NDIA 12th Annual Systems Engineering Conference

Chief Engineer Panel

27 October 2009

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Topics

RDA CHIEF SYSTEMS ENGINEER

- DoD 5000 and Weapon System Acq Reform Act
- DoN Acquisition Governance
- Mission Level System Engineering
- System Engineering Workforce

Acquisition Areas of Emphasis

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- DODI 5000.02
  - Earlier definition of requirements KPP/KSA feasibility
  - Technology Development Strategy and System Engineering
  - Use of prototyping during TD phase
  - T&E Strategy
  - Total Ownership Cost
  - Cost Estimates to Budget
  - Sustainment / Logistic Planning and Execution
  - RMA considerations

- Weapon System Acquisition Reform Act
  - Development and tracking of measurable performance criteria
  - Competitive prototyping
  - Role of systems engineering in development planning, lifecycle management and sustainability
  - Completion and MDA assessment of system level Preliminary Design Review before MS B

DoN Acquisition Governance

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- The Secretary of the Navy
  - Comprehensive review of the Acquisition process
  - Challenges in Program Planning and Execution.
- Enhance the Acquisition Governance process
  - Inject Early Senior Leadership
  - Continuous Engagement and Transparency
- Increase discipline during each phase of Program Maturity
- Codified by SECNAVNOTE on 26 February 2008

“Two Pass / Six Gate”

DoN Acquisition Governance

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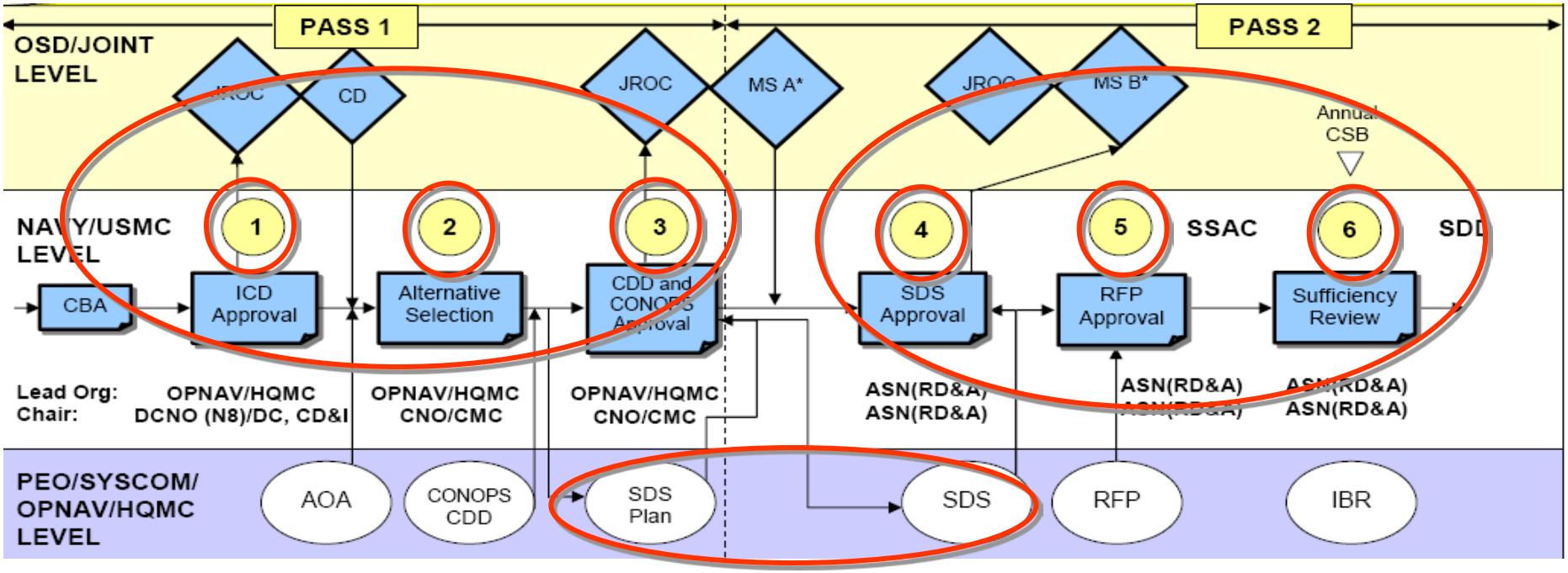

- First Pass - Requirements Establishment
- Second Pass - Acquisition Execution
- Gates - Reviews to Assess Readiness to Proceed
- System Design Specification - Capability and Performance Expectations

