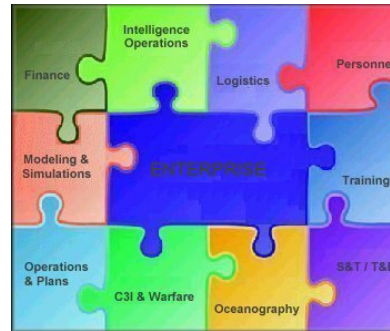




Department of the Navy Enterprise Architecture



Enterprise Taxonomies

Briefing for AFD Working Group
11 July 2002



Outline

- Taxonomies and Architecture
 - Why are they important?
 - How is DON implementing?
- Taxonomy Tool
 - CADM
 - CONOPS
 - Use in architecture data development
- Demo



Taxonomies?

- Categorization (types-of) and composition (parts-of) are so fundamental to human reasoning they are almost indescribable, yet are essential to almost all human thought
- They are the most valuable tool known for dealing with what would otherwise be an intractably complex number of variables
- Hence their critical role in dealing with the intractably large number of variables in large enterprise architectures

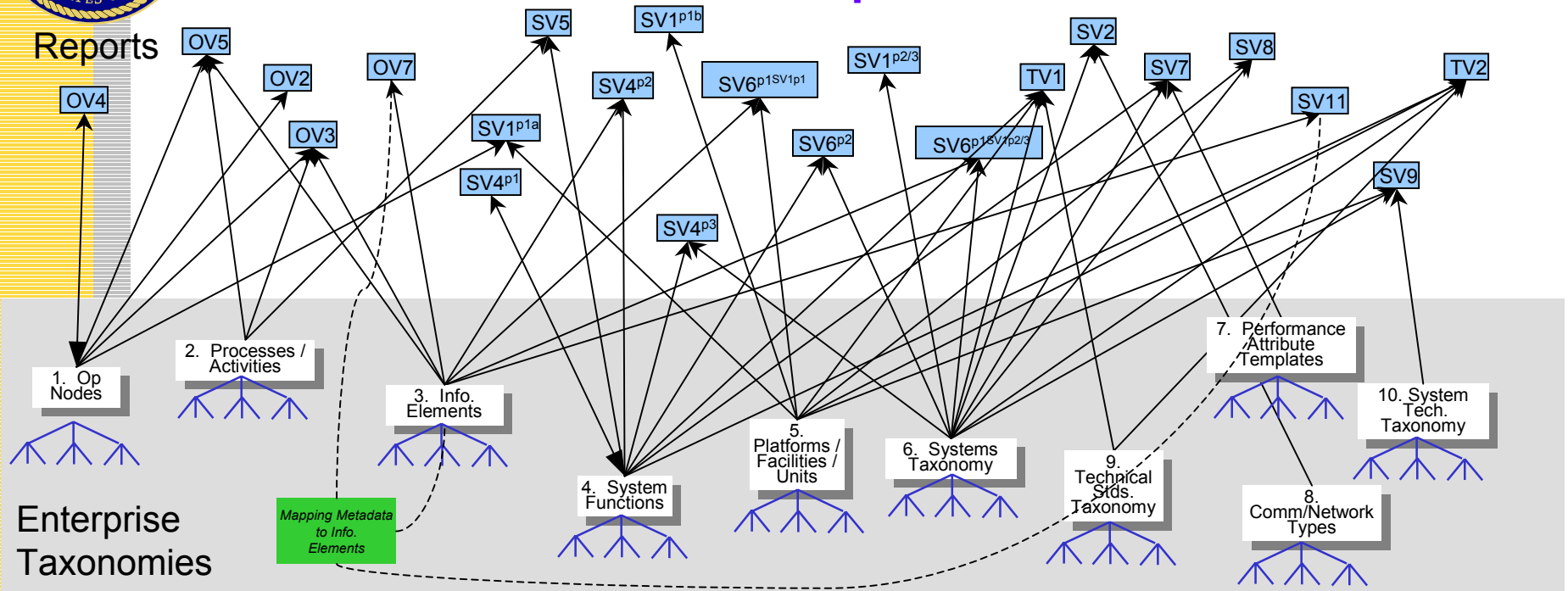


Major Taxonomy Types in Architecture

1. Operational Nodes
2. Process-Activities
3. Information Elements
4. System Functions
5. Systems
6. Platforms / Facilities / Units
7. Performance Attributes
8. Technical Standards
9. Science and Technology



