



Automating the Remote Observatory for Variable Object Reserach (ROVOR) with

CELESTIAL GRID

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Background: ROVOR

The Remote Observatory for Variable Object Research (ROVOR) is a 16" RC Optical telescope sited 12 miles NW of Delta Utah. May 8, 2008 - ROVOR had first light.



Automating ROVOR

Needed a simple system to streamline and automate ROVOR operations:

- Minimize human interaction with the observatory and telescope systems.
- Reduced interaction not only leads to fewer human introduced errors, but also enables researchers to focus on the science of astronomy and not the mechanics observing.

Telescope Control

Wanted the most affordable option that was most likely to work.

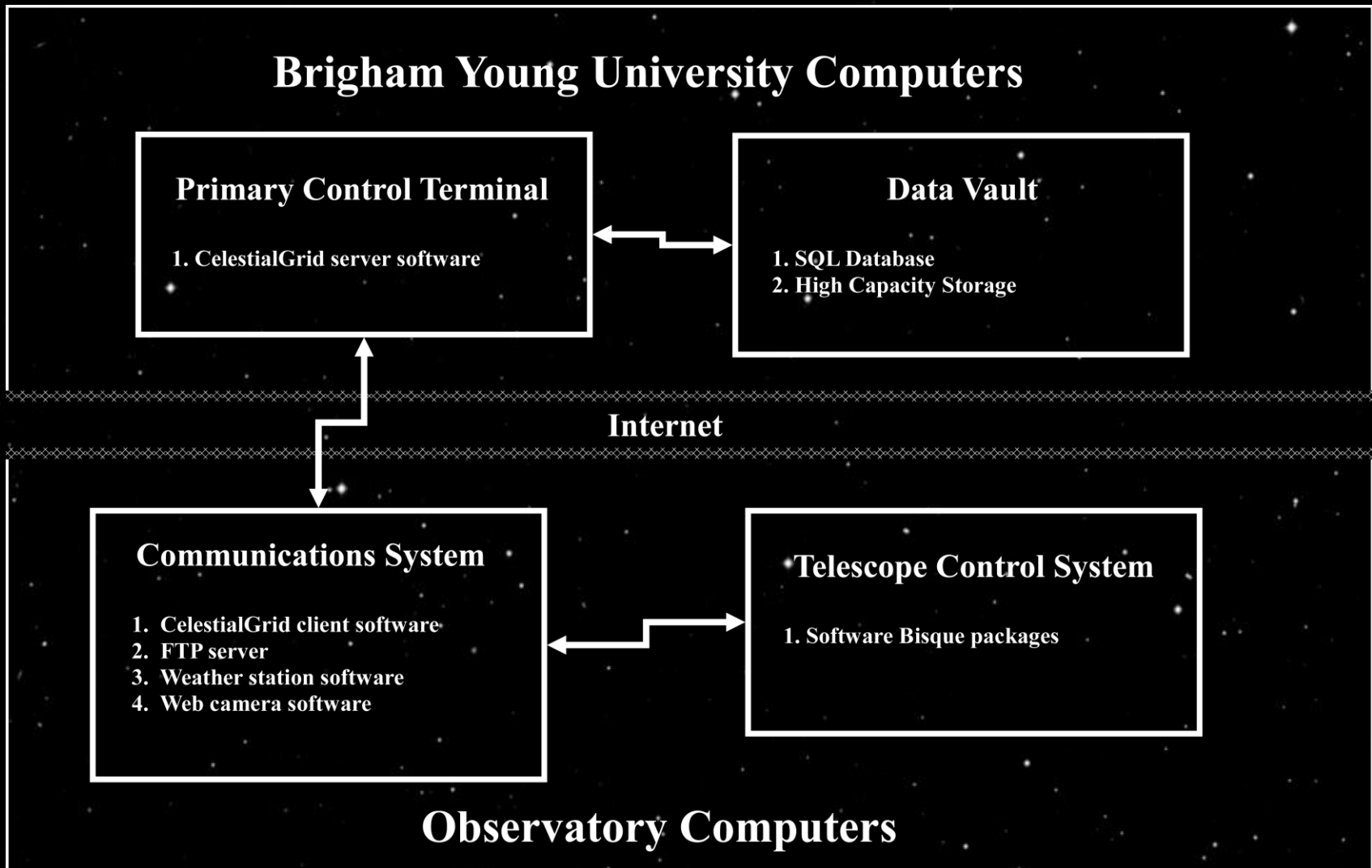
System Options:

1. Design a control system from scratch.
2. Purchase a commercial control system.

CelestialGrid

- Utilize Software Bisque TheSky™, CCDSoft™, and Orchestrate.
- CelestialGrid is an application that wraps around Orchestrate to manage telescope operations.
- Provide a common interface to manage all observatory operations.

