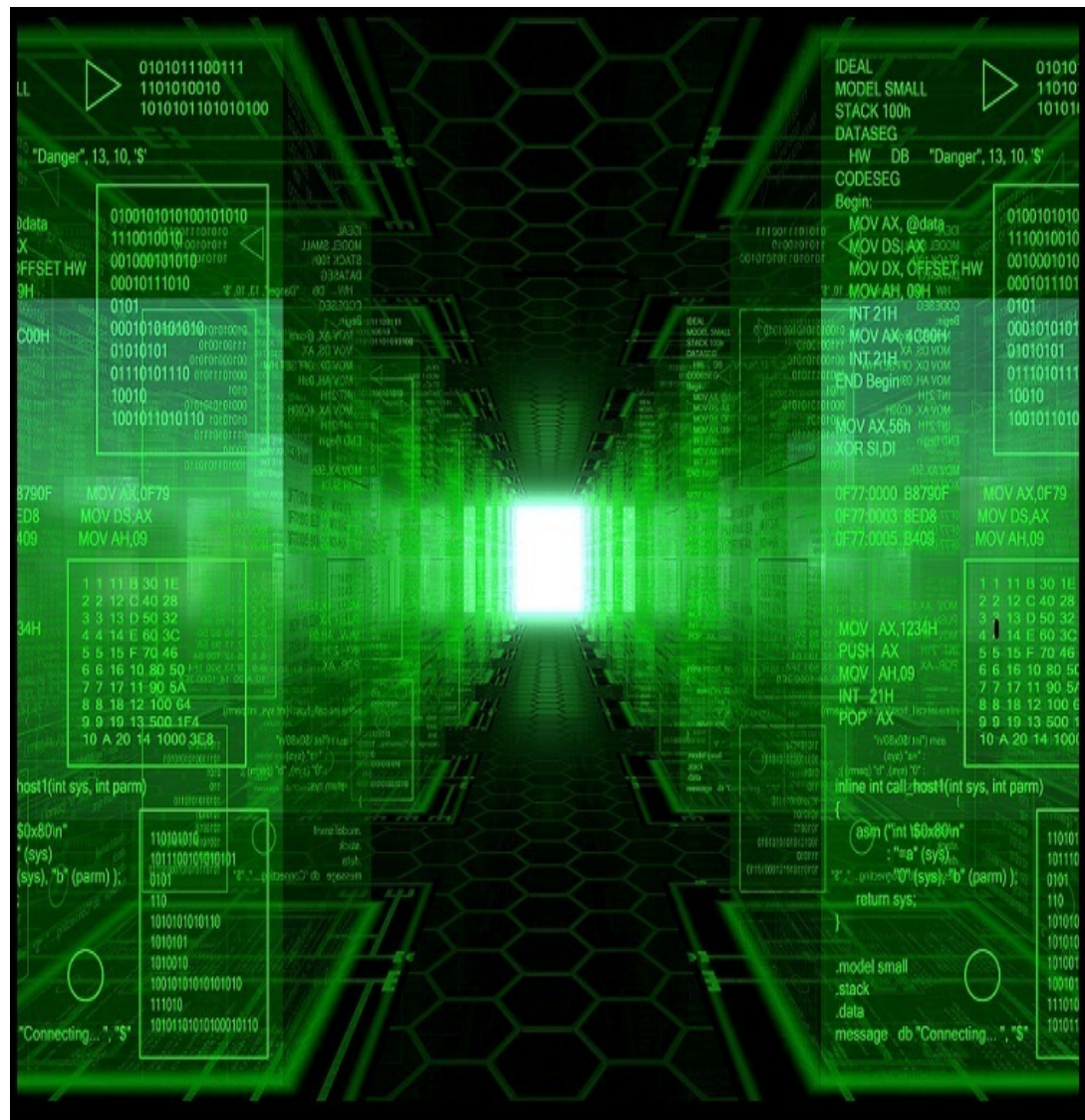




U.S. Department of the Army

# The Enterprise Data Analytics Strategy for Army Business

2018-2022



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## FOREWORD

Leaders in industry, academia, and government broadly agree on the incredible potential of big data and analytics in identifying opportunities for innovation, driving operational improvement, and advancing organizations toward their strategic goals. The availability of enormous quantities of data in the Army combined with tools for rapidly analyzing data on a massive scale carries the potential to answer previously unanswerable questions or to ask questions that today we don't even know we should be asking.

