IDE Update
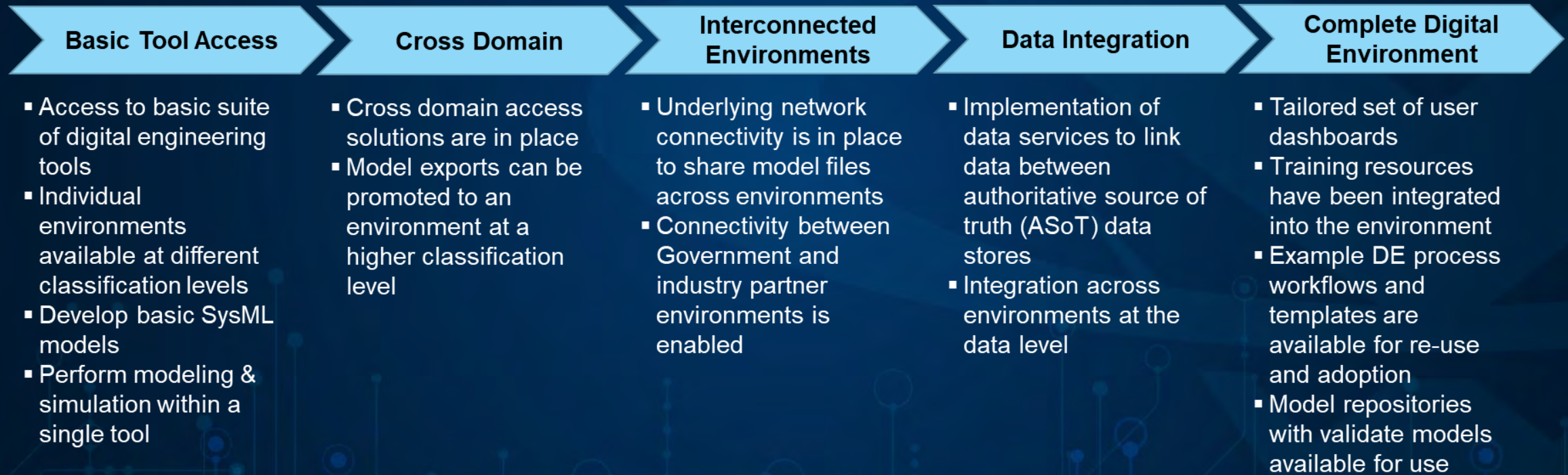
Agenda

- Creating an Enterprise IDE

- DMM Enterprise Environment Roadmap

- IDE Architecture

- Common DE Service

DTO

Enterprise IDE Goes Beyond Basic Tool Access

Basic Tool Access	Cross Domain	Interconnected Environments	Data Integration	Complete Digital Environment

Basic Tool Access
- Access to basic suite of digital engineering tools
- Individual environments available at different classification levels
- Develop basic SysML models
- Perform modeling & simulation within a single tool

Cross Domain
- Cross domain access solutions are in place
- Model exports can be promoted to an environment at a higher classification level

Interconnected Environments
- Underlying network connectivity is in place to share model files across environments
- Connectivity between Government and industry partner environments is enabled

Data Integration
- Implementation of data services to link data between authoritative source of truth (ASoT) data stores
- Integration across environments at the data level

Complete Digital Environment
- Tailored set of user dashboards
- Training resources have been integrated into the environment
- Example DE process workflows and templates are available for re-use and adoption
- Model repositories with validate models available for use

