Lean Effects on Aerospace Programs
Atlas Case Study
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Presentation Outline

- Product History and Program Overview
- Lean Implementation
- Major Achievements and Benefits
- Enablers
- Major Findings
- Remaining Challenges
Atlas History

- **Atlas: Air Force & ICBM Heritage**
  - NASA used first Atlas in 1958
  - Total launches 553, as of 2/9

- **Atlas II and IIAS**
  - First launch in 1990
  - 60 consecutive successful launches (including Atlas III)

- **Atlas III**
  - Technology transition platform: Atlas II to Atlas V
  - Total production Atlas II + Atlas III = 103

- **Atlas V—EELV**
  - Improved design for manufacturability
  - Payload capacity 8700-19,000 lbs to GTO
  - First launch May 9, 2002
Goal: Reduce costs while maintaining mission success

Supplier incentives
Supplier mentoring program

1995
EELV competition
Projected growth in market
Commercial competitive pressure

1996
Value relationships with suppliers initiated
Kaizen events

1997
LM-21 Initiative - Lean and 6 Sigma
Helping suppliers become lean

1998
Lean training events

1999
Reorganization around value streams

2000
Supplier incentives

2001
Reorganization around value streams

Goal: double capacity without doubling the facility
Atlas II was the focus of improvement;  
Atlas V will reap more benefits

- Manufacturing: 10,000 part reduction between Atlas IIAS and III
- Supply chain: percent of failed inspections from 28% to 6%
- Performance: available payload increase of 2400 lbs
- Production cycle time reduction: Atlas II - 48 months to 24
- Significant cost reduction

All of this accomplished during a market downturn!
Enablers

- Leadership
- Communication
- Information flow
- Factory floor initiatives
- Lean from government side
Leadership, corporate visibility, LM-21 initiative

People issues are critical

Employee value

Supplier value

Engage workforce in self-reinforcing learning cycles

A significant fraction of supplier cost is determined by the customer’s requirements and business practices
Remaining Challenges

- Maintain employee commitment and knowledge base during market downturn
- Do for the rest of the enterprise what lean has done for manufacturing
- Maintain leadership focus during the continuing enterprise transition