ELT progress update

Joël Vernet (ESO)

The Dome

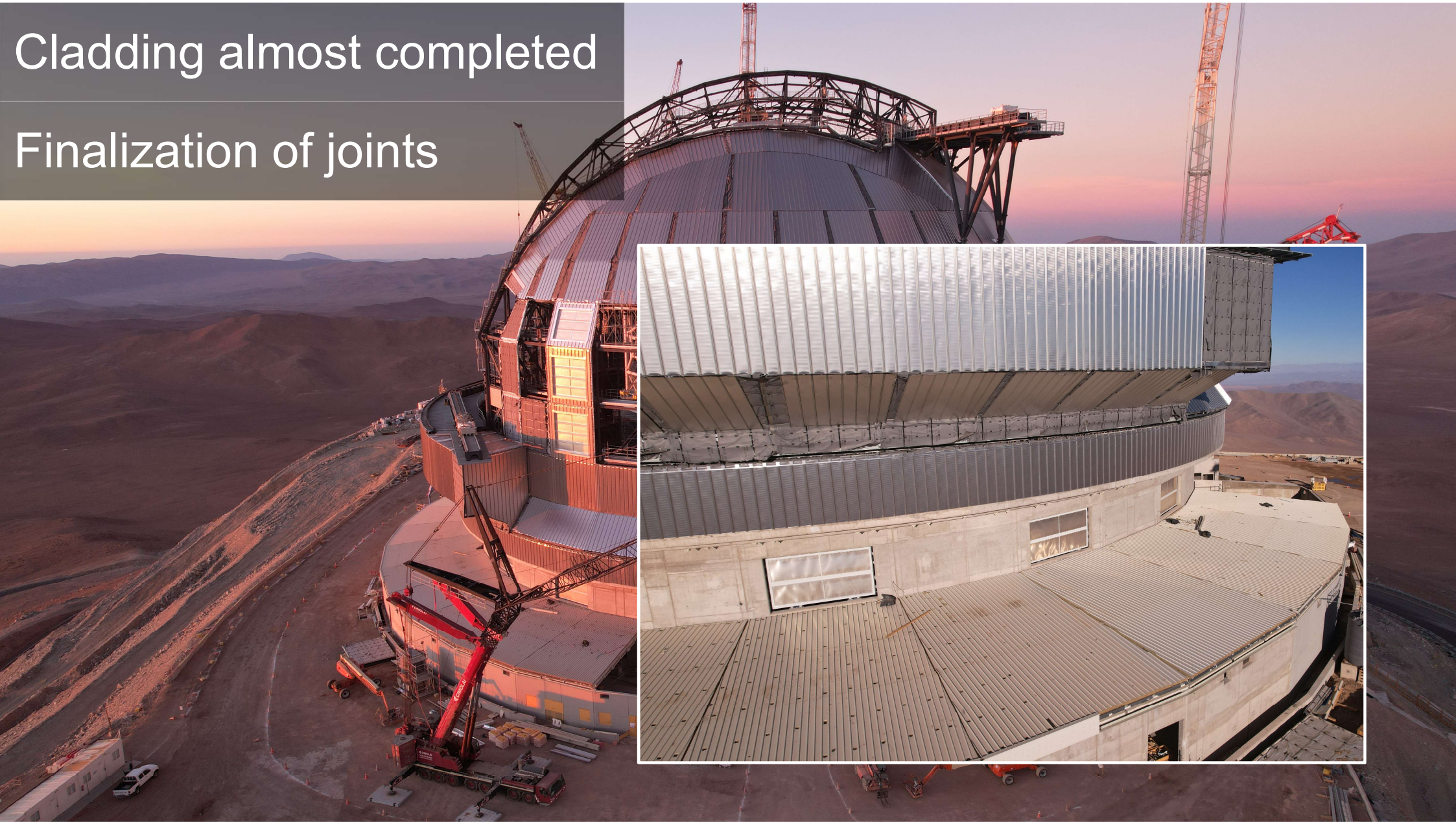
- 6100 t, 85m high, 88m diameter
- fast rotating up to 2˚/s or 5km/h outer edge
- No vibrations transmitted to the telescope
- 600t slit doors
- Powerful air conditioning

