National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

A Briefing for UC Berkeley

Andrew A. Shapiro, Ph.D.
Division Technologist

Jet Propulsion Laboratory
California Institute of Technology
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A Quick Overview of JPL

- Federally (NASA) owned "Federally Funded Research and Development Center" (FFRDC)
- University (Caltech)-operated
- 5,000 employees (+~1000 contractors)
- 177 acres (Includes 22 acres leased for parking)
- 139 buildings and 36 trailers
- 673,000 net square feet of office space
- 906,000 net square feet of non-office space

JPL Enjoys a Unique Relationship with NASA and Caltech

- **JPL is an operating division of the California Institute of Technology staffed with Caltech employees, and a Federally Funded Research and Development Center (FFRDC) under NASA sponsorship and ownership**
  - **The Laboratory provides a major research and development capability that supports NASA programs and defense and civil programs of national importance that are compatible with JPL's capability.**

Focus on Robotic Space Exploration

- **As part of the NASA team, JPL enables the nation to explore space for the benefit of humankind by developing robotic space missions and contributing to the human space program to:**
  - **Explore our own and neighboring planetary systems.**
  - **Search for life beyond the Earth's confines.**
  - **Further our understanding of the origins and evolution of the universe and the laws that govern it.**
  - **Make critical measurements to understand our home planet and help protect its environment.**
  - **Enable a virtual presence throughout the solar system using the Deep Space Network and evolving it to the Interplanetary Network of the future.**
  - **Apply JPL's unique skills to address problems of national significance.**
  - **Inspire the next generation of explorers.**

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19 Spacecraft and 10 Instruments across the Solar System (and Beyond)

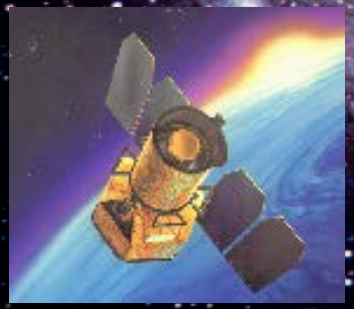
Spitzer

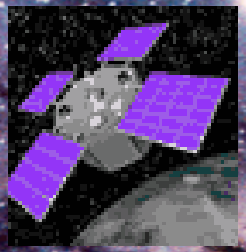
Kepler

Mars Odyssey

Cassini

CloudSat


GALEX


ACRIMSAT

Spirit

Opportunity

Stardust-NExT

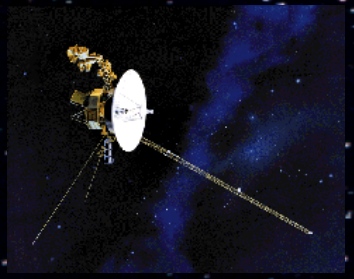
GRACE

Dawn

Mars Reconnaissance Orbiter

Deep Impact-Epoxi

QuikSCAT


Two Voyagers

(Plus ASTER, MISR, TES, MLS, AIRS, M^3, MIRO, Herschel, Planck, and LRO Diviner instruments)