CelestialGrid Setup



CelestialGrid Interface

CelestialGrid 1.99c

File Edit Run BD: 1/24/2011

ROVOR **BASS**

Observatory Control


Connected No IAI Object

Disconnect Settings Power Control

Telescope Control Dome Control Web Cameras

Start Observation Observ Summary

Status and Weather Conditions



Dome: Closed Mount: Parked Target: 0h 0m 0s0° 0' 0" Startup Time: Fri 05:29 PM
Observatory Zenith: 5h 39m 0.9423218s 39° 27' 17.1" Observation Time: Fri 06:57 PM
Wind Dir: 187.056 ° Wind Sp: 0.975 mph Temp: 24.2853 ° F
Humidity: 72.2831% Pressure: 29.9855" Solar Intensity: 0.0878403

Active Observation Tasks

- SadunOct12 - 10/12/2010
- HAlpha Run - 08/19/2010

Saved Observation Tasks

- HAlpha Run - 08/19/2010
- Auto Build - 08/31/2010
- CamSept30 - 10/05/2010
- CamOct30 - 10/11/2010
- SadunOct12 - 10/12/2010
- HMXBOct13 - 10/13/2010

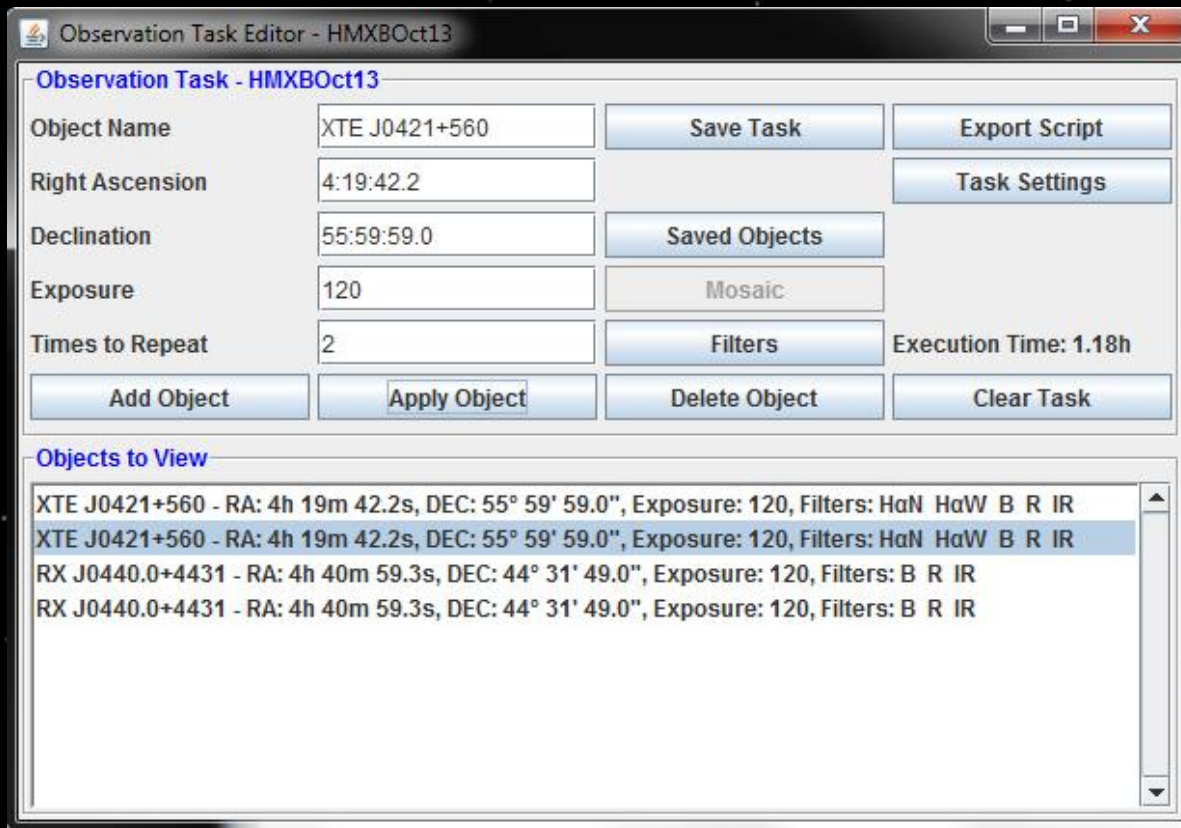
Import/Export Tasks De-activate Activate New Edit Delete

Recent Activity

Fri 20:45 PM Connected to client

Primary Features

- An interface to view web cameras and weather conditions.
- A simple graphical interface for building and controlling observation tasks.

