



ACQUISITION INNOVATION  
RESEARCH CENTER

# Digital Data Management and Analytic Pilots

EXECUTIVE SUMMARY  
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## EXECUTIVE SUMMARY

**Background.** This technical report for WRT-1057.6 describes the follow-on efforts for WRT-1047p, Digital Data Management and Analytic Pilots, which focused on establishing use cases for innovative analyses of acquisition data, and establishing a data science environment for analysis of sensitive acquisition data known as DARCIE: Defense Acquisition Research, Collaboration and Innovation Environment. These efforts are consistent with the initiatives outlined in WRT-1047s IDEAS: Innovative, Data-Enabled Acquisition Strategy.

**Use Cases.** The previous research task had several recommendations focused on developing high-value use cases for analysis of acquisition data to drive innovation and improve decision-making. Working with the sponsor, the research team developed materials for eight potential use cases, which were used to solicit support from potential sponsors of acquisition data analysis. In order to ensure a commitment toward using the results, AIRC recommends that potential sponsors for the use cases provide some form of commitment to either support the research or adopt solutions. Three of the use cases represent opportunities to improve management of a portfolio of acquisitions. The eight use cases were:

- Portfolio Management
  - » Tradespace Analysis in Integrated Acquisition Portfolio Reviews (IAPRs)
  - » Total Lifecycle Portfolio Cost
  - » Alignment of Major Defense Acquisition Programs (MDAPs) and Universal Joint Task Lists (UJTLs)
- Digital Data Storage Management
- Rapid, Serial Incrementalism
- Securing the Software Supply Chain
- Quantitative Risk Assessment
- Climate Crisis

Of the eight, the two use cases that attracted the most attention were data analyses of software bills of materials to strengthen the software supply chain, and methods for quantitative risk management.

**DARCIE.** Building on the successful establishment of the pilot DARCIE 1.0 environment in the previous research task, this research task identified the requirements to develop the next phase of DARCIE. Two primary goals were to expand access and improve the user experience. The research team held conversations with three Federally Funded Research and Development Centers (FFRDCs) to understand the lessons that they learned in establishing their enclaves for processing controlled unclassified information (CUI). The researchers also met with Snowflake, Palantir and Scale AI to discuss their capabilities and ways they could potentially contribute to the DARCIE environment. This information served as inputs to the research team, which then developed a baseline set of requirements for further development of DARCIE (see Appendix A in full report).

The research team found that the need for DARCIE continues to be strong as the pilot DARCIE environment was used to support analysis of Department of Defense (DoD) obligation data by the Planning, Programming, Budgeting, and Execution (PPBE) Reform Commission. The U.S. Marine Corps also piloted the use of DARCIE for analysis of CUI for the Digital Data Grand Prix, providing a model for how CUI data competitions could take place within the AIRC. Additionally, the research team met several times with representatives from the U.S. Air Force Research Institute for Tactical Autonomy to figure out the best methods to support their needs.

### **Recommendations.**

**Use Cases.** The previous WRT-1047p research task recommended conducting a workshop to build a consensus around a set of high-value use cases for innovative analyses of acquisition data. Overall, the research team recommended following the precepts of Kotter's model of organizational change<sup>1</sup> to break down the institutional and cultural barriers surrounding innovative sharing and use of acquisition data:

- Establish a sense of urgency
- Create a guiding coalition
- Develop a vision and strategy
- Communicate the change vision
- Empower employees for broad-based action
- Generate short-term wins
- Consolidate gains & produce more change
- Anchor new approaches in the culture

In the future such a workshop could provide the impetus needed to obtain the leadership support for the sharing and analysis of acquisition data, help to create a guiding coalition, and successfully executing the analyses.

In order to start making the changes needed for innovative use of acquisition data, AIRC recommended that A&S seek out like-minded partners to identify high-impact opportunities. These partners should be empowered to represent their organizations and make the commitments necessary to share the data and conduct the necessary analyses. The focus should be on generating short-term wins on issues of importance to the Department.

**DARCIE.** The research team recommends continued DARCIE development as the need remains strong. The resulting infrastructure will help achieve the intent of the statute that establish AIRC<sup>2</sup>, which included provisions to establish data repositories and develop analytical capabilities to enable researchers and acquisition professionals to access and analyze historical data sets to support research and develop new policies and practices.

<sup>1</sup> Kotter, John P. *Leading Change*. Harvard Business Review Press, 2012.

<sup>2</sup> "National Defense Authorization Act for Fiscal Year 2020, Section 835." Congress.gov, 20 Dec. 2019.

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