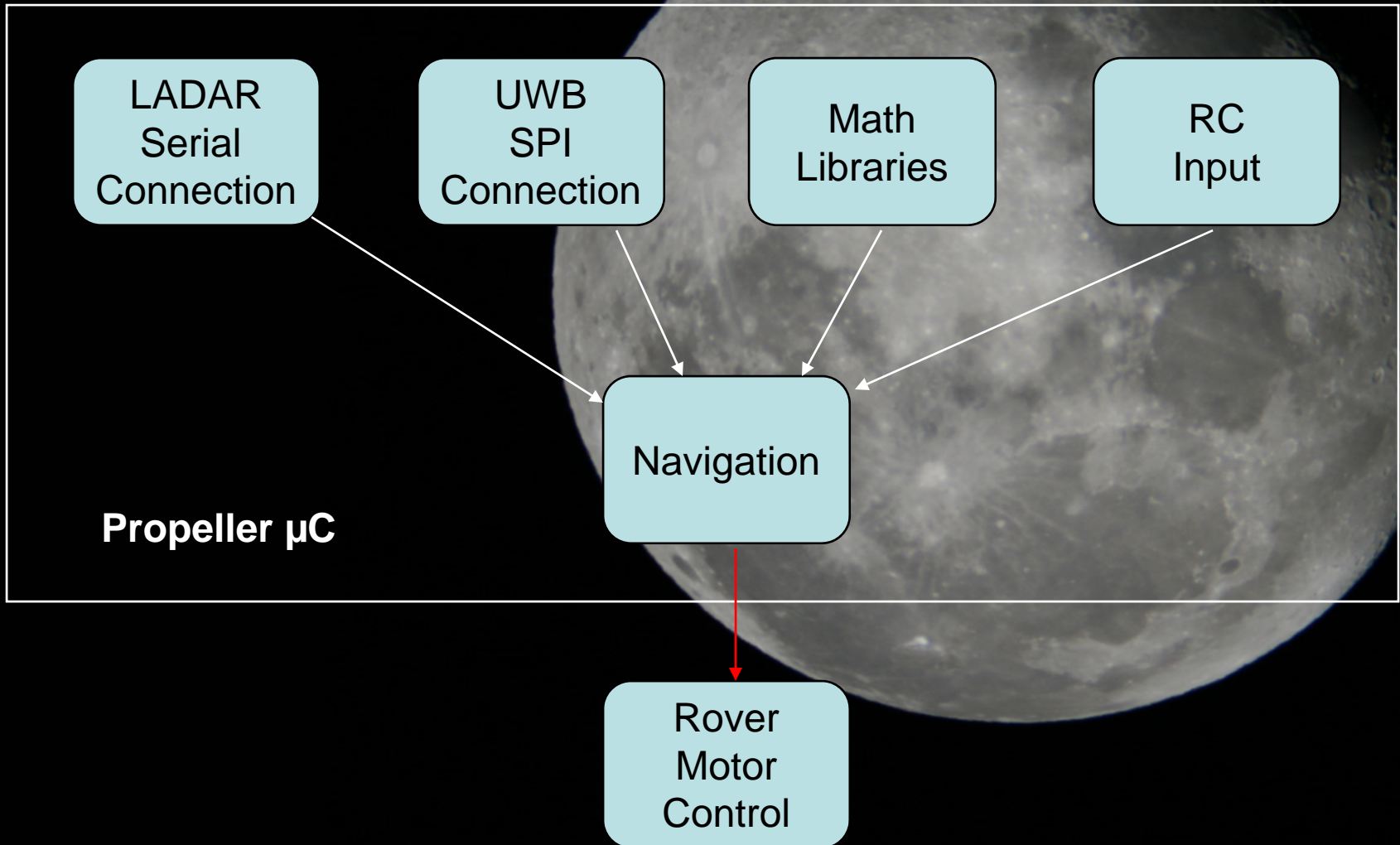# LUNA

Team Members:

Randall Burk

Tony Luchner

Julie Poole

Kris Silvey
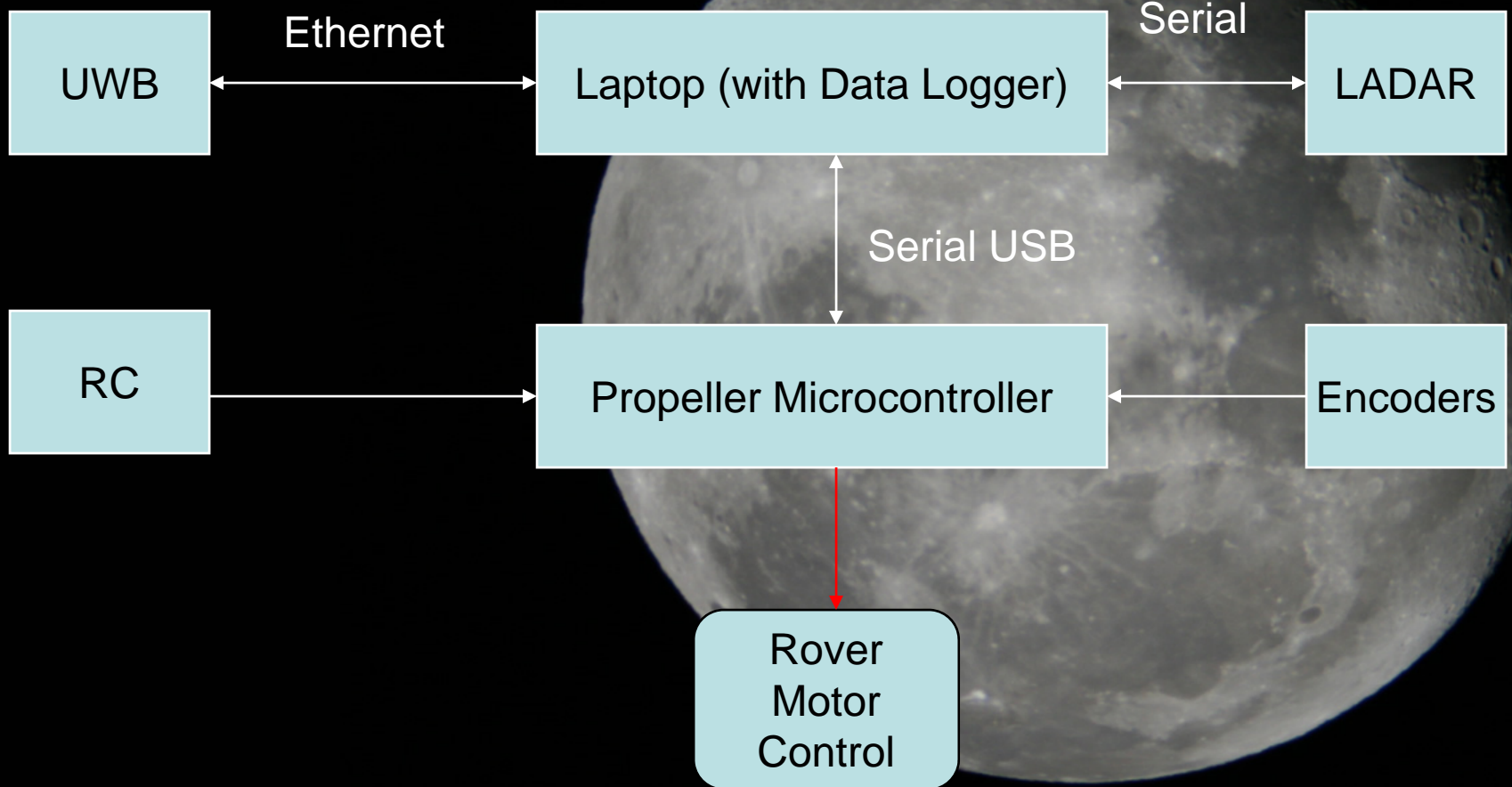
LUNA: Today
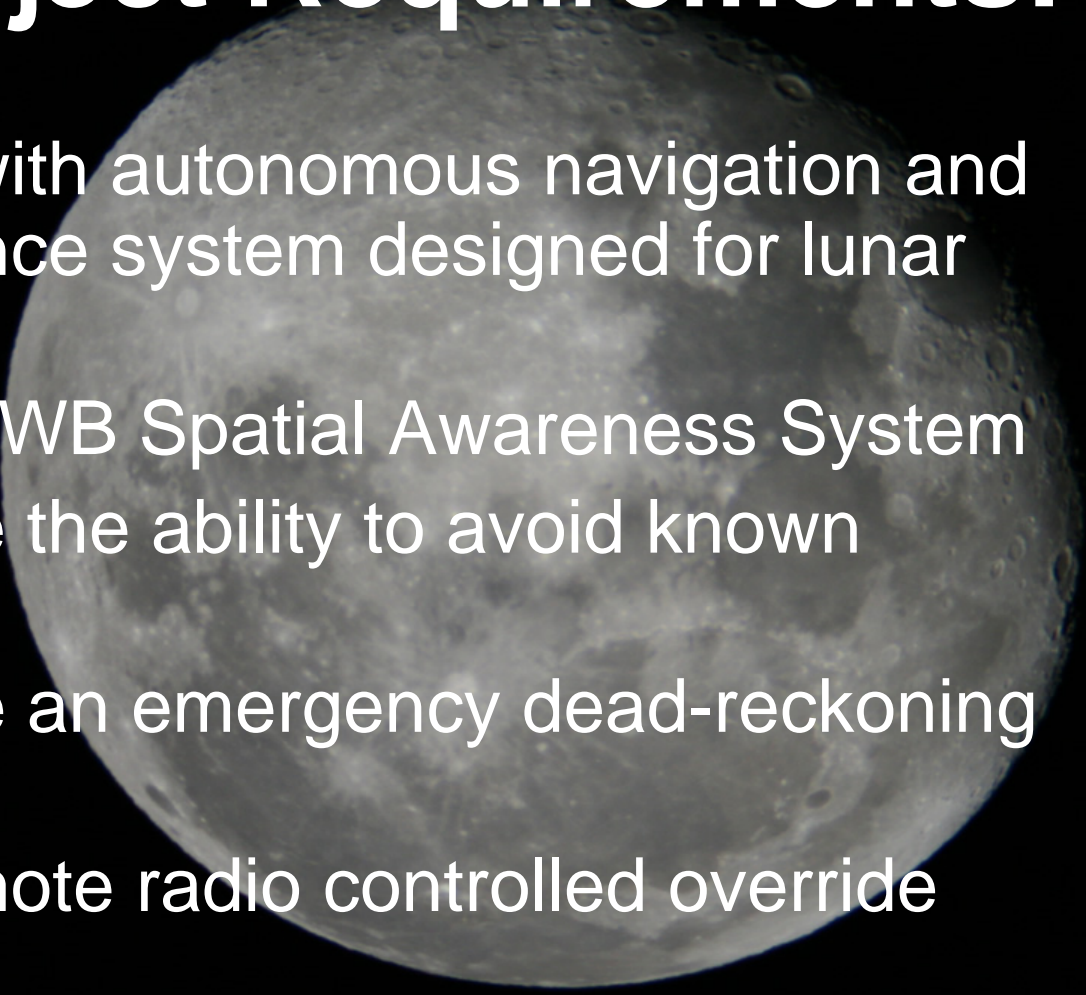
Current Software Overview:

Re-Design Plan:

UWB	**Ethernet** →	Laptop (with Data Logger)

Serial

LADAR

Serial USB

RC → Propeller Microcontroller ← Encoders

Rover Motor Control

Overall Project Requirements:

- Design a rover with autonomous navigation and obstacle avoidance system designed for lunar exploration

- Implement the UWB Spatial Awareness System

- Rover shall have the ability to avoid known hazard areas

- Rover shall have an emergency dead-reckoning system.

- Implement a remote radio controlled override system
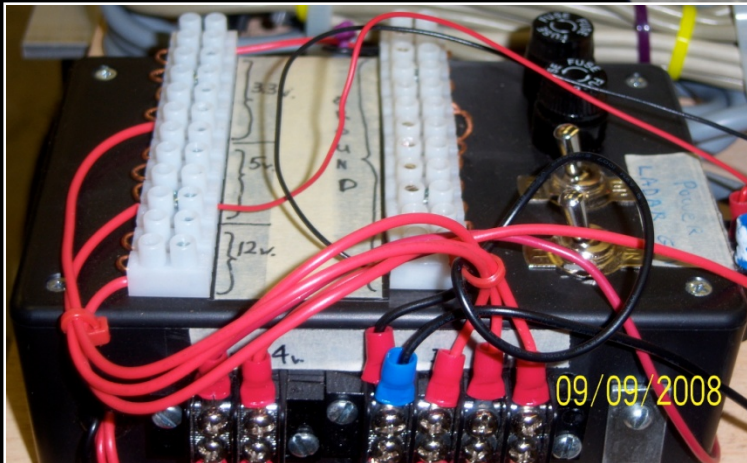
Mechanical Re-fabrication:

(Randall Burk)
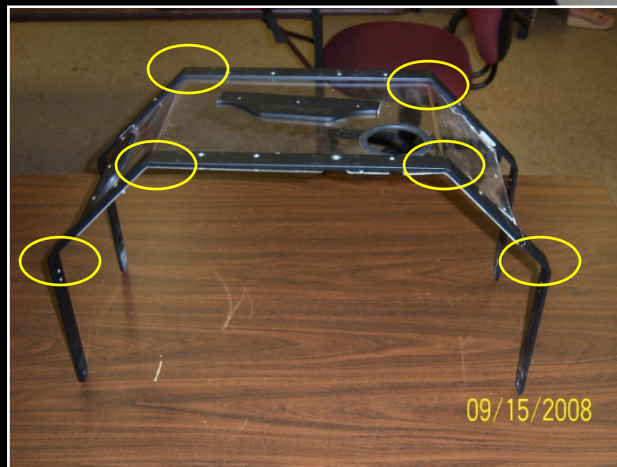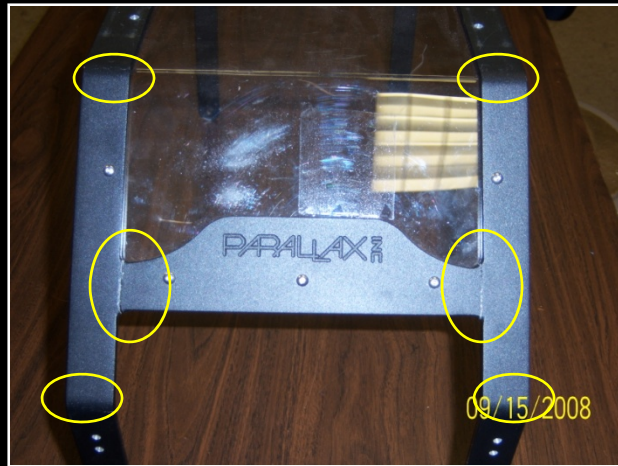
Yellow circles indicate weaknesses in material for top chassis mounting. According to industry professionals, 6061 aluminum is not appropriate for bending