NDIA 12th Annual Systems Engineering Conference

Organizing for the Future

Army SE Initiatives

ROSS R. GUCKERT
Assistant Deputy for Acquisition and Systems Integration
Assistant Secretary of the Army for Acquisition, Logistics and Technology
Ross.Guckert@us.army.mil
27 October 2009

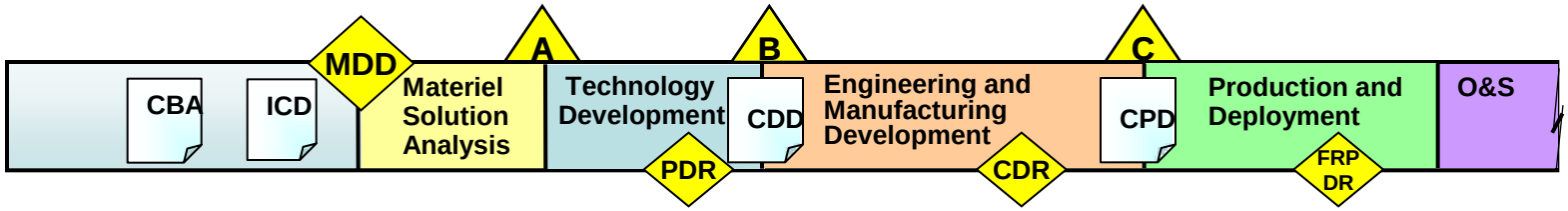
Agenda

- Developmental Planning in the Army
- Army's Capability Package Process
- System Engineering Enablers
  - System-of-Systems Systems Engineering (SoS SE)
  - PEO Integration
- Army Reliability Initiatives

Developmental Planning

in the Army

Army Developmental Planning



- Army Capstone Concept
- Army Expeditionary Warrior Experiment
- Army Evaluation Task Force
- C4ISR On-The-Move

DP: Development Planning
DT&E: Developmental Test and Evaluation
LCS: Life Cycle Sustainment
SE: System Engineering
CBA: Capabilities Based Assessment
CDD: Capability Development Document
CPD: Capability Production Document
ICD: Initial Capabilities Document
MDD: Materiel Development Decision

Army's Capability Package Process

ASA (AL&T)

Army Capability Set Management Process

"Capability Set Life-Cycle"

What can be provided when at affordable price?
- SoS Engineering Analysis/Trades
- SoS Synchronization
- Technical Feasibility
- Inform decisions
- "Bang for the Buck"

Does Capability Set stand up to Oper Analysis?
- Exercise Cap Set through Oper Analysis - leverage analytic tool suite
- Adjust to changes (funding, rqmt, force changes, etc.)
- Assess changes on SoS perf & synchronization
- Re-assess "Bang for the Buck"

DEFINE & DEVELOP

G3 — STEP 1 CABILITY NEEDS ANALYSIS

PRIORITIZE ABILITY EDS

G3 — ESTABLISH CAPABILITY SET PARAMETERS (OPN, TECH, FISCAL)

R-7 Years

FOCUS ON CAPABILITY SEGMENTS

STEP 2 INTEGRATE ARCHITECTURES

STEP3 Fiscal Analysis

STEP 4 SCREEN & ID SOLUTION SET

REFINE

IT FOR CHANGE ENVIRONMENT

EW TECHNOLOGY, ONS/JUONS, FORCE SIZING)

PRODUCE / PRIORITIZE COAS

SOSE ANALYSIS OF CAPABILITY SETS

Understood Operational Effects Through Operational Analysis (M&S)

APPROVE

Approve "Baseline" CAP. SET 15-16 FOR REFINEMENT

LWN GOSC

R-6 Years

STEP5 Develop "BASELINE" INTEGRATED CAPABILITY SET

SELECT CAPABILITY SET COA

LWN GOSC

R-36 months

BOIP Lock

"80% Solution"