Taxonomies Relationships to AFD Reports



Product Subparts Legend:

- SV4^{p1} = System Functions Taxonomy
- SV4^{p2} = Function Information Flow Spec./Desc.
- SV4^{p3} = Functional Allocation
- SV1^{p1a} = Operational Node PFU Operation Rqmts/Desc.
- SV1^{p1b} = System Interface Description, Internodal

- SV1^{p2/3} = System Interface Description, Intranodal and Intrasystem
- SV6^{p1SV1p1} = System Information Exchange Description, Internodal
- SV6^{p1SV1p2/3} = System Information Exchange Description, Intranodal and Intrasystem

Taxonomies = {

- The dictionary of words or terms used in the architecture
- The Enterprise common terms of reference (SME's already use)
- The Enterprise objects and elements
- The categories and composition of those objects and elements

}



Challenge

- Consensus and communication across a large enterprise
 - No mature, complete, or well-defined starting points
 - Many legitimate and useful categorizations
 - Definition of terms
 - Tools didn't exist until recently
 - Flat tools (Excel, PowerPoint, Word) don't work
- Need
 - Central Forum for debate
 - Tools (see next slide)



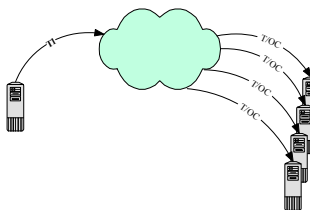
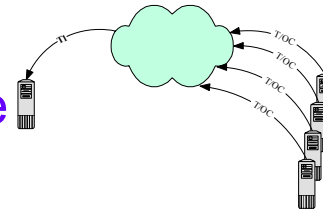
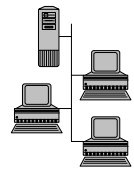
Taxonomy Tools

"See" the taxonomy	Tree, hierarchy
Navigate the taxonomy	Collapse and expand branches
Reconcile	Merge
Restructure	Move branches Trial branch moves
Relate to local taxonomies or multiple authoritative sources	Many-many mapping
Match up like concepts	Find by various criteria



What the DON is Doing with the 23 Functional Area Managers

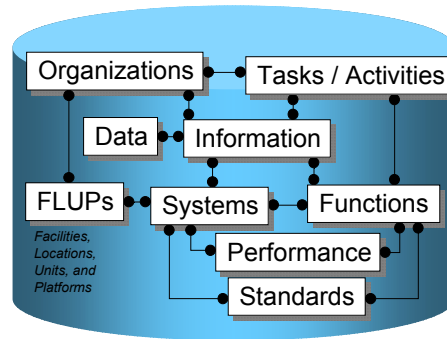
- General session to layout top-tier of taxonomy and procedures
- Install startup DB's with FAM teams (23 synchronizable DB's)
- Upload and sync periodically or when done
- Sync and download
- Convene general session for any needed reconciliation





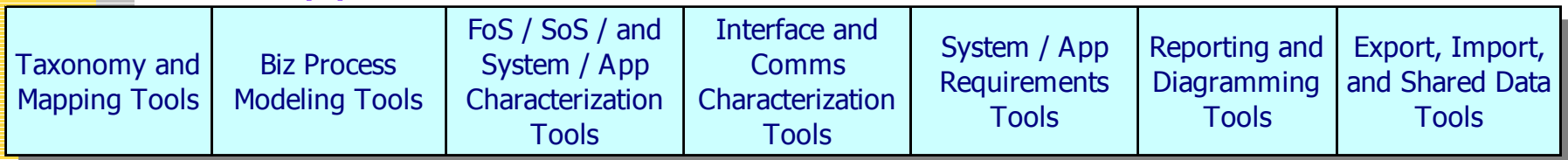
DON Taxonomy Tools

A
database



- DoD designed (CADM)
- Open

An application





Why Taxonomies and CADM Are Essential to an EA

An EA Cannot be Construed From “Stovepiped” Architectures

- “Product” or diagram driven
 - employing various artistic tools; spreadsheets, word processors, home-made stand-alone databases, etc.
- Replicates the current problem of stovepiped systems, one of the primary problems architectural techniques were created to address!
- All specific architectures need to be within the context of others, that is, an EA