Jason 1 and Jason 2

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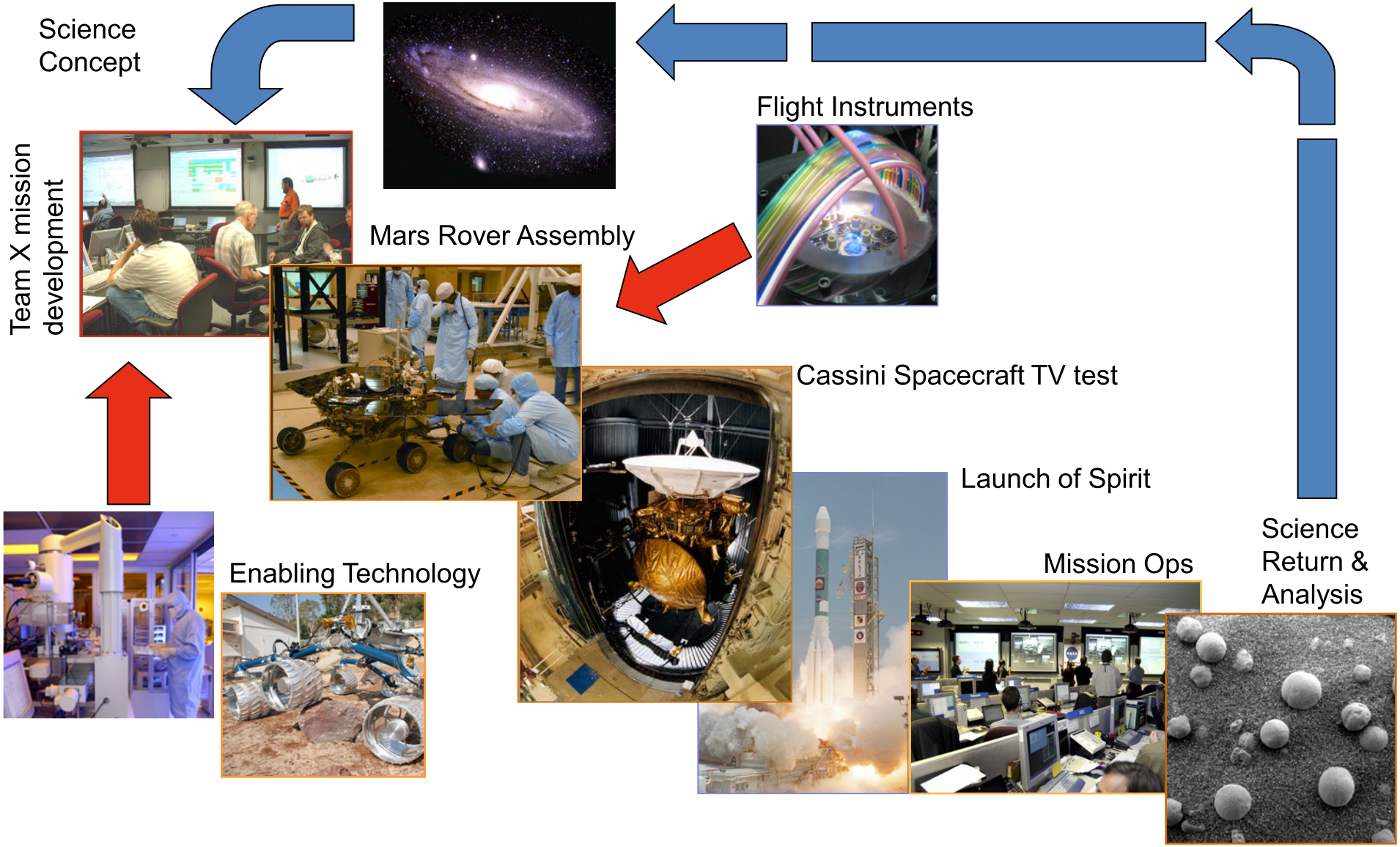
End-to-end capability



