Potential Oversight
Document Review	Automate the review of contract documents to assess whether all obligations have been met and identify any outstanding issues	Low
Knowledge Management	Capture lessons learned and best practices from closed contracts	Low

Cautions and Limitations of AI Integration

While AI offers numerous benefits, organizations must also consider challenges such as data privacy, the need for high-quality data, integration with existing systems, and the potential for bias in AI algorithms and training data. Reviews by human experts is still critical because many AI techniques can hallucinate, make errors, or reach false conclusions, especially when data are conflicting, missing, or containing errors. Other techniques are not perfect or can reach false conclusions as is possible with statistics. Ensuring that AI systems are transparent, ethical, and aligned with organizational goals is crucial for successful implementation.

In summary, AI can transform the acquisition life cycle by automating tasks, analyzing data, and providing actionable insights, leading to more efficient, accurate, and speedy processes. Organizations that effectively leverage AI in their acquisition strategies are likely to gain a competitive edge in the marketplace. However, human experts must still be involved to ensure quality, objectivity, and accuracy while taking the outputs from AI tools into human decision-making.

Embedding AI in Contracting Phases

The federal contracting and procurement life cycle consists of several phases, each of which can benefit from the integration of AI to enhance efficiency and effectiveness. Figure 2 illustrates contracting elements in the acquisition life cycle tagged with ways that AI can be injected to each phase to provide support.





Figure 2 - Leveraging AI in the Acquisition Lifecycle

Step 1: Needs Identification and Requirements Definition

A foundational step of any acquisition which should be a collaboration between the program leadership, stakeholders and contracting officer and supporting functions. Soliciting detailed requirements from program staff can often be challenging, but AI tools can be used to assist in drafting clear and precise requirements by analyzing previous contracts, results of previous programs, and identifying common patterns and language. This could be organization-specific contracts or across a wide data set of contracts from across the federal landscape. In this first step AI can also be used to map and analyze stakeholders' interests and influence, ensuring that all relevant parties are considered in the requirements definition process. AI can help to supplement this process and provide a more technically and operationally feasible starting point to be validated by further market research and analysis.

Step 2: Market Research and Analysis

A common complaint is that this step is cumbersome and overwhelming, and consumes a significant portion of time and energy, particularly in data rich environments. Al could make market research more insightful by analyzing vast amounts of data to identify potential vendors and gauge capabilities offered, assess market trends, and predict future needs. Natural language processing can be used to extract relevant information from industry reports and databases quickly. Machine learning algorithms can predict future demand for goods and services based on historical data, helping agencies plan more accurately. Al could also be used to identify trends in vendors' responses to RFIs or review transcripts from industry days or vendor one-on-ones. By using Al tools to supplement and assist in market research, this step becomes more efficient and provides the information needed to help acquisition professionals execute the next step. By finding more potential vendors, DoD can reduce its use of sole source contracts and task orders.

Step 3: The Acquisition Strategy

Contracting professionals sometimes struggle to develop acquisition strategies due to cultural, bureaucratic, policy, time, and budget constraints. Al could be leveraged to assist in



analyzing the optimal path for acquiring goods and services, benefiting from the data captured from past program strategies with successful outcomes. More importantly AI can be used to help educate program and project managers on why particular strategies were chosen and what is required to execute such a strategy. AI could summarize the policies, procedures, and other factors that are driving the chosen strategy and help to inform all the documentation and reviews required. This will help to optimize the execution of the chosen strategy and ensure the contracts and contracting professionals take the best approach and award the most capable vendors.

Step 4: Solicitation

Tools can be used to assist in the development of the evaluation criteria that will be associated and how the award will be made to winning proposal. Al tools could be used to automate the development of the request for proposal (RFP) into a standardized format, resulting in a quicker time to solicitation. Al tools could look across the federal landscape and develop evaluation criteria based off large data sets of previous solicitations and the responses to them. Al could be used to ingest the finalized requirements or objectives, so that selection criteria can be used to properly differentiate between vendors. The use of these Al tools would result in more effective solicitations that have been vetted by an unbiased tool and finalized by the human in the loop. Better solicitations lead to better evaluations, source selections, and awards.

Step 5: Evaluation and Source Selection

Well suited to be optimized with AI tools by helping to evaluate proposals by analyzing them against the predefined criteria such as analyzing supplier capabilities and past performance data. Imagine using AI to assist in a review of supplier capabilities and past performance across all the most recent data across all their contracts with the federal government. AI can then take this information and predict the likelihood of a vendor's success based on this historical data helping to provide more informed decisions. For example, the Contractor Performance Assessment Report Reporting System (CPARS) provides source selection officials with information on contractor past performance. Acquisition professionals have anecdotally expressed the strong need for support in this area and conclude that LLMs could improve how this information is generated and used.

Solicitations produce large volumes of information that must be reviewed in a proposal. Al can help distill this into usable information quickly and help source selection teams to more quickly assess the viability of a vendor against their solicitation requirements. On top of these particular use cases, Al could be leveraged to assess the risk associated with different vendors by analyzing financial health, past performance, and other risk indicators that programs or projects identify.

