DoD Software Engineering and System Assurance

New Organization – New Vision

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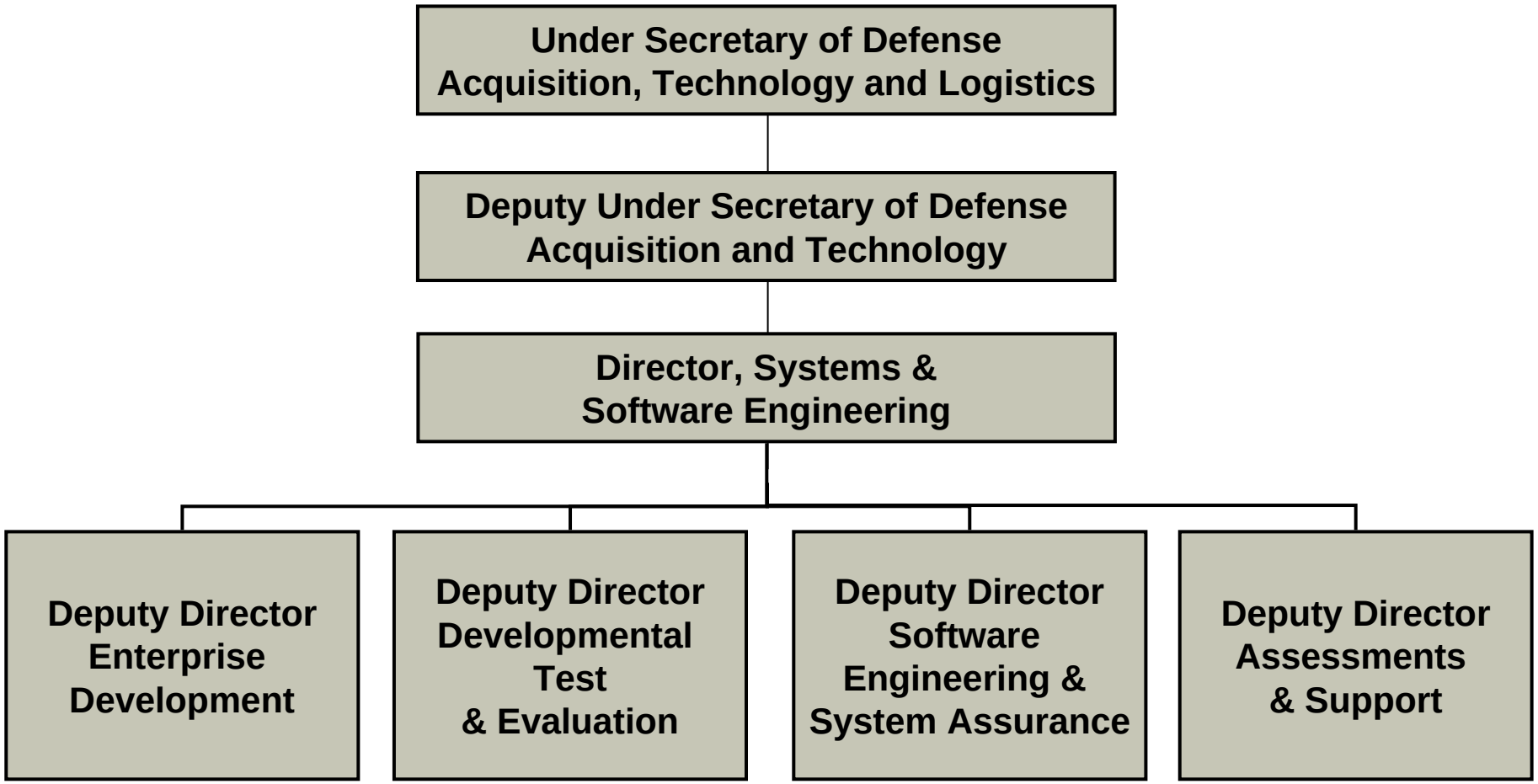
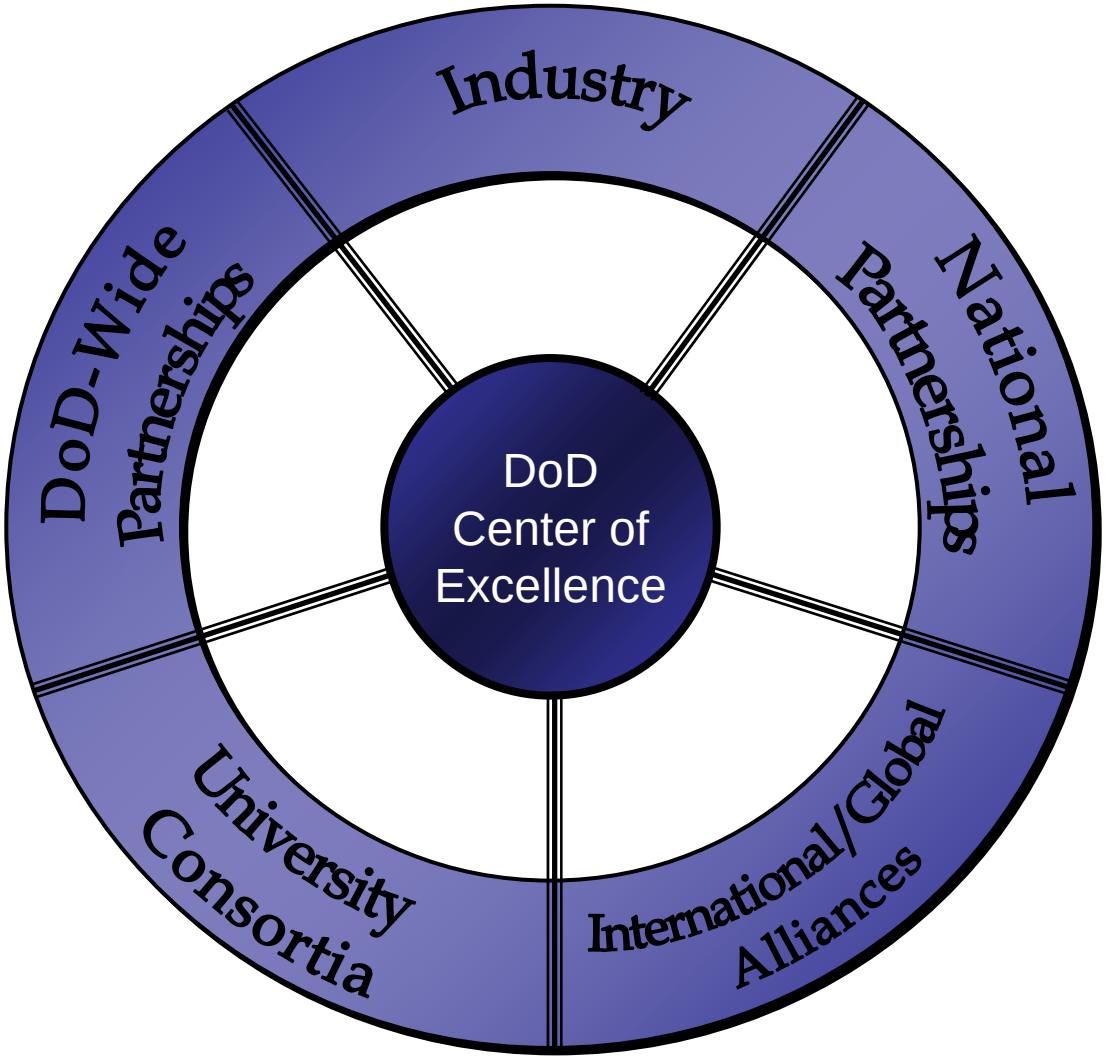
Systems and Software Engineering
Organizational Core Competencies