SYNCH

Near Term Trades

APPROVE Final CAPABILITY SET Synched w ARFORGEN

LWN GOSC

R-18 Months

MTOE Lock

"Good Idea" Cut-Off

ONS/JUONS

STEP7 SYNCH CAPABILITY SET Testing & Certification

Force Validation Conference
Army Sourcing Conferences
Army Equipping Conferences

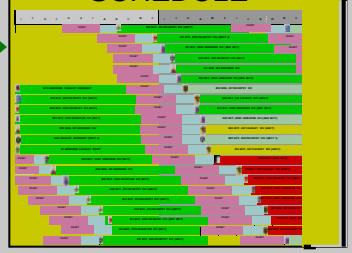
FIELD

Begin Reset

SWB Go / No Go

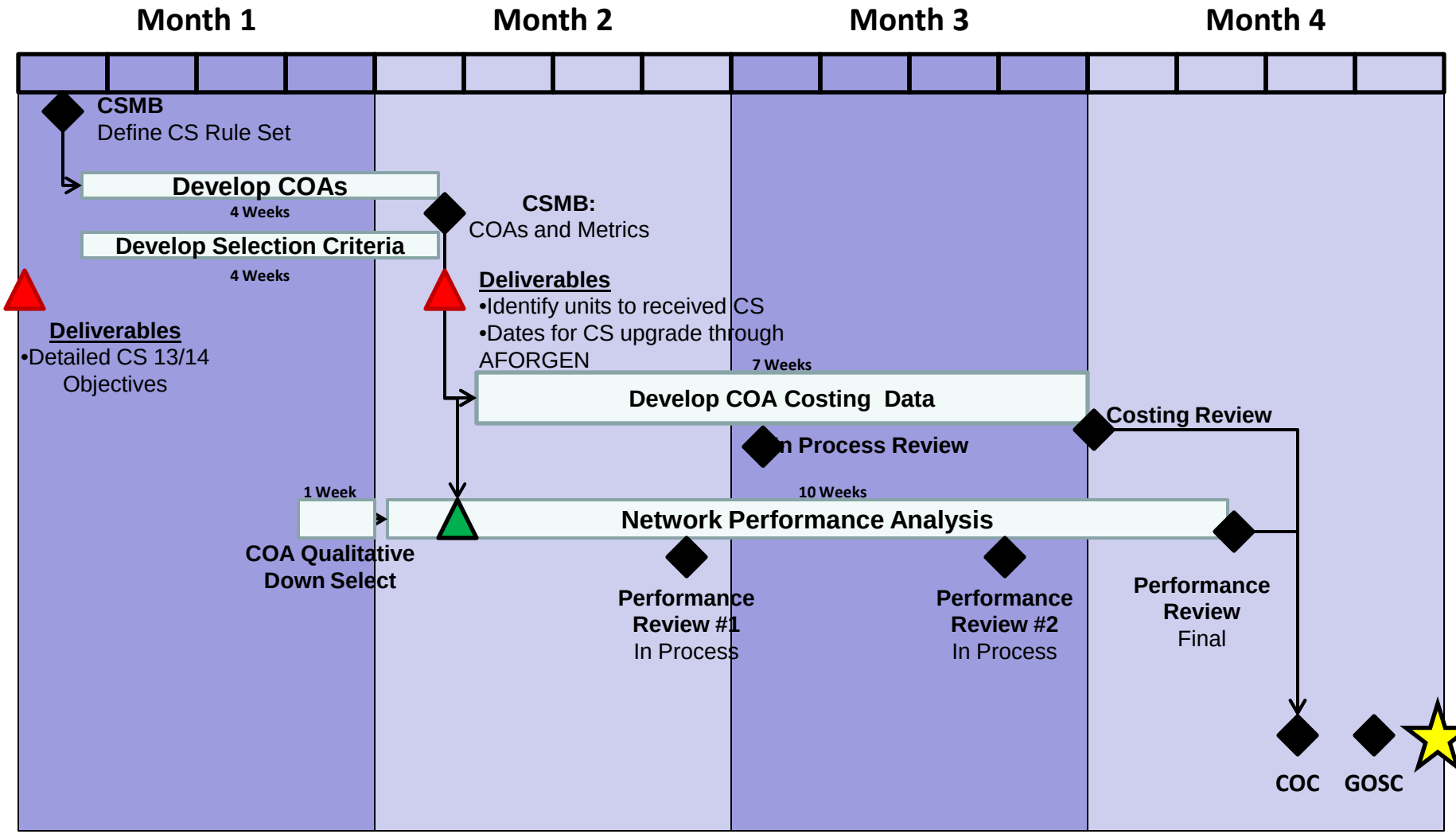
Issue MTOE

ARFORGEN RESET SCHEDULE



