



NORTHERN ARIZONA UNIVERSITY

NASA HUMAN EXPLORATION ROVER COMPETITION

Background Presentation

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Project Description

NASA Human Exploration Rover Challenge revolves around NASA's plans to explore planets, moons, and asteroids across the solar system [1].

Our task is to:

- Design
- Construct
- Test

A human-powered rover capable of traversing various, demanding environments.

Project sponsored by: SAE, NASA

Benchmarking

- Background: No pre-existing NAU designs or builds



Design 1: Quadrature Cycle



Design 2: NAU HPV

Benchmarking



Design 3: Recumbent Cycle



Design 2: Tandem Cycle



Design Requirements

- Sponsor: NASA Human Exploration Rover Challenge
- Competition Requirements
 - Human Propelled (50)
 - Needs to be designed and built by the NAU team (40)
 - Collapsible (30)
 - Seat two drivers (30)
 - No air inflated wheels (30)
 - Carried by two individuals (20)
 - Wheels must have debris mitigation devices (10)
 - Wheels of adequate diameter to traverse obstacles and crevasses (10)
 - Must be able to climb inclines (10)
 - Maintain traction throughout various surfaces (10)
 - A narrow design (10)



Customer Requirements

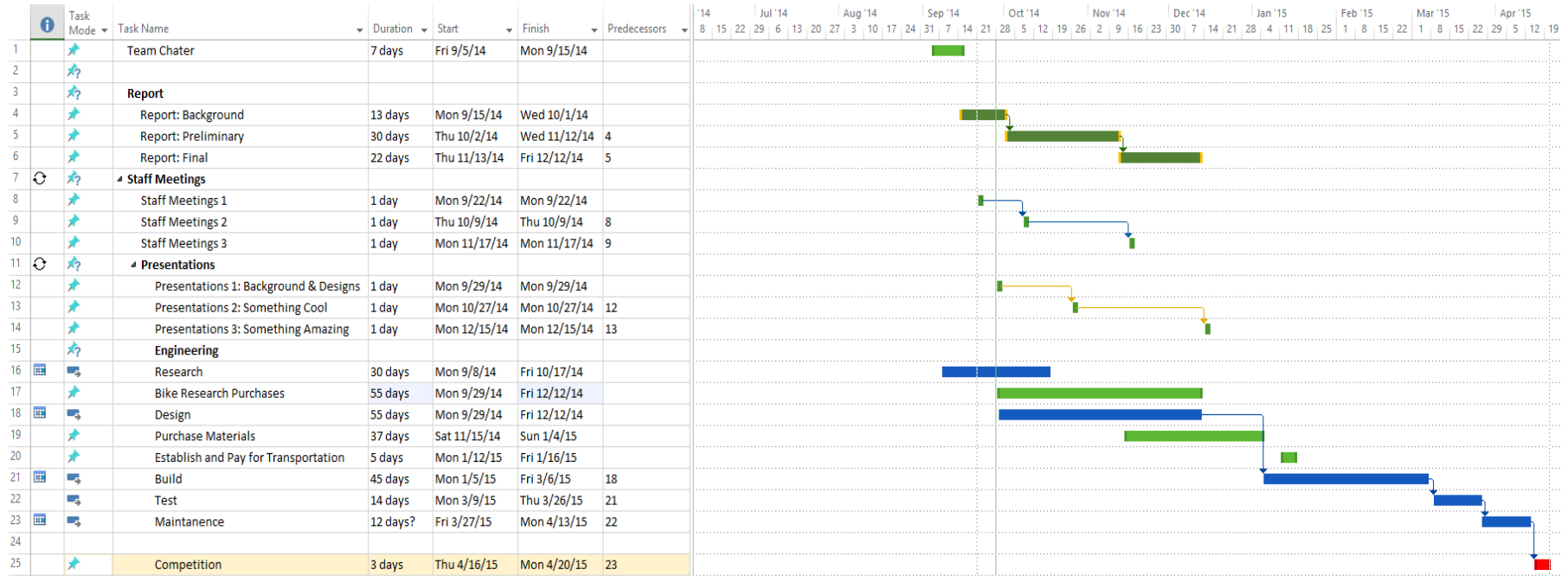
- Customer: Dr. John Tester

- Requirements

- Safety seat restraints (30)
- Small turning radius (25)
- High volumetric storage (15)
- No sharp protrusions (10)
- Rover painted in school colors (10)
- Built with campus equipment and resources (10)



Schedule



•Schedule: On Track



Budget

Available Funding:

- SAE: Possibly \$2000 - Expected \$1500
- NASA: No Funding
- ASNAU: Possible Travel Expenses

Anticipated Expense:

- Competition Lodging = \$500
- Travel & Shipping = \$6,000
- Fabrication = \$0 \Leftrightarrow \$500
- Parts & Prototyping = \$1,200
- Total Anticipated Expense = \$7,700 \Leftrightarrow \$8,200

Expense to Date:

- SAE Membership - 7 members x \$25 = \$175

