



A Hybrid Enterprise Architecture Framework

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What is an Enterprise Architecture Framework?

- Guidelines for capturing, organizing, and presenting architecture information
- NOT a complete tutorial, methodology, and philosophical treatise on how to perform Enterprise Architecture

Frameworks Are Like Opinions – Everybody's Got One*



TOGAF

MODAF

DODAF



FEAF



TEAF

Zachman



* To paraphrase a popular saying

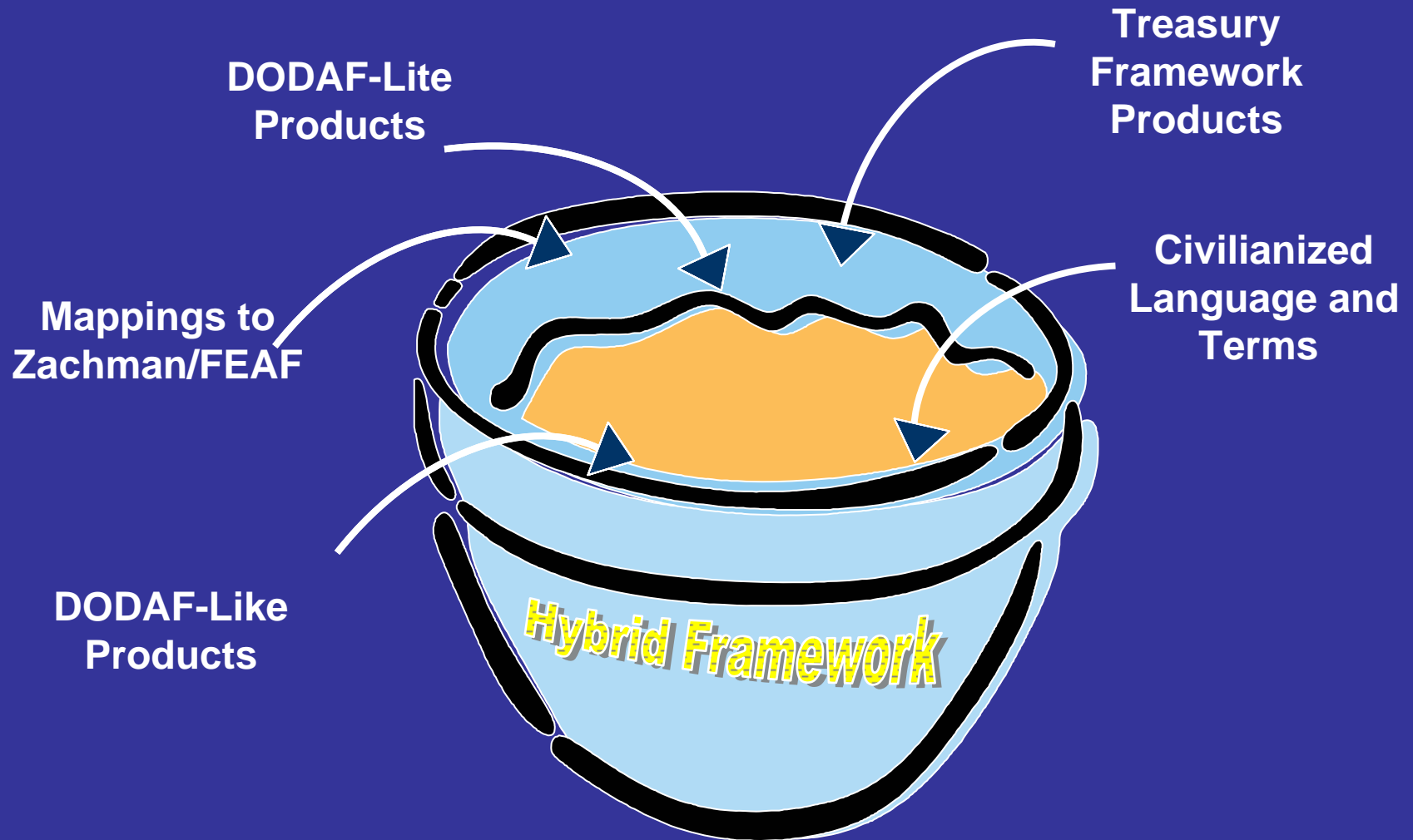
Why a Hybrid Framework?

- To provide a common architecture language for all communities
- To provide a level playing field for DoD and FEAF sides of FEAC
- To enable consistent evaluation and grading of practicums across FEAC

What Are the Key Features of the Hybrid Framework?

- Product Descriptions
- Graphical Templates
- Product Data Content
- Relationships Among Products

What Is in the Hybrid Framework?