ASA (AL&T)

Notional Timeline for Capability Sets



Task Force 120 - Overview of COAs

FCS NIKs

JCR key leaders

Common to all COAs:

CO CP comms, WIN-T Incr 2, FCS SO sensors

Rifleman Radio

LW or GSE → COA 3 — EPLRS for FCS NIKs

MBITR → COA 2 — PRC-117G for FCS NIKs

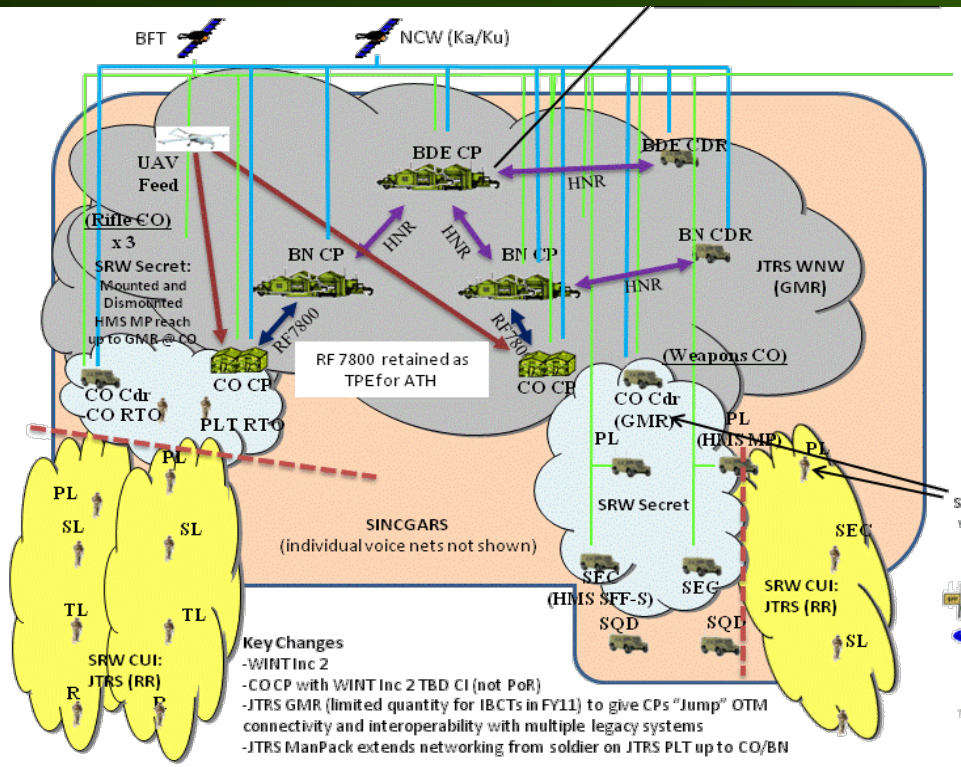
GMR → COA 1

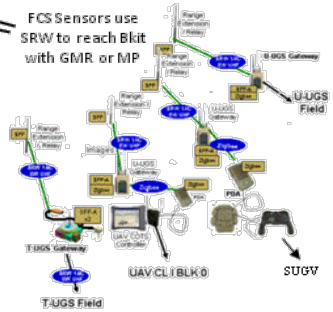
50% GMR / 50% MP → MP → COA 1b; SFF-S → COA 1c

