Systems and Software Engineering Overview

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SE Challenges … circa 2003

- Lack of Uniform SE Understanding at Department level
  - Policy, implementation, incentives, product/process balance, life-cycle focus
- Lack of Uniform Understanding of SE in the Community-at-Large
  - Scope of SE, understanding of how to implement SE, what makes a good systems engineer, alignment of management and SE processes, multiple standards and models, alignment of practitioner communities
- Increasing system complexity
  - Integrated systems … higher levels of integration
- SE Resources – “We have a pipeline problem”

**Our Challenge: Execute the “Big Picture”**
DoD Systems Engineering Response

➢ USD(AT&L) Imperatives
  • Provide a context for decisions on individual programs
  • Achieve credibility and effectiveness in acquisition and logistics support processes
  • Help drive good SE practices back in how we do business

➢ Organizational response: new SE organization
  • Institutionalize SE across the Department
  • Set implementation policy, capture best practices, standards for Education and Training
  • Emphasis on system assessment and support
What We Have Done To Revitalize Systems Engineering 2003 - Today

- Issued DoD-wide SE policy – focused effort on up front, sound technical planning; issued safety policy
- Issued guidance on Systems Engineering, test and evaluation (T&E), software, and safety
- Worked with Defense Acquisition University to revise Systems Engineering curricula -- currently revising T&E and enabling career fields curricula
- Established Systems Engineering Forum—senior-level focus within DoD
- Integrated development testing, software/system assurance, system of systems, and open systems into revitalization efforts
- Instituting a renewed emphasis on modeling and simulation
- Leveraging closer working relationships with industry and academia
- Instituting system-level assessments in support of OSD major acquisition program oversight role
System Engineering Revitalization Effort

* New/Updated Courses
  Career Field Training
  - Fundamentals of Systems Engineering Course
  - Systems Planning, Research, Development and Engineering
    Course (Intermediate A&B and Advanced)
  Test & Evaluation Courses
  - Course updates to address Safety
  Continuous Learning Courses
  - System Safety
  - Modeling and Simulation
  - Technical Planning
  - Reliability and Maintainability
  - Technical Reviews
  - Modular Open Systems
  - Trade Studies

Outreach
Over 25 conferences, engagements per year
Current State of DoD Systems Engineering

- We have revitalized Systems Engineering Policy, Guidance, Education and Training…

- We have driven good systems engineering practices back into the way the acquisition community does business, and have had a positive impact on programs…

- We have expanded the boundaries to include increasingly important enablers for sound SE application…

- We have a rigorous process to capture what went wrong…

- …but failed to change, root cause behavior that leads to programs that do not meet cost, schedule, and performance expectations…adequate maturity at program initiation

Much Accomplished – Much to Do!