Categorizing the Products

The product set is divided into two parts:

Core Products: Those that are used most often, in most architectures

Supporting Products: Other products that may be useful

The products are further categorized according to what they describe: the Business, Technology (or Systems), or Standards aspects of an architecture. These categories are only used to indicate the primary types of information contained in the product. Other categories could also be used.

It is not feasible to categorize the products only by the FEAF or Zachman cell each represents, because the products often overlap multiple cells. It is not recommended to build a separate product for each FEAF or Zachman cell.

The products in this set are not the only architecture products, but they provide an integrated set that covers the main aspects of architecture.

The Hybrid Products Map to the FEAF/Zachman Cells, with Some Overlaps

	Data	Application	Technology	People	Time	Motivation
Planner's View	<p>List of Things Important to Business</p> <p>Integrated Dictionary</p>	<p>List of Processes</p> <p>Activity Model (List)</p>	<p>List of Locations Important to Business</p> <p>Business Node Connection Model</p>	<p>List of Organizations Important to Business</p> <p>Organization Chart</p>	<p>List of Events Significant to Business</p> <p>Business Scenario Sequence Model</p>	<p>List of Business Goals/Strategies</p> <p>Capability Maturity Profile</p>
Owner's View	<p>e.g., Entity Relationship Diagram</p> <p>Logical Data Model</p>	<p>e.g., Function Flow Diagram</p> <p>Activity Model</p>	<p>Information Exchange Matrix</p>	<p>Agent=Org Unit Work=Work Product</p>	<p>Time=Business Event Cycle=Business Cycle</p>	<p>End=Business Objectives Means=Business Strategy</p>
Designer's View	<p>Entity=Data Entity Relationship=Data Relationship</p>	<p>Business Activity to Sys. Function Matrix</p> <p>System Functionality Description</p>	<p>e.g., Distributed</p> <p>Systems Connection Model (High Level)</p>	<p>e.g., Human Interface</p> <p>Activity Model</p> <p>Work=Deliverable</p>	<p>e.g., Processing Structure</p>	<p>e.g., Knowledge Architecture</p> <p>End=Criterion Means=Option</p>
Builder's View	<p>Physical Schema</p>	<p>Systems Connection Model (Detailed)</p>	<p>Systems Connection Model (Detailed)</p>	<p>e.g., Human/</p> <p>Systems Connection Model (Detailed)</p>	<p>Business/Systems Scenario Sequence Models</p>	<p>e.g., Knowledge Design</p> <p>End=Condition Means=Action</p>
Subcontractor's View	<p>Ent=Fields Rel=Addresses</p>	<p>e.g., Program</p> <p>Funct=Language Stmtms Arg=Control Blocks</p>	<p>System COMMS Description</p>	<p>An Aspect of Multiple Products</p>	<p>Time=Interrupt Cycle=Machine Cycle</p>	<p>e.g., Knowledge Definition</p> <p>End=Subcondition Means=Step</p>

Categories of the Suggested Architecture Products

Business

Technology

Interface Standards
(rules not explicit in FEAF/Zachman)

* Only selected hybrid architecture products are shown on this figure.

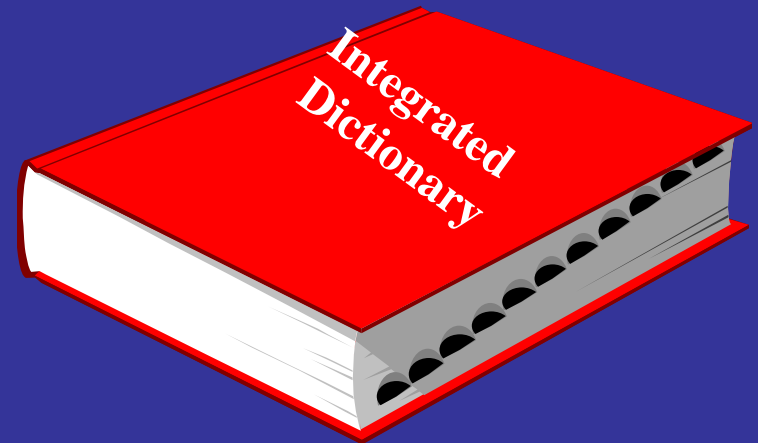
“Overall” Products Capture Information That Applies to the Architecture As a Whole

Core Products

Architecture Problem Statement and Roadmap

- **Identification**
 - Name
 - Architect
 - Organizations Involved
 - When Developed
- **Purpose**
 - Analysis Needs
 - Decision Support Needs
- **Scope**
 - Views and Products Used
 - Time Frames Addressed
- **Context**
 - Mission
 - Geographical
 - Rules, Criteria, and Conventions Followed
- **Findings: Results, Recommendations**
- **Tools and File Formats**