Acquisition program excellence through sound systems and software engineering

Establishing a DoD Engineering Center of Excellence



DoD Engineering Center of Excellence

- Support Acquisition Success
- Improve State-of-the-Practice of Software Engineering
- Leadership, Outreach and Advocacy
- Foster Resources to Meet DoD Needs

Getting Started – What are we Doing?

- Identify software issues, needs
  - Software Industrial Base Study
  - NDIA Top Software Issues Workshop
  - Defense Software Strategy Summit
- Creating opportunities, partnerships
  - Established network of Government software POCs
  - Co-Chairing NDIA Software and System Assurance Committees
  - Information exchanges with Government, Academia, and Industry
  - Planning the Systems & Software Technology Conference, TAMPA!
- Executing focused initiatives
  - CMMI Integrity, CMMI-ACQ, CMMI Guidebook
  - Handbook on Engineering for System Assurance
  - SoS Systems Engineering Guide
  - Providing support to acquisition programs
  - Transparent data vision for Acquisition Reform

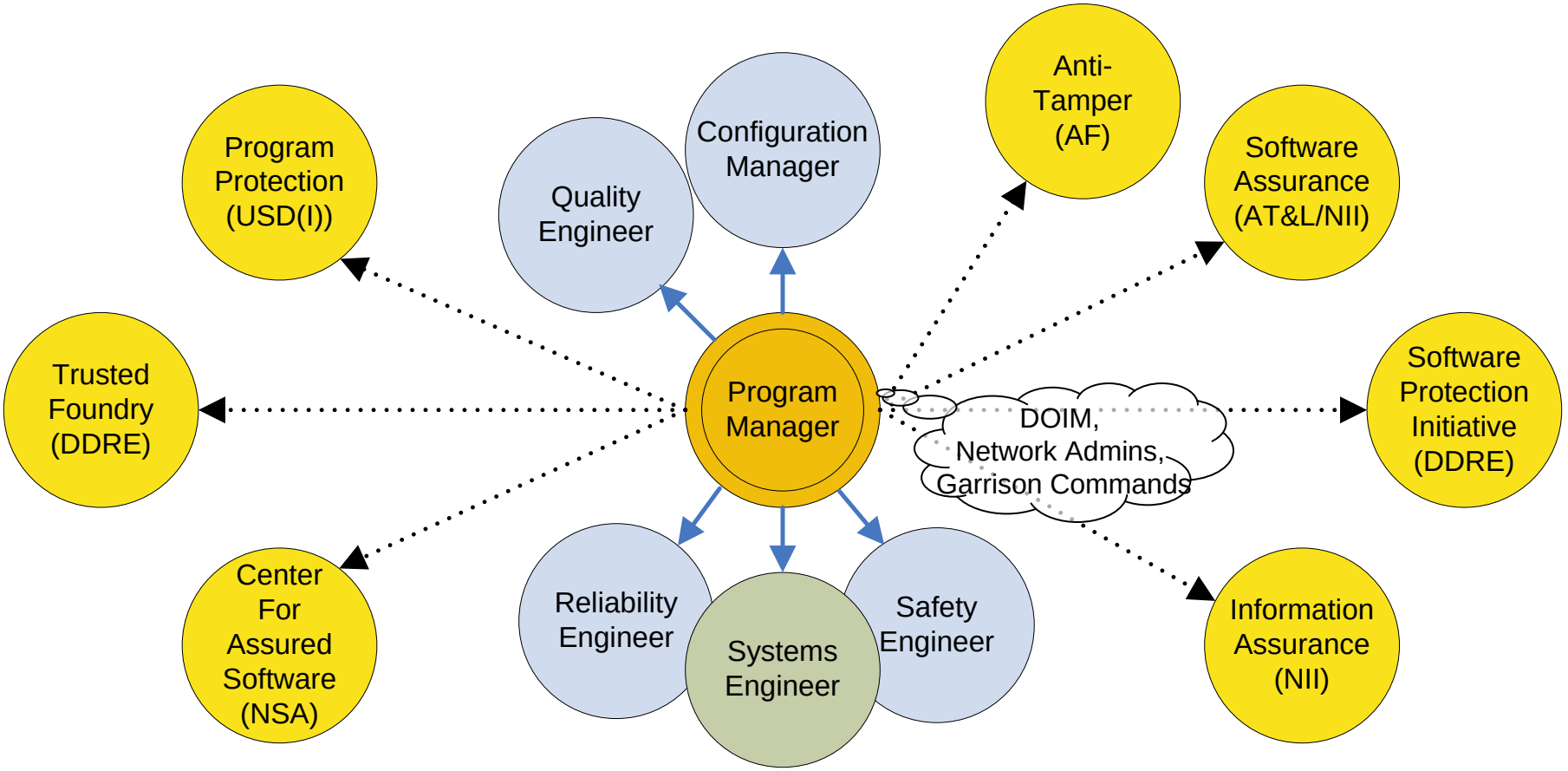
*Top Software Issues**

1. The impact of requirements upon software is not consistently quantified and managed in development or sustainment.
2. Fundamental system engineering decisions are made without full participation of software engineering.
3. Software life-cycle planning and management by acquirers and suppliers is ineffective.
4. The quantity and quality of software engineering expertise is insufficient to meet the demands of government and the defense industry.
5. Traditional software verification techniques are costly and ineffective for dealing with the scale and complexity of modern systems.
6. There is a failure to assure correct, predictable, safe, secure execution of complex software in distributed environments.
7. Inadequate attention is given to total lifecycle issues for COTS/NDI impacts on lifecycle cost and risk.

