

## 2016 Defense Health Information Technology Symposium

# Using Analytics to Transform Enterprise Architecture



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**“A joint, integrated, premier system of health, supporting those who serve in the defense of our country.”**



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# Learning Objectives

- Describe the objectives and three major components of Enterprise Architecture (EA)
- Identify areas for healthcare improvement within the MHS
- Define the Long-Range Technical Architecture (LRTA) and its role in shaping the future of HIT for the DHA
- Gain an understanding of the enterprise and industry analytics used behind the LRTA's methodology
- Discuss the value the EA and LRTA bring to organizational transformation by creating an enterprise view

# Agenda

## ■ Enterprise Architecture (EA)

- ❑ What is EA
- ❑ A Look into Current EA Activities
- ❑ MHS EA Content Framework
- ❑ Enabling Interaction Across the MHS
- ❑ Enabling a Common EA Repository
- ❑ Constructing an EA Metamodel to Run Analytics

## ■ Long-Range Technical Architecture (LRTA)

- ❑ Background
- ❑ Purpose
- ❑ Methodology
- ❑ Results
- ❑ Near-Term Focus
- ❑ Future of the LRTA

# Enterprise Architecture

# What is Enterprise Architecture

**The set of common instructions and building blocks used when developing new capabilities and making decisions**

- ✓ EA provides a **standard framework of guidelines** (concepts, policies, principles, rules, patterns, interfaces and standards) in order for all systems in the enterprise to align, communicate and interface with each other
- ✓ Its aim is to ensure **alignment of the strategy, people, processes, information, and technology** of the enterprise with each other and with the external environment
- ✓ The U.S. Government defines EA as a '**strategic information base**' that defines the mission of an agency and describes the technology and information needed to perform that mission

# What is Enterprise Architecture (cont'd)



\*Includes reports (e.g. documents, glossaries) of artifacts



Data Repository & Analytics Engine



Portfolio Management



Budget Optimization



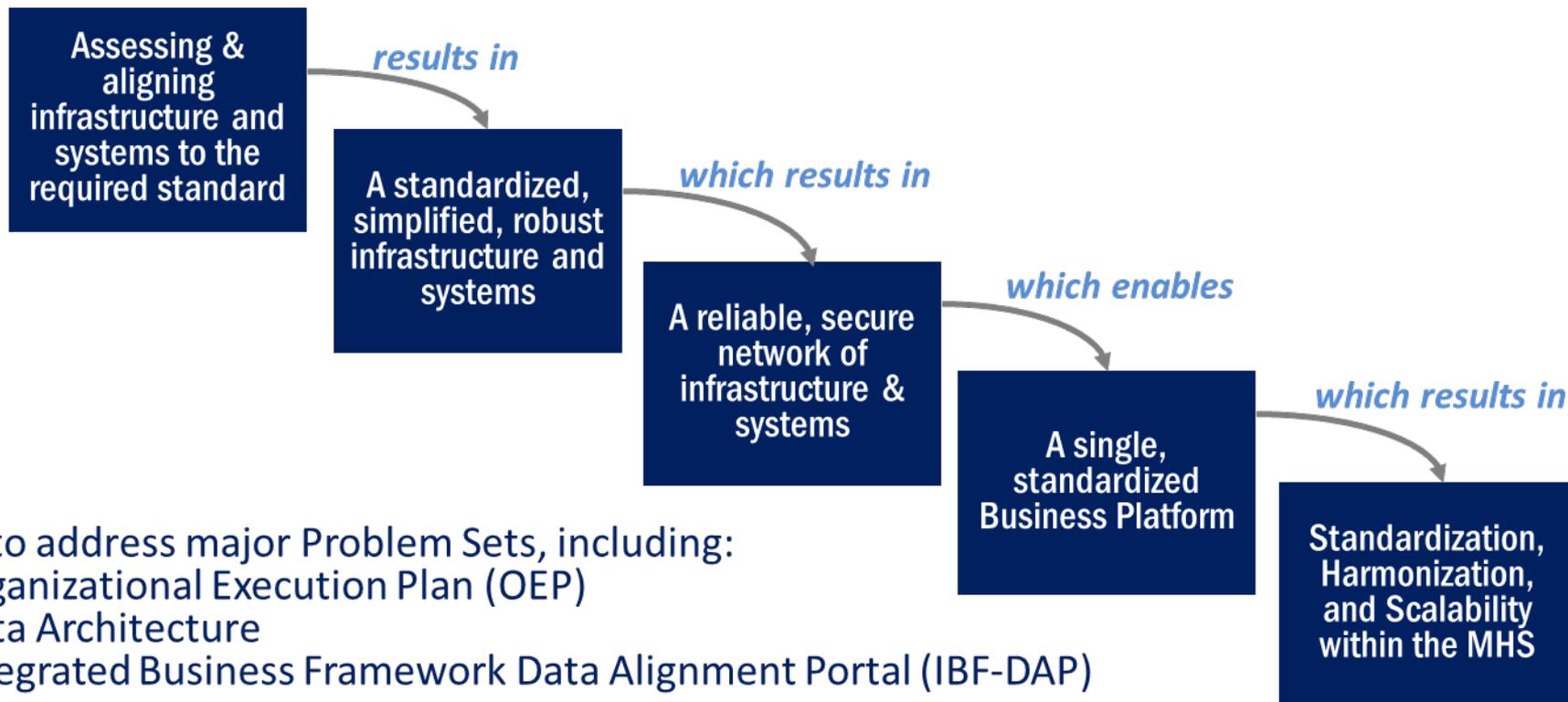
Capability Development



Collaboration & Communication



# Impact of EA?



Used to address major Problem Sets, including:

- Organizational Execution Plan (OEP)
- Data Architecture
- Integrated Business Framework Data Alignment Portal (IBF-DAP)

# EAB Strives to Support MHS Priorities

## **EAB Mission Statement:**

To explicitly and formally describe the current and target state Military Health System and provide diagnostic and actionable information that enables the transformation of military healthcare.

