

AARMS Version 2.0 TRAINING COURSE



TRADOC AIMD

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TRAINING COURSE OUTLINE

Day 1:

0800-0810 Welcome and Administrative Instructions

0810-0900 AARMS Overview Briefing

0900-0945 The Architecture Development Process
and AARMS

0945-1000 Break

1000-1045 Architecture Development Stage 0 and 1

1045-1200 Architecture Development Stage 2

1200-1300 Lunch

1300-1400 Architecture Development Stage 2 Cont.

1400-1700 Architecture Development Stage 3

Day 2:

0800-0830 Day 1 Recap

0830-1030 Architecture Development Stage 4

1030-1045 Break

1045-1200 Architecture Development Stage 5

1200-1300 Lunch

1300-1430 Architecture Development Stage 5

1430-1530 Architecture Development Phase III, The
Management Tool

1530-1700 Practical Exercise Completion

Tasks, Conditions, Standards

Tasks:

1. Attain a basic understanding of the process used to build DOD Architecture Framework compliant products in the AARMS/CADM repository.
2. Build the following architecture products using the AARMS Architecture Tool: OV2, OV3, OV4, OV5, SV1/2, SV3, SV4, SV5, SV6.
3. Store and archive architecture data files in the AARMS repository created with other architecture tools.
4. Generate reports and create information sets.
5. Manage architecture data within the repository.

Conditions:

In a classroom environment, using a special training copy of the actual AARMS database and the most up to date version of the AARMS application.

Standards:

Through a series of classroom instruction and practical exercises, the student will demonstrate basic knowledge of the architecture development process and how to leverage the AARMS repository and tool set to create, store, and manage DOD Architecture Framework compliant products and information sets.



AARMS Progress Report and Overview

Current Status

- AARMS version 2.0 was released Monday, 3 February. No data was lost and 100% data integrity was maintained. A problem with the IER revision allowing IER's to be written to ASIOE equipment was causing issues with IER approval and rolling rules forward. This new feature was turned off and the original code was put back in place. The feature will be reintroduced after further testing.

- New features in 2.0 include the following new modules in one architecture tool:

- ✓ OV5 (Import/Export to BPwin/AllFusion)
- ✓ SV1/2, 3, 4, 5, 6
- ✓ Horse Blanket Report to VISIO
- ✓ Core Systems Quantity Report
- ✓ Feed MS Excel directly with report data
- ✓ Send OV4 and OV2 report data directly to MS PowerPoint
- ✓ New enhanced Report Writer

- Visualization of AARMS data mirrors legacy web site with standardized reports and ad-hoc query capabilities.

Current Status

- The AARMS data repository can store all DOD Architecture Framework products using the ARCADM 3.01 data model.
- The AARMS Architecture Tool application allows users to build the following Framework products directly into a project in the AARMS database:
 - ✓ OV-2
 - ✓ OV-3
 - ✓ OV-4
 - ✓ OV-5 (interface with BPWin, AllFusion)
 - ✓ OV-7 (BPwin to ERwin, AllFusion)
 - ✓ SV-1 (interface with Netviz)
 - ✓ SV-2 (interface with Netviz)
 - ✓ SV-3
 - ✓ SV-4
 - ✓ SV-5
 - ✓ SV-6

AARMS PARADIGM SHIFT

Current: Product/OPFAC Centric, Process Specific

Future: Data Centric, Process Independent



New Vision for the Future:

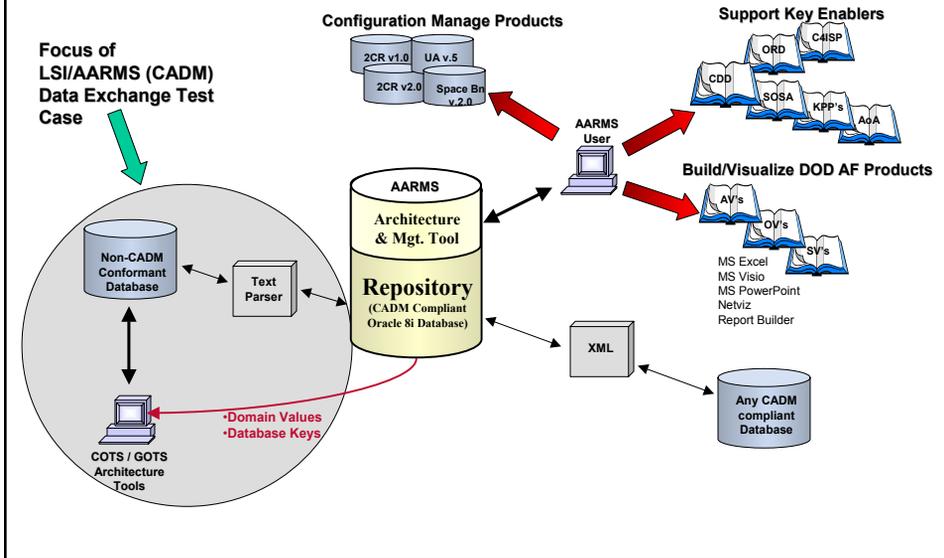
Support JIM and AEA design and development. Serve as a repository for Land Warfare architecture information and facilitate the validation, approval, analysis and distribution of information sets within a Joint context. Provide a controlled collaborative framework for architecture product development/ information set development using a distributed CADM conformant database. Serve as a single point of entry for warfighting architectures produced by TRADOC, other Army organizations, Joint Experimentation, Objective Force LSI, and industry.

REVISED AARMS OBJECTIVES

- ❑ **Improve Joint to Army traceability**
 - ✓ *Leverage Joint Warfighting concepts, required operational capabilities, and DOTMLPF analyses, joint experimentation, SWGs, Rock drills, etc.*
 - ✓ *Fully integrate Operational and System Architectures*
- ❑ **Flexible, tailorable decision support system**
 - ✓ *Provide senior leader information sets for analysis and decision making*
 - ✓ *Allow for user defined reports for repository architecture data analysis to support the JCIDS process*
 - ✓ *Provide standard DOD Architecture Framework views and non-framework reports for the integrated architecture community*
- ❑ **Ensure DOD Core Architecture Data Model (CADM) conformance**
 - ✓ *Facilitate data sharing and reuse both within the Army, Joint, DoD, Inter-Agency, and Multi-National arena*
 - ✓ *Common data dictionary and **Integrated Architectures at data level***
- ❑ **Continuously improve tool sets to achieve greater efficiencies**
 - ✓ *Facilitate concurrent/parallel collaborative development*
 - ✓ *Enhance query and report modules to allow visualization of Architecture Information Sets*
 - ✓ *Mine reusable architectures to enhance data sharing and information set formulation*

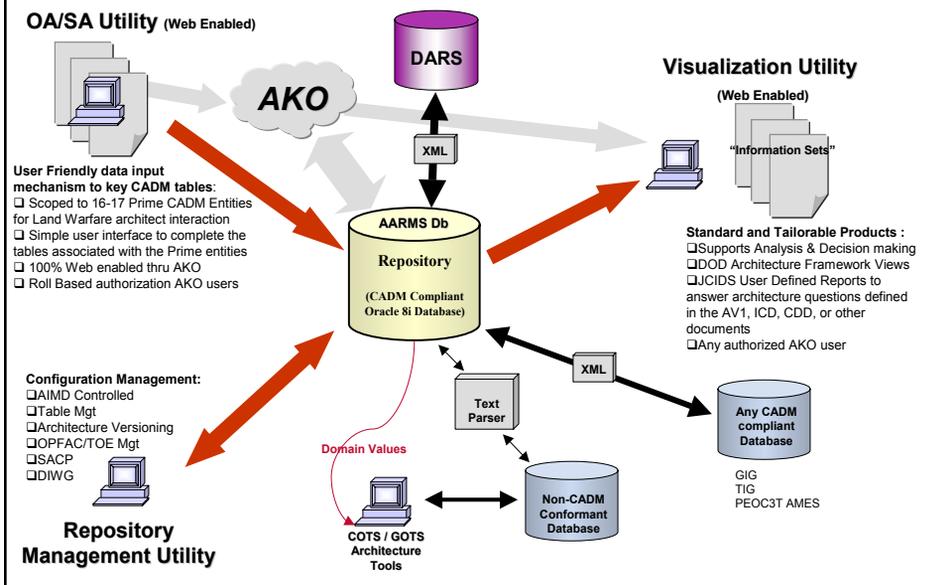
AARMS WAY AHEAD

CURRENT AARMS CONFIGURATION



AARMS WAY AHEAD

FUTURE AARMS CONFIGURATION



AARMS Fielding Schedule/Priority of Effort Summary

As of: 11 March 2003

DEC	JAN	MAR	APR	MAY	JUN	JUL	AUG	SEP	
<ul style="list-style-type: none"> • v.2.0 Release (13th) • Patch Work • Software Documentation • Training Materials 	<ul style="list-style-type: none"> • v.2.0 User Training 	<ul style="list-style-type: none"> • Web tool eval/training • Conversion to Oracle 9i • AARMS 4.0 "UFD" development • Build object model of DB • Work LSI data integration • Work CAC (UE) data integration • DARS coordination • v.2.0 User Training 	<ul style="list-style-type: none"> • Web tool eval/training • AARMS 4.0 "UFD" development • Build object model of DB • Work LSI data integration • Work CAC (UE) data integration • DARS coordination • v.2.0 User Training Help Desk OPS 	<ul style="list-style-type: none"> • Work LSI data integration • Work CAC (UE) data integration • DARS coordination 	AARMS 4.0 Development				
				All CADM Upgrade					
			Table Maintenance / "As Is" Product Improvement					<ul style="list-style-type: none"> • v.2.0 Release 	

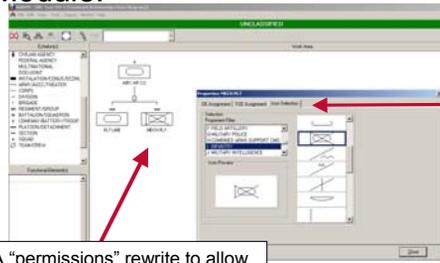
Priority of Effort for Remainder of FY03

- 1) AARMS v.2.0 release / Support
- 2) Software Documentation / Training Materials
- 3) All_CADM data model change and upgrade (Beginning April 03) (6-8 mth effort)
- 4) Develop AARMS 4.0 in support of new paradigm
- 5) Adding new and improved Reports
- 6) AARMS Web access upgrade (JAVA) (better access to OV/SV products)
- 7) Upgrade to Oracle version 9i



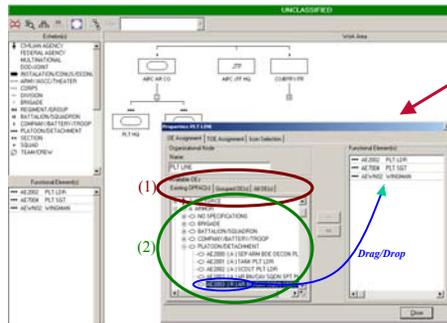
Overview of Changes since AARMS v.1.0

The OV4 Module:



The addition of the Symbols editor IAW FM 101-5-1.

A total OA/SA "permissions" rewrite to allow architects to task organize the OV4 and edit Functional Elements.



BUILDING NEW and REUSE of FE(s)

After building unit icons in the OV4, the architect must assign Functional Elements (FE) to the units, or nodes, he created. This is no change from previous versions. However, you will now notice THREE tabs (1) for use in building FEs:

1. <Existing OPFAC(s)> (START "A") displays all OPFACs in the repository, or Architecture 0, to use for this project (2)
2. <Grouped OE List> (START "B") facilitates creation of new FEs and OPFACs by providing a pull down list of all approved OE's by Battlefield Functional Area.
3. <All OE(s)> Same as 2 above except all OE's are displayed in alphabetic order.