SFF-V → COA 1d

PRC-117G → COA 1e

Task Force 120 – Recommended Course of Action





AN/PRC 119 (SINCGARS VHF)	190
AN/PRC 148 (VHF UHF)	242
AN/PRC 150 (HF)	8
AN/PSC 5	20
AN/VRC 104 V3 (HF)	63
SINCGARS VEH RTs(VHF)	1313
AN/PRC-154 (RR)	1658
COA 1b/1c/1d/1e	

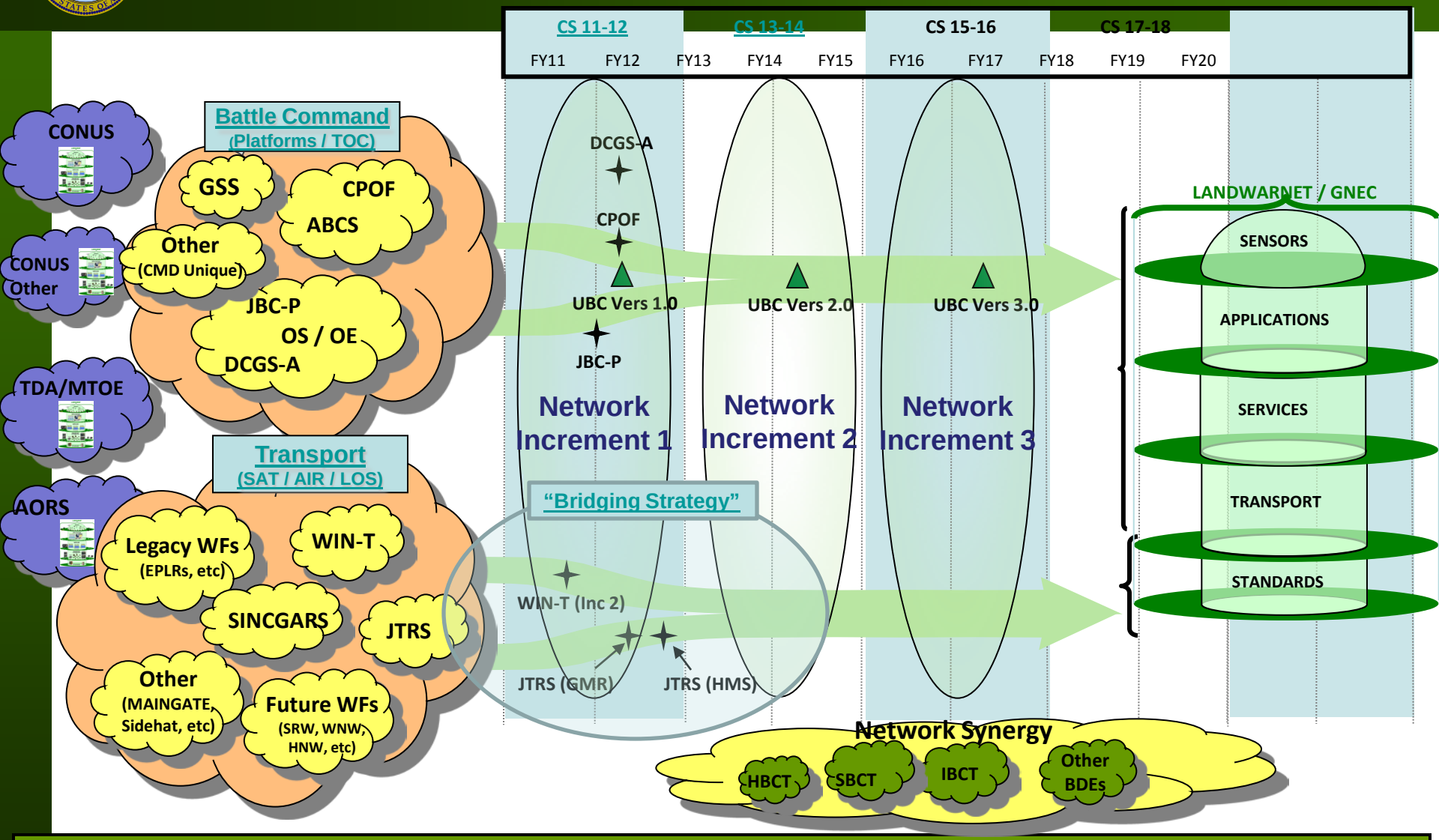
CSS VSAT	7
DVB-RCS (GBS)	5
GRRIP (HUMINT TMS)	3
HCLOS	2
RF 7800W	38
SMART-T	2
TROJAN SPIRIT V3	4
TSR-8 (GBS)	8
WIN-T Inc 2 TCN	8
WINT Inc 2 TBD ATH LOS and BLOS	13
WINT Inc 2 PoP	7
WINT Inc 2 SNE	34
WIN-T LAW (WIN-T INC 2 VWP)	10
JTRS GMR	40
JTRS HMS MP	116
BFT1 - Ground	282
JTRS SFF-S	60