# Transformation of the MHS Begins with EA

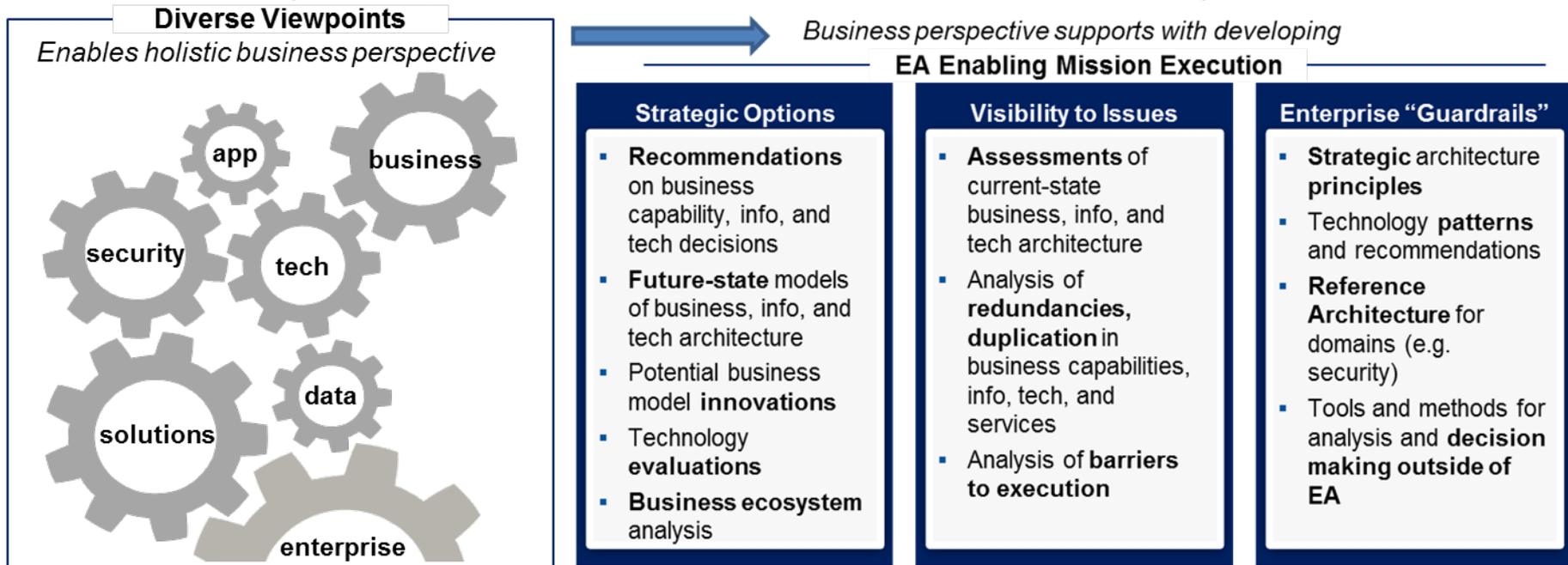
- Architecture data at solution level is distributed across various divisions (Technical, Data, Infrastructure, Security, etc.), and divisions are responsible for architecture at the solution-level
- EA collects these varied sets of data and synthesizes the information in to a single set enabling MHS to draw meaningful conclusions in support of effective IT Portfolio Management



- EA ties together disparate enterprise data scattered across multiple divisions in the enterprise, by creating an enterprise view thereby enabling large-scale MHS transformation.