Cladding almost completed

Cladding almost completed

Cladding almost completed

Finalization of joints



Cladding almost completed

Finalization of joints

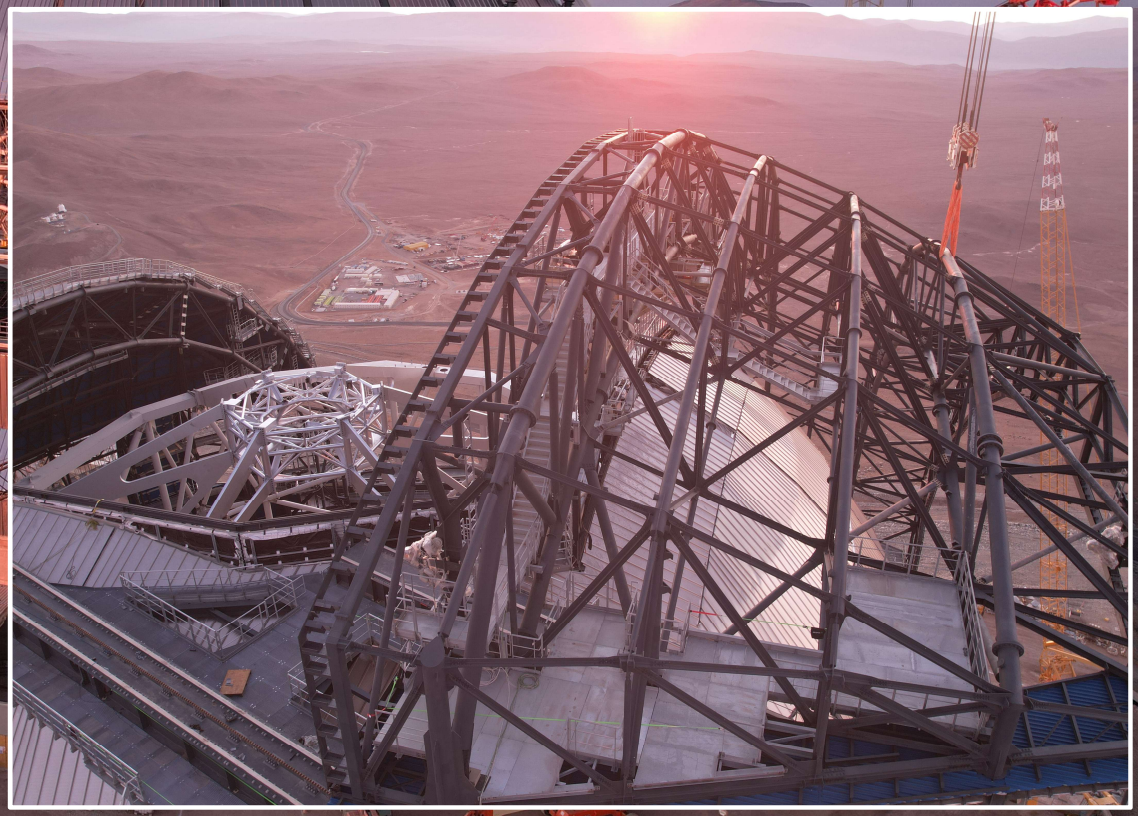
Louvers installation

Cladding almost completed

Finalization of joints

Louvers installation

Slit doors being assembled



Cladding almost completed

Finalization of joints

Louvers installation

Slit doors being assembled

M1 segment crane test

Cladding almost completed

