JPEO-CBRND

DIGITAL TRANSFORMATION

SMART BOOK

2023

As of July 2023

TABLE OF CONTENTS

JPEO-CBRND DIGITAL TRANSFORMATION

Digital Transformation adds value for the warfighter and workforce by delivering successful acquisition outcomes. As a leadership and organizational priority, Digital Transformation leverages digital technologies to transform business processes, empower the workforce, and develop capabilities that serve the Joint Force.

FUNCTIONAL AREAS

The Digital Transformation Smart Book outlines how each digital technology will benefit and impact day-to-day operations for each of the JPEO-CBRND functional areas.

- Program Management
- Engineering
- Test & Evaluation
- Finance
- Logistics
- IT Operations & Cybersecurity
- Contracting

FOCUS AREAS

Data
Modernize data practices to use and share data more efficiently and effectively

Engineering
Manage the complexity of engineering CBRND solutions using digital technology

Software
Develop and procure cybersecure software faster and more frequently

Workforce Development
Create a digitally capable workforce trained to use and acquire digital technologies

DIGITAL LITERACY CAMPAIGN

As part of the JPEO-CBRND's focus on workforce development, the Digital Literacy Campaign is a dedicated effort to provide learning opportunities and adapt our culture to embrace digital technologies.

Benefits:

- **Increased Accessibility**: Access digital products anywhere, anytime if connected to the Internet or network
- **Enhanced Virtual Collaboration:** Facilitate telework, long-distance collaboration, and continuity of operations
- **Faster Technology Adoption:** Use new digital technology, processes, and tools at a faster rate with fewer issues
- **Improved Information Sharing:** Find, use, and compare information from subject matter experts

Learning Opportunities

- DAU Training
- Carnegie Mellon University's Digital Data Leaders Course
- DigitalU Training
- Udemy Training

For information and resources, visit the JPEO-CBRND Digital Transformation Teams channel
For learning opportunities, visit the JPEO-CBRND People Operations Teams channel

FACT SHEET

JPEO-CBRND

DIGITAL TRANSFORMATION 101

OVERVIEW

Digital Transformation is the adoption of digital technologies to enhance business processes, empower the workforce, and improve capability development.

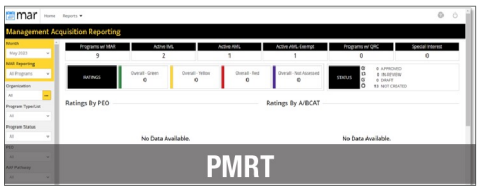
JPEO-CBRND's Digital Transformation aligns with and is driven by:

- DoD Digital Modernization Strategy
- Army Digital Transformation Strategy

FOCUS AREAS:

- Data
- Engineering
- Software
- Workforce Development

Real World Examples:



BENEFITS

Business Processes

- Streamlining acquisition processes (e.g., monthly reports, requirements management)
- Improving decision making with easily-accessed cost, schedule, and performance data
- Increasing resilience to disruption and ability to adapt to change

Workforce Empowerment

- Increasing collaboration and communication
- Improving digital literacy and demystifying new technology
- Creating a culture of innovation through technology enablers (e.g., Qlik, real-time document editing)

Capability Development

- Improving warfighter user experience
- Enhancing system performance against near-peer competitors
- Providing earlier identification of risks and issues

WHAT'S NEXT

Digital Literacy Campaign – Training opportunities focused on Digital Transformation are available! The list of classes, as well as additional information and resources can be found on the People Operations Digital Transformation Information in Acquisition Workforce Teams channel.

Ask Questions and Share Your Feedback – Digital Transformation is a continuous process that affects each functional area. Talk with your functional leads about how digital transformation can benefit you and your team.

Fred Buchanan | fred.b.buchanan.civ@army.mil

FACT SHEET

DIGITAL TRANSFORMATION
ENTERPRISE DATA MANAGEMENT, ANALYTICS, & VISUALIZATION

Focus Area: *Data*

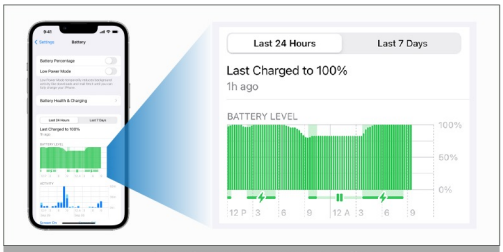
OVERVIEW

- Enterprise Data Management is the process of inventorying and governing your business' data.
- Data Analytics is the process of turning data into useful information to drive decision making.
- Data Visualization is the process of delivering information or data in an easy to read, easy-to-understand graphic.

