Office of the
DEPUTY CHIEF MANAGEMENT OFFICER

Heading, Altitude & Airspeed: Service Orientation, Cloud & Semantics – All or Nothing!

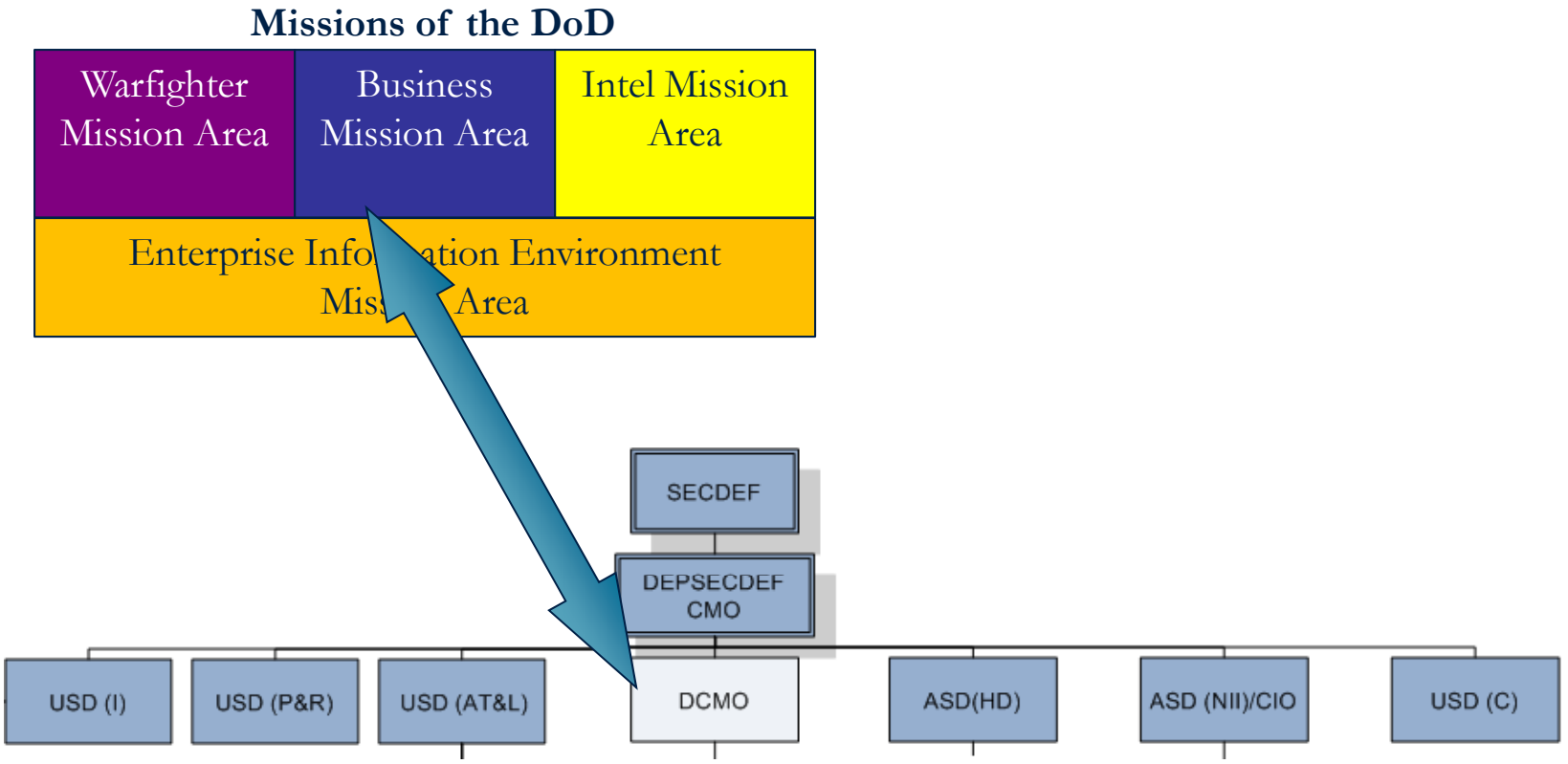
March 7, 2012

Dennis E. Wisnosky
DoD BMA CTO & Chief Architect

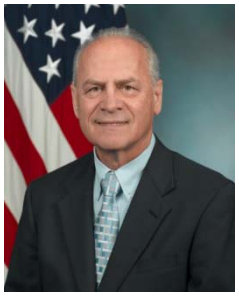
DoD Semantic Technology Clip

http://www.youtube.com/watch?v=OzW3Gc_yA9A

DCMO CTO/CA

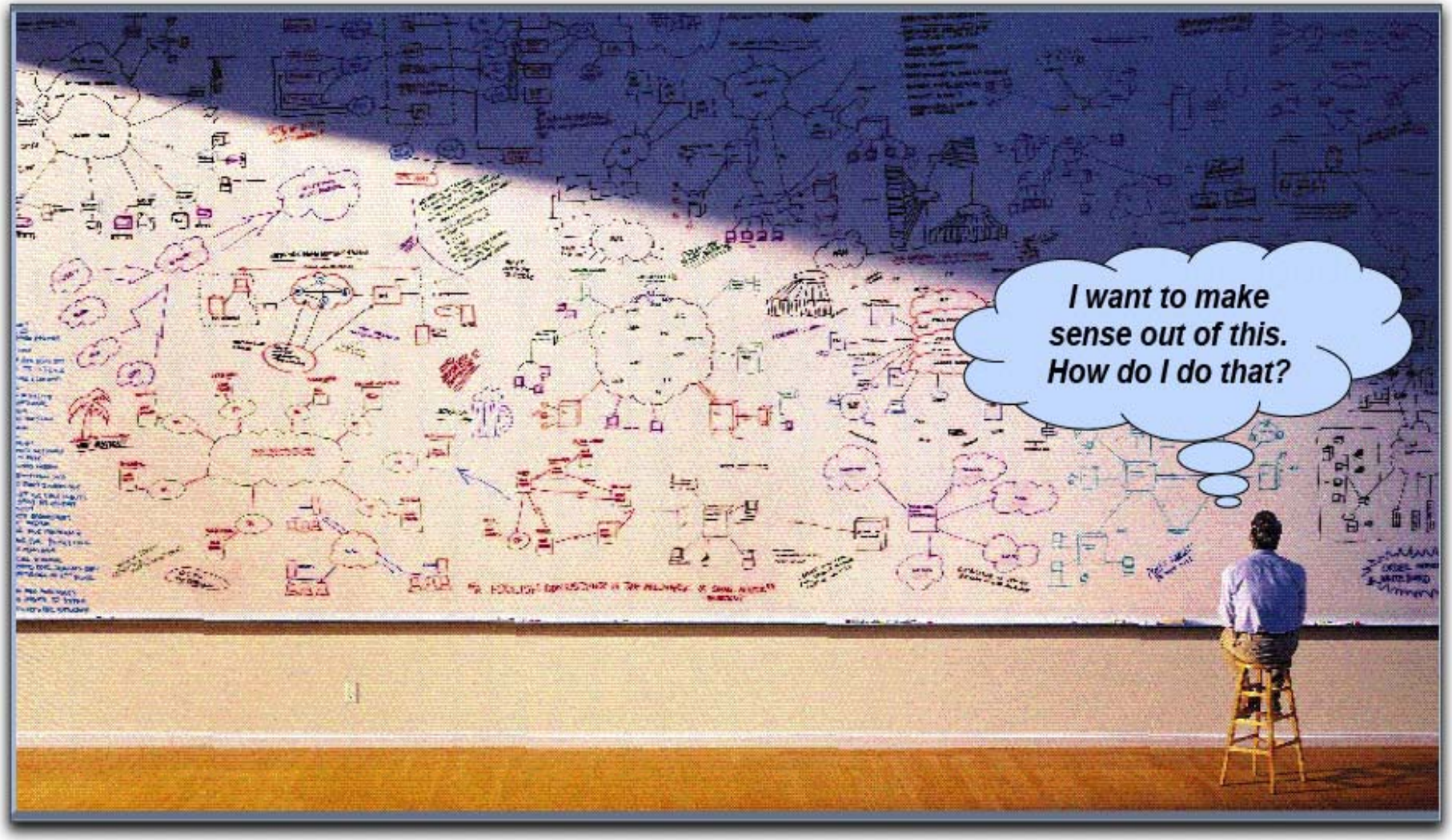


Dennis E. Wisnosky, DoD BMA CTO & Chief Architect in the Office of the Deputy Chief Management Officer (DCMO)