Gate Review Process Updates to Align with DoD 5000 and WSARA

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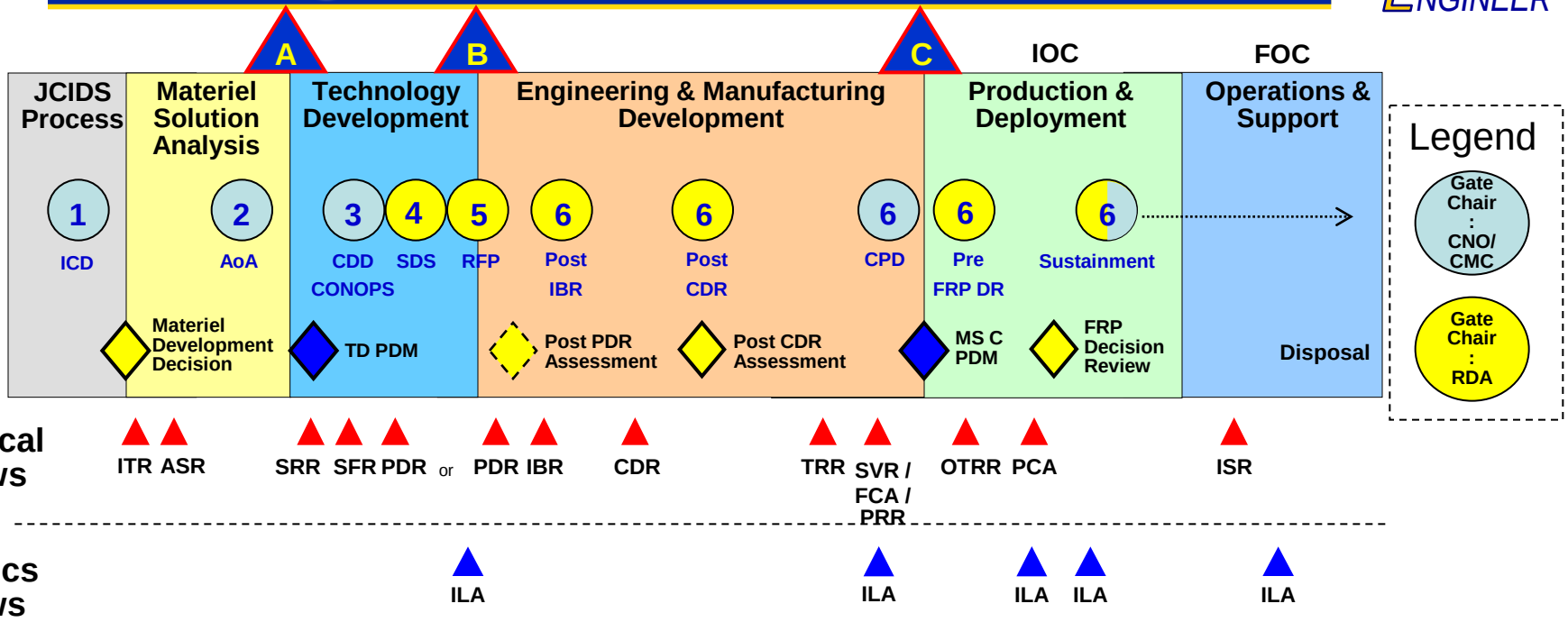

- Total Ownership Costs
  - Affordability assessments earlier
- Life Cycle Sustainment Planning and Execution including RMA
- Operational Manpower Estimates

- Program and Technical Baseline
  - Earlier look at KPP / KSA feasibility
  - Emphasis on Prototyping, Tech Development, and System Engineering
- Dev, Integrated, and Operational T&E Planning and Execution
  - T&E Deficiency resolution

