

The background of the slide is a deep space image featuring several colorful galaxies in shades of red, orange, and blue against a black field of stars. In the upper right corner, there is a white, stylized logo consisting of a horizontal line and a diagonal line that forms a sharp, upward-pointing 'A' shape.

Mission Assurance Challenges in Space Flight Projects

Regina Palmer
Lockheed Martin Space Systems Company
Civil Space Line of Business (LOB)
Quality Assurance Director

CIVIL SPACE PROGRAMS



Courtesy: NASA

GOES-R



Courtesy: NASA

TIROS

(All Flying)



Orion



Courtesy: NASA

Hubble Space Telescope (HST)



Courtesy: NASA

International Space Station (ISS)



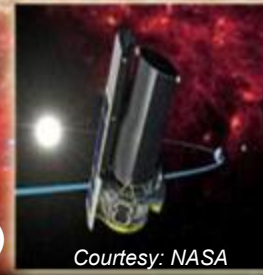
SUVI



GLM



Near Infrared Camera (NIRCam)



Courtesy: NASA

Spitzer Space Telescope (formerly SIRTf)



ASRG



2001 Mars Odyssey



Mars Reconnaissance Orbiter (MRO)



MAVEN



Phoenix (Completed)
Courtesy: NASA



Mars Science Laboratory (MSL)



Courtesy: NASA

Juno



GRAIL



Stardust NeXT

CIVIL SPACE SUBCONTRACTORS

International Suppliers

- Galileo Avionica - Italy
- IHI Aerospace - Japan
- Rutherford Appleton Laboratory - England
- RYMSA - Spain
- Sodern - France
- THALES - Germany



Heritage Hardware Reduces Cost and Risk to Programs

- Commercial programs have:
 - Proven 15 year life performance,
 - Quick turn around (less than 2 years from start to launch)
 - Fixed price performance
 - Leverages existing designs, EEE parts, materials, processes, manufacturing work instructions, EGSE/ MGSE and test procedures
- DOD now exploring use of commercial spacecraft process as part of affordability Initiatives

Recommendations for Programs

- At contract award, clearly identify qualification and flight history of proposed hardware
 - Show how proposed hardware is enveloped by the qualification history
 - Provide flight data summary (e.g. years of operation, flight failure history, etc.)
 - Include a summary of Circuit Card Assembly (CCA) modifications (e.g. “White wires”, “cuts and jumpers”) that were part of the qualification and flight history.
 - Accept existing CCA modifications based on Qualification/Flight history

Recommendations for Programs

- At contract award, clearly define deltas between proposed hardware and the qualification/flight history
 - Identify changes to EEE parts list due to part obsolescence or design modifications
 - Identify EEE parts that exceed the age requirements due to life time buys or other reasons
 - Identify changes to Materials and Processes
 - Identify additional CCA modifications required for proposed hardware

Mission Assurance Challenges Now and the Future



- Shrinking budgets requires all of us work together to identify opportunities for affordability
 - Must focus on areas that reduce risk
- 