Mission Description

- Hybrid of CommSat & RoverSat
  - CommSat $\rightarrow$ Demonstrate communication with ground
  - RoverSat $\rightarrow$ On landing deploy a rover with a camera
Mission Goals and NASA Benefits

- Demonstrate novel communication methods between DemoSat and ground
  - Development methods for transmitting and receiving using unique methods, compression schemes, commercially available hardware, and frequencies

- Deploy and operate rover upon landing, and image landing site.
  - Prototype development of future Mars or Moon rovers. Methods could lead NASA on new design paths.
Project Management

- **Project Sponsor/Coordinator**
  - Dr. Paul Wilbur

- **Project Manager**
  - John Rhoades

- **Teams**
  - **Communications Team**
    - Steve Asmus
  - **Mechanical Team**
    - Paul Doyle, Nick Vrettos
  - **Computer & Electrical Team**
    - Ben Hanson
System Requirements

- Long-range Communications System
- Landing System
- Rover Structural System
- Rover Navigational Sensors
Mechanical Components

- **Housing**
  - Provides impact protection
  - Keeps tether clear of rover
  - Self-righting geometry

- **Rover**
  - Operates in two configurations
  - Possible to operate upside down
  - Houses electronics
Mechanical Components
Rover operation

Undeployed → Deployed
Rover Animation
# Mass Budget

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System Overview

- Cell Phone
- Power Control
- Atmel Flight Computer
- Rover Deployment Servos
- Camera
- Rover Drive Servos
- Rover Navigation Sensors
- Compact Flash Card

- Ground Computer
- Cell Phone

Diagram showing the system overview with connections between different components.
System Interfaces

- Testing Circuits & Sensors to Flight Computer
  - Analog to Digital Converters
- Flight Computer to Communications
  - RS-232
- Flight Computer to Servos
  - Function Generators
- Flight Computer to Cameras
  - Digital Output, & RS232
Question and Answers?