

Online Astronomy



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First...a couple of questions for you

Do you have an online/remote telescope?

Have you used an online/remote telescope?

Would you like to have/use an online telescope?

Tonight's Agenda

- 1 What is online astronomy
- 2 5 common misconceptions about online astronomy
- 3 Why create an online telescope network
- 4 Who uses online astronomy
- 5 Tools & technologies to get online
- 6 Challenges and advantages in using online telescopes
- 7 The future of online astronomy
- 8 LightBuckets demonstration and Q&A

What is online astronomy?

Online Catalogs



Online Sky Shows



Online Observatories



What is online astronomy?

Online Catalogs



M5 – Microsoft Worldwide Telescope

Online Sky Shows



M5 – SLOOH

Online Observatories



M5 – LightBuckets

5 common misconceptions about online astronomy

1 Online astronomy will replace hands-on astronomy

2 Online astronomy is expensive

3 Online astronomy is “cheating”

4 Online astronomy will make me a better imager

5 Online astronomy restricts ownership of the image data

Why create an online telescope network

The LightBuckets Telescope Network



▶ LB-0001 - Rodeo, NM	RC Optical Systems 24" Carbon Truss
▶ LB-0002 - Rodeo, NM	Coronado Instruments SolarMax 90
▶ LB-0003 - Rodeo, NM	Takahashi TOA-150
▶ LB-0004 - Pingelly, Australia	RC Optical Systems 14.5" Carbon Truss
▶ LB-0005 - Mayhill, NM	RC Optical Systems 20" Carbon Truss

It's all about access...

- Unique telescopes and instrumentation
- Locations with excellent weather and sky quality
- Virtually around the clock availability
- Northern and southern hemisphere imaging

Who uses online astronomy

1 Students

2 Hobbyists

3 Astrophotographers

4 Researchers

Tools & technologies to get online

At the observatory



- Facilities
 - Real estate
 - Structures
 - Domes
 - Hosting



- Infrastructure
 - Power/power management
 - Bandwidth
 - PC/Server



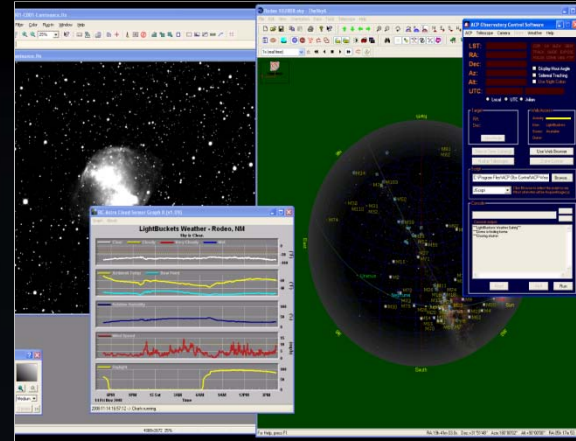
- Instruments
 - Telescope
 - Mount
 - Camera
 - Filter wheel, filters, focuser, rotator, OAG, guider

Tools & technologies to get online

At the observatory



- Sensors
 - All sky camera
 - Seeing monitor
 - Cloud sensor
 - Inside/outside observatory cameras



- Software
 - ACP
 - TheSky
 - MaxIm
 - FocusMax
 - Clarity

Tools & technologies to get online

The LightBuckets stuff



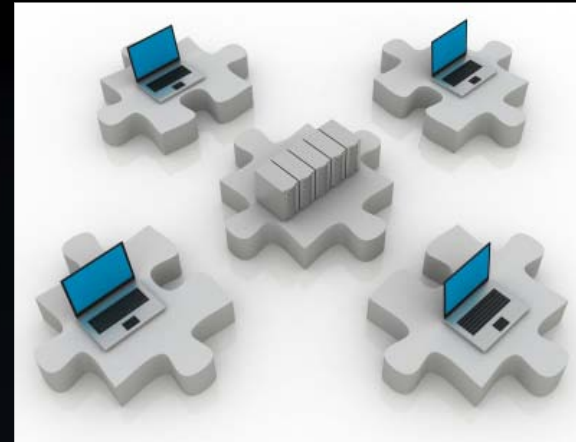
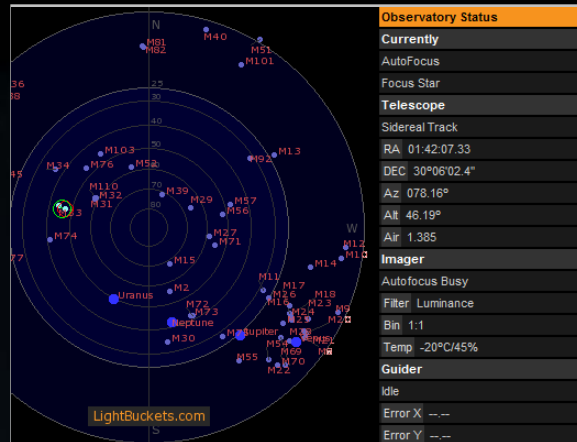
- Servers
 - Fully redundant
 - Dual-Xeon Processors
 - 4GB RAM
 - 4TB Storage
 - 100Mbps connection



- Database
 - Imaging history
 - Schedule queue
 - Run playback

Tools & technologies to get online

The LightBuckets stuff



- Web 2.0 technologies (AJAX, etc.)
 - Interactive interface
 - Dynamic Web Content

- LBCOM – proprietary management suite for constant communication between server and observatory, observatory health, start up/shut down, automated processing, and more

Challenges and advantages of using online astronomy

Challenge

- You're not there
- Things go wrong
- Don't get to tinker

Advantage

- Unique instruments
- Premier locations
- Telescope availability
- Image in both hemispheres
- No maintenance
- Always the latest technology – both hardware and software

The future of online astronomy



More reality to the virtual world

- More tools for the user
- More live features
- More locations
- More instruments



Demonstration and Q&A