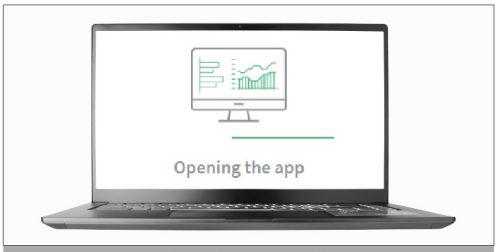
Core Principles:

- Data has value; manage it as an asset
- Data management requirements are business requirements
- Data management requires diverse skills
- Data management is lifecycle management

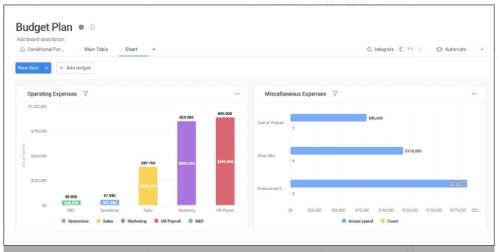
Real World Examples:



iPHONE BATTERY USE



JPEO-CBRND Qlik



SPENDING ANALYSIS

BENEFITS

- Increase the speed and efficiency of decision-making
- Work directly with updated authoritative data
- Explore the data through analytics
- Tell an effective story to internal and external decision makers
- Prepare to present the narrative, including responding to ad hoc questions
- Eliminate time spent creating slides and spreadsheets
- Integrate visual analytics across functional areas and business processes

DAY-TO-DAY IMPACT

All Functional Areas

- Easier access to data throughout the acquisition lifecycle
- Improved accuracy of data
- Informed decision making

DoD Analytics Tools

pmrt — **Project Management Resource Tools**

ARMY VANTAGE DATA ANALYTICS PLATFORM — **Army Digital Analytic Platform**

Fred Buchanan | fred.b.buchanan.civ@army.mil

FACT SHEET

DIGITAL TRANSFORMATION
CLOUD COMPUTING

Focus Area: *Data*

OVERVIEW

- Cloud computing is a digital technology that allows users to access data and use services over the Internet from any device or location.
- A cloud consists of many computer servers connected and managed by a cloud provider.
- Cloud users interact with the cloud "as-a-service." They don't need to worry about hardware or computer infrastructure.

Real World Examples:

MS Office 365 & OneDrive

Gmail

Joint Enterprise Technology Tool

JACKS Master Analytics Portal (JMAP)

BENEFITS

- **Accessibility:** Access data from anywhere if connected to the Internet or the organization's network
- **Scalability:** Adjust storage needs as data increases or requirements change without worrying about physical limitations (e.g., available hard drive space on a laptop)
- **Cost Savings:** Leverage the pay-as-you-go pricing model and pay for only for the storage space needed
- **Collaboration:** Share files and folders, control access permissions, and collaborate on documents in real-time
- **Data Protection and Redundancy:** Cloud providers manage continuous cybersecurity updates and maintenance
- **Streamline Application Development:** Shorter development timelines with integrated software development and deployment environments

DAY-TO-DAY IMPACT

All Functional Areas
- Cost savings using cloud services
- Deliver and deploy systems faster
- Gov. cloud environments approved to store CUI and classified data

Finance and Contracting
- Contract language specific to cloud providers (e.g., metrics)
- Contract cost considerations for cloud services

Engineering & Logistics
- Develop software faster
- No need to maintain server infrastructure and hardware

DoD Cloud Providers

cArmy

Cloud One

Fred Buchanan | fred.b.buchanan.civ@army.mil

FACT SHEET

DIGITAL TRANSFORMATION
ARTIFICIAL INTELLIGENCE

Focus Area: *Data*

OVERVIEW

- **Artificial Intelligence** (AI) is a digital technology that enables computers to perform tasks that would be considered intelligent if done by a human.
- **Data science** is a field of study closely associated with AI. A **data scientist** uses mathematics and computers to extract useful knowledge from data.
- AI applications often require vast amounts of data to function. **Data engineering** methods are used to design systems that collect and use data.

Real World Examples:


ChatGPT

Apple Face ID

Spell Check


Virtual Assistant

BENEFITS

- **Automation:** Automate many manual tasks and improve workforce efficiency
- **Analysis:** Assess new data quickly to provide insights and predictions
- **Customization:** Create user experiences that are tailored based on preferences and environment
- **Complex Problem Solving:** Process large amounts of data quickly and provide potential solutions without a subject matter expert
- **Minimize Errors:** Perform repetitive tasks and provide quality assurance checks

DAY-TO-DAY IMPACT

All Functional Areas
- Identify trends, risks, and warnings earlier and more often
- Automate tasks such as data entry
- Enhanced decision-making models

