



# Giant Magellan Telescope

Presented by

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# GMTO Corporation

- USELT
  - GMT
  - TMT
- NOIRLab (NSF Funding)

# GMTO Corporation

At the helm of the GMTO Corporation is an international consortium of leading universities and research institutions.

→ MEET OUR FOUNDERS

• Weizmann Institute of Science

• Korea Astronomy and Space Science Institute

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• The University of Arizona

• The University of Texas at Austin

• Texas A&M University

• The University of Chicago

• Harvard University

• Carnegie Institution for Science

• Smithsonian Institution

• The São Paulo Research Foundation – FAPESP

  
Giant Magellan  
Telescope

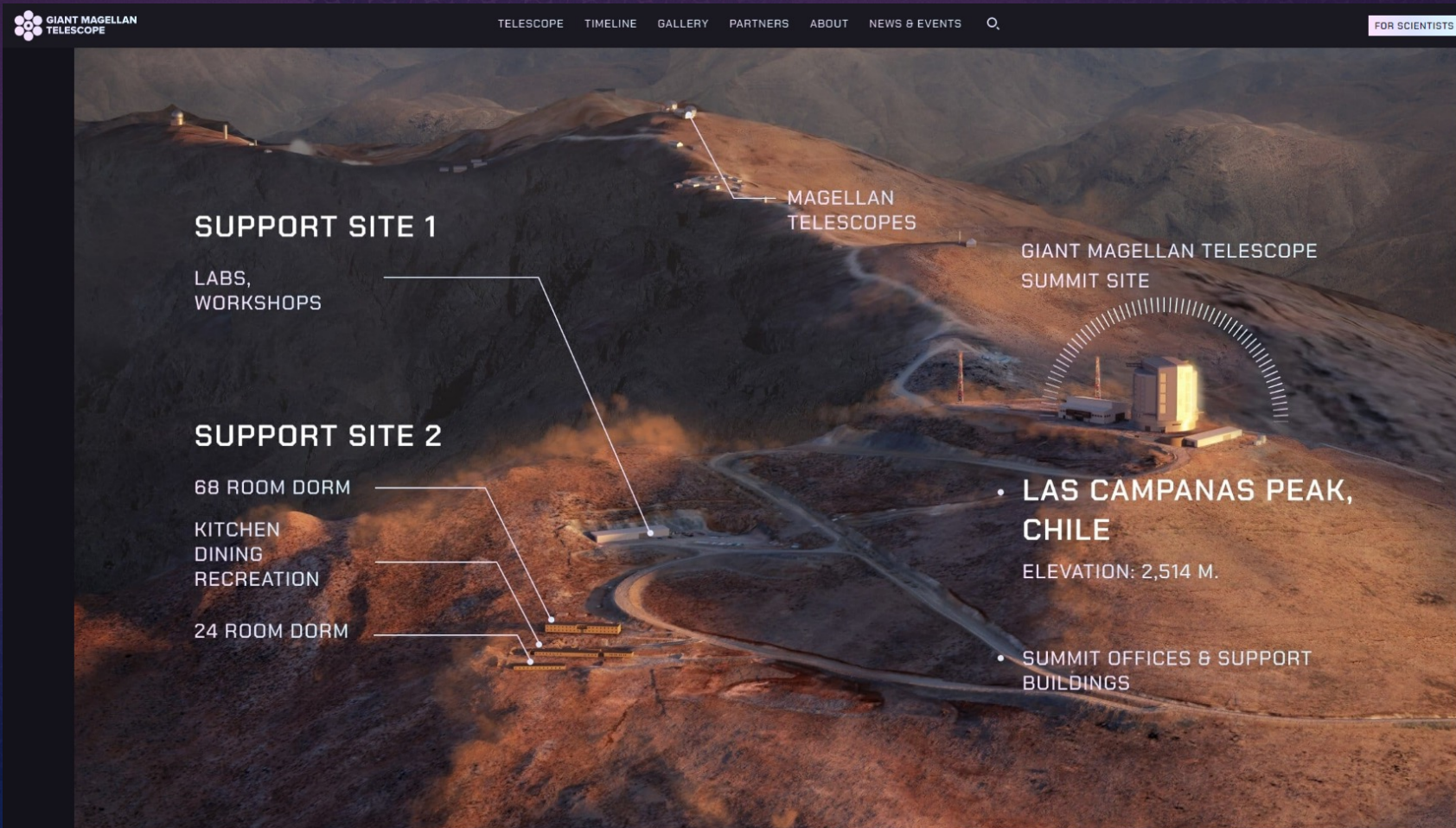
# Giant Magellan Telescope (GMT)