SO B-Kit ICS	81
SO B-Kit Antenna	81
Urban - Unattended Ground Sensors (U-UGS)	29
Tactical - Unattended Ground Sensors (T-UGS)	12
Non-Line of Sight Launch System (NLOS-LS)	6
Small Unmanned Ground Vehicle (SUGV) Block 1	38
Class I Block 0	22
Other Hardware (Inmarsat BGAN, S-PoP)	1
SO A-Kit HMMWV	81

- Assumes availability of HMS Manpack (same as COA 1b)
  - Comms within CO uses SRW (instead of WNW)
  - FCS NIKs below CO use HMS MPs (~50%)
- Assumes availability of SFF-S
  - Single channel radio, shares SINCGARS vehicular adapter
  - Postulated as low cost/SWAP approach for vehicles that only require one SRW channel as an advanced waveform
  - For key leader JCR vehicles
    - As alternative to HMS manpack
    - SRW net for more robust comms (augments BFT)
  - SFF-S is not currently part of JTRS program of record
- For dismounts
  - Rifleman Radio up to Platoon Leader
  - Retain PRC-148 down to Squad Leader

ASA (AL&T)

Army Network Modernization Strategy



Capability Set and POR specific ARFORGEN focused fieldings that introduce new technologies reallocates assets, divest older technologies and incrementally modernizes the Army's network.