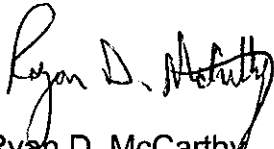
To optimize this potential, we are working to advance the Army's current data analytics approaches and goals to develop an enterprise-level data analytics capability. This capability will enable analysis, extraction of meaningful information, and decision-making based upon large, diverse, and real-time datasets that has not thus far been possible. This foundation for innovative analysis can generate new insights and inform strategic decisions regarding issues of readiness that are fundamental to the Army's Title 10 United States Code responsibilities including modernization, and related planning, programming, and budgeting. Ultimately, and most importantly, it will facilitate the resource-informed decision making necessary to support optimized efficiency in manning, training, and equipping the force.

The Enterprise Data Analytics Strategy (EDAS) for Army Business builds on the framework of the Army Data Strategy that established the foundation for sharing data, information, and information technology services to make data visible, accessible, understandable, trusted, and interoperable. The EDAS will capitalize on this data management framework to set the doctrinal, organizational, and personnel related conditions to provide actionable insights into areas of strategic importance.

I applaud the work that has been done through distributed communities of practice in using data analytics to solve Army problems and in elevating it, through this strategy, as a means to achieving competitive advantage in a complex world. However, full realization of benefits associated with an Armywide data analytics capability will require leadership engagement at all levels to increase awareness, understanding, and use of its great potential.

Thank you for your support in implementing the EDAS and its role in rising to tomorrow's challenges.

Army Strong!

  
Ryan D. McCarthy  
Under Secretary of the Army

## I. Purpose

Through its goals and objectives, the EDAS establishes a trajectory for the Army in building enterprise-wide decision analytics capabilities that capture the full business value of Army information resources. The Army will develop best-in-class analytics doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P) capabilities for a data-driven culture to drive fact-based, resource-informed decisions that generate readiness at best value.

## II. Strategic Intent

Army leaders are often forced to make inductive decisions because they lack access to timely and accurate predictive, inferential, or causal analysis that links resource decisions and proposed courses of action to projected outputs or outcomes. This lack of access precludes the Army from capturing the full business value of its information resources to identify opportunities and solutions for the improvement of readiness at best value to the Nation.

To address this gap, the Army has substantially invested in its business information technology over the past 5 years. Advanced Enterprise Resource Planning (ERP) systems have been and continue to be fielded to better manage personnel, logistics, financial, force management, and training operations. More significantly, the Army is migrating these systems into an integrated environment to provide the architectural and data management foundations necessary for visibility of overall Army enterprise process performance and cost directly related to readiness. This information environment will have the potential to generate new insights and other capabilities such as Global Force Information Management, the Army Contract Writing System, the Army Training Information System, and others to inform strategic, fact-based decisions regarding matters that are fundamental to the Army's Title 10 United States Code (USC) responsibilities.

While much progress has been made toward materiel solutions to support enterprise level data analysis, expanding and sustaining the use of Army data to capture its full business value will require approaches that go beyond data analysis and data management to incorporate data science (figure 1).

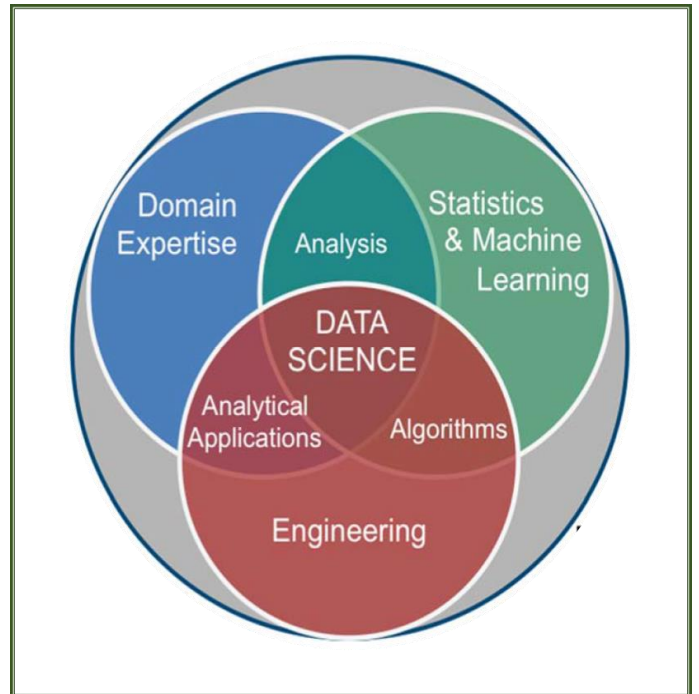


Figure 1: National Institute of Standards and Technology Data Science Model

To optimize benefits of the integrated ERP environment, the Army must mature its approaches to data analytics. The Army must move from descriptive and diagnostic analytics—that are historically based, predominantly transactional, and focused on performance evaluation—toward enabling predictive and prescriptive analytics. This maturation will provide the Army with the ability to generate readiness and to answer questions about what is likely to happen, what can be done to make things happen, and how to take advantage of opportunities or mitigate risks as events unfold (figure 2).

