Architecture in Support of Business Operations

Dennis E. Wisnosky
DOD Business Mission Area
Chief Technical Officer/Chief Architect
within the Office of the
Deputy Chief Management Officer

June 3rd, 2009

Enterprise Architecture

- To Understand
  - Analyze what already exists
  - Assess what will be
  - Main purpose: People Integration/Conversation
- To Build
  - Design what will be within today's constraints
  - Set objectives and constraints for detailed specifications
  - Main purpose: Instruct/Guide
- To Verify
  - Provide a framework for others
  - Evaluate current practice against existing guidelines
  - Main purpose: Compliance/Control

Ability to Communicate

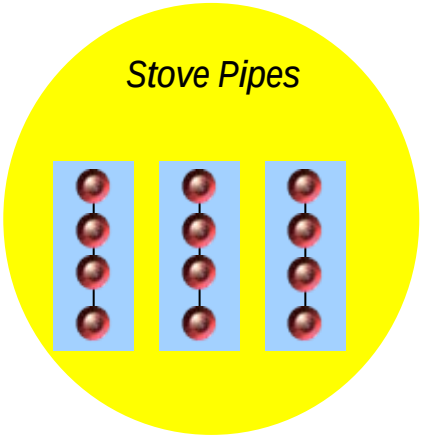
Enterprise Architecture is primarily about People talking to each other…

Ability to Communicate

…so we can build

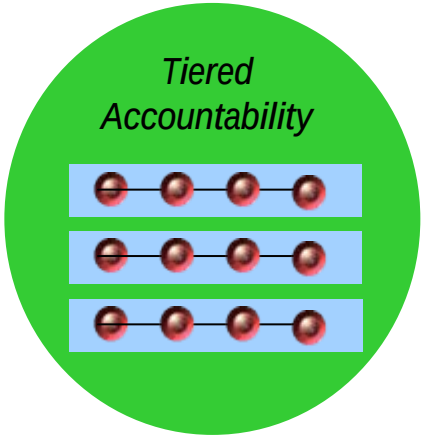
Systems and Services that talk to each other

Legacy



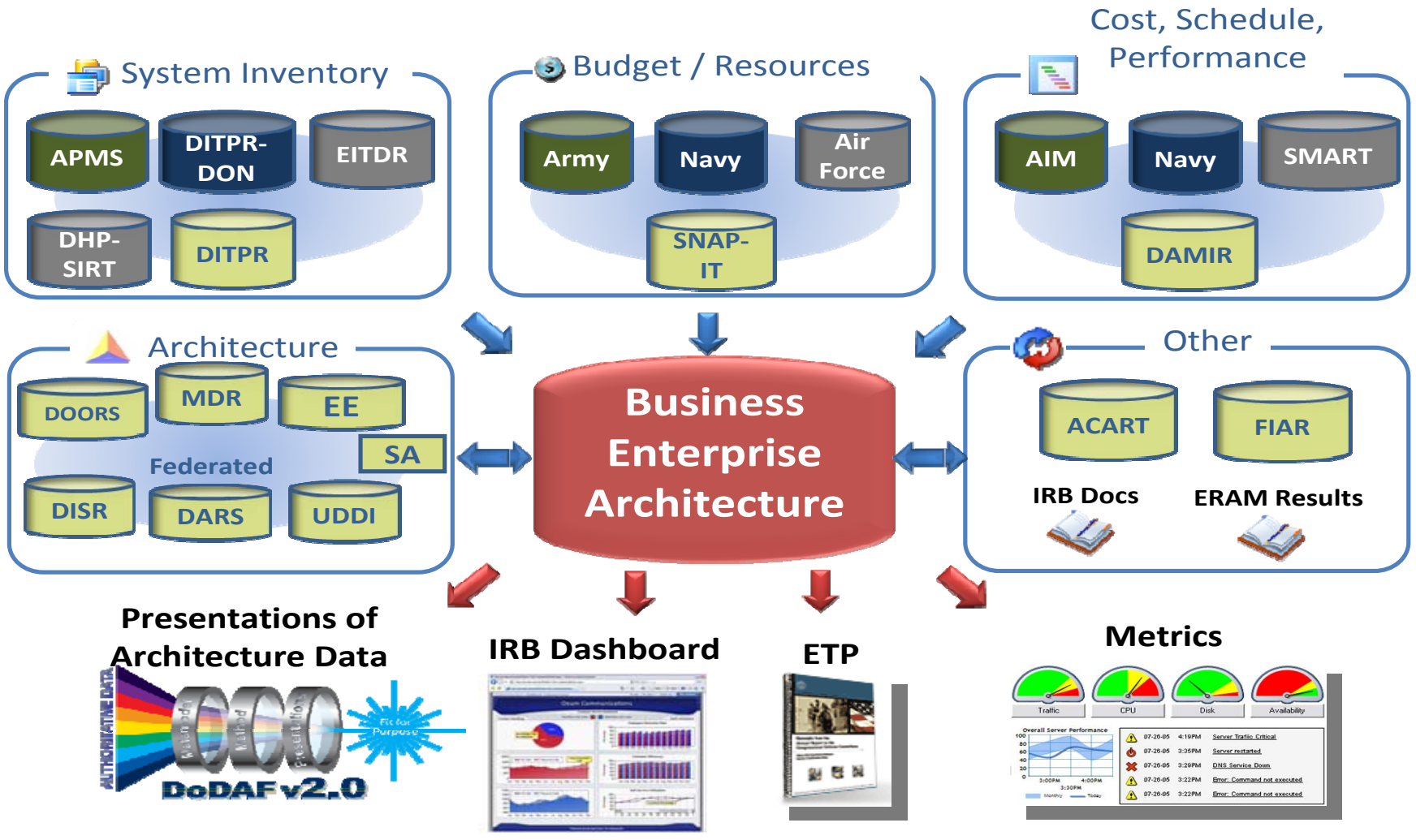
Was

Forced by NDAA 2005



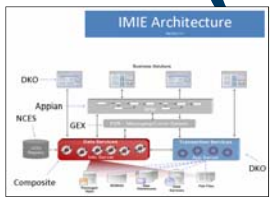
IS

Version 6.0 BEA



Integrated Management Information Environment (IMIE)

Integrated Management Information Environment



IMIE

Feb 2009

Point of entry

desktop

Office

IRB Doc Gen

Deployment Path

R-Process

Data acquisition & storage

thoughtweb

SOA

Data Quality

In the oven

Portals

DKO DEFENSE KNOWLEDGE ONLINE

Public | CAC | Public

Process

COGNOS

Registries | Data Sources | Artifacts

Appian BPM

Automation

Visualizations

Navigation

Content & Document Management

Gadgets, Appliances, Calculators

Collaboration

DCO DEFENSE CONNECT ONLINE

SurveyMonkey.com because knowledge is everything

- Knowledg. Centers
- Announcements
- Calendars
- Members Online
- Video Libraries
- Blogs
- Forums

IOC Estimator

NSPS Merit Increase Guide

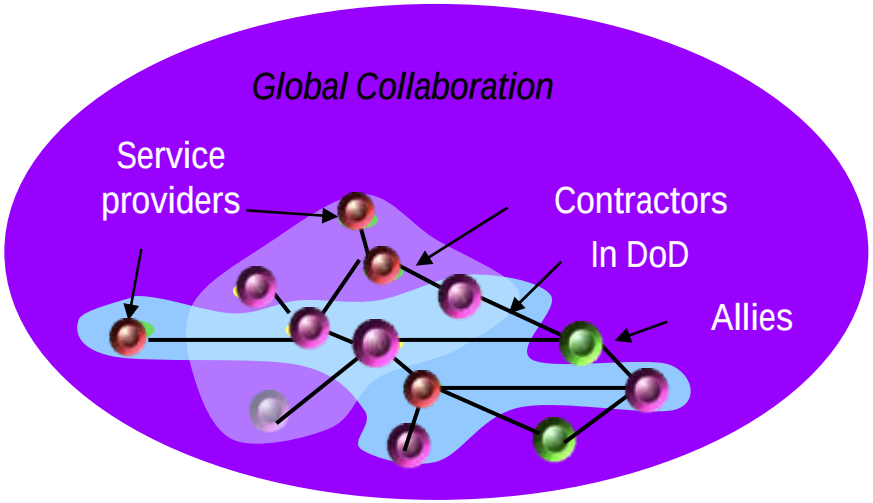
Applications

ENTERPRISE ELEMENTS

IChart

Let's go live!