The OV3 Module:

Different set of IR's based on the

TRANS MEANS
BOS
AUTL
DIT
IR

relationship. ART 1.1.1 has a different set of IR's than ART1.2 even though the DIT's are the same.

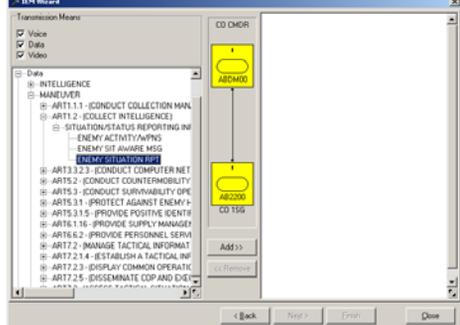
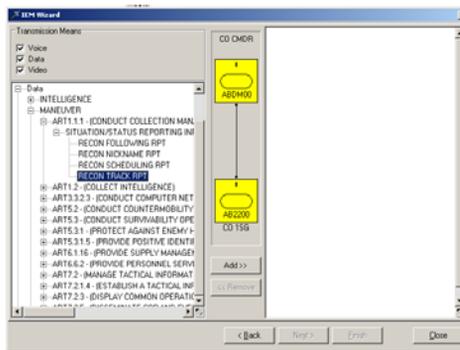
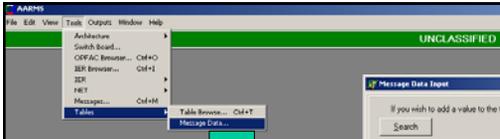


Diagram A



The OV3 Module:

If the IEM wizard does not have the task you want, AARMS gives you the ability to build your own associations by using the Tools menu and selecting the Message Data Tab to go to the Message Data Input tool.

All AUTL and UJTL task are available for use along with all IR's in the database.

Message Data Input

If you wish to add a value to the table below, click the "Next >" button.

Trans Type	BOS	Function Code	Function Name
D	COMMAND AND CONTROL	ART7.4	PLAN TACTICAL OPERATIONS USING THE MI
D	COMMAND AND CONTROL	ART7.4.5	PROVIDE OPERATIONAL LAW SUPPORT
D	MANEUVER	ART7.4.5	PROVIDE OPERATIONAL LAW SUPPORT
V	COMMAND AND CONTROL	ART7.4.5	PROVIDE OPERATIONAL LAW SUPPORT
V	MANEUVER	ART7.4.5	PROVIDE OPERATIONAL LAW SUPPORT
D	COMMAND AND CONTROL	ART7.4.5	PROVIDE OPERATIONAL LAW SUPPORT
D	MANEUVER	ART7.4.5	PROVIDE OPERATIONAL LAW SUPPORT
V	COMMAND AND CONTROL	ART7.4.5	PROVIDE OPERATIONAL LAW SUPPORT
V	MANEUVER	ART7.4.5	PROVIDE OPERATIONAL LAW SUPPORT
D	COMMAND AND CONTROL	ART7.4.5	PROVIDE OPERATIONAL LAW SUPPORT
D	MANEUVER	ART7.4.5	PROVIDE OPERATIONAL LAW SUPPORT
V	COMMAND AND CONTROL	ART7.4.5	PROVIDE OPERATIONAL LAW SUPPORT
V	MANEUVER	ART7.4.5	PROVIDE OPERATIONAL LAW SUPPORT
D	COMMAND AND CONTROL	ART7.4	PLAN TACTICAL OPERATIONS USING THE MI
D	MANEUVER	ART7.4	PLAN TACTICAL OPERATIONS USING THE MI
D	COMMAND AND CONTROL	ART7.4	PLAN TACTICAL OPERATIONS USING THE MI
D	MANEUVER	ART7.4	PLAN TACTICAL OPERATIONS USING THE MI
D	COMMAND AND CONTROL	ART7.4	PLAN TACTICAL OPERATIONS USING THE MI
D	MANEUVER	ART7.4	PLAN TACTICAL OPERATIONS USING THE MI

Buttons: < Back, Next >, Finish

Message Data Input

Fill in the desired information. Click Next to add more or Finish to exit.

Transmission Means: Data

BOS: AIR DEFENSE

Task: [Empty]

Information Exchange Term: [Empty]

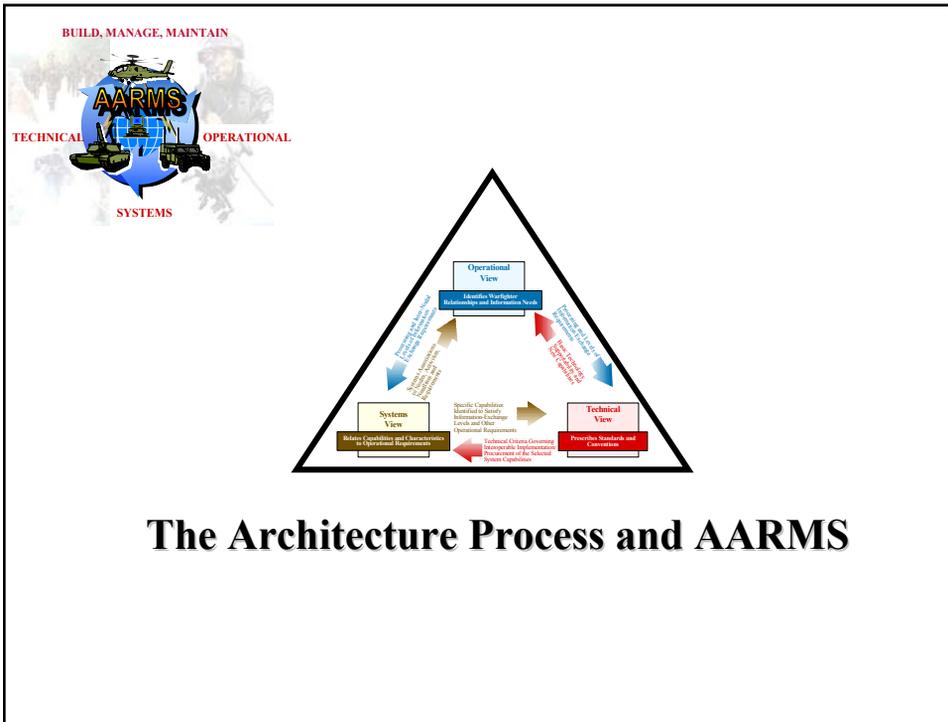
Communication Product Type: [Empty]

Select Communication Product: [Empty]

Code	Name	Source
IN2.4.1.1	PROVIDE WORLDWIDE NATIONAL STRATEGIC INDICATIONS AND WARNING	UJTL, +4.8
IN2.4.2.2	PROVIDE CURRENT INTELLIGENCE TO NATIONAL STRATEGIC PLANNERS AND DECISION MAKERS	UJTL, +4.8
IN2.4.2.3	PROVIDE GENERAL MILITARY INTELLIGENCE TO NATIONAL STRATEGIC PLANNERS AND DECISION MAKERS	UJTL, +4.8
IN2.4.2.4	PROVIDE INTELLIGENCE FOR NATIONAL STRATEGIC TARGETING	UJTL, +4.8
IN2.4.3.5	PROVIDE SCIENTIFIC AND TECHNICAL INTELLIGENCE FOR R&D AND FORCE PLANNING	UJTL, +4.8
IN2.5	DISSEMINATE AND INTEGRATE NATIONAL STRATEGIC INTELLIGENCE	UJTL, +4.8
IN2.6.1	PROVIDE EMPLOYED INTELLIGENCE PRODUCTS TO NATIONAL STRATEGIC PLANNERS AND DECISION MAKERS	UJTL, +4.8
IN2.6.2	PROVIDE FOLLOW-ON INTELLIGENCE SUPPORT TO NATIONAL STRATEGIC PLANNERS AND DECISION MAKERS	UJTL, +4.8

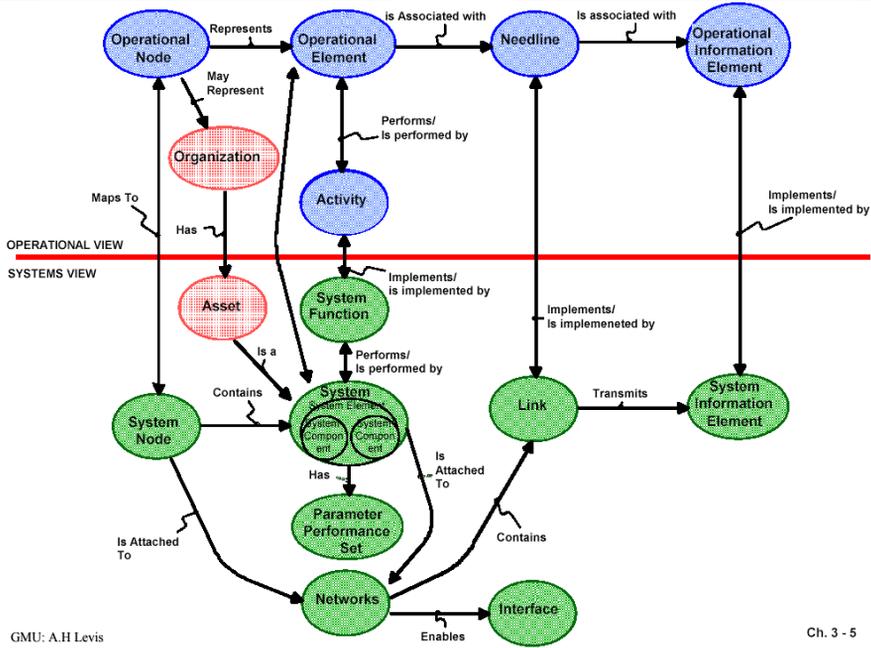
Buttons: < Back, Next >, Finish

Diagram B



The Architecture Process and AARMS

Key Entities and their Relationships



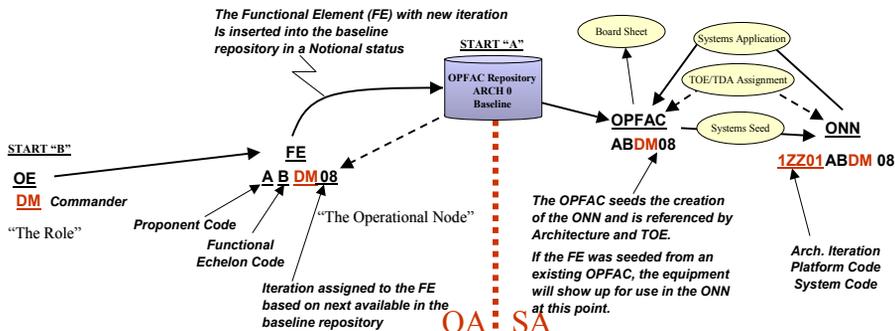
AARMS Requirements Traceability from OA to SA

OE: Operational Element. The OE represents the **ROLE** assigned to a node. OE's are associated with functions and tasks. OE's in AARMS are stored in a standardized and managed look up table.

FE: Functional Element. An OE that has been assigned a functional echelon and a functional Proponent (Formally known as the "candidate OPFAC"). FE's are nodes and use the assigned **ROLE**.

ONN: Operational Networked Node. The physical manifestation of the operational and functional elements which includes the **platform**, c4 systems, and personnel. Systems and Networks are applied to the ONN to support warfighter operational requirements. ONN's may have systems pre-assigned based on the OPFAC that "seeds" it's creation.

