A Briefing for UC Berkeley

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

- Spitzer
- Kepler
- Mars Odyssey
- Cassini
- CloudSat
- ACRIMSAT
- Spirit
- Stardust-NExT
- Opportunity
- GRACE
- GALEX
- Dawn
- Mars Reconnaissance Orbiter
- Deep Impact-Epoxi
- QuikSCAT
- Two Voyagers
- Jason 1 and Jason 2

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