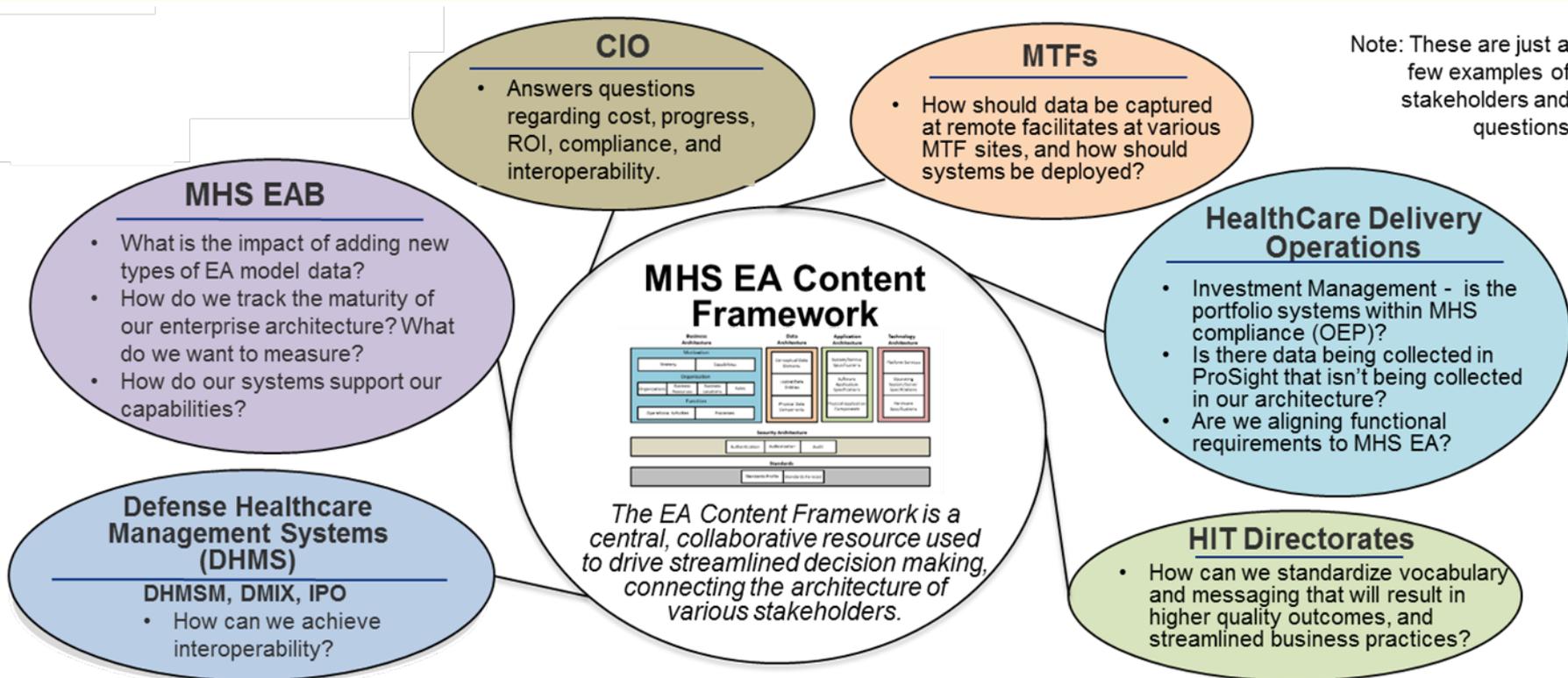
# Gaining a Holistic Perspective Using EA

With its exposure to different architecture domains, the MHS has a “big picture” perspective that it can leverage to help the DHA preemptively identify issues, challenges, and disconnects.



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# Decision Making Support Among Stakeholders



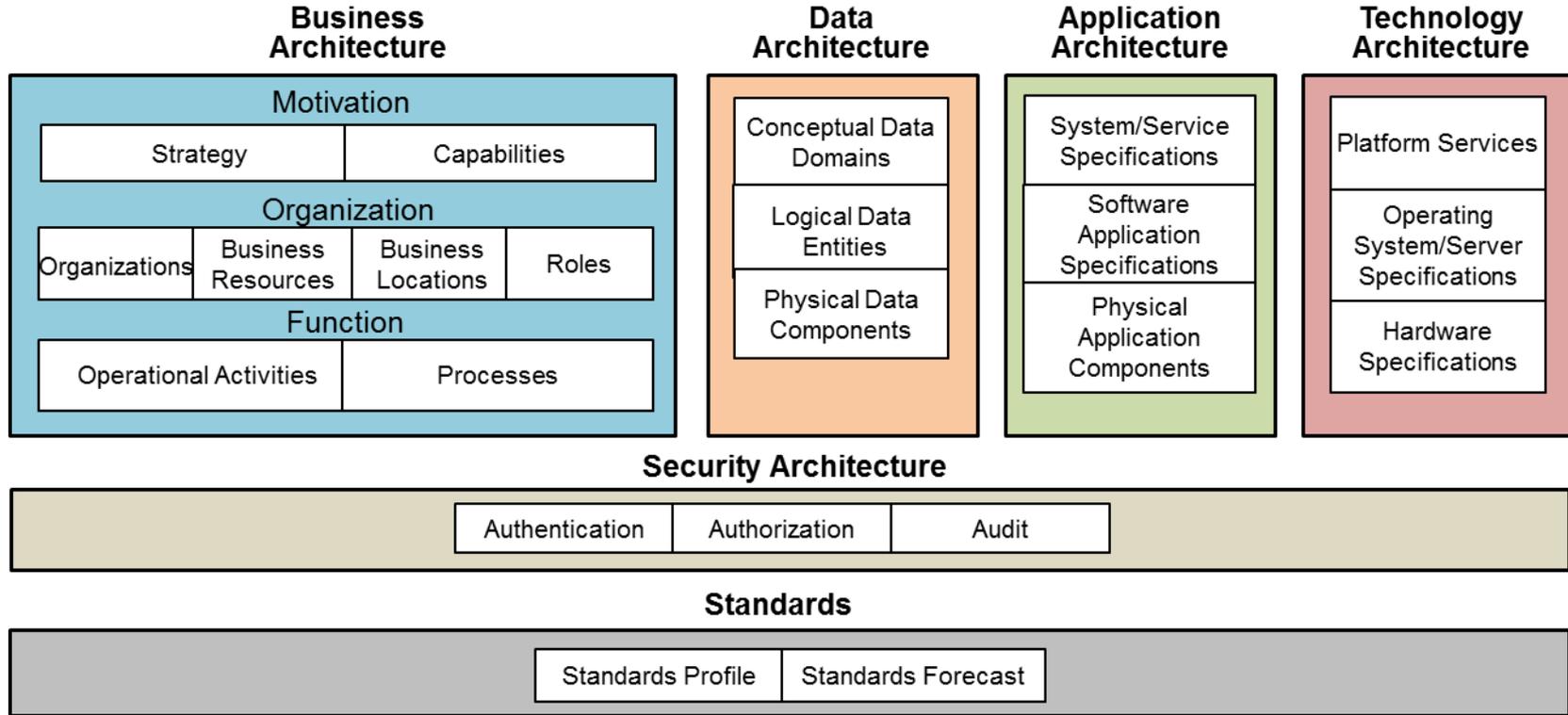
Note: These are just a few examples of stakeholders and questions