• To achieve a true EA:

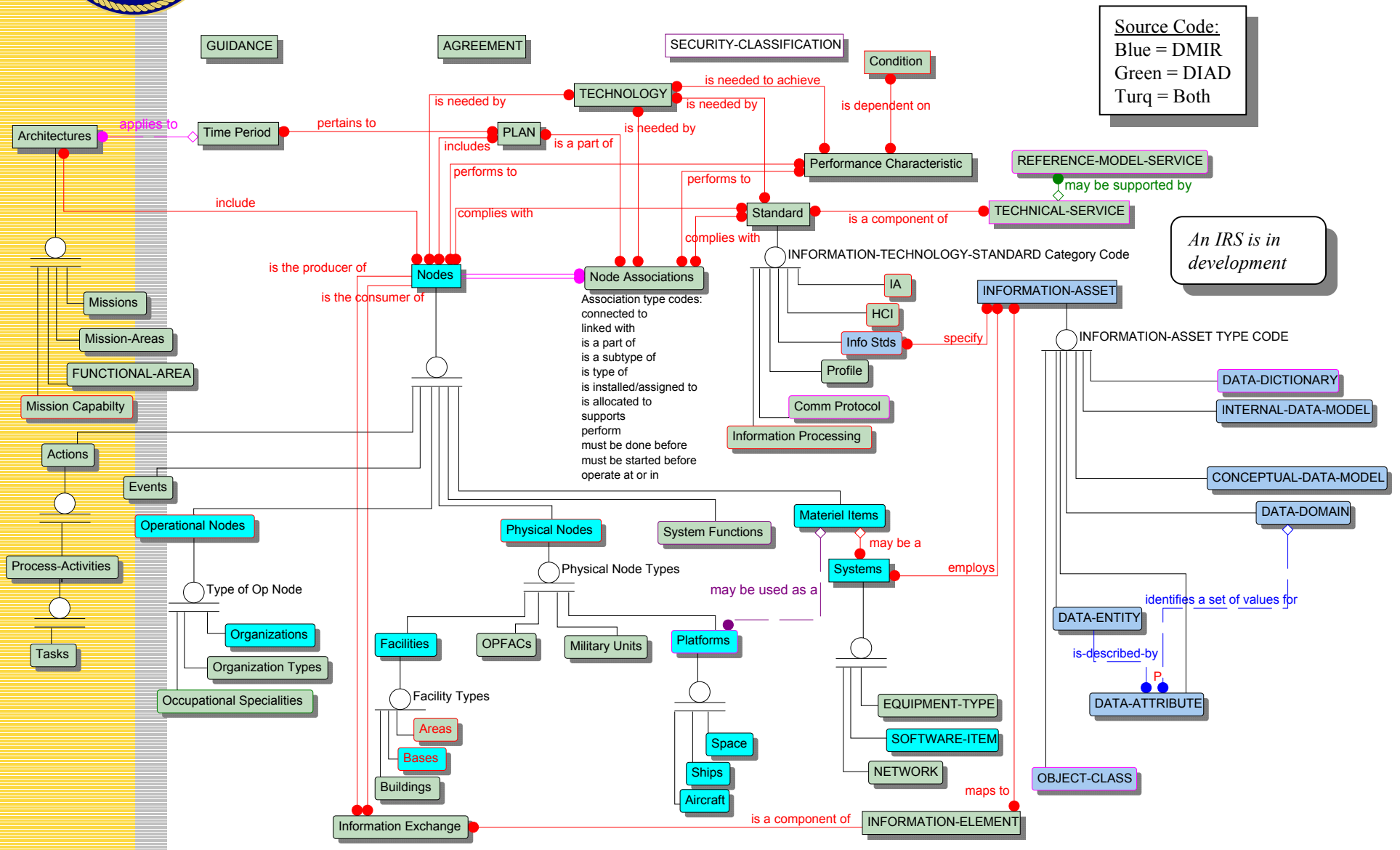
- Standard architectural concepts and conceptual relationships.
 - largely accomplished by the AFD and CADM
- Products are used to communicate but the real strength lies in the underlying data
 - Products referenced in the Architecture Framework are predefined subsets of the architecture’s information
- Common architecture object taxonomies.
 - often overlooked
 - learned over many years to be critical to architecture success
- Architecture data sharing and reuse
 - relate to the vast number of architectural objects within the DON and with which the DON interoperates
 - many stakeholders in the enterprise architecture
 - not developed as a single effort, but is made up of data throughout the enterprise that is
 - » continuously developed
 - » validated
 - » maintained
 - » evolves over time.
 - sources of the data may be varied and loosely coupled,
 - architecture federated but shared and integrated

