Panel: Improving the Effectiveness of the Systems Engineering Workforce

NDIA Systems Engineering Conference

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Government Communications Systems
Context: Quantifying the Business Need for Growing Capability of the SE Workforce

**Market Trends**
- Increasing complexity
- Greater competition for declining resources
- Technology innovation
- Diversification into adjacent markets

**Business Drivers**
- Growth
- Speed
- Talent
- Strategy
- Affordability

**Demographics**
- **Engineering Generations**
  - Gen Y Millennials
  - Gen X
  - Baby Boomers
  - Matures

**Market Trends**
- Increasing complexity
- Greater competition for declining resources
- Technology innovation
- Diversification into adjacent markets
A Model for Operational Excellence

Capability of the Engineering Workforce is a Foundation for Business Performance and Growth

- Continuous measurable improvement
- Predictable cost, schedule, quality, performance
- Streamlined and efficient processes
- Adapting best practices
- Skills development
- Tools
- Capital Resources
- Overhead costs, rates
- Creating, developing, and delivering on opportunities to excel
- Right person, right job
54% GCS Employees are Degreed Engineers with an Average of 14 Years of Service

$100M investment in High Technology Center
  • Increases technological innovation
  • Enhances collaborative thinking

Engineering Personnel By Degree
- PHD (3%)
- Non Deg (9%)
- AA (7%)
- Mast, (33%)
- Bach, (48%)

Engineering Degree Disciplines
- Electrical Engineering (16%)
- Mechanical Engineering (8%)
- Software Engineering (26%)
- Systems Engineering (19%)
- Other Engineering (23%)
- Sys Integration & Test Engrg (8%)
- PHD (3%)
- Non Deg (9%)
- AA (7%)
- Mast, (33%)
- Bach, (48%)
## Harris SE Leadership Roles

<table>
<thead>
<tr>
<th>SE Role</th>
<th>Definition</th>
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<tbody>
<tr>
<td><strong>Chief Systems Engineer (CSE)</strong></td>
<td>Senior technical authority and point of contact for a program, pursuit, study.</td>
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<tr>
<td><strong>Project Engineer (PE)</strong></td>
<td>Implements and executes the plan for delivering the system, within established cost, schedule, and technical baselines.</td>
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<tr>
<td><strong>Systems Architect</strong></td>
<td>Creates program conceptual approach based on a thorough understanding of customer mission, applications, and value system.</td>
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<tr>
<td><strong>Advanced Programs Engineer (APE)</strong></td>
<td>Provides strategic technical leadership to draw on Harris technical competencies to meet the business needs of Harris and its customers.</td>
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<tr>
<td><strong>Enterprise Architect</strong></td>
<td>Works with stakeholders to validate understanding of an organization’s strategy, processes, information, and information technology assets.</td>
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Harris Strategies for Growing SE Capability

• Workforce assessments
  – Leadership
  – Technology
  – Succession planning
  – Workforce competencies

• SE development
  – Transfers from other disciplines
  – “Systems thinking” across functions
  – Sponsored MSSE / MSEM programs
  – Training and development
  – Career planning (tech vs. mgmt paths)
  – Formal mentoring program
  – SE forums, seminars, working groups

• Key initiatives: processes and tools
  – Model-Based Engineering
  – Affordability, Design to Cost

The Harris strategic growth plan depends on developing future leaders. Action plans are defined and tracked to close capability gaps.
## Developing the Workforce in a Matrix Organization

<table>
<thead>
<tr>
<th>Action</th>
<th>Engineering</th>
<th>Programs</th>
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<tbody>
<tr>
<td><strong>Performance Management</strong></td>
<td>• Perf. reviews (annual, periodic)</td>
<td>• Day-to-day oversight</td>
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<td>• Regular communications (formal and informal)</td>
<td>• Regular feedback to employee</td>
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<td></td>
<td>• Mentoring, counseling, action plans</td>
<td>• Periodic inputs to Eng Mgmt chain (performance, salary planning, …)</td>
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<tr>
<td><strong>Rewards and Recognition</strong></td>
<td>• Formal and informal recognition</td>
<td>• Program team/peer recognition</td>
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<td></td>
<td>• MBWA</td>
<td>• Nominations for formal recognition</td>
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<tr>
<td><strong>Career Development</strong></td>
<td>• Staffing assignments</td>
<td>• Salary planning input</td>
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<tr>
<td></td>
<td>• Salary planning, promotions</td>
<td>• Promotion input (solicited, unsolicited)</td>
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<td></td>
<td>• Succession planning</td>
<td>• Program role opportunities</td>
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<td>• Calibration across departments</td>
<td>• Mentors, protégés</td>
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<tr>
<td><strong>Training</strong></td>
<td>• Role-based career learning paths</td>
<td>• Program training (domain, tools, processes, etc.)</td>
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<tr>
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<td>• Strategic skills development</td>
<td>• Cross-IPT collaboration, sharing, WGs</td>
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<td></td>
<td>• Tools, processes, technologies</td>
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<td></td>
<td>• Classroom, CBT, forums, lunches</td>
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<tr>
<td>**Employee Engagement /</td>
<td>• Periodic interaction</td>
<td>• Daily interaction</td>
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<tr>
<td>Communications**</td>
<td>• Harris communications, roundtables</td>
<td>• Business area/program communications</td>
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<td></td>
<td>• Employee resource groups</td>
<td>• All hands, staff meetings</td>
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<tr>
<td></td>
<td>• Status reports, briefings, email</td>
<td>• Program socials, team building</td>
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**Effective workforce performance and retention is a partnership between Engineering and Programs**

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