Naval Probability of Program Success v2

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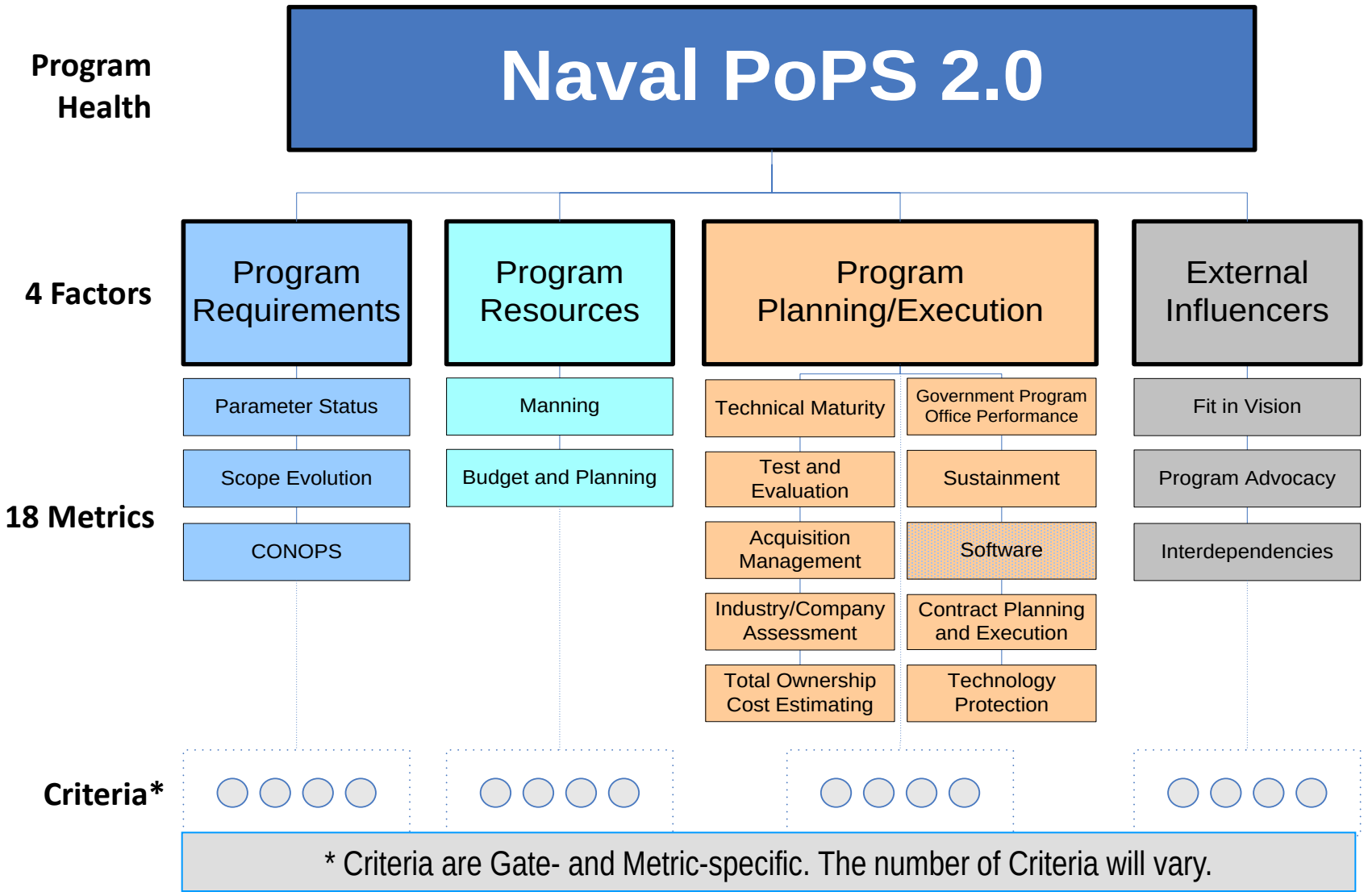

