Homeland Defense and Civil Support Capabilities-Based Assessment (HD/CS CBA)

Integrated Architecture (IA)
Overview

- HD/CS CBA Tasking
- Role of Integrated Architectures (IA) in a CBA
- Utilizing DODAF 2.0 - “Fit for Purpose” to support CBA
- Architecture Development Methodology
- Architecture Overview
- Demo Scenario Animation Capability
- Sharing the Integrated Architecture with interested stakeholders
- Architecture Utility Beyond the CBA
- Summary
HD&CS CBA Tasking

- NORAD/USNORTHCOM tasked by DepSecDef SEP07 to lead a 14 month CBA for HD/CS
- HD/CS CBA identified as one of DOD’s Top 25 Transformational Initiatives to be completed by DEC08
- CBA Purpose:
  - Examine DOD Homeland Defense and Civil Support missions
  - Identify DOD required capabilities and tasks to successfully perform the HD/CS missions (*Functional Area Analysis*)
  - Utilize approved scenarios as the backdrop to measure DOD’s ability to perform the mission
  - Determine mission area capability gaps (*Functional Needs Analysis*)
  - Develop recommendations for gap closure
Analytical Methodology for the HD/CS CBA

- Size (DOD-wide) and scope (breadth of missions involving Homeland Defense and Civil Support) were significant challenges
- CBA Team organization - Six Working Groups: Air and Space, Defense Support to Civil Authorities, Cyber, Land, Maritime and Mission Assurance
- Integrated Architecture Team role: Provide analytical rigor to support the CBA development and support post-CBA resource allocation decisions
- Views developed (ideally suited for DODAF 2.0 “Fit for Purpose”):
  - 13 Operation Concept Graphics (OV-1s)
  - 135 Operational Activity Models (OV-5s)
  - 13 Operational-Event Trace Descriptions (OV-6Cs)
  - 13 Scenario Animations (e.g. cyber attack, asymmetric ballistic missile defense, earthquake, etc.) (Our “Fit-for-Purpose” example of “executable architecture” from DODAF 2.0)
Role of Integrated Architectures in CBA

“The CBA should use the existing DOD Enterprise Architecture and related solution architectures as means of assessing the capability gaps and proposed approaches to mitigate them”.

CJCSM 3170
1 May 2007
Asymmetric Ballistic Missile Defense Scenario OV-1

Per JCIDS, this single OV-1 would have met Integrated Architecture requirements.

Operational (yellow) / System (orange) Nodes:
- N2C2 – NORAD/NORTHCOM Command Center
- UEWR – Upgraded Early Warning Radar
- WAS – Wide Area Surveillance Radar (Future Capability)
- EDS – NORAD Eastern Defense Sector
- AFNORTH – Air Forces Northern
- DSP/SBIRS – Defense Support Program / Space Based Infrared System
- JADOC – Joint Air Defense Operating Center

*Note – Multiple additional information exchanges and C2 nodes are involved in this scenario; these are critical nodes/IEs only.
DODAF 2.0 Viewpoints That “Fit-the-Purpose: for the HD/CS CBA

Architecture viewpoints are composed of data that has been organized to facilitate understanding.
HD&CS CBA Integrated Architecture Development Process

- Identify DOD required HD/CS capabilities and tasks to respond to scenarios (organization and system agnostic)
- Leverage existing overarching Concept Plans, Concept of Operations, EXORDS and Subject Matter Expert inputs to put capabilities and tasks in time-sequence
- Identify primary DOD operational nodes and critical information exchanges for successful scenario execution
- Insert 2015 Family of Systems (where applicable) into the scenario
- Add absolute measures to tasks (proficiency, sufficiency, timeliness, etc.) to assist in capability gap identification
- Utilize the architecture as gap analysis tool; include identified gaps into IA model and Joint Capabilities Document
- Apply unique architecture animation capability to provide a dynamic visualization of scenarios
Overview of HD/CS Integrated Architecture & Scenario Animation Demo

“Dynamic Analyses – sometimes referred to as executable models…examine performance aspects through dynamic simulations.”