Agile, Adaptive Organization

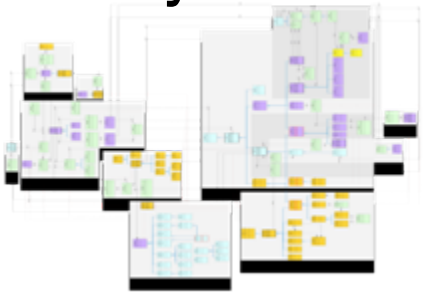


"To Be"

How can we do this?

Today's Reality

- Many Frameworks



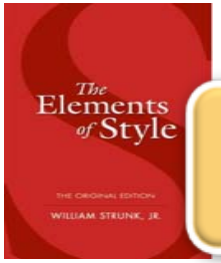
- Many Views

There must be standard formats for diagrams, and for data that represents the diagrams, and for data that moves within and between the reality that diagrams represent.

- Many Techniques
  - IDEF, UML, BPMN, RAD, EPC, PowerPoint and many, many others...

We get there thru primitives!

Primitives



Standard Symbols

Engineering Language and Symbols:

Resistor symbol

Capacitor symbol

This agreed upon representation of electrical engineering allows a common understanding…

Standards
Best Practices

informed by

influences

PriMo
Modeling Guide

foundation for

PrOnto
Ontology (Lexicon)

input for

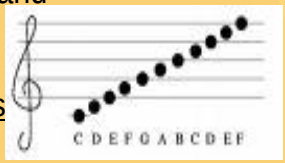
Differen
Framewo

Architecture Primitives

Architecture Primitives

Music Language and Symbols:

Music Scale symbols



Notes symbols

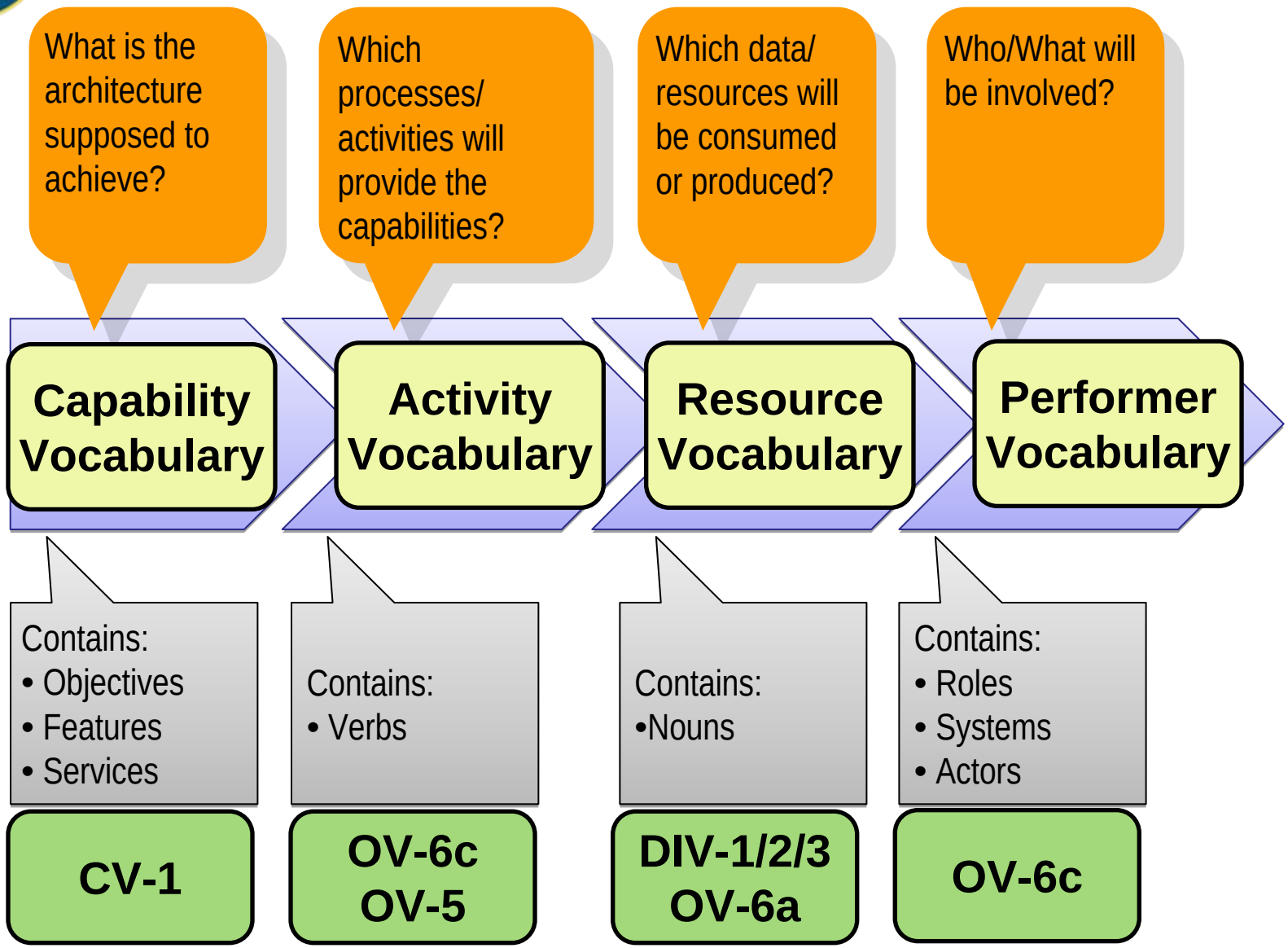
This agreed upon representation of music allows a common understanding…

Standard Language

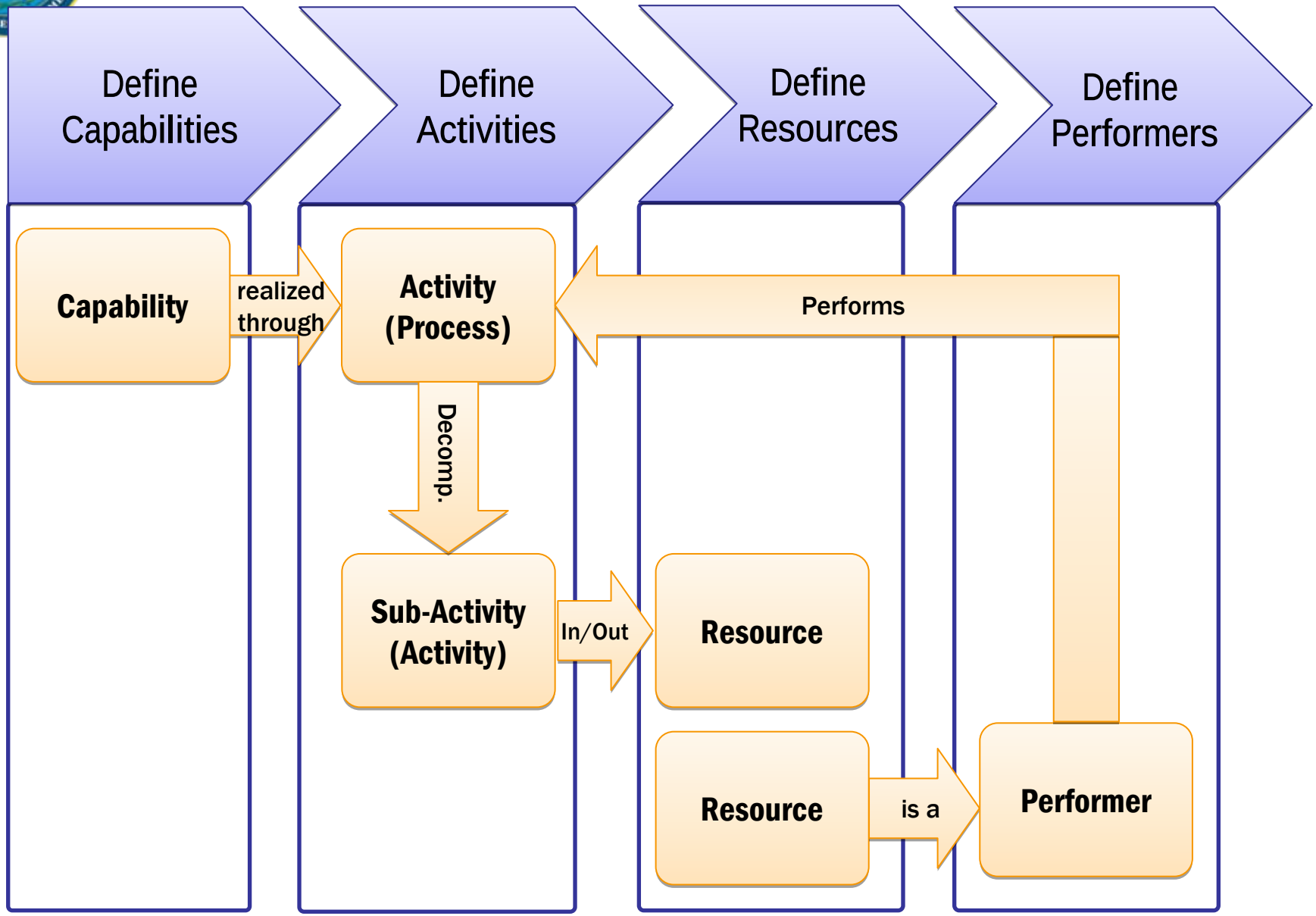
- DoDAF 2.0 serves as the foundation for architecture primitives
- Use Cases being developed and used to drive pilots