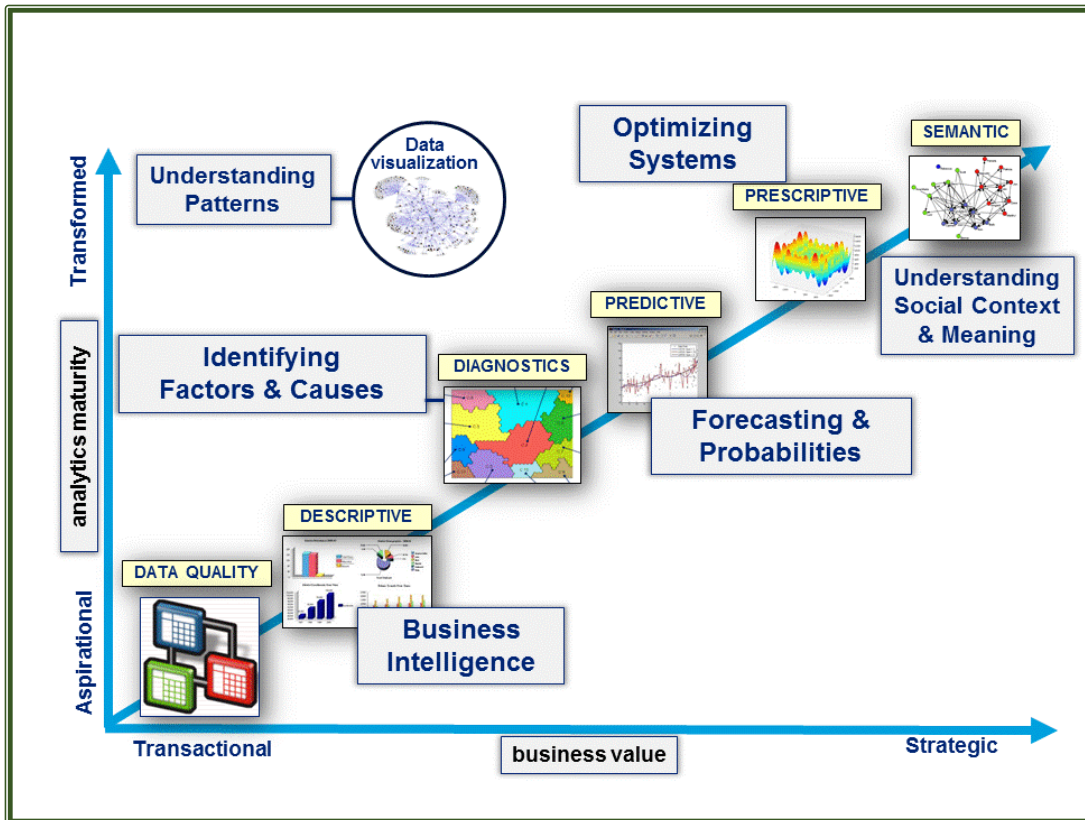


Figure 2: The Analytics Continuum

These approaches to data analytics must also address the full spectrum of DOTMLPF-P considerations. Further, the maturation of data analytics in the Army will require the definition of roles and responsibilities and the synchronization of organizations already working to support this capability across a number distributed communities of practice. The EDAS provides overarching direction to address these requirements and, in doing so, plays a vital role in the improving the way the Army mans, trains, and equips the force.

### III. Strategic Narrative

The Army must advance its data analytics capability to a maturity level in which data is a driver of continuous improvement and innovation. Information must be regarded as a

strategic asset. Analytical insight must optimize business process performance. Information governance must be integrated into all aspects of business processes to improve readiness.

#### IV. Planning Cycles and Strategic Alignment

As an enabling strategy to the Department of Defense Agency Strategic Plan and the Army Strategic Plan, the EDAS is aligned to, and synchronized with, other Army functional strategies, particularly the Army Data Strategy, the Army Business Strategy, and the Army Innovation Strategy. At the same time, EDAS provides overarching and unifying direction for operations, programs, and initiatives already using data analytics and data science to address specific Army challenges (figure 3).