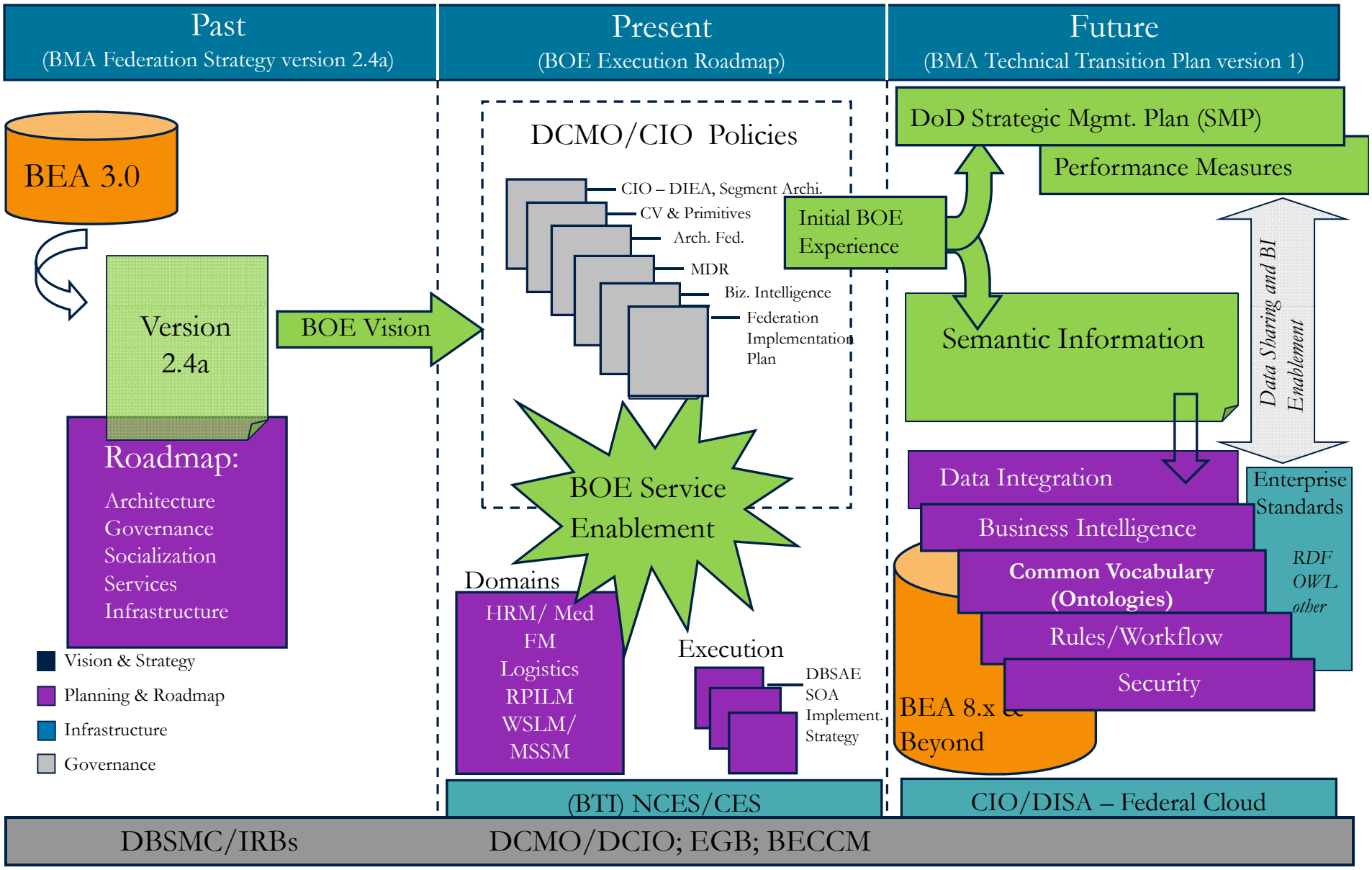


Reach of the Business Mission Area

DoD Management Challenges

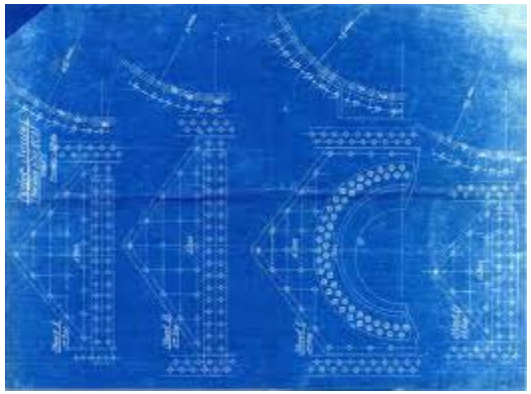


Strategy and Roadmap for DoD Business Operations Transformation



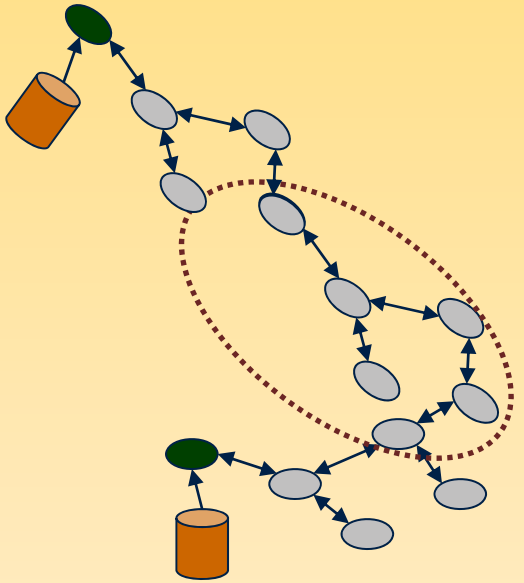
DoD Architecture Progression

Blueprinting → BEA - Stovepiped → BEA - Semantic



Branch office-based; readable but not analyzable; stovepiped

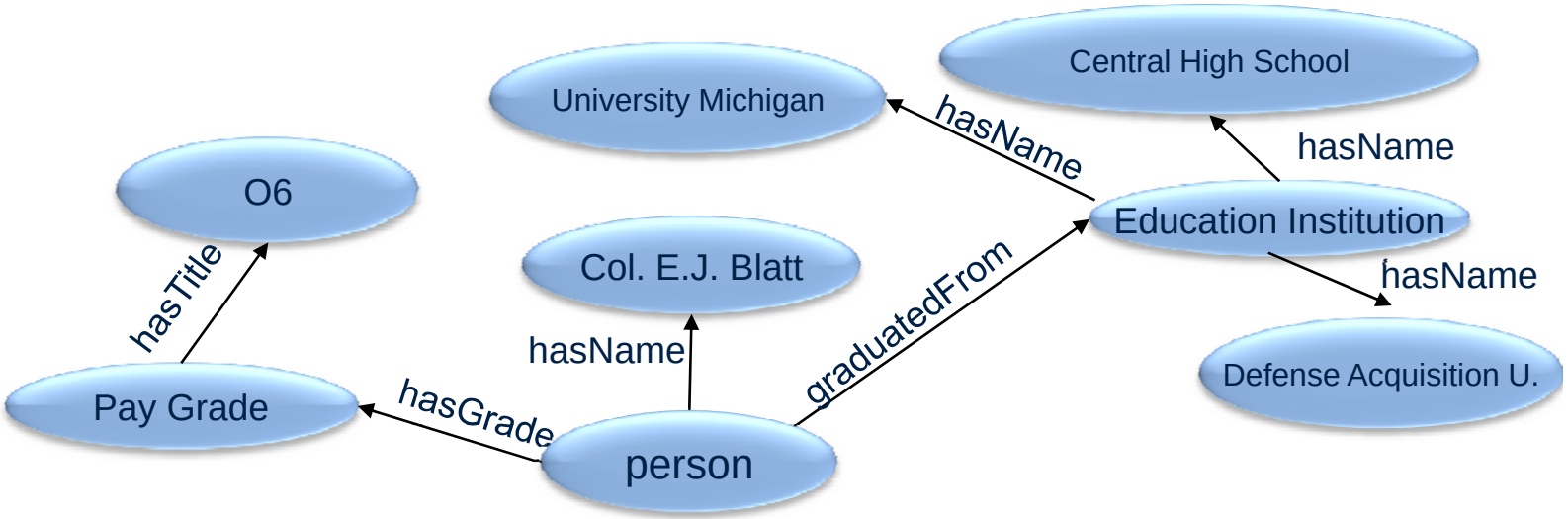