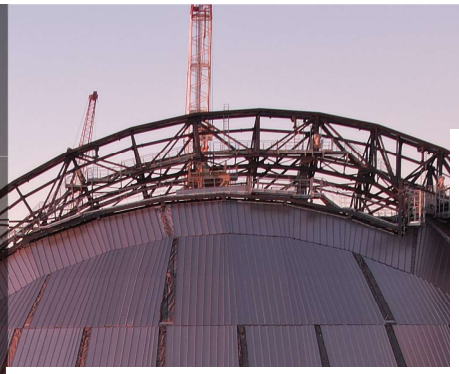
Finalization of joints

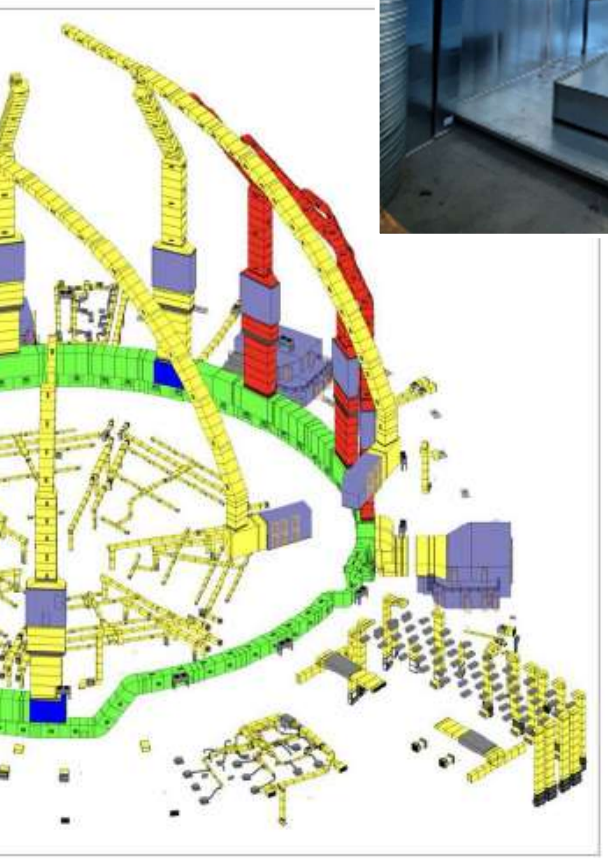
Louvers installation

Slit doors being assembled

M1 segment crane test

Air handling construction





Cladding almost completed

Finalization of joints

Louvers installation

Slit doors being assembled

M1 segment crane test

Air handling in construction

Cladding almost completed

Finalization of joints

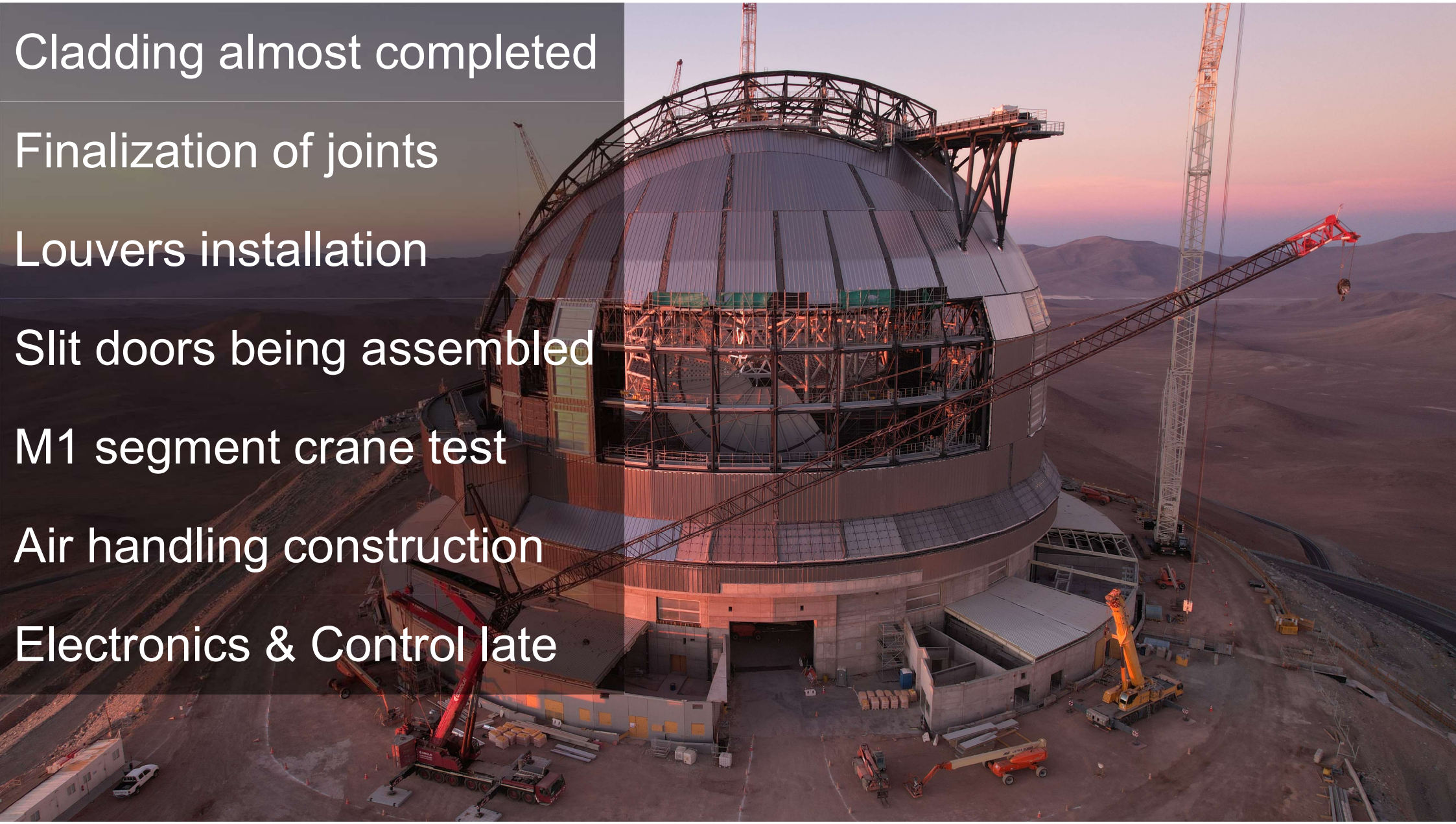
Louvers installation

Slit doors being assembled