Net-Centric Integration and Interoperability

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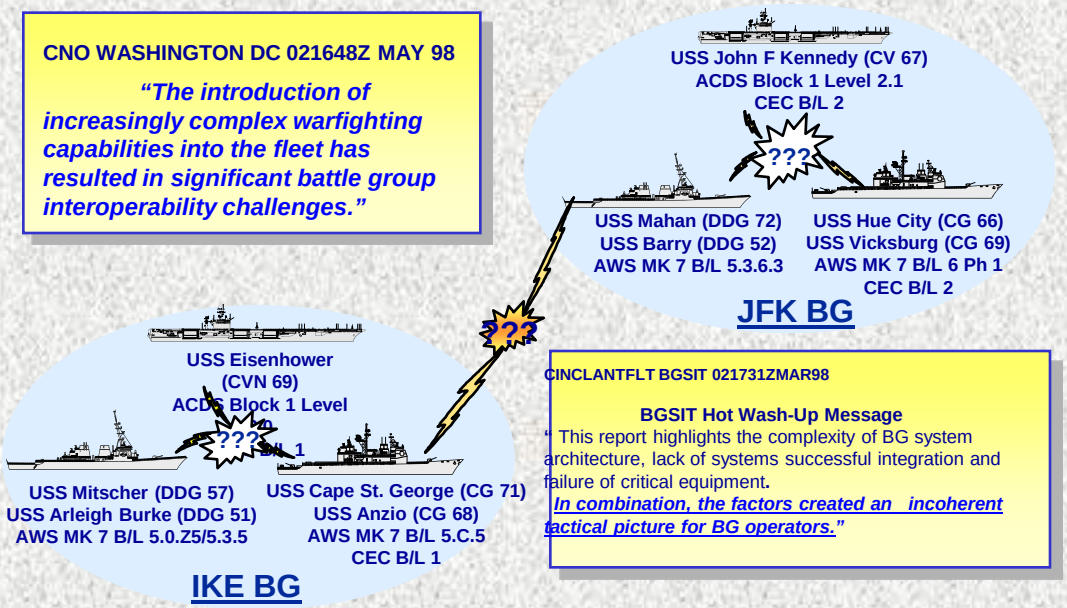
Navy Battle Group Operations: 1997 - 1998

CNO WASHINGTON DC 021648Z MAY 98

"The introduction of increasingly complex warfighting capabilities into the fleet has resulted in significant battle group interoperability challenges."



CINCLANTFLT BGSIT 021731ZMAR98

BGSIT Hot Wash-Up Message

"This report highlights the complexity of BG system architecture, lack of systems successful integration and failure of critical equipment. ***In combination, the factors created an incoherent tactical picture for BG operators."***

Impact of System Deficiencies:

- *Disrupted CINC Deployment Plans*
- *Perturbated Program Execution Budget and Timelines*
- *Caused Nearly 10% Program Growth*

What's Needed? . . . *Elevating Systems Engineering to a New Level ……..the Mission Level*

Engineering at the Mission Level

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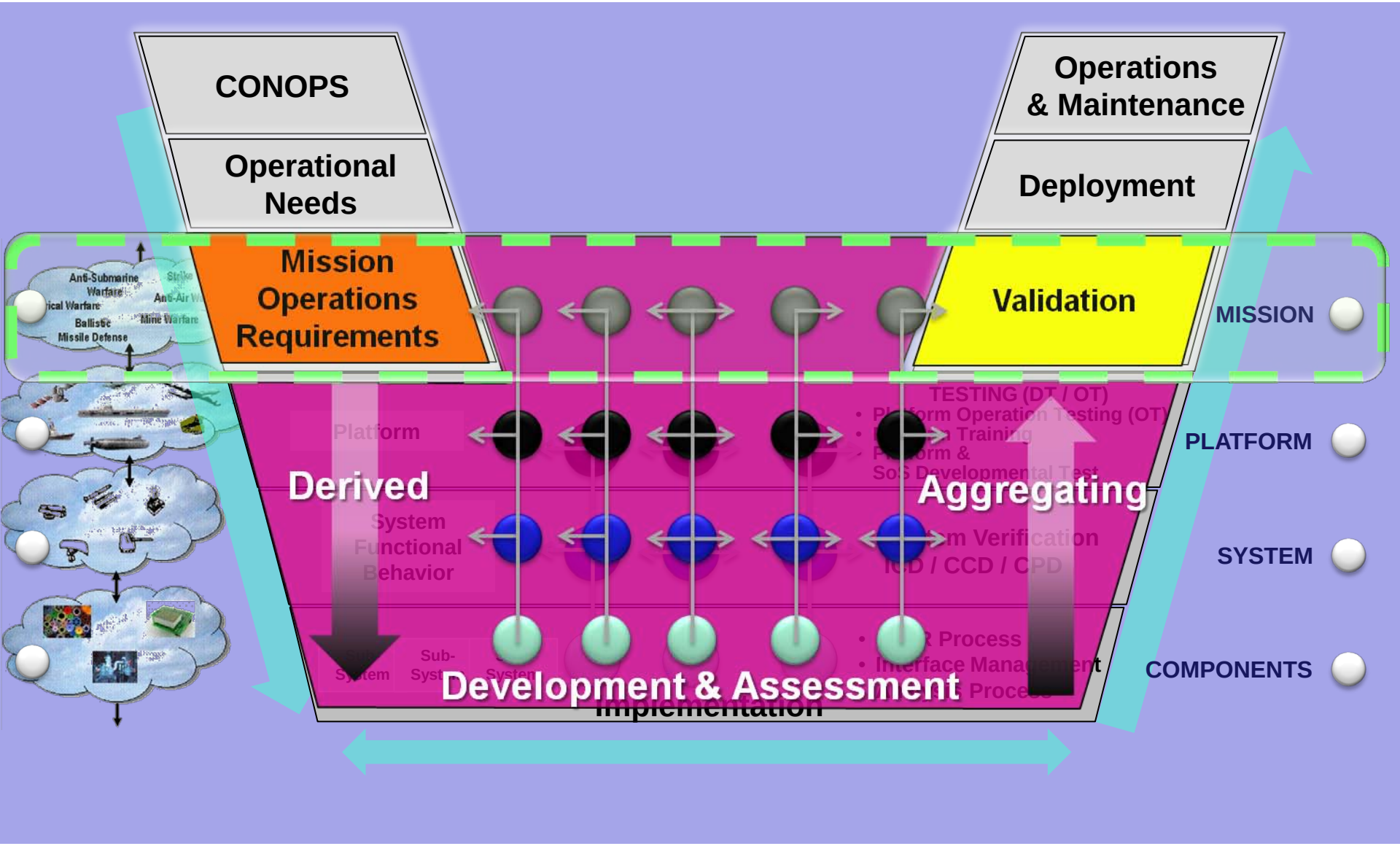