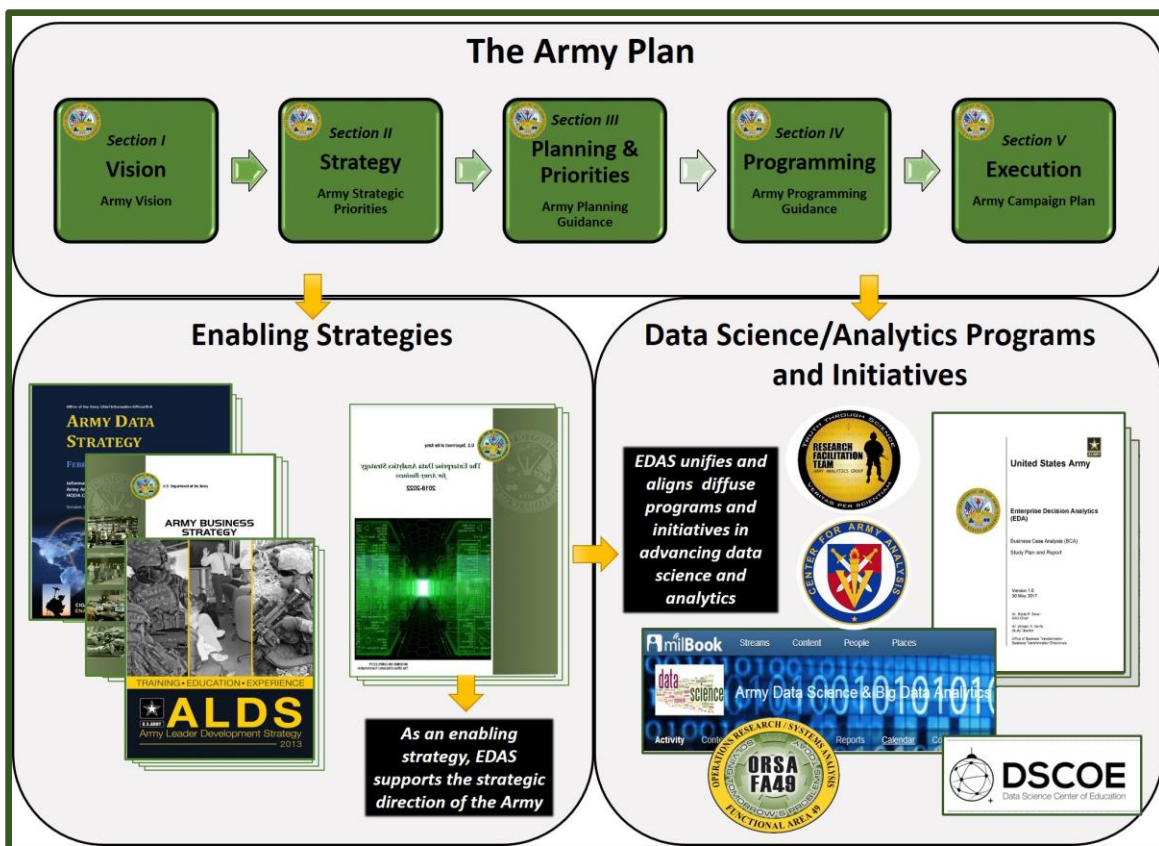


Figure 3: Enterprise Data Analytics Strategy Alignment

The strategy has a 5-year planning horizon and is reviewed and updated biannually to ensure continued responsiveness to the Army's evolving strategic environment. Updates to the EDAS will subsequently be published by the Office of Business Transformation (OBT) during the first quarter of the fiscal year.

#### V. Governance and Assessment

The Chief Management Officer is responsible for development and coordination of the EDAS and OBT facilitates the assessment of performance related to its objectives. This

assessment is accomplished through the Two and Three-Star Army Business Council (ABC) meetings with updates provided as appropriate to the Senior Review Group (SRG), chaired by the Under Secretary of the Army (USA) and the Vice Chief of Staff of the Army (VCSA). While the primary purpose for the reviews is to monitor progress, ABC venues provide Army senior leaders with the opportunity to engage in overcoming obstacles or necessary decision-making in the achievement of EDAS objectives.

The Army's Strategic Management System (SMS) facilitates measurement of progress against strategic objectives and is the directed, enterprise-level tool used to manage strategy execution in the Army to include the EDAS.

## **VI. Strategic Goals, Objectives, and Performance Measures**

### ***A. Data Analytics Doctrine and Policy***

**Challenge:** Data analytics can create tremendous value for organizations by collecting novel sources of data, combining data in novel ways, and analyzing data with novel methods. But the nature of data analytics poses challenges for established, bureaucratic institutions as it requires innovation, experimentation, and discovery; ascribes value to data itself; and has clear return on investment (ROI) metrics. Processes such as acquisition, budgeting, and even strategic decision-making must adapt to the rapidly evolving tools and capabilities of data analytics.

**Goal 1:** Army Data Analytics doctrine and policy adapt new capabilities to the Army's circumstances. The Army is oriented and organized around fast experimentation to understand, learn, and improve its business operations through data analytics and, as a result, continuously improves Army readiness.

**Objective 1.1:** Establish formalized governance for the Army to develop overarching policy and guidance for the Army enterprise approach to data analytics, translate strategic leadership questions into data projects, and harmonize previously disparate analytics management efforts.

