Models & Simulation - Enabled Network Analysis for Enterprise Decision Points

Information Exchange Forum
Session: 2
HQDA CIO/G-6

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Agenda

★ Background
★ Network Analytic Shortfalls
★ Concept
  • Major Questions
  • Analytic Flow
  • Sequencing
★ Study Issues: Fall
★ Study Issues: Spring
★ M&S Mission Recap
Based on discussion between LTG Sorenson and Gen Chiarelli in FY10 it was determined the Army needed an integrated network E2E assessment business process that:

- capitalizes on & aligns network M&S resources & activities
- Informs requirements/acquisition/tech insertion decision points (unity of effort)
- streamlines network solution validation processes to support timely evolution of the network environment to meet mission requirements (synchronization)

Convened network analysis community of interest - Participants: CIO/G6, AMSAA, ASA(ALT), CERDEC, ASEO, Ft Gordon Battle Lab, MITRE, TRAC, AIMD, PEO STRI, PEO I; Coordinated with AMSO, G8, G3 1st Qtr FY 10

G-3 issued Models and Simulation-Enabled Network Analysis to Support Decision Making EXORD 31 May 2011

- TRADOC overarching lead

FY 11-12 Integrated Network Tests EXORD 17 Sep 10 and subsequent Network Integration Evaluations (NIE) Implementation Objectives Memo 13 Apr 11

- Conduct integrated evaluations in order to facilitate programs of record (POR) testing and assess developing and emerging capabilities
Network Analytic Shortfalls

- Network M&S activities not tied to specific Decision Points
- Lack correlation between operational effectiveness & network performance
- No systemic reference points ("As-Is" and "To-Be" Network Architecture)
- No integrated terms of reference across the community
- No systemic data collection for stakeholder community (need to instrument operational networks)
- No holistic process defined with assigned roles and responsibilities across the community
- No systemic investment strategy for on-going cross capability set analysis
What capability gaps should the Army mitigate?
What solutions best mitigate the Army’s gaps?
How do those solutions mitigate gaps?
How many of the materiel solutions should the Army procure, and who gets them?

These questions should be answered to inform decisions for the years covered in the POM.
Spring Analysis

- Refined gaps, anticipated capabilities
- Relevant opn'l conditions

Fall Analysis

- Suggested network design COAs
- Potential trades (for middle three years of POM)

NSWG

POM recommendations

Analysis informs decisions over the span of the POM, with the NSWG guiding analysis and using analytic products to inform recommendations.

NIE

- Gap mitigation
- Emerging gaps
- Network design information
- TTP

Decision information flow
Analysis data/information flow
FY11 Fall Analysis 15/16

FY12 Spring Analysis (17/18)
- Gaps of focus
- Opportunities
- Refined gap statements
- Issues for NIE
- Lessons learned
- Recommendations
- Gaps of focus

FY12 Fall Analysis (16/17)
- High-priority gaps
- Potential solutions
- FY13 Plan
- POM guidance recommendations
- Fielding rec.
- Emerging tech rec.

FY13 Spring Analysis (19/20)
- Network COA
- Trade space

NIE 12.1 (13)
NIE 12.2 (13)
NIE 13.1 (14)
NIE 13.2

Blue text – info/results to feed decisions.
Black text – info to enable further analysis.
Study Issues: Fall

1. Capability gaps. What network capability gaps should current Capability Sets focus on?

2. Technologies. What current technologies exist to address these capability gaps and are attainable between now and FY15 timeframe?

3. Performance. What is the performance difference of each network COA compared to the baseline network?

4. Operational Impact. What is the operational impact difference of each network COA compared to the baseline network?

5. DOTMLPF. What are the DOTMLPF implications associated with each network COA?

6. Cost. What are the costs associated with each network COA and each technology/system?

7. Cost-benefit. What network COA provides best cost-benefit?
1. Capability gaps. What network capability gaps should future Capability Sets focus on?

2. Attainable technologies. What technologies have potential to address these capability gaps and are attainable in the 17/18 timeframe?

3. Performance. What is the performance difference of each network COA compared to the baseline network?

4. Operational impact. What is the operational impact difference of each network COA compared to the baseline network?

5. DOTMLPF. What are the DOTMLPF implications associated with each network COA?

6. Cost. What are the estimated costs associated with each network COA?

7. Cost-benefit. What network COA provides the best cost-benefit?
Execute two Analyses targeting specific PPBES activities:

- Fall 2011 – CS 13/14 and CS 15/16; feeds JCA/2Star Review
- Spring 2012 – CS 11/12 (Baseline) Target CS S&T (CS 17/18 or CS 19/20); feeds development of POM guidance for next cycle

Demonstrate Value to Enterprise Decision-Making

- Fall Analysis – Lay out network performance & operational effectiveness expectations for each cross CS COA with associated cost & risk
- Spring Analysis – Lay out alternative operational & network performance impacts anticipated from adoption of new and emerging technologies versus expansion of BOI of on hand solutions

Refine Cross-organizational Roles & Responsibilities for yearly cross-CS analyses
Backup
Notional Scope of Analytic Efforts

★ Analytic Effort #1 (Jun 11 – Oct 11) parameters:
  - Base Case is CS 11-12 (Reference Point)
  - Analysis of CS 13-14 & CS 15-16 approved COAs (solution sets)
  - Uses the CS 13-14 materiel solution list of the Network Strategy WG (Jun 11)
  - NIE 11.1 Results
  - IBCT Unit Formation (2nd Priority: Div HQ)
  - Phase IV insurgent / COIN
  - JIIM/Coalition context
  - Multi-terrain
  - Multi Level Scenario (MLS)

★ Analytic Effort #2 (Dec 11 – May 12) parameters:
  - Base Case is CS 11-12 (Reference Point)
  - Analysis of CS 17-18 or CS 19-20 approved COAs (solution sets) for S&T priorities; CS 13-14 & CS 15/16 for Operational effectiveness/network performance expectations for RDT&E & OPA priorities
  - NIE 12.1 Results
  - IBCT Unit Formation (2nd Priority: Div HQ; 3rd Priority: SUST Bde)
  - Phase III/IV Operations
  - JIIM/Coalition context
  - Varied terrain
  - Multi Level Scenario (MLS)
Roles and Responsibilities

★ Integrated Team:

- ASAALT SoSE - Develop technical network modeling and analysis in support of operational effectiveness assessments; Develop System Architecture (Network Design) for all options to be analyzed
- DASA (CE) – Convene CBA review board to review the CBA in support of this analysis
- OBT – Identify situations, mission threads and systems that will enable analysis of GFEA Network needs and design
- CIO/G6 – Lead effort to find NM&S tool efficiencies; Provide Technical Architectures (Standards and Protocols) for each capability set
- G3/5/7 – Integrate/synchronize organizations’ analytic activities through an integrated timeline
- G8 – Provide annual resource target in POM for this recurring analysis
- TRADOC – Lead Network Modeling and Analysis efforts; Conduct operational effects analysis of different technical configurations; Provide Operational Architecture support, Integrate/synchronize NM&S analytic efforts
- RDECOM – Provide Network Performance Modeling and Analysis Support; Identify emerging Technologies
- ATEC – Provide empirical network performance data from all testing and evaluations

★ Team Tasks:

- Identify & use Integrated Standardized set of Scenarios
- Identify & use minimum standardized input data set
- Identify & use standardized set of system and operational performance measures.
- Formulate recurring resource requirements & strategy for annual analyses