Business Mission-based; readable within a Business Mission; not analyzable; not integrated with solution architectures



End-to-End based; analyzable; executable; integrated with & consumable by solution architectures

Ontology – Based Information Integration & Analytics

HR Dataset

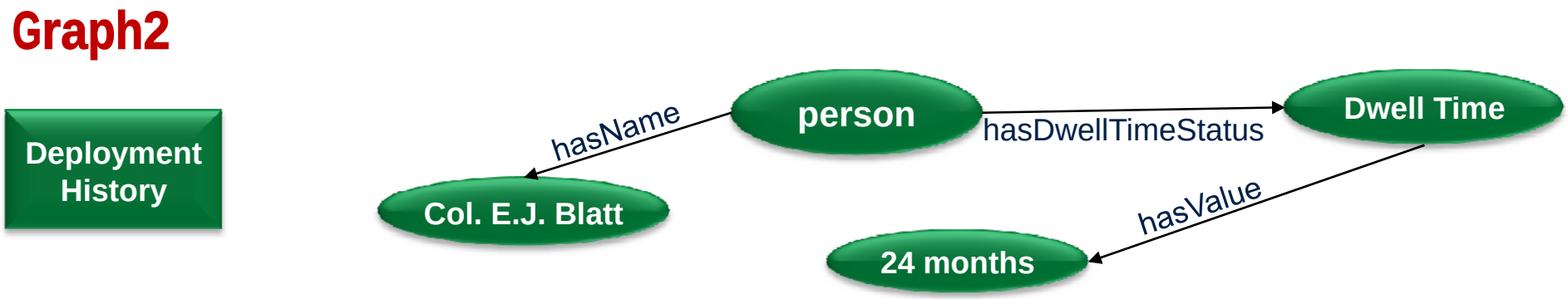


Graph1

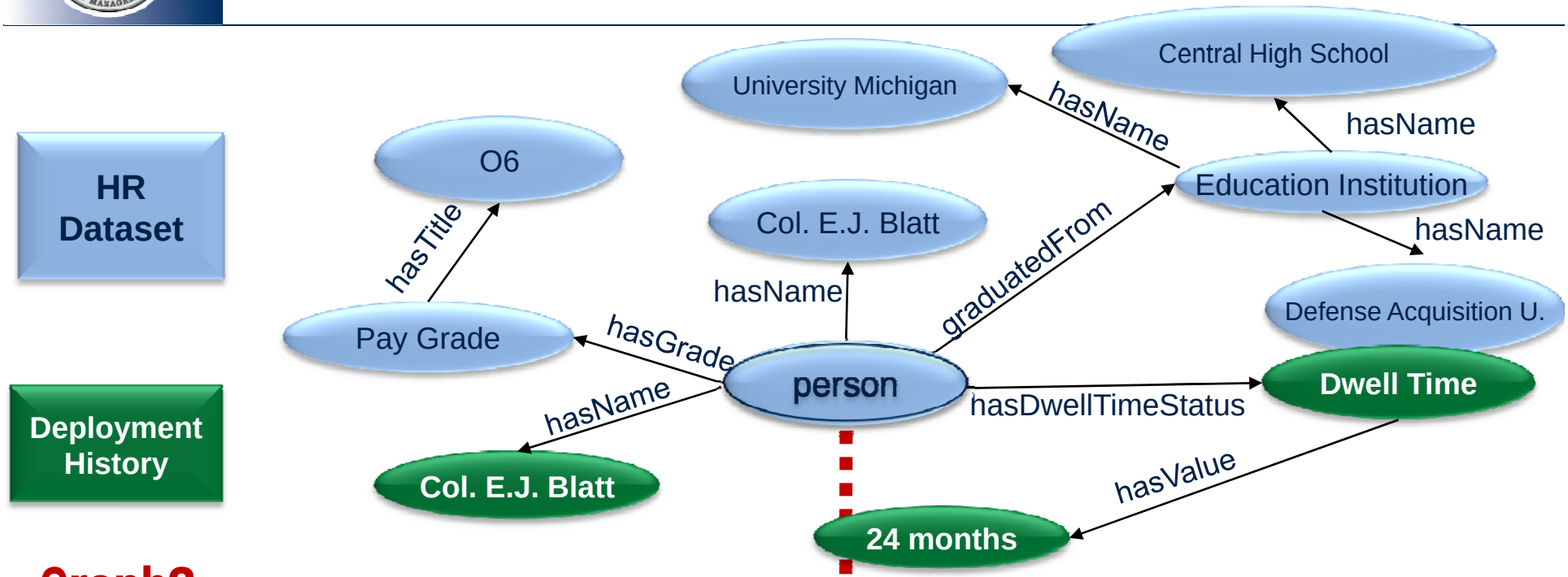
What Pay Grade is Col. Blatt?