*Performance Indicator 1.1a:* Establish an Army Analytics Board (AAB) with representation from across Headquarters, Department of the Army (HQDA). Target: The AAB is established with initial meeting conducted no later than (NLT) 3rd quarter (Qtr), fiscal year 2019 (FY19).

*Performance Indicator 1.1b:* The AAB maintains and manages a portfolio of data analytics activities and a project pipeline with an optimal mix of core, adjacent, and transformational projects that will allow the Army to best mitigate technical, implementation, and adoption risks. Target: NLT 4th Qtr, FY19.

**Objective 1.2:** Provide authoritative direction for the Army's approach to data analytics.

*Performance Indicator 1.2:* The Army's approach to data analytics and data science is codified in Army Regulation (AR) 5-1 (Management of Army Business Operations). Target: With first revision of AR 5-1 after the publication of this strategy.

**B. Data Analytics Organization and Infrastructure**

**Challenge:** An enterprise data analytics capability that includes people, platforms, and tools can be organized in a variety of ways that suits the particular needs of an enterprise. Within the Army today there is some centralization of data and data governance with a focus on the collection, storage, and governance of data but this is not sufficient for the strategic use of those assets. Further, organization of the Army's data analytics capability must address cross-functional, enterprise-wide issues of strategic value, incentivizing innovation, and enabling agility. This challenge will require enterprise level management of the Army's approaches to data analytics.

**Goal 2:** The Army establishes a federated approach to data analytics and data science that provides a mandate, incentives, and opportunity for the growth and maturation of this capability while supporting the further development of establishment of data analytics cells at other echelons and leveraging existing capabilities currently dispersed across the Army (figure 4).