Integrated Dictionary

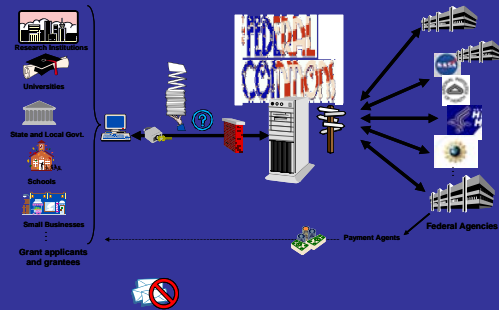


At a minimum, the integrated Dictionary is a glossary with definitions of terms used in the given architecture description. Each labeled graphical item in the graphical representations should have a corresponding entry in the Integrated Dictionary.

The Business Products Capture the Critical Mission Relationships and Information Exchanges

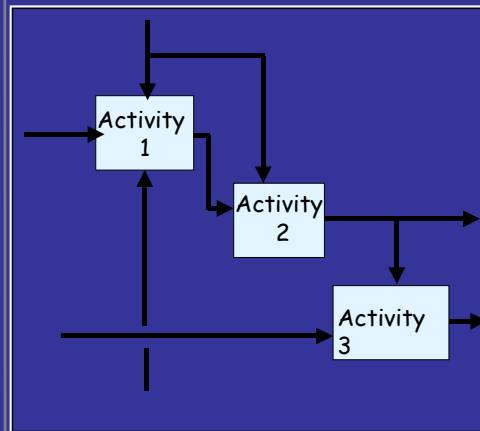
Core Products

Business Concept Graphic



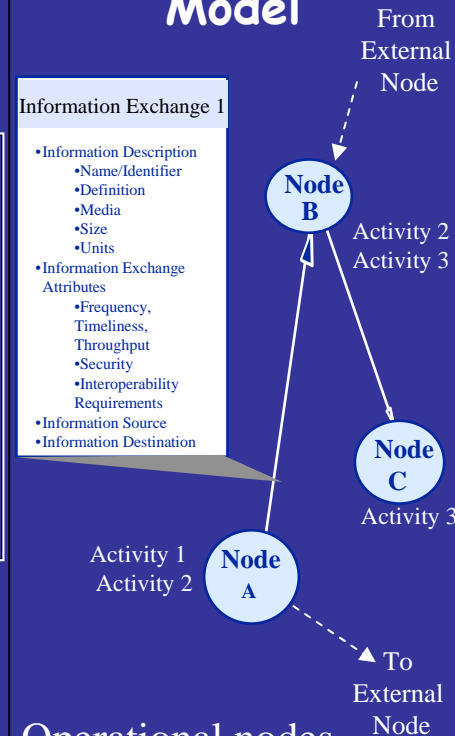
High-level graphical description of the operational concept of interest

