

CartoCosmos



Team Members:

Kaitlyn Lee, Jacob Kaufman,
Scott Ames, Christopher Moore

Mentor:

Isaac Shaffer

Client:

USGS's Trent Hare and Scott Akins

The Planetary Science Community

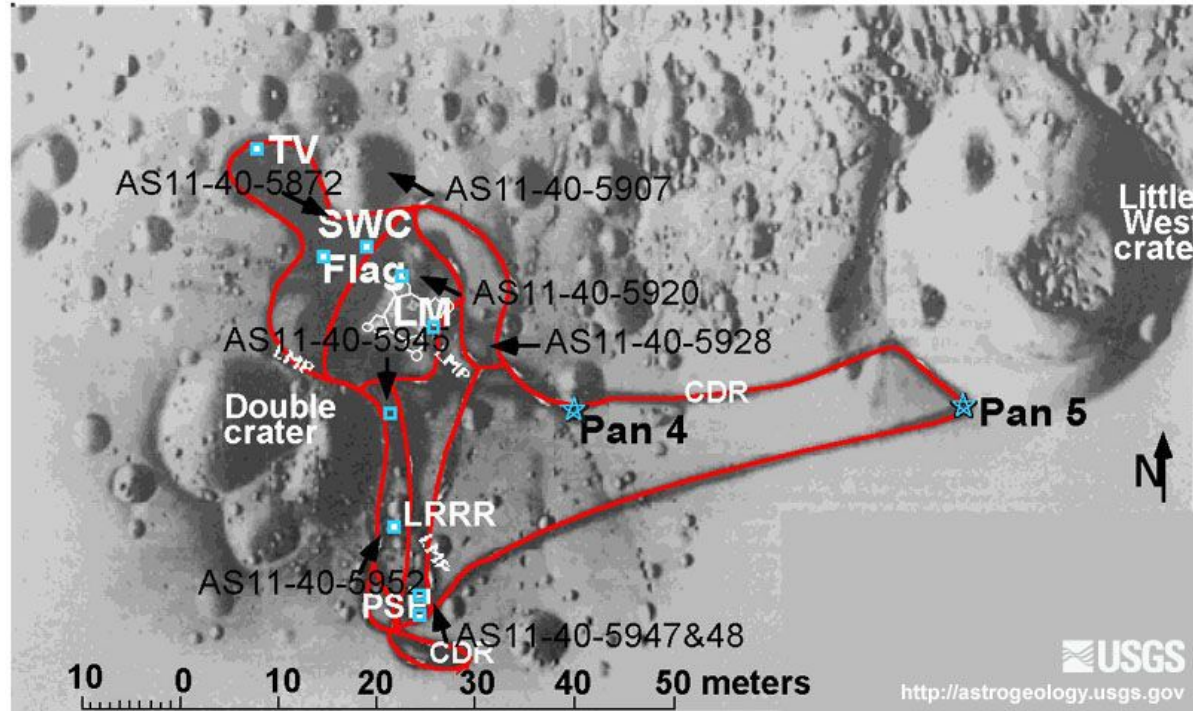


Figure: Map of Landing Site for Apollo 11 Mission

Our Clients



Trent Hare - Cartographer



Scott Akins - IT Specialist



Workflow & Problems

Problems

- Only made for Earth.
- Cannot change lat/lon settings.
- Cannot change projection.