# MHS EA Content Framework



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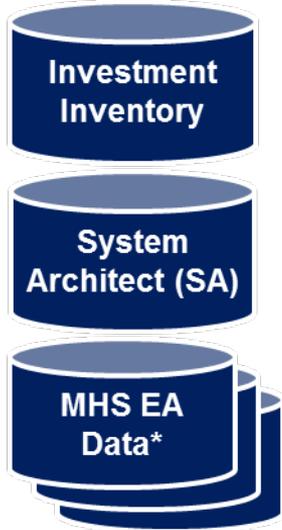
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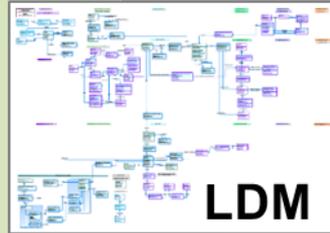
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# Enabling a Common EA Repository

## DATA SOURCES



\*MHS GENESIS, ProSight, Defense Health Program System inventory Report (DHP-SIRT), Architecture Compliance and Requirements Traceability (ACART), and other data not in SA



**LDM**

A Logical Data Model (LDM) used to model data from sources and enable:

- Common vocabulary
- Normalized structure relationships/integrity
- Integration & federation

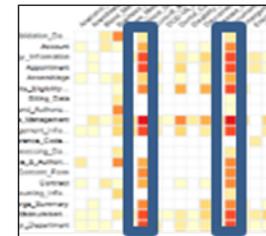


## CENTRAL ANALYTICS PLATFORM



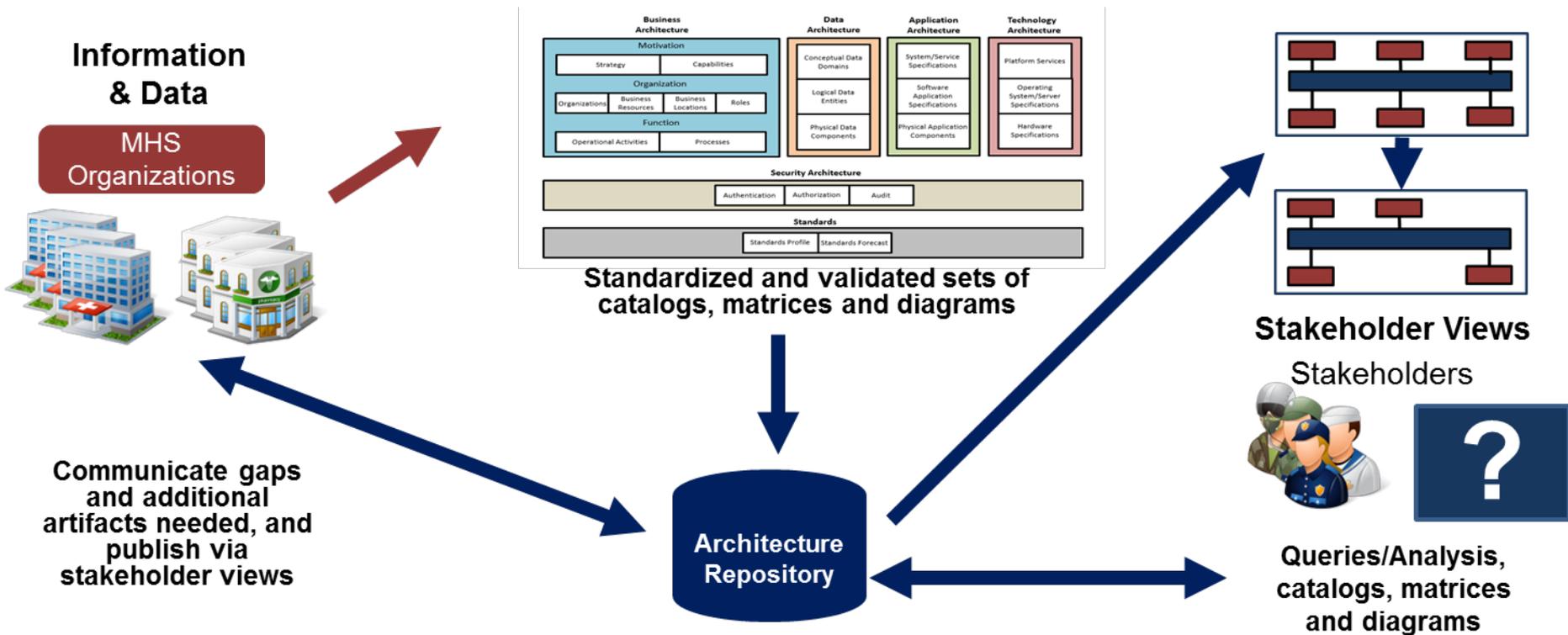
The Semantic Open Source Software (SEM OSS) will access MHS EA data in order to:

- Perform analysis
- Generate reports
- Inform decisions
- Provide recommendations



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# Enabling Interaction Across the MHS



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# A Look into Current EA Executing Activities

- **ZBR Portfolio Rationalization:** Provide recommendations for portfolio rationalization activities using collected data and analytics routines
- **Rational System Architect (RSA) Connectivity:** Build connection between platforms to enable a common data source, allowing SEMOSS to access, visualize, and analyze new sources of data
- **Data Collection Planning:** Streamline data collection process for system owners to provide and update data regarding their system in support of ongoing portfolio analysis
- **Portfolio Analysis Support:** Identify systems that do not have a disposition and collaborate with OTM to plan and execute further analysis using a phased approach
- **Cerner Workflow Mapping:** Connect Cerner workflows to existing systems and activities to identify gaps in transitioning from legacy systems' capabilities
- **DHMSM Support Data Architecture:** Support enterprise data mapping to facilitate transition from legacy systems to DHMSM
- **Systems Viewpoint 8 Dashboard:** Develop dynamic SEMOSS dashboard to show system evolution and transition status over time
- **EA Working Group:** Encourage cross-functional usage of EA and provide a cross-functional knowledge-sharing platform

# Example 1

## ZBR Queuing Rationalization Dashboard



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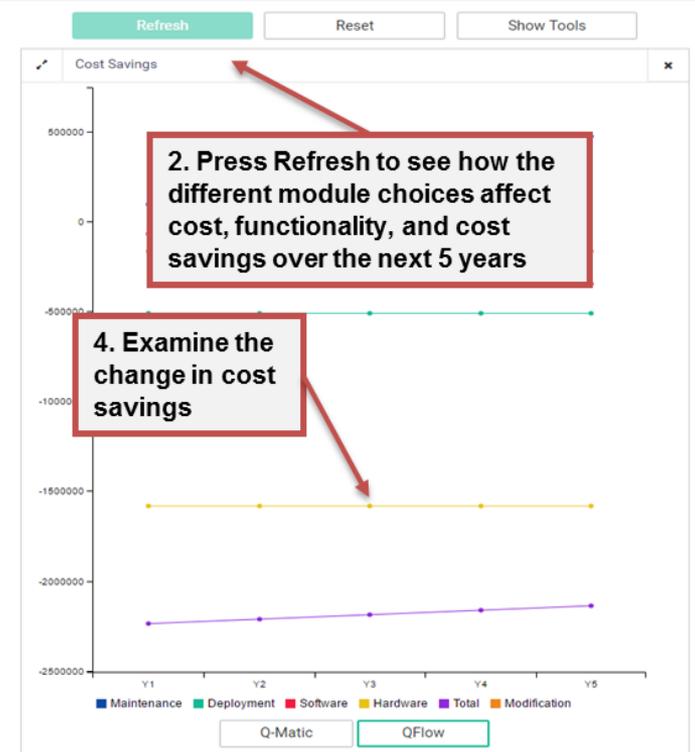
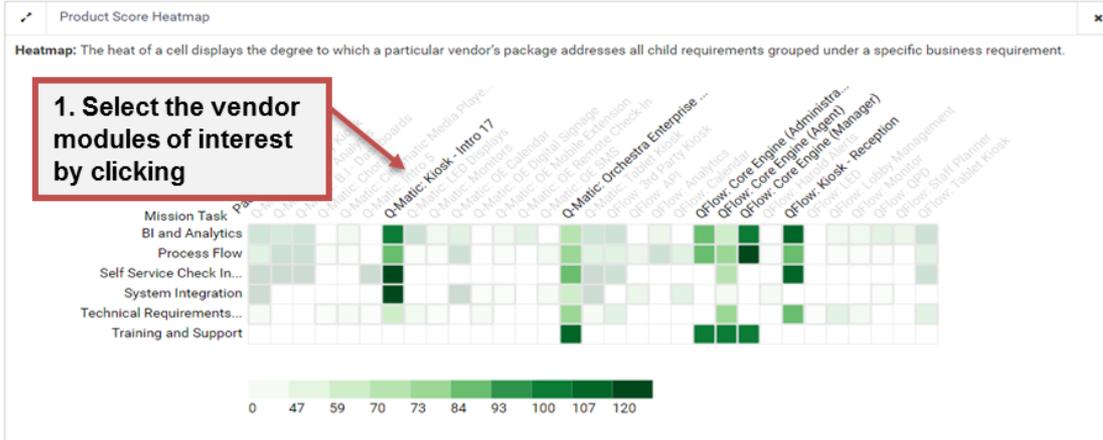
### AOA Queuing Dashboard

Overall Vendor Score and Cost

**Vendor Score:** The percentage of functional requirements addressed by each vendor's selected packages  
**Vendor Cost:** The total cost to provide each vendor's functionality across a hypothetical MHS enterprise.

