



**NDIA Systems Engineering Division
April 19, 2006**

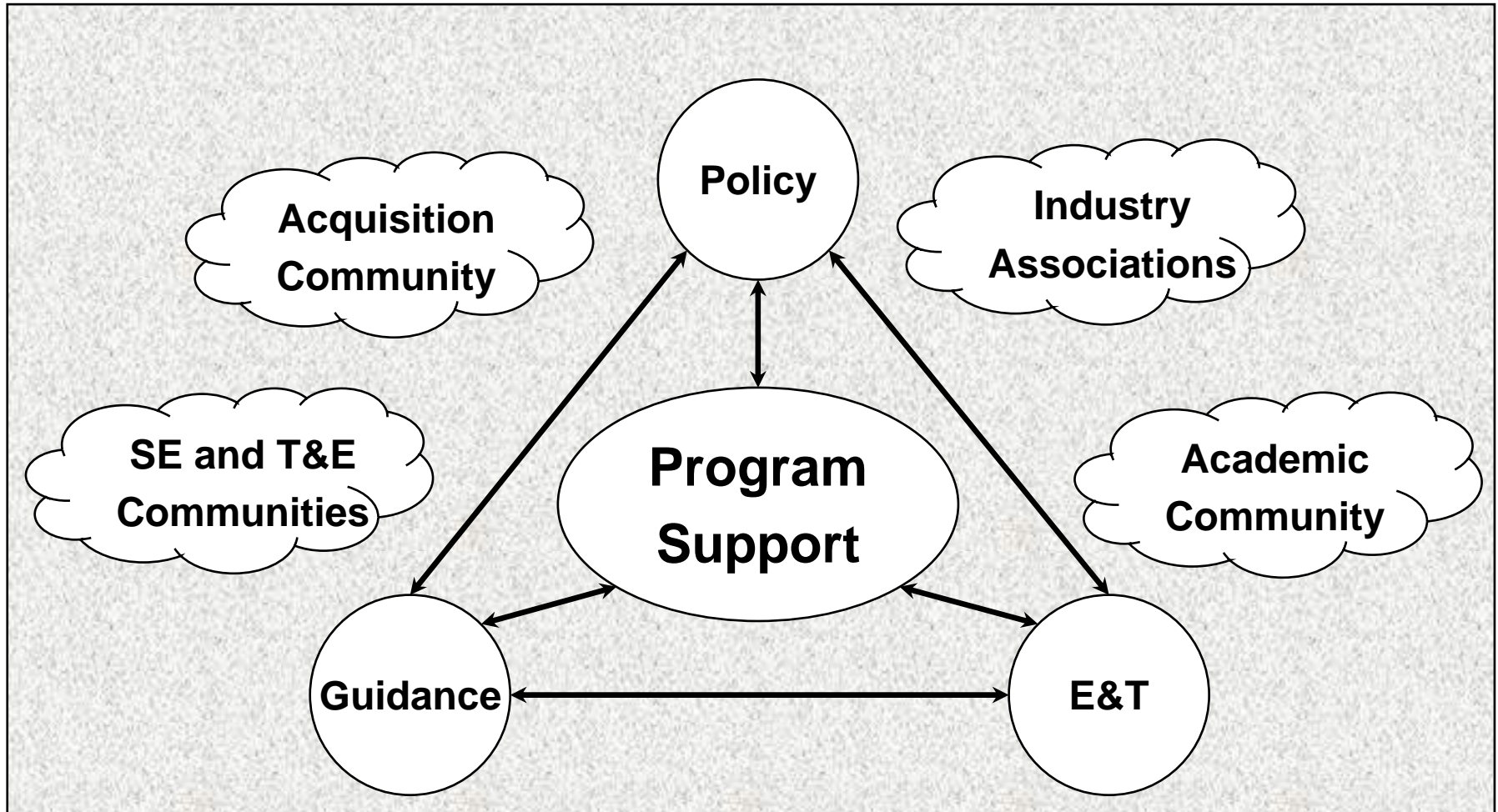
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Office of the Under Secretary of Defense (AT&L)



