Innovation in Workforce Development

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Challenges

Engineering design is the first step in the process of realizing a product. If the design is done right, everything else will follow. If the design is done wrong, everything else will follow.

Importance of Engineering

The Stakes: Everything

- The fate of the free world
- The fate of your brothers / sisters
- The fate of your allies
- The fate of your children
Balancing Creativity & Value Creation

**CREATIVE PROCESSES**

- Out-of-box thinking
- Raw and refined ideas
- Experimentation
- Ambiguity/Uncertainty
- Research
- Intuition
- Surprise
- Courage
- Find the right things
- Ask questions and explore the unknown innovation
- Seize opportunities
- Visualize the future and consider all options
- Include incremental and radical innovations

**VALUE CREATION PROCESSES**

- In-the-box thinking
- Engineering/Manufacturing
- Precision
- Well-calculated trade-offs
- Buying/Selling of ideas
- Do things right
- Answer questions and verify solutions
- Avoid major risks
- Get the product into the marketplace
- Bias for incremental

Source: “Making Innovation Work”
Davila, Epstein & Shelton, 2010
Cornerstones to Engineering Excellence

**Organization**
- Hierarchal alignment and consistent expectations of engineering leaders to reinforce excellence
  - Focus on technical decisions / risk
  - Independent path for information flow
  - Elevate and arbitrate high risk decisions
- Dedicated technical leaders focused on technical issues

**People**
- Sustainable development system that enables and reinforces the strengthening of engineering excellence
  - Technical role of the engineering leader
  - Training, development, and feeder pools
  - Succession planning
- Visible and aspirational career positions for senior engineering leadership

**Process**
- Insight to technical decisions & issues, and ability to interject technical guidance
  - Engineering commitment
  - Gated development process engagement
  - Technical independent review leadership
  - Supplier insight
- Risk awareness and mitigation
  - Disciplined technical risk identification, assessment, and resolution
  - Closed loop finding closure plans
- Technology direction and readiness

**Culture**
- Open, transparent communication paths for technical issues integral to program operations
- Technical decision making valued as the highest priority for engineers and engineering leadership
- Engineers demonstrate the highest standards of safety, honesty, integrity, and ethics
- Reinforced personal accountability for engineering excellence – within four walls and into the supply base
Engineering Excellence Threads

- Increase technical focus and accountability
- Enable rapid access to enterprise technical expertise
- Improve process usefulness to ensure effectiveness and to foster innovation
- Enhance technical career development
## Career Development Roadmap

### Leadership Training
- Systems Engineering Overview
- Employee New Hire Experience

### General Competencies Training
- Engr Process Principles
- Materials Engr Principles
- Lab Protocols and Procedures
- Standardization Requirements
- Engineering Drawings & Specs
- Materials & Processing

### Technical Competencies Training
- Engineering Processes
- Engineering Standards
- Manufacturing Methods
- Matl/Engineer Principles
- Industry/Govt Standards

### Company Process Training
- IDS Enterprise-Wide Engineering Processes Training
- MP&P Enterprise-Wide Common Processes Training
- Spec Authoring
- Prin Inv on R&D Task
- Publish An Industry Tech Paper
- Publish Internal Tech Report
- Support Special Proj
- Support External
- Prepare Capital Bus Case
- Sds Dev Org
- Lead M&P Role on IPT
- Perform Failure Analysis
- Lead Supplier Resolution Activity
- Proposal Lead
- Participate on an Independent Review Team
- Lead M&P Engr For Program Mgr (Small)

### On-the-Job/Developmental/Experiences
- Lead Supplier
- Lead M&P Engr For Program Mgr (Large)
- Support on Capital Bus Case
- Participate on a Supplier Qual Team
- Lead M&P Role on IPT
- Site IAD Coordinator
- Represent Boeing on ESDO

### Formal Education
- Engineering Degree
- Master of Science / Management / Business
- Executive Leadership Curriculum/Program

### Capability Clusters
- Company Process Training
- IDS Enterprise-Wide Engineering Processes Training
- MP&P Enterprise-Wide Common Processes Training
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- Publish Internal Tech Report
- Support Special Proj
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### Degrees
- Engineering Degree
- Master of Science / Management / Business

### Exec 1 Exec 2
- Manager K
- Manager L
- Manager M
- Exec 1
- Exec 2

### Grades 1 – 6
- STF
- TF
- ATF
- Tech Princ. (NW)