



The System - Today and Tomorrow

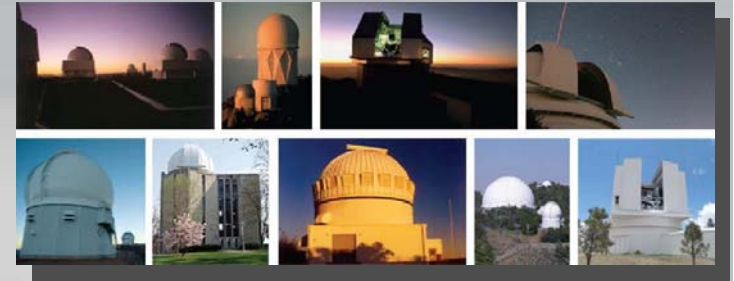
The System in the context of GSMT



- SENIOR REVIEW
- RESTAR
- ALTAIR

Defining a system in balance

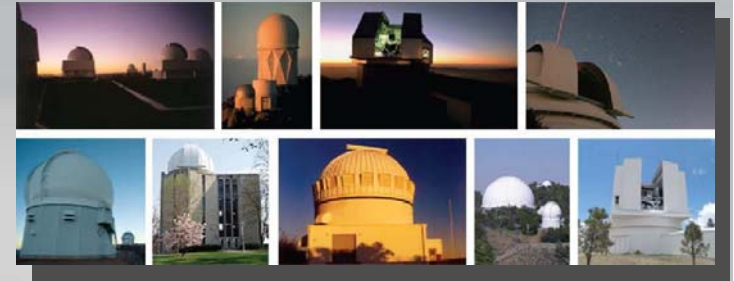
The Senior Review Lesson



- Balance between big and small
- Give greater priority to the base
- Renew/maintain the infrastructure
- Science driven, but note additional roles for (small) telescopes
 - education and training
 - innovation and instrumentation

What's Big??

What's Small??



- 1-m (and smaller) telescopes likely need a different approach (SMARTS, WIYN, SARA)
- ReSTAR: 2-6 meters – science case
- ALTAIR: A system for 6.5-10 meters
 - Expand the TSIP program already in place! (more access to Keck, Magellan, MMT, HET, LBT, WIYN...)
- GSMT

What does the community need in the system?



- How many nights on what telescopes?
- How to collaborate with non-federal facilities?
 - New facilities?
- What instrumentation, what capabilities?
 - What new operations modes?
 - What about data access?
 - What does access mean?

The System is Science Driven

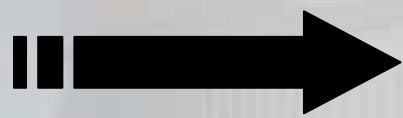


- Science opportunities in a variety of fields drive priorities

New Opportunities



- Experiments
- Surveys
- Time Domain



• PI-Driven Programs

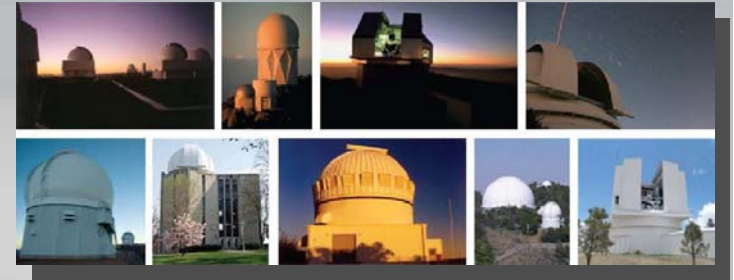
How Many Nights???