Finance and Contracting
- Contract and cost requirements

Engineering
- Build data sets to teach AI

Test & Evaluation
- Measure and test AI model performance

Logistics
- Provide feedback to improve AI tools

Cybersecurity
- Develop trusted AI models

AI/ML Powered Acquisition Programs

CBRN Support to Command & Control (CSC2)

Generative Unconstrained Intelligent Drug Engineering (GUIDE)

F35 Lightning II (Joint)

Integrated Visual Augmentation System (IVAS)

Fred Buchanan | fred.b.buchanan.civ@army.mil

FACT SHEET

DIGITAL TRANSFORMATION

DIGITAL ENGINEERING

Focus Area: *Engineering*

OVERVIEW

- Digital Engineering (DE) is a digital technology that uses computer models and data to design complex systems.
- DE uses shared data and digital models in place of static documents (e.g., PDFs and spreadsheets) to perform engineering tasks.
- Model Based Systems Engineering is the use of a collaborative, digital model to document and track the systems engineering process from end to end.

Real World Examples:

BENEFITS

- **Collaboration:** Central platform for information sharing and communication
- **Rapid Prototyping:** Accelerate time to market by evaluating design alternatives, testing hypotheses, and creating solutions before prototyping
- **Cost Savings:** Create prototypes and test or rework before production
- **Streamlined Testing**: Improved models can create cost savings and accelerate testing
- **Efficiency:** Automation of repetitive tasks and reduced human errors
- **Design and Analysis:** Create digital representations of products and systems to improve understanding of performance, behavior, and potential issues

DAY-TO-DAY IMPACT

All Functional Areas
- Eases integration and product reuse
- Simplified version control
- Improves digital collaboration across industry, academia, and government
- Early design and performance risk identification

Finance and Contracting
- Intellectual property costs of data
- Contract language requires DE practices and industry/DoD standardized tools

Engineering and Logistics
- 24/7 model accessibility
- Assess and manage the lifecycle needs for your project or product

Digital Engineering in the DoD

- 3DS MagicDraw
- IBM Rational
- DAU Digital Engineering Credential

Fred Buchanan | fred.b.buchanan.civ@army.mil

FACT SHEET

DIGITAL TRANSFORMATION
PRODUCT LIFECYCLE MANAGEMENT

Focus Area: *Engineering*

OVERVIEW

- Product Lifecycle Management (PLM) is the management of a product throughout its entire lifecycle—from concept to disposal.
- Digital PLM creates and manages this process digitally by building a digital thread.
- The concept of a digital thread links all data related to a product's lifecycle together to create a centralized data source, also referred to as a single source of truth.

BENEFITS

- **Traceability:** Digital artifacts are linked and can be traced back to originating documents
- **Synchronized Actions:** Centralized digital artifacts are easier to manage, maintain, and reference
- **Faster Development Time:** Design teams can collaborate and work on the same data in real time, decreasing the chances for errors
- **Reduced Compliance Risk:** Centralized data can be easily audited to ensure compliance with the latest standards
- **Innovation:** Collaborative teams across the organization can easily access, review, and create
- **Increased Productivity:** Digital artifacts and workflows can be automated and streamlined

DAY-TO-DAY IMPACT

All Functional Areas
- Digitization of existing documents and data
- Standardized data sharing requirements
- Requires near constant access to centralized data
- Manage your data the same as any other asset

Contracting
- Contract language specific to data rights and IP considerations

Finance, Engineering, Test, & Logistics
- Linking digital tools and data to create the digital thread

PLM in the DoD

Popular PLM tools used across the Services and large defense vendors

windchill®

TEAMCENTER

Fred Buchanan | fred.b.buchanan.civ@army.mil

FACT SHEET

DIGITAL TRANSFORMATION

DEVSECOPS AND AGILE

Focus Area: *Software*

OVERVIEW

- DevSecOps and Agile are software development methods that focus on an expedited delivery of a minimum viable product (MVP) with small updates at frequent intervals to add or improve features and security.
    - The focus of DevSecOps (short for development, security, and operations) is to shorten the overall software development lifecycle.
    - The focus of Agile is to incrementally deliver software by combining collaborative, cross functional teams with end users.