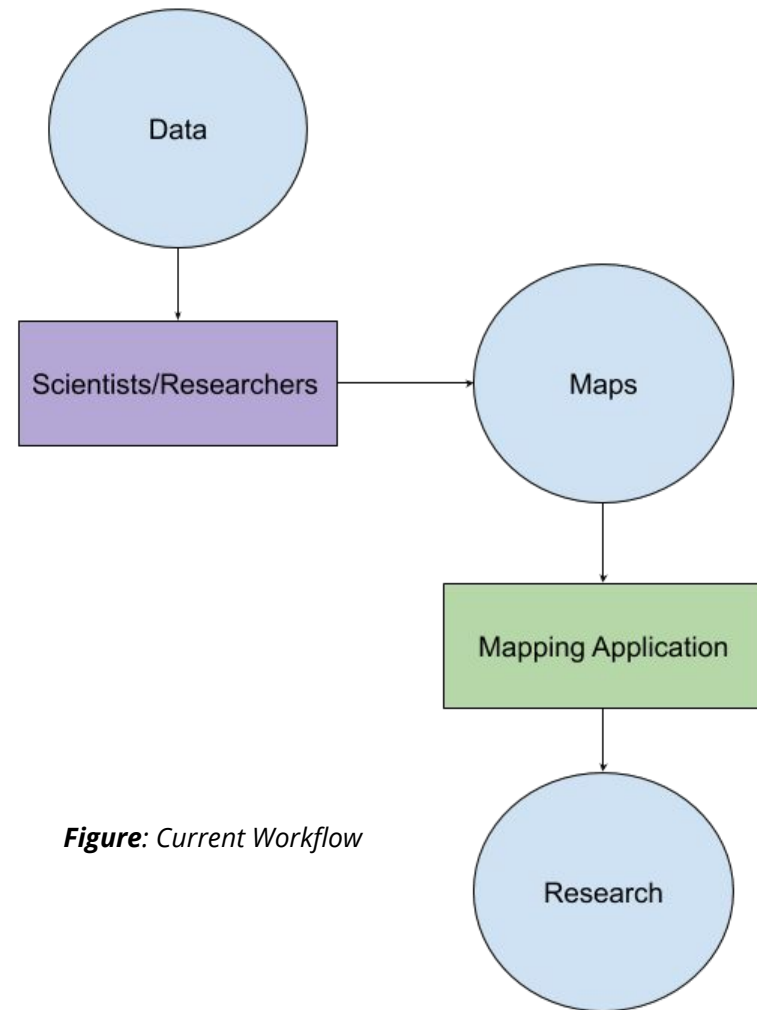


Figure: Current Workflow

Problems with the Current Solution

- It uses OpenLayers version 2 released in 2006.
- It is not modular.

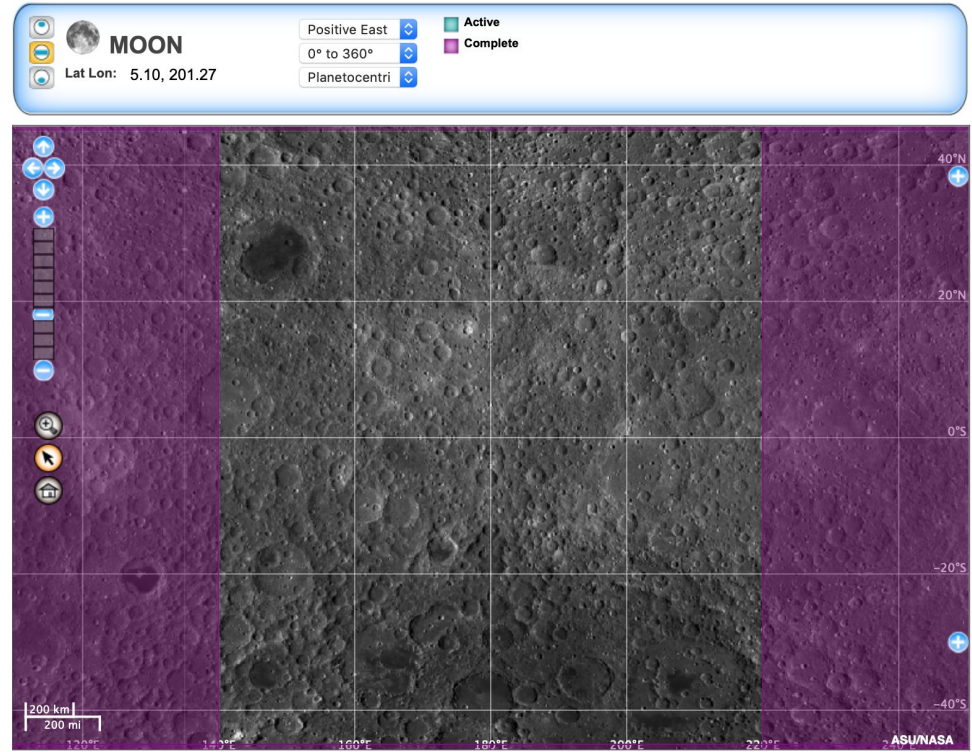


Figure: OpenLayers Solution

Solution Overview

- Use Leaflet to build a new mapping tool.
- View more bodies, not just Earth.
- Allow changing the projection.
- Allow swapping Lat/Lon settings.
- Create a modular package.