Enterprise IDE needs to incorporate resources beyond tools and infrastructure to drive cultural change and adoption
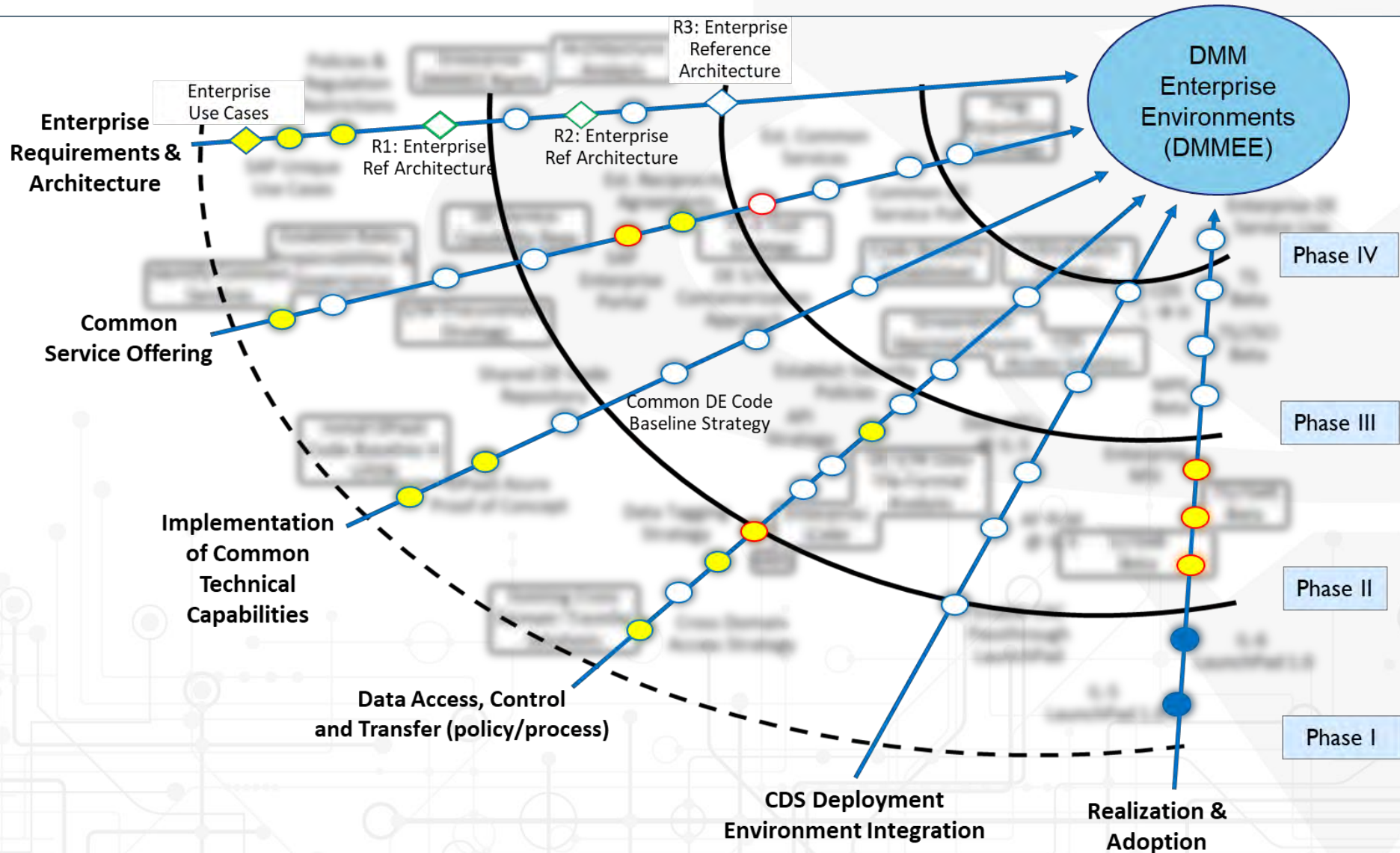
DTO

Creating an Enterprise IDE

Focus on defining a vision and architecture that goes beyond a single enterprise solution and allows interoperable capabilities across diverse platforms

Draft DMM Enterprise Environment Roadmap

Enterprise Use Cases

R3: Enterprise Reference Architecture

DMM Enterprise Environments (DMMEE)

Enterprise Requirements & Architecture

R1: Enterprise Ref Architecture

R2: Enterprise Ref Architecture

Common Service Offering

Common DE Code Baseline Strategy

Phase IV

Phase III

Implementation of Common Technical Capabilities

Phase II

Data Access, Control and Transfer (policy/process)

Phase I

CDS Deployment Environment Integration

Realization & Adoption

Legend:
- ● Available
- ● In progress
- ○ Not Started
- ○ SAP Specific
- ◇ DMM IAC Contribution

DTO

Informing IDE Reference Architecture

IAC

Reference Architecture

Enterprise User Stories
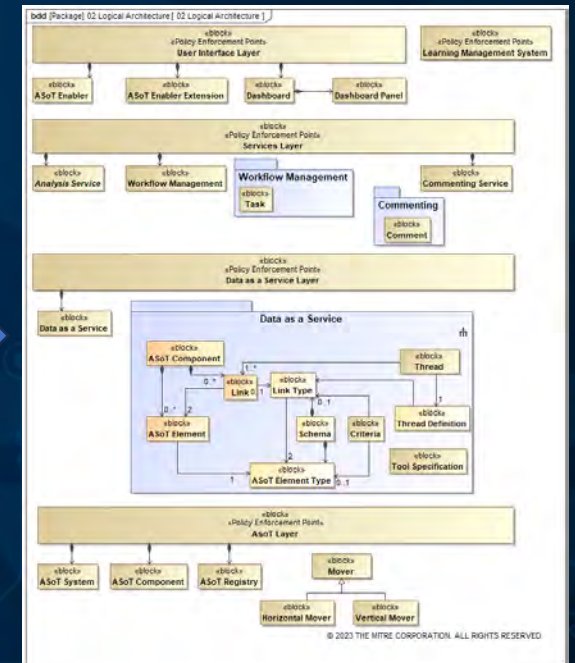
Architecture Design Decisions