Ontology – Based Information Integration & Analytics

How much Dwell Time does Col. Blatt have?



Ontology – Based Information Integration & Analytics



Who has a Pay Grade of "O6" and has at least 24 months of Dwell Time?

This Changes Everything!

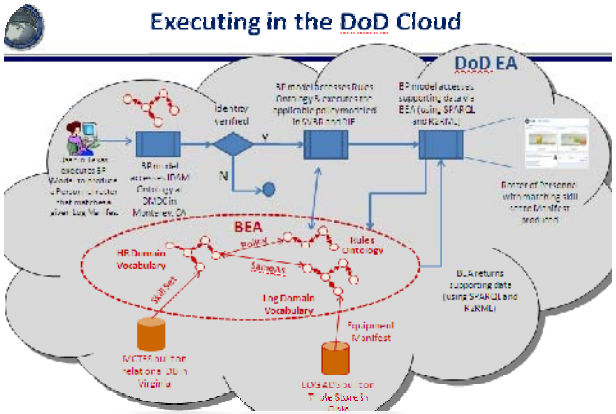
DoD BEA State of Intended Uses

	Current State	Future State
Portfolio Management	➢Lacks requisite data ➢Lacks requisite rules ➢Lacks requisite metrics ➢Requisite methodology not defined and implemented	➢Strategic alignment ➢Management via E2E Framework ➢Discovery of data, rules and metrics via E2Es ➢Target Systems Environment
Interoperability	➢Lacks requisite data ➢Lacks requisite rules ➢Requisite methodology not defined and implemented	➢Standardized process methodology ➢Requisite data standards ➢Redefined business and systems rules ➢Performance measures
Federation	➢Alignment based on Activities ➢Lack of standards & tool enabling search via alignment	➢Redefined as interoperability ➢Domain ontologies ➢Redefinition & storage of content according to RDF/OWL
Reuse	➢Methodology and rules not defined to guide reuse of BEA content and tools ➢Content not easily discoverable	➢Defined plan and methodology to guide reuse efforts ➢Federated to DoD CIO Registries to enable discovery