Activity Model



Operational activities performed and their input/output relationships

Business Node Connection Model



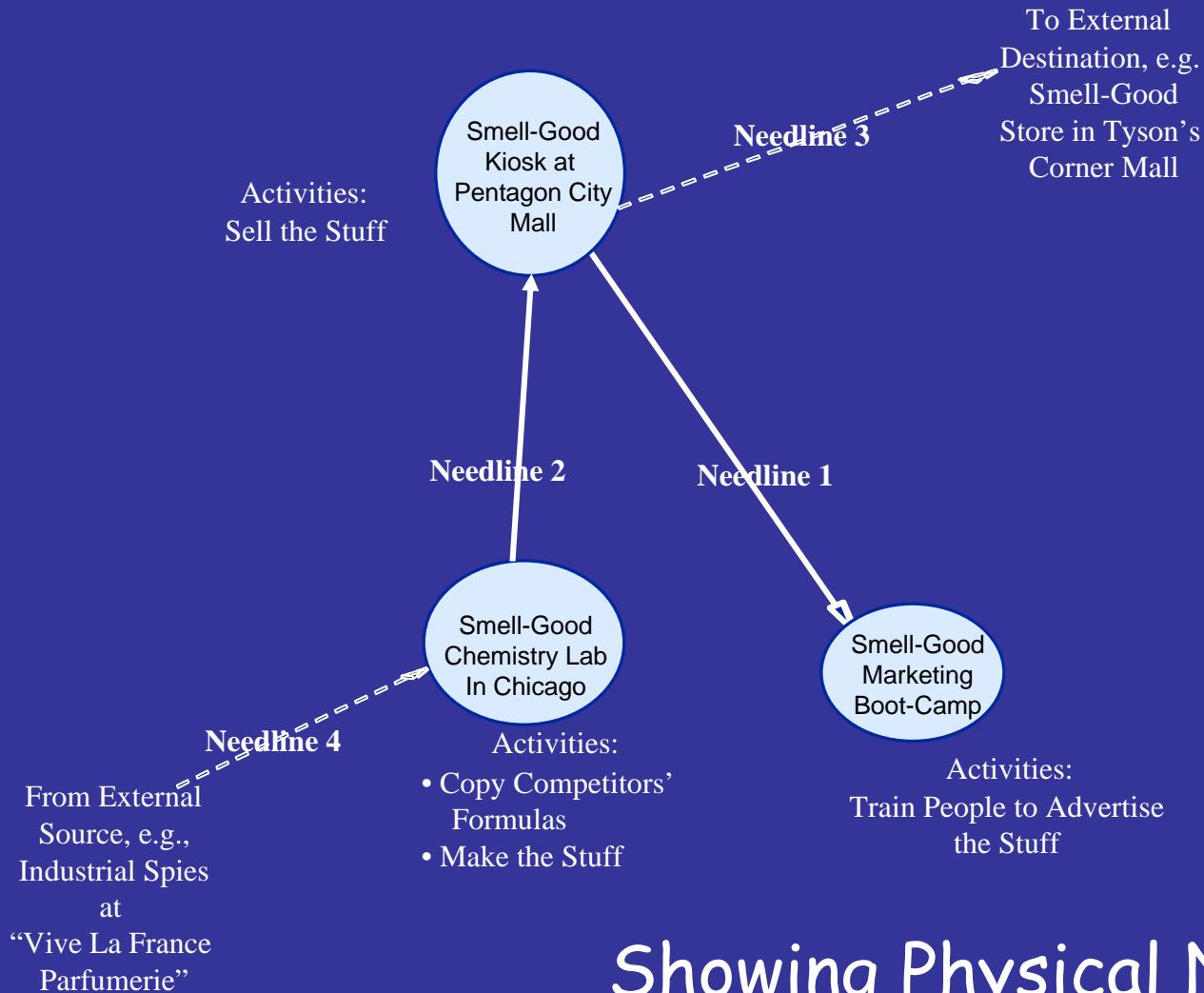
Operational nodes, activities performed at each node, node-to-node relationships, and information needlines

Information Exchange Matrix

INFORMATION EXCHANGE ATTRIBUTES	INTEROPERABILITY REQUIREMENTS	FREQUENCY, TIMELINESS, THROUGHPUT	SECURITY
INFORMATION DESTINATION	OPERATIONAL ELEMENT & ACTIVITY	IDENTIFIER OF ACTIVITY	CONSUMING OF ACTIVITY
INFORMATION SOURCE	OPERATIONAL ELEMENT & ACTIVITY	IDENTIFIER OF ACTIVITY	PRODUCING OF ACTIVITY
INFORMATION DESCRIPTION	DISCREPTION	NAME IDENTIFIER	DEFINITION
	SIZE RANGE LIMITS	DIGITAL VOICE, TEXT, IMAGE, ETC.	
	UNITS	FEET, LITERS, INCHES, ETC.	