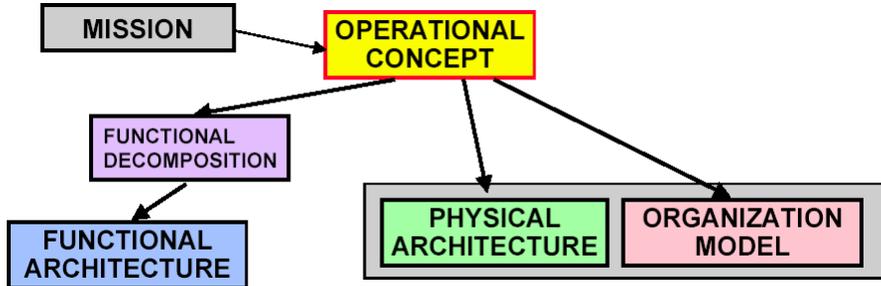
OPFAC: Operational Facility. The C4 subset of the ONN. OPFACs are used to manage C4 equipment requirements in the Repository. They can be re-used and applied to many Architectures, TO&E's, and TDA's



Elements of Architecture Development

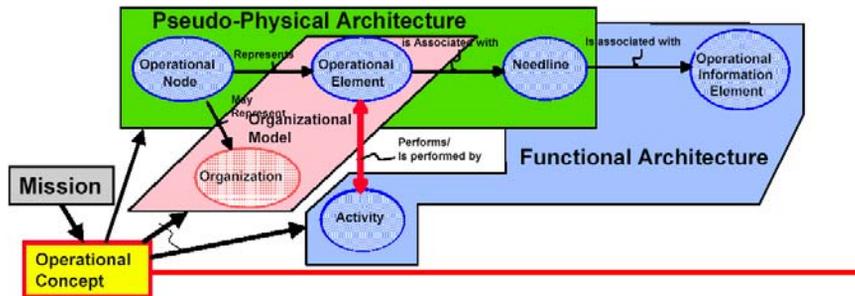
Defining Functional, Organizational, Systems Architectures

- A Functional Architecture based on activities and information flows
- Physical Architecture with System Nodes and Links
- An Organizational Model



GMU: A.H Lewis

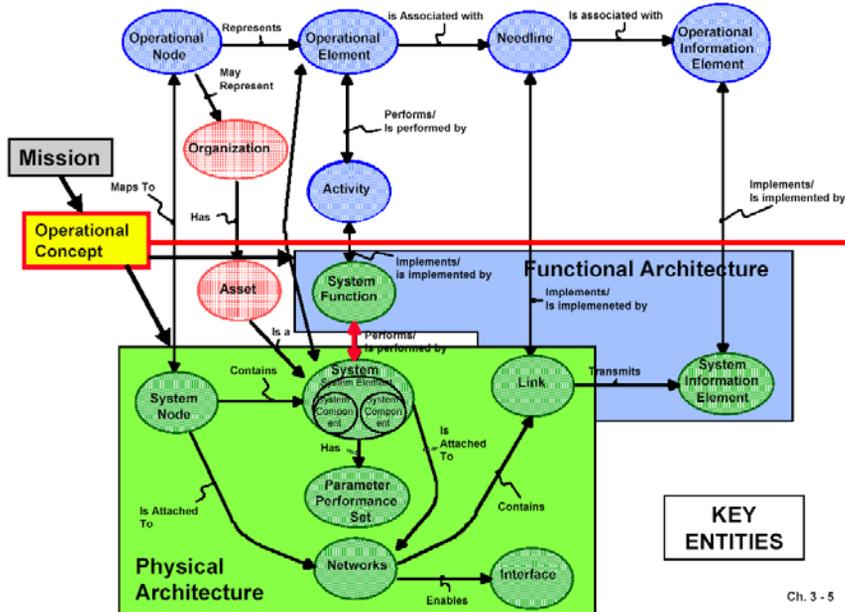
Operational Architecture Development and Key Entities



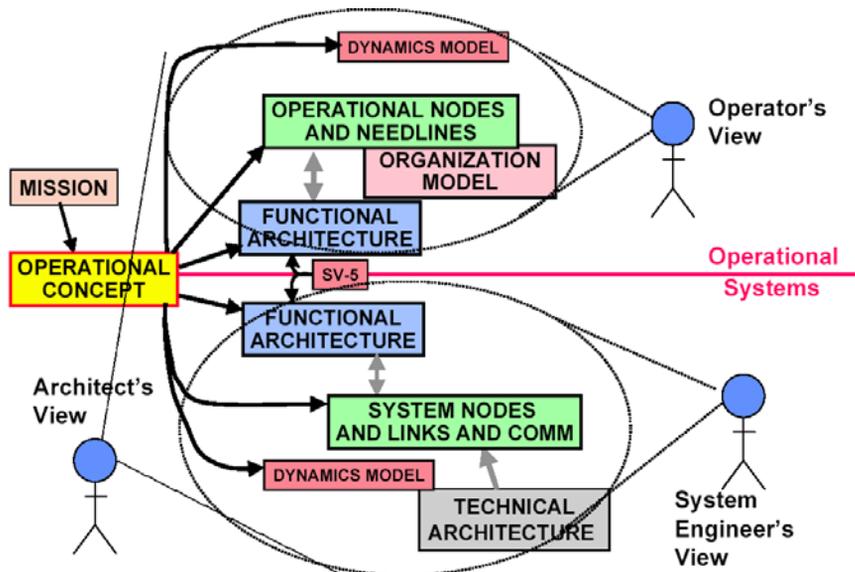
KEY
ENTITIES

GMU: A.H Lewis

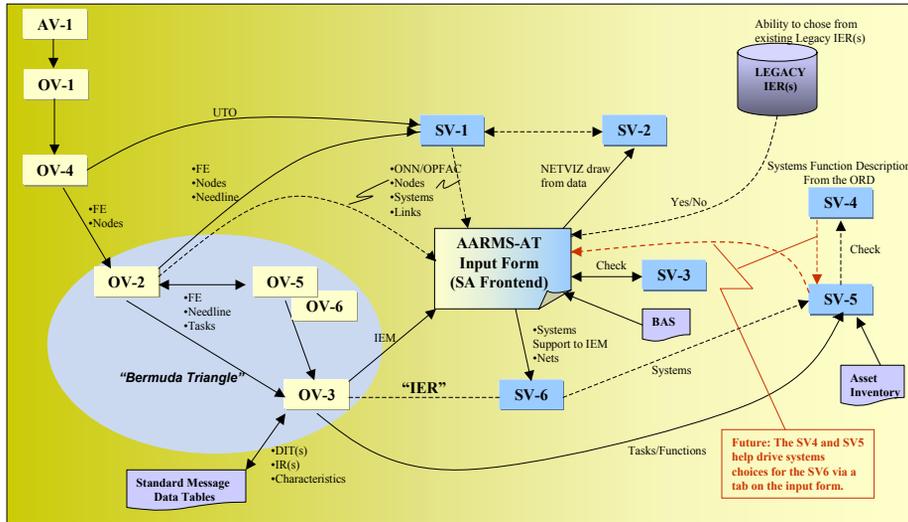
Systems Architecture Development and Key Entities



Process and Perspective



How is Operational to Systems Integration Accomplished



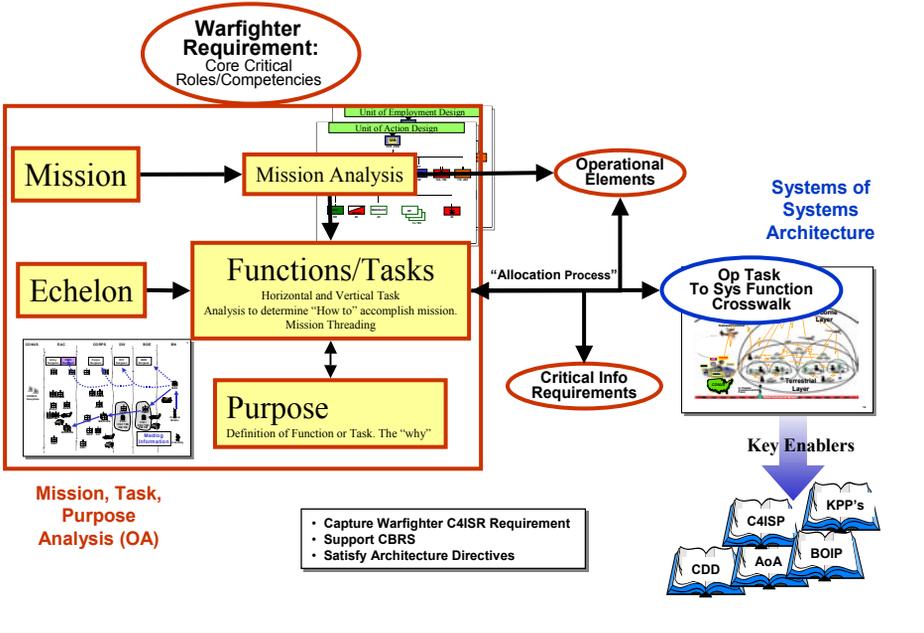
“Operationalizing the Architecture” Process

Architecture Development = Operationalizing the Architecture

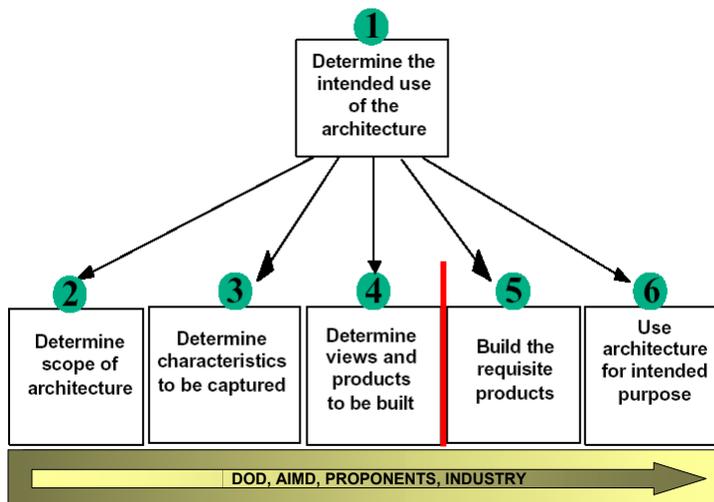
- Architecture development is linked to the CBRS process
- Warfighters provide the operational concept
- Concepts are developed and refined through Operational Views (OV)
 - Enabled by *mission, task, and purpose* analysis
 - Facilitates a common understanding of the concepts
- DTLOMS-PF enabling solutions are developed and refined through Systems Views (SV)

“Operationalizing the Architecture” is about warfighter requirements and enabling solutions