Step 6: Contract Award and Negotiation

Al tools have many potential applications in this space, such as recommendation engines for optimal contract terms and conditions by analyzing similar contracts and outcomes, better balancing the needs of both the customer and vendor. Additionally, Al can detect anomalies and potential fraud in contract awards by analyzing patterns and flagging suspicious activities. This could help to identify contractors looking to enter the market at all costs, which can be bad for the government if the vendor can't deliver. It also allows for an unbiased review and analysis that helps to inform the contracts and acquisition professionals around things like terms and conditions, clauses, and even data and intellectual property rights. By building the use of Al tools into the negotiation process it gives the contracting officer/specialist the power to quickly produce useful information resulting in better value for the government.



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Step 7: Contract Management

This step can be enhanced by using AI-enabled tools by easing the workload for contracting officer representative or contract officer technical representatives. AI can continuously monitor contract performance using data analytics, alerting managers to potential issues before they become significant problems. Along with this AI can generate reports on contract performance, compliance, and financials, reducing the administrative burden. With many CORs and COTRs often having this role as an additional duty, leveraging AI could help to reduce the burden created by these activities, while allowing personnel to focus on higher priority issues.

For example, AI tools could help turn requirements into solicitation packages or more efficiently streamline justification and approval (J&A) paperwork by leveraging past examples of J&A documents. Within DoD's business and financial management enterprises, there exist many opportunities to modernize legacy systems that are responsible for contract, cost, and pricing audits.

Step 8: Contract Closeout

This step could be streamlined using AI-enabled tools by automating the review of contract documents to assess whether all policy, regulatory, and contractual obligations have been met and to identify any outstanding issues. This can help all stakeholders to be able to close out complex and longstanding confidently and to meet all documentation requirements more easily.

Step 9: Evaluation and Feedback

Responsibilities can be supported with AI-enabled tools by capturing lessons learned and best practices from closed contracts or past programs, which would provide valuable insights for future acquisition strategies. AI-supported analysis can help program officials to understand what happened during execution, summarize what occurred, and develop the best program strategies based on all available sources of information. By embedding AI in these acquisition life cycle steps, federal agencies can streamline processes, reduce costs, improve decision-making, and enhance overall acquisition outcomes.

Policy, Cultural, and Technical Challenges

Al—especially Generative Al—shows immediate promise for increasing efficiency and productivity. There is a recognition that AI is changing how the Department views enterpriselevel management and some individuals are advocating for the use of AI tools to support acquisition professionals. Its utility for different areas of enterprise management is clear and raises questions related to the efficacy and efficiency of current practices in activities such as legal analysis, compliance, and procurement. However, the application of AI in acquisition processes does pose certain risks such as a lack of transparency in decision-making and potential cybersecurity vulnerabilities. Additionally, much of the current discourse on the use of these tools is focused on how to educate acquisition professionals on AI and how to create incentives for the use of new capabilities. Ultimately, cultural barriers among other considerations constrain the government's ability to collaborate with industry and adopt new technologies.

Policy Considerations

Inherently Governmental Functions (IGFs)

Within acquisition, certain functions are inherently governmental, which statutes and regulations generally define as a particular task or function that must be performed by a government official (Defense Acquisition University, n.d.). IGFs require officials to exert



discretion over governance areas such as policy decision-making, performance/mission accountability, and execution of monetary transactions and entitlements. FAR 7.503(c) provides a list of 20 examples of IGF, which includes functions such as awarding and terminating contracts, among others. FAR 7.503(d) describes 19 functions which are closely associated with IGF. If a task or function is not determined to be inherently governmental, DAU states that it may be eligible for performance by private sector contractors through a contract or other service arrangement. The type of performance that private industry can provide to the government is limited to services that gather information on the government's behalf for the purpose of advising, offering opinions, and providing recommendations or ideas. The criteria are that contractors cannot establish government policies, provide actionable organizational decisions, or spend taxpayer dollars. Similarly, AI tools must be treated as advisory rather than authoritative. While they can enhance decision-making, they cannot independently dictate policy, make binding organizational choices, or allocate government resources. Just as government functions require human oversight when working with contractors, the same principle applies to AI: it should support, but not replace, human judgment and accountability.

Classification & Large Language Models (LLMs)

While not a significant barrier, it is important to note that existing DoD policy restricts national security information and controlled unclassified information (CUI) or use in a publicly accessible tool, including personally identifiable or protected health information. DoD personnel are prohibited from entering such information into common commercial generative AI tools, such as ChatGPT or any other LLM that is connected outside protected firewalls and thus divulges CUI. In instances where government-generated data, code, text, or media does not fall into classified or CUI categories, DoD personnel may only input such information into publicly accessible generative AI tools if that content has been approved for public release. This is intended to protect sensitive but unclassified information while allowing for the responsible use of generative AI tools to enhance efficiency and innovation within federal government operations. However, there are LLMs that are authorized to host CUI material; these LLMs must be DoD Impact Level (IL5) compliant, which falls under the responsibility of the Defense Information Systems Agency (Nicewick, 2024). DoD is currently experimenting with LLMs that work inside Non-Secure Internet Protocol Router (NIPR). In June 2024, the Department of the Air Force launched NIPRGPT, which is intended to assist users with a wide range of tasks, such as correspondence, background papers, and code (Secretary of the Air Force Public Affairs, 2024). CamoGPT, which was developed by the Army AI Integration Center, is currently available on NIPR and is built to optimize equipment maintenance, logistics, and supply chain management using data analytics and algorithms (Pharathikoune, 2025).

