Boeing N&SS

Systems Engineering Streamlining
Budget Constrained Strategies for SE Excellence

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Better Buying Power & Streamlining Initiatives

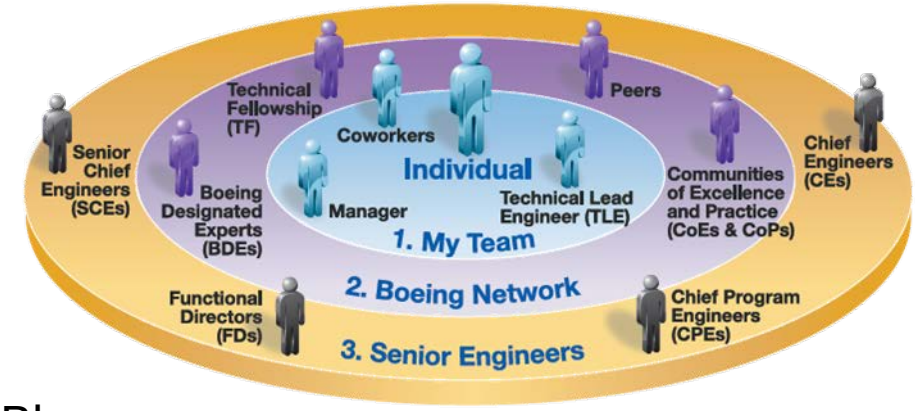
- Better Buying Power 1.0, 2.0, 3.0
  - Best Practices, Better Tools, Innovation and Technical Excellence
- DASN RDT&E Systems Engineering Streamlining Initiative (SESI) Task Force
  - Eliminate redundancies, overlaps, cumbersome work practices and process inefficiencies
  - Evaluate policy, guidance and processes to make recommendations on SE policy changes, improved planning processes and effects process alignment
  - Building a SE competency model and working with OSD and DAU on key leadership position designations, developing training and establishing qualification processes

Attracting Talent
Engineering Accelerated Hiring Initiative

- Vision
  - Build an incredibly strong diverse engineering talent pipeline to assure Boeing's second hundred years
- Background
  - The Engineering Accelerated Hiring Initiative was chartered in 2010 by Boeing's SVP Engineering, Operations and Technology
  - Over the past four years, Skill Leaders have engaged strategic engineering universities for on-campus interviews and hiring decisions
  - There are currently 23 strategic universities
  - Selected students are extended commitment letters for a job with Boeing
  - Positions are available across the enterprise
  - Entry level and intern positions available

Developing Talent
Skill Development Programs

- Technical Lead Engineer (TLE) / Communities of Practice
- Engineering Excellence Career Partnership (EECP)
- Career Roadmaps / Guidelines
- Training Guidelines / Courses
- Personal Development Plans
- Technical Fellowship
- Boeing Designated Expert (BDE)
- Proposal Experience through Get To Blue
- Boeing Technical Exchange Conference (BTEC)
- Systems Engineering Leadership Program (SELP)
- Enterprise Engineering Technical Mentoring (EETM)
- Communities of Excellence / Communities of Practice



Streamlining Initiatives
Reuse

- Space Launch System (SLS)
  - System designed around the reuse of heritage components from Shuttle, Delta, Atlas, et al.
  - Recognition that intimate understanding of reused components is essential – no compromising engineering rigor or skipping steps!
  - Appropriate qualification of heritage components performed to mitigate the risks from differences in requirements, use cases, and environments
- Derivative programs
  - KC-46 Tanker (767)
  - AWACS (707/767)
  - AEW&C (737-700)
  - P-8 (737-800)
- 702 Satellite Product Line: designed for dual use – commercial & government
- Software development

Shuttle Prevalve

Delta IV Pressurization Solenoid Valve

Shuttle Fill & Drain Valve

Streamlining Initiatives
Model-Based Systems Engineering

- **Single Database**: Architecture elements, along with their attributes and relationships, are created and stored in an integrated database that includes –
  - Use Cases, Functions, Requirements, Verification Requirements, Interfaces, etc.
- **Minimizes Tool Integration Issues**: Integrated database eliminates the need to interface disparate tools (e.g., Requirements Development tools (DOORS) and System Behavior modeling tools (Rhapsody))
- **Traceability and Change Impact Analysis**: Interrogation of any given architecture element reveals all relationships to the element
- **Different Architecture Views**: Tool provides multiple views of the same data (Hierarchy, EFFBD/Activity, Sequence, N2, IDEF0, and Spider)
- **Extensive Pre-Defined Schema**: Provides for extensive linking

Streamlining Initiatives
Model-Based Systems Engineering

- Single data environment ensures completeness & consistency of design data
- Permits multi-user input & immediate synchronization, improving efficiency & productivity
- Potential design issues identified early in the lifecycle
- Robust query engine allows rapid assessment of the integrated database, finding anomalies early, preventing rework
- Use of a single data environment results in data availability throughout program life-cycles
- Traceability through model elements enables efficient change / impact analysis enabling a more adaptable system and more efficient trades
- Detailed functional architectures result in reductions of actual program test hours