The Department of the Navy
Systems Engineering Career Competency Model
(SECCM)

2015 Acquisition Symposium
Naval Postgraduate School
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May 13, 2015

Presented by: Professor Cliff Whitcomb, Rabia Khan, Jessica Delgado, Dr. Dana Grambow, Paul Walter, Juli Alexander and Corina White
### The Department of the Navy Systems Engineering Career Competency Model (SECCM)

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Prepared by ANSI Std Z39-18
• Background
• Working Group (WG)
• Development
• Cognitive and Affective Aspects + Analysis
• ENG Career Field Competency Model
• Verification of SECCM and Occupational Analysis – OPM
• Competency Model Implementation – SPAWAR Systems Center Atlantic
• Looking Ahead
What Happens When You Try to Hire Systems Engineers Without Actual Competencies
SECCM Problem Context

There is no systems engineering competency model verified IAW with the Uniform Guidelines on Employee Selection Procedures.

Only a model that is verified with the Uniform Guidelines can be used with confidence for human resource functions.
What is a Competency?

An observable, measurable pattern of skills, knowledge, abilities, behaviors and other characteristics that an individual needs to perform work roles or occupational functions successfully (OPM).
SECCM Working Group
Existing Models Used as a Foundation

- NASA SE Competency Model
- INCOSE UK SE Competency Model
- NAVAIR SE Competency Model
- Boeing SE Competency Model
- MITRE Competency Model
- OSD ENG Competency Model
- NUWC Newport SE Workforce Development Model
- SPAWAR Competency Model

SECCM

MASTER BUILDING
KSAs Used From Other Sources to Build SECCM

- ENG (Formerly SPRDE) 9%
- DAU 21%
- INCOSE UK 10%
- MITRE, BOEING, NASA 32%
- SE Workforce Development NUWC 28%
Cognitive and Affective Domains as Captured in SECCM

**Cognitive Domain**
Total KSAs: 1,732
- Remember: 23%
- Understand: 11%
- Apply: 41%
- Analyze: 9%
- Evaluate: 9%
- Create: 7%

**Affective Domain**
Total KSAs: 869
- Respond: 71%
- Value: 18%
- Organize: 3%
- Characterize: 4%
- Receive: 4%
- Characterize: 4%
- Value: 18%
- Organize: 3%
## ENG Career Field Competency Model

### 41 ENG Competencies

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<tr>
<th>Mission Level Assessment</th>
<th>Design Considerations</th>
<th>Data Management</th>
<th>Communication</th>
<th>Cost, Pricing, and Rates</th>
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<td>Stakeholder Requirements Definition</td>
<td>Tools and Techniques</td>
<td>Interface Management</td>
<td>Coaching and Mentoring</td>
<td>Cost Estimating</td>
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<tr>
<td>Requirements Analysis</td>
<td>Decision Analysis</td>
<td>Software Engineering Management</td>
<td>Managing Stakeholders</td>
<td>Financial Reporting and Metrics</td>
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<td>Architecture Design</td>
<td>Technical Planning</td>
<td>Acquisition</td>
<td>Mission and Results Focus</td>
<td>Business Strategy</td>
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<tr>
<td>Implementation</td>
<td>Technical Assessment</td>
<td>Problem Solving</td>
<td>Personal Effectiveness/Peer Interaction</td>
<td>Capture Planning and Proposal Process</td>
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<tr>
<td>Integration</td>
<td>Configuration Management</td>
<td>Strategic Thinking</td>
<td>Sound Judgment</td>
<td>Supplier Management</td>
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<tr>
<td>Verification</td>
<td>Requirements Management</td>
<td>Professional Ethics</td>
<td>Industry Landscape</td>
<td>Industry Motivation, Incentives, Rewards</td>
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<tr>
<td>Validation</td>
<td>Risk Management</td>
<td>Leading High-Performance Teams</td>
<td>Organization</td>
<td>Negotiations</td>
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<tr>
<td>Transition</td>
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- **Analytical**
- **Technical Management**
- **Professional**
- **Business Acumen**
Verification and Occupational Analysis - OPM

Verification of SE Competency Model with OPM

Step 1: Conduct SME Panels
• Use existing information to develop competency descriptions and list of tasks
• Conduct SME panels to refine the task and competency lists

Step 2: Administer Occupational Analysis Survey
• Assess competency importance along with frequency and importance of tasks
• Analyze results to identify critical tasks and competencies
SPAWAR Systems Center Atlantic Competency Alignment

SSC Atlantic SE Competency Framework KSA Pyramid
Use of SE Competencies for Workforce Development

**Step 1:** Go to the CDM wiki page for information on your Competency Roles & CDMs

**Step 2:** Identify your Role and/or Specialty Role(s). Draft your Short and Long Term Objectives.

**Step 3:** Complete & Submit your CDM Assessment Package

**Step 4:** Review feedback from CDM Assessment; Identify a few key training events or assignments

**Step 5:** Develop your IDP in TWMS and route to your supervisor.

**Step 6:** Complete recommended training or activities

**Step 7:** Update your IDP throughout the year!
- Knowledge of...
- Skilled in...
- Ability to...

**Step 8:** Submit for reassessment against CDM

**SPAWAR Systems Center Atlantic**
Looking Ahead

- Job Analysis for Model Verification
  - Survey of SE Population
    - Near end of FY15/early FY16
  - Analyze results
    - DON FY15
    - USA, USAF, and MDA FY16
- Create Career Development Plans
- Harmonize SECCM with Competency Framework for the International Council on Systems Engineering (INCOSE)
Questions?

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