User stories are driving architecture design decisions

- Distribution of tools across IDE
  - Optimal environment(s) to host DE tools/software
  - Performance and security impacts
- Integration across DE tools:
  - 3rd party integration tools
  - Custom developed integrations using vendor APIs
  - Leverage standards such as OSLC
  - Alignment w/ secure and structured data MTO
  - Security considerations

Distributed Simulation

User Story

As a program engineer, I want to perform a trade space analysis using design of experiments that is automated and executed across tools hosted within multiple environments across the enterprise IDE.

Acceptance Criteria

The program engineer:
- From the DPaaS virtual desktop create an automate workflow
- Provide input variables and initiate workflow
- Automated workflow pulls data from an MBSE model in DPaaS based on input variables
- Automated workflow kicks of execution of MATLAB simulation in DPaaS with variables populated based on data pulled from the MBSE model
- Automated workflow kicks of a campaign simulation in the DoD HPCs using the results of the MATLAB simulation to populate the simulation variables
- Results from campaign simulation are exported to the DPaaS environment for further analysis

Analysis Informed Decisions - Tool Integration

User Story

As a program manager, I want to be able to accomplish a technical analysis and evaluation of a system design so that I can make fast, confident, trade space decisions regarding airworthiness, cyber analysis, safety risk, and other considerations.

Acceptance Criteria

The program engineer
- From the DE virtual desktop I can review the current system architecture model
- Open a cyber analysis tool input the system architecture model
- Perform cyber threat analysis and automated creation of RMF artifacts
- Publish RMF artifacts to the AF cyber authorization repository

DTO

Current State Challenges

- Multiple vendors are deploying DE capabilities across different cloud and on-premise platforms

  - Different user experience across each platform

  - No single office to responsible for deploying a complete capability across classification levels

  - Duplicating efforts to perform software assessments, procure software, and develop code to deploy DE tools