and maintaining rigidity. This is the necessary reason for re-fabrication.
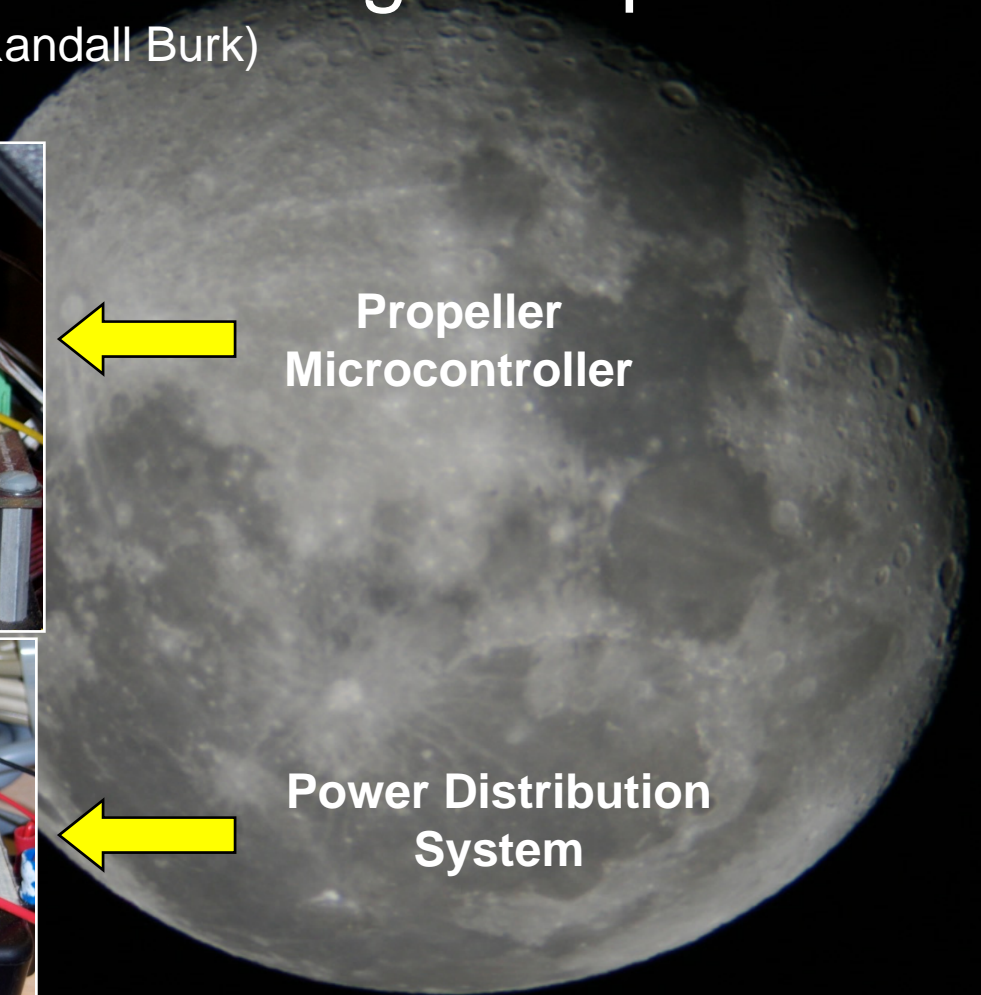
Electrical Troubleshooting & Repair:
(Randall Burk)
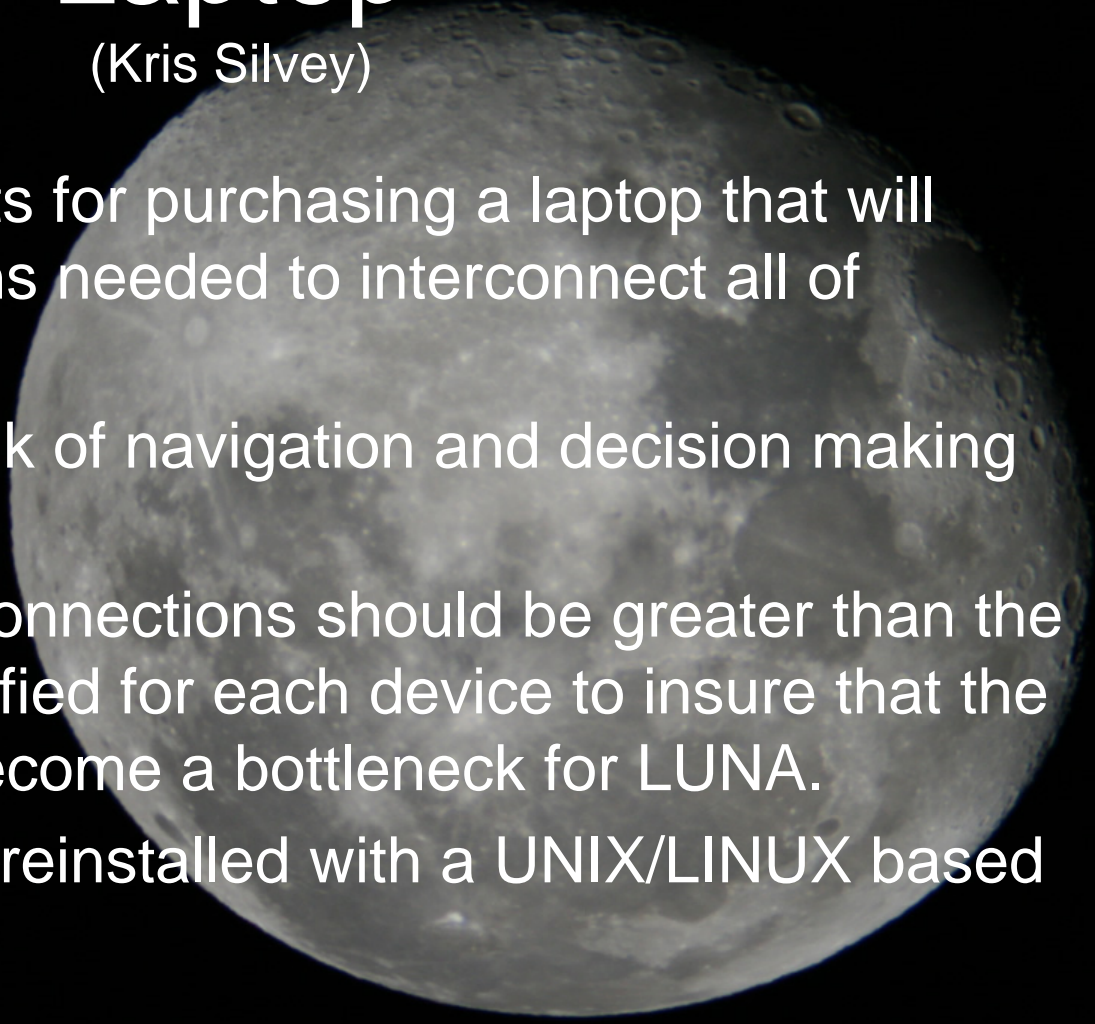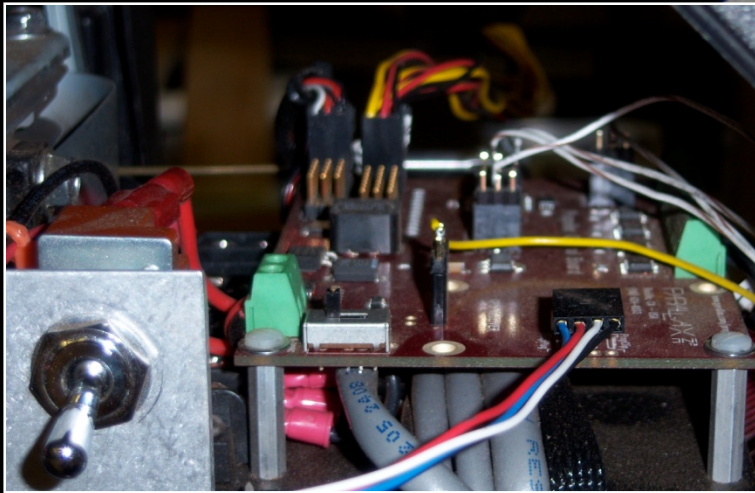