Engineering Practices at the Mission Level

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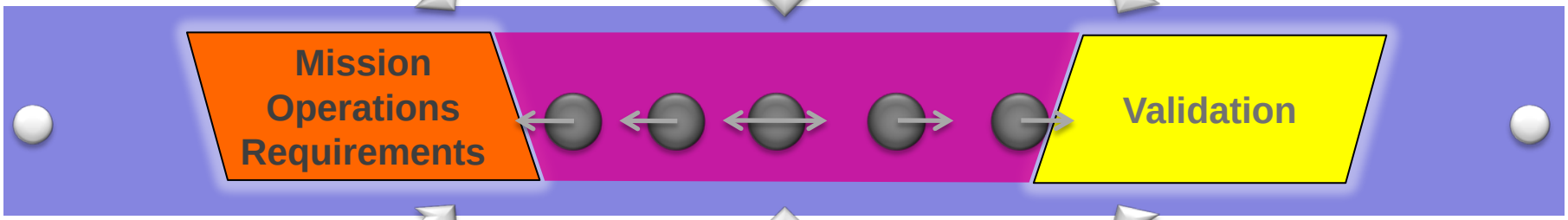
Net-Centric Integration & Interoperability

- ISP Review
- NR KPP Guidebook
- **DODAF Usability For Engineers**
  - -Architecture Data Elements
  - -Architecture Repository
  - -Architecture Hierarchy
- Mission/SoS Engineering Guidebook
- Mission Area CHENGs



Leveraging Modeling and Simulation

- Large Scale Capability Assessments
- COTF/MCOTEA – Test in the intended Environment

Meta Data Strategy
Analysis – Engineering – T&E Community

- Mission Threads
- Mission Based Test Scripts
- Use of Live Virtual Constructive Environment