We need a discipline supported by Common Vocabularies!

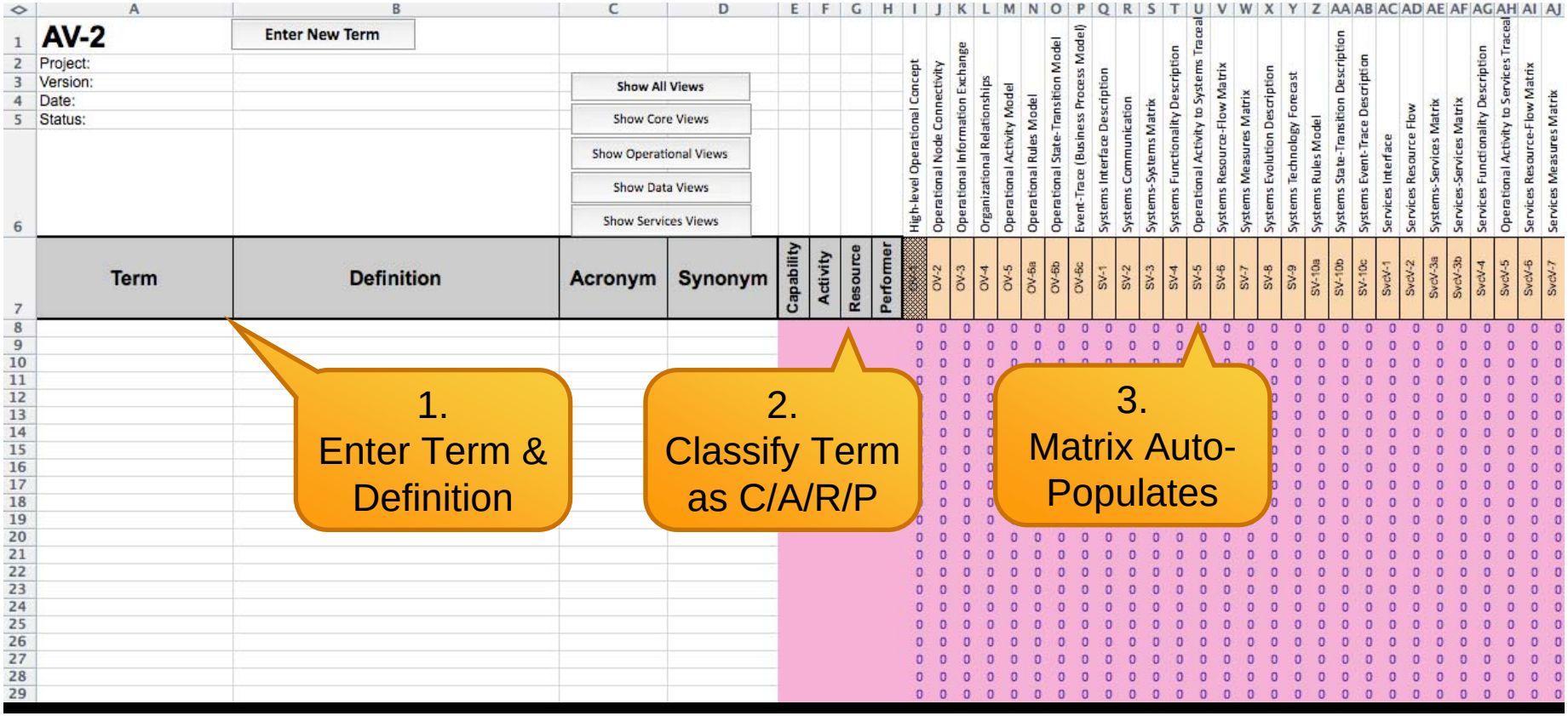
Our Architecture Discipline



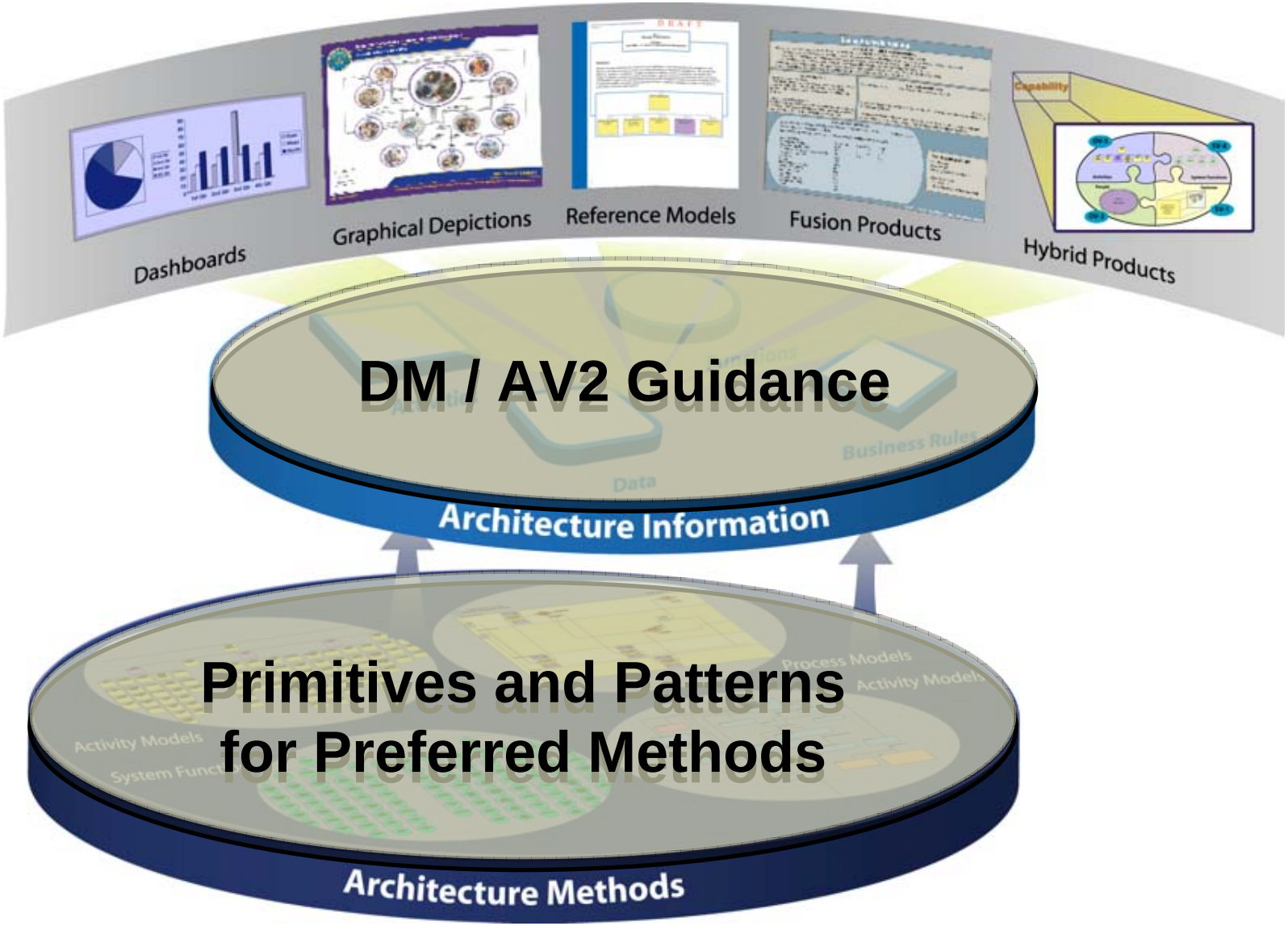
Relationships Among the Terms



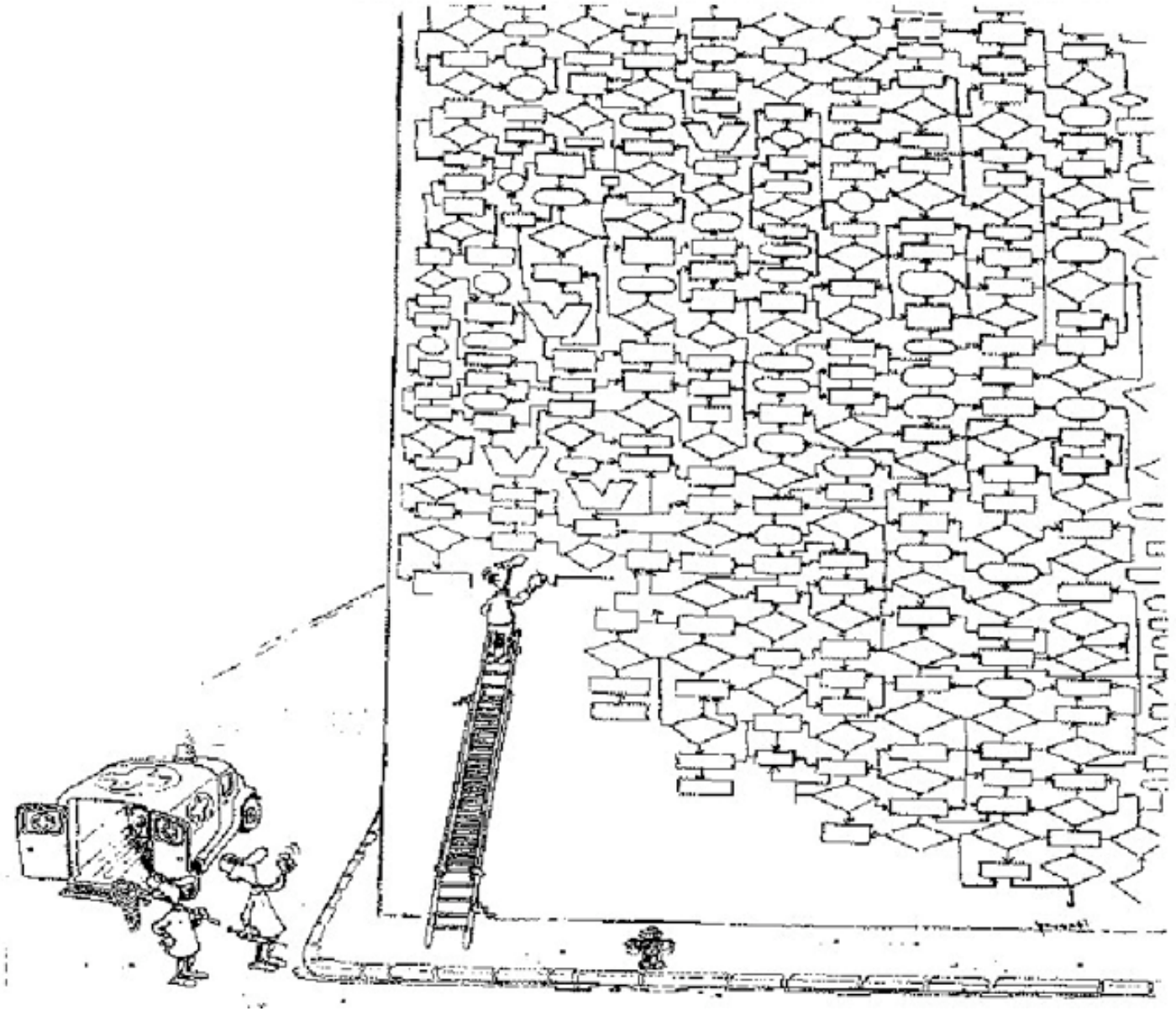
Capturing the Information: AV-2 Template



Alignment with DoDAF v2.0

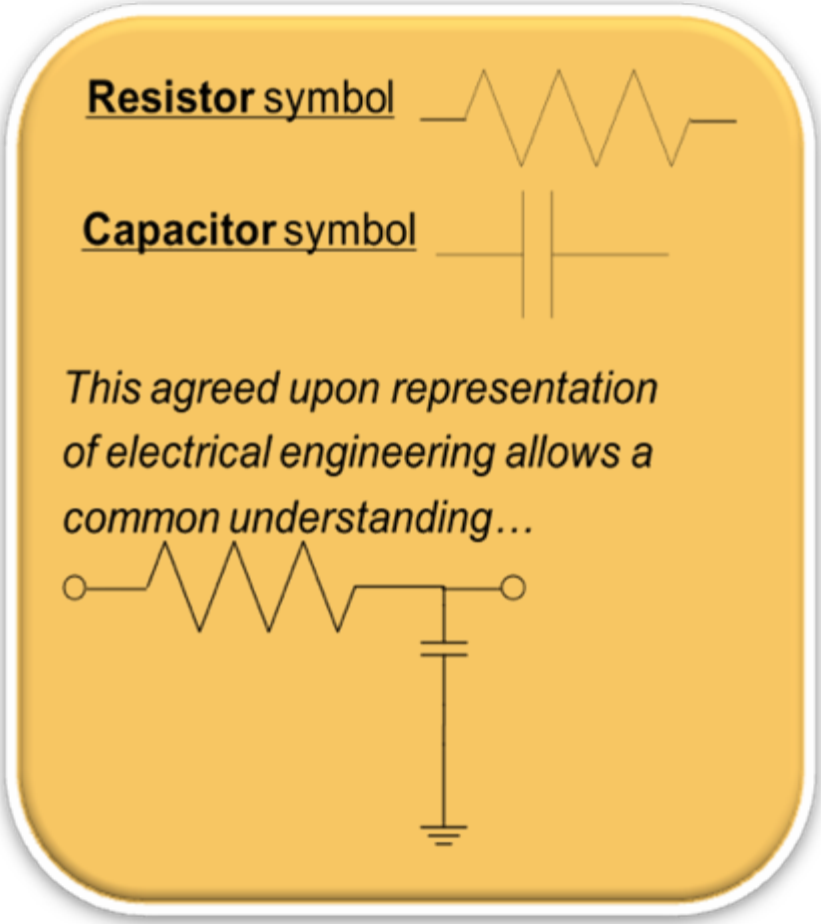


Current EA Building Practice



Engineering vs. Architecture

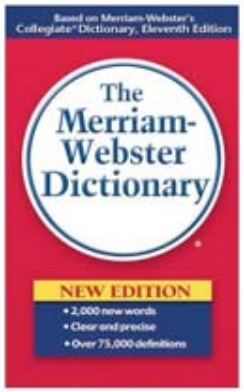
- If you show the same circuit diagram to two electrical engineers they will be able to understand the diagram because
  - The symbols are drawn the same way everywhere
  - The symbols have a well-defined meaning (semantics)
  - All electrical engineers are trained on the same set of symbols