Overall Vendor Score		Green Field Acquisition Cost					
	Score	Total Cost	Licensing	Hardware	Modification	Deployment	Maintenance
Q-Matic	79.19%	Q-Matic \$16,971,615	\$3,375,607	\$4,964,612	\$1,171,844	\$2,455,421	\$5,004,131
QFlow	84.26%	QFlow \$19,462,529	\$5,911,733	\$6,997,050	\$665,607	\$2,034,084	\$3,854,055

3. Examine the change in functionality and cost

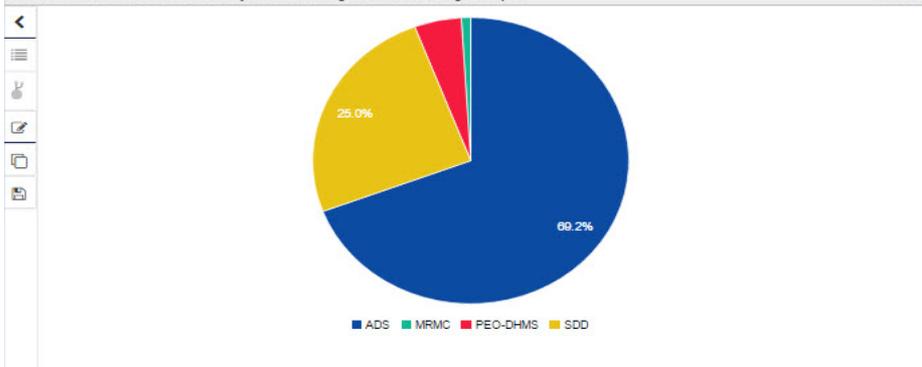


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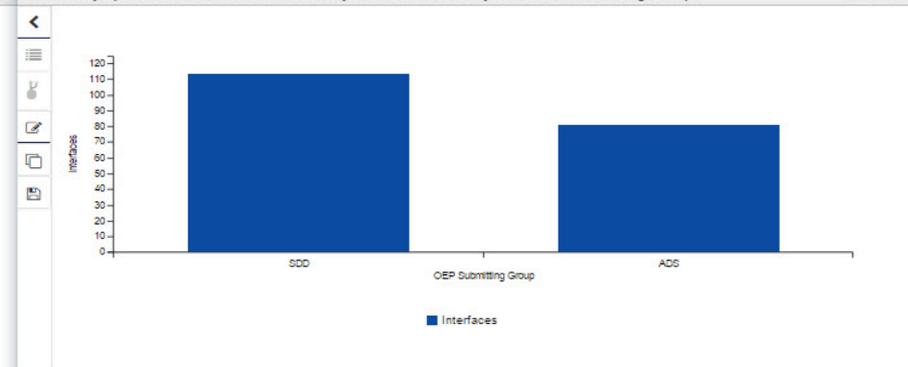
# Example 2

## Submitting Organizations Dashboard

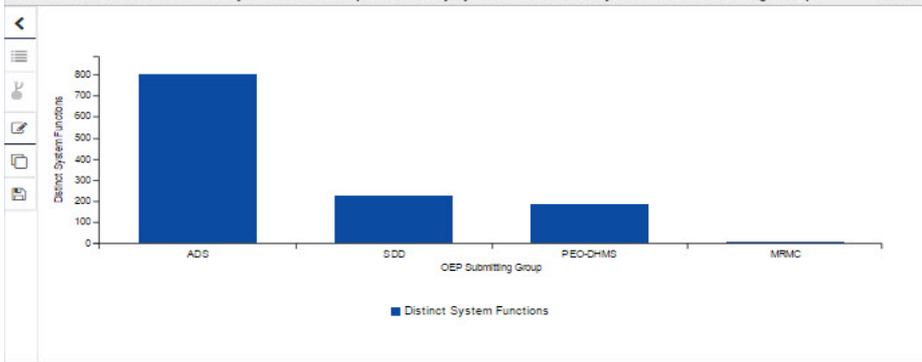
What is the distribution of OEP systems among OEP Submitting Groups?



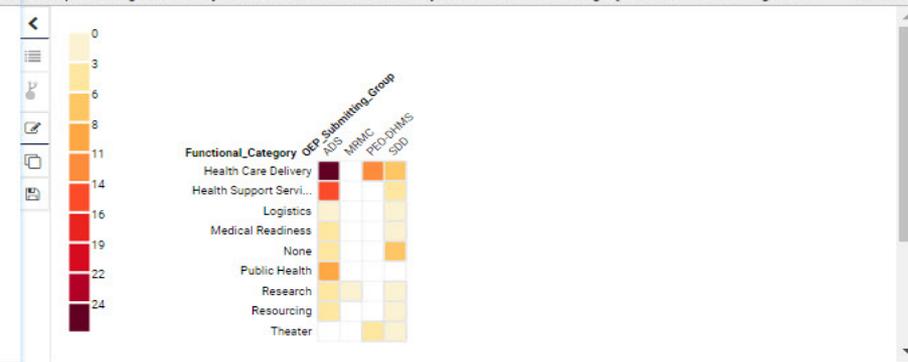
How many upstream interfaces exist in the systems submitted by each OEP Submitting Group?



What is the number of distinct system functions performed by systems submitted by each OEP Submitting Group?

