Team Skyward: Frost Monitor

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Design Review 1

Team Introduction

- Members:
  - Gage Cottrell: Team Lead
  - Kaina Crow: Front-End
  - Justin Kincaid: Back-End
  - Chris French: Editor
  - Alexander Sears: Recorder, UI/UX

- Faculty Mentor:
  - Dr. Otte

Project Sponsors

Dr. David Trilling

- Ph.D. Planetary Sciences
- Associate Professor at NAU
- Area of Interest: Observational planetary astronomy

Dr. Michael Mommert

- Ph.D. Geophysical Sciences
- Post-Doctoral Researcher at NAU
- Areas of Interest: Near-Earth objects, outer Solar System bodies

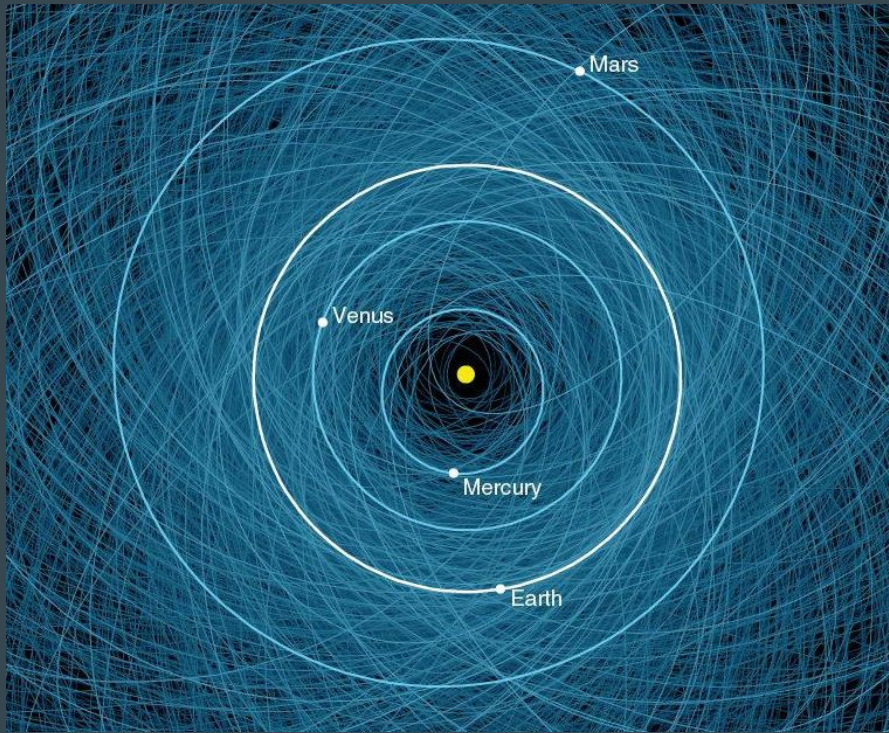# Near-Earth Objects

Fig. 1: NEOs orbits

Fig. 2: Meteor Crater, Northern Arizona

NEO Research and Analysis

- National Aeronautics and Space Administration

  - Discover, catalogue, track NEOs

  - NASA Authorization Act of 2005

- NAU and Department of Physics and Astronomy

  - Flagstaff Robotic Survey Telescope (FRoST)

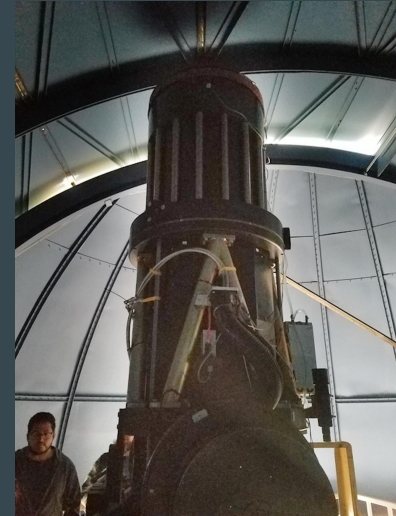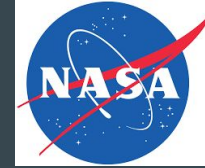   - Follow-up research on newly discovered NEOs

