Thirty-Meter Telescope: TMT
TMT and the NSF

“Planning a Partnership Model for a Giant Segmented Mirror Telescope (GSMT)”

Cooperative Agreement established as a result of TMT response to NSF-AST solicitation

“The primary deliverable of this award is to be a partnership model that might allow NSF to join the TMT Project on behalf of the US astronomical community.”
Cooperative Agreement Activities

- **US TMT Science Working Group** will be established in partnership with NOAO
- US community representation on the **TMT Science Advisory Committee** and **TMT Collaborative Board**
- Annual **townhall meetings/workshops**
- Annual **TMT Forum**

Goal is to give the US community a voice in defining the TMT Observatory and defining potential NSF role in construction and operation of the project.
How can members of the community participate?

- Become a **member** of the **US TMT Science Working Group** (and perhaps a member of the **TMT SAC**)
- Attend the annual **TMT Forum** as a US community member
- **Request a visit to your department/regional meeting** to present and discuss the TMT project and US community involvement
- Indicate your interest (via future announcements) in **participating in the development of instrumentation** for TMT
- **Provide input** through community-wide solicitations about TMT science, TMT instrumentation, and TMT operations.

Indicate your interest by contacting Todd Boroson (**tboroson@noao.edu**) at NOAO, who is establishing a US TMT Liaison office.
Thirty Meter Telescope (TMT)

Nine times the light collecting area of a Keck 10-m Telescope
Twelve times higher spatial resolution than the Hubble Space Telescope for wavelengths where AO can achieve diffraction limit of the primary mirror
First Generation Instrument designs underway

- **MOBIE** (Wide-field optical spectrometer) PI: R. Bernstein
- **IRIS** (AO-fed spectrometer and imager) PI: J. Larkin
- **IRMS** (Keck MOSFIRE clone)
- **NFIRAOS** 180nm WE AO system (HIA)

Instruments are large, expensive and individual subsystems are comparable in scope to instruments for 4-8m telescopes. Instruments will be designed and built through collaborations.
TMT Science

TMT light gathering power and very high spatial resolution will revolutionize studies in the areas of:

- the first epoch of star formation in the Universe
- the assembly and evolution of galaxies
- the discovery and characterization of extra solar planets
- New discovery space
Site: Mauna Kea
Mauna Kea

Very stable atmosphere above the site
- Excellent image sharpness
- Leads to excellent adaptive optics correction
- High site: low water vapor, low UV extinction
University of California and Caltech participation via major gift from the Gordon and Betty Moore Foundation

ACURA (Canada) has been a partner since 2004

China, India and Japan have been scientific and technical partners since 2007/8
International Partnership

• Completing the TMT international partnership is a major activity
  – Legal agreements and corporate structure
  – Some partners are preparing construction proposals in 2013 for a 2014 start
  – NSF is undertaking a program to explore partnership in the project