Propeller Microcontroller
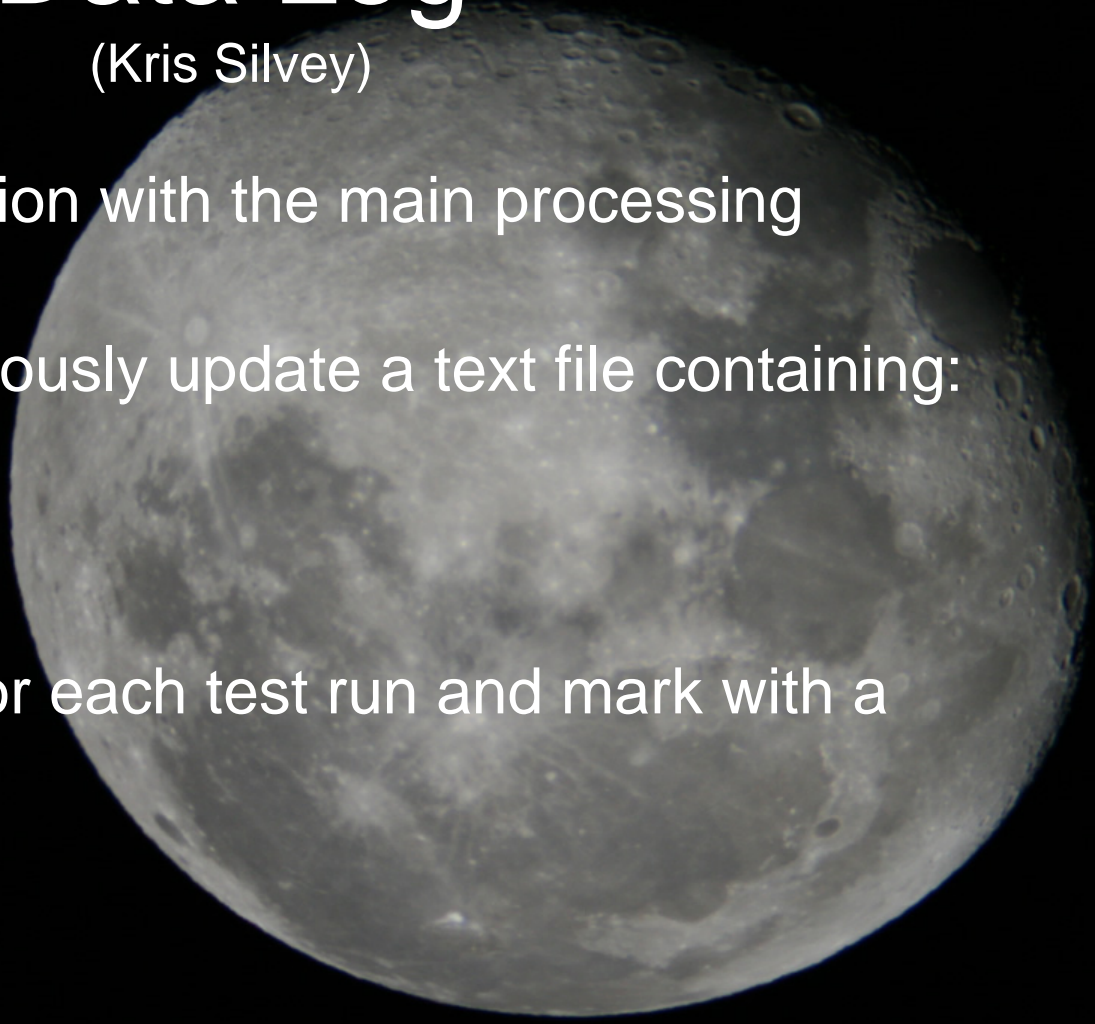
Power Distribution System