System Engineering Enablers

- System-of-Systems Systems Engineering (SoS SE)
- PEO Integration

ASA(ALT) Management Structure for Army Mod Plan

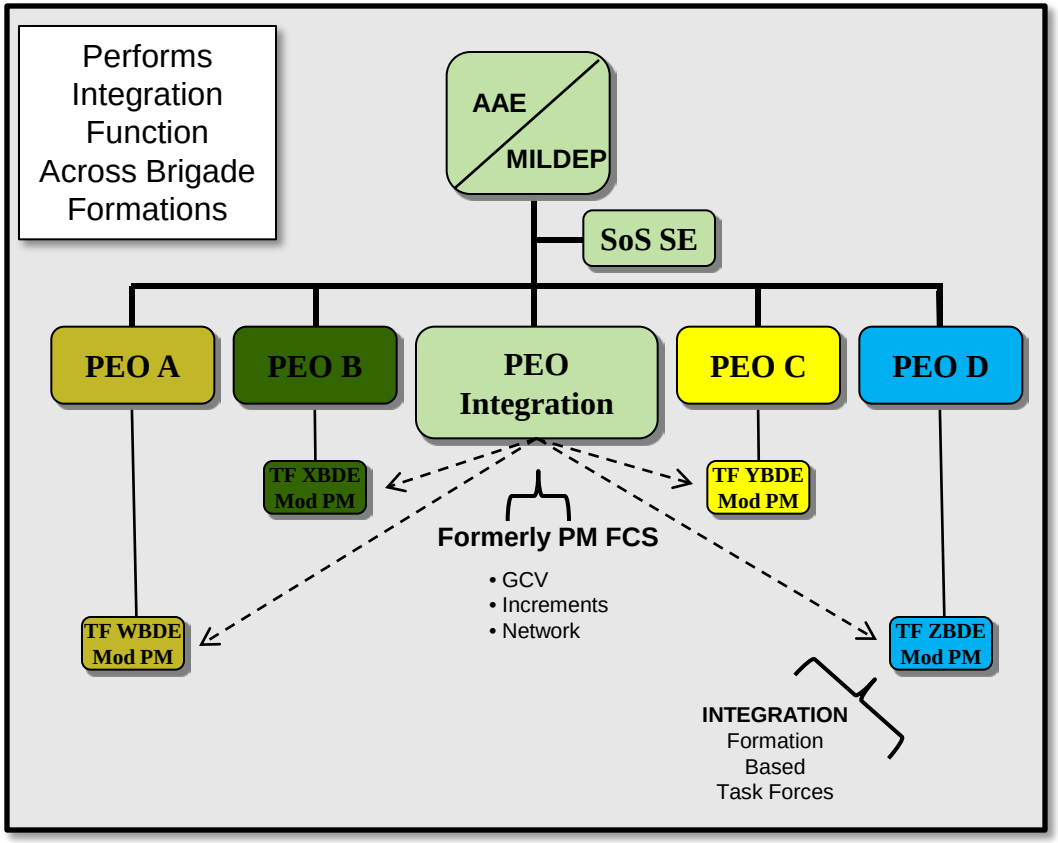
TODAY

- AAE
- MILDEP
- PM FCS
  - GCV
  - Spin Outs
  - Network
- PEO A
- PEO B
- PEO C
- PEO D
- REF
- Non-PORs

Solutions Fielded But Not Integrated Across BDE Formations

FUTURE

Performs Integration Function Across Brigade Formations



Leverages Investment in FCS and OIF/OEF Procurements –
Organized to Integrate and Incrementally
Deliver Materiel Solutions Across Brigade Formations

ASA (AL&T)

SoS Systems Engineering

Strategic Enterprise Transformation Results

SOS SE Strategic Goal - Warfighters have what they need, when they need it, and it works.

SOS SE Vision - The SOS SE organization leads the synchronization of Army technical efforts and enables delivery of world-class integrated materiel solutions to the Warfighter.

SOS SE Mission - Architect and enable the incremental delivery of relevant, integrated and affordable capabilities by formation type in support of the Army's guidance, modernization strategy, and Army Force Generation model.

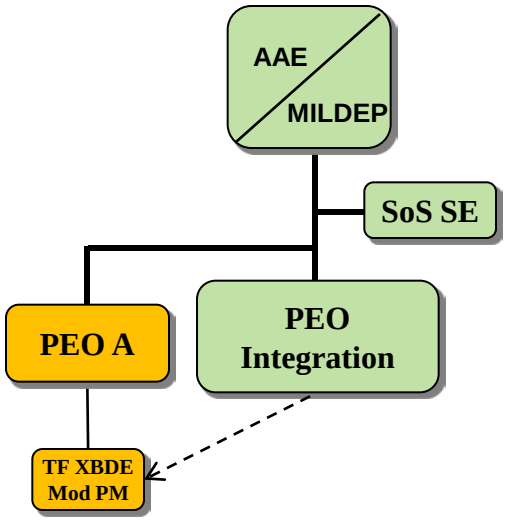
SOS SE Stakeholder Values

- Ensure materiel solutions (including systems, components, applications and networks) work properly together
- Provide authoritative, suitable, relevant, responsive, flexible, integrated, interoperable, synchronized, balanced SOS architectures
- Coordinate and synchronize efforts across PEOs and external entities (Materiel Enterprise (ME), ARSTAFF, ATEC, OSD)
- SoS SE policy, guidance, enterprise governance and terms of reference, define system interfaces and implementation of technical standards
- Agile, responsive, synchronized SoS SE in support of the acquisition process to deliver capability in accordance with ARFORGEN
- Establish a uniform set of Modeling & Simulation and analysis tools
- Synchronize decomposed requirements and adjudicate conflicts and duplications with requirements community
- Shape technology transition to ensure greatest enterprise value
- SoS-level Analysis/Trades to provide objective recommendations in operational terms (with TRADOC) to enable better Army and DOD level decisions
- Adjudication of cross PEO level SoS issues