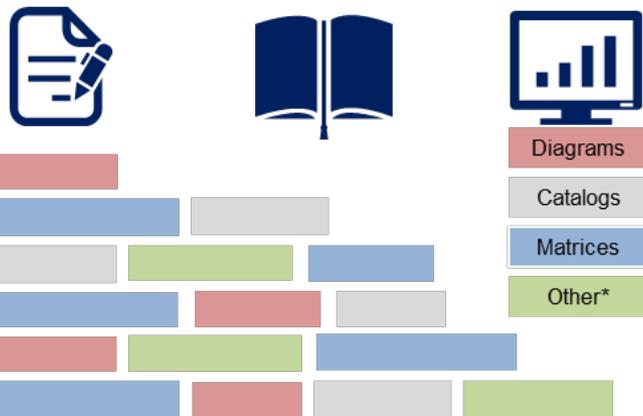


What percentage of OEP System Functions are covered by each Functional Category and OEP Submitting Group?



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# Transitioning into LRTA



\*Includes reports (e.g. documents, glossaries) of artifacts

Set of common instructions and building blocks that describe the **current state** of the Enterprise



# A

How should the organization use Long-Range Technical Architecture to facilitate innovative solutions to meet MHS Quadruple Aim using the approved EA standards and process?

# Long-Range Technical Architecture

# LRTA Background (the Why and What)

- Historically, as investment strategy and planning is taken through the chain of command, key actionable intelligence is lost
- This leads to uninformed gut reaction decisions, caused by lack of understanding of 2nd and 3rd order effects, inhibiting our mission support
- The LRTA intends to solve this issue by providing a thorough **investigation and prescription of where the DHA should invest over the next ten years**, to be used by leadership at all levels **to better inform and align mission decisions.**

# LRTA Background (the How?)

- The LRTA **develops a methodology to better support our mission** through business optimization, financial viability, and technical feasibility
- The LRTA **measures potential HIT initiatives** based on their ability to drive DHA strategy, DOTMPLF, and the closure of enterprise functional and technical gaps

## LRTA Strategic Plan and Ongoing Analysis

- Apply predictive modeling to prescribe the most sound investments
- Guide the sequencing of investments over the next ten years
- Drive continuous value creation through the efficient realization of the MHS Strategy Map

# LRTA Purpose

The **LRTA** helps meet the following goals by guiding future IT investment planning based on enterprise strategies and ability to fill functional and technical gaps.



**Fortify our  
Relationship  
with the Services**

**Proactively plan for, POM,  
and execute future state  
investments as one Joint  
enterprise**



**Strengthen our role  
as a Combat Support  
Agency**

**Identify linkages between  
industry capabilities and  
mission goals in order to  
provide an actionable path for  
reaching them**

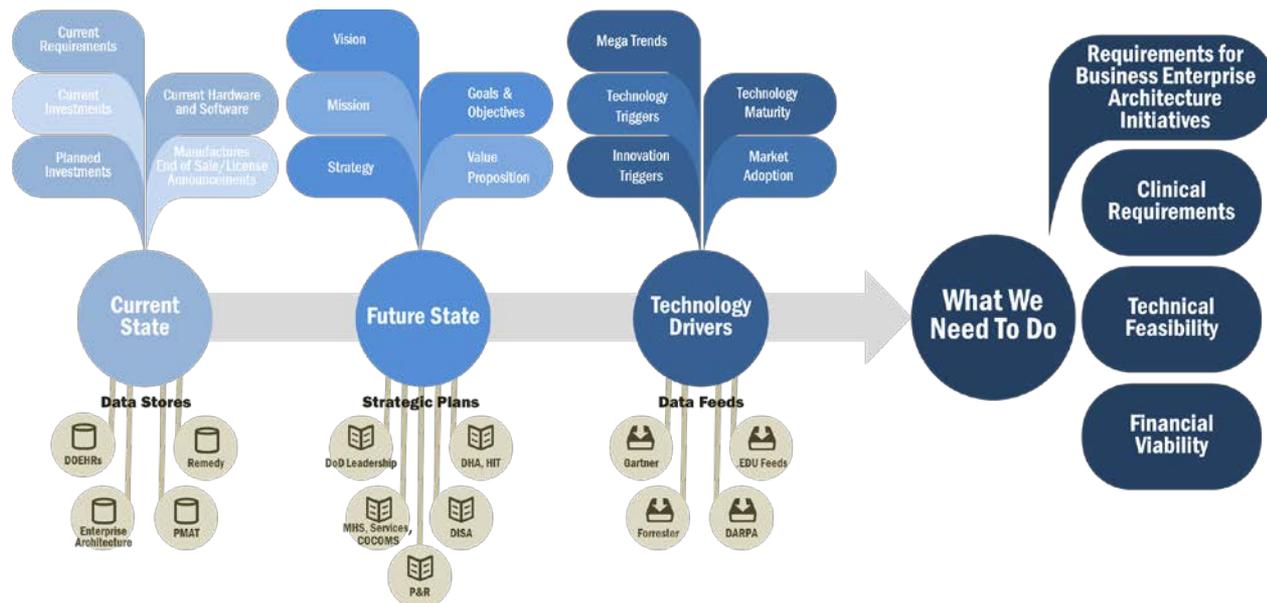


**Optimize  
DHA  
Operations**

**Clearly understand what gaps  
are most imperative and what  
technologies can answer them  
for better quality services at  
the lowest cost**

# LRTA Methodology

The analysis supporting the LRTA was designed to be accurate, specific, and repeatable.