“Presenting the architectural data to varied audiences requires transforming the architectural data into meaningful presentations for decision-makers”

DODAF 2.0---Architecture Methodology/Presentation Techniques
Asymmetric Ballistic Missile Defense Scenario OV-1

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Sharing the HD/CS IA with Stakeholders

- DOD Architecture Framework Products
  - 13 OV-1s (*Animated Scenarios)
  - 135 OV-5 Activity Diagrams
  - 13 OV-6C Operational-Event Trace Descriptions

- Mapping to 442 HD/CS Functional Area Analysis (FAA) tasks, 105 Task Level Gaps and 31 Capability Gaps

- Process/Methodology “videos”
  - CBA Methodology
  - FAA Task to Architecture Mapping
  - FNA Task Level and Capability Gap Mapping

- CBA Documents (Study Plan, FAA, FNA, JCD)

- Other relevant JCIDS efforts integrated within the architecture
  - Homeland Air and Cruise Missile Defense FAA/FNA/JCD/FSA
  - Maritime Homeland Defense FAA/FNA/JCD
  - Coast Guard Coalition Warfighter Interoperability Demo (CWID) 2007

Over 320 of these disks have been requested and provided to DOD and DHS external stakeholders
Architecture Utility Beyond the HD/CS CBA

• Next phase of JCIDS
  • Utility for DOTMLPF Change Requests (DCRs)
  • Support follow on Wide Area Air Surveillance Analysis of Alternatives
  • Results in traceability from mission capability/task identification, gap analysis to solutions implementation (whether materiel / non-materiel)
• Mission CONOPS Development
• Exercise scenario/vignettes and visualizations
  • NORAD and Coast Guard Exercise support
• Office of Management and Budget (OMB) Enterprise Architecture Assessment
  • HD/CS IA utilized as a segment architecture for 3 mission areas in FY 11 Budget Guidance
• Supporting other HD/CS-related Initiatives
  • Integrated Unit, Base and Installation Protection (IUBIP) Analysis of Alternatives, National Guard Bureau Study, etc.
We believe this methodology results in defensible resource allocation decisions using an IA as the foundation as envisioned by JCIDS.
Questions?

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Sharing the HD/CS IA with External Stakeholders

***DRAFT***

NORAD and USNORTHCOM Homeland Defense & Civil Support (HD/CS) Capabilities Based Assessment (CBA) Architecture
Version 2.0
30 September, 2008

Distribution authorized to DOD/DHS organizations. Other requests shall be referred to NORAD and USNORTHCOM J8C: (719) 554-4435

Resources on this CD:

Architecture Model
HD/CS CBA Architecture (contains DOD Architecture Products)

Process/Methodology Presentations
HD/CS CBA Architecture Overview (movie that describes overall CBA methodology)
Architecture/Navigation Instructions (describes how to navigate the CD)
FAA Task to Architecture Mapping (methodology specific to the FAA)
FNA Architecture Methodology (methodology specific to the FNA)

Scenario "Animations"
Scenario Architecture Animations (13 animated CBA scenarios)

CBA Products

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Example IA Benefits

Screen Capture from Integrated Architecture Scenario Animation

Operational Nodes
UEWR – Upgraded Early Warning Radar
WAS – Wide Area Surveillance (Future Capability)
EADS – NORAD Eastern Air Defense Sector
CONR – NORAD Continental Region
JADOC – Joint Air Defense Operating Center
*Note – Multiple additional information exchanges and C2 nodes are involved in this scenario; these are critical nodes/IEs only.

Provides framework for gap analysis—asset sufficiency

Multiple Domain Tasks in one scenario – Air/Space, Maritime and Land “Detect”
State Actor Scenario

** Cyber Attack (#15)

** Nuclear-tipped 10 kT SLBM (#1)

** Nuclear-tipped ICBM (#1)

** SLCM w/ non-cont. bio agent (#3)

** 10 kT response (#1)

Bio Attack response (#2)

CHDS – Homeland Defense

NPS – Civil Support

SSSP

** Maritime Domain – Homeland Defense (#4-04)

Cyber Domain – Homeland Defense (#4-05)

Air Domain – Homeland Defense (#4-06)

Land Domain – Homeland Defense (#4-07)