- A hard question!!
 - Science needs
 - Proposal driven
 - Demographic factors
 - Training and education

Build/acquire more access as
oversubscription exceeds x2

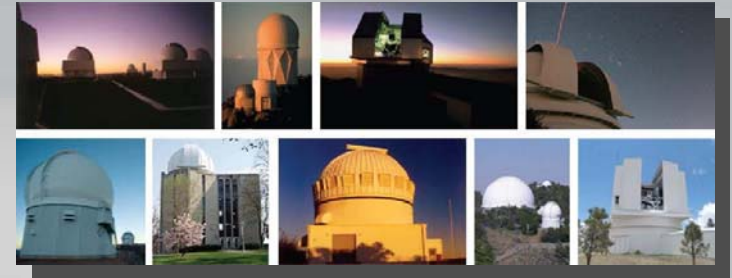
The System Today for 2-4m Telescopes



4.2 equivalent 2-4 meter class telescopes
available through public access today

- 80% of the Blanco 4-m at CTIO
- 30% of the SOAR 4.1-m telescope at Cerro Pachon
 - 70% of the Mayall 4-m at Kitt Peak
- 40% of the WIYN 3.5-m telescope at Kitt Peak
 - 100% of the 2.1-m telescope at Kitt Peak
- 100% of the IRTF on Mauna Kea

Roughly 1200 publicly available telescope nights per year



System @ 6-10 m

Facility	Aperture	Where?	Who	Public Access Nights/ Oversubscription
Gemini	2 x 8m	NGS	50% US	193 / 2.6-3.1
Keck	2 x 10m	N	Non-Fed	19 / 4.7-6.8
Magellan	2 x 6.5m	S	Non-Fed	10 / 3.3
MMT	6.5m	N	Non-Fed	25 / 2.1
HET	9.2m eff	N	Non-Fed	15 / 1.5
LBT	2 x 8.4m	N	Non-Fed	Coming...
SALT	11m	S	Non-Fed	---
Subaru	8m	N	Japan	---
VLT	4 x 8m	S	ESO	---

Nights allocated in 2007B + 2008A (thanks to Joan Najita)



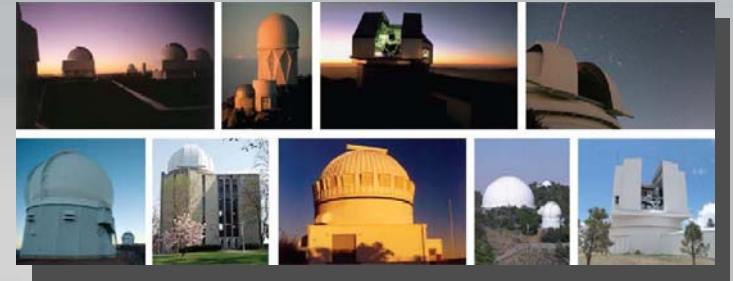
ReSTAR's Vision

A system of small and mid-size telescopes comprising federal facilities and public access to non-federal facilities will provide a cost effective mechanism to meet the needs of the discipline for observations and also provide a more diverse set of instrumental capabilities and operations modes than can be offered through federal facilities alone

The same logic applies at 6-10 meters

ALTAIR will establish the level of need for public access to telescopes in the 6-10 meter range in the next decade

The System in 2020 - 3 parts...

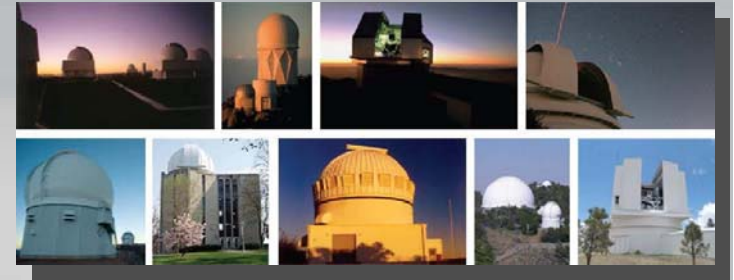


I. ReSTAR - "the equivalent of at least eight 2- to 4-m class telescopes should be available to the community for classically scheduled PI and survey programs"

II. ALTAIR??? Plausible recommendation might be 2-4 equivalent 6-10 meter telescopes by 2020, acquired and enhanced through public investment in non-federal telescopes

III. GSMT What does the community need?

Take-Away



- The System should include access to federal and non-federal telescopes and data at each aperture range to provide the science capabilities needed
 - Fund non-federal facilities to support community users
- ReSTAR and ALTAIR costs are modest compared to GSMT
 - ReSTAR, ALTAIR, and GSMT are all needed to support the science of 2020
 - The System is more than just telescopes