

TMT for Subaru/Gemini's Future

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(NAOJ)

Early History (1) 1987

Visit by UK Large Telescope Panel

- A.Boksenberg & R.Ellis visited NAOJ to inquire for the possibility of UK–Japan collaboration in building an 8m telescope.
- NAOJ had to decline the idea, having no past example of such a full–scale international collaboration. What if we sought for this chance?
- NAOJ and UK, instead, started **JSPS/PPARC** project around mosaic CCD camera on INT, which evolved into SDSS collaboration and SuprimeCam.

Early History (2) 1993

Call for 8m Club by Gemini

GEMINI PROJECT NEWS

June 1993 / Number 5

**Matt Mountain
had to testify at
Houck Comm. to
defend for the
choice of active
thin mirror.**

"Subaru / Gemini Workshop

3. Is the baseline Gemini design likely to perform to the specifications and provide a uniquely powerful imaging and infrared capability on Mauna Kea?

No. In choosing a meniscus mirror over a honeycomb mirror, the Project has unnecessarily exposed itself to significant additional risk of failure. The decision traded a perceived short term financial risk in mirror blank fabrication for a long term technical risk to the telescope's performance. Although we did not find proof that the

meniscus concept cannot meet the requirements, this approach is clearly more risky.

Based on the extensive material presented to us during the review, we conclude that it is essential that the Project return to the honeycomb mirror concept. This is our principal technical finding. Previous NOAO/GEMINI committees have found the borosilicate mirror to be the preferred technical solution.

8m Club Meetings

3M™ bond



- 1st meeting on 1 Mar, 1993 in London (was it at Oxford?)
- VLT (M.Tarenghi) / Subaru (M.Iye) / Gemini (M.Mountain)
- 5~6 meetings during 1992–1995
- Compare and discuss basic engineering concepts
- Common active thin mirror concept.
- Different engineering solutions for active optics
- Difference in choices of foci & instrument package

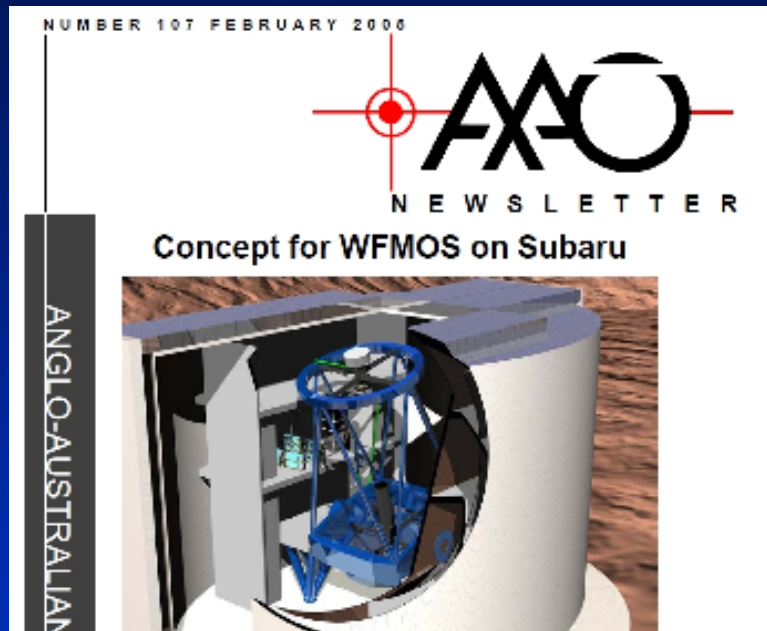
Each group had their own construction budget approved.

The issue was “How to build 8m telescope”.

Very candid productive meetings!! Mutual respects ...

