



Status and challenges:

# European Southern Observatory (ESO) Square Kilometre Array telescope (SKA)

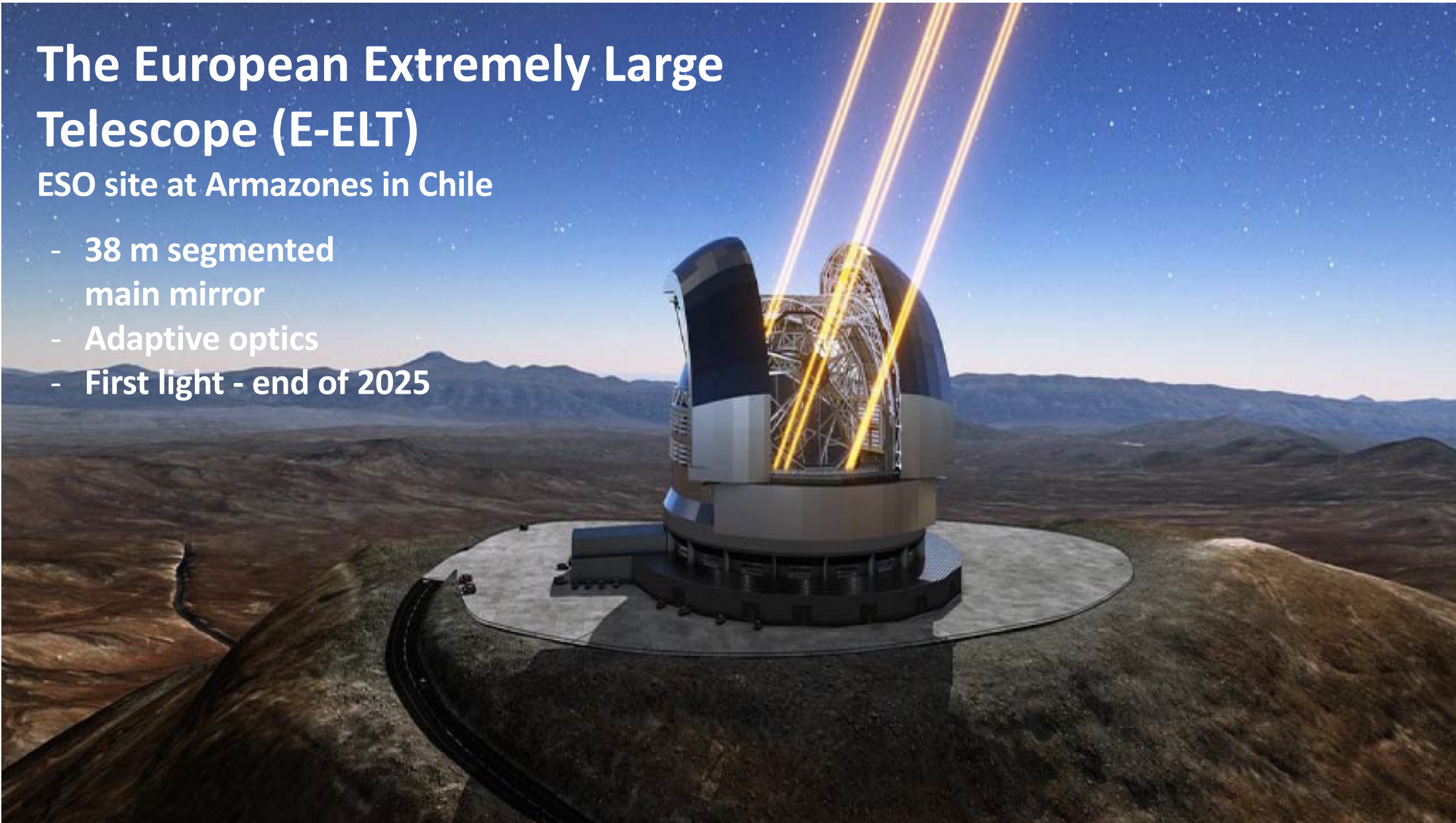
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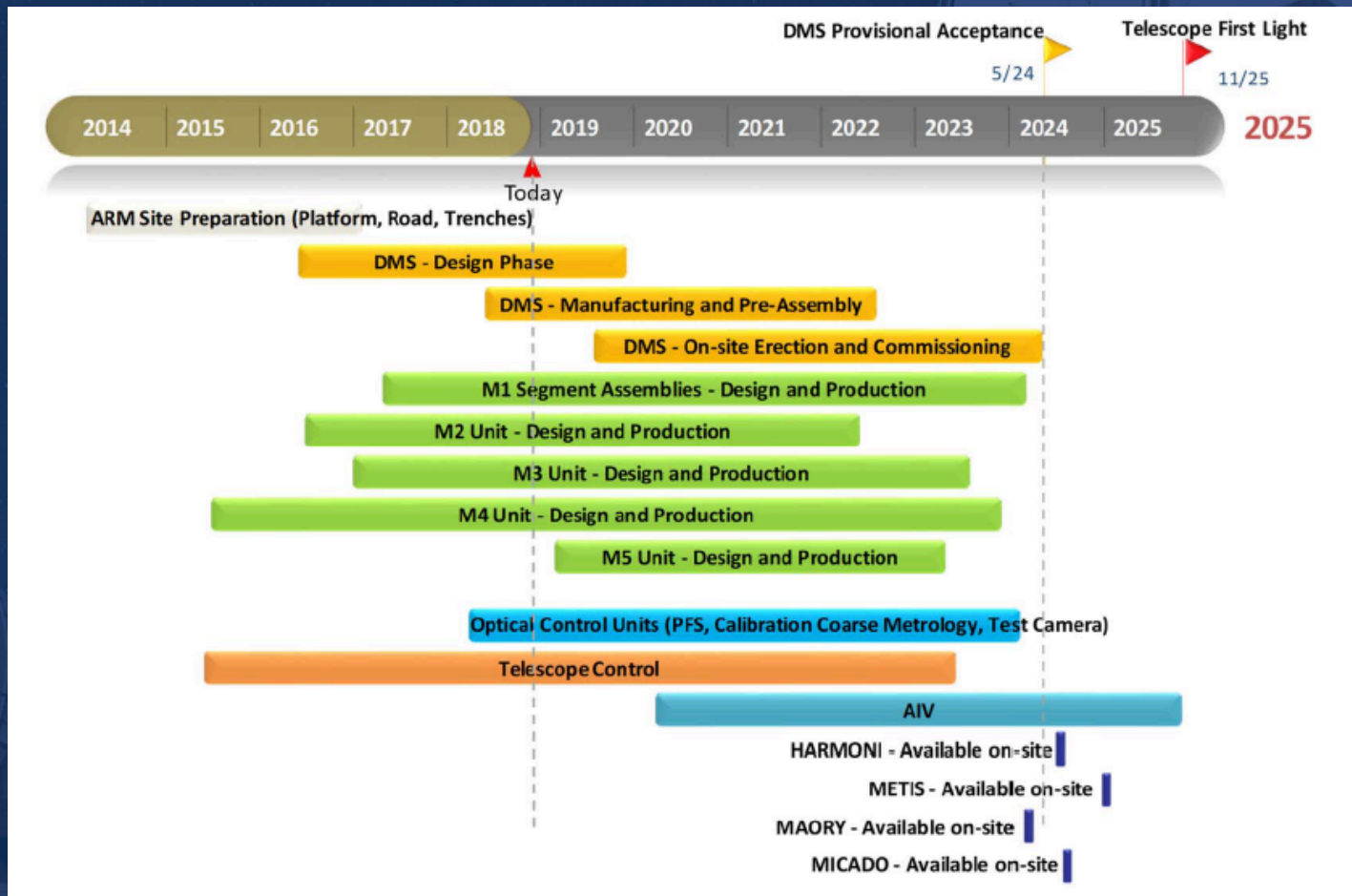
# The European Extremely Large Telescope (E-ELT)

