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Apr 28th, 8:00 AM

## Panel Session IV - Launch Vehicle Options for Exploration

Michael Gass

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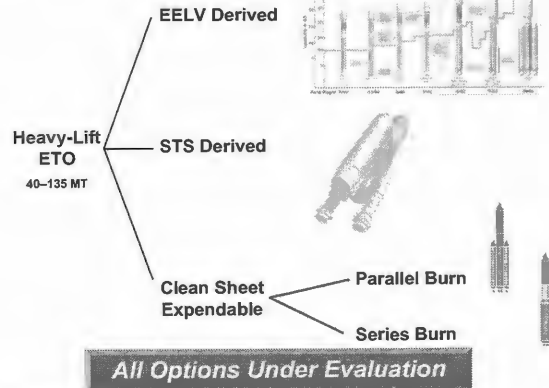
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# Launch Vehicle Options for Exploration

Mr. Michael Gass  
VP, Space Transportation  
Lockheed Martin  
Space Systems Company



## Heavy Lift Options



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## Evolution Philosophy

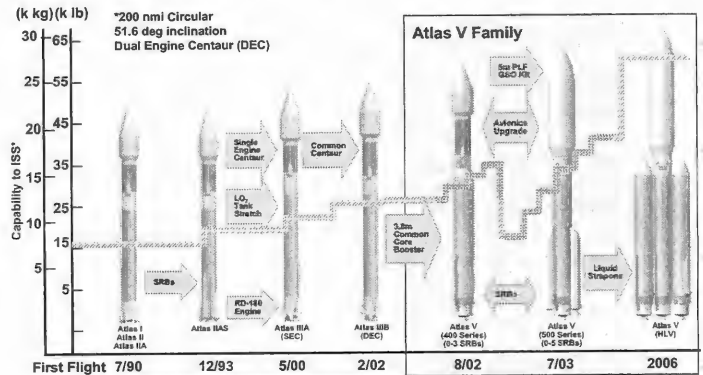
- Maximize Mission Success, Affordability and Performance
  - Introduce Improvements One Step at a Time- Spiral Development
  - Ensure Improved Flying Product at Each Step
- Maintain Common Fleet and Processes for All Customers
  - NASA, AF, NRO, Commercial
  - Human Spaceflight
- Benefits of Evolution Philosophy
  - Grow Capability As Needs Mature-Lowest Risk & Incremental Cost
  - High Demonstrated Reliability
  - Shared Infrastructure Reduces Cost

**Evolutionary LV Development Strategy Proven**

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## Atlas Evolution

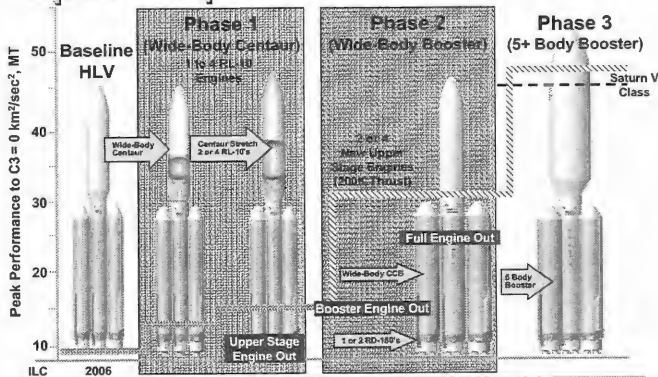


**Low Risk Evolutionary Development**

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## Atlas Evolution for Space Exploration



**Evolutionary Strategy Enables Flexible Architecture**

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## System-Level Human Rating

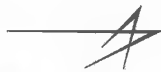


**System Level Approach Meets Space Exploration Needs**

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## Summary



- **Focus on 100% Mission Success**
- **Mission Architecture Sets Direction for Future Space Transportation Capability**
- **Integrating Safety, Affordability and Performance Is Critical to Enable Renewed Vision of Discovery**

*Nation's Vision Provides Unique Opportunity for  
NASA, DOD and Industry Partnership*

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