Automating the Remote Observatory for Variable Object Research (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

Brigham Young University Computers

Primary Control Terminal
1. CelestialGrid server software

Data Vault
1. SQL Database
2. High Capacity Storage

Communications System
1. CelestialGrid client software
2. FTP server
3. Weather station software
4. Web camera software

Telescope Control System
1. Software Bisque packages

Observatory Computers
CelestialGrid Interface
Primary Features

- An interface to view web cameras and weather conditions.
- A simple graphical interface for building and controlling observation tasks.
• 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
M33 3x3 Mosaic – B, V, R, Hα – Compositing by Tearsa Monet