“Operationalizing the Architecture” Process

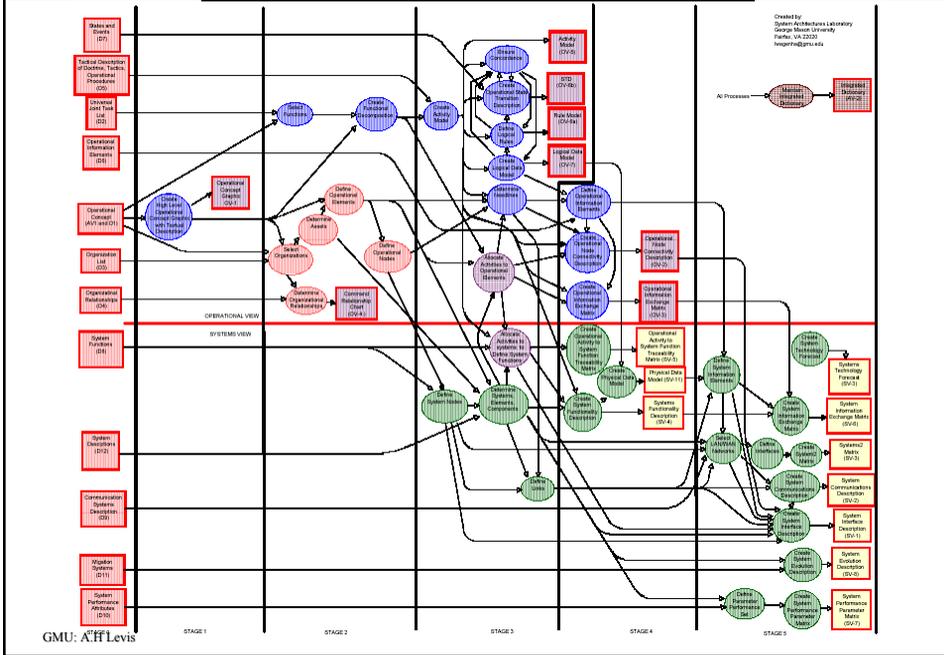


Architecture Development Process

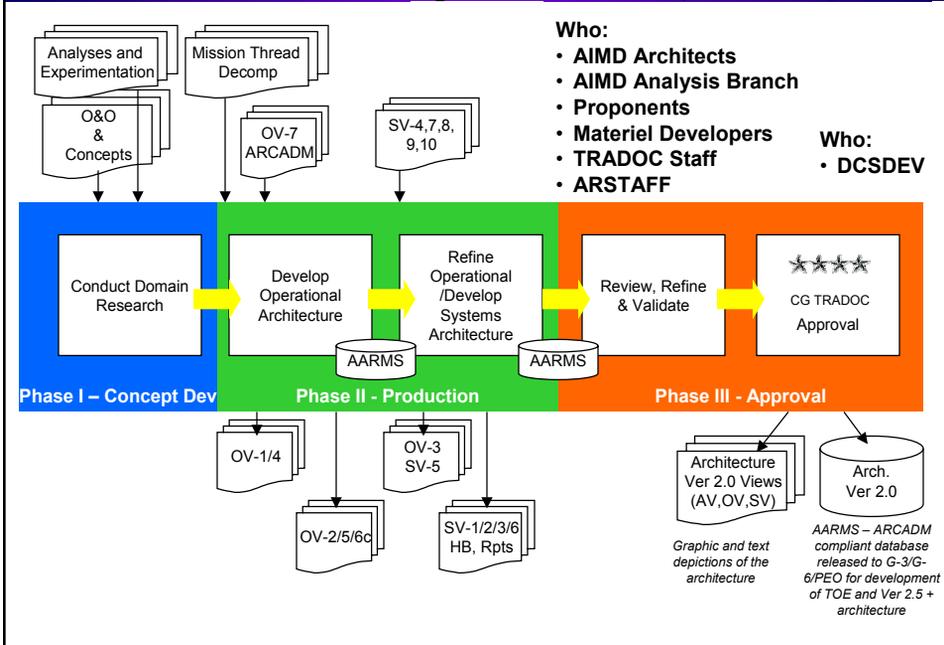


DOD Framework version 1.0

The Production Phase (Six Stage Process)



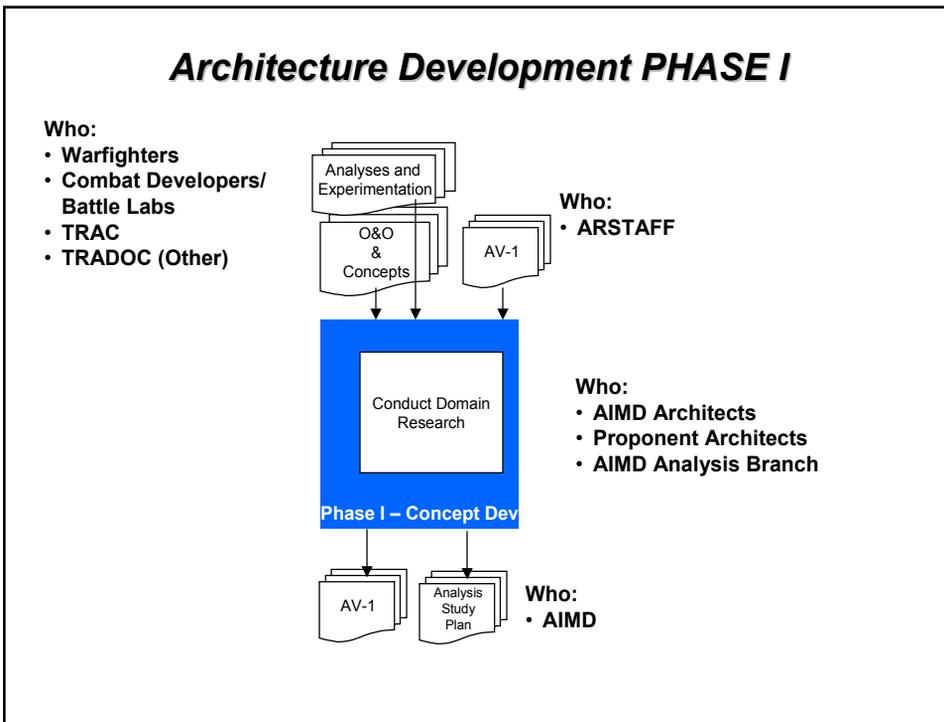
Architecture Development Process (Phase III)

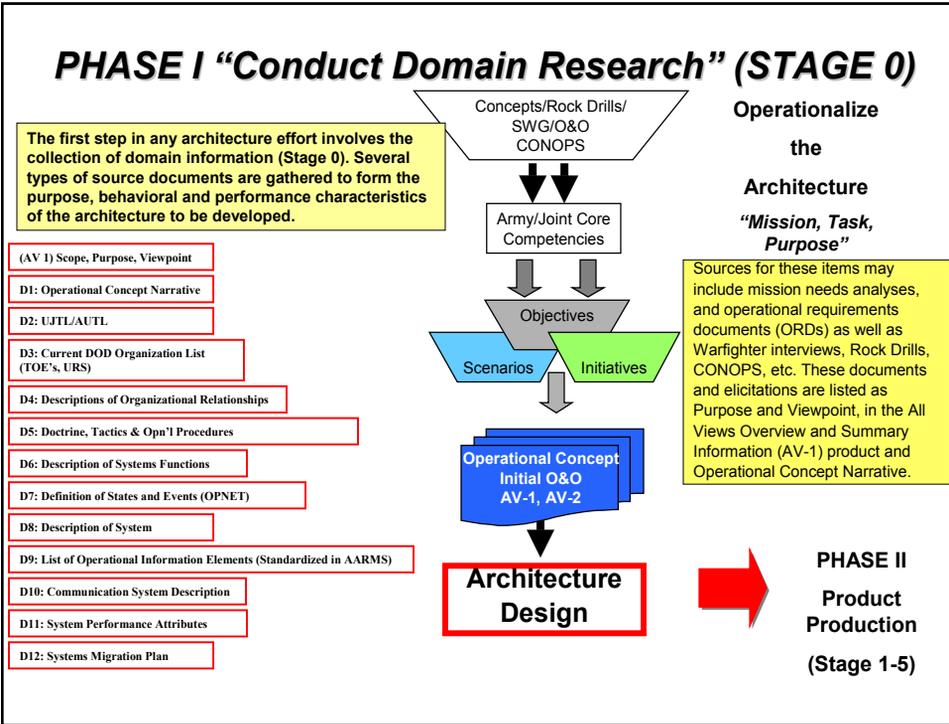


BUILD, MANAGE, MAINTAIN



Lesson #1 Architecture Development Phase I (Stage 0 Development)





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TECHNICAL OPERATIONAL

SYSTEMS

Architecture Development PHASE I

Stage 0 Architect Tasks

- Log-In to AARMS (Chapter 1)
- Create/Edit an Architecture Project (Chapter 2)
 - The Architecture Browser
 - Create a new project
 - Architecture Properties
 - Assign permissions
- Reuse existing architecture data from other projects (Chapter 11)

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 TECHNICAL OPERATIONAL
 SYSTEMS

