JPL and Our Spacecraft

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Sept. 21, 2005

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Overview

- **Select Planetary Missions**
  - Ranger & Pioneer
  - Voyager & Galileo
  - Cassini
  - DS1

- **Select Mars Missions**
  - Pathfinder & Sojourner
  - Mars Surveyor and DS2
  - Mars Exploration Rovers
Early JPL Spacecraft (1960’s)

Mariner Series

Ranger Series
Early JPL Spacecraft (1970’s)

Voyager

Galileo
Mars Vehicles
Mars Surveyor Orbiter and lander
Deep Space 2
Mars Micro Probe
MER Rover Mobility System
Rover with Harness and Mobility
The Lander
Lander Petal Actuators
Fit Checking Lander to Aeroshell
Rover Harness
Complete Landed System
Cruise Harness Mockup
Final Cruise Stage Assembly
Entry Vehicle
MER Compared to Other Spacecraft

Schedule as function of Complexity

- Successful FBC Spacecraft
- Successful Traditional NASA Spacecraft
- Failed Spacecraft
- Partial Failure/Impaired

Development Time (months)

Complexity Index

MER
Design Mass History

MER Launch Mass History

- **Launch-CBE**
- **Launch-CBE+Unc**
- **Launch- Allocation**
- **Design Capability**
- **Project Policy-CBE**
- **Project Policy-Reserve**

**Mass (Kg)**

**Time**

- **Pre-Ship**
- **Launch**