Systems Engineering Revitalization Framework



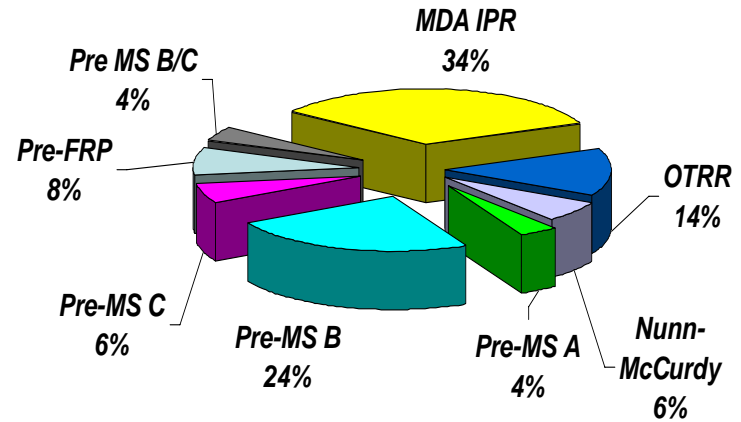
Driving Technical Excellence into Programs!



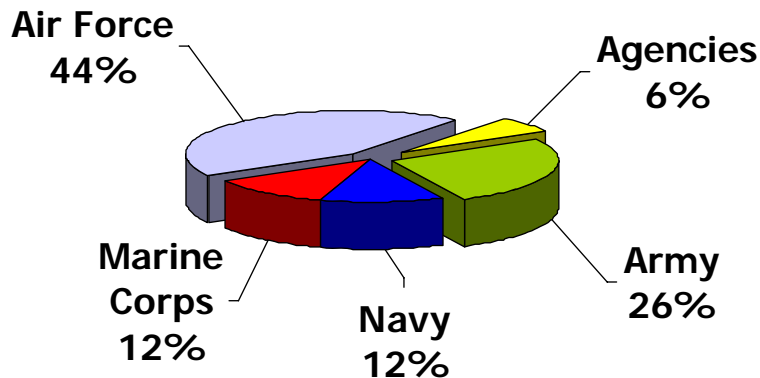
Program Support Review Activity (since March 2004)

- PSRs/NARs completed: 33
- AOTRs completed: 7
- Nunn-McCurdy Certification: 3
- Participation on Service-led IRTs: 4
- Technical Reviews: 3
- Reviews planned for rest of FY06
 - PSRs/NARs: 12+
 - AOTRs: 2
 - Nunn-McCurdy: 2

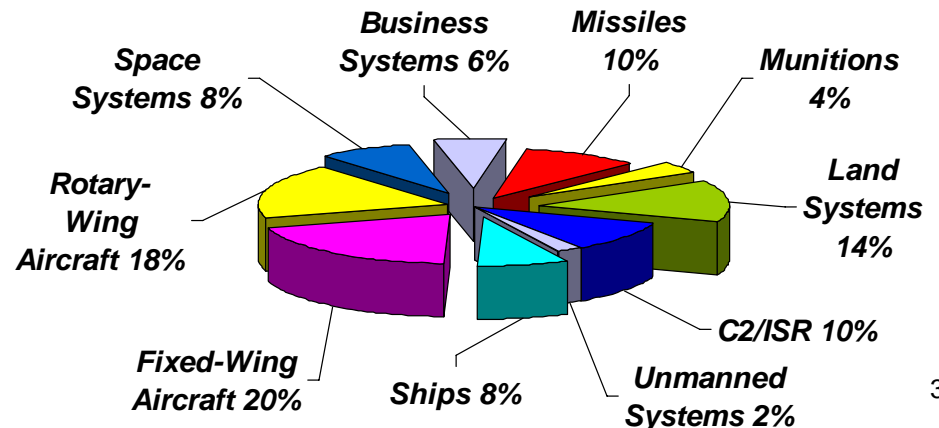
Reviews by Program Event



Service-Managed Acquisitions



Programs by Domain Area





Representative Issues*

Program Requirements

- Observations

- Changing requirements without coordinating with program manager nor considering dependent program offices
- Missing Joint CONOPs
- Poorly addressing Interoperability with Joint Forces



- Effects

- Lack basis for decisions
- Limits confidence in decisions
- Lack basis for testing
- Lack of metrics to test against
- Benefits of multi-platform, scalable design not realized

