OSU Robotics Club Timeline

- Resurrected in December 2006
- Began Mars Rover in February 2008
- Won University Rover Challenge in June 2008
Building a Foundation

5 Competition Based Learning Outcomes

1. Developed creativity
2. Increased troubleshooting
3. Learned microcontroller design
4. Understood procrastination
5. Ate pizza and had fun!
Robot Sumo

- Autonomous
- Limited weight and size
Line Following

- Autonomous
- Limited size
Fundraising for Mars Rover

- $10,000 maximum allowance for URC 2008
- Unlimited product donations from industry

Needs:
- Capital for purchases
- Technical advice
- Mechanical Engineers
Southern Oregon Robotics Club and Parallax

- Met with SORC in early February
  - 6 hours roundtrip
- Met with Parallax CEO 3 weeks later
  - 16 hours roundtrip
- Acquired a QuadRover prototype
Oregon Space Grant Consortium

- Met with OSGC on OSU campus
  - Awarded $6,000
  - Increased to $10,000
Construction - Main Vehicle

- Garage built
- Home Depot trips
Construction - Robotic Arm

- Professionally punched
- Telerobotic control
Construction - Soil Sensor

- Garage built
- Home Depot trips
Testing - Rehearsal

- 1 month before competition
- Invited
  - High school robotics teams
  - College classmates
  - Newspapers
  - Sponsors
  - Mom and Dad
Testing - Rehearsal Failure

- Data transmission lost at high engine RPM
Testing - Rehearsal Failure

- Wheel encoder malfunction
- Counted unreliably
Testing – Measuring Size

1. Take a picture
2. Move a known distance
3. Take another picture
4. Use trigonometry, 4% error
Testing - 2nd Rehearsal

- 1 week before competition
Competing - Final Vehicle

1. Hex Bolt Adapter
2. Robotic Arm
3. Second Viewpoint Camera
4. Shielded Microcontroller Box
5. Pan-Tilt Camera
6. 2.4 GHz Data Transceiver
7. Amateur TV Antenna
8. Amateur TV Transmitter
Competing - MDRS

- Mars Desert Research Station
Competing - Geology

- Identify signs of water at 4 of 13 possible GPS sites
Competing - Emergency Navigation

- Locate an astronaut suit in 30 minutes
Competing - Construction

- Tighten bolts on a control panel
Competing - Soil Analysis

- Analyze soil at 4 sites
Publicizing - Internal

- Photoshoot for OSU
  - College newspaper
  - OSU website
  - College of Engineering annual report
- College Advisory Board
- OSU Alumni skybox
- Oregon Stater Award Ceremony
- Oregon Space Grant Consortium Symposium
Publicizing - External

- Mars Society
- Robot Magazine
- Parallax Website
Current Projects - URC 2009

- Balanced student distribution
- More experienced
- Custom CS, ECE, and ME
Current Projects - IARC 2009

- Aerial robot
- Autonomous
- Explore a building
- Transmit a 5 second video of a control panel

NOTE: Internal wall and obstacle placement is purely notional. Actual placements may differ.
Conclusions

- OSURC is a club where students can use sponsorship money to build robot
- Older students develop leadership skills
- Younger students develop engineering skills
- Everybody has fun learning

- Questions?