ESO site at Armazones in Chile

- 38 m segmented main mirror
- Adaptive optics
- First light - end of 2025



# E-ELT Status and challenges



- Main contracts are placed
- Fighting to stay on schedule (DMS)
- Opportunities:
  - DMS
  - Vacuum
  - Instruments
  - Mirror coating system
  - Control systems

# Atacama Large Millimetre Array (ALMA) radio telescope

Site at Atacama in Chile

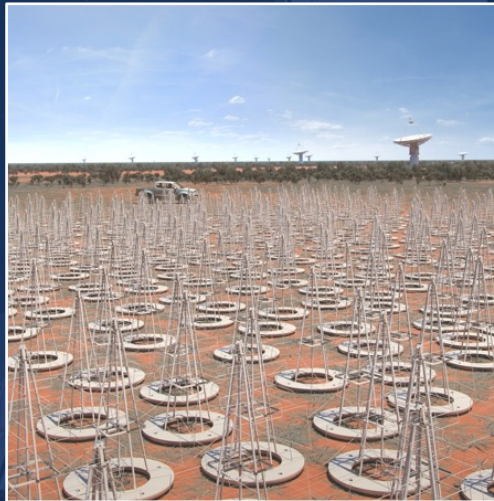
- **Partners: Europe, North America and East Asia**
- **66 antennas**
- **First light 2013,**
- **Sweden: Receivers and water vapour radiometers**
- **Upgrade - ALMA 2030**
  - **+ 30 antennas**
  - **New correlator**
  - **New receivers**

Foto: ESO

# The Square Kilometre Array (SKA) telescope



200 dishes in  
South Africa



130 000 antennas  
in Australia



Advanced digital signal processing  
and supercomputers are key for  
performance

Will be the most powerful radiotelescope for the coming 50 years

# The SKA Data Flow

**Global internet traffic ~360 Tb/s**  
(Cisco: 2016)

Huge data sets

Central and Regional  
data centres

Driver for :

- Data handling methods
- AI algorithms for science analysis

**SKA1-LOW**



Adrian Urschewski/ESO



© Radio Astronomy

**SKA1-MID**



# The SKA status and challenges

- 13 countries including Sweden entering an Intergovernmental Organisation
- Chalmers/Onsala Space Observatory is Swedish coordinator
- Mature design, reviewed, ready for industrialisation and construction (~870 M€)
- Negotiations ongoing - who will do what?
- Swedish funding: Operations covered (VR) if construction funding is achieved (~15 M€)
- Industrial return to Sweden:
  - Condition for funding.
  - Areas of Swedish technology lead and prototyping.