Compelling Need to Engage with Programs Early in Process



Representative Issues*

Event-driven Technical Reviews

- Observations

- Missing System Functional Review and Preliminary Design Review during System Development and Demonstration Phase
- Not conducting Production Readiness Review prior to Low Rate Initial Production decision
- Missing or poorly defined entry / exit criteria



- Effects

- Lack confidence in proposed technical solution
- Unclear if solution will meet user requirements
- May not be able to build initial production articles
- Events are progress reviews, not assessing program maturity

Compelling Need to Engage with Programs Early in Process



Acquiring Capabilities: What Have We Learned?

- Early involvement in requirements determination is critical
 - Identify range of solution opportunities
 - Shape key performance parameters based upon analysis of affordability, risk, urgency of need
- Capability needs will be satisfied by groupings of legacy systems, new programs, and technology insertion—systems-of-systems
 - Solutions will cross organizational and funding “stovepipes”
 - Acquisition must focus early (pre-MS B) on integrated design feasibility, full lifecycle considerations, and technology maturity
 - Solutions must integrate with other related capabilities and enterprise architectures (e.g., Global Information Grid)
- Management oversight of capabilities has ripple effects on individual programs
 - Broad context and knowledge of interrelationships are critical to decision-making



Education and Training

2006 Plan

- SE course development
 - New SYS101: SE technical management processes; pilot offering in April; available in May
 - SYS201A → SYS202: SE application throughout life cycle; lessons under development; available September
 - SYS201B → SYS203: case studies in applied SE; including CDR case study; available in October
 - SYS301 → SYS302: SE leadership, technical planning, technical baseline management, and technical reviews; developing six case studies to pilot in SYS301; SYS302 full transition by December
 - LOG204: Aligned Configuration Management with SE guidance; converting to on-line delivery; available in May
- Developing continuous learning modules:
 - Modeling and Simulation in SE
 - Corrosion Prevention and Control
 - Technical Planning
 - Trade Studies
 - Modular Open Systems



Key SE Initiatives

System Assurance (IA, SwA, Anti-Tamper)

- Recent DoD IG findings on Department deficiencies in planning for and the adequacy of Information Assurance (IA) and Software Assurance (SwA) in acquisition programs
- Current draft DoD Instruction on Program Protection
 - Misses unified approach to program protection that would address IA, SwA, Anti-Tamper, and related issues across the entire acquisition life cycle
 - Fails to flow down security requirements into all contracts and subcontracts to mandate compliance and ensure program protection.
- NDIA System Assurance Committee a key activity to address issues
 - Must ensure SA handbook is an effective tool for Gov't and Industry acquisition PMs and engineers

“Effective” system assurance in DoD acquisition must be holistic in its approach and consistently applied by industry and Government alike across the entire acquisition life cycle.



CMMI: Some identified issues*

*from Sept 05 CMMI Workshop

- Programs execute at lower maturity levels than their organizations have achieved and advertised
- Appraisals use small samples—don't cover all projects
- You can't judge a program without appraising it
- How can an organization's level be for "Life" when people and processes change?
- High-maturity practices are not consistently applied at the project level after contract award
- Is the completeness of appraisal disclosure statements adequate?
- Low-maturity acquirers and high-maturity suppliers

What is the resolution of these issues?



CMMI: Immediate Next Steps

- Must implement changes to the CMMI v1.2 product suite to ensure:
 - Integrity of appraisals
 - Quality of the product suite
 - Education of acquirers
 - Opportunities for streamlining where appropriate
- Next CMMI Steering Group meeting shall:
 - 1. Recap all issues and improvements to the 1.2 product suite
 - Sum of improvements must address CMMI Workshop issues and Govt Recommendations
 - 2. Review implementation of these actions and impacts to CMMI 1.2 products
 - Update CMMI 1.2 release schedule to reflect implementation



Way Ahead for Systems Engineering...

- OSD's fundamental role is to set policy, provide relevant and effective education and training, and foster communication throughout the community—much has been accomplished
- OSD cannot do everything...nor should we
- Services, Agencies, and Industry must take ownership of the institutionalization of Systems Engineering across all programs—ACAT I to ACAT IV

... It's Beginning!