Recent History (3) 2005

WFMOS on Subaru



4 year effort to get
community's support

Sorry for unlucky WFMOS



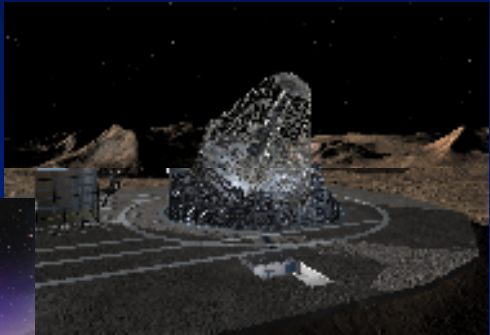
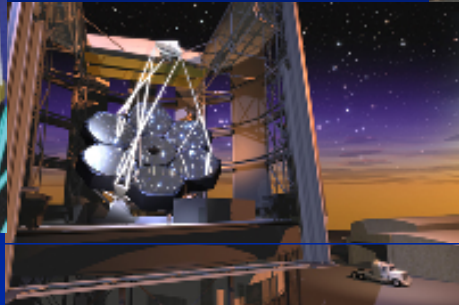
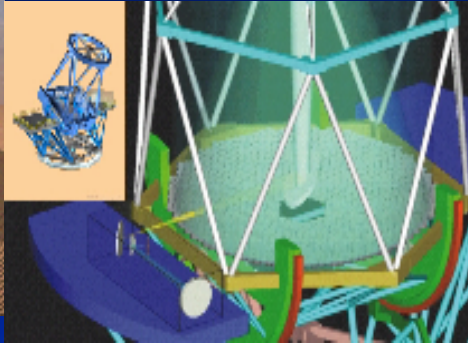
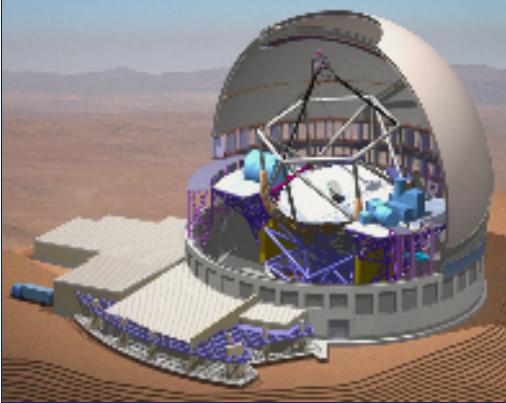
Never Give-up



Yes, we can

Recent History (4) :2007

JELT Decision to join TMT @MK



TMT ← 合流

JELT

Giant Magellan T.

European ELT

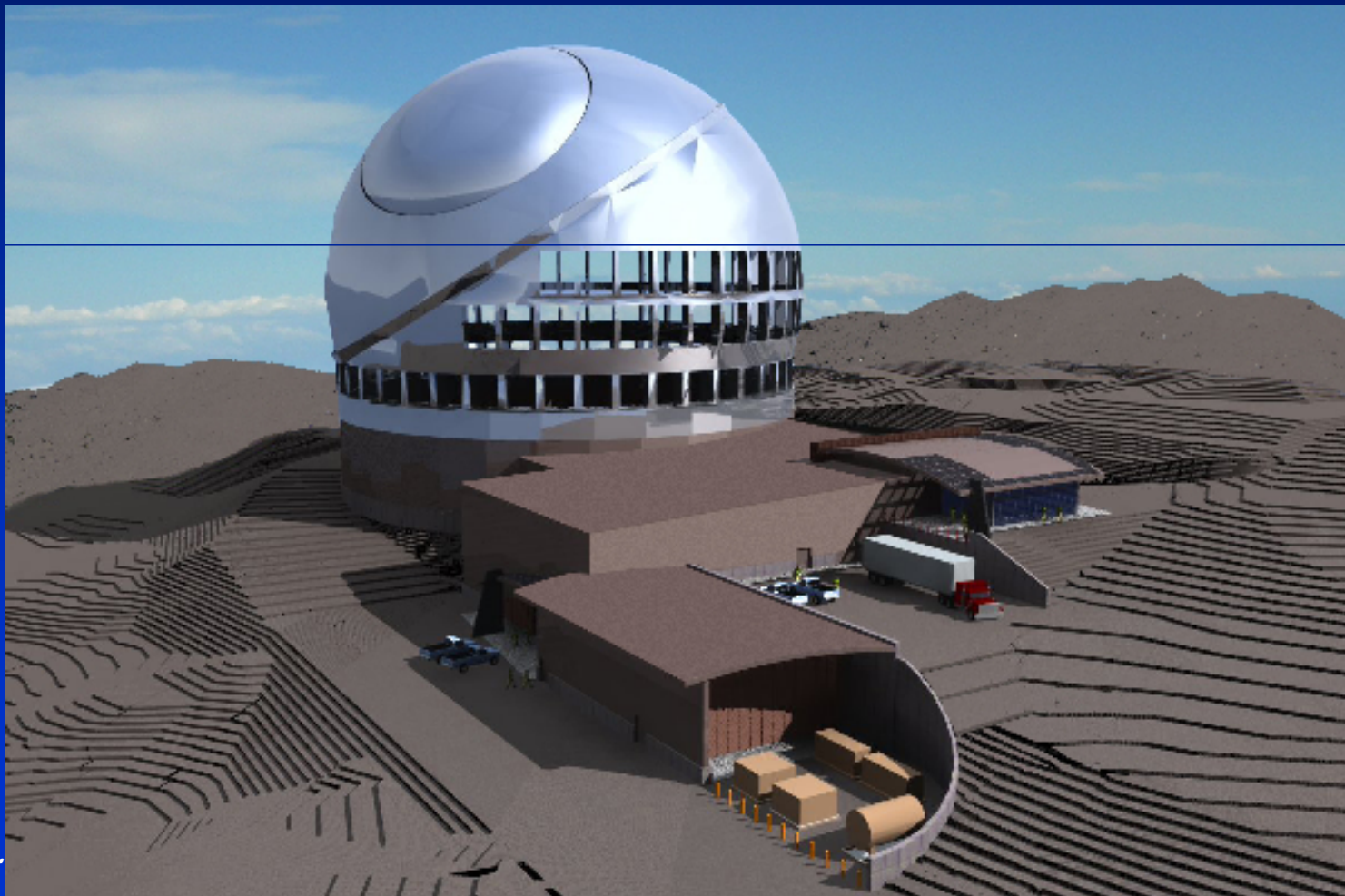
Caltech etc.
30m
Hawaii/Chile
~1000M\$
(2018?)