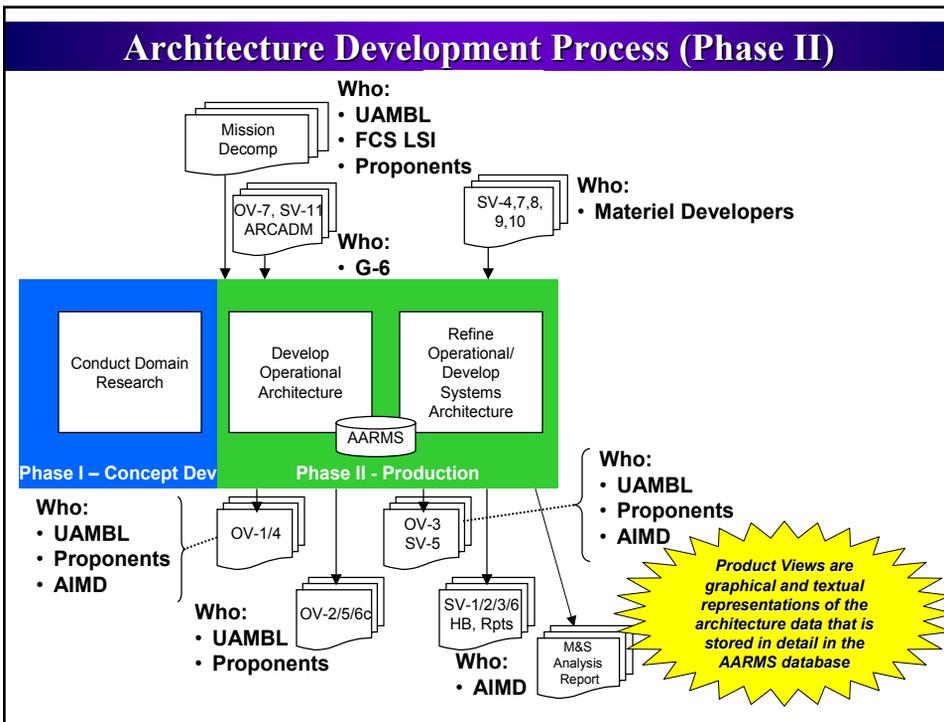
Lesson #2

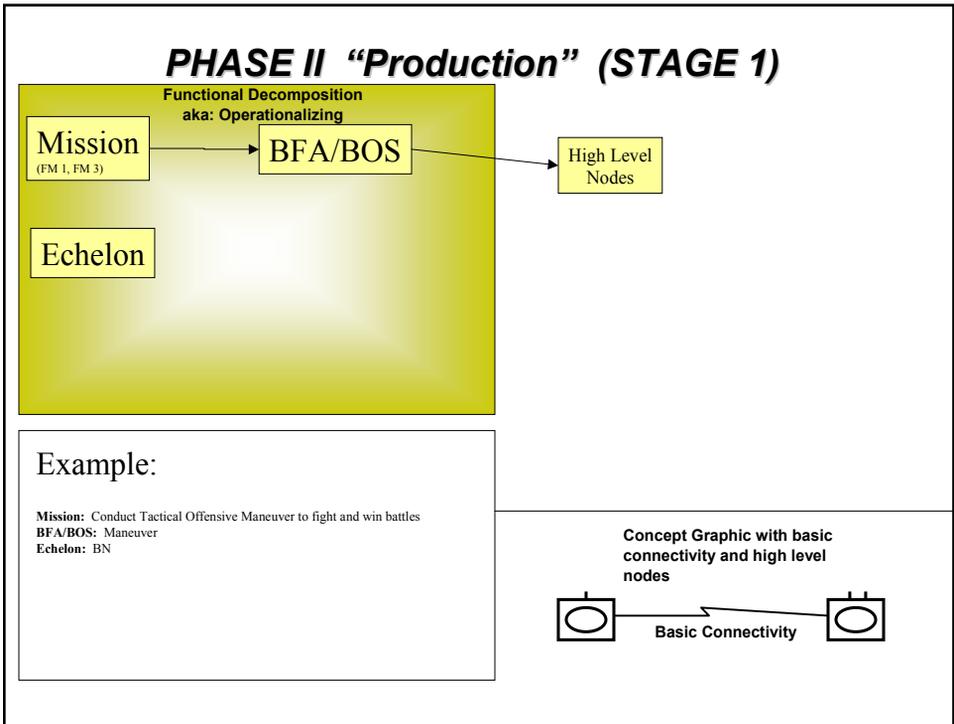
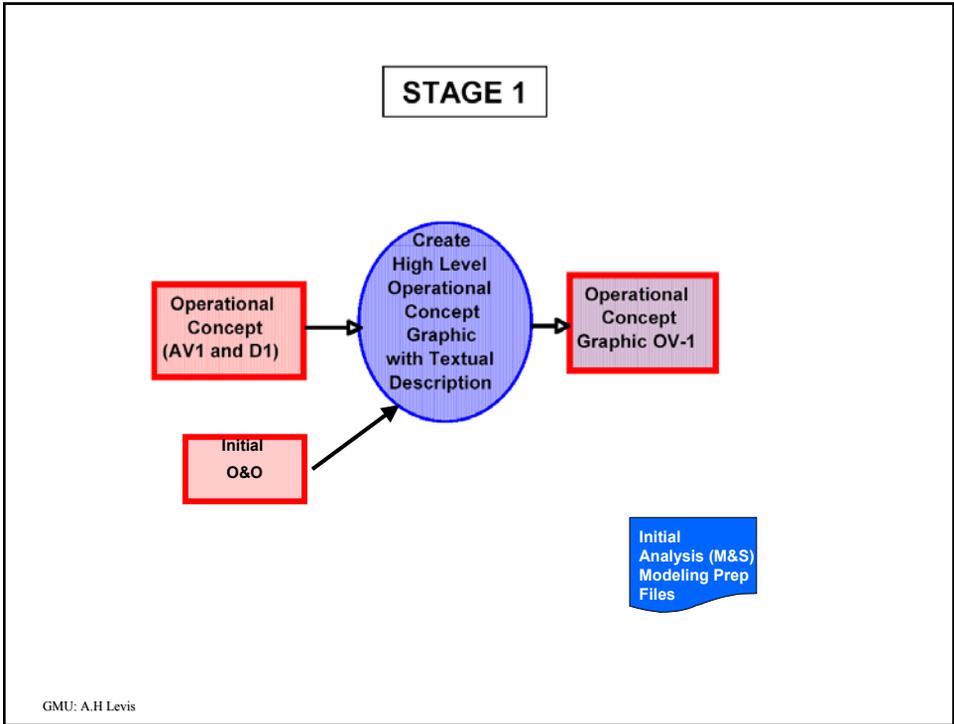
Architecture

Development Phase II

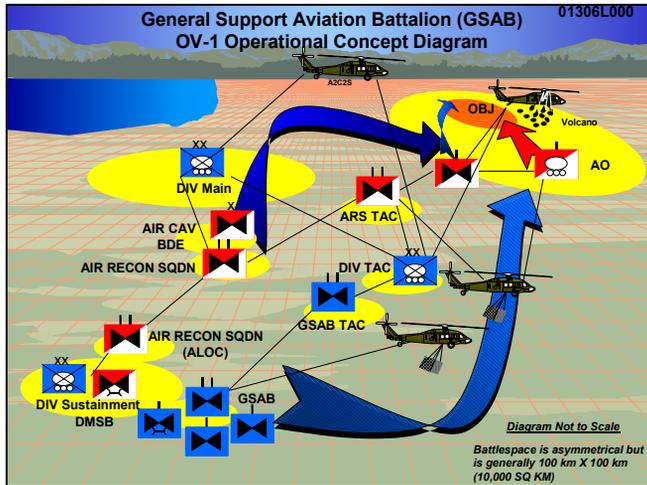
(The Six Stage Development Process)

Stage 1





OV-1: Operational Concept Description



Currently built in PowerPoint or other graphic program and stored in AARMS as a document file.

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SYSTEMS

Architecture Development PHASE II

Stage 1 Architect Tasks

- Import/Store/View/Edit Files in AARMS (Chapter 3)

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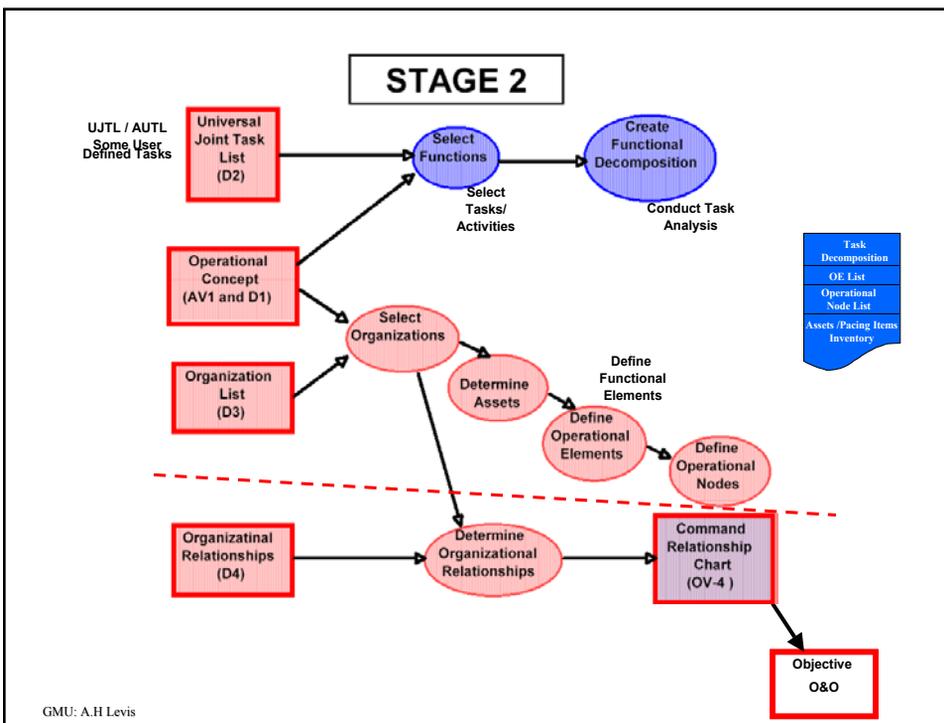


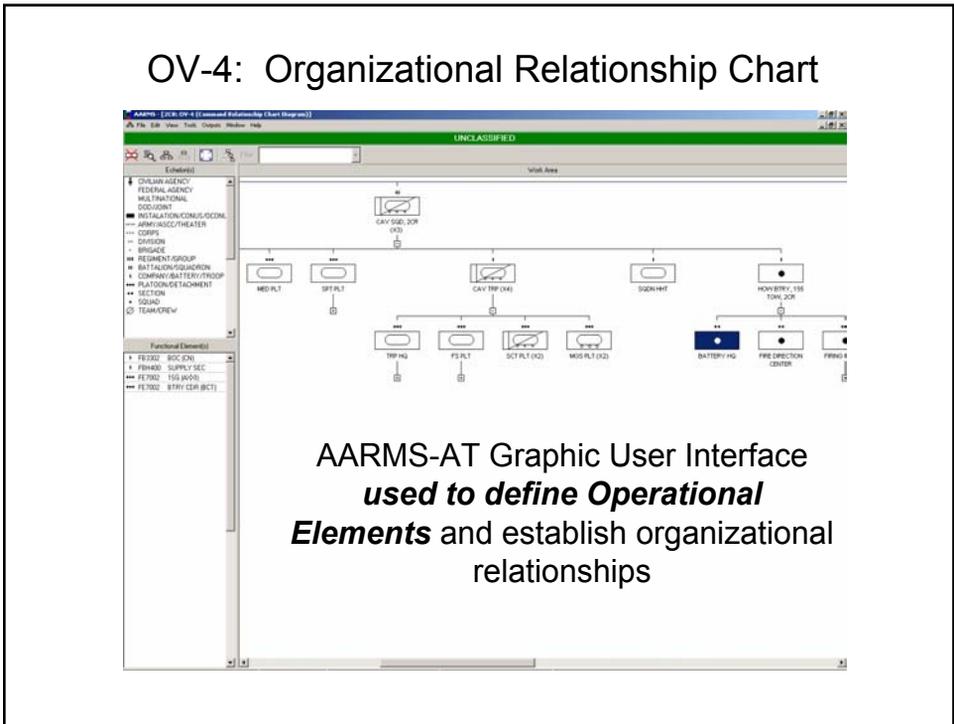
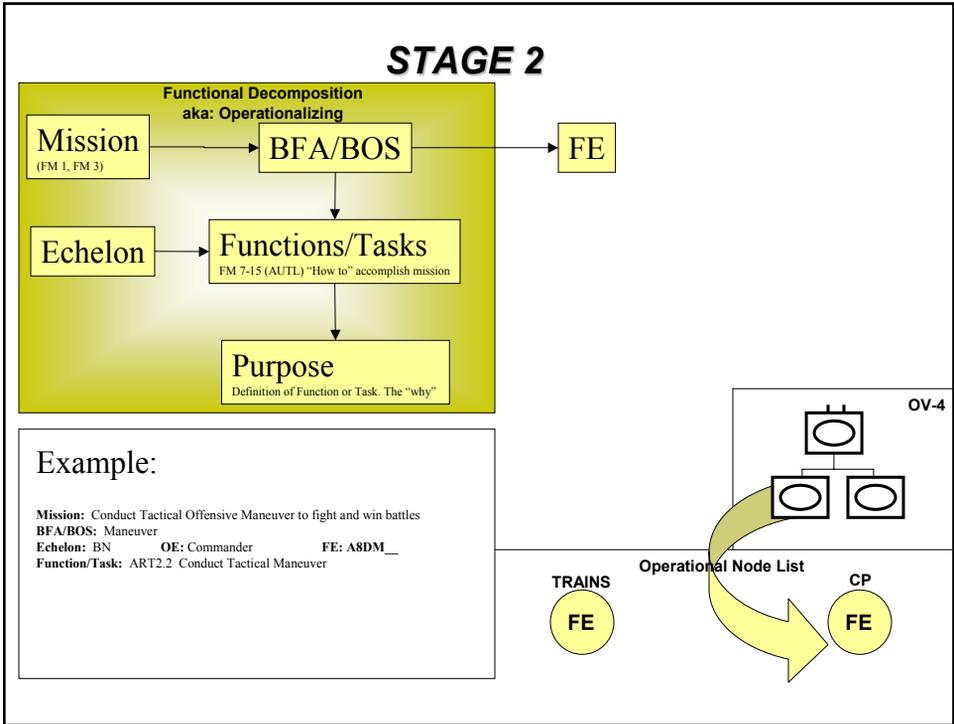
Lesson #3