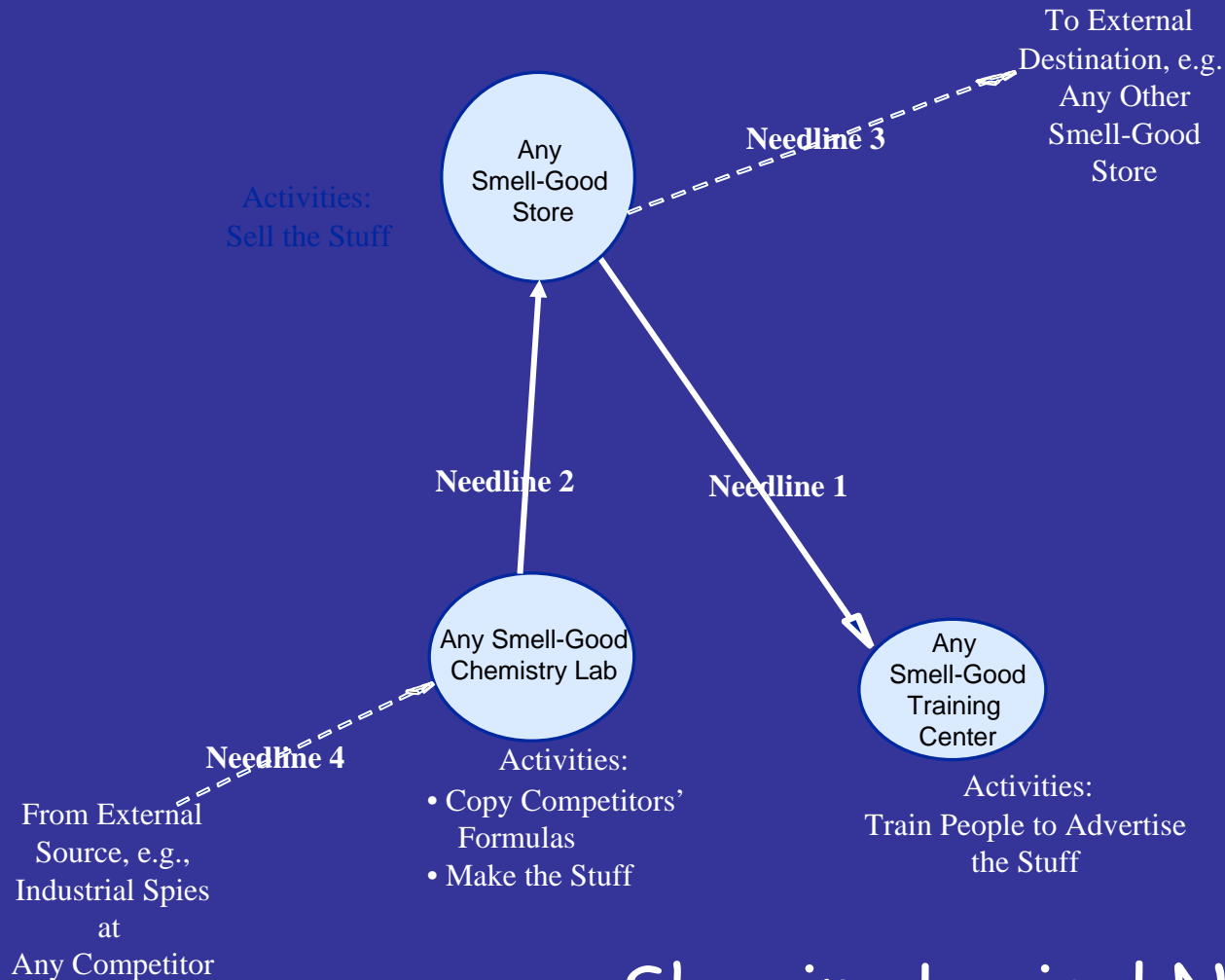
Information exchanged between nodes and the relevant attributes of the exchanges

A Closer Look at the Business Node Connection Model – Smell-Good Parfumerie, Inc.