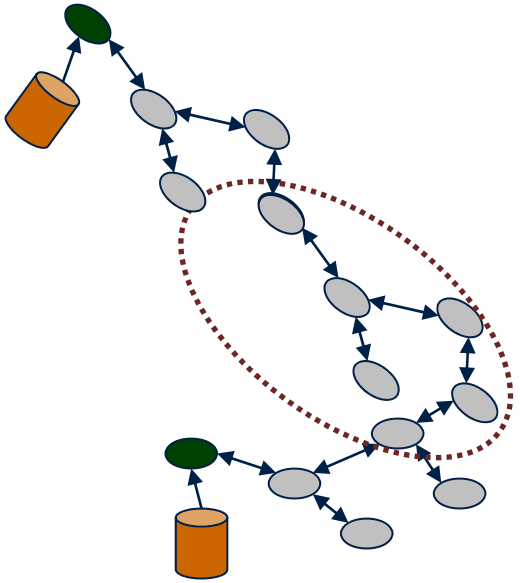
SOA – Cloud - Semantics

Services Oriented Architecture

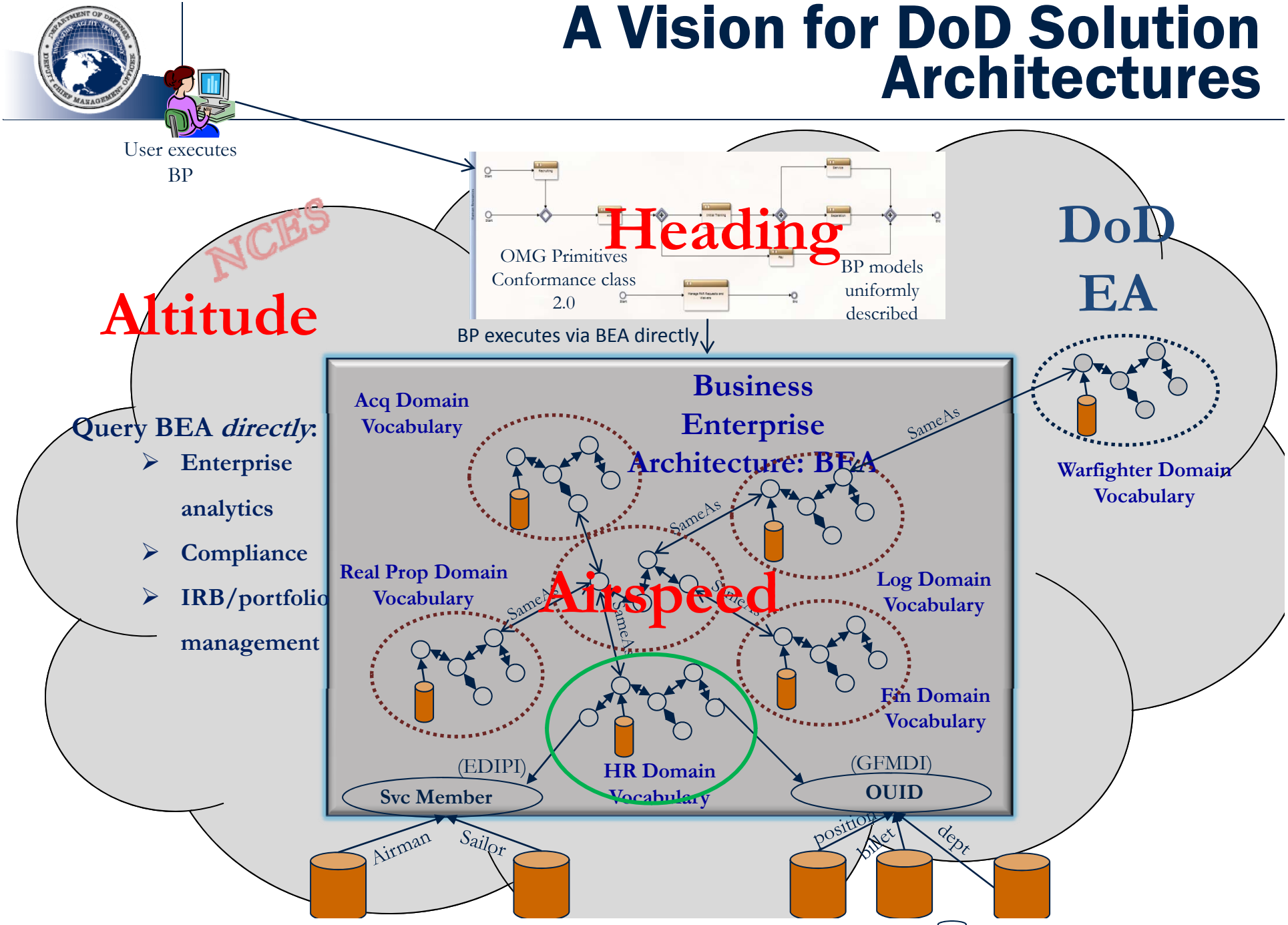
Cloud



Semantic Technology

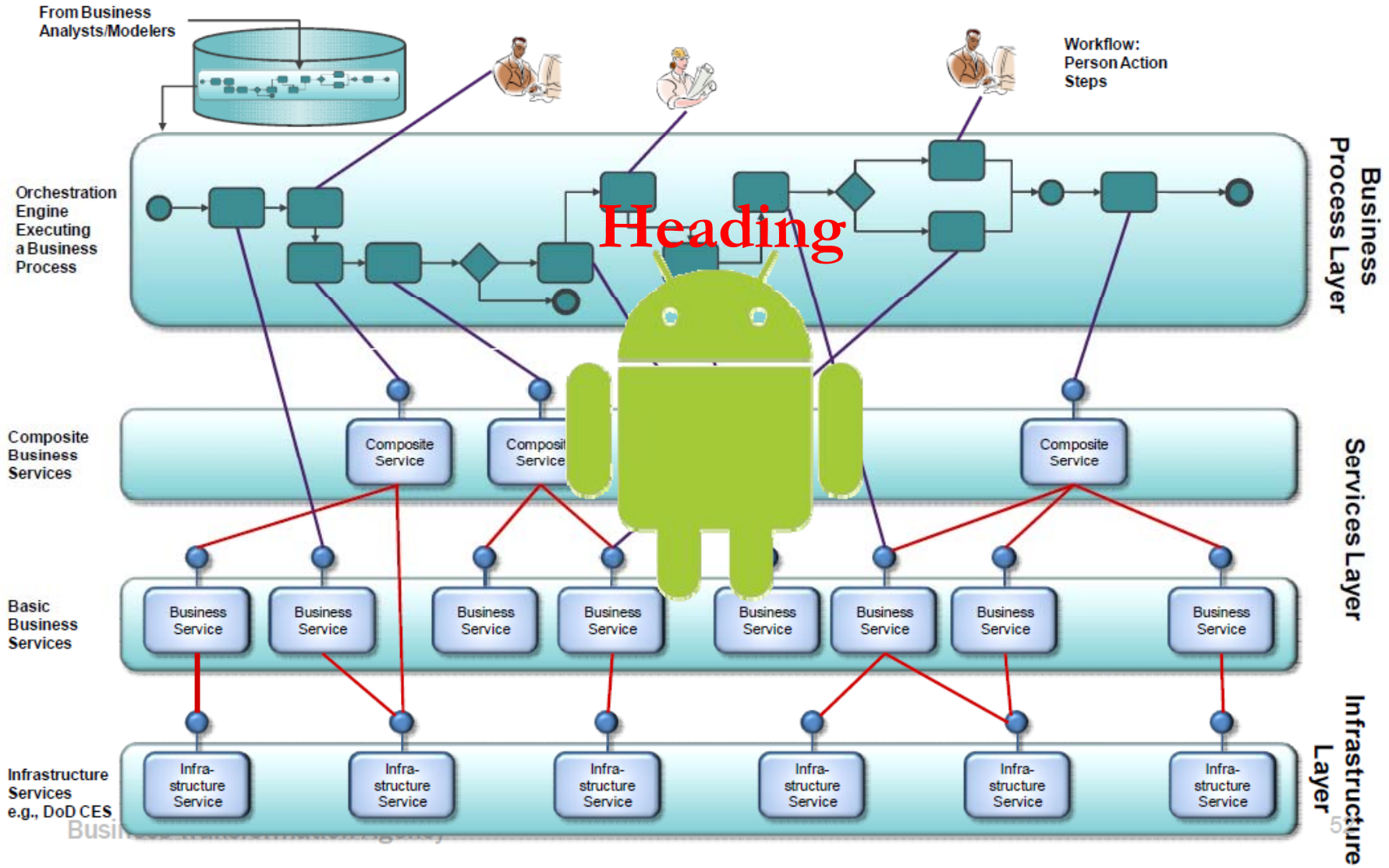


A Vision for DoD Solution Architectures

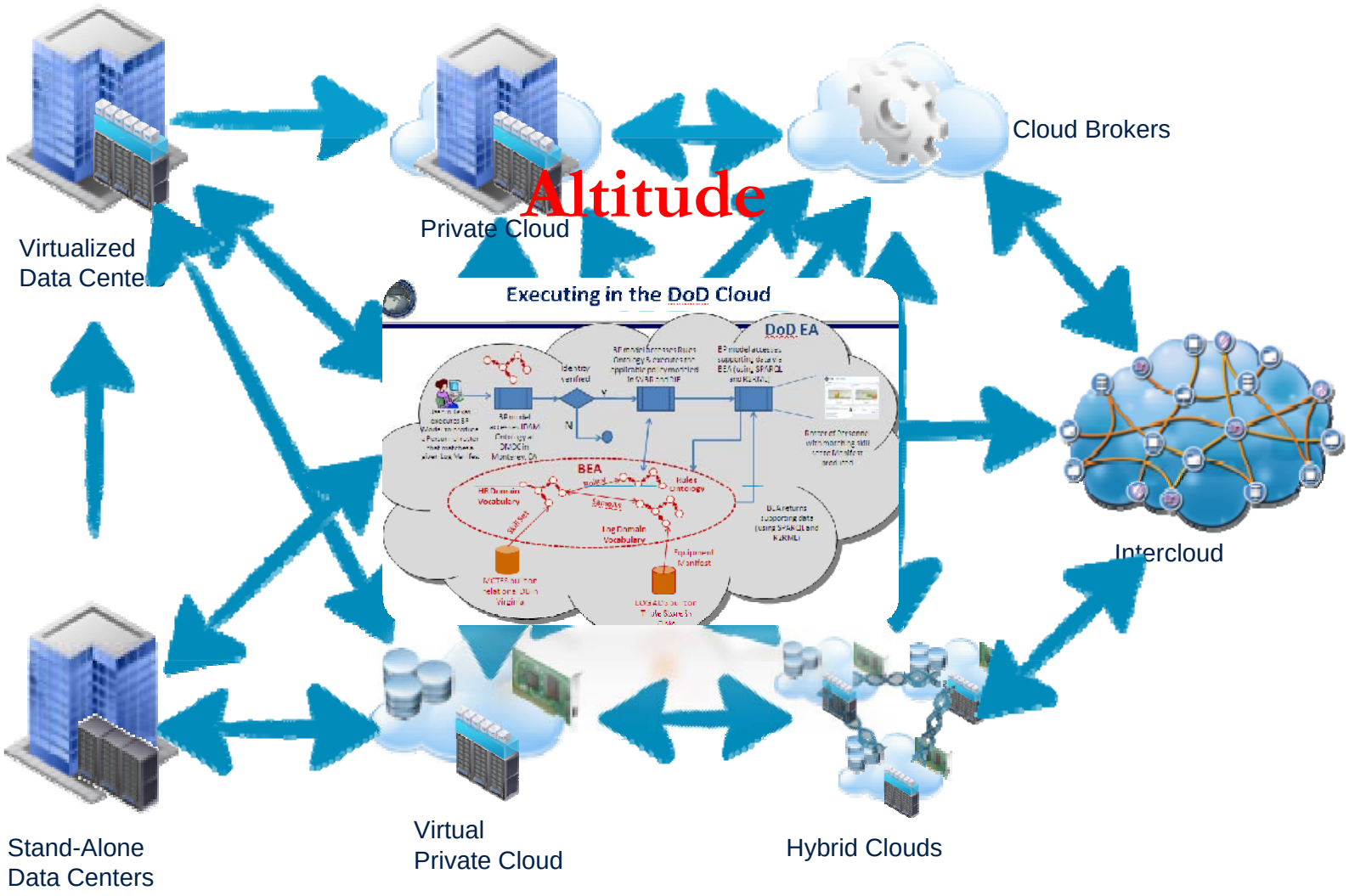


A Metaphor to Consider: Heading – Altitude - Airspeed

(SOA) Services Orchestration



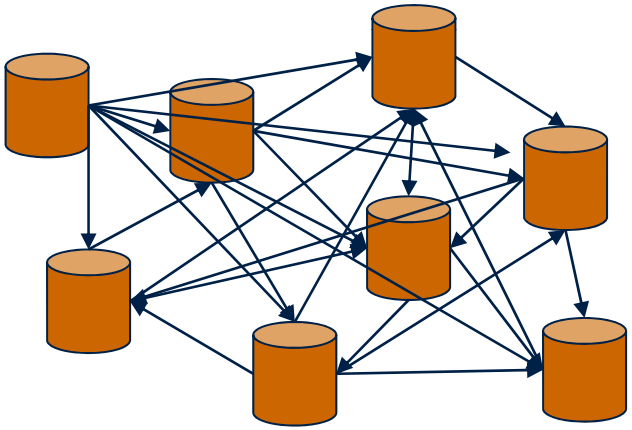
The Cloud


Altitude
Cloud Brokers
Private Cloud
Virtualized
Data Center