Architecture

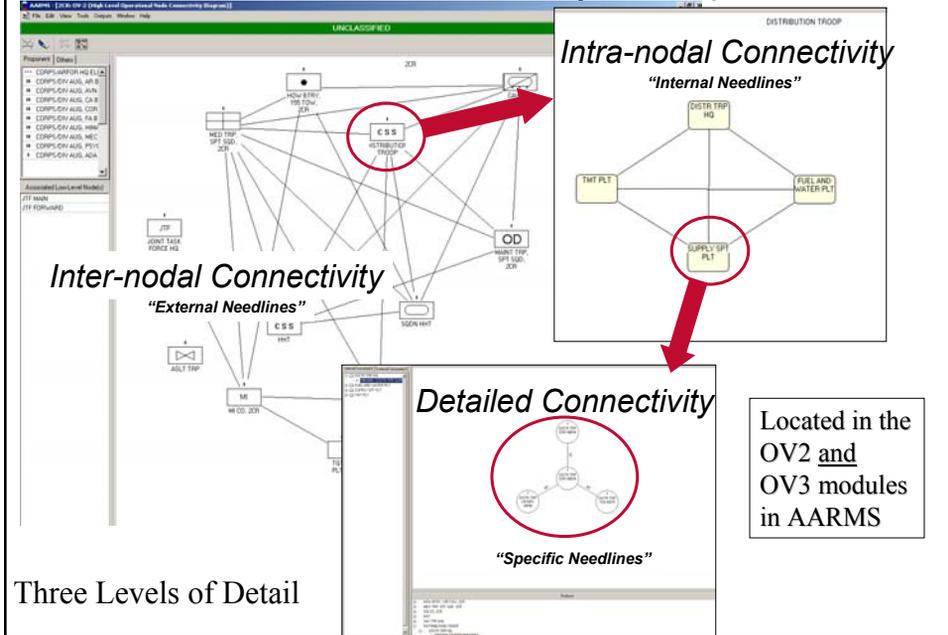
Development Phase II

(Stage 2 Development)





OV-2: Node Connectivity Description



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Architecture Development PHASE II

Stage 2 Architect Tasks

- Create Command Relationship Diagrams, OV4 (Chapter 4)
- Create Functional Elements (Chapter 5)
- Edit Command Relationship Diagrams, OV4 (Chapter 6)
- Command Relationship Chart Re-use (Chapter 7)

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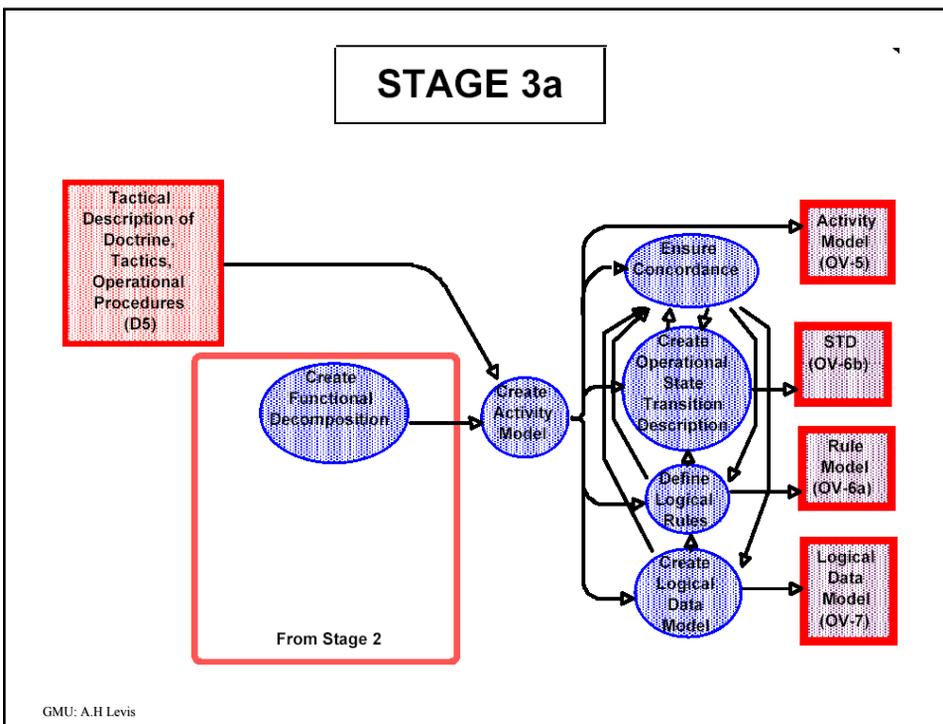


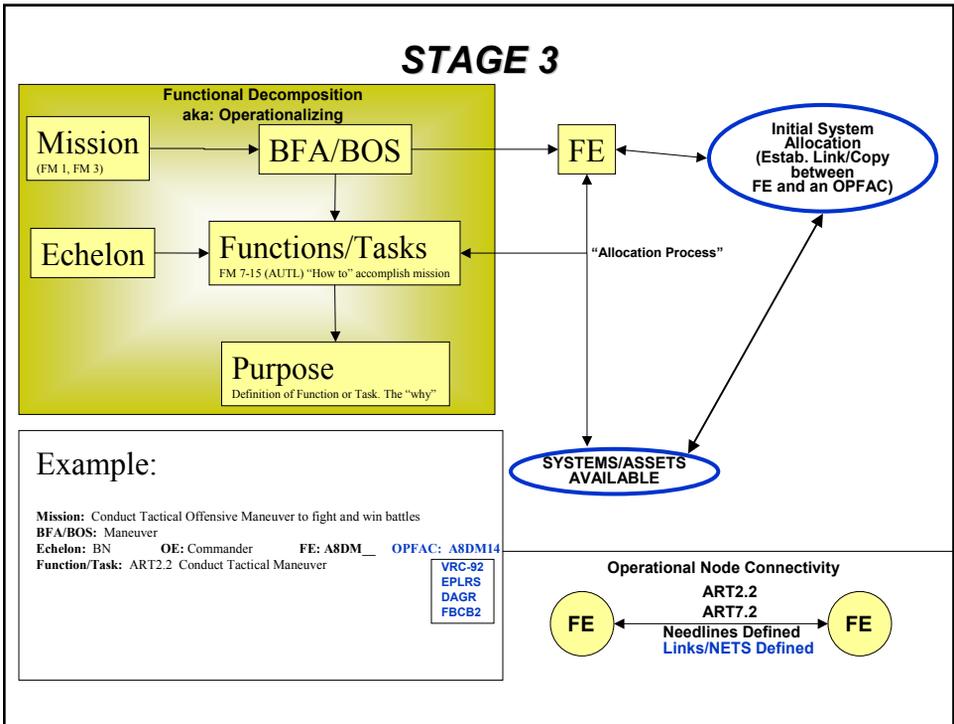
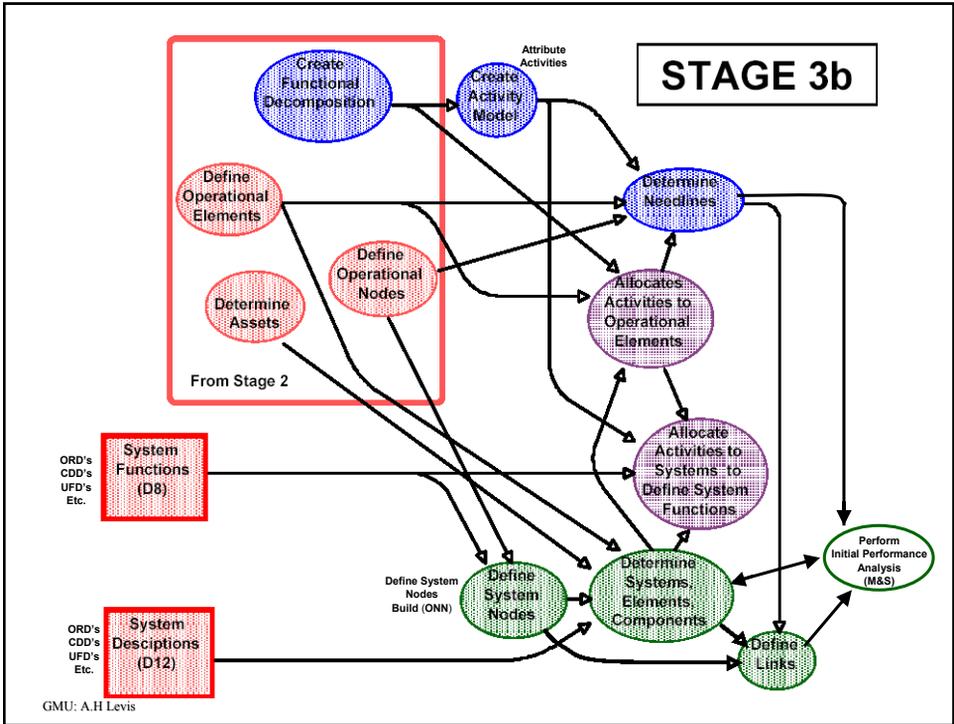
Lesson #4

Architecture

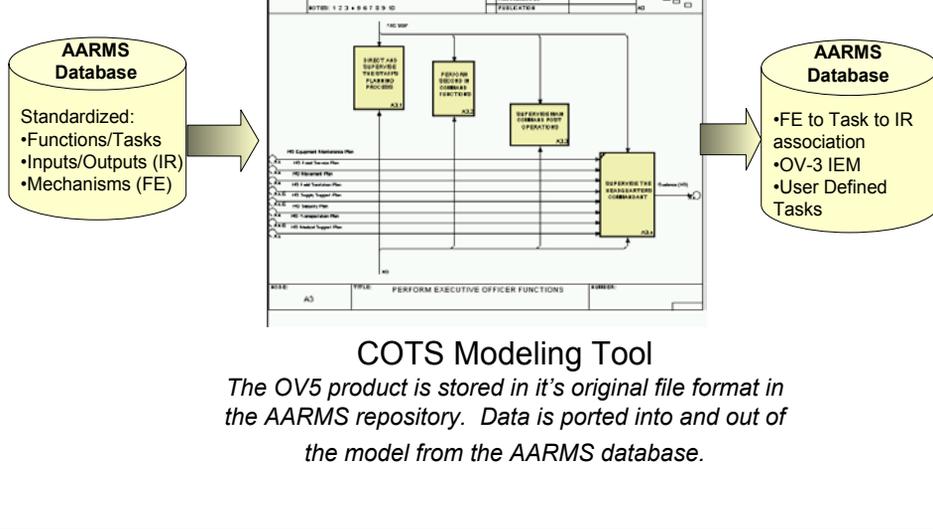
Development Phase II

(Stage 3 Development)

