A New Software User Interface for the Upgraded Haystack 37-meter Radio Telescope

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Overview

- Previous UI
- Development tools
- Coordinates
- Documentation
- Demo
Previous UI
What we Needed

- User-friendly interface
- More visual aids
- Facilitate observation for both astronomers and engineers
The New UI

- Radio Source Sky Map
  - Various functionalities useful for an observer
  - Important antenna status information
- DSS Plotting Application
  - Real time plotting of discrete source scans
- UpNow Application
  - Source trajectories for the current day
Development Tools

- Python 2.7.10
- Spyder IDE
- PyQtGraph
  - Scientific graphics and GUI library
- PyNovas
  - Package for coordinate conversions and solar system body positions
  - DE405 Ephemeris data set provided by JPL
Equatorial Coordinates:
- Given for a specific epoch
  - e.g. January 1, 2000 (J2000)
- Need to account for precession of the earth to get the true to date coordinates.

Horizontal Coordinates:
- Antenna uses these to point
- Mapped onto 2D plot in the new UI
Documentation

- Sphinx Python Documentation Generator
- User Manual
- GitHub
Demo