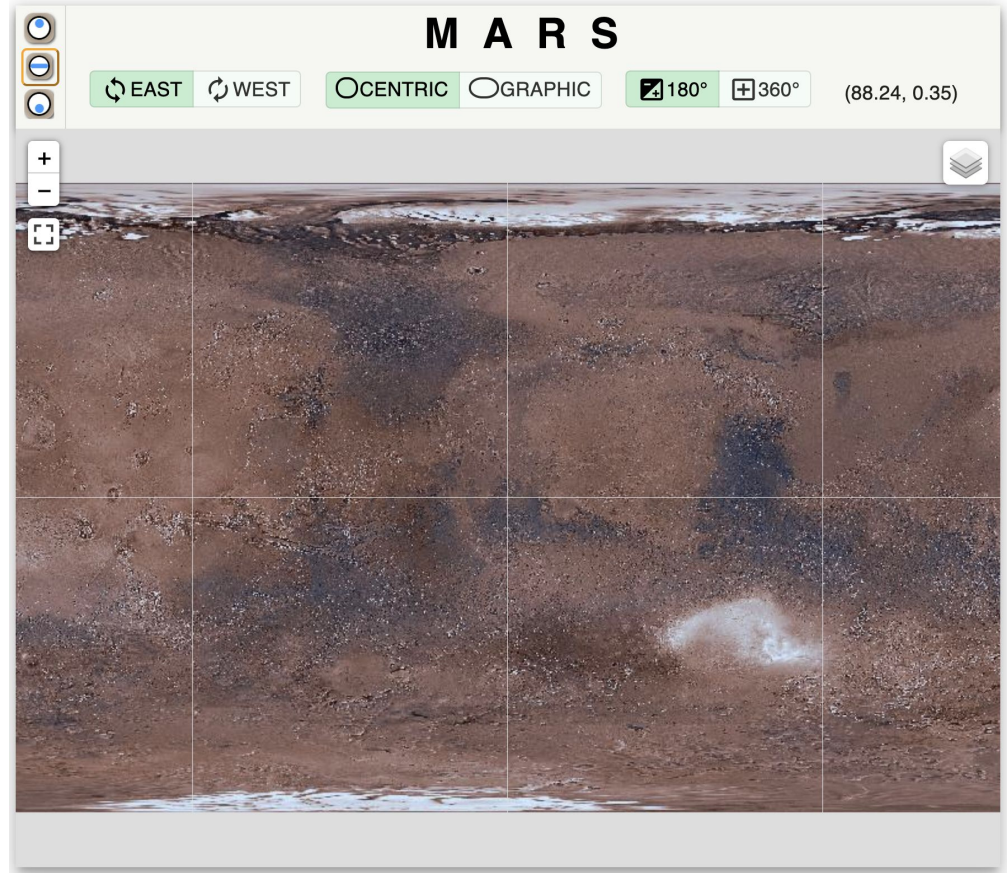


Figure: Our Leaflet Solution

Requirements Refresher

- JavaScript and Leaflet.
- GUI with all features needed by scientists.
- modular for easy updates.
- compatible with any web browser.
- distributed via package managers, e.g., Anaconda, Pip, and NPM.