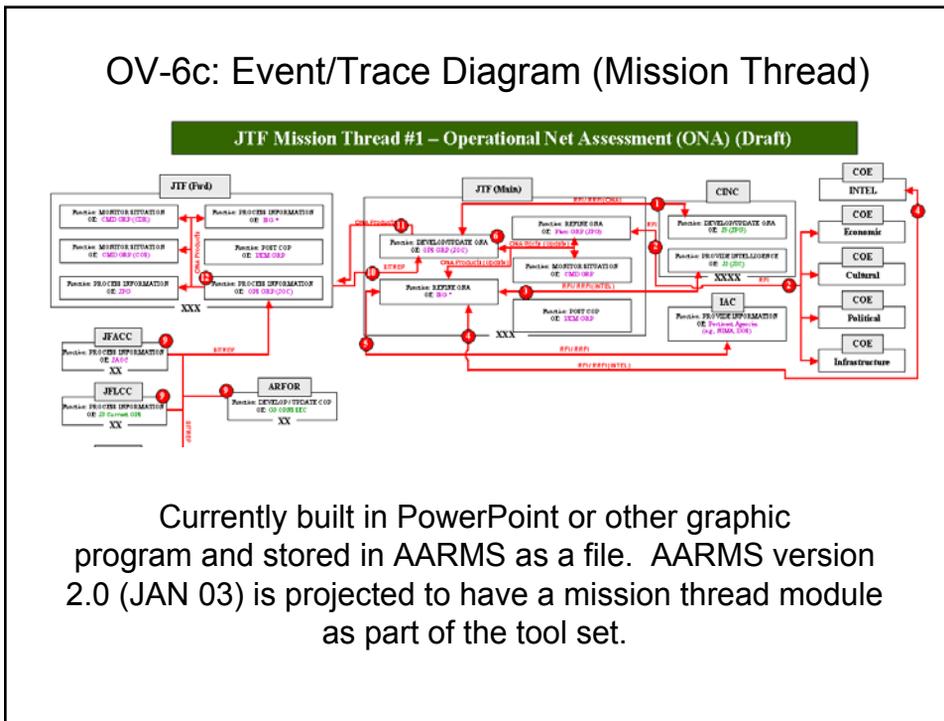




OV-5: Activity Model



OV-6c: Event/Trace Diagram (Mission Thread)



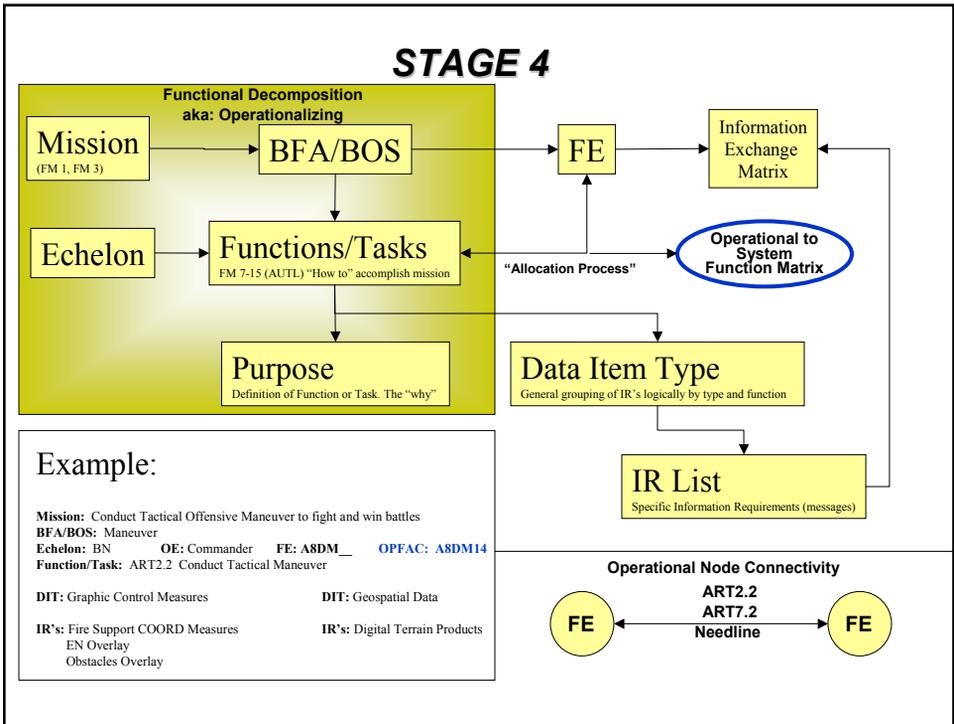
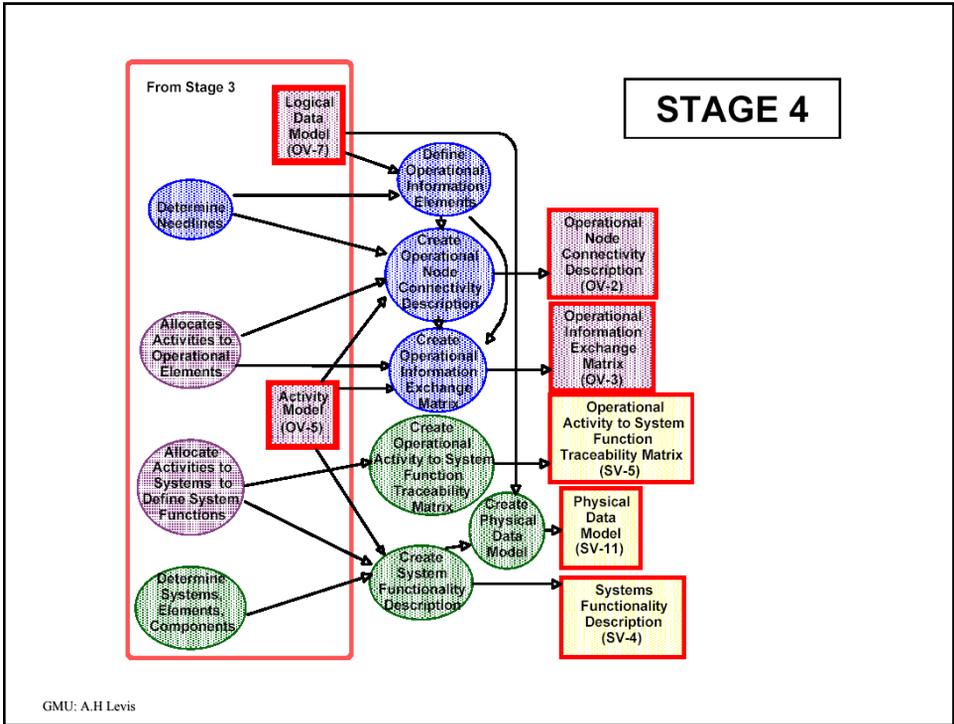


Architecture Development PHASE II Stage 3 Architect Tasks

- Create Node to Node Connectivity Diagram, OV2 (Chapter 8)
- Conduct Activity Modeling using BPwin (AllFusion) and AARMS (Chapter 9)
- Develop the Information Exchange Matrix, OV3 (Chapter 10)
- Defining Operational Information Elements (Message Data Editor, Chapter 33)
- The Logical Data Model, OV7
 - ERwin model based on the OV5
- Navigating the System Architecture Tool Set (Chapter 14, 15)
 - Menus
 - Viewing Architecture Data
- Build Operational Network Nodes (Chapter 16)
- Create Systems Architectures (Chapter 17)



Lesson #5 Architecture Development Phase II (Stage 4 Development)



SV-5: Op. Activity to System Function Matrix

	A	B	C	D	E	F	G	H	I	J	K	L
1	Enblon	Core_Compntng	Element of Combat Power	Task	Task Name	C2	MANEUVER	INTELLIGENCE	FIRE SUPPORT	AIR/DEFENSE	INFO-WAR	CSS
2	EOE	Conduct offensive tactical maneuver to fight and win battles and engagements	C2	AR17.1	Establish a Command Post (resource with network C2 systems and staff and provide BCDTM)	●						
3	EOE	Conduct offensive tactical maneuver to fight and win battles and engagements	C2	AR17.2.2	Process relevant information to create a Common Operational Picture	●	●	●	●			●
4	EOE	Conduct offensive tactical maneuver to fight and win battles and engagements	C2	AR17.2.3	Display a Common Operational Picture	●	●	●	●			●
5	EOE	Conduct offensive tactical maneuver to fight and win battles and engagements	C2	AR17.3.1	Provide battle damage assessment (BDA) to the commander to enable him to make decisions on application of combat power	●	●	●				
6	EOE	Conduct offensive tactical maneuver to fight and win battles and engagements	C2	AR17.4.3	Assess CDR	●						
7	EOE	Conduct offensive tactical maneuver to fight and win battles and engagements	C2	AR17.4.4	Allow the commander to direct attack of targets			●	●			
8	EOE	Conduct offensive tactical maneuver to fight and win battles and engagements	FOP	AR16.2	Process tactical aerial targets (Provide aerial threat early warning to at-risk forces)						●	
9	EOE	Conduct offensive tactical maneuver to fight and win battles and engagements	FOP	AR16.3	Destroy aerial targets (Execute air defense against enemy air threats, counter aerial RSTA)						●	
10	EOE	Conduct offensive tactical maneuver to fight and win battles and engagements	FOP	AR16.11.1	Conduct Drenching Operations	●	●	●	●			●
11	EOE	Conduct offensive tactical maneuver to fight and win battles and engagements	Fire	AR17.2.1	Immediatly responsive fires using readily available communications	●	●	●	●			
12	EOE	Conduct offensive tactical maneuver to fight and win battles and engagements	Fire	OP1.17	Employ FSCMs to ensure responsive fires and prevent fratricide	●		●				
13	EOE	Conduct offensive tactical maneuver to fight and win battles and engagements	Maneuver	AR17.2	Conduct tactical maneuver (control forces to maintain momentum, control decisive force at decisive point and time, control threat)	●	●					●
14	EOE	Conduct offensive tactical maneuver to fight and win battles and engagements	Maneuver	AR17.2.2	Conduct actions on contact (Develop situation out of contact (GDF/Maneuver integration), seize and retain the initiative)	●	●					
15	EOE	Conduct offensive tactical maneuver to fight and win battles and engagements	Maneuver	AR17.4	Conduct direct fires (evolution provide Close Support to ground maneuver)	●	●	●	●			
16	EOE	Conduct offensive tactical maneuver to fight and win battles and engagements	Support	AR16.12	Distribution Management	●						●
17	EOE	Conduct offensive tactical maneuver to fight and win battles and engagements	Training	AR17.2	Develop the Common Operating Picture (COP) (horizontally integrate BDA horizontally with System of Systems forces)	●	●					
18	EOE	Conduct offensive tactical maneuver to fight and win battles and engagements	Training	AR17.4.3	Developing Commanders Critical Information Requirements	●						

BUILD, MANAGE, MAINTAIN

TECHNICAL OPERATIONAL

SYSTEMS

Architecture Development PHASE II

Stage 4 Architect Tasks

- Develop the Information Exchange Matrix, OV3 (Chapter 10)
- Produce the Operational Activity to System Function Traceability Matrix, SV5
- The Systems Functionality Description, SV4
- The Physical Data Model, SV11
 - The physical schema base on the OV7, Logical Data Model