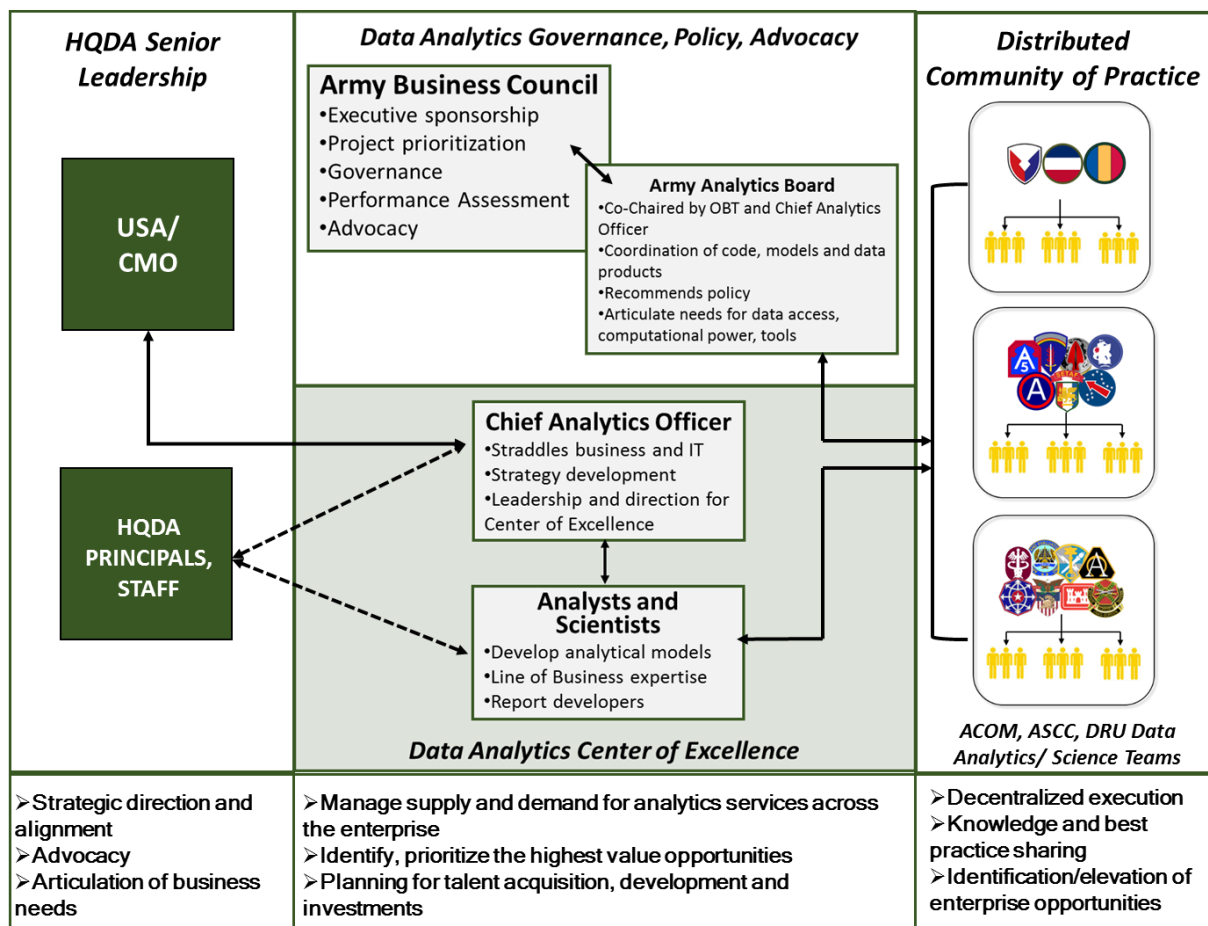


Figure 4: Federated Approach to Data Analytics for Army Business



**Objective 2.1:** Establish a data analytics cell resident within HQDA with leadership formally designated as the Army's Chief Analytics Officer (CAO) to focus on enterprise-level questions. With the addition of expertise in the areas of data science, data management, communications, and subject matter expertise, and with the stand-up of the Army Analytics Board, the cell evolves to become the Army's Analytics Center of Excellence (ACE) with responsibility for developing and deploying related strategic direction throughout the Army, solving the hardest enterprise questions and maturing the broader data analytics community.

*Performance Indicator 2.1a:* CAO position designated, filled, and data analysis cell established. Target: 3rd Qtr, FY19.

*Performance Indicator 2.1b:* ACE is formally established and is at initial operating capacity. Target: End of FY19.

**Objective 2.2:** Organize and conduct collaborative Armywide events such as Unified Quest or similar challenges to engage and build relationships across government, industry, and academia in advancing the Army's data analytics and data science capability.

*Performance Indicator 2.2:* The Army conducts collaborative, Armywide events to advance its data analytics capability. Target: Minimum of one event annually beginning in FY19.

**Objective 2.3:** Strengthen the Army's data analytics community of practice through a federated organizational structure where there is a balance of centralized and distributed coordination and a centralized group of advanced analysts, strategically deployed to enterprise-wide initiatives (figure 4).

*Performance Indicator 2.3a:* Army's federated approach to data analytics is codified in policy and in place. Target: NLT 3rd Qtr, FY19.

*Performance Indicator 2.3b:* Data analytics and data science teams operating at echelons identified in figure 4 are addressing key roles of data science life cycle. Target: End of year (EOY) FY19.

**Objective 2.4:** Systematically pursue relationship building opportunities and collaborative agreements with academia and industry in advancing the Army's data analytics capabilities and optimizing the benefits derived from them.

*Performance Indicator 2.4:* The Army has at least two formal arrangements with academia or industry in place. Target: EOY FY20.

**Objective 2.5:** Establish HQDA-level incentives for data analysis cells at all echelons to innovate and create value.

*Performance Indicator 2.5:* Incentives for data analytics cells at all echelons are formalized and in place. Target: NLT EOY 2019.

### **C. Workforce Capability and Capacity for Data Analytics**

**Challenge:** Expanding, maturing, and sustaining the Army's approach to data analytics will require workforce capability and capacity not fully developed in the Total Force. Attracting, developing, managing, and retaining uniformed and civilian personnel in addressing this requirement is further complicated by rapidly evolving skills and tools needed to keep the approach current and by increased demand for talent from the private sector and other organizations that place increasingly high value on data analytics.

**Goal 3:** Through collaborative teams and a range of competencies the Army expands, matures, and sustains a data analytics capability that captures the full business value of its information resources with a broad range of descriptive, diagnostic, predictive, and prescriptive analytics.

**Objective 3.1:** Catalyze and support the currently decentralized data analytics community to meet the evolving demand for enterprise-level data analytics solutions.

*Performance Indicator 3.1:* Data Analytics Center of Excellence (ACE) actively engages analytics professionals throughout distributed community of practice to solve enterprise level problems. Target: Within 3 months of standing up the ACE.

**Objective 3.2:** Identify positions and roles needed to establish an organic data analytics capability within the Army, the competencies required by these positions, and opportunities for training and developing data analytics competencies.

*Performance Indicator 3.2a:* Workforce inventory is conducted triennially by the ACE. Target: Beginning in FY20.

*Performance Indicator 3.2b:* ACE prepares training guidance, based on inventory results. Target: Within 3 months of inventory completion.

*Performance Indicator 3.2c:* Track data analytics competencies among military personnel using Additional Skill Identifiers (ASI) or Personnel Development Skill Identifiers (PDSI) to inform workforce inventory. Target: NLT 3rd Qtr, FY19.