Fig. 3: FRoST

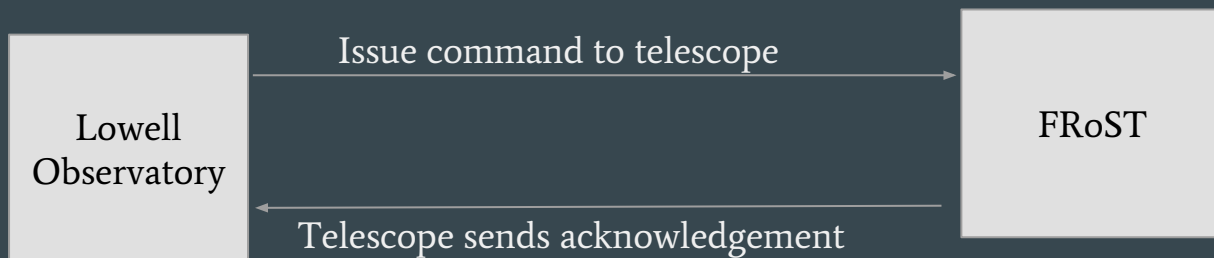# Problem Statement

- There is currently no way to easily view the status and surrounding weather information of the telescope

Current Workflow Example

Issue command to telescope

| Lowell Observatory | | FRoST |

Telescope sends acknowledgement

Solution: FRoST Monitor application

- Dynamic and responsive web application: FRoST Monitor
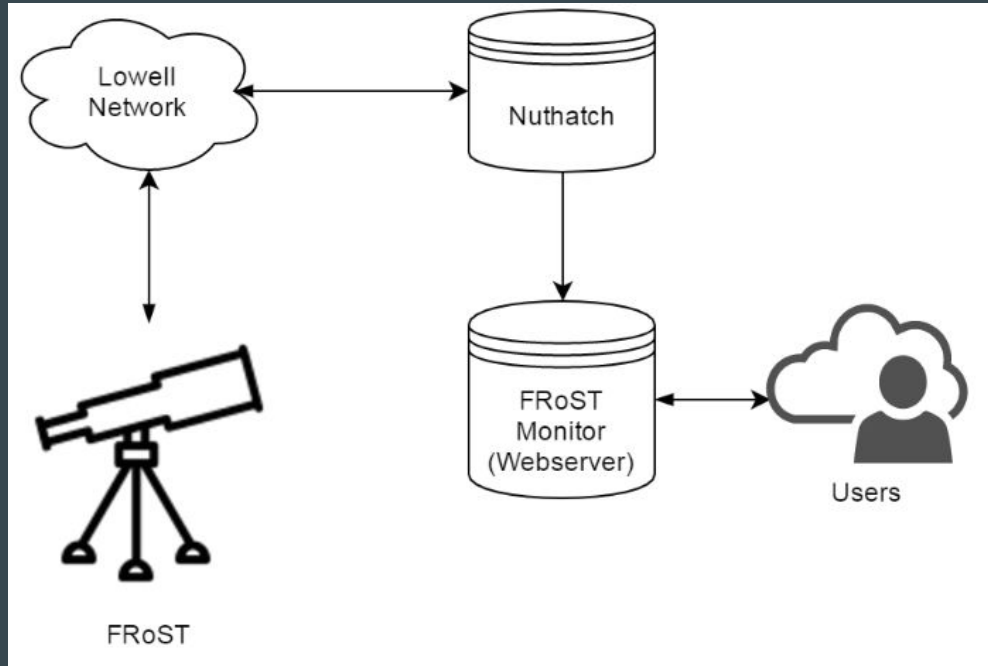
High Level Network Visualization