Executing in the DoD Cloud
DoD EA
BEA
Intercloud
Stand-Alone
Data Centers
Virtual
Private Cloud
Hybrid Clouds
Federation / Workload Portability / Interoperability

Semantic Technology

Current State
System of Systems

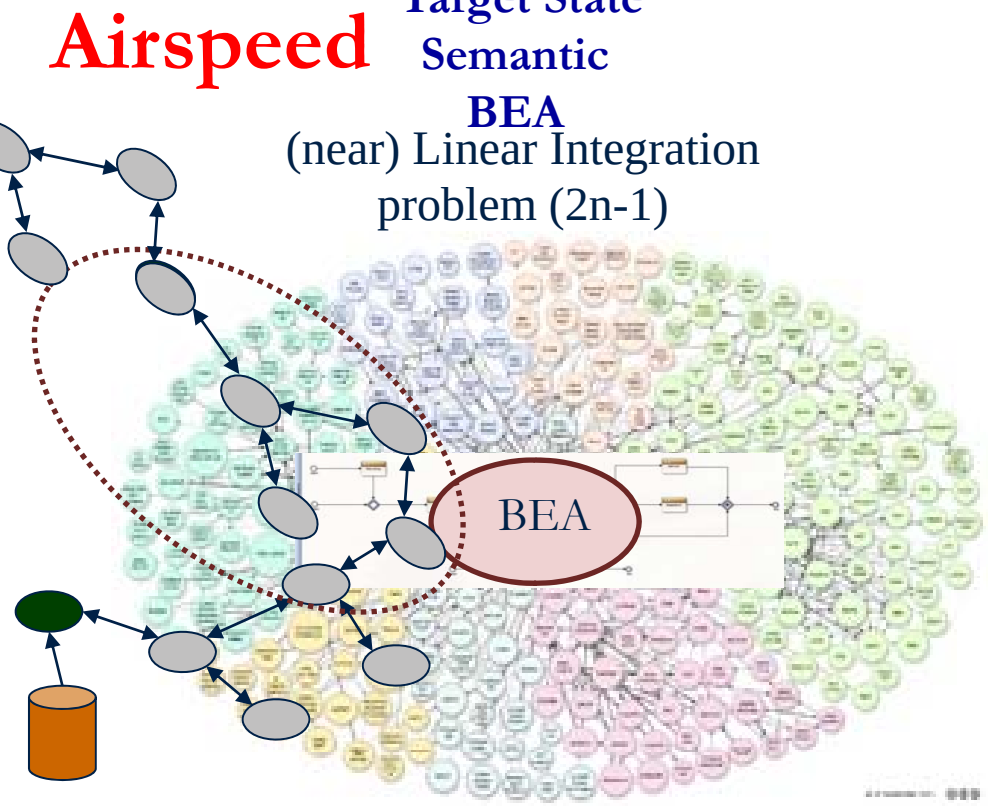
(near) Exponential
Integration problem ($n^2 - n$)



Airspeed

Target State
Semantic
BEA

(near) Linear Integration
problem (2n-1)



Inflexible Data model
Total interoperability for 100 systems > $4B*
Promotes operational silos
Promotes data duplication