Barriers

Data Quality & Ownership

The quality and completeness of data available for analysis, refining algorithms, and for use to support machine learning profoundly impacts the effectiveness of AI applications. DoD and defense and commercial industry have struggled to collect and retain data about acquisition processes and program execution. They have also struggled to share data across government and the private sector; between industry partners; and even between government organizations. These issues are generally attributed to business models and incentives, the lack of effective technical infrastructure to support sharing and collaboration, the desire to avoid intrusive management and oversight, classification issues, and other bureaucratic dynamics.

One frequently asked question is: What rights does the federal government have over the data? Intellectual property (IP) rights have grown in importance to DoD as U.S. defense research and development (R&D) spending as a share of global R&D spending has declined. IP



rights are also increasingly important to industry partners who rely on their portfolios of developed IP to generate profits from their R&D investments.

Another specific worry regarding technical data bias is potential cases of corruption and compliance issues. This introduces, for example, possible instances of organizational conflicts of interest, where companies have built a product—which is used by DoD—that could help benefit the same company later in a future procurement. Trust in new AI tools and the organization, cleanliness, and management of data are intertwined. Ultimately, the Department understands that trust in data underpins its adoption strategies and has attempted to craft policies that are specifically designed to empower leaders at all levels. However, the issue of explainability of AI-generated results will continue to present challenges for all professionals who are expected to justify decisions or outcomes when AI tools are used.

Security Compliance & Authority to Operate (ATO)

Due to legitimate security and reliability concerns, the ATO process is used to determine when new software can be installed on and used in most of these systems. Waiting for an ATO and working through assessments is often the longest step in deploying software. This process requires a government sponsor or Authorizing Official (AO), who will work hand-in-hand with the industry partner. The pace of technological development, however, requires agile development practices that continuously integrate and deliver software while still maintaining security. Small and non-traditional businesses are playing a key role in developing new AI technologies and often state that obtaining an ATO is slow and expensive, which limits the ability of these companies to work with DoD. By limiting the software available to the government to only products from companies that can accept high initial costs and long-term horizons, the government misses out on innovative solutions from non-traditional players. This bottleneck not only slows adoption but also hinders the government's ability to rapidly leverage cutting-edge AI solutions, micro tools, and emerging innovations. By streamlining ATO pathways, the DoD can inject these advancements more quickly-where they can make an immediate impact on a timeline more consistent with the development of new AI capabilities and with changing operational needs.

Continuous ATO (cATO) is an emerging approach to deploying secure software faster. DoD's Chief Information Officer (CIO) defines cATO as "a modernized authorization process designed to work with software delivery organizations that want to move faster and are willing to adopt the necessary culture change" (U.S. Department of Defense, 2024). cATO eliminates the delays that come with leaving testing and certification to the end. By doing those things in parallel, time is saved and mission effectiveness improved; however this process still requires adequate resourcing, which may not be realistic for some government offices. The "Assess Only" process is an alternative option, which allows organizations to incorporate and use products and services that fall below the system level (e.g., system components, hardware, software, IT services) without going through the full ATO process (U.S. DOD Chief Information Officer, 2024). By using fast-track ATOs or testbed environments, vendors could deploy and iterate AI solutions immediately ensuring the government can harness innovation at the speed of relevance rather than being bogged down by lengthy certification timelines. Sec. 1522 of the FY2025 NDAA took a step to help with reciprocity of ATOs. Specifically, it states DoD must develop a policy requiring DoD officials to accept security analysis and artifacts of a cloud capability that has already been authorized by another DoD official or component (U.S. Congress, 2025). The policy must also provide for standardization of accreditation documentation and other measures to enhance reciprocity between DoD components' respective ATO processes, including Federal Risk and Authorization Management (FedRAMP) ATOs. This legislation marks a step forward in reducing bureaucratic hurdles for both technology companies and DoD.



Acquisition Barriers

The integration of Al-enabled tools into contracting and the acquisition life cycle writlarge suffers from the same challenges that the entire DoD acquisition ecosystem is plagued with, including slow budgets, unclear requirements, and difficulty procuring commercial technologies and services. The Planning, Programming, Budgeting, and Execution (PPBE) Commission found that "the opaque and unresponsive nature of the PPBE process is antithetical to the kind of market signaling, commitment, and certainty that they need to attract private investment supporting development of emerging technologies" (Commission on PPBE, 2024). This is compounded by the fact that there is no coordinated procurement effort to purchase Al-enabled tools, consolidate requirements, and distribute these tools across DoD's acquisition program offices. Moreover, while Al is a highly technical and fast-moving technology, there is also no supportive science and technology enterprise to help DoD understand, leverage, and modify these technologies so that they can be used within DoD's acquisition processes.