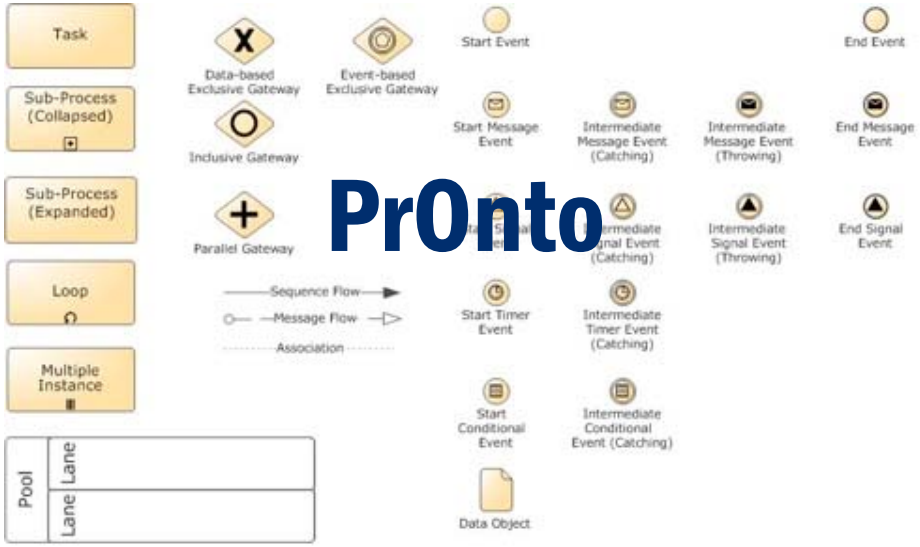


Solution:

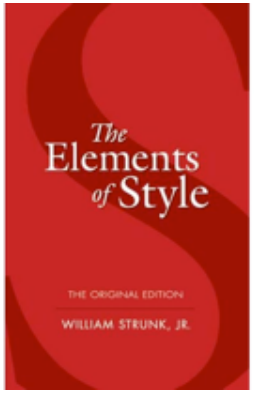
Primitives + Patterns + Style Guide

Solution: Primitives & Patterns

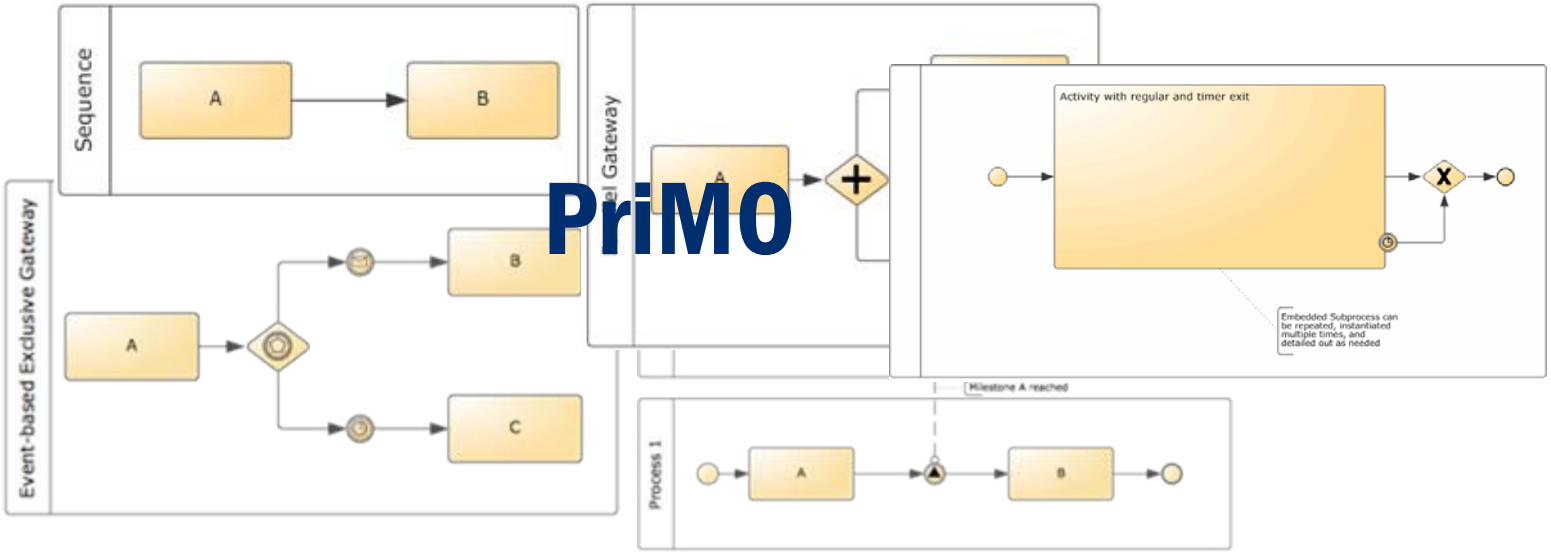




PrOnto



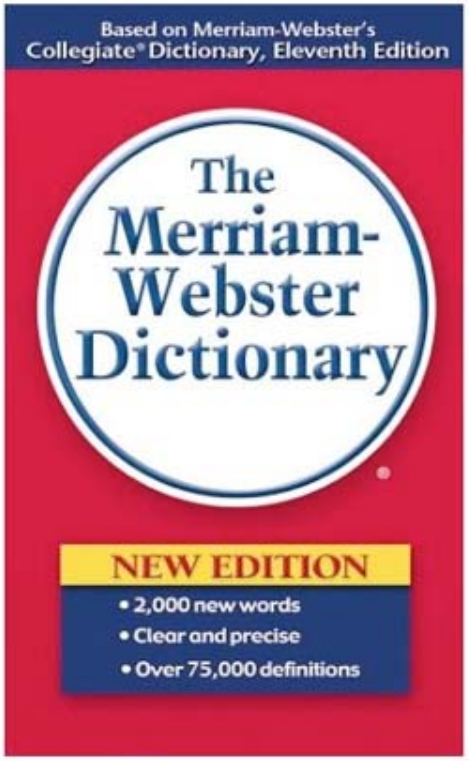
PriMO



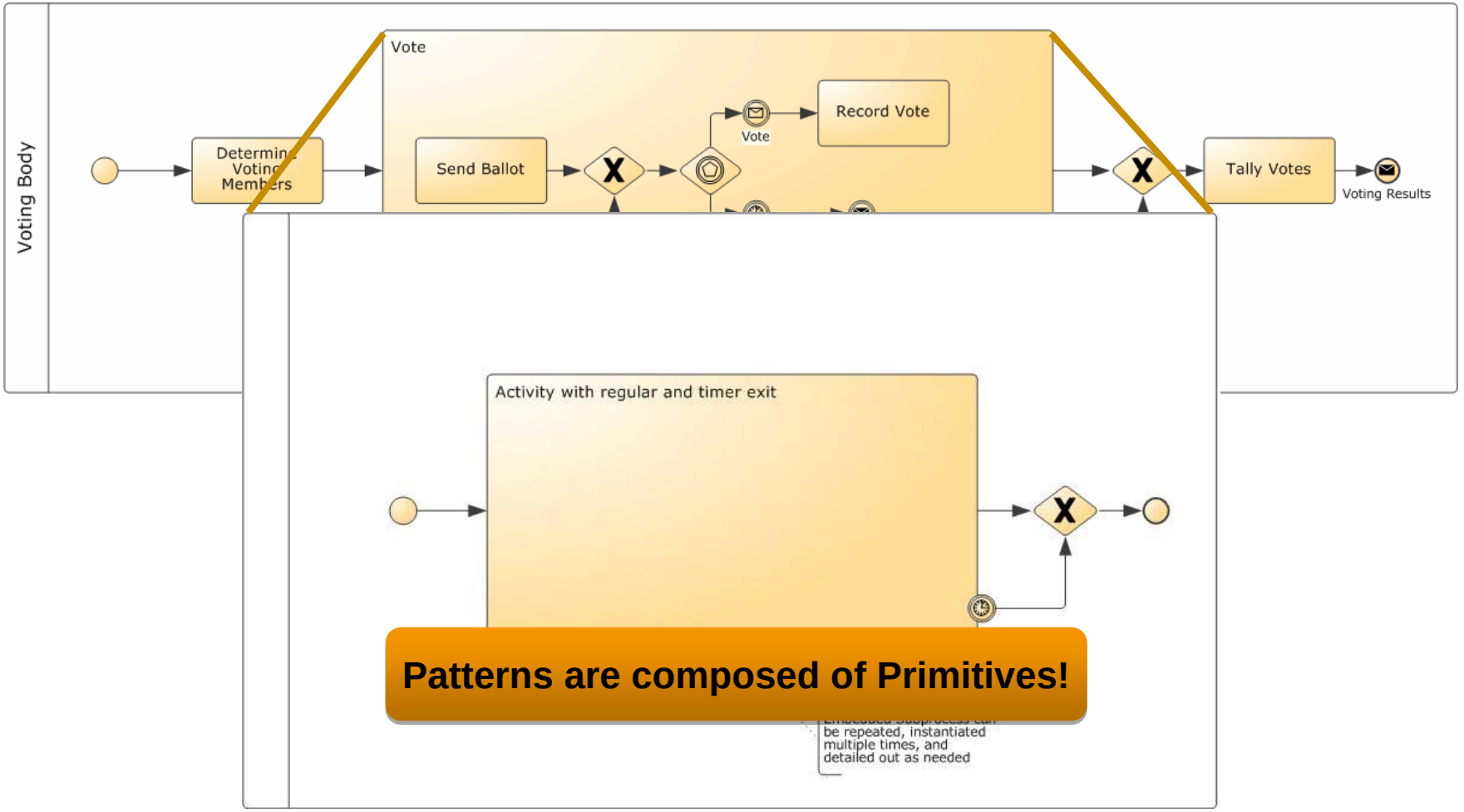
PrOnto – Vocabulary

- Provides basic definitions of the architecture model semantics
- Provides elementary rules for the connectivity of primitive constructs
- Provides foundation building blocks for constructing architecture products

- Caveat: A common vocabulary by itself does not guarantee high quality products: We need a Styleguide

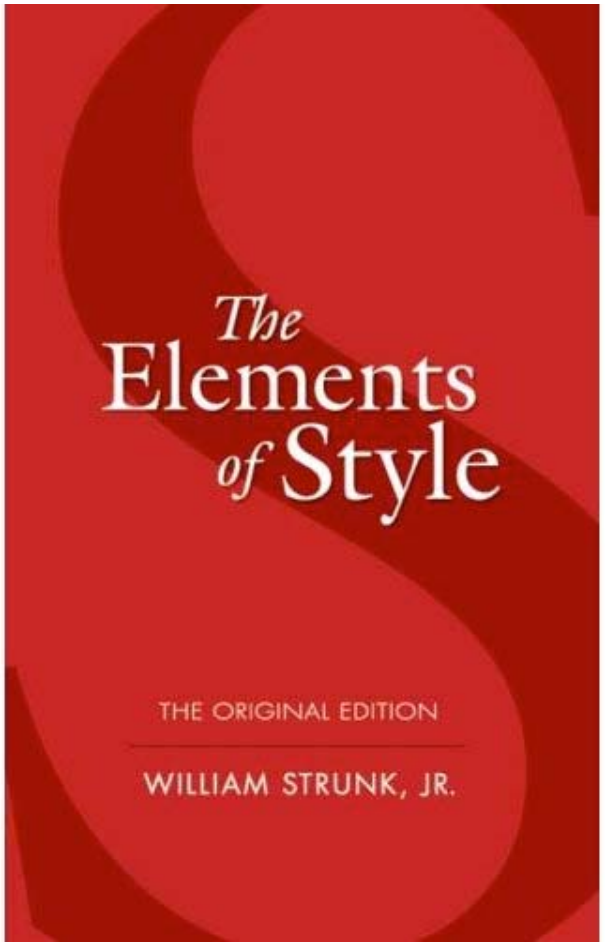


Low- and High-Level Patterns

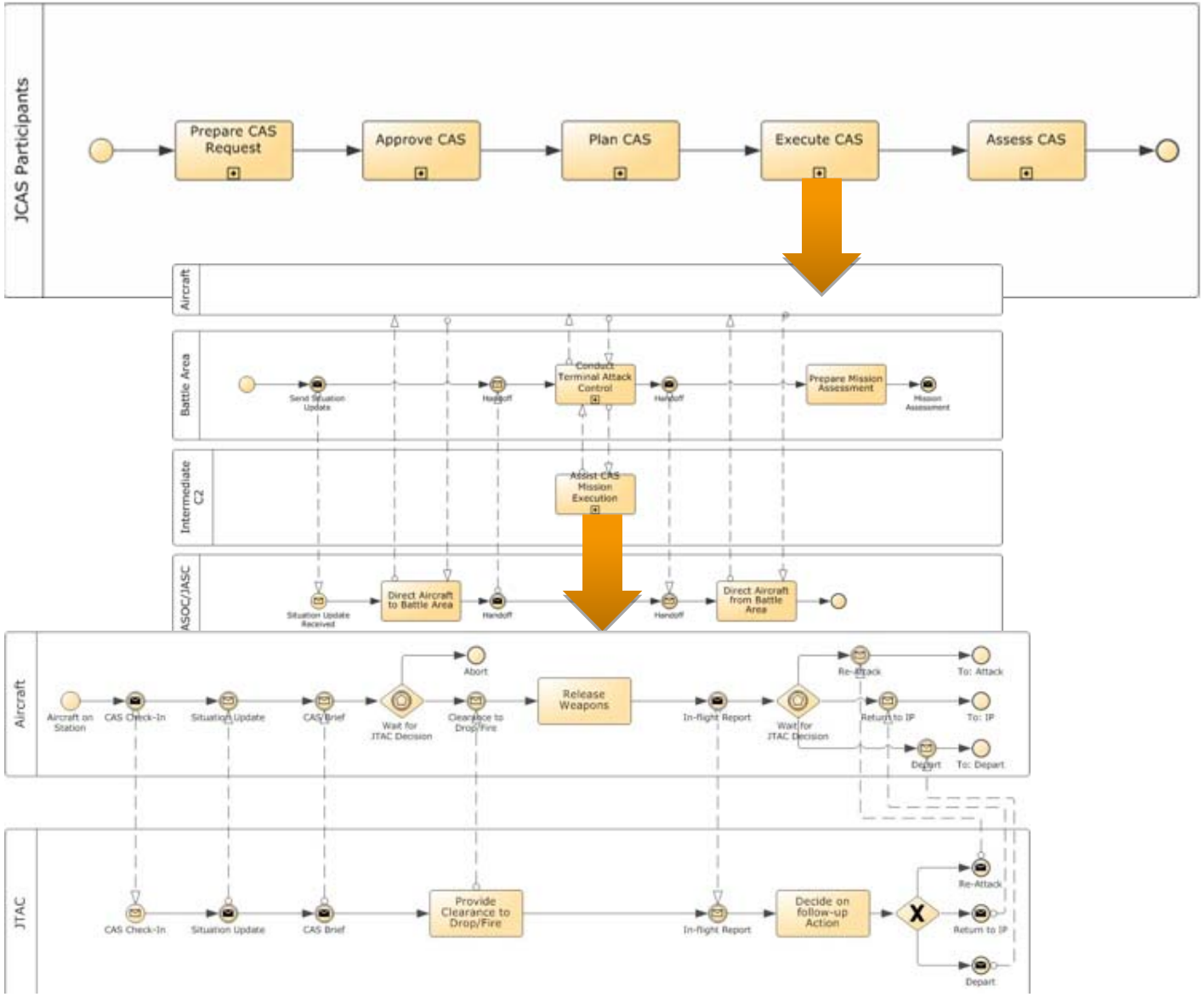


PriMo - Modeling Guide

- A style guide provides subjective advice that will ensure the design of high quality products
- A style guide advises on
  - Choice of words
    - Which constructs are appropriate in a given situation
  - Choice of grammar
    - How to combine constructs to maximum effect

