NDIA Human Systems Conference

"Advancing the Practice of Human Systems Integration (HSI)"

Presented by:

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Office of the Deputy Assistant Secretary of Defense for Systems Engineering

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DASD, Systems Engineering Mission

Systems Engineering focuses on engineering excellence – the creative application of scientific principles:

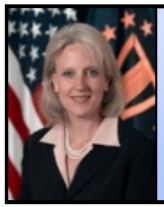
- To design, develop, construct and operate complex systems
- To forecast their behavior under specific operating conditions
- To deliver their intended function while addressing economic efficiency, environmental stewardship and safety of life and property

DASD(SE) Mission: Develop and grow the Systems Engineering capability of the Department of Defense – through engineering policy, continuous engagement with component Systems Engineering organizations and through substantive technical engagement throughout the acquisition life cycle with major and selected acquisition programs.

A Robust Systems Engineering Capability Across the Department Requires Attention to Policy, People and Practice

- ***US Department of Defense is the World's Largest Engineering Organization***
- ***Over 108,000 Uniformed and Civilian Engineers***
- ***Over 39,000 in the Engineering (ENG) Acquisition Workforce***

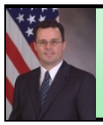
DASD, Systems Engineering



Acting Deputy Assistant Secretary of Defense
and Principal Deputy, Systems Engineering
Kristen Baldwin

Homeland Defense
Capability
Development
Robin Hicks

Major Program Support
James Thompson



Engineering Enterprise
Robert Gold

Supporting USD(AT&L) Decisions with Independent Engineering Expertise

- Engineering Assessment / Mentoring of Major Defense Programs
- Program Support Assessments
- Overarching Integrated Product Team and Defense Acquisition Board Support
- Systems Engineering Plans
- Systemic Root Cause Analysis
- Development Planning/Early SE
- Program Protection

Leading Systems Engineering Practice in DoD and Industry

- Systems Engineering Policy and Guidance
- Technical Workforce Development
- Specialty Engineering (System Safety, Reliability and Maintainability, Quality, Manufacturing, Producibility, Human Systems Integration)
- Security, Anti-Tamper, Counterfeit Prevention
- Standardization
- Engineering Tools and Environments

Providing technical support and systems engineering leadership and oversight to USD(AT&L) in support of planned and ongoing acquisition programs

DASD(SE) Key Responsibilities

- **Program Engagement**
  - Serve as principal engineering advisor to the SECDEF and USD(AT&L) in support of critical acquisition decisions
  - Provide continuous engineering oversight and mentoring of Major DoD Programs to identify, assess, and mitigate engineering risk; focus on helping ensure program success
  - Serve as approval authority for Systems Engineering Plans for all Major DoD Programs
  - Certify completeness of Preliminary Design Reviews and Critical Design Reviews for all Major DoD Programs
- **Policy and Guidance**
  - Develop engineering, manufacturing, reliability, program protection, and modeling and simulation policy and guidance for the DoD
  - Serve as Defense Standardization Executive – approve military standards and coordinate DoD engagement on non-military standards
- **Technical Workforce Development**
  - Provide functional leadership for the Non-Construction (Engineering) and the Acquisition (ENG and PQM) workforce
- **Engineering Research and Development**
  - Sponsor the DoD Systems Engineering Research Center (SERC) University Affiliated Research Center (UARC)
  - Sponsor the MITRE National Security Engineering Center (NSEC) Federally Funded Research and Development Center (FFRDC)

Reference: DoDI 5134.16, Deputy Assistant Secretary of Defense for Systems Engineering

Today's Challenge

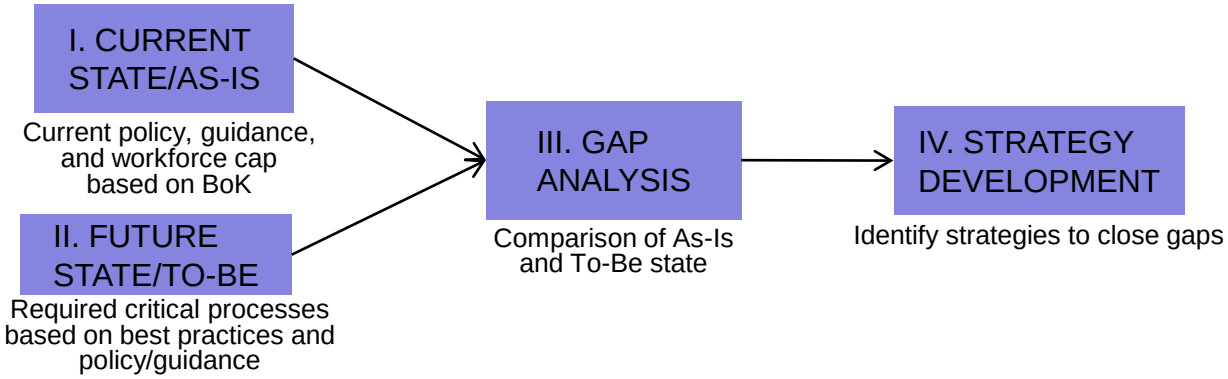
- **DoD systems are complex weapon systems controlled by highly trained warfighters**
  - Sophisticated sensors sweep data from across the spectrum
  - Computers analyze data from multiple source simultaneously and prepare options for the warfighter
  - Fire control solutions are presented to address priority adversaries
  - Warfighters must be focused on the critical decisions and timely actions necessary to prevail
- **The HSI practitioner must optimize efficiency of warfighter actions enabling maximum effectiveness of man-machine interactions**
  - View/analyze critical decision-based information
  - Life-like training/simulations to enable instinctive reactions
  - Minimize unnecessary distractions

Challenges to the HSI Communities

- **Challenges to meet:**
  - Technology evolution;
  - Insufficient resources;
  - Evolving threats; and
  - Few new start programs
- **Intense pressure on warfighters**
  - Decision times compressed
  - Must develop and retain the correct skills; master training to develop instinctive reactions
  - Cohesive unit performance must be achieved
- **HSI community must enable integration of man and machine**

Understand and Use an Enterprise Model

- **Enterprise Model:**
  - Inventory our current requirements for HSI policy, processes, tools, techniques, and workforce KSAs
  - Analyze future requirements
  - Identify gaps between current and future requirements
  - Construct gap closure concepts…alter appropriate policy, processes, tools, techniques, and workforce KSAs to close the gaps
- **Recommend: HSI community utilize an Enterprise Model to validate required policy, processes, tools, techniques and workforce KSAs**



Systems Engineering: Critical to Defense Acquisition










Defense Innovation Marketplace
http://www.defenseinnovationmarketplace.mil

DASD, Systems Engineering
http://www.acq.osd.mil/se