BUILD, MANAGE, MAINTAIN

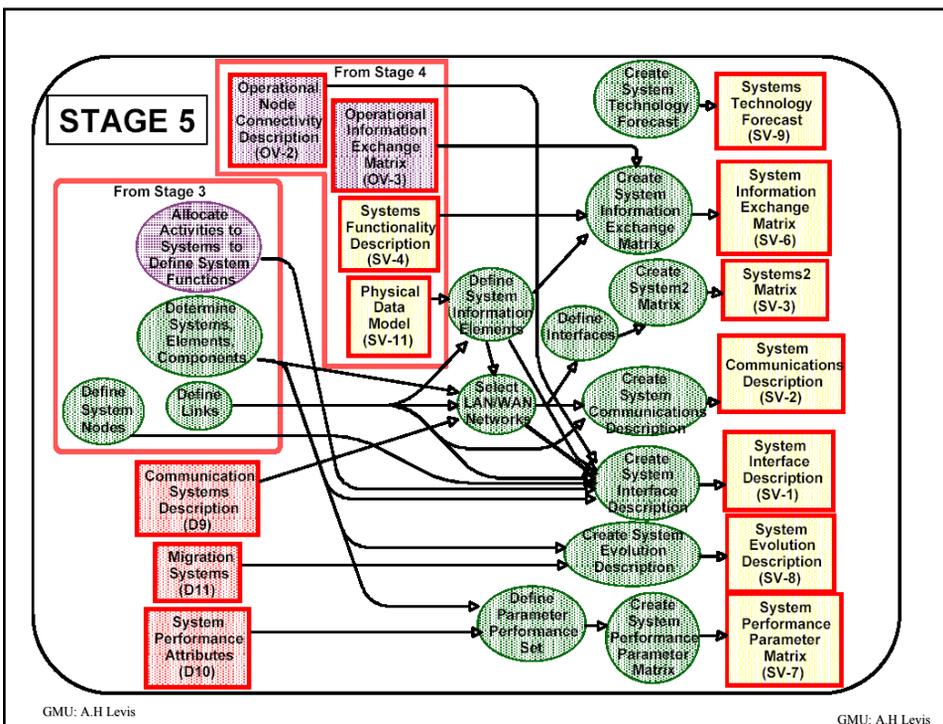


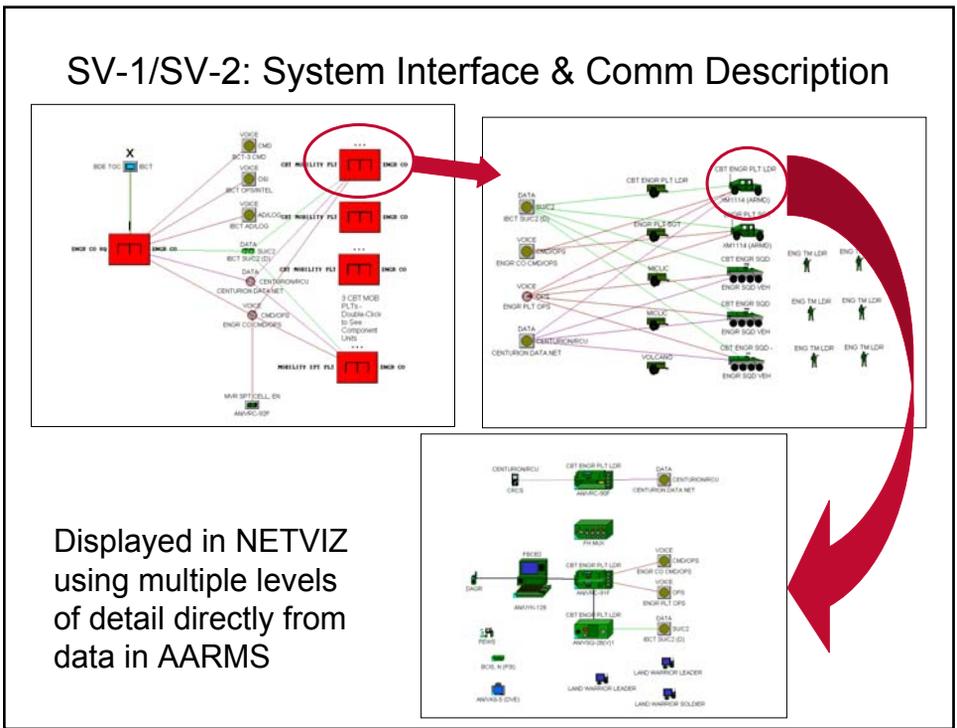
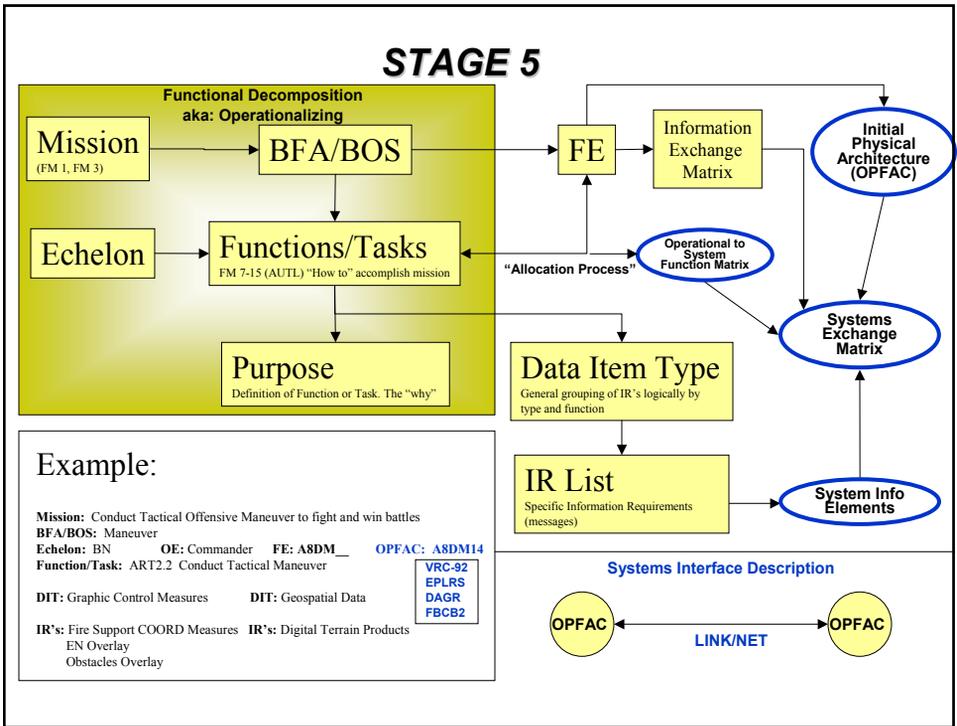
Lesson #6

Architecture

Development Phase II

(Stage 5 Development)





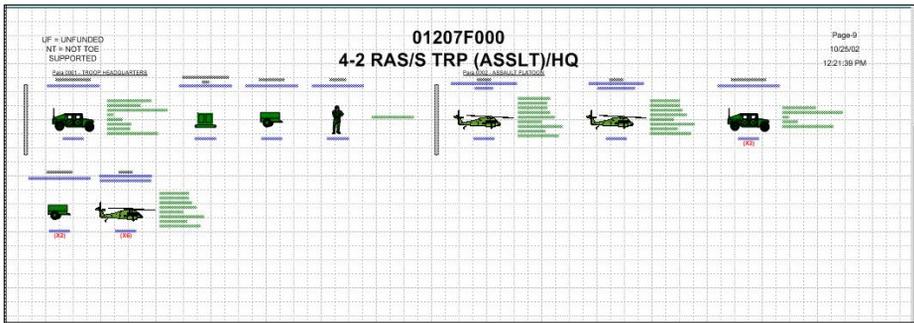
BUILD, MANAGE, MAINTAIN



Architecture Development PHASE II Stage 5 Architect Tasks

- Building System Interface Descriptions, SV1, and Systems Communications Descriptions, SV2 using AARMS data and NETVIZ
- Create/Use the System to System matrix, SV3
- The System Data Exchange Matrix, SV6

“Horse Blanket” Report



Non standard report used by many in the architecture and force development community

Core Systems Quantity Report

All Systems Count with Components for SBCT-1

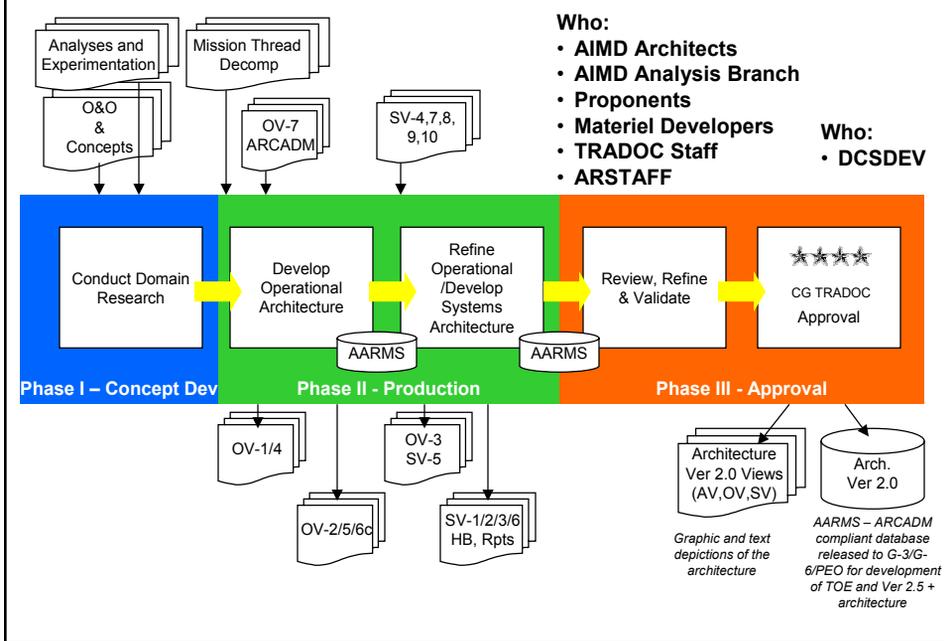
LN	Short Name / Description and Remarks	LN	QTY	Found	TR
01304	ADZ		1	Yes	Yes
	AIR DEFENSE SYSTEM (REGULATOR) (ADZ)				
	System Component: FR MODEM	LN: 80060	Total Qty: 1		
	System Component: CTRC HOPE/STATION	LN: 80061	Total Qty: 1		
	System Component: PROTRAC/LSBR	LN: 20188	Total Qty: 1		
01305	COMMUNICATIONS CONTROL SET (CCS): AN/TRQ-182		1	Yes	Yes
	COMMUNICATIONS CONTROL SET (CCS) (AN/TRQ-182)				
	System Component: ANQD-240	LN: 83604	Total Qty: 1		
	System Component: COM/PWR. TACTICAL (ANQD-240) (ANQD)	LN: C7175	Total Qty: 1		
	System Component: FUNC.2 (MANAGEMENT OPERATIONS) (ANQD-240)	LN: 20020	Total Qty: 1		
	System Component: TDC/LLI	LN: 80036	Total Qty: 1		
	System Component: ANQAC-104 (DD)	LN: 80037	Total Qty: 1		
	System Component: ANQAC-104 (DP)	LN: 80040	Total Qty: 1		
	System Component: ANQD-2 (A) (P) (ANQD)	LN: 14987	Total Qty: 1		
	System Component: SPQD-200B (ANQD)	LN: 20882	Total Qty: 1		
	System Component: PROTRAC NETWORK	LN: 80039	Total Qty: 1		
	System Component: TA-242	LN: 04881	Total Qty: 3		
83201	AN/GRC-240		1	Yes	Yes
	RADIO SET (AN/GRC-240)				
	System Component: ANQAC-104 (DD)	LN: 80037	Total Qty: 1		
	System Component: SPQD-200B (ANQD)	LN: 20882	Total Qty: 1		
	System Component: TDC/LLI	LN: 80036	Total Qty: 1		
QUANTITY TOTAL					1
PARTIAL QUANTITY TOTAL					1

Non standard report used by many in the architecture and force development community



Lesson #7 Architecture Development Phase III (Architecture Management)

Architecture Development Process (Phase III)



BUILD, MANAGE, MAINTAIN



Architecture Development PHASE III Architecture Management

- Locking an Architecture (Chapter 11)
- The Management Tool Set
 - OPFAC manipulation (Chapters 23-28)
 - Reports (Chapter 30)
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