- Most DE software is not designed to run in the Cloud

  - Vendors don't offer containerized versions of their applications

DTO
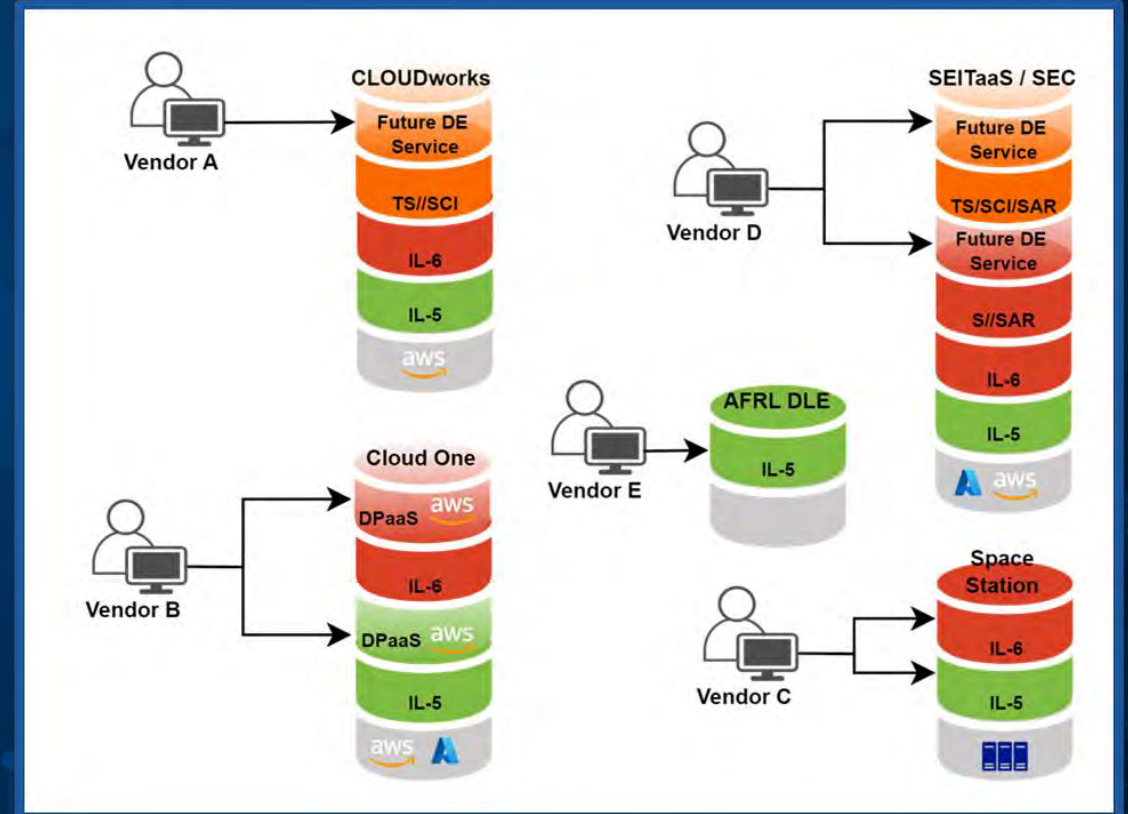
Common DE Service Offering

A common DE service offering is critical to establishing and managing an Enterprise IDE

- IDE software factory to develop and manage the common IDE code baseline
    - Software vendors deliver and maintain containerizes in a repository like Iron Bank
- Enterprise contract to manage the DE service offerings
- Governance structure to manage the content of the common DE service
- Flexibility for users to customize the toolset beyond the standard offerings
    - Add to common DE service baseline as demand increases

DTO
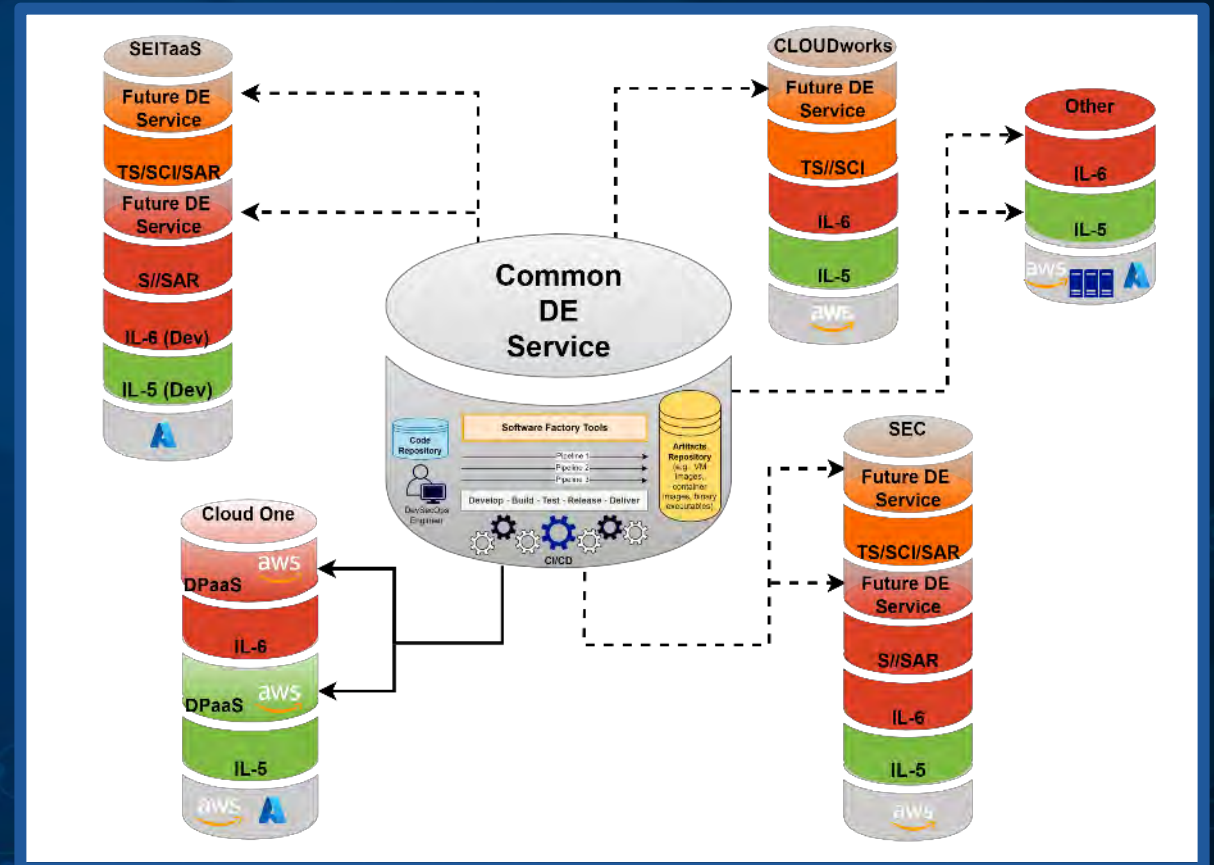
Backup

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