Fig. 4: Map Overlay

Requirements Elicitation

- Weekly team meetings with FRoST project leaders

- On-site visit of telescope

- Online communication

Key Functional requirements

- Display telescopes information on NAU server

  - Telescope status
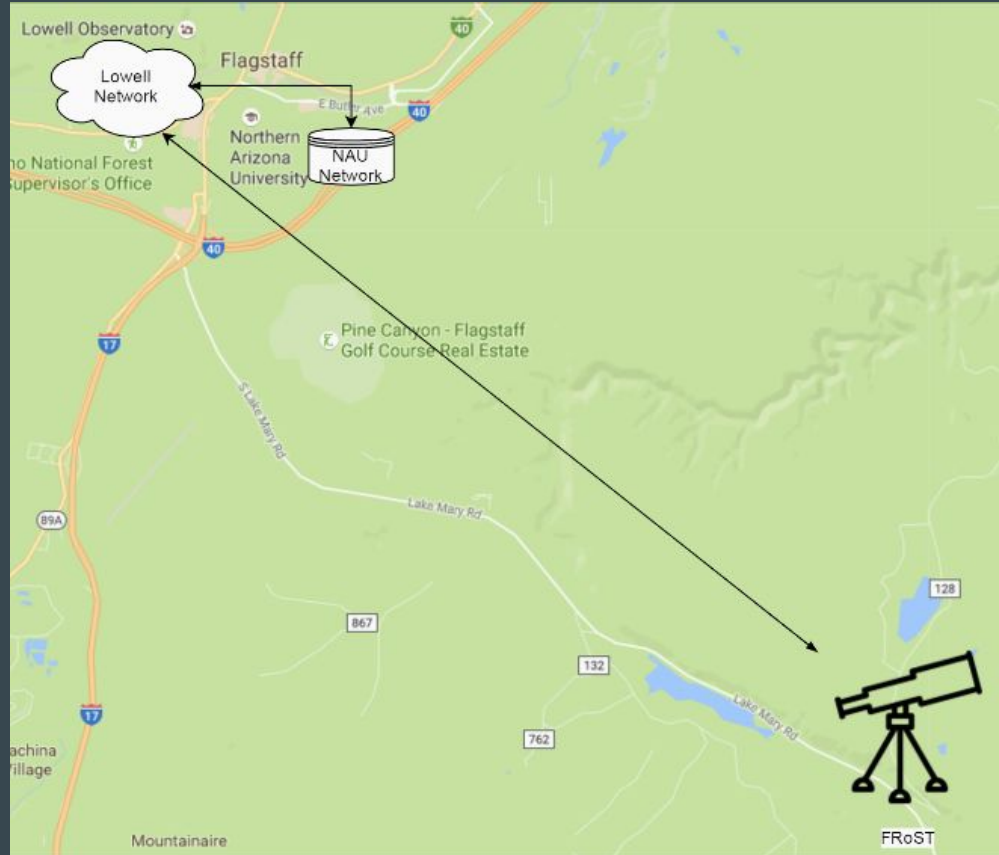 - Images from Lowell's weather camera

- Display up to date weather information
  - Temperature
  - Forecast information

- Provide a signal to telescope for dome closure / shutdown

Key Performance Requirements

- Weather/telescope/camera status information updated once every 60 seconds

- Password-protected user login for shutdown-button in less than 60 seconds

- Users understand how to use website and features within 10 seconds or less

- Support at least 10 simultaneous users

Environmental Constraints

- Website hosted on NAU maintained server

- Weather data can only be pulled when available

- Linux based server environment

Project Risks

Risks	Likeliness	Severity
Changes to project and/or requirements	Moderate	Moderate / High
Timeliness of data displayed	Low / Moderate	High
Unauthorized Access	Low	High