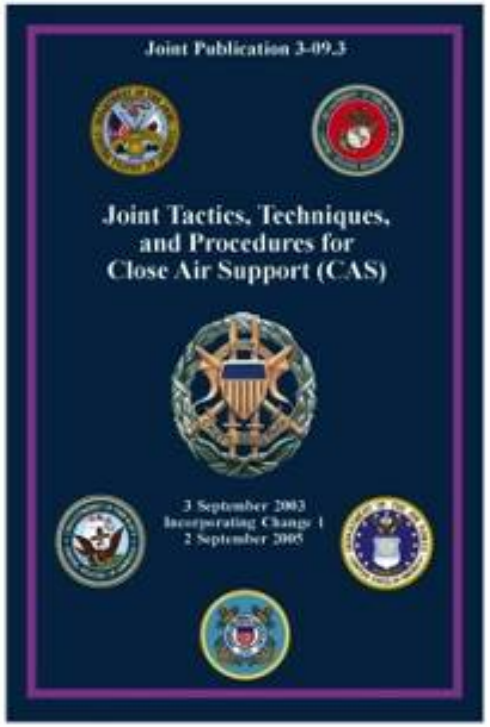


Guidelines for Systematic Process Decomposition

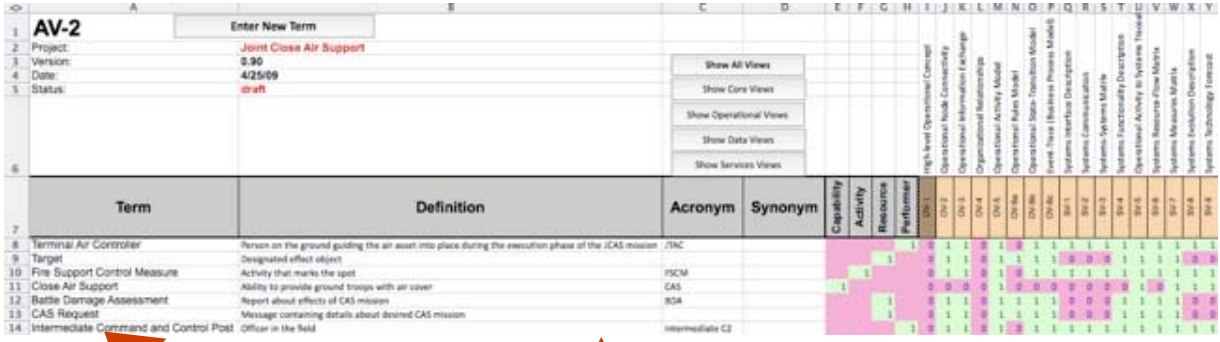


Example Application: Joint Close Air Support

Joint Close Air Support



provides



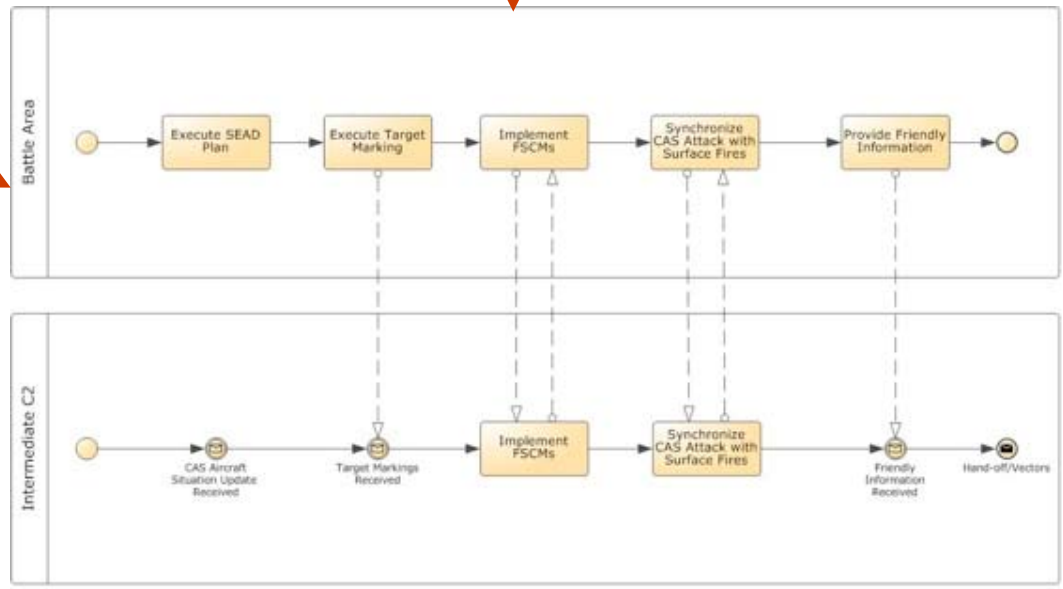
AV-2	Enter New Term
Project:	Joint Close Air Support
Version:	0.90
Date:	4/25/09
Status:	draft

Show All Views | Show Core Views | Show Operational Views | Show Data Views | Show Services Views

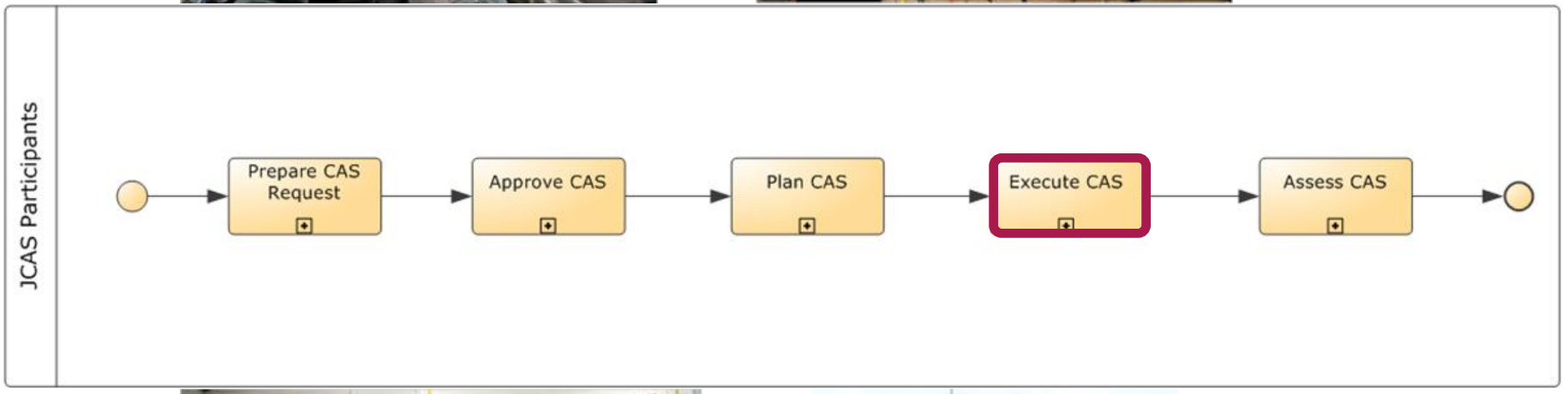
Term	Definition	Acronym	Synonym	Capability	Activity	Resource	Performer
Terminal Air Controller	Person on the ground guiding the air asset into place during the execution phase of the JCAS mission	JTAC					1
Target	Designated effect object				1		
Fire Support Control Measure	Activity that marks the spot	FSCM			1		
Close Air Support	Ability to provide ground troops with air cover	CAS		1			
Battle Damage Assessment	Report about effects of CAS mission	BDA				1	
CAS Request	Message containing details about desired CAS mission					1	
Intermediate Command and Control Post	Officer in the field	Intermediate C2					1

synchronized

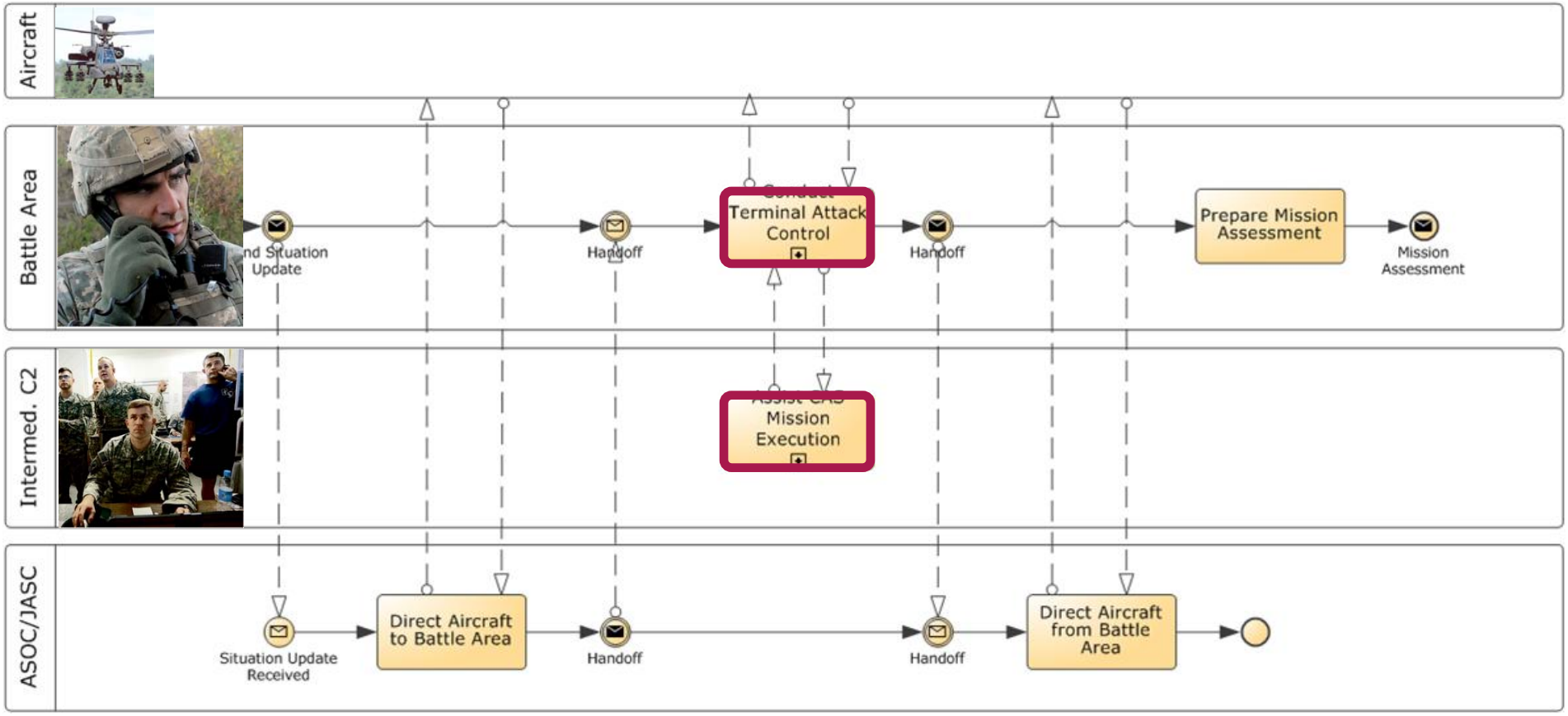
provides



3-Level Hierarchy: Milestones

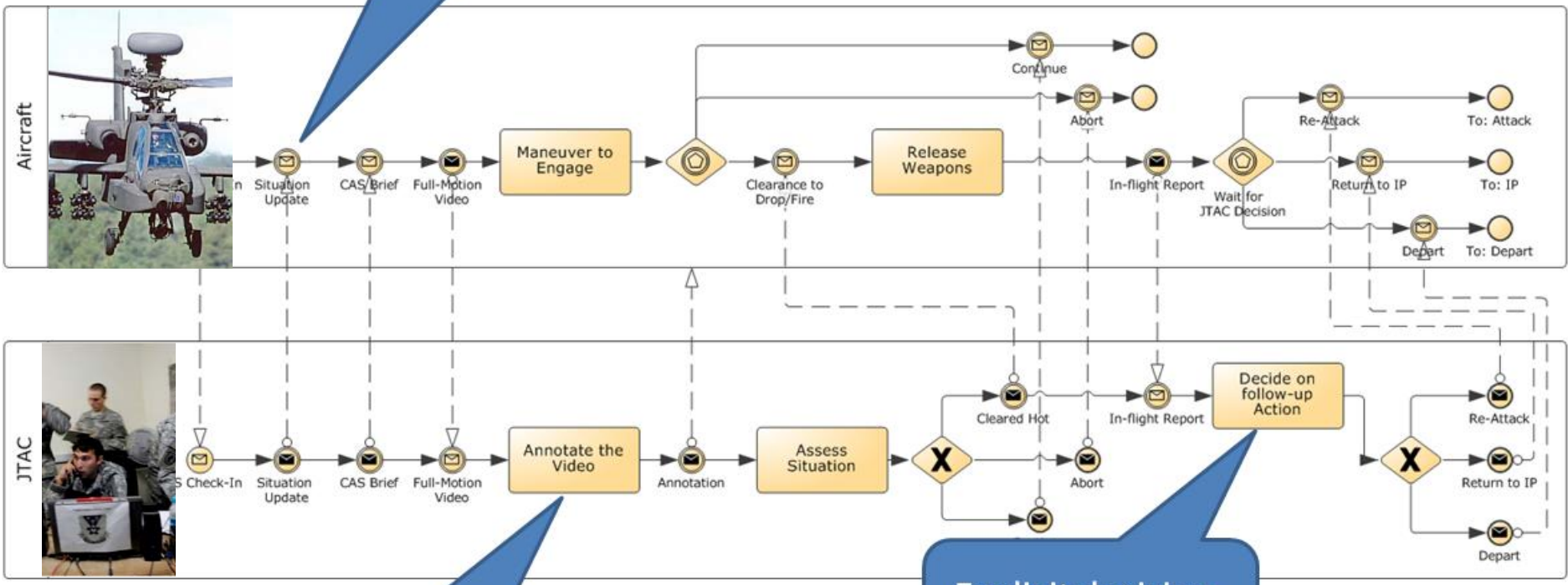


3-Level Hierarchy: Handoffs



3-Level Hierarchy: Procedures

Focus on detailed message exchange



Actionable activity descriptions

Explicit decision-making activities

Where did this take us?

Results of JCAS Effort

Agreement with USARCENT G8/Brightstar

Visibility → Insight → Action

Monitor Policies, Actions, and Outcomes

Analyze and Optimize Actions and Outcomes

Causal Chain and Root-Cause Analysis

Predictive Analysis

status and metrics

Audit Trail & Stream – Real-time & Historic

©2009 Vitria Technology, Inc.

Summary

- Enterprise Architecture is about Interoperability and Communication
- Primitives/Lexicon provides guidelines to achieve this
  - Minimize Diagram Types: Fewer primitives to learn
  - Standardize Patterns: Unified use of modeling language
  - Define Vocabulary first: Lexicon ties model types together

- **A realistic design standard for modelers, architects, and tool vendors**

Historic Founders of DoD Architecture Primitives Project

Team Members (Back to Front and Left to Right) taken on 05/01/2008: Dennis Wisnosky (OSD/OBT), COL Loretta Reynolds (JCS), COL Elizabeth Bierden (JCS), Brian Wilczynski (DoD OSD/NII) LtCol Jonathan Sutherland (JCS), Ron Bechtold (ARMY), Paul Ketrick (BTA/EP&I), Deedee Akeo (BTA/EP&I)

For More Information

Available on DKO/DoDAF 2 Journal: