ASA (AL&T)

Army - ASA(ALT) System of Systems Engineering (SoSE)

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SoSE

DESIGN ✷ DEVELOP ✷ DELIVER ✷ DOMINATE

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ASA(ALT) - SoSE Capstone Concept

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Environment

- Complex Acquisition processes, stove-piped architectures driven by stovepipe requirements independent cost/schedule performance driven priorities
- Inadequate and fragmented architectures, engineering and analytical structures
- Immature work force in the discipline of SoS engineering

The System of System Engineering (SoSE) Mission

The Mission of ASA(ALT) SOSE: *Provide the Army's leadership and materiel developers with the necessary engineering/architectural products to manage and shape the Army's materiel portfolio,* *to ensure a System Engineering discipline across the Materiel developer community throughout the acquisition life cycle* and *grow the System Engineering capability within the Army – through education, engineering policy, guidelines and adoption of best industry practices,...."Build the Bench".*

The Army/ASA(ALT) Problem

How does ASA(ALT) apply available resources to engineer and deliver a complex architecture for the largest enterprise in the world and accomplish this mission in complex acquisition environment while supporting the Warfighter needs in multiple theaters of operation

Central Idea and Solution

The Army/ASA(ALT) must employ an empowered SoS Engineering Organization that will deliver the products to integrated and optimized materiel solution This will require:

- Team effort across the Army & Joint Staff and MSCs to deliver the blueprint to direct the Army capability development
- Enterprise vs. Stovepipe mindset
- Open Architectures focused on rapid technology evolution – leverage the countries industrial base
- Cost conscious culture
- An ability to make rapid adjustments based on a continuous assessment of Warfighter changing requirements

Supporting Ideas

- Establish the SOS Engineering Environment
- Build the core team with in concert with the PEO/PM Engineering teams
- Establish the Processes for analysis
- Promote transparency & knowledge sharing

Core Operational Actions

- Deliver the Materiel Solutions Architecture in support of ARFORGEN
- Support management of the Army portfolio
- Support the resourcing process providing the relevant trades
- Support the synchronization, and alignment of S&T, systems integration, test, and certification activities
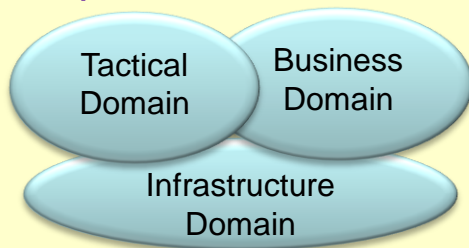
Desired End State

An establish SoS engineering environment for the Army's Materiel Enterprise that will deliver the authoritative blueprint to build superior, integrated cost effective Materiel Solutions to enable world's most capable, powerful and respected Army

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System of Systems Engineering (SoSE) – Environment

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Scope

Tactical Domain

Business Domain

Infrastructure Domain

Build the Bench

- Organize the Army Engineering Community
- Establish Technical Authority and engineering expertise/capability
- Pursue accreditation and certifications of organic workforce & organizations

Mission

The Mission of ASA(ALT) SOSE:
Provide the Army's leadership and materiel developers with the necessary engineering/architectural products to manage and shape the Army's materiel portfolio, to ensure a System Engineering discipline across the Materiel developer community throughout the acquisition life cycle **and** grow the System Engineering capability within the Army – through education, engineering policy, guidelines and adoption of best industry practices,...."Build the Bench".

Manage the Army's Portfolio

Product

Cost

Technology Maturity

Capability

Time

Analysis

Feedback

Capability Sets

2011/12   13/14   15/16

Create Data Transparency

- Establish CM and an authoritative repository for products
- Establish a collaboration environment
- Establish a common operating environment for engineering Products
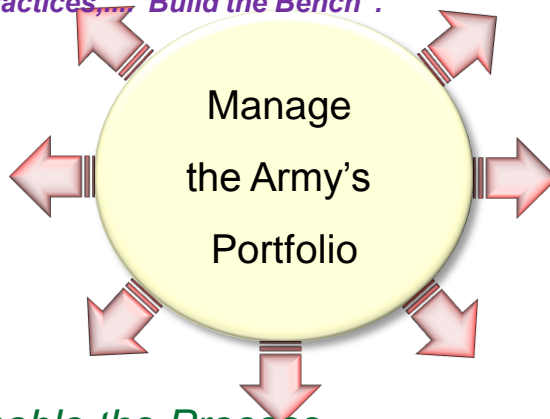
Enable the Process

- Establish the engineering process to deliver synchronized capability
- Establish the analytical structure with models & simulations
- Establish the engineering compliance structure/process for acquisition execution excellence
- Deliver engineering support to HQ staff and acquisition community
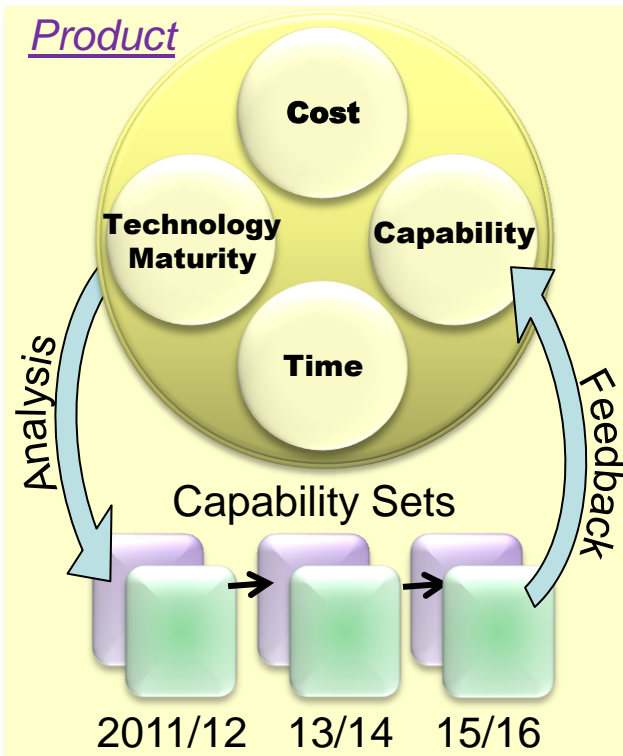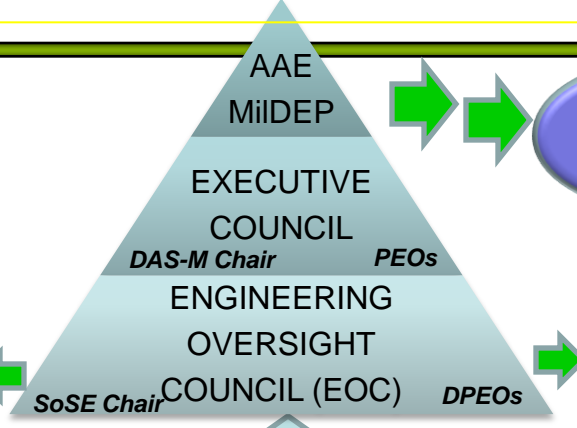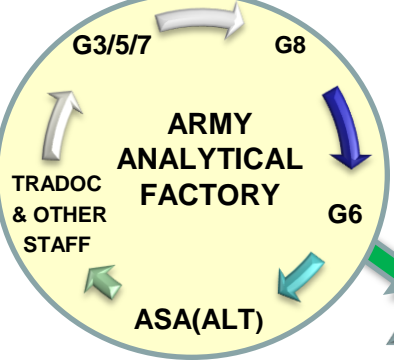
Manage the Portfolio

- Support the prioritization of capabilities within the portfolio
- Set the baseline architecture roadmap over time
- Support the resourcing process
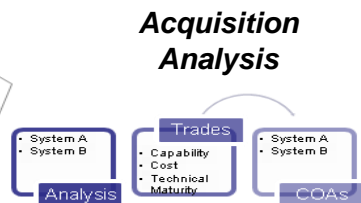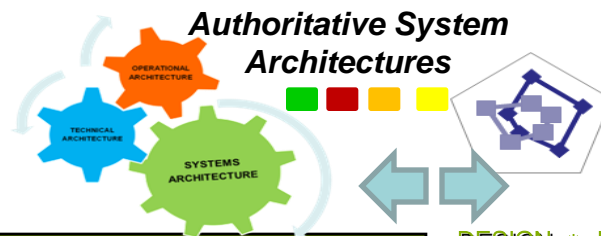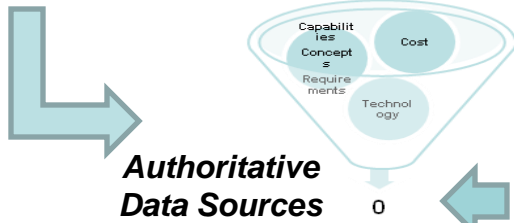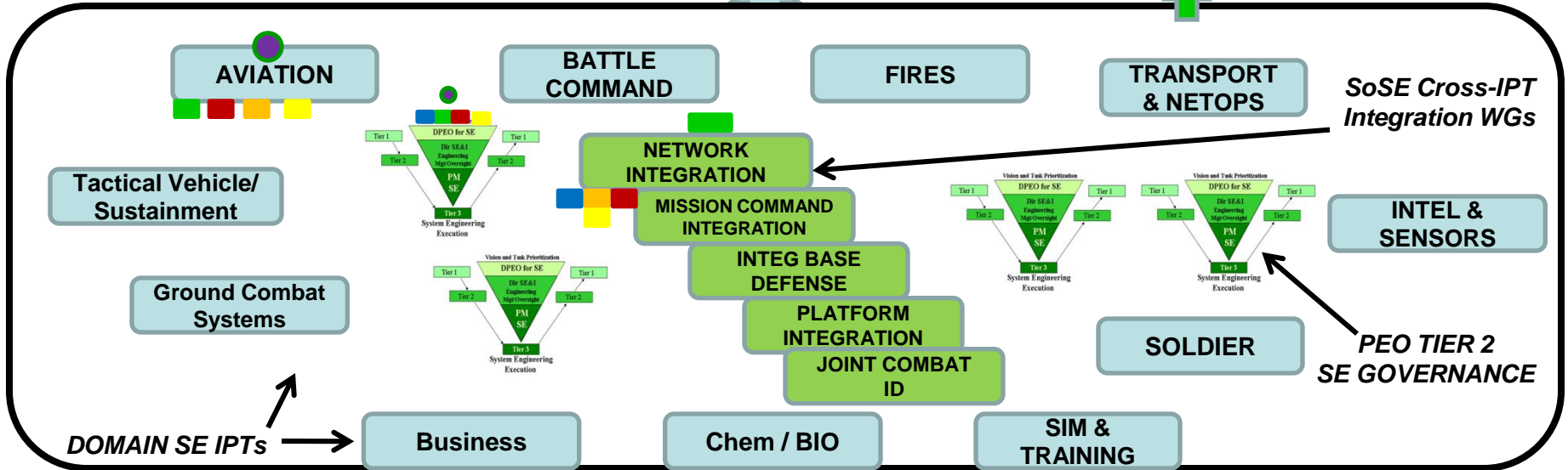- Synchronize and align the S&T, systems integration, test, and certification activities

Ver. 2.7

Organizing the SoS Space

ASA (AL&T)

G3/5/7   G8

ARMY ANALYTICAL FACTORY

TRADOC & OTHER STAFF

G6

ASA(ALT)

LWN GOSC

AAE
MilDEP

EXECUTIVE COUNCIL

DAS-M Chair   *PEOs*

ENGINEERING OVERSIGHT COUNCIL (EOC)

SoSE Chair   *DPEOs*

Acquisition Decision Authority

Configuration Steering Board

- *- PEO*
- *- SoSE*
- *- S&T*
- *- INTEGRATION*
- *- RDECOM*
- *- FFRDC*

AVIATION

BATTLE COMMAND

FIRES

TRANSPORT & NETOPS

SoSE Cross-IPT Integration WGs

Tactical Vehicle/ Sustainment

DPEO for SE
Dir SE&I Engineering Mgt/Oversight
PM SE
Tier 1   Tier 2   Tier 3
System Engineering Execution

NETWORK INTEGRATION

MISSION COMMAND INTEGRATION

INTEG BASE DEFENSE

PLATFORM INTEGRATION

JOINT COMBAT ID

Vision and Task Prioritization
DPEO for SE
Dir SE&I Engineering Mgt/Oversight
PM SE
Tier 1   Tier 2   Tier 3
System Engineering Execution

Vision and Task Prioritization
DPEO for SE
Dir SE&I Engineering Mgt/Oversight
PM SE
Tier 1   Tier 2   Tier 3
System Engineering Execution

INTEL & SENSORS

Ground Combat Systems

Vision and Task Prioritization
DPEO for SE
Dir SE&I Engineering Mgt/Oversight
PM SE
Tier 1   Tier 2   Tier 3
System Engineering Execution

SOLDIER

PEO TIER 2 SE GOVERNANCE

DOMAIN SE IPTs

Business

Chem / BIO

SIM & TRAINING

Authoritative Data Sources

Capabilities
Concepts
Requirements
Cost
Technology
0

Authoritative System Architectures

OPERATIONAL ARCHITECTURE
TECHNICAL ARCHITECTURE
SYSTEMS ARCHITECTURE

Acquisition Analysis

- System A
- System B

Trades
- Capability
- Cost
- Technical Maturity

Analysis

- System A
- System B

COAs

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Army SoSE Organization

Director

**XO
EA**

MILDEP

Deputy Director

Operations/KM

Domain Leads

- Network
- Mission Command
- Sensors
- Business Systems
- Chem /Bio
- CCCS/GCSS
- Ammo
- M&S
- AVN
- Medical
- Sim & Training

Systems Analysis

- Analysis of Complex Systems
- Systematic Root Course Analysis
- Arch Analysis/Trades
- Modeling & Sim

Systems Architecture

- Enterprise Architecture
- Systems Architecture
- Systems Arch Integration
- Architecture Analysis
- Performance Management

Program Support

- Engineering Assessments/Monitoring of Major Defense Programs
- Sys Engineering Plans
- Program Support Reviews - DAB, PDR, CDR, IPS, EIP, ITAB, OTRR
- Program Support Rev

Mission Assurance

- Sys Eng Policy Guide /
- Standards
- Specialty Eng (System Safety / Rel / Avail / Maint
- Qlty Manf, Producability, Human System Integration
- Program Protection
- ACQ Cyber Security
- Technical Engineering Workforce Development

•- Domain Leads

•- GOV

•- RDECOM

•- FFRDC/Contractor

Providing Technical and SE Leadership & Oversight to ASA (ALT) in support of planned ongoing Acquisition Programs

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Way Ahead / Challenges

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- **As a newly formed organization, SoSE is still identifying the best initiatives and strategy for providing value-added engineering to the Army's SoS.**
  - Must leverage the "Best of Breed" practices from across the community

- **Must overcome existing cultural patterns and create collaborative, enterprise thinking environment that is focused on delivering integrated solution to the Warfighter in efficient and effective manner.**

- **Continue to find efficiencies while increasing capability**