Real World Examples:

iTunes App Store

Windows Update

Google Play Store

Google Play

BENEFITS

- **Speed:** Commitment to an agreed upon MVP improves speed of initial capability delivery
- **Cyber Threats:** Incorporating cybersecurity in the development process addresses controls and testing early and throughout
- **Flexibility:** Priorities can be adjusted at delivery intervals (also known as sprints)
- **User Feedback:** Users provide valuable feedback throughout the development process
- **Early Testing:** Cross functional teams include testers and expedite the testing cycles
- **Automatic Updates:** Frequent updates can be deployed automatically and seamlessly to the user

DAY-TO-DAY IMPACT

All Functional Areas

- Culture change from sequential processes to iterative processes

Program Management

- Delegation of responsibilities for sprint planning and execution

Contracting

- Contract language specific to agile contracting and deliverables

Engineering, Testing, & Cyber

- Tightly integrated development teams
- Collaborative problem solving

Agile Software Development Values*

- Individuals and interactions over processes and tools
- Working software over comprehensive documentation
- Customer collaboration over contract negotiation
- Responding to change over following a plan

** Derived from the Agile Manifesto*

Fred Buchanan | fred.b.buchanan.civ@army.mil

HELPFUL RESOURCES

JPEO-CBRND Digital Transformation

- Digital Transformation 101 Briefing
- People Operations Workforce Development Teams page

TRAINING

- DAU Training
- Carnegie Mellon's Digital Data Leaders Course
- DigitalU Training
- Udemy Training
    - Digital Transformation Masterclass
    - Agile Samurai Bootcamp
    - Product Management for AI and Data Science

STRATEGIES & GUIDANCE

- DoD Digital Modernization Strategy (July 2019)
- Army Digital Transformation Strategy (October 2021)
- DoD Digital Engineering Strategy (June 2018)
- Director, Acquisition Career Management (DACM) Newsletter on Digital Transformation (January 2023)
- Manifesto for Agile Software Development

GLOSSARY

TERM	DESCRIPTION
Agile	Software development method that combines collaborative, cross functional teams with end users to incrementally deliver software
Artificial Intelligence (AI)	The ability of machines to perform tasks that normally require human intelligence—recognizing patterns, learning from experience, drawing conclusions, making predictions, taking action, and more
Cloud	Remote, computer servers connected and managed by a cloud provider
Cloud Computing	Digital technology that allows users to access data and services over the Internet from any device or location
Command, Control, and Communications (C3)	Information systems, incorporating strategic and tactical systems, that is typically employed by a military organization
Cybersecurity	The practice of protecting systems, networks, and programs from digital attack
DASA(DES)	The Deputy Assistant Secretary of the Army for Data, Engineering and Software (DASA(DES)) position is newly established within the Assistant Secretary of the Army (Acquisition, Logistics and Technology) to lead Digital Transformation and software modernization efforts
Data Analytics	Process of turning data into useful information to drive decision making
Data Engineering	Designing and building systems that collect and analyze data
Data Science	Field of study often associated with Artificial Intelligence and Machine Learning that focuses on finding useful information from data by analyzing it carefully
Data Scientist	An expert who uses mathematics and computers to extract useful knowledge from data
Data Visualization	Process of delivering information or data in an easy to read, easy-to-understand graphic
DevSecOps	Method to shorten the software development lifecycle; natural extension of Agile methods and encompasses the tools, services, and standards that enable IT development, security, and operations disciplines to come together in the development, deployment, and operation of applications in a secure, flexible, and interoperable fashion*
Digital Engineering	Digital technology that uses computer models and data to design complex systems
Digital Literacy (Army)	Army initiative to support upskilling the Acquisition workforce. Intended to create a common understanding of topics such as digital transformation, agile software development, DevSecOps, cloud foundations, data science, machine learning, human centered design, artificial intelligence, and cybersecurity

***Content derived from:** DOD Digital Modernization Strategy

GLOSSARY

TERM	DESCRIPTION
Digital Literacy Campaign (JPEO-CBRND)	Combination of training and culture shift within the JPEO-CBRND workforce to adopt, use, and acquire digital technologies
Digital Thread	Linking all lifecycle product data together creating a centralized data source, also referred to as a single source of truth
Digital Transformation	Leveraging digital technologies to transform business processes, empower organizations, and develop capabilities
Enterprise Data Management	Process of managing and governing business data
Expert Systems	Computers making decisions that replicate what human experts would make
Internet of Things (IoT)	Assortment of embedded sensors and connected devices to gain the ability to sense, predict, and respond to our needs and can be integrated into our decision-making processes and natural behaviors*
Machine Learning	Programs and systems that improve performance over time
Minimum Viable Product (MVP)	The first version of a product that has just enough features to be usable by an initial user to solicit feedback
Model Based Systems Engineering	Use of a collaborative, digital model to document and track the systems engineering process from end to end
Natural Language Processing	Computers understanding human language
Product Lifecycle Management (PLM)	Management of a product from concept to disposal
Robotics	Machines performing tasks autonomously based on data about its environment
Speech Recognition	Computers converting spoken audio into usable data
Vision	Computers understanding and interpreting information from images or videos
5G	The 5th generation of mobile network technologies that encompasses wireless standards, emerging technologies, and mobile platform delivery services designed to deliver enhanced mobile broadband and machine to machine communications*

***Content derived from:** DOD Digital Modernization Strategy