NAOJ
30m
Hawaii
~900M\$?
(2018?)

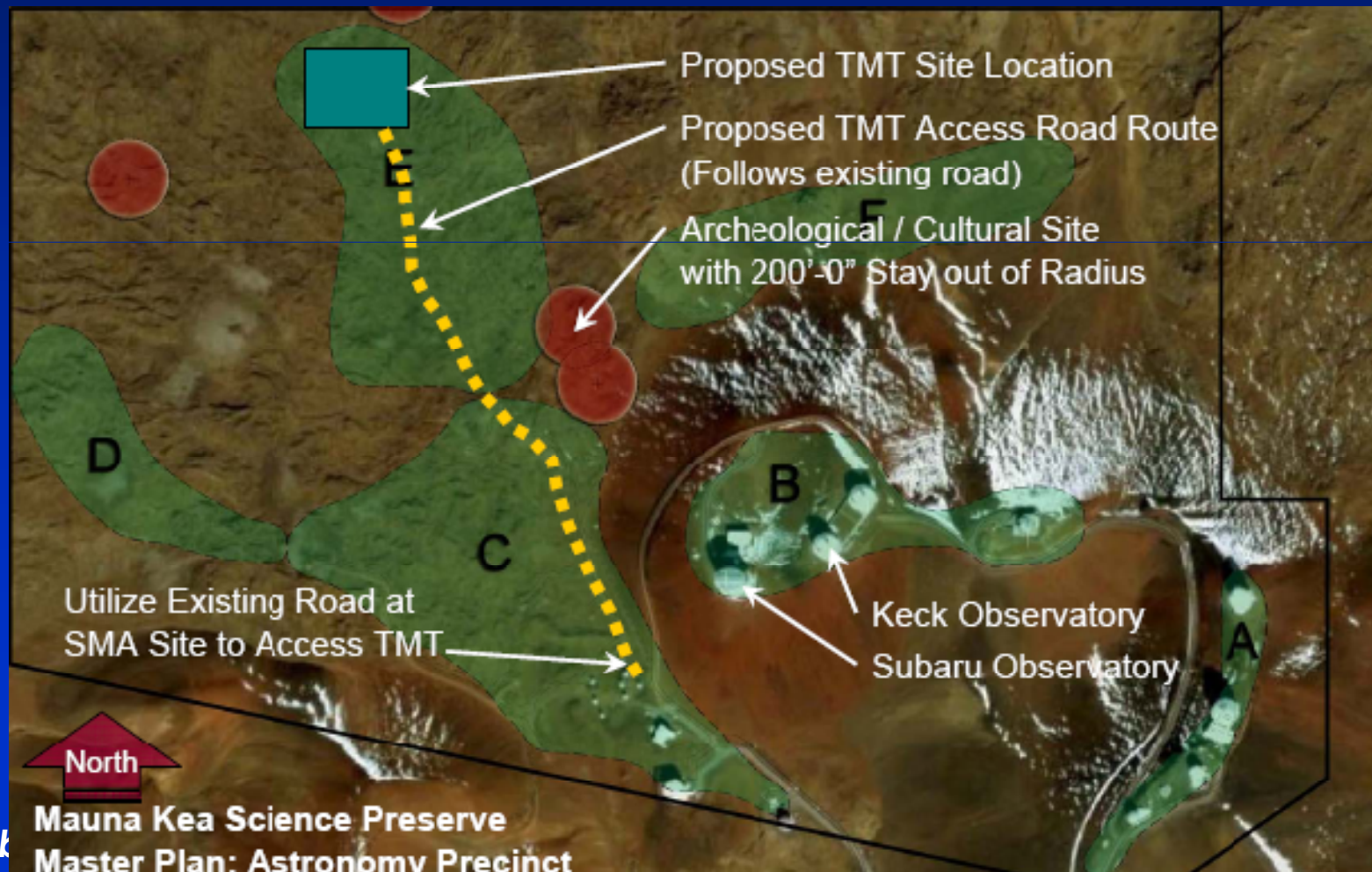
Arizona U. etc.
8mx7 (22m)
Chile
550M\$?
(2018?)