The Engineering Workforce

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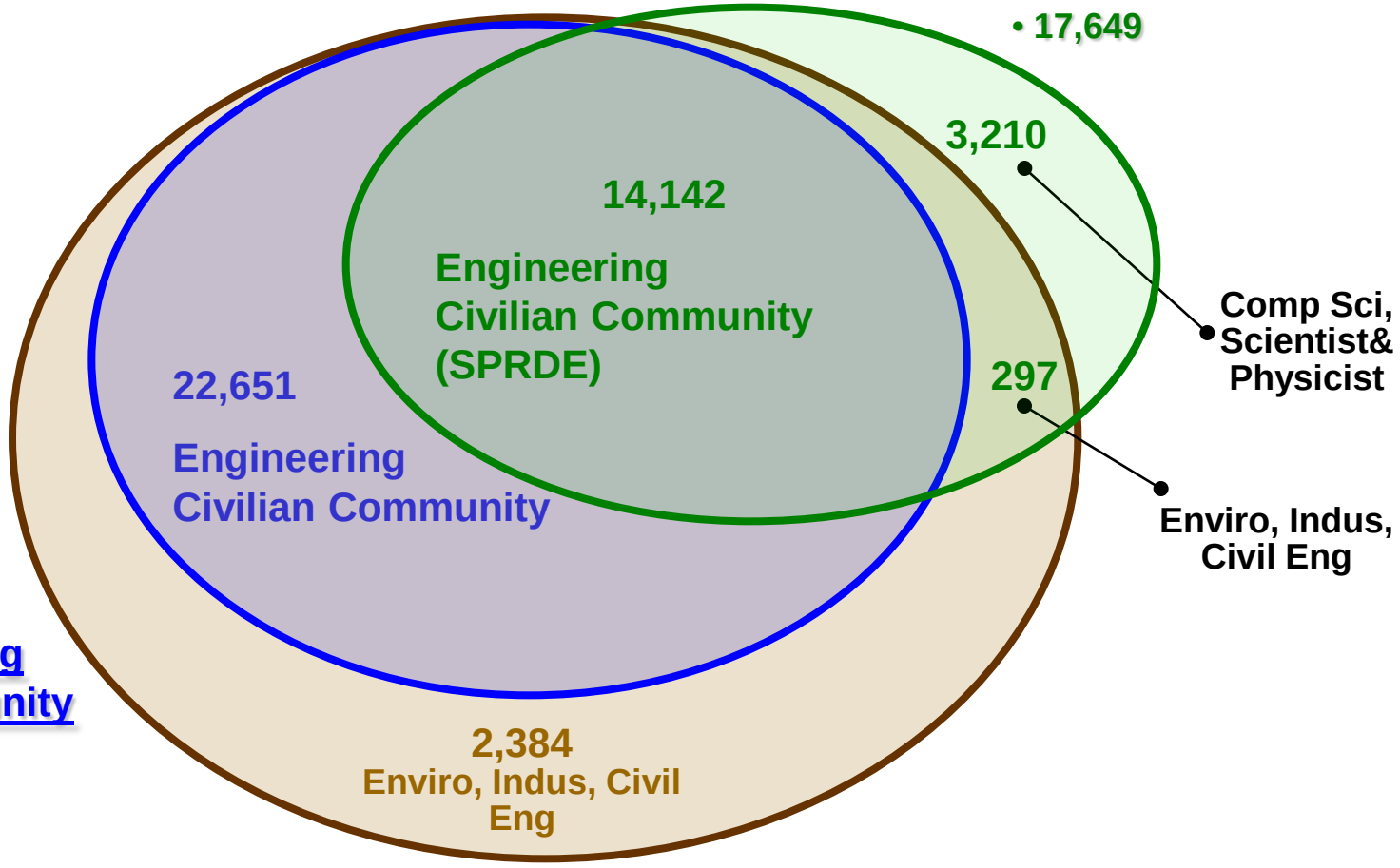
All Engineering Occupations (08xx)

- 39,474

Systems Planning, Research, Development & Engineering (SPRDE)

- 17,649



DoN Engineering Civilian Community

- 36,793

Figuring Out Who We Are Managing

OPM, DAWIA and Other Grouping Constructs

Engineering Community Workforce Geographic Location

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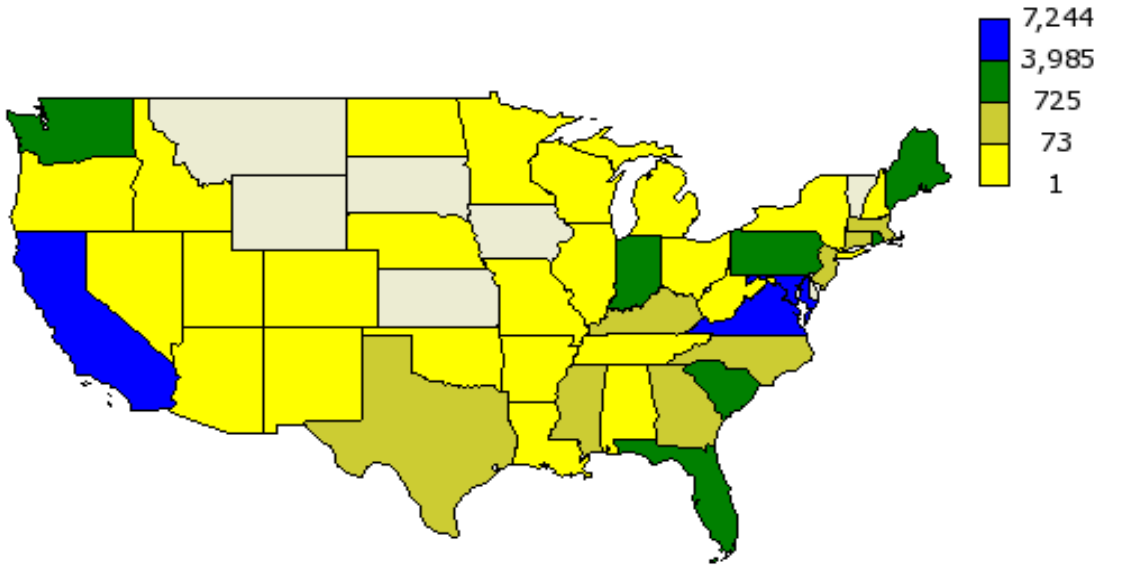

