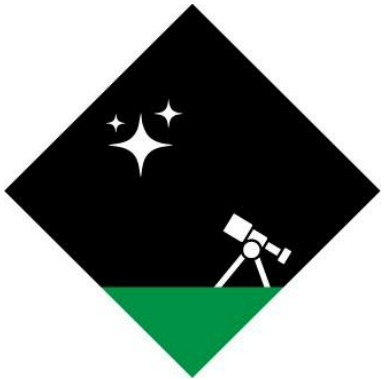
Team Dark Sky Design Review



Team: Luke Thompson, Justin Ceccarelli, Jordan Tatum

Faculty Leader: Michael Leverington

Our Client: The Navy Precision Optical Interferometer (NPOI)

Jim Clark: Director and Chief Engineer at the NPOI.

Peter Kurtz: Software Engineer.

Henrique Schmitt: Astronomer and Head of Interferometry

What is the NPOI?

- Collaborative partnership between the Naval Observatory and Naval Research Lab, and occasionally corporate with Lowell.
- Helps us better understand our universe
- Informs Naval navigational tools, and the world's GPS and time measuring systems.

Problem Statement

- Obsprep (observation preparation)
- Graphical front end of obsprep is using deprecated code (python 2)
- Difficult installation process
- Even more difficult with newer computers
- Protracted adjustment for new users both technically and intuitively (potentially years)

How This Disrupts Their Workflow

- Unnecessary use of man-hours when an employee gets a new computer or joins the team
- Failure to troubleshoot issues efficiently leading to lost sky time
- Lack of effective distributables
- Historically intermittent access to necessary backend functions

Solution Vision: Technical

- Rebuilt obsprep frontend
- Updated Python version
- Configurable for desired observation stations
- Cross platform support

Solution Vision: Usability

- Quickly accessible help text for increased intuitiveness
- Simplified installation with regard for the end user's technical expertise
- Distributable and interpretable files
- Easy to read Graphs and output

Key Requirements: Origins

- Project Description
- The current software product
- Direct communication with our client and users

Key Requirements: Functional

- Develop User Interface
- Present astronomers with star data
- Address legacy issues and quality-of-life

Performance Requirements

- Communication Speed
  - Output follows input by less than 5 seconds
- Accessible descriptions
  - Help functionality within 3 clicks
- Brief training period
  - < 1 hour of training to obtain competence

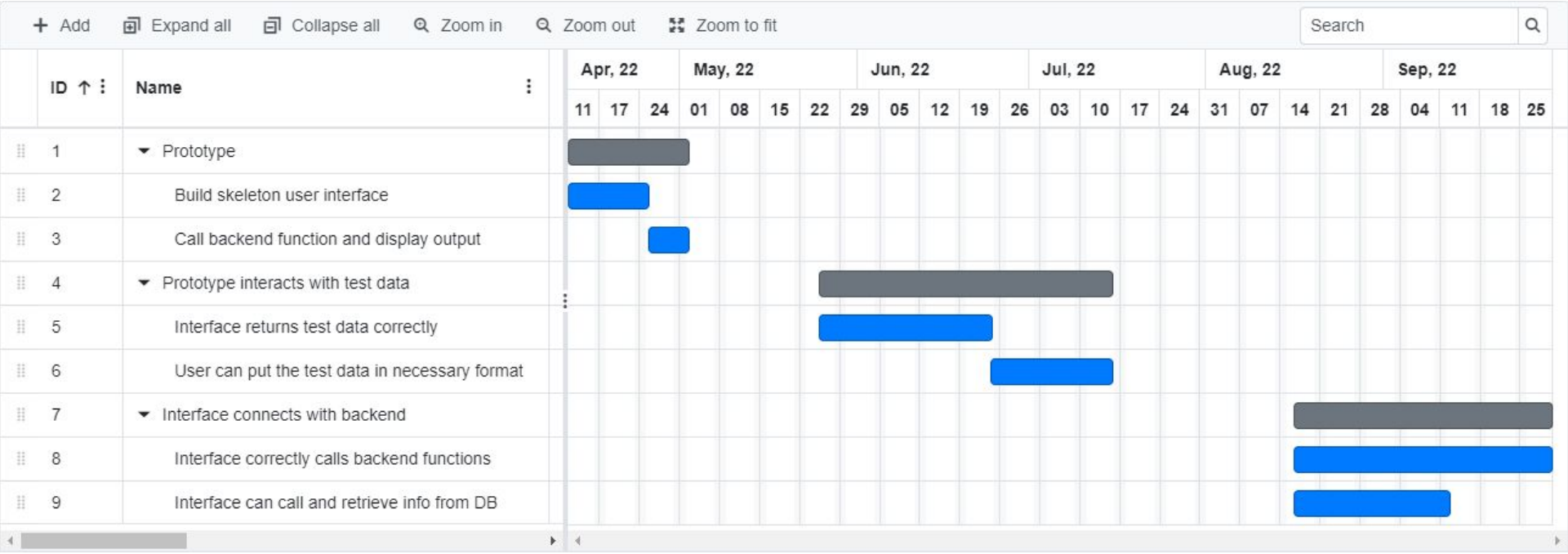
Environmental Requirements

- Access to back-end
- Installable on both work and personal computers
    - Cross-platform across the big three

Risks and Feasibility

Risk	Likelihood	Severity
Rapid depreciation	Low	Low
Protracted training period	Low	Medium
Incorrect calculations	Low	High
Failure to save data	Low	High

Schedule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1 Prototype
2 Build skeleton user interface
3 Call backend function and display output
4 Prototype interacts with test data
5 Interface returns test data correctly
6 User can put the test data in necessary format
7 Interface connects with backend
8 Interface correctly calls backend functions
9 Interface can call and retrieve info from DB

Conclusion

Our project will:

- Simplify organizational challenge
- Perform astronomical calculations
- Reduce operational time
- Replace outdated software