Laptop
(Kris Silvey)

- Define requirements for purchasing a laptop that will have all connections needed to interconnect all of LUNA's devices.

- Laptop will hold bulk of navigation and decision making algorithms

- The speed of the connections should be greater than the requirements specified for each device to insure that the laptop will never become a bottleneck for LUNA.

- System wiped and reinstalled with a UNIX/LINUX based operating system.

Data Log
(Kris Silvey)

- Will run in conjunction with the main processing program.

- Create and continuously update a text file containing:
  - Input data
  - Program decisions
  - Device Status

- Create a new file for each test run and mark with a timestamp
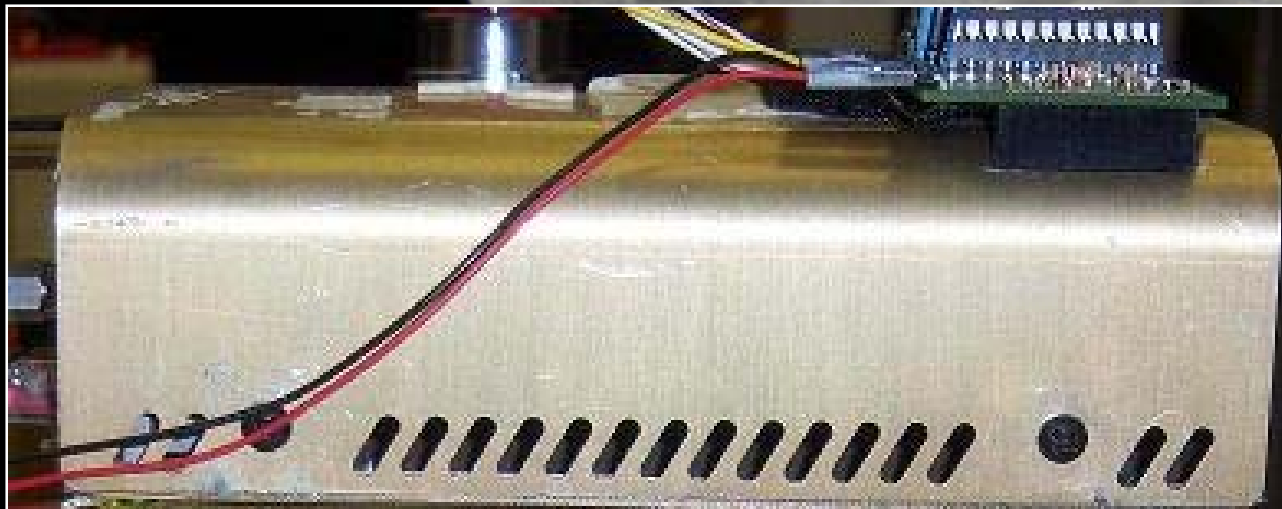
Sick LADAR
(Tony Luchner)

- Will be used for Obstacle Avoidance
- Needs to detect, and report anything in the robot's path
- 80ms frequency
- RS-232/422 interface

UWBSAS

(Julie Poole)

- Ultra Wideband Spatial Awareness System
- Raw data rate of 150 kbps in a 100 – 140 m range
- Uses an Ethernet/UDP connection
- 2D Tracking system
- With one coordinate node 2 antennas must be present

Questions?