ESO
42m
Chile
850ME?
(2018?)

Site decision in July, 2009 studies for Mauna Kea Concept



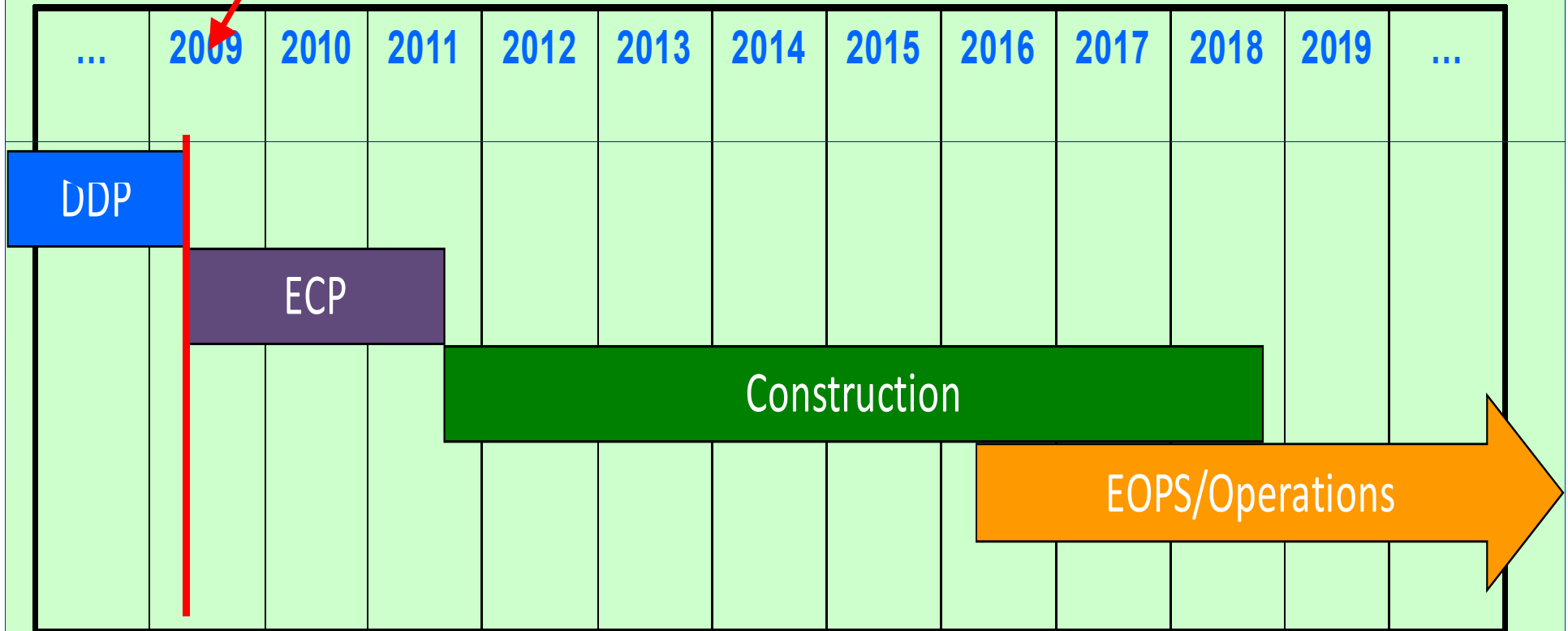
Precise Location Selected for MK Road via SMA under study



TMT Schedule by Program Phase

Design Development Phase was completed March 2009

TMT Project Schedule by Programmatic Phase
(by calendar year)



Mauna Kea Community

- **Best site in the northern hemisphere**
 - **Existing top-level active observatories**
Subaru, Gemini, Keck, CFHT, UKIRT, UH,
 - **High possibility for TMT to choose MK**
 - **Subaru's future with emphasis on**
wide field capability
(FMOS, HSC, WFMOS-like)
 - **Operation of 8m telescopes in TMT era :**
needs for international arrangements
- => Mauna Kea Consortium for TMT**
Let's be the Northern Center of ELT era.

Key to success for Subaru/Gemini's future

Innocent people tend to misunderstand that astronomers are noble folks away from money.

This is no more true and we need money, and that's a huge sum of money. Some of us are striving to raise it but the necessary fund tend to exceed the level single institute/nation can afford.

We need to work together to make TMT (and WFMOS+ ?) as reality. None has enough money yet.

Stimulating perspectives by Hideki and Tim.

Building Subaru-Gemini person-to-person contacts is the key to our future.

In this sense, this WS was most successful!

Thank you all, especially to SOC/LOC.