The LRTA leverages **years worth of MHS and DHA data stores, Federal strategic plans, and industry data feeds** from a variety of best-in-practice industry resources

# High-Level Process for Conducting LRTA Analysis

## Break Down the DHA's Current and Future States into Measurable Enterprise Components

## Calculate the Effects of Industry Solutions on #1 and #2

## Apply the Highest Scoring Solutions to the Future State Landscape



**Result:** An actionable plan to positively impact all DHA business requirements

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# LRTA Result: A 10-Year Roadmap

**Plots 32 technologies across distinct time frames**, based on their analyzed benefit and maturity.

- More quickly adapt to/benefit from industry trends
- More efficiently plan POM needs
- Align the internal community
- Achieve long-term strategic goals
- Reduce maintenance costs
- Eliminate critical and costly functional gaps

**4-6 Years**

Top **11** Technical Solution Domains  
Impact **80%** of Strategic Objectives and **85%** of Current Functional Gaps

**7-10 Years**

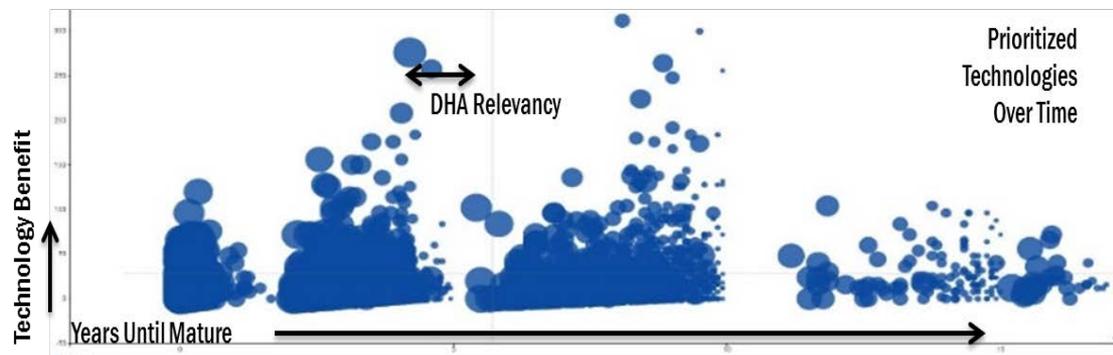
Top **21** Technical Solution Domains  
Impact **100%** of Strategic Objectives and **90%** of Current Functional Gaps

# LRTA Result: Targeted Innovation

The LRTA provides valuable insights that enable MHS stakeholders to accurately answer important enterprise questions

Data-Driven Answers to:

- What capabilities is our enterprise currently demonstrating?
- What capabilities do we need to reach our long-term Strategic Goals?
- What emerging industry solutions most address these capabilities?
- What Vendors will best provide those Technologies?
- When is the best time to invest? What would be the approximate Level Of Effort to implement and sustain these efforts?



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# LRTA Near-Term Focus

The LRTA shows that near-term technical architecture must enable portfolio rationalization and the ability to consolidate systems while ensuring consistent communication. The architecture must also support interoperability with external or new systems such as DHMSM.

Our Near-Term Architectural Requirements were identified as follows:

- **Data Federation.** Provide a uniform, coherent, and integrated view of data that are distributed
- **Integration.** Make data from different systems available seamlessly through authorized functionalities
- **Interoperability.** Allow different functionalities in various systems to seamlessly understand and operate upon the same data

# Recent LRTA Data Enhancements

The dynamic nature of the database allows it to ingest new data and offer new insights

- > 2,500 Standard Vendor Evaluations
- > 160 HR CONOPs Capabilities
- > 150 Official CDD Theater Gaps

DHMSM Requirements Traceability Matrix

This new data helps deepen the analysis and evaluate particular solutions, rather than solution domains, within a technology space—prescribing not only the “what” but the “how”.

# Summary

**Enterprise Architecture will use the Long-Range Technical Architecture (LRTA) Strategic Plan and the analytics that link the two together, in order to successfully guide the DHA's transition architectures over the next ten years.**

This will help ensure the DHA proactively implements the most beneficial technologies for the enterprise and its Warfighters, using the most sustainable methodology. Collaboration should happen specifically:

- When Considering EA Requirements and Impact Early-on
- When R&D funds are being designated, and pilot design begins (opportunity to collaborate on future project scope and DODAF)
- When Transition into Enterprise Takes Place (crucial time to work together to ensure success and enterprise fit)

# Key Takeaways

- The EA uses a set of common instructions and building blocks to describe the as-is and to-be state of the MHS, in order to:
  - ❑ Capture key artifacts on business, data, application, technology, security, and standards
  - ❑ Enable stakeholders to make informed decisions and develop new capabilities for the enterprise
  - ❑ Support the creation of a common repository among various data sources, and run analytics
- The LRTA directs future investment and architectural decisions to:
  - ❑ Proactively plan for, POM, and execute future state investments as one Joint enterprise
  - ❑ Identify linkages between industry capabilities and mission goals in order to provide an actionable path for reaching them
  - ❑ Understand what gaps are most imperative and what technologies can answer them for better quality services at the lowest cost

# Questions?



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# Evaluations



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Please complete your evaluations

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[https://info.health.mil/hit/portfolio/entarch/SitePages/EAB\\_Homepage.aspx](https://info.health.mil/hit/portfolio/entarch/SitePages/EAB_Homepage.aspx)

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