Showing Physical Nodes

A Closer Look at the Business Node Connection Model - continued

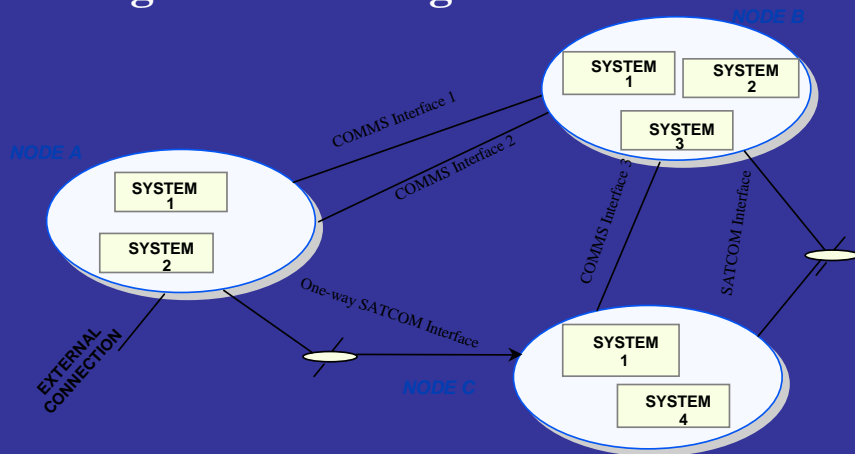


Showing Logical Nodes

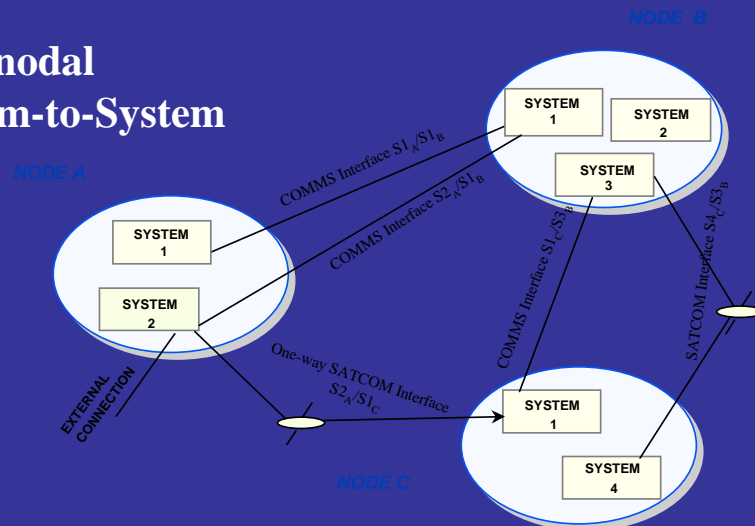
The Systems Products Examine Current and Postulated HW/SW Capabilities in Context with Mission Operations

Core Product: Systems Connection Model

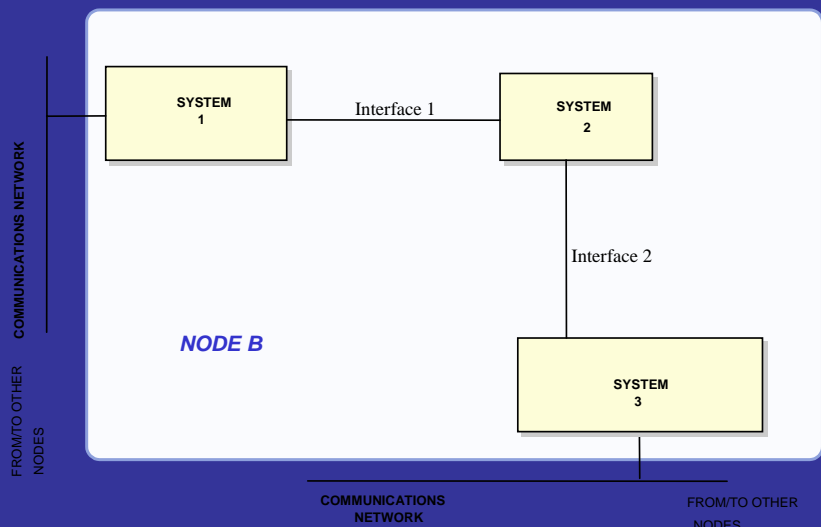
Internodal Node-Edge-to-Node-Edge



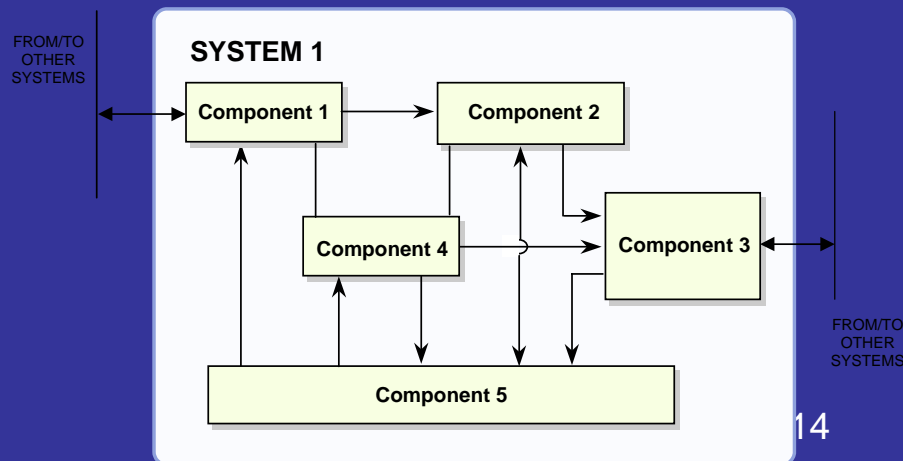
Internodal System-to-System



Intranodal



Intrasystem

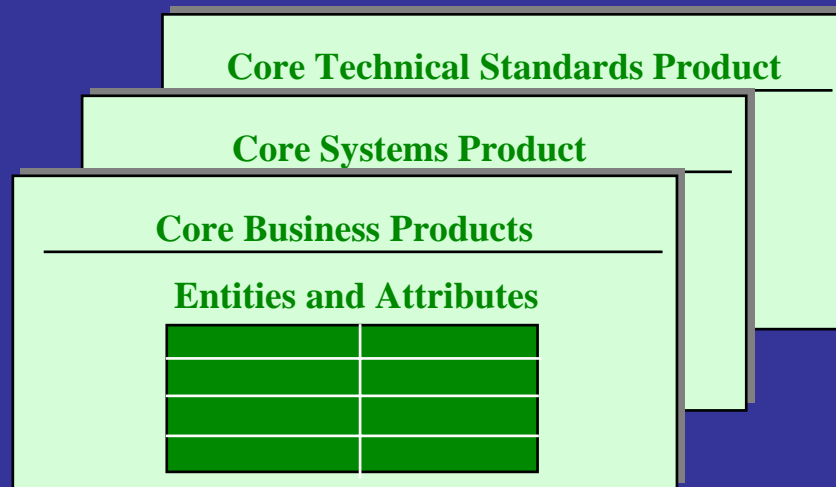


Technical Standards Products Identify Implementation Criteria That Govern the Given Architecture