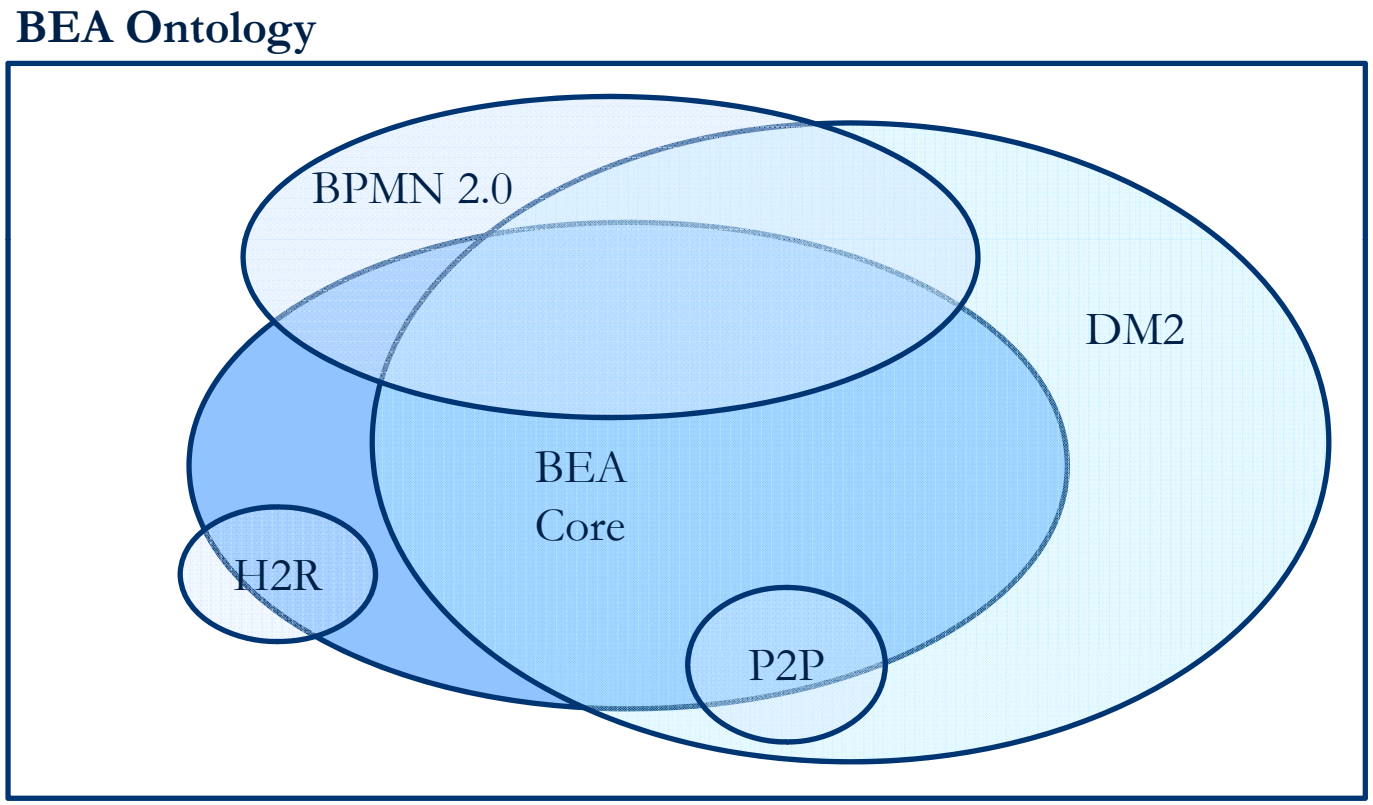
Infinitely extensible data model
Total interoperability for 100 systems < $40M*
Promotes cross-domain reasoning
Encourages data reduction

* Assumes $400K/interface

How to Achieve Airspeed! Objectives:

- Design and create a BEA ontology that establishes and integrates BEA, DM2, BPMN 2.0, and other domain ontology OWL files
- Migrate existing BEA data to RDF store that reflects new integrated ontology
- Test the BEA RDF store with queries from TopBraid Composer (desktop)
  - Query from BEA, BPMN, and DM2 perspective