Education & Training

FIGURE 3.9

According to research at RAND, approximately more than 50% of the DoD civilian acquisition workforce consists of individuals aged 40 and above (Gates et al., 2024). The age distribution—due to the pace of technology development—demands attention toward the need for retraining and upskilling. The education or formal training that a 20–29 year old received is much different than their peers who graduated decades ago. It is imperative for contracting organizations to gain a deep understanding of the workforce skills and processes needed to ensure all contracting officers are able to consistently use and scale new AI tools.



Age Distribution of the Civilian Acquisition Workforce, FYs 2010 to 2021

NOTE: The percentage of workers below age 20 is very small and, therefore, not visible in the figure.

Figure 3 - RAND DoD Civilian Acquisition Workforce



Contracting professionals rarely have the time to enroll in a course to learn a tool; therefore, it is critical that their cognitive load is also well-understood by industry service providers. As such, potential solutions aimed at improving efficiency should be easily integrated into existing systems and processes. New tools should be built with the intention that integration should require minimal training.

Cultural Resistance & Need for Clearer Incentives

Cultural barriers in the workforce also limit the ability to make full use of AI in acquisition, specifically the fear of job loss and risk-aversion. Data from a 2023 Gallup poll shows that just over a fifth of U.S. workers are worried technology will make their jobs obsolete; this certainly applies to the contracting and overall acquisition workforce. The fear of job loss is a real concern. Education and training will need to demystify the realities of AI integration. Moreover, the acquisition community works in such a highly regulatory field, so there is also an intrinsic risk aversion among contracting officers, which leads to a reluctance to explore new tools and processes. Other factors can disincentivize the use of AI tools. For example, it can be difficult for people to use AI-empowered tools when they have to justify the results, yet the AI tools are a black box to them. These factors must force organizations to determine how to incentivize their workforce to use new AI tools.

Considerations for Successful AI Integration

Laying the groundwork for long-term AI adoption in acquisition processes requires a strong emphasis on technical infrastructure, interdepartmental coordination, and clearly articulated standards for data management, training, and ethical governance. Robust infrastructure includes high-performance computing environments and secure, cloud-based architecture equipped to process large datasets, as noted by the National Security Commission on Artificial Intelligence (2021). Ensuring interoperability and integration across existing contract writing, financial management, and logistics platforms is equally essential to minimize data silos and maintain a coherent flow of information throughout the acquisition life cycle (GAO, 2021).

Equally critical is the need for interdepartmental alignment. Establishing clear datasharing policies, while respecting privacy, classification, and compliance requirements creates a uniform foundation for building and refining AI models. Organizational readiness also entails upskilling the workforce, recruiting and retaining acquisition professionals to operate and interpret AI tools, and enabling them to leverage the insight generated by the AI tool effectively and make informed decisions. Cultivating leadership support, open communication channels, and cultural receptiveness helps overcome resistance to change and encourages a collaborative atmosphere that values innovation over routine practices. These efforts, combined with adherence to legal and ethical guidelines, such as transparent AI outputs, robust cybersecurity protocols, and strong conflict-of-interest policies, will support the development and deployment of systems that develop AI-based actionable recommendations that are both trustworthy and accountable.

Acquisition and Innovation Activities

To promote the use of AI tools by the acquisition workforce, acquisition programs must be established and resourced with the mission to develop and deploy such tools, in the same way traditionally done for weapons systems and other IT capabilities. This includes processes to acquire the AI-tools and transition them into use, some of which will be based on existing commercial capabilities and some of which may be unique to the defense enterprise. There are also very limited science, technology, innovation, and testing activities executed by the military service and defense agencies to support the development and delivery of tools to meet the needs of the acquisition workforce and contractors conducting the "business" of acquisition.



ACQUISITION RESEARCH PROGRAM DEPARTMENT OF DEFENSE MANAGEMENT NAVAL POSTGRADUATE SCHOOL Without the establishment of these kinds of activities, the adoption of AI tools will be sporadic and anecdotal.

User & Leadership Buy-In

Ultimately, widespread adoption of AI-enabled tools will be intrinsically linked to the openness of the acquisition workforce and insistence of their use by DoD senior leadership. It is often colloquially known that "Cultural barriers tend to manifest themselves as policies and budgets." With limited funding, decision-makers prefer to spend appropriated dollars on more urgent needs. To continuously gain buy-in from both users and senior government leadership, embedding AI into the acquisition life cycle must also include a clear understanding of investment returns. The individual, or group of individuals, who are acting as the change agent, or "champion," should be able describe metrics of effectiveness and performance, linked to the program characteristics variable being addressed (i.e., schedule, cost savings, retention, and competition). The metrics must be quantifiable and should be able to be clearly understood by all stakeholders, including government appropriators, users, and agency leadership—all of which will help the AI-enabled tools scale into broader use.

Procedural Reviews

The embedding of AI in acquisition on both the commercial and government side is leading to new workflows, where AI tools are compared to highly skilled assistants and therefore create possibilities for improved decision-making, streamline processes, and ultimately drive toward better acquisition outcomes. On the industry side, the barrier to entry for contract writing, for example, is much lower; it is becoming easier to quickly generate documents when responding to RFPs using AI tools. However, this presents a challenge to government officials. AI-generated responses are becoming easier, making it difficult for contracting officers to weigh bids. This example illuminates the need to adopt appropriate review processes to ensure that all stakeholders' needs are met in accordance with existing laws and regulations.