Implementation Overview

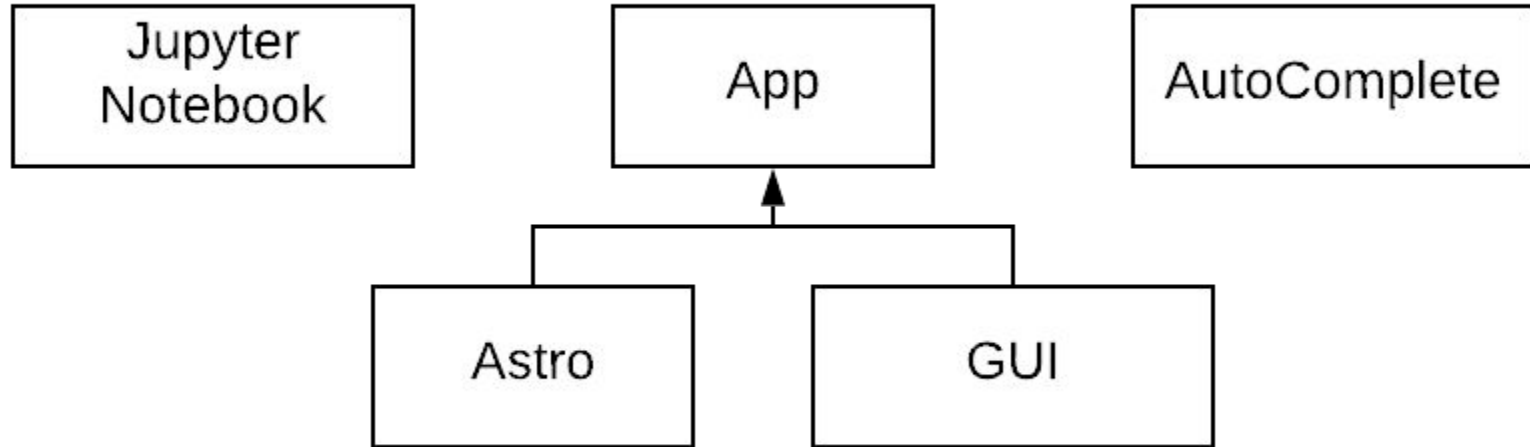


Figure: Overview of Modules

The Astro Package

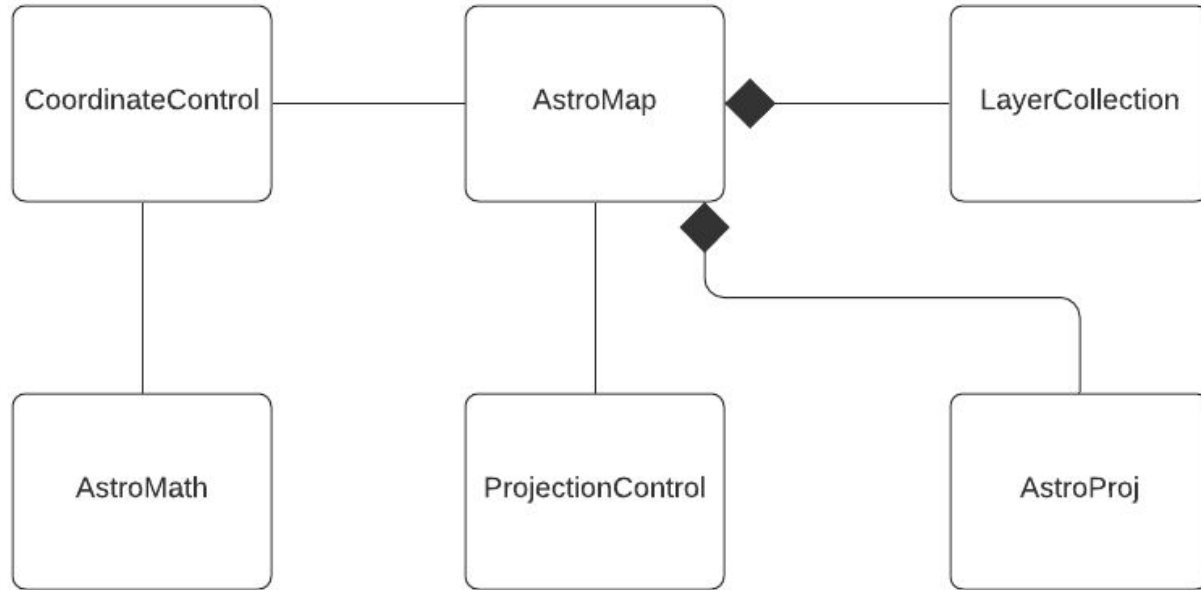


Figure: Overview of the Astro Module

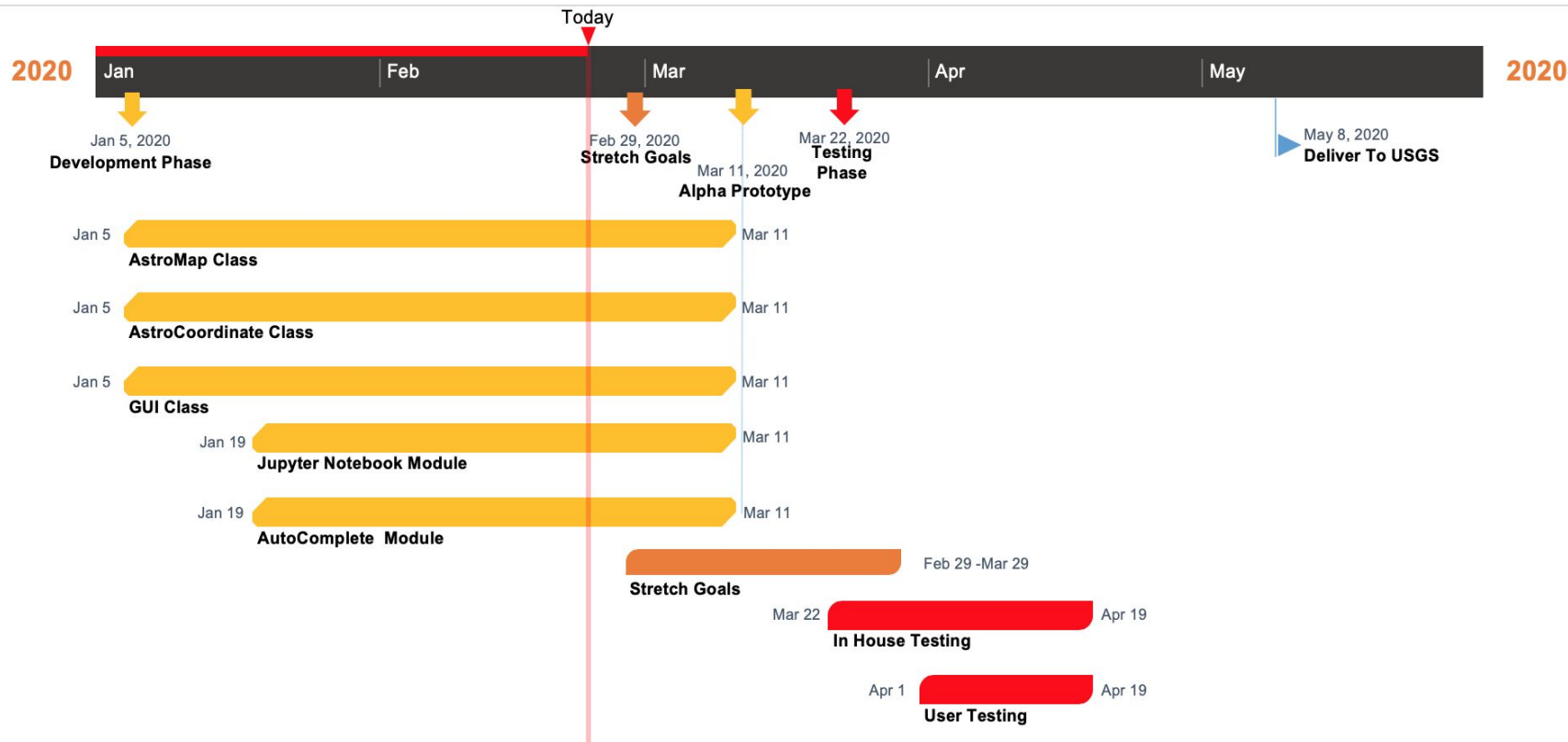
GUI Architecture Demo

[Click Here for Demo](#)

Challenges and Resolutions

- Using React (ES6 JavaScript) for the front-end and CommonJS (ES5 JavaScript) for the back-end
 - Refactor the CommonJS code to export its functionality for use by React
- Jupyter Notebook Integration required using ipyleaflet
 - Little to no documentation or example usage for ipyleaflet
- 404 errors when querying an older USGS server
 - Server being overhauled

Team Schedule



Conclusion

- Team CartoCosmos
- Client: USGS
- Problem: O.L. implementation is out-of-date.
- Solution: A modular Node package using leaflet.
 - AutoComplete search tool
 - Python Implementation
- Alpha-Prototype almost complete and working on stretch goals.

Thanks For Listening

CartoCosmos



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CartoCosmos
Website:

