Industry Panel: Best Practices for SE Workforce Development

Thursday, October 31, 2013
Track 3: Education

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COL Don Robbins, USAF, Deputy for SE Plans and Policy, ODASD(SE)

Dr. Stan Rifkin, Master Systems Inc., facilitator

Dedicated to the hard work of …

Mr. Nic Torelli, recently retired Director of Mission Assurance, Office of the Assistant Secretary of Defense (SE).

Also: Thank you to Geoff Draper, Harris Government Communications Systems, for suggesting the panel and submitting the proposal for approval.

Defense Acquisition Workforce Lifecycle Model (WLM)
by Years to Retirement Eligibility (YRE) - Civilian (FY11) - SPRDE (SE/PSE)

Future Career Group - 21 to 25+ Years to Retirement	Mid Career Group - 11 to 20 Years to Retirement	Senior Career Group - 10 or less years to retirement or retirement eligible
12,625 (33.5%)	7,429 (19.7%)	17,659 (46.8%)

Workforce Count (Civilian)

- More than 25 YRE: 21.2% — 8,010
- 25 to 21: 12.2% — 4,615
- 20 to 16: 8.9% — 3,343
- 15 to 11: 10.8% — 4,086
- 10 to 6: 18.2% — 6,869
- 5 to 1: 17.2% — 6,495
- Eligible to Retire: 11.4% — 4,295
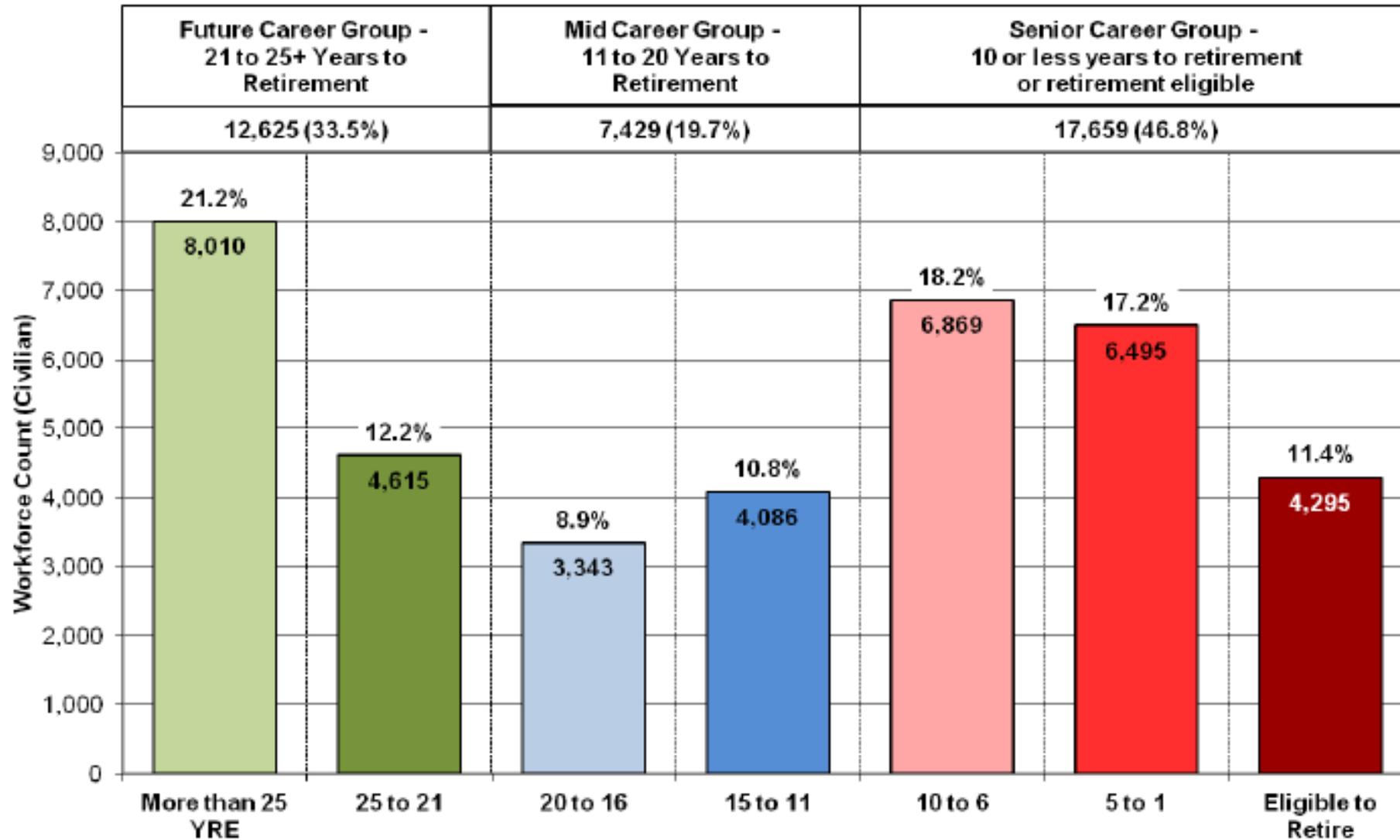
OUSD(AT&L)/HCIDefense Acquisition WorkforceSPRDE (SE/PSE)Summary Data FY 2011, Ver. 2, p. 6. Available at
https://dap.dau.mil/workforce/Documents/FY11-Functional-Career-Fields/FY11-SPRDE%28SE-PSE%29-DataAddendums-v2.pdf

What's the secret to success in managing high technology?