Project Schedule and Milestones

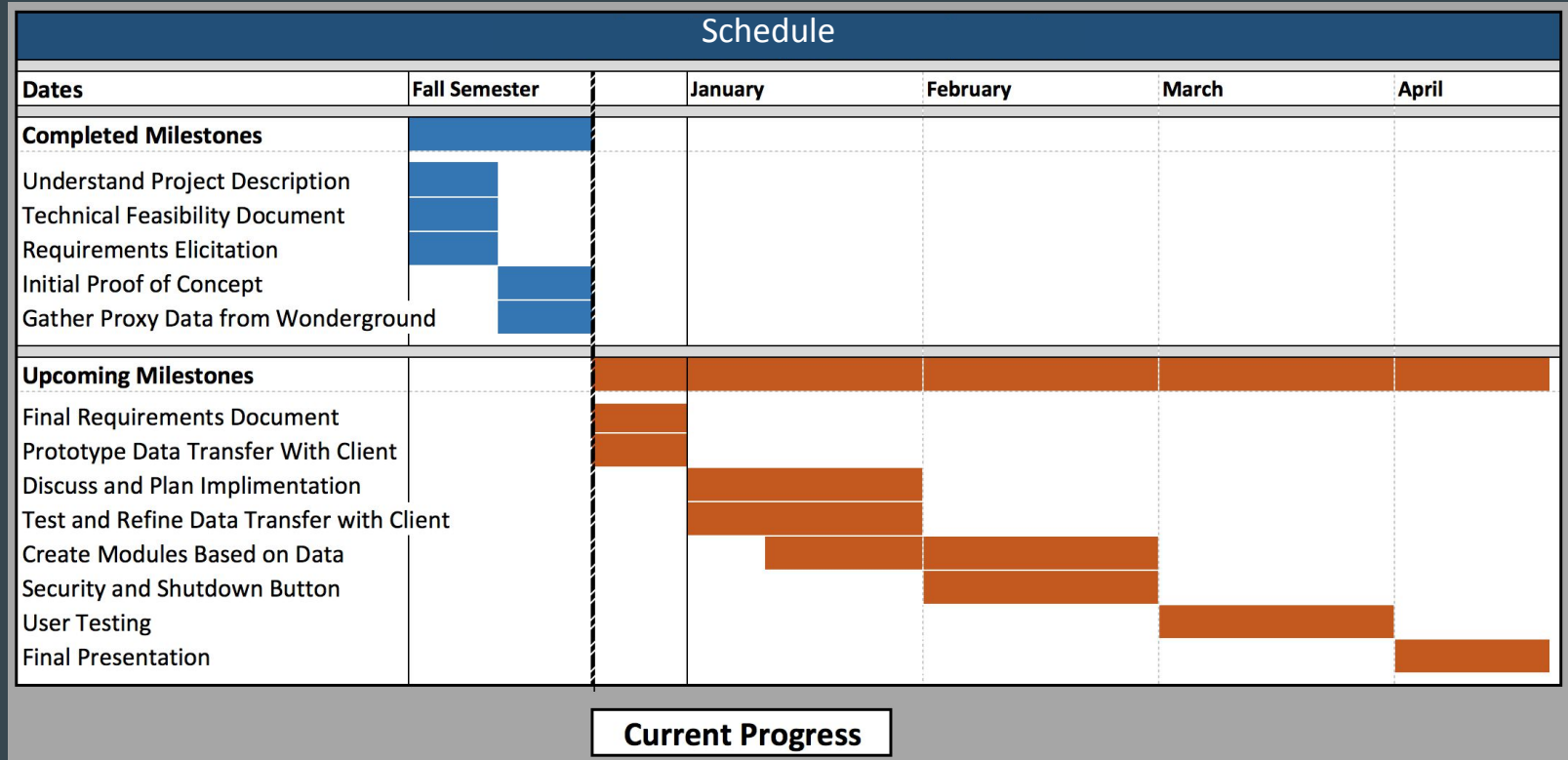| Schedule						
Dates	**Fall Semester**		**January**	**February**	**March**	**April**
Completed Milestones	███					
Understand Project Description	██					
Technical Feasibility Document	██					
Requirements Elicitation	██					
Initial Proof of Concept	██					
Gather Proxy Data from Wonderground	██					
Upcoming Milestones		███	███	███	███	███
Final Requirements Document		█				
Prototype Data Transfer With Client		█				
Discuss and Plan Implimentation			██			
Test and Refine Data Transfer with Client			██			
Create Modules Based on Data			█	██		
Security and Shutdown Button				██		
User Testing					██	
Final Presentation						██

Current Progress

Fig. 6

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Conclusion

- NEO's need to be monitored to ensure they do not make unknown impacts

- The client needs a way to easily check the telescope and weather information

  remotely

    - Web application will allow the Client to access telescope without going to the telescope

- We feel that we are on schedule and are confident that we will complete the

  project on time.

References

- Figure 1: Orbit diagrams - NASA/JPL - http://photojournal.jpl.nasa.gov/catalog/PIA17041

- Figure 2: Meteor Crater image - http://meteorcrater.com

- Figure 3: Map overlay - http://maps.google.com