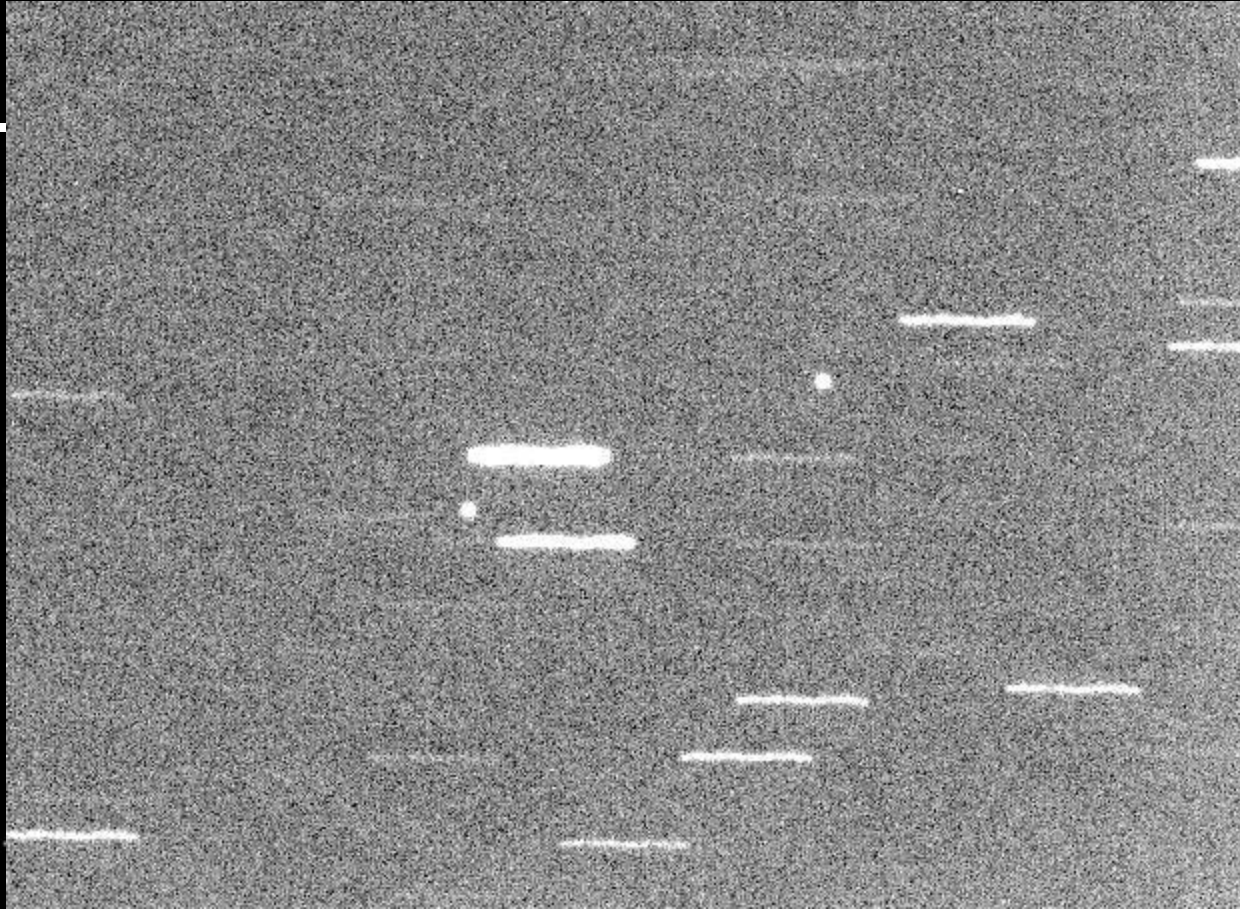


Features continued

- An interface to easily add standardization frames.
- Automatic interrupt imaging connected to GCN.
- Automatic BIAS, FLAT, DARK calibration frames.
- Ability to control and coordinate multiple telescopes.
- Satellite tracking.
- Users can download and install the software to control the telescope from any location.
- Data is automatically retrieved and processed.
- Developed for platform independence in Oracle Java.
- Java Web Start technology ensures all installations of CelestialGrid Server are up to date.
- Simple to use!

Current Development

- World Coordinates for availability in the National Virtual Observatory.
- A user login interface that accepts multiple connections to the observatory.
- New automatic scheduling interface.
- Automatic photometry stored in a SQL database.



Part of the DTV₄S satellite cluster



M42 3x3 Mosaic – B, V, R, H α – Compositing by Tearsa Monet



M33 3x3 Mosaic – B, V, R, H α – Compositing by Tearsa Monet