High differentiation and high integration:
   Differentiation = deep expertise.
   Integration = getting the experts aligned to proceed in the service of a common goal (herding cats?).

Ever seen "Integrator" on a business card?
We do see Product Manager or Systems Engineer!

PAUL R. LAWRENCE
JAY W. LORSCH

Organization and Environment

Harvard Business School Classics
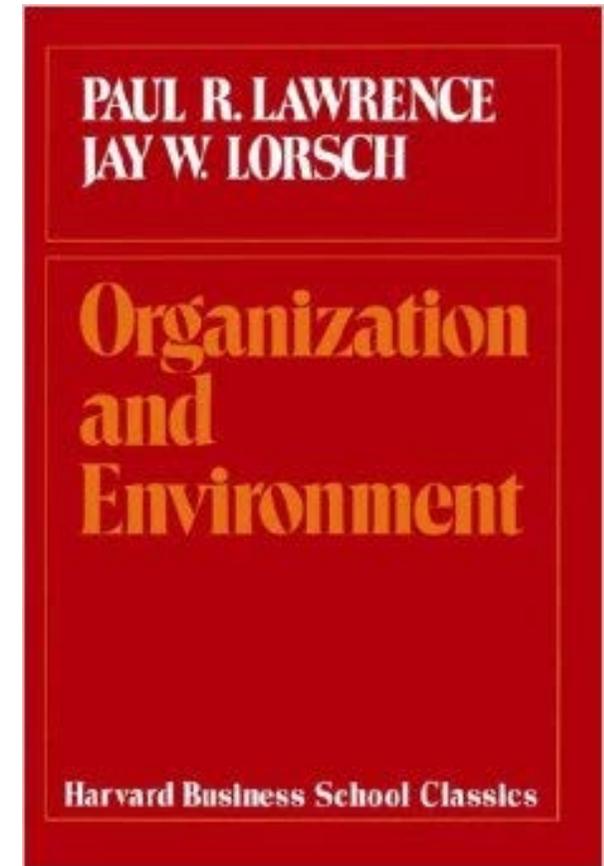
(1967)

Criteria for Successful MITRE Systems Engineers

- • Define the sponsor's and customer's problem or opportunity from a ==comprehensive, integrated perspective==.
- • Apply ==systems thinking== to create strategies, ==anticipate problems==, and ==provide short- and long-term solutions==.
- • ==Adapt to change and uncertainty== in the project and program environment, and assist the sponsor, customer, and other stakeholders in adapting to these.
- • Propose a ==comprehensive, integrated solution== or approach that:
  - o Contributes to achieving the sponsor's, customer's and other stakeholders' ==strategic mission objectives in a changing environment==,
  - o Can be feasibly implemented within the sponsor's and customer's ==political, organizational, operational, economic and technical context==,
  - o Addresses ==interoperability and integration challenges== across organizations, and
  - o Shapes ==enterprise evolution through innovation==.
- • ==Cultivate partnerships== with our sponsors and customers to work in the public interest.
- • Bring their own and others' expertise to provide ==sound, objective evidence and advice that influences the decisions== of our sponsors, customers, and other stakeholders.

MITRE Enterprise Perspectives

1.1 Comprehensive Viewpoints. Systems engineers demonstrate a broad understanding of the systems context and environment, model systems of varying complexities, and discover new approaches and ideas to model complex systems. They perform portfolio gap analyses and scenario developments, learn to view uncertainty as an opportunity for achieving better enterprise capability, and create long-term strategies that achieve business/mission objectives. They consider the future needs of the sponsor/customer by considering all aspects of their problems, including the political, organizational, economic, operational and technical aspects.

1.2 Innovative Approaches. Systems engineers innovatively identify partial solutions to ambiguous problems, propose and generate creative ideas and solutions, and frame the essence of the sponsor/customer's problem. They develop solutions that take a global view, while addressing competing local interests, synthesize information into solutions that make appropriate trade-offs by aligning the interests of the larger stakeholder community, and recommend scalable and adaptable solutions for complex systems to the sponsor/customer.

1.3 Foster Stakeholder Relationships. Systems engineers network to build alliances and consensus among stakeholders and leverage the best engineering resources for the sponsor/customer inside and outside MITRE. They develop and express independent, objective, and unbiased positions, and can communicate information objectively, directly, and tactfully to key decision-makers, including information on sensitive or politically-charged issues. They explain complex ideas, problems and solutions in understandable terms, question assumptions, and give frank advice even when it may require difficult conversations with our stakeholders .

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General agreement on the traits, but …

Are the traits innate or learned?
Politically correct answer: Some of both.

Why does that matter?

Prefer investing in training or investing in selection?

This is the Education Track, so …

If we bet wrong, then:

      We have wasted scarce resources, esp. time.

      We have not created (more) effective SEs.

How do effective SEs obtain alignment?

- (Line) Authority?
- Influence?
  - Know the questions to ask, speak the language.
  - Must have technical background.

Experience. What does it bring?

What is the difference between a novice and an expert?

- How to accomplish specific tasks (prepare for, review, and conduct a PDR).
- How to think about a situation, how to see the essence quickly.

Source/Credit: Nicole Hutchison, Systems Engineering Research Center

Col. John P. Stapp on the rocket sled "Sonic Wind I"
during a 421 mph-run in March 1954