*Performance Indicator 3.2d:* A comprehensive review of Career Programs (CPs) 16 (Engineers and Scientists), 36 (Modelling and Simulation), and Functional Area (FA) 49 (Operations Research/Systems Analysis) to evaluate and make recommendations on the capability and capacity of these careerists related to the Army's strategic direction for data analytics and data science is conducted with recommendations made to ACE. Target: NLT 2nd Qtr, FY19.

**Objective 3.3:** Ensure the rate with which the Army acquires and develops data analytics expertise is congruent with the scaling and growth of its data analytics capabilities and initiatives.

*Performance Indicator 3.3:* In conjunction with comprehensive review of CP 36 and FA 49, ACE conducts formal assessment to determine that the rate at which the Army grows its data analytics capability is informed by the rate with which it can acquire and develop highly educated personnel in this area. Target: Annual assessments beginning in FY 2019.

**Objective 3.4:** Attract, recruit, incentivize, and retain uniformed and civilian data scientists and data engineers.

*Performance Indicator 3.4:* Formalized, systematic approaches to incentivizing and retaining uniformed and civilian data scientists and engineers in place. Target: NLT 3rd Qtr, FY20.

**Objective 3.5:** Support the continued acquisition of formal data analytics academic degrees and training with industry.

*Performance Indicator 3.5:* Formal approaches in place to support enrollment in data analytics academic degree programs for both uniformed and civilian employees. Target: EOY 2020.

#### ***D. Leadership for Data Analytics***

**Challenge:** To capture the full business value of its data and analytic capabilities, an enterprise must have leaders who have data analysis competencies appropriate for their role and level within the enterprise. Senior leaders must be comfortable with allowing data analytics to inform their strategic decisions. Leaders of analytics teams must be able to translate business and operational questions into data analytics questions and process (acquisition, personnel, training, etc.) leaders must understand enterprise-wide requirements for a robust data analytics capability.

**Goal 4:** Both uniformed and civilian Army Leaders have a working understanding of data analytics. This understanding, coupled with their knowledge of business problems increases the demand signal for data analytics capability and solutions.

**Objective 4.1:** Develop opportunities for executive/leadership data analytics training.

*Performance Indicator 4.1:* Opportunities for executive and leadership data analytics and science training are provided with active enrollment. Target: 2nd Qtr, FY20.

**Objective 4.2:** Enterprise-level performance measures are established to determine value of the emerging data analytics capability. These measures are routinely reviewed by Army senior leaders through the ABC.

*Performance Indicator 4.2:* Measures indicative of ROI-related to data analytics and data science are identified, reported, and routinely reviewed by the ABC. Target: 3rd Qtr, FY19.

**Objective 4.3:** Leaders at all echelons are incentivized to use data analytics to innovate, create value, and find solutions to their most pressing organizational challenges.

*Performance Indicator 4.3a:* Formalized, systematic approaches to incentivizing the use of data analytics and science are in place. Target: EOY 2019.

*Performance Indicator 4.3b:* Business Mission Area (BMA) Self-Assessment scores. Target: To be determined (TBD) pending baseline from 2019.

#### ***E. Materiel and Technology Support for Data Analytics***

**Challenge:** Technologies for the collection, aggregation, and analysis of data at enterprise scale continue to evolve. This brings benefits such as the generation of new types of data and the enabling of greater automation, but also brings risks such as vendor lock-in, rising licensing and hardware costs, and questions about ownership of raw and processed data and potential security vulnerabilities. Evolving technologies also affect other elements of the data analytics strategy, especially training and personnel. The Army must remain cognizant of and responsive to these trade-offs so that data analytics capabilities are sustainable and cost-effective.

**Goal 5:** The Army's materiel solutions for enterprise data analytics continue to address the needs of the broader Army data analytics community and balance technology solutions with the human resources required to employ them in a cost effective manner.

**Objective 5.1:** The Army This evaluation is conducted in concert with HQDA-level human resources planning to include an assessment of workforce capability and capacity, and professional development plans and programs.

*Performance Indicator 5.1a:* Recurring reviews are held annually at HQDA-level to evaluate the Army's current data analytics tools, talent, training, and infrastructure against new options. Target: EOY 2019.

*Performance Indicator 5.1b:* Conclusions, requirements, and action plans related to these reviews are used systematically to inform HQDA-level human resources planning.

*Performance Indicator 5.1c:* BMA Self-Assessment scores. Target: TBD pending baseline date from 2019.

**Objective 5.2:** The acquisition and development of Army data systems and tools are shaped by inputs from Army data analytics professionals including leadership, data engineers, and data scientists at the enterprise level and through distributed communities of practice. Materiel support responds with agility to these demand signals and is prepared to provide the scale, access, and governance required to enable the success of the data analytics mission.

