PARTNERSHIP

The TMT Observatory Corporation is a partnership between:

- Association of Canadian Universities for Research in Astronomy (ACURA)
- California Institute of Technology (Caltech)
- University of California (UC)

The current US$ 80 million, five year design and development program is planned for completion in 2009. Construction is expected to commence immediately thereafter, leading to initial science operations in the second half of the next decade. The Moore Foundation has committed US$ 200 million for construction. Caltech and UC have committed an additional US$ 50 million each. TMT is actively seeking additional major partners for the construction and operations phase.

TMT gratefully acknowledges financial support for design and development from the following organizations:

Gordon and Betty Moore Foundation
Canada Foundation for Innovation
Ontario Ministry of Research and Innovation
National Research Council of Canada
Natural Sciences and Engineering Research Council of Canada
British Columbia Knowledge Development Fund
Association of Universities for Research in Astronomy
National Science Foundation (USA)

Thirty Meter Telescope
2632 E. Washington Blvd.
Pasadena, CA, USA
626.395.1602
info@tmt.org

FOR MORE DETAILS

Construction Proposal: 2007

Detailed Science Case: 2007

Observatory Requirements Document

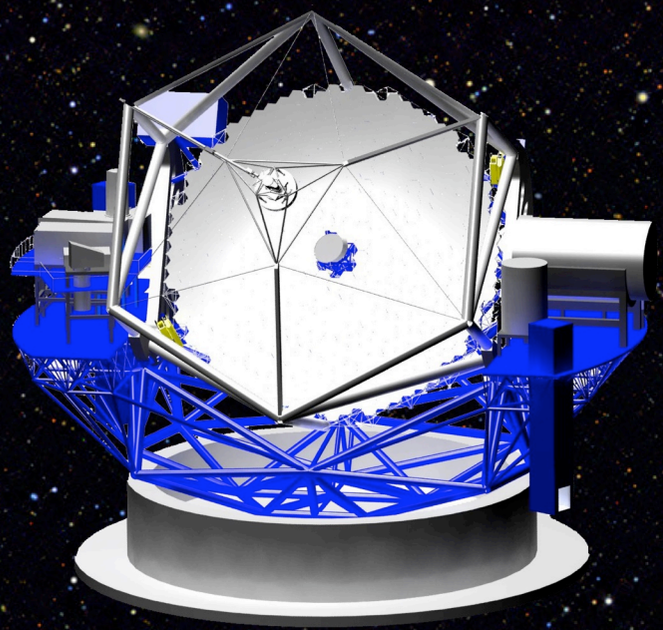
Observatory Architecture Document

Operations Concept Document

Available from www.tmt.org

TMT

THIRTY METER TELESCOPE



www.tmt.org

OBSERVATORY

More sensitive than existing ground-based telescopes by factors of 10 (natural seeing mode) to 100 (diffraction-limited mode)

Segmented (492 x 1.4 m hexagons), f/1, filled aperture, 30-m primary mirror

Ritchey-Chrétien, altitude-azimuth mount

Wavelength coverage: 0.31 – 28 μm

Nasmyth platforms for long-term mounting of diverse instrument suite

Rapid instrument switching: < 10 min

Rapid target acquisition: < 5 min

Multi-conjugate adaptive optics (AO) and laser guide star (LGS) systems at first-light

Diffraction-limited images: 0.015 arcsecs @ 2.2 μm over a 30 arcsec field-of-view

Scientific synergy with James Webb Space Telescope and Atacama Large Millimeter Array

