Exploration: An Industry Perspective

Sustaining the future of America’s Human Space Flight Program

Presented by:
Charlie Precourt
ATK Aerospace Systems
Keys to Sustainability

• Safety must be a priority

• Timely execution is key
  • Near-team human exploration missions are critical
  • Streamline procurement process
  • Government / industry interface – learn from NRA development

• Engage International Partners

• Seek continuous improvement focused on cost
  • Incorporate lean manufacturing
  • Schedule is one of the biggest drivers of cost
  • Affordability benefits are achievable
Making Affordability Happen
**Value Stream Mapping Overview**

**Objective**
- Reduce cost of SLS first stage booster by >30%

**Approach**
- Established Value Stream teams – Hardware and System
- Executed value stream mapping process to capture opportunities for improvement
  - Established current condition, ideal condition and target condition for booster components and systems
  - Identified hardware flow, “do-loop” inefficiencies, wait times, process issues, information flows, redundant process steps, unnecessary move operations, excess operations support, etc.

**Results**
- ~ 450 Changes were worked with and approved by NASA
  - Numerous improvements implemented and validated.

**Driving Need**
- ATK challenged to provide future boosters for less cost to NASA
- Projected budgetary constraints will challenge ATK resources

**Initial VSM Team Targets**
- 50% reduction in cycle time
- Zero defects
- Component design to cost targets (~30% reduction)

**48 to 26 weeks = 46% Motor Assembly Reduction**
VSM Summary

- Value Stream Mapping Objectives
  - Cost Savings – striving to achieve proposal targets
  - Assembly Cycle Time Reduction – 46% reduction to-date
  - Defect Reduction – ~50% reduction
- Continued improvement is mandatory to achieve SLS budget commitments (Learning Curve)
  - Opportunities still exist
  - Increasing value through waste elimination must be a continuing goal

Continuous improvement is the Key to meeting our Program Goals
Timely Execution, Affordability and Safety are Keys to Success

• Must be sustainable for the long-term
  • Streamline processes and costs
  • Engage International Partners
• Leverage lessons from previous program designs to achieve highest levels of safety
Near term missions are critical

• Demonstrates mission viability (joint moon mission with robotics, NEA)
• Generates and maintains excitement about program
• Focus on mid range vehicle (100 ton range)
  • More affordable
  • Adequate for high majority of possible missions
  • Allows funding to build mission hardware
  • Facilitates more earlier missions
  • Focus on mission versus launchers
  • America operations in Human Space Flight sooner

Focusing on the mid range launcher meets the NASA demand for affordability, sustainability and safety.