Notional BEA Ontologies



In Another Venue:
Heading – Altitude - Airspeed

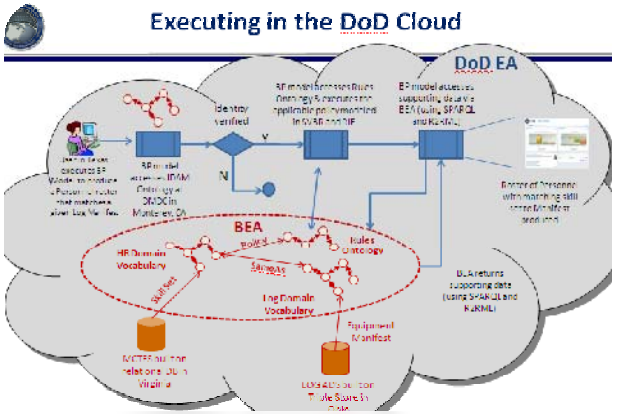
Heading - Altitude - Airspeed

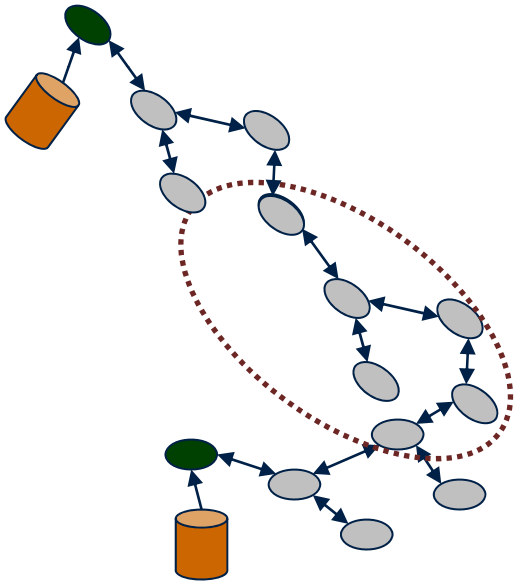
Heading – Altitude - Airspeed

Services Oriented Architecture

Cloud

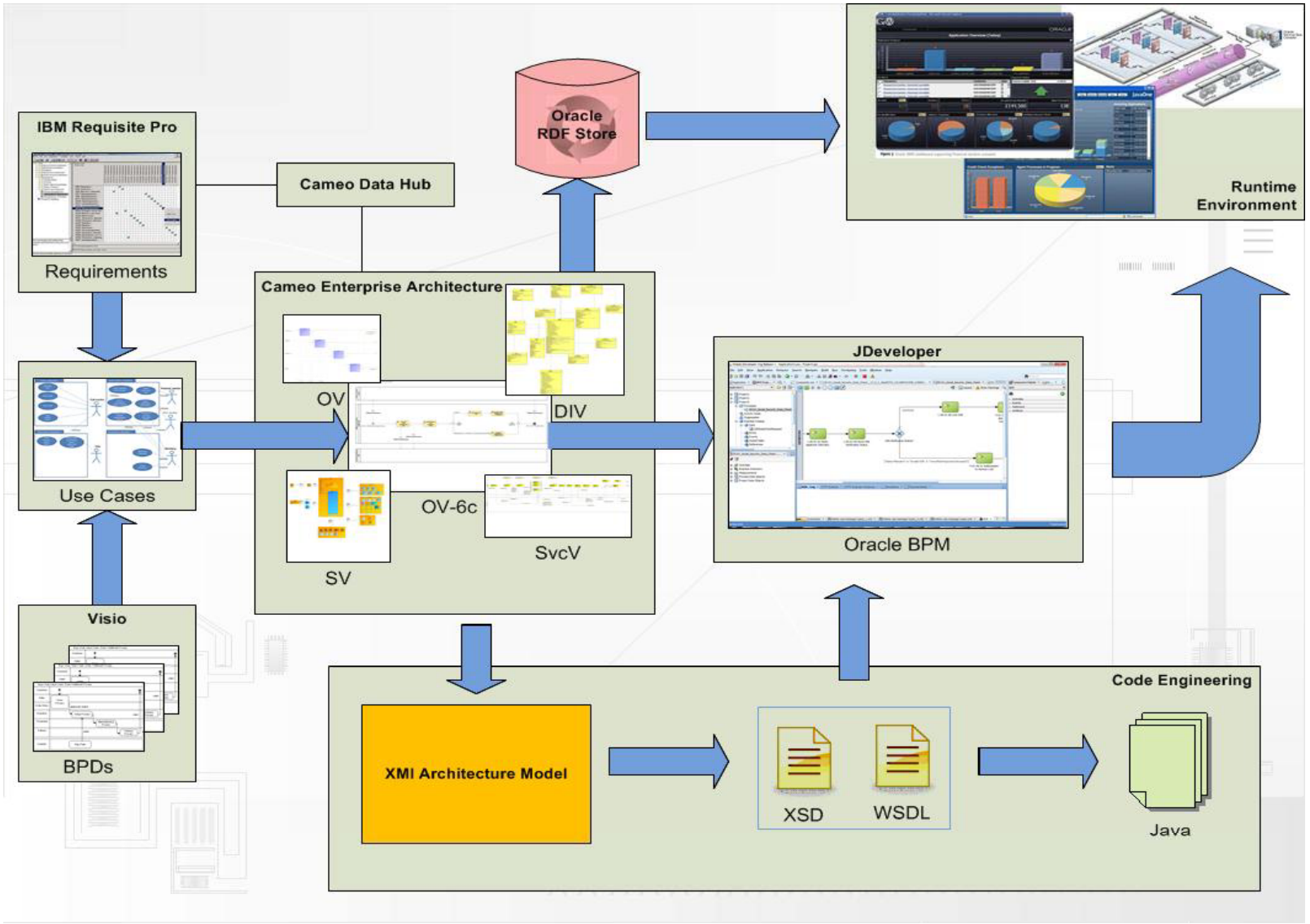
Semantic Technology



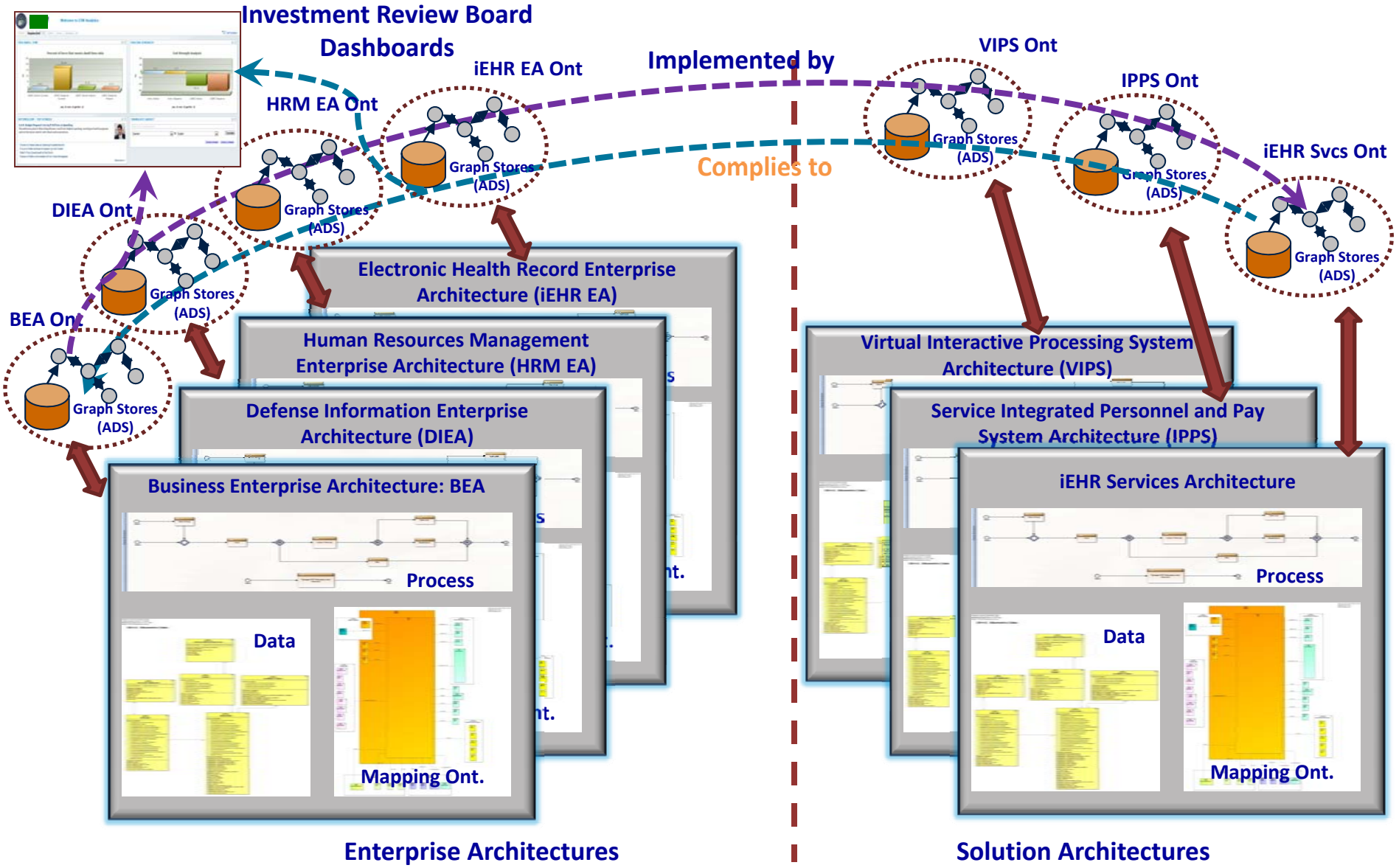


All or Nothing!

An Example: VIPS Solution Architecture



Federation through Semantic Architecture



Thank you!

Questions?

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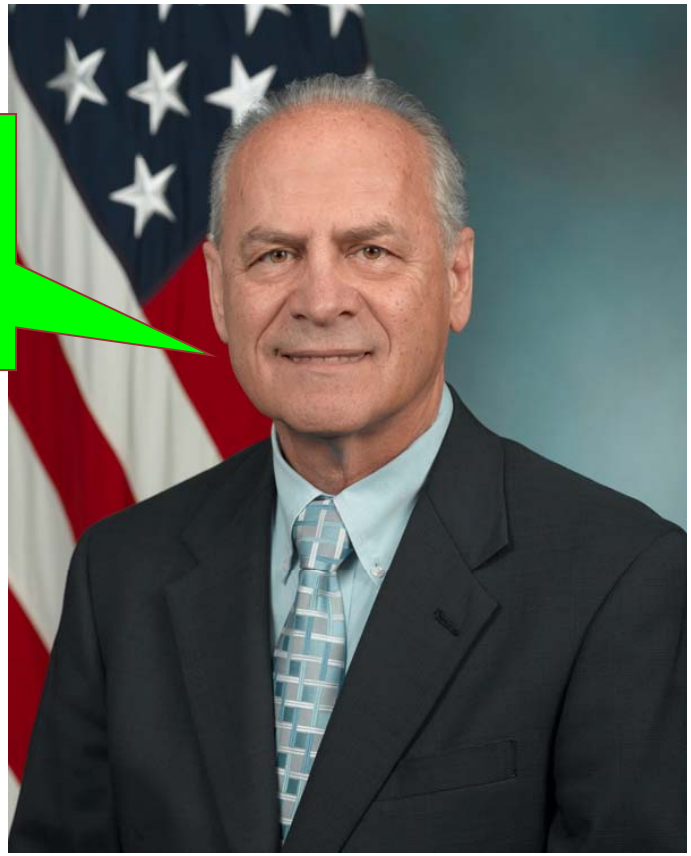

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