Core Product: Interface Standards Profile

Service Area: <i>Service Access & Delivery</i>			
Service Category	Service Standard	Standard Description	I.D. of Affected System Interface
Access Channels	Web Browser	MicroSoft Internet Explorer version x.xx (Product Standard)	
Service Transport	Supporting Network Services	Internet Message Access Protocol (IMAP) version x.xx (Interface Standard)	
		Multipurpose Internet Mail Extensions (MIME) version x.ss (Interface Standard)	
		Simple Mail Transfer Protocol (SMTP) version x.ss (Interface Standard)	
Service Transport	Service Transport	Transport Control Protocol (TCP) version x.ss (Interface Standard)	
		Internet Protocol (IP) version x.ss (Interface Standard)	
		Hyper Text Transfer Protocol (HTTP) version x.ss (Interface Standard)	
Service Area: <i>Service Platform & Infrastructure</i>			
Service Category	Service Standard	Standard Description	I.D. of Affected System Interface
Support Platforms	Platform Dependent	MicroSoft Windows XP Professional version x.xx (Product Standard)	

Each Product Contains Specific Architecture Data

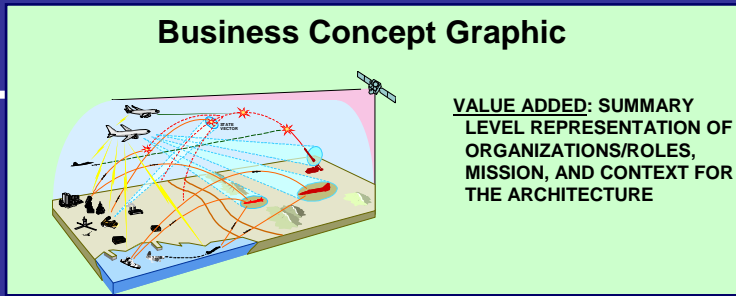


The products are not just pictures!

Example – Specified Information Content for the Business Node Connection Model (Extract)

Entities, Attributes, & Relationships	Example Values/Explanation
Graphical Box Types	
• Business Node*	
Name*	Name or label of node box on diagram
Description*	Text description of mission or role being performed by the node
Location	Actual location or generic location type
Graphical Arrow Types	
• Needline*	
Identifier*	Unique identifier of the needline (may be a number)
Descriptive Name*	Descriptive name for the needline, usually associated with the type(s) of information associated with the needline
Description*	Text description of needline
“From” Business Node*	Name of node box that is the source of the node connector on the diagram
“To” Business Node*	Name of the node box that is the destination of the node connector on the diagram.

The Core Products Relate to Each Other

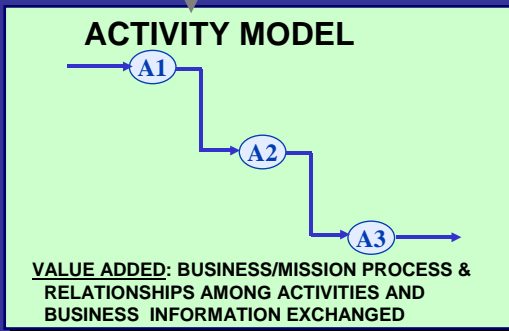


INTERFACE STANDARDS PROFILE

SERVICE AREA	SERVICE	STANDARD
Support Applications	Web Applications	Internet Explorer Version 4.0 or better
Data Management	Business Data	Microsoft Access 2.0 or better
	Business Data	Data Universal Numbering System (DUNS)
	Business Data	ZIP Code Database
Data Interchange	Document Interchange	ISO 1166: ISO 1166-1 (October 1997) and ISO 1166:2 (5 December 1998) (Code for the Representation of Elements of Quantities and Their Substitutions)
	Document Interchange	U.S. State Codes and Precinct Codes
	Document Interchange	Electronic Data Interchange (EDI) - Business to Business
	Document Interchange	Electronic Order Data Interface
Communications	World Wide Web Services	XML 1.0, W3C Recommendation, 19 February 1998, Revision 19980220 (Recommendation Language)
	Electronic Mail	HTTP Standard 1.0 RFC: 81 RFC: 1807 RFC: 1870 Simple Mail Transfer Protocol and POP Version 3 Internet Standard 9801
	Electronic Mail	HTTP Standard 1.1 RFC: 82 RFC: 1889 Standard for the Format of ARPA Internet Text Messages, 19 August 1996
	Electronic Mail	HTTP RFCs 2045-2049 Multipurpose Internet Mail Extension (MIME), November 1996
	Electronic Mail	SMTP RFC: 2821 Internet Mail Extensions (IM) RFC: 1870