*Performance Indicator 5.2:* A formal mechanism is in place to aggregate input from Army data analytics professionals at all levels of the Army to inform the acquisition, development, and sustainment of Army data systems and tools. Target: NLT EOY 2019.

**Objective 5.3:** The Army operates a centralized and de-centralized scalable, trusted data environments with tools that provide automation, governance, and a full range of descriptive, diagnostic, predictive, and prescriptive analytics on both historical and real-time data.

*Performance Indicator 5.3:* BMA Self-Assessment scores. Target: TBD pending baseline from 2018 assessment.

## **VII. Summary of Goals and Objectives**

Table 1 contains a summary of the EDAS objectives and the goals they support.

**Goal 1: Army Data Analytics doctrine and policy adapt new capabilities to the Army's circumstances. The Army is oriented and organized around fast experimentation to understand, learn and improve its business operations through data analytics and, as a result, continuously improves Army readiness.**

**Objective 1.1:** Establish formalized governance for the Army to develop overarching policy and guidance for the Army enterprise approach to data analytics, translate strategic leadership questions into data projects, and harmonize previously disparate analytics management efforts.

**Objective 1.2:** Provide authoritative direction for the Army's approach to data analytics.

**Goal 2: The Army establishes a federated approach to data analytics and data science that provides a mandate, incentives and opportunity for the growth and maturation of this capability while supporting the further development of establishment of data analytics cells at other echelons and leveraging existing capabilities currently dispersed across the Army.**

**Objective 2.1:** Establish a data analytics cell resident within HQDA with leadership formally designated as the Army's Chief Analytics Officer (CAO) to focus on enterprise-level questions. With the addition of expertise in the areas of data science, data management, communications, and subject matter expertise, and with the stand-up of the Data Analytics Board, the cell evolves to become the Army's Analytics Center of Excellence (ACE) with responsibility for developing and deploying related strategic direction throughout the Army, solving the hardest enterprise questions and maturing the broader data analytics community.

**Objective 2.2:** Organize and conduct collaborative Army-wide events such as Unified Quest or similar challenges to engage and build relationships across, government, industry and academia in advancing the Army's data analytics/data science capability.

**Objective 2.3:** Strengthen the Army's data analytics community of practice through a federated organizational structure where there is a balance of centralized and distributed coordination and a centralized group of advanced analysts, strategically deployed to enterprise-wide initiatives.

**Objective 2.4:** Systematically pursue relationship building opportunities and collaborative agreements with academia and industry in advancing the Army's data analytics capabilities and optimizing the benefits derived from them.

**Objective 2.5:** Establish HQDA-level incentives for data analysis cells at all echelons to innovate and create value.

**Goal 3: Through collaborative teams and a range of competencies the Army expands, matures and sustains a data analytics capability that captures the full business value of its information resources with a broad range of descriptive, diagnostic, predictive and prescriptive analytics.**

**Objective 3.1:** Catalyze and support the currently decentralized data analytics community to meet the evolving demand for enterprise-level data analytics solutions.

**Objective 3.2:** Identify positions and roles needed to establish an organic data analytics capability within the Army, the competencies required by these positions, and opportunities for training and developing data analytics competencies.

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**Goal 4: Both uniformed and civilian Army Leaders have a working understanding of data analytics. This understanding, coupled with their knowledge of business problems increases the demand signal for data analytics capability and solutions.**

**Objective 4.1:** Develop opportunities for executive/leadership data analytics training.

**Objective 4.2:** Enterprise-level performance measures are established to determine value of the emerging data analytics capability. These measures are routinely reviewed by Army senior leaders through the ABC.

**Objective 4.3:** Leaders at all echelons are incentivized to use data analytics to innovate, create value and find solutions to their most pressing organizational challenges.

**Goal 5: The Army's materiel solutions for enterprise data analytics continue to address the needs of the broader Army data analytics community and balance technology solutions with the human resources required to employ them in a cost effective manner.**

**Objective 5.1:** The Army systematically evaluates its current tools and infrastructure against new options for effects on automation, costs, manpower and business processes associated with data analytics activities and makes appropriate adjustments to its related approaches. This evaluation is conducted in concert with HQDA-level human resources planning to include an assessment of workforce capability and capacity, and professional development plans and programs.

**Objective 5.2:** The acquisition and development of Army data systems and tools are shaped by inputs from Army data analytics professionals including leadership, data engineers and data scientists both at the enterprise level and through distributed communities of practice. Materiel support responds with agility to these demand signals and is prepared to provide the scale, access, and governance required to enable the success of the data analytics mission.

**Objective 5.3:** The Army operates a centralized and de-centralized scalable, trusted data environments with tools that provide automation, governance, and a full range of descriptive, diagnostic, predictive and prescriptive analytics on both historical and real-time data.

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