• Needed:

- Tool built from the ground-up as CADM-compliant so CADM’s object model is inherent
 - Import/export, interfaces, subsets, translators, etc. have many un-addressed issues, e.g., lossy translations, non-affine models
- Taxonomy tools
- Sharing and re-use tools
- Manipulation tools for fundamental architectural data
- Basic reporting and product tools

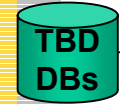


Taxonomies are a Big Part of CADM



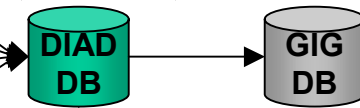


DON CONOPS Vision



1. Authoritative Data Sources, stakeholders and oversight

2. Interfaces



3. Modeling and Analysis Tools

- DIAD Application**
- BPWin
 - Rational Rose
 - Bonapart
 - System Architect
 - NetViz
 - Visio
 - MS Project
 - DOT/NEATO
 - CORE
 - OPNET
 - G2
 - Netwars
 - Extend
 - DOORS
 - JCOAT
 - Naval Simulation System
 - SLATE
 - AppliCAD
 - others TBD

- DON CIO
- ASN RDA
- Navy / Marine Corps IOs
- FAMs
- FDMs
- Ech 2 CHENG/CIO
- Ech 2 PM's
- NWDC/MCCDC

Architecture Data

Organizations <i>(Needlines, Command Relationships, Info Rqmts, FLUP rqmts)</i>
Activities/Tasks <i>(Activitylines, Sequences, Activity Info Rqmts)</i>
Information <i>(Data mapping, System / App, System Function, FLUP interfaces)</i>
Data <i>(System / App, FLUP, System Function interfaces)</i>
Systems/Apps <i>(Interfaces, Functional allocation, Performance & Tech Stds, assign/install to FLUPs)</i>
System Functions <i>(Funcational design, perf characteristics, tech stds per function)</i>
Performance Characteristics <i>(relate to Tech Stds, spec for FLUPs)</i>
Technical Stds <i>(Interdependency, spec for FLUPs)</i>
Facilities / Locations / Units / Platforms <i>(FLUP interfaces)</i>

Taxonomies								
Organizations	Activities/Tasks	Information	Data	Systems/Apps	System Functions	Performance Characteristics	Technical Stds	Facilities / Locations / Units / Platforms
o	o	o	o	o	o	o	A	o
				o	A	A	s	s
		s	s	s	s			
s	A			A	A	s	s	A
		A	A					
		s	s	s	s	A	s	
			s	s	s	s	s	
A	A	s						s

(symetric)								
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Challenge

- Meet the letter of the law:
 - AFD
 - OMB
 - Etc.
- Also must be:
 - Useful
 - Easy but rigorous; high-level but detailed; graspable but full-featured; overview but in-depth; simple but complex; quick-and-dirty but authoritative-and-executive-DSS; no-training-required but sophisticated; object-oriented but diagrammatic; pictures but CADM; etc.



Taxonomy Tools Demo

- AV-2 Taxonomy Tools
 - Building and re-arranging
 - Importing and mapping
 - Using
- Use in Building Products