## WORLD'S MOST POWERFUL TELESCOPE

- The Giant Magellan Telescope is the largest Gregorian optical-infrared telescope in history.
- It will use seven of the world's largest mirrors to see farther into deep space than ever before.
- Its unique design will produce the highest possible resolution of the Universe over the widest field of view.
- This extraordinary image clarity will enable scientists around the globe to obtain new clues to the fundamental nature and evolution of the Universe — from searching for signs of life on distant exoplanets to investigating the cosmic origins of chemical elements.
- The telescope is expected to have a resolving power 10 times greater than the [Hubble Space Telescope](#).



# Observatory Site





# Telescope Rendering



Daytime interior rendering of the telescope viewing platform. Image credit: Giant Magellan Telescope – GMTO Corporation.

# Las Campanas

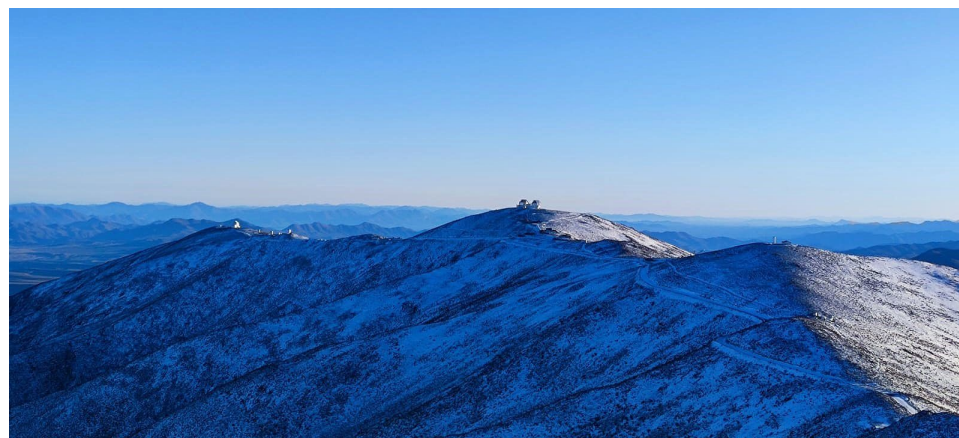


Feb 2020



Telescope Enclosure Platform

October 2021



Snow at Atacama Desert



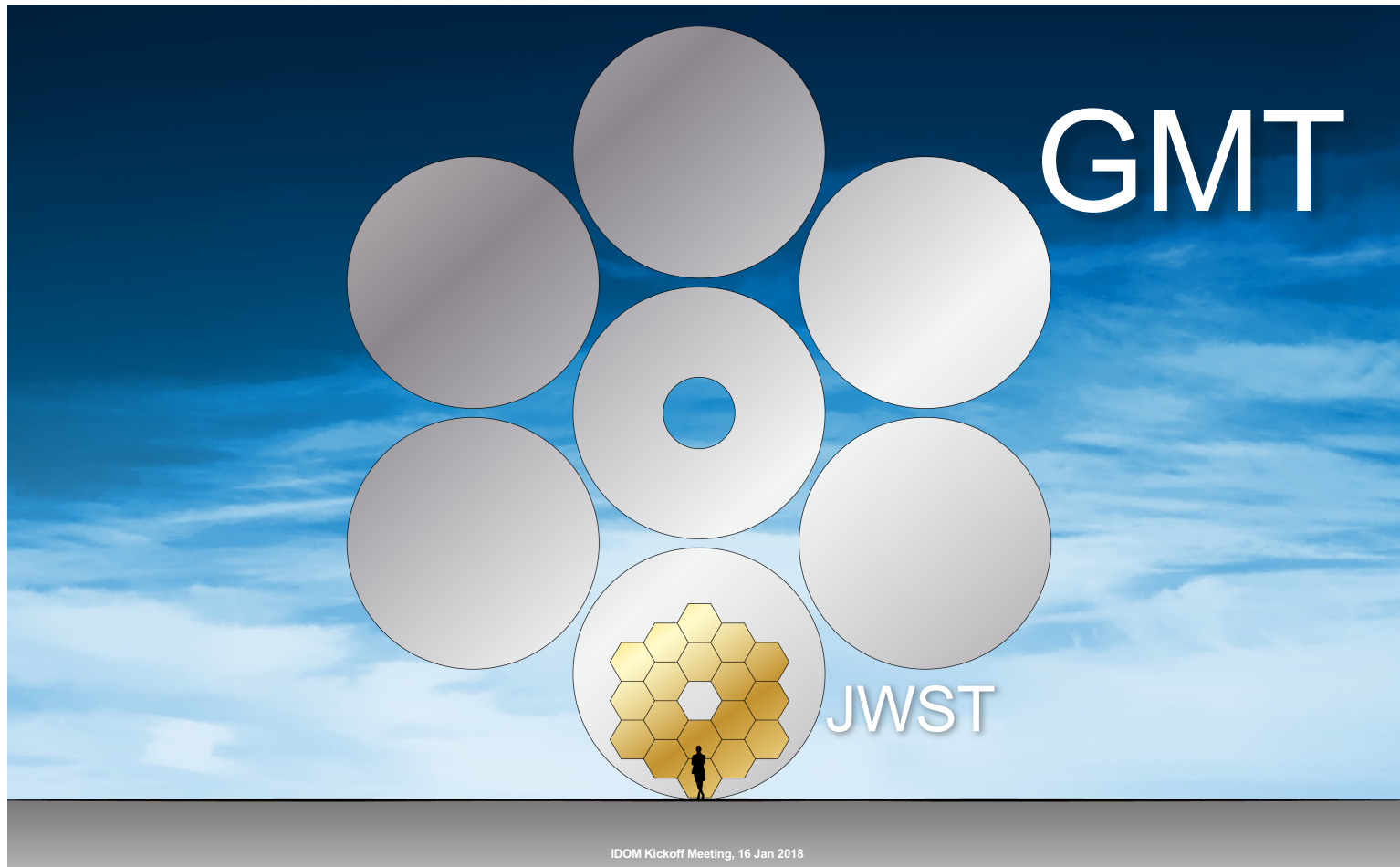
## Water Tank – Feb 21, 2020



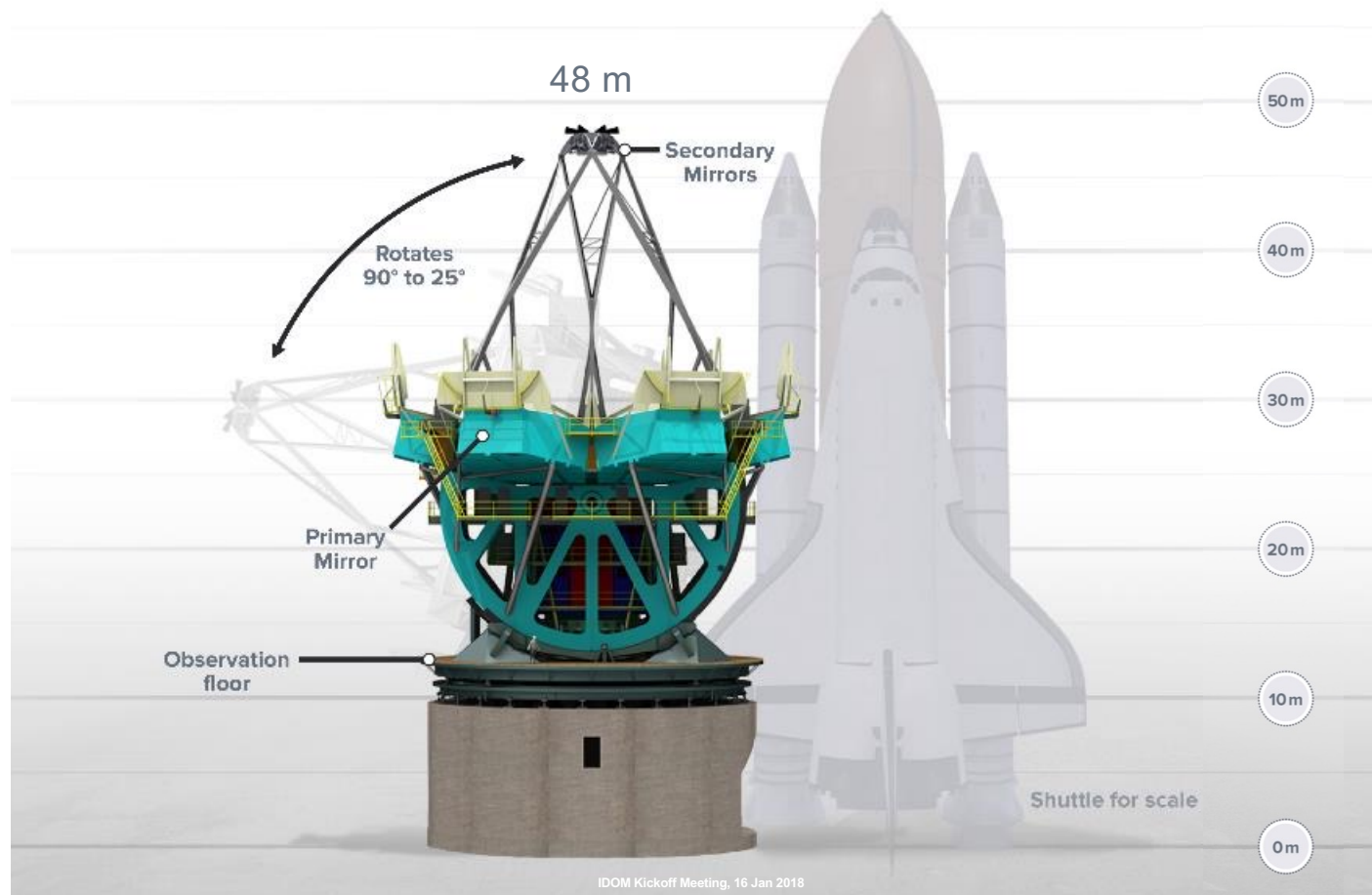


# GMT Size Comparison

(JWST = 6.5m; GMT = 24.5m ~ 80ft)