SOS SE Strategic Objectives

- Synchronize acquisition program requirements and programmatics
- Use SOS SE efficiencies to improve capabilities delivered despite fiscal constraints
- Be a recognized source for authoritative SOS acquisition decision data
- Provide authoritative SOS architectures for all Army formations
- Shape tools needed to execute SOS SE mission
- Establish systems engineering enterprise standards
- Shape S&T investment strategy

Responsibilities – SoS SE, PEO I, Task Forces



SoS SE

- Representative, authoritative architectures for each Brigade type
  - COA development, analysis, costing and decision support
  - Establish operational value
- Establishing standards and policy (via MILDEP policy or AAE ADM)
- Alignment/reconciliation of resourcing and requirements with HQDA and TRADOC
- Direct and lead SoS trades
- Resolve conflict, provide governance
- Synchronize PEOs with Army Mod Strategy and delivery of Capability Packages - Maintain strategic IMS/IMP

PEO Integration

- Specific architectures for Brigades to be "touched" in ARFORGEN
  - COA "executability" determination
- Execute SoS Trades ICW ASA(ALT), provide recommendations to ASA(ALT)
- Recommend resource and requirement changes to align PORs/non-PORs to Capability Packages
- Maintain IMS/IMP for all Brigades in ARFORGEN cycle
- Development and management of vehicle-network architectures, as well as other critical interface/touch point architectures IAW established standards

Task Forces

- Manage IMS/IMP for specific Brigades to be "touched"
- Coordinate across PEOs to deliver IAW architectures and IMS/IMP
- Ensure policy/standard implementation
- Manage SoS testing/certification
- Synchronize Unit Set Fielding
- Recommend resourcing changes to accommodate Capability Package fielding

Army Reliability Initiatives

Army Reliability Policy

- Mandates development and demonstration of a mid-SDD reliability test threshold for all pre-Milestone B programs with a JPD of JROC Interest[1]:
  - Default value is 70% of CDD reliability requirement
  - Must be demonstrated with at least 50% statistical confidence by end of the first full-up, system-level developmental test event of SDD
  - Threshold value must be approved as a part of the TEMP, and recorded in the SDD contract and APB at Milestone B
  - Requires review of material developer's reliability case documentation
    - AMSAA and AEC to apply Reliability Scorecard