INSTRUMENTATION

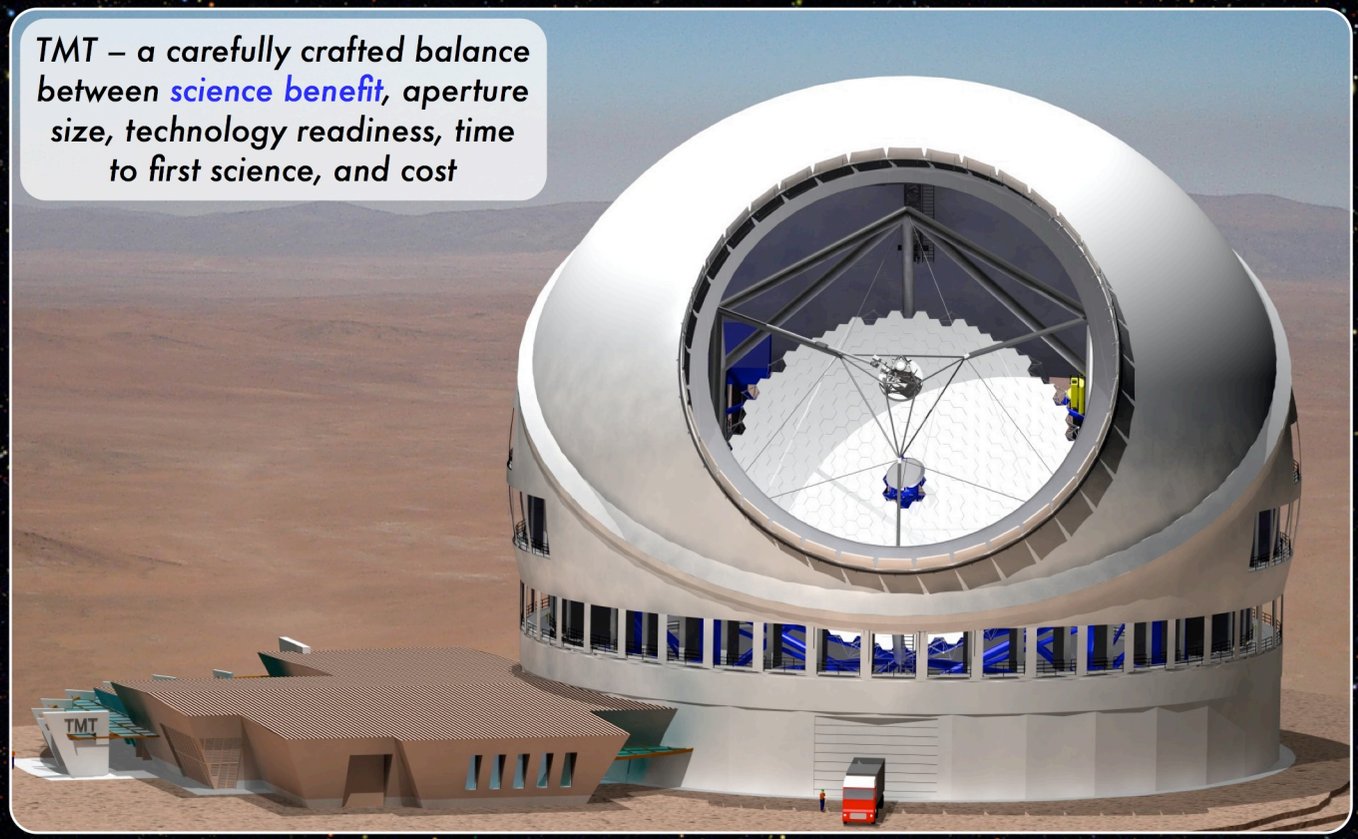
Early-light instrument capabilities

- Diffraction-limited LGS-AO imaging and integral-field spectroscopy (0.8–2.5 μm)
- LGS-AO multi-slit spectroscopy (0.8– 2.5 μm)
- Wide-field multi-object spectroscopy (0.3–1 μm)

Additional first-decade instrument capabilities

- Extremely high contrast (10^8 @ 1.65 μm) planet imaging and spectroscopy
- Echelle spectroscopy (0.31–1 μm, R ~ 50 000)
- AO-fed echelle spectroscopy (1–2.5 μm, R ~ 25 000)
- AO-fed mid-IR imaging spectroscopy (8–28 μm)
- AO-fed precision astrometric imaging (1–2.5 μm)
- Multiple NIR integral-field units over a 5 arcmin field-of-view, with individual AO correction

TMT – a carefully crafted balance between science benefit, aperture size, technology readiness, time to first science, and cost



SCIENCE FRONTIERS

- Dark energy, dark matter and tests of the Standard Model
- First stars, first galaxies and the epoch of reionization
- Galaxy assembly and evolution over the past 13 Gyrs
- Connection between supermassive black holes and galaxies
- Star-by-star dissection of galaxies out to 10 Mpc
- Physics of star and planet formation
- Exo-planet discovery, characterization and the search for life
- Kuiper belt object surface chemistry
- Solar system planetary atmosphere chemistry and meteorology