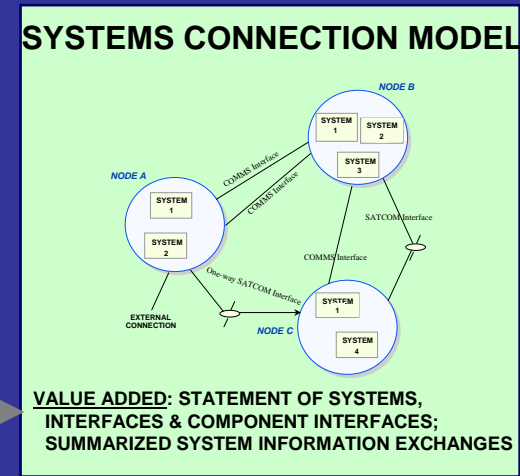
VALUE ADDED: COMPLETE LIST OF RELEVANT STANDARDS WITH OPTIONS & PARAMETERS

OPERATIONAL CONCEPT ROLES & MISSIONS SET SCOPE FOR ACTIVITY MODEL



- ACTIVITIES MAP TO NODES
- I/O'S MAP TO NEEDLINES
- PERFORMERS OF ACTIVITIES, IF SHOWN ON ACTIVITY MODEL, MAP TO NODES

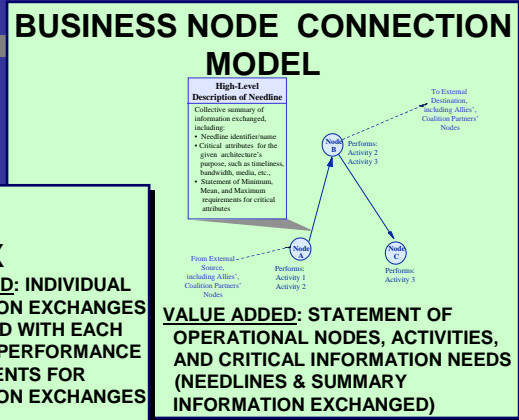
STANDARDS APPLY AT SYSTEM TO SYSTEM INTERFACES



BUSINESS NODE CONNECTIVITY & INFORMATION EXCHANGES, IF SHOWN ON CONCEPT GRAPHIC, MAP TO NEEDLINES & INFORMATION EXCHANGES

INPUT/OUTPUT LABELS MAP TO INFORMATION EXCHANGES (NOT ALWAYS ONE-TO-ONE)

INFORMATION EXCHANGES ASSOCIATED WITH EACH NEEDLINE ARE DETAILED IN MATRIX



- BUSINESS NODES ARE ASSOCIATED WITH SYSTEMS
- EACH NEEDLINE MAPS TO ONE OR MORE SYSTEM INTERFACES

INFORMATION EXCHANGE MATRIX

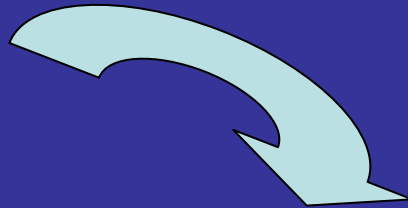
VALUE ADDED: INDIVIDUAL INFORMATION EXCHANGES ASSOCIATED WITH EACH NEEDLINE, PERFORMANCE REQUIREMENTS FOR INFORMATION EXCHANGES

Needline ID	Needline Name	From External Source, including Allies', Coalition Partners' Nodes	To External Destination, including Allies', Coalition Partners' Nodes	Needline Description	Minimum	Mean	Maximum
1
2
3
4

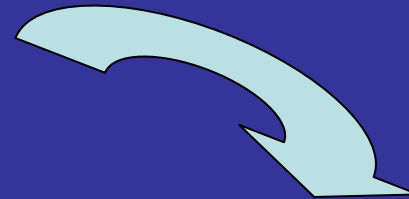
Architecture Problem Statement and Roadmap, and Integrated Dictionary are not shown because they relate to all other products

Where Can I Get the Hybrid Framework?

Virtual University



Library



“Architecture Products Guide”