Coordination and Information-Sharing Between Pilot Programs

As pilot programs continue to develop and successful efforts transition, the lessons learned need to be shared and implemented across DoD. However, robust information-sharing is historically a challenge within the Pentagon, sometimes leading to unwanted duplicative efforts and heterogeneous practices leading to confusion for both government and industry. Current practices for developing AI-enabled tools include having a clear understanding of the problem and workflows, not dictating the solution, and requiring demonstrations. Coordination is necessary so that resources are used more efficiently and will help inform DoD efforts that look to build on past successes and failures. The insights gained should also be used to inform future policies, training, and budgetary requests, which would be based on clear and documented data.

Insufficient data collection, labeling, and storage is a deterrent to adopting or even experimenting with AI capabilities. While there have been attempts at tracking the acquisition workforce's time on a given task, these efforts have failed. Most professionals do not have these steps documented and therefore it is difficult to assess how effective an AI-enabled tool is without a baseline understanding of knowing what is consuming an individual's time. As these steps or as more data is collected, AI-enabled tools will become more available as well as accurate.

Addressing Risk of Skill Decay

One of the concerns with using an Al-enabled tool to perform an acquisition task is the risk of losing competency in the given acquisition function. Simply, the function is being outsourced, which could lead to a loss of skills. The downside to automation is that the workforce is not sharpening their critical thinking skills and may lose the ability to determine the



quality of the AI-delivered product. Senior government leaders will also need to consider how to approach ensuring that a workforce—augmented with AI-enabled tools—can still be effective if the tools experience any technical failures. While discussed within a medical context, the National Institute of Health concluded in a 2024 study that multidisciplinary research is needed to 1) understand the potential cognitive consequences of leveraging AI, 2) design artificial intelligence systems to mitigate skill decay, and 3) develop training and use protocols to prevent negative impacts on users' cognitive skills (Macnamara et al., 2024). Building a AI-literate workforce is contingent upon finding the right balance between embedding AI and preserving human judgment and safeguarding the foundational capabilities that humans are well-suited for.

Education

Education is and will continue to play an instrumental role in convincing the acquisition workforce that new AI tools can ease their workload, minimizing the cultural resistance to change. Emphasizing AI literacy among the DoD civilian and military acquisition workforce will help build trust between users and AI systems. Partnerships between government and industry, Federally Funded Research and Development Centers (FFRDCs), nonprofit organizations, or academia can help introduce AI tools, deliver training, and overcome cultural barriers. Low-risk opportunities for individuals to engage with AI tools will help them learn how to interact with new AI tools and build trust in the technology. The goal should be to understand and determine how to increase user trust in AI systems in the same way they would trust other pieces of software commonly used for acquisition functions.

Build Modern Data Infrastructure

To bridge the gap from what is technologically possible today to future applications, DoD will need to improve its data infrastructure and overall data collection efforts. The National Security Commission on Artificial Intelligence's final report noted that DoD currently lacks the digital infrastructure in place to support the development of AI tools (2021). Moreover, data are critical to the development and operation of AI-enabled capabilities, but according to various DoD officials, the department often lacks data that are usable for AI. High performing AI typically requires accurately labeled historical data to train the system. While DoD recognizes this need is incongruent with historical data collection practices, it is beginning to adopt collection, storage, and cleaning processes needed to train models.

To accelerate the adoption of advanced AI-enabled capabilities, DoD will also need to prioritize more computing power to support the processing of AI's algorithms and data. Part of the feedback received after the launch of NIPRGPT focused on the shortfalls in compute in DoD's high-performance computers and commercial vendors (Harper, 2024).

Recommendations for Harnessing AI's Transformative Potential

As AI continues to reshape industries globally, its transformative potential within the federal acquisition system has never been more significant. Drawing on recent insights from the GSA, DoD, National Science Foundation, emerging best practices from AI research and policy experts, and insights from the joint NDIA ETI-MITRE symposium in October 2024, this paper provides actionable guidance for modernizing federal acquisition systems by leveraging AI. This paper outlines several strategic recommendations aimed at ensuring the successful integration of AI technologies in defense and acquisition practices. The recommendations focus on a holistic approach to AI adoption that includes early engagement, iterative development of AI tools, comprehensive training, policy reform, infrastructure investments, and fostering cross-sector collaboration.



Cultivate Collaboration and Stakeholder Engagement

Successful integration of AI-enabled tools in the federal acquisition space requires strong, coordinated leadership and collaboration across multiple sectors, including government, industry, and academia. Agency leadership should prioritize creating cross-sector partnerships that bring together diverse expertise, from technological development to ethical considerations. These partnerships should have a mandate to accelerate the development of AI solutions for acquisition process so that they address practical needs. The National AI Initiative Office is a good example of supporting this approach, advocating cross-sector partnerships to advance AI technologies in the defense sector, based on identified needs.

The successful integration of AI technologies within the federal acquisition system hinges on early engagement with key stakeholders, including both the user and policy-making communities, in government agencies, defense contractors, policy-makers, and technology developers. Engaging stakeholders early in the research, development, prototyping, experimentation, and testing phases is critical to building a comprehensive understanding of the benefits and risks of using AI in acquisition as well as breaking down the cultural resistance to AI adoption. Early engagement can identify potential concerns, such as suitability for use, ethical considerations, security risks, and workforce impacts, while also creating opportunities for collaboration in designing AI solutions that meet the specific needs of the acquisition workforce.

Analyze the Acquisition Life Cycle

All federal agencies must truly understand workflows, organizational incentives, and workforce issues to understand where to prioritize development efforts and technology insertions. This information will be presented to senior leaders on where it makes sense to prioritize the use of AI, the best way to go about educating the workforce to use AI and considering AI as an assistive tool rather than a replacement for the acquisition professional.

Previous sections of this paper broke down at a very high level the contracting life cycle and gave examples of where AI could be inserted. It is recommended that federal agencies break this down even further and look at where it would make sense to potentially pilot the use of AI and where it would make sense to educate and test in potential agency labs. This should be done side-by-side with AI subject matter experts who understand the intricacies of the use of AI and where it would make sense to insert new tools.

An example of this that is being done by several agencies currently was the identification of how AI could be leveraged to complete more impactful market research. These agencies identified that if the use of AI were to fail or not be that effective in piloting it in the market research phase that this failure could be learned from and have less impact on the acquisition. For example, the Department of Homeland Security use the market research phase to gain buyin from the workforce while also educating the workforce on the use of different AI tools and how to properly develop things like prompts that are important for the successful use of these tools (DHS, n.d.). By starting small and inserting AI-enabled tools in lower risk areas, agencies help cultivate user buy-in and mitigate potential risks to workflows.

Pilot Programs and Innovation Activities

The federal government struggles with change if senior leaders at the implementing agencies don't allow acquisition professionals to learn, for example through pilot initiatives, and most importantly tolerate failure in some efforts. Pilots should be designed with end uses in mind, a strategy to transition them into broader use across the enterprise, appropriate resources for executing the pilot, and a comprehensive set of metrics, data collection activities, and independent evaluation processes to judge the value of the pilot to federal goals and missions.



Leadership plays a crucial role in driving the adoption of AI technologies. Support from top leadership increases the likelihood that AI initiatives receive the necessary resources, attention, and momentum to succeed. This includes advocating for AI within the broader organizational strategy, fostering an environment that encourages experimentation, and providing adequate funding and resources for AI-related initiatives and their transition across the enterprise.

One of the crucial ways senior leaders can show full buy-in from the top down is the establishment of dedicated innovation activities which would perform research and prototyping activities on technologies, practices, and new fundamental concepts that would enhance the capabilities of the federal acquisition workforce, including through the use of AI. Congress should draft a provision requiring DoD to show it a plan to use commercially available tools to address targeted areas for improvement in the contracting life cycle (e.g., market research, J&A paperwork, Contractor Performance Assessment Reporting (CPAR, or RFIs). In DoD's plan, there should be strict criteria to evaluate the success of these pilots and a plan to scale the tools, if appropriate. Such activities, if they incorporate both intramural and extramural efforts, would allow different users to test AI technologies in practical settings before full-scale implementation. The DoD stresses the value of pilot programs in refining AI technologies before large-scale deployment but sometimes fails to capture lessons learned from pilots or have strategies to transition successful activities.

Innovation labs serve as dedicated spaces for testing and prototyping new Al-driven ideas. These labs allow teams to experiment with Al applications in a controlled environment, providing valuable insights that can inform future development. Leadership support is critical for creating an atmosphere of innovation, where failure is seen as a learning opportunity rather than a setback.

Pilot programs should be designed to demonstrate quick wins and generate confidence in AI's value. Regular evaluation of these pilots will allow for iterative improvements, ensuring that AI tools are continually refined and adapted to meet the unique needs of the federal acquisition process. Pilot programs can provide vital feedback and improve the alignment of AI tools with real-world operational requirements.

Transition strategy

Institute Training Programs and Foster AI Literacy

For AI to be fully harnessed within federal acquisition, comprehensive training programs must be developed to ensure AI literacy and technical competence across the workforce. In some cases, this means understanding the strengths and limitations of what AI can do while being an informed manager of AI inputs and consumers of AI outputs. Not everyone needs to know how to develop and use AI, but everyone needs to be literate enough to ensure proper usage. This is essential for both acquisition professionals and technical personnel. For example, the Defense Acquisition University could consider developing a standardized AI in Acquisition certification for contracting officers/specialists, program managers, and acquisition executives. This could be mandated for all acquisition professionals, ensuring AI becomes an integral part of the contracting life cycle and would allow acquisition professionals to begin their training in simulation-like environments. In other cases, selected people need skills in building or using AI, particularly in data analysis and AI tool usage.

Training programs should be designed with varying levels of expertise in mind, from foundational AI literacy for general employees to specialized courses for data scientists, analysts, and acquisition experts. These initiatives should emphasize practical knowledge, focusing on the application of AI tools within the acquisition life cycle. In addition to formal



training, mentoring programs and internal workshops could foster a culture of continuous learning and skill development.

The aim is to create a workforce that is not only proficient in using AI tools but also capable of adapting to the rapidly evolving landscape of AI technologies. Building a culture of AI literacy across the federal workforce is fundamental to ensuring the effective adoption and deployment of AI tools. AI literacy training initiatives should be designed not just for technical teams but for all employees involved in decision-making processes. These programs should educate staff about the fundamentals of AI, its potential applications, and its ethical implications.

Al literacy initiatives will empower workers to understand the capabilities and limitations of AI, enabling them to make more informed decisions when interacting with AI-powered systems. The goal is to create a workforce that is not only capable of using AI tools but also prepared to make critical decisions regarding AI's implementation, security, and ethical considerations. The Artificial Intelligence Workforce Act supports the expansion of AI literacy programs across government sectors (Peters & Schmitt, 2024).

Invest in Infrastructure and Data Governance

One of the biggest takeaways from the symposium was that for AI adoption to succeed, significant investments in infrastructure and robust data governance policies are necessary, including data sharing and access across the DoD. AI tools require advanced computational resources, cloud services, and secure networks to function effectively. The federal government must invest in AI-supportive infrastructure, including high-performance computing systems and data storage solutions that meet the demands of AI applications. The National Institute of Standards and Technology (NIST) provides guidelines for developing secure and ethical data governance structures necessary to support AI (NIST, 2024). Along with this NIST is creating AI Risk Management Frameworks, ARM enables organizations to tailor risk management practices to their unique needs to coincide with the governance necessary (NIST, 2024).

Additionally, effective data governance is crucial to ensure that AI tools are trained and operated using high-quality, secure, and compliant datasets. Establishing standards for data collection, usage, and sharing will help mitigate risks related to data privacy and security while enabling AI to deliver actionable insights. Furthermore, a commitment to data interoperability across agencies will promote more cohesive AI-driven solutions. It cannot be overstated that the key to successful implementation of AI tools is the data that the AI will be ingesting to produce its outputs. To support this effort, Congress could request that DoD create a S&T portfolio to support the development of acquisition tools intended to improve its acquisition and IT performance.

A great example of this type of investment is the DoD's Joint All-Domain Command and Control (JADC2) initiative, which made key investments in Al-supportive infrastructure. It aims to modernize IT systems and improve data accessibility, enabling seamless data sharing across different military branches. JADC2 relies on cloud computing to provide the infrastructure needed for Al tools to analyze vast amounts of data in real-time. Data governance policies under JADC2 ensure that data across the DoD is consistent, secure, and usable by Al systems, facilitating better decision-making and operational efficiency (Obis, 2023). These are the type of investments and implementations that the federal government needs to continue to make if it wants to be successful with Al, and that was evident throughout the symposium and in the multiple interviews that were conducted.

Establishing Standardized Evaluation Metrics

Establishing a standardized set of AI evaluation metrics is crucial for fostering trust, resiliency, accuracy, and effective monitoring of AI systems. These metrics provide a consistent



framework for assessing AI performance, ensuring that systems operate reliably and transparently across diverse applications. By standardizing evaluation criteria, stakeholders can more easily compare and validate AI models, promoting accountability and confidence in AI technologies. Furthermore, standardized metrics facilitate the identification and mitigation of biases and errors, enhancing the resilience and accuracy of AI systems. This structured approach to evaluation also supports ongoing monitoring and improvement, enabling AI systems to adapt to evolving challenges and maintain their integrity over time.

Final Encouragement: Building an AI-Driven Acquisition System

It is essential to recognize that the successful integration of AI within federal acquisition is not just about adopting new technologies; it is about building a resilient, future-proof system that can adapt to evolving challenges. AI has the potential to radically improve the way the government acquires goods and services, from streamlining acquisition processes to enhancing decision-making capabilities. To achieve this, we must take decisive action now, embracing innovation, collaboration, and continuous learning. This includes implementing the many published recommendations that have been provided in a strategic and logical fashion that will allow for the true adoption of the use of AI in the acquisition life cycle. The call to action for all federal agencies is now as AI tools and capabilities continue to evolve daily, and the more collaborative learning and implementation that can occur around these tools and capabilities, the more successful the federal government will be in harnessing its potential.