***NDIA Top Software Issues Workshop August 2006**

Overarching Concern for Systems Assurance

Systems Assurance involves integrating multiple initiatives with multiple owners



Consequences of Fragmented Systems Assurance Initiatives

- Lack of Coherent Direction for PMs, and others acquiring systems
  - Numerous, uncoordinated initiatives
  - Multiple constraints for PMs, sometimes conflicting
  - Loss of time and money and lack of focus on applying the most appropriate engineering for systems assurance for each system
- Synergy of Policy – Multiple ownership
  - Failure to capitalize on common methods, instruction among initiatives
- DoD Risk Exposure
  - Lack of total life cycle view
  - Lack of a focal point to endorse system assurance, resolve issues, advocate PM attention
  - Lack of system-of-systems, architecture perspective on system assurance
  - Potential for gaps in systems assurance protection

Moving Forward with Acquisition of Assured Systems

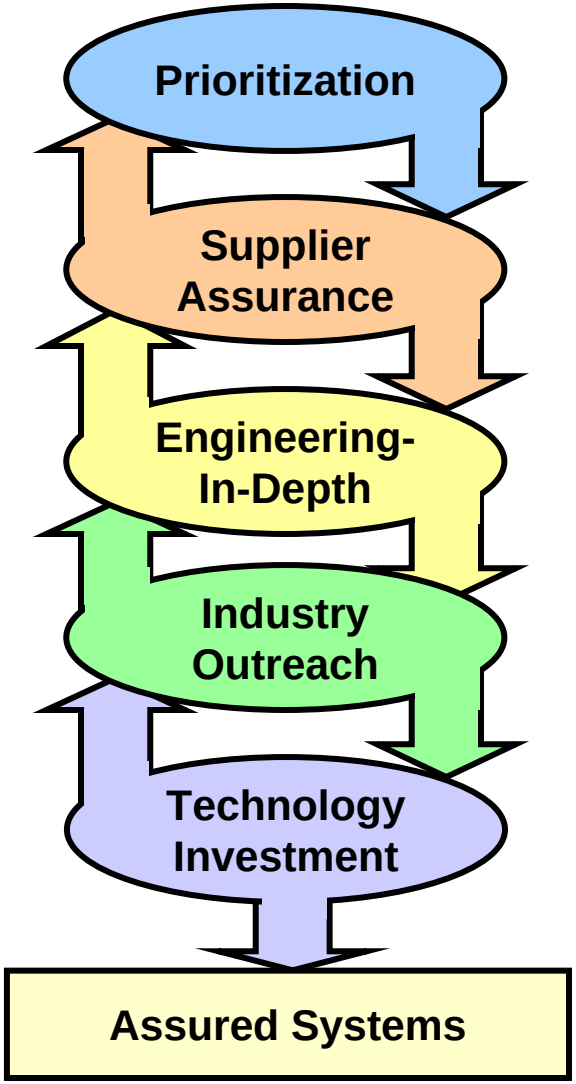
- ✓ Validate need
- ✓ Define DOD Strategy/CONOPS
- Provide a framework for integration of policies and guidance for acquisition of Assured Systems
  - A roadmap for relating the multi-disciplinary systems assurance specialties
- DoD Acquisition Evolution
  - Integrate Systems Assurance approach into the acquisition lifecycle
- Provide Coherent Guidance for PMs
  - Coordinated initiatives
- Synergistic Implementation
  - Capitalize on common methods, instruction among initiatives
- Minimize DoD Risk Exposure
  - Provide focal point to endorse system assurance, issue resolution, PM advocacy

Systems Assurance

The totality of the planned and systematic set of acquisition and sustainment activities that will result in systems that are protected from malicious and unintended supply chain and design vulnerabilities and threats at any time during the lifecycle

System Assurance: What does success look like?

- The requirement for assurance is allocated among the right systems and their critical components
- DoD understands its supply chain risks
- DoD systems are designed and sustained at a known level of assurance
- Commercial sector shares ownership and builds assured products
- Technology investment transforms the ability to detect and mitigate system vulnerabilities



Opportunities

- Continued collaboration is essential
  - Partnering across Government, Industry to implement the path forward
- But, we must focus on producing outcomes
  - Provide guidance for our program managers
  - Reduce risk exposure
- Your contribution to ongoing initiatives is important
  - Engineering for System Assurance Guidebook
  - Pilots and experiments with acquisition programs
- Capitalize on new DoD vision

Build assured systems of systems