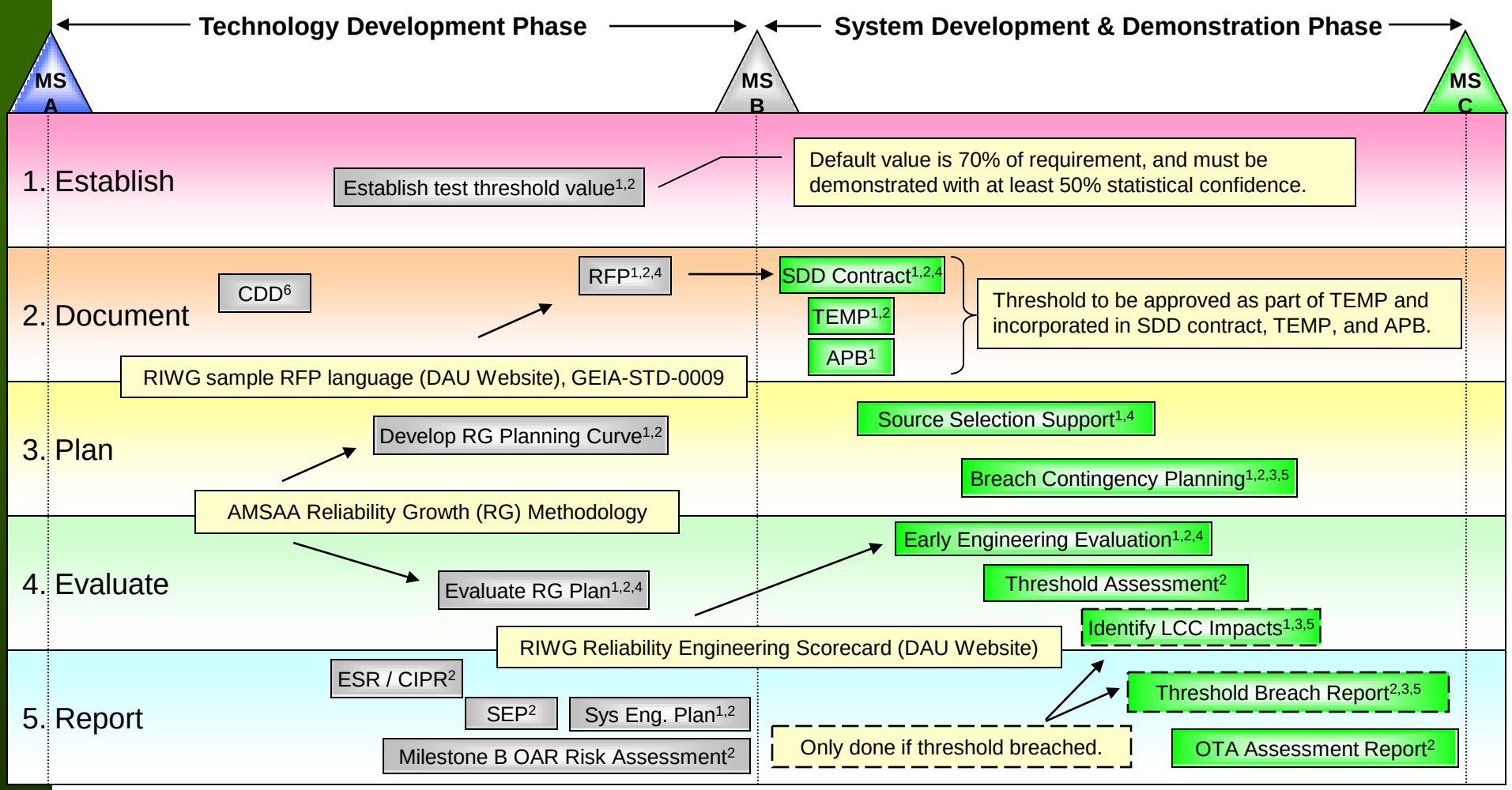
- ATEC to perform threshold assessment, and lead IPR in event of a breach:
  - PEO/PM develops corrective action plan
  - AEC performs assessment of PM's plan and projected reliability
  - AMSAA/AEC estimates ownership cost impacts
  - TRADOC assesses utility of system given current reliability maturity level
  - ATEC CG provides recommendation to ASA(ALT) thru Army T&E Executive, with PEO coordination in advance

ASA(ALT) policy expands the Army's current T&E mission

1. Per CJCSI 3170.01F, JROC "Interest" refers to programs that have a potentially significant impact on joint warfighting.

ASA (AL&T)

Enabling Early SE
5-Step Army Policy Implementation Plan



- **Key players**: 1 PEO/PM, 2 AEC-RAM, 3 AEC-ILS, 4 AMSAA - Reliability Branch, 5 AMSAA - Resource Studies Branch, and 6 TRADOC.
- **Documentation**: Currently developing an ATEC guide on this implementation plan and associated reliability growth planning processes.
- **Reference**: ASA(ALT) Memorandum, Dated 6 December 2007, Subject: Reliability of U.S. Army Materiel Systems.
- **GEIA**: Government Electronics and Information Technology Association.

Summary

- **Agility and Responsiveness are Critical Attributes for Army Acquisition**
- **The Army Must Organize for Success to Execute the Army's Modernization Strategy**
- **We Must Leverage Enablers to Deliver Warfighting Capability**