# Giant Magellan Telescope Configuration



IDOM Kickoff Meeting, 16 Jan 2018

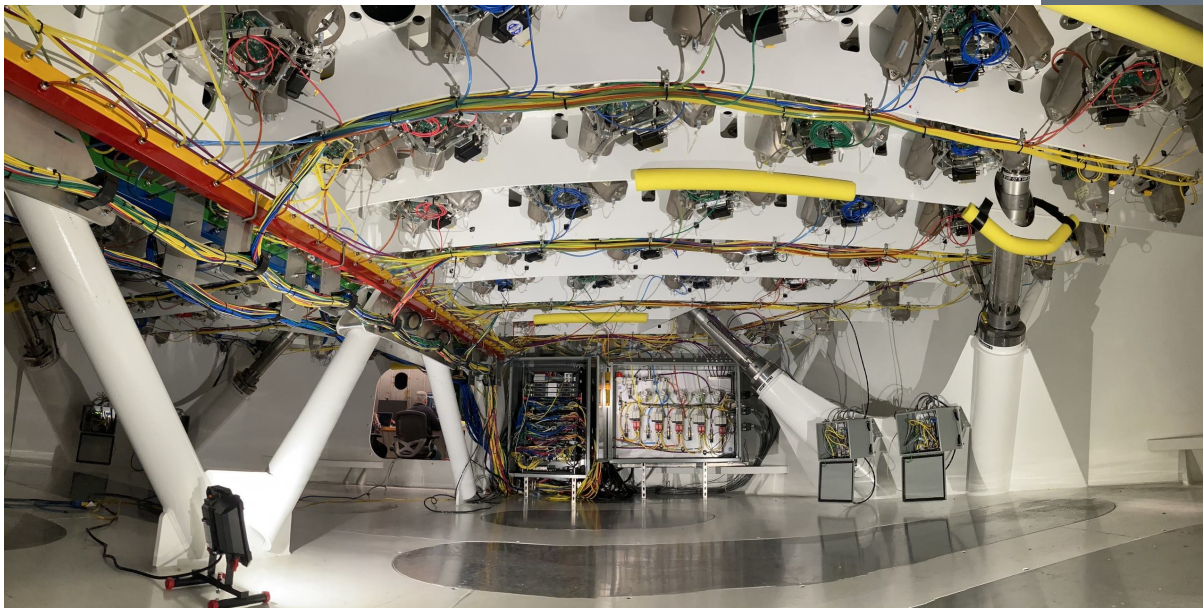


# GMT Size Comparison (Rose Bowl Stadium)





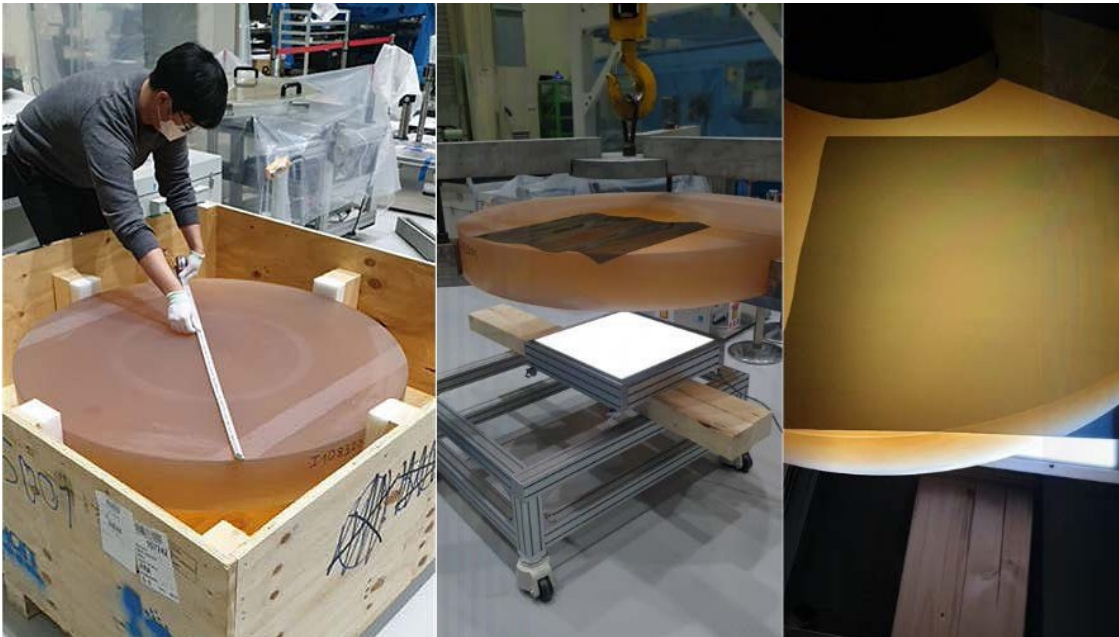
# Integration progress on the Test Cell continues at the University of Arizona Tech Park (Tucson, AZ)



**All six hardpoints and HP electronics boxes, all 170 support actuators, PCC, ACC, CCC, server cabinet, air distribution, and cabling are now installed, and M1S DCS testing has begun**



# Adaptive Secondary Mirror



**Fabrication of the first Adaptive Secondary Mirror (ASM) segment and positioner is underway.**

## Mirror Status

Each Mirror is 8.4-meter (27.5 feet) mirror — about two stories high when standing on edge

Fabricated at the [University of Arizona's Richard F. Caris Mirror Lab](#) and will take nearly four years to complete.

- S1 – Completed in Storage
- S2 – Completed in Storage
- S3 – In production que
- S4 – In production que
- S5 – In production que
- S6 – Out of casting
- S7 – TBD

# Primary Mirror Segment 6 Unveiling



**August 2021**

**The casting process began in March 2021 and has been annealing over the last few months.**

**The mirror will undergo inspection and cleaning before being carefully lifted from the furnace floor and moved across the Lab into the integration hall for rear-surface generation.**



## Primary Mirror Segment 6 Move



Using a lifting fixture bonded to the mirror's front surface, segment 6 was carefully lifted from the furnace floor and moved into the integration hall for rear-surface generation.

**Richard F. Caris Mirror Lab at the University of Arizona in late August**



## Science Data

- Projected 10-40 TB per night (Total Data)
- No Data until First Light ~ 2028
- Leverage nearby data center (NSF research/education network)
- Fiber from Summit to La Serena through new power lines
- Data Location? NOIRLAB?

# GMTO Cybersecurity – Data Center

## Pasadena Data Center

- Data
  - Backup locally every hour
  - Backup to Faction Nightly (cloud)
- Pasadena Data Center replicate to the Summit

## AWS Services

- Data are backup nightly
- Pasadena Services moving to AWS



**Thank You!**

<https://www.giantmagellan.org>

GMP Visit to Brazil, August 2018