The Helix Project
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- Helix is a multi-year longitudinal study designed to build an understanding of the systems engineering workforce in the U.S. Department of Defense (DoD) and the Defense Industrial Base (DIB)
- Helix is focusing on three main research questions: 1. What are the characteristics of systems engineers? 2. How effective are systems engineers and why? 3. What are employers doing to improve the effectiveness of their systems engineers?
- Data collection is primarily through face-to-face, semi-structured interviews with systems engineers
- Reporting is done in an aggregated anonymous manner without revealing the identities of participating individuals or organizations

Atlas: The Theory of Effective Systems Engineers, v. 0.25

Forces that impact level of Proficiency
(generated by Personal and Organizational Development Initiatives)

Experience  Mentoring  Education & Training

Proficiency of a Systems Engineer

Personal Enabling Characteristics
Lifelong Learning
Self-Awareness
Ambition & Internal Motivation
Confidence, Persistence, and Focus
Professionalism and Respect
Personal Interests and Experiences

Technical Leadership
Building & Orchestrating a Diverse Team
Balanced Decision Making & Risk Taking
Managing Stakeholders and their Needs
Conflict Resolution & Barrier Breaking
Business & Project Management Skills

Interpersonal Skills
Communication
Listening & Comprehension
Working in a Team
Influence, Persuasion, & Negotiation
Building a Social Network

Math / Science / General Engineering

System's Domain & Operational Context

SE Discipline

SE Mindset

Illg Picture Thinking
Paradoxical Mindset
Flexible Comfort Zone
Inquisitive & Self Driven
Quick Learning & Abstraction
Foresight & Vision

Analysis of INCOSE Professional Certification Program Applications

Research Plans for 2015
- Develop next version of the theory of effective systems engineers, Atlas v. 0.5
- Expand data collection beyond defense-related organizations, and to include program / project managers and other specialty engineers
- Validate and implement model for developing effective systems engineers
- Continue analysis of INCOSE Professional Certification Program applications

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