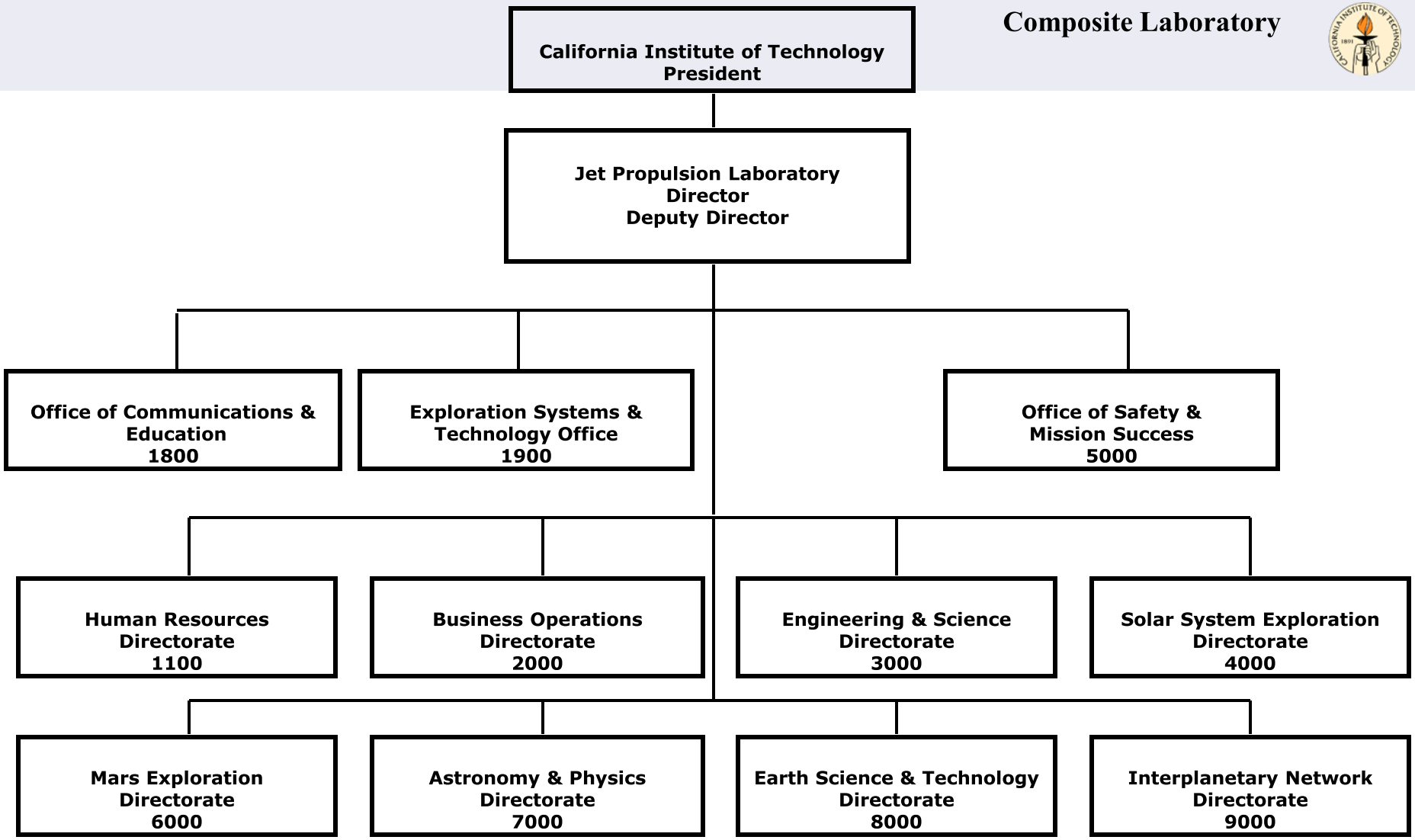
Managing by Strategic Technologies

- **JPL maintains and monitors a set of *Strategic Technologies* managed by the Chief Technologist**
  - Critical to JPL's ability to successfully contribute to NASA's exploration goals and responding to NASA's science questions
  - Areas where JPL makes a unique or distinguishing contribution
  - Require overt JPL or NASA management action to nurture and sustain their development

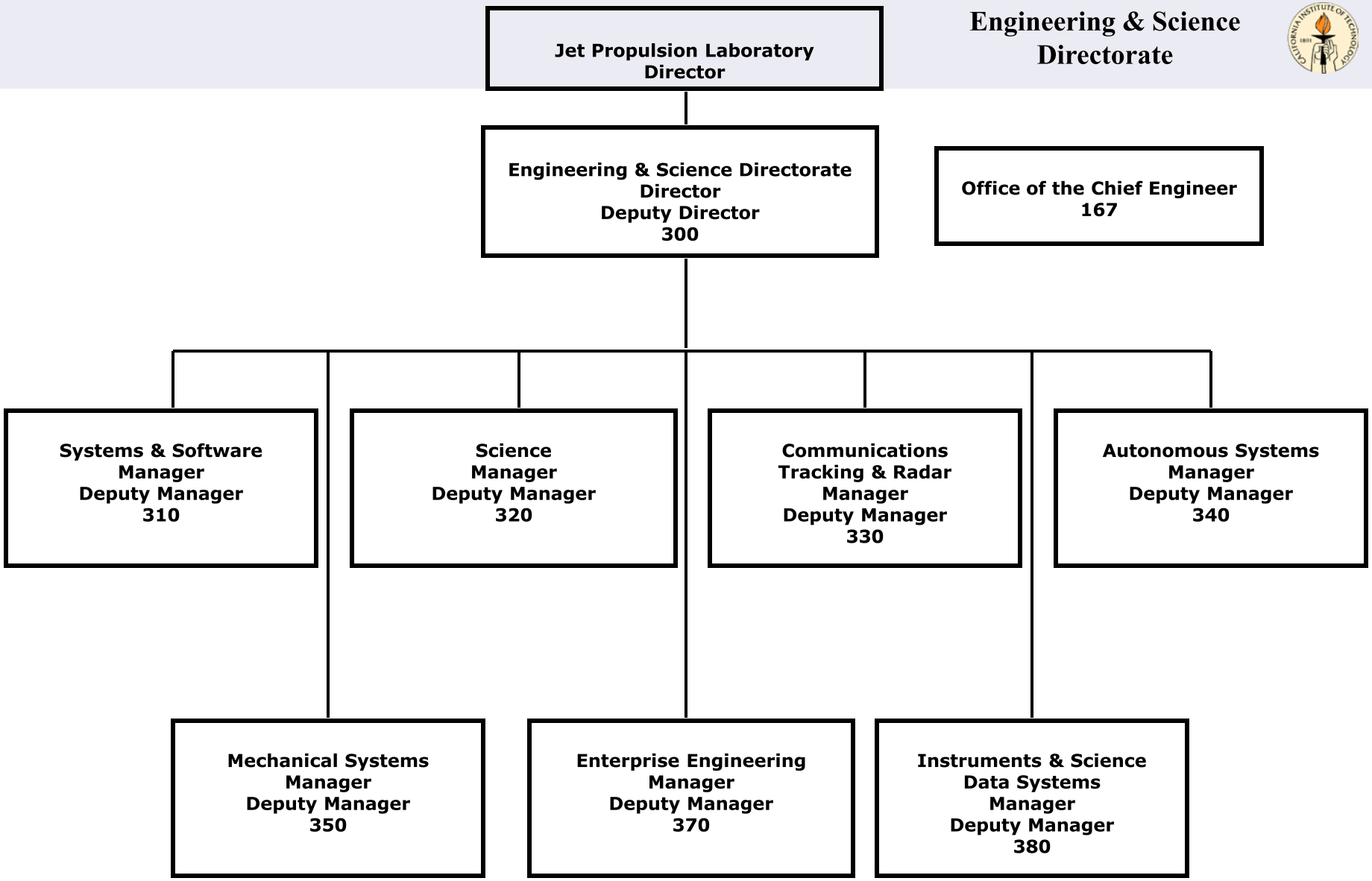
- **Updated 2009**
  - 10 Strategic Technologies