Bibliography

- Bistarkey, D. (2024, July 26). *AI-powered agile talent identification systems support joint force*. Air Force. <u>https://www.af.mil/News/Article-Display/Article/3851781/ai-powered-agile-talent-identification-systems-support-joint-force/</u>
- Commission on Planning, Programming, Budgeting, and Execution Reform. (2024). *Defense* resourcing for the future. <u>https://pbbereform.senate.gov/wp-</u> <u>content/uploads/2024/03/Commission-on-PPBE-Reform Full-Report 6-March-</u> <u>2024_FINAL.pdf</u>
- Defense Acquisition University. (n.d.). *Inherently governmental functions*. DAU. https://www.dau.edu/acquipedia-article/inherently-governmental-functions
- Defense Logistics Agency. (2020). *DLA Fiscal Year 2020 historical report*. <u>https://www.dla.mil/Portals/104/Documents/Headquarters/History/Fiscal2020AnnualHistory/Fiscal2020</u>
- Department of Defense Chief Information Officer. (2024). ATO 101 for small businesses. https://dodcio.defense.gov/Portals/0/Documents/Library/ATO-101SmBusinessInfo.pdf
- Department of Defense. (2024). *Continuous authorization to operate (cATO) evaluation criteria: DevSecOps use case*. <u>https://dodcio.defense.gov/Portals/0/Documents/Library/cATO-</u> <u>EvaluationCriteria.pdf</u>
- Gates, S. M., Esteves, F., Roth, E., & Kempf, J. (2024). *Implementation of the new Defense Acquisition Workforce Improvement Act framework: End of Fiscal Year 2022 update.* RAND Corporation. <u>https://www.rand.org/pubs/research_reports/RRA758-3.html</u>
- Harper, J. (2024, November 7). *How things are going with the Air Force's experimental NIPRGPT chatbot*. Defensescoop. <u>https://defensescoop.com/2024/11/07/air-force-niprgpt-experimental-chatbot-how-things-are-going/</u>
- Macnamara, B. N., Berber, I., Çavuşoğlu, M. C., Krupinski, E. A., Nallapareddy, N., Nelson, N. E., Smith, P. J., Wilson-Delfosse, A. L., & Ray, S. (2024). Does using artificial



intelligence assistance accelerate skill decay and hinder skill development without performers' awareness? *Cognitive Research: Principles and Implications*, *9*(46). <u>https://doi.org/10.1186/s41235-024-00572-8</u>

- National Institute for Standards and Technology. (2024). Secure software development practice for generative AI and dual-use foundation models. <u>https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-218A.pdf</u>
- National Institute for Standards and Technology. (2024). *Artificial intelligence risk management framework: Generative artificial intelligence profile.* <u>https://nvlpubs.nist.gov/nistpubs/ai/NIST.AI.600-1.pdf</u>
- National Security Commission on Artificial Intelligence. (2021). *Final report*. <u>https://assets.foleon.com/eu-central-1/de-</u> <u>uploads7e3kk3/48187/nscai_full_report_digital.04d6b124173c.pdf</u>
- NetImpact Strategies. (2024, June 25). *The role of AI in transforming federal acquisition*. <u>https://netimpactstrategies.com/insights/point-of-views/the-role-of-ai-in-transforming-federal-acquisition/</u>
- Nicewick, A. (2024, June 10). *Generative AI and the DOD*. Defense Acquisition University. <u>https://www.dau.edu/sites/default/files/2024-06/June102024-AI%20presentation%20.pdf</u>
- Noy, S., & Zhang, W. (2023). Experimental evidence on the productivity effects of generative artificial intelligence. *Science*, *381*(6654), 187–192. https://www.science.org/doi/10.1126/science.adh2586
- Obis, A. (2023, May 15). *Pentagon developing data integration layer to enable JADC2*. GOVCIO Media & Research. <u>https://govciomedia.com/pentagon-developing-data-integration-layer-to-enable-jadc2/</u>
- Obis, A. (2024, May 16). *DoD's acquisition workforce is stretched thin*. Federal News Network. <u>https://federalnewsnetwork.com/defense-main/2024/05/dods-acquisition-workforce-is-</u> <u>stretched-thin/</u>
- Pharathikoune, S. (2025, March 7). Enhancing military operational effectiveness through the integration of CAMO and NIPR GPT. U.S. Army. <u>https://www.army.mil/article/283601/enhancing_military_operational_effectiveness_through_the_integration_of_camo_and_nipr_gpt</u>
- Secretary of the Air Force Public Affairs. (2024, June 10). *Department of the Air Force launches NIPRGPT*. Air Force. <u>https://www.af.mil/News/Article-</u> <u>Display/Article/3800809/department-of-the-air-force-launches-niprgpt/</u>
- Technology Workforce Framework Act of 2024, S. 3792, 118th Cong. (2024). https://www.congress.gov/118/bills/s3792/BILLS-118s3792is.pdf
- U.S. Army Public Affairs. (2024, October 18). Army launches pilot to explore generative AI for acquisition activities. U.S. Army. <u>https://www.army.mil/article/280500/army_launches_pilot_to_explore_generative_ai_for_acquisition_activities</u>
- U.S. Congress. (2021, January 1). FY21 National Defense Authorization Act (Public Law 116–283). <u>https://www.congress.gov/116/plaws/publ283/PLAW-116publ283.pdf</u>
- U.S. Congress. (2025, December 11). FY25 National Defense Authorization Act (Public Law 118-31). <u>https://www.congress.gov/bill/118th-congress/senate-bill/4638/text</u>



- U.S. Department of Homeland Security. (n.d.). *Artificial intelligence for market research contract*. <u>https://www.dhs.gov/sites/default/files/2022-</u>12/AI%20for%20MArket%20Research%20DHS-gov.pdf
- U.S. Government Accountability Office. (2021). *Artificial intelligence: An accountability framework for federal agencies and other entities*. <u>https://www.gao.gov/assets/gao-21-519sp.pdf</u>
- U.S. Government Accountability Office. (2018). *Defense contracting: Enhanced information needed on interagency contracting* (GAO-18-578).

















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