Alabama	17	Indiana	1627	Nebraska	2	Rhode Island	1613
Arizona	58	Iowa	0	Nevada	33	South Carolina	977
Arkansas	1	Kansas	0	New Hampshire	4	South Dakota	0
California	7243	Kentuckzy	0	New Jersey	669	Tennessee	28
Colorado	0	Louisiana	40	New Mexico	18	Texas	81
Connecticut	137	Maine	1309	New York	19	Utah	12
Delaware	0	Maryland	4630	North Carolina	621	Vermont	0
District of Columbia	2082	Massachusetts	85	North Dakota	1	Virginia	6001
Florida	1832	Michigan	1	Ohio	3	Washington	2755
Georgia	201	Minnesota	0	Oklahoma	11	West Virginia	9
Idaho	31	Mississippi	305	Oregon	2	Wisconsin	2
Illinois	55	Missouri	14	Pennsylvania	1228	Wyoming	0
Data Current as of March 2009						CONUS Total	33,757
						OCONUS Total	1,682
						Grand Total	35,439

Workforce Development Continuum

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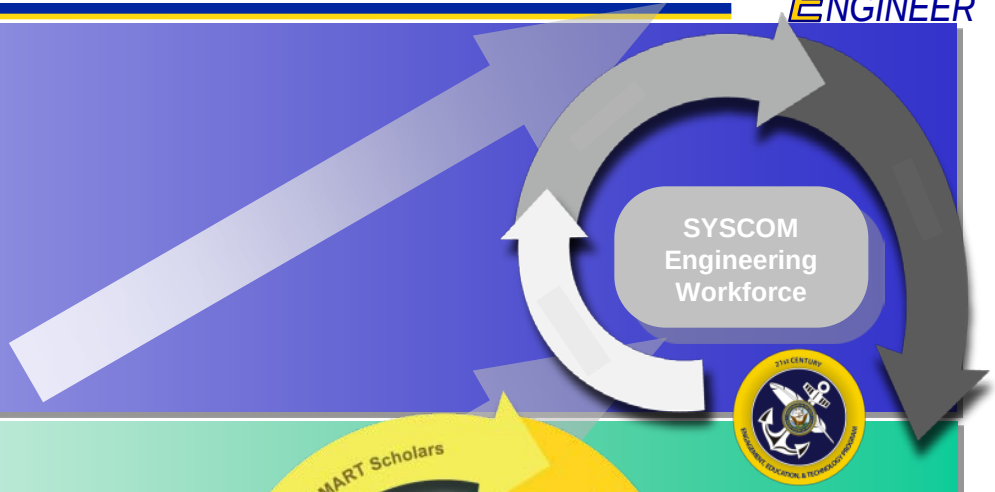
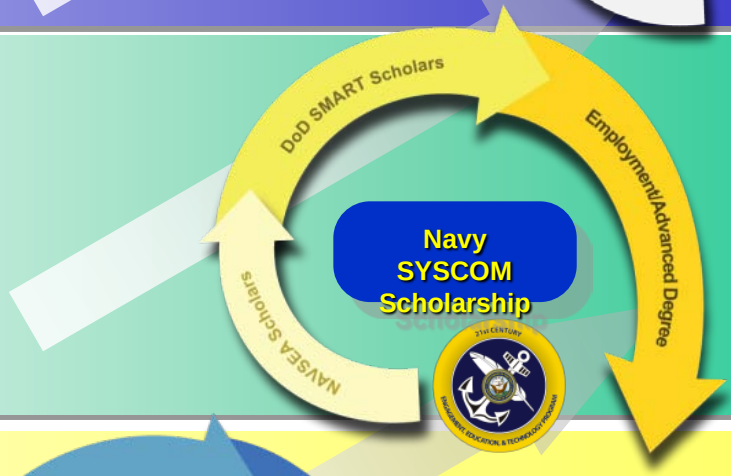
In-Service Workforce