http://scienceandtechnology.jpl.nasa.gov/research/StTechDir/

Composite Laboratory



Engineering & Science Directorate



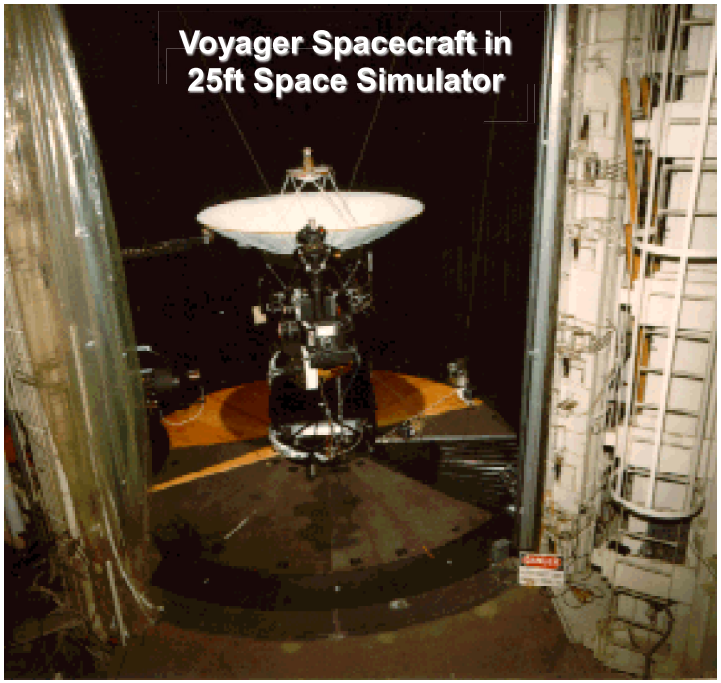
Some Unique and Important Specific Facilities

- **Unique facilities important to NASA's scientific and technology missions**
  - Microdevices Laboratory (MDL)
  - Tunable Laser Spectrometer Laboratory
  - Formation Flying Technology Laboratory
  - Rover Technology Integration and Test Laboratory
  - Laboratory for Technologies for Exo-Planet Observations
- **JPL's work is directed toward NASA's Science and Technology Missions**
  - Facilities and laboratories used to develop, integrate, and test robotic science spacecraft are also on-site

Equipment and Facilities

- **Laboratories and equipment**
  - **Supporting fundamental science and engineering research**
  - **Supporting flight engineering**

    - Many facilities and pieces of equipment overlap both worlds



Herschel and Planck Missions

Herschel and Planck launch, 14 May 2009

MDL detectors and components enable 3 of the 5 instruments on Herschel and Planck: HIFI, SPIRE, and HFI

Conclusions

- **Fundamental science and engineering research enables breakthrough, unique mission development**
  - **Science and technology laboratories must be supported over long time periods**
    - Technology development occurs over time scales that can be far greater than mission development time scales