- Job Assignments
- Work Experience
- DAWIA Certification
- Graduate Education
- Other Training



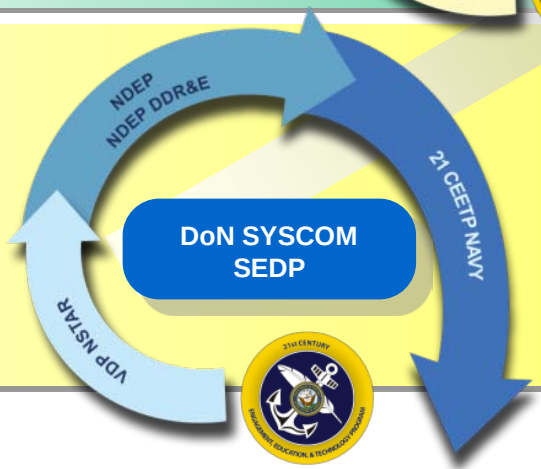
Undergraduate Workforce

- COOP/Summer Jobs
- Internships
- Scholarships
- Collaborative Research
- Recruiting



Future Workforce (K-12)

- Tutoring
- Competitions (Robotics, ROVs, etc)
- Science Fairs
- Influencing Educators / Curriculum



CHIEF / LEAD SYSTEMS ENGINEER
Training, Qualification & Certification Program

RDA CHIEF SYSTEMS ENGINEER

DOD TRAINING

SPRDE
SE/PSE
LEVEL I/II/III

DoN EDUCATION

GRADUATE
SE/ENG
COURSES

DoN SE TRAINING

- Naval SE Guide
- SEP Development
- Technical Authority
- ECPs for Engineers
- Leadership
- Communication
- SYSCOM Unique Courses

PERFORMANCE

DoN TWH CERTIFIES

SYSCOM
CHIEF /LEAD
SYSTEMS
ENGINEER

- DEMONSTRATED ABILITY TO PLAN and IMPLEMENT ENGINEERING PROCESSES
- BREADTH AND DEPTH OF TECHNICAL EXPERIENCE
- 8-10 YEARS OF EXPERIENCE

Naval Systems

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SHIPS AND AIRCRAFTCARRIERS

SUBMARINES

AIRCRAFT

C4ISR SYSTEMS

WEAPON SYSTEMS

LAND COMBAT SYSTEMS

Questions?

"Engineering": Overlapping Taxonomies

Each of the "Engineering" workforces is defined by a separate taxonomy:

"0800-Engineering & Architecture" is *1 of 23* white collar occupational groups

- Source: OPM's Handbook of Occupational Groups and Families
- Scope: Covers Federal civilian workforce

Occupational Group *- A major category of white collar occupations, embracing a group of associated or related occupations; e.g., the Engineering and Architecture Group, GS −0800....*

"Engineering Civilian Community" is *1 of 22* Navy Civilian Communities

- Source: Civilian Community Management's Community Definition (also adopted by CHR)
- Scope: Covers Navy civilian workforce

Community *- A subset of the organization's workforce, grouped from the highest organizational perspective by similarity of occupation, competencies, and career experience. The purpose of communities is to cultivate and manage a set of skills in the workforce, across the programs, lines of business, departments, or lower level organizational units.*

"Systems Planning, Research, Development, & Engineering" is 3 of 15 DoD/DoN AT&L Position Categories

- Source: DoD/DoN DAWIA Operating Guides
- Scope: Covers DoD/DoN active, reserve, and civilian acquisition workforce

Position Category *- subsets of AT&L positions that are characterized by a common set of core acquisition and functional competencies.*

Taxonomies: Authority/Policy

"0800-Engineering & Architecture" –
part of OPM's Occupational Definition

- US Code, Title 5

"Engineering Civilian Community" –
part of Navy Civilian Community Management (N111)'s Community Definition

- CEB Decision Memo (Jul 01)
- OPNAVNOTE 5430
- TFPM MOA, dated May 14, 2008

"Systems Planning, Research, Development, & Engineering" –
part of DoD/DoN's AT&L Position Categories

- DAWIA – Defense Acquisition Workforce Act (US Code, Title 10, Chapter 87)
- DOD DAWIA Operating Guide
- DoN DAWIA Operating Guide

***Related Efforts**:*

- *OSD/Component Functional Community Managers (CFCM)*
  - *DODI 1400.25*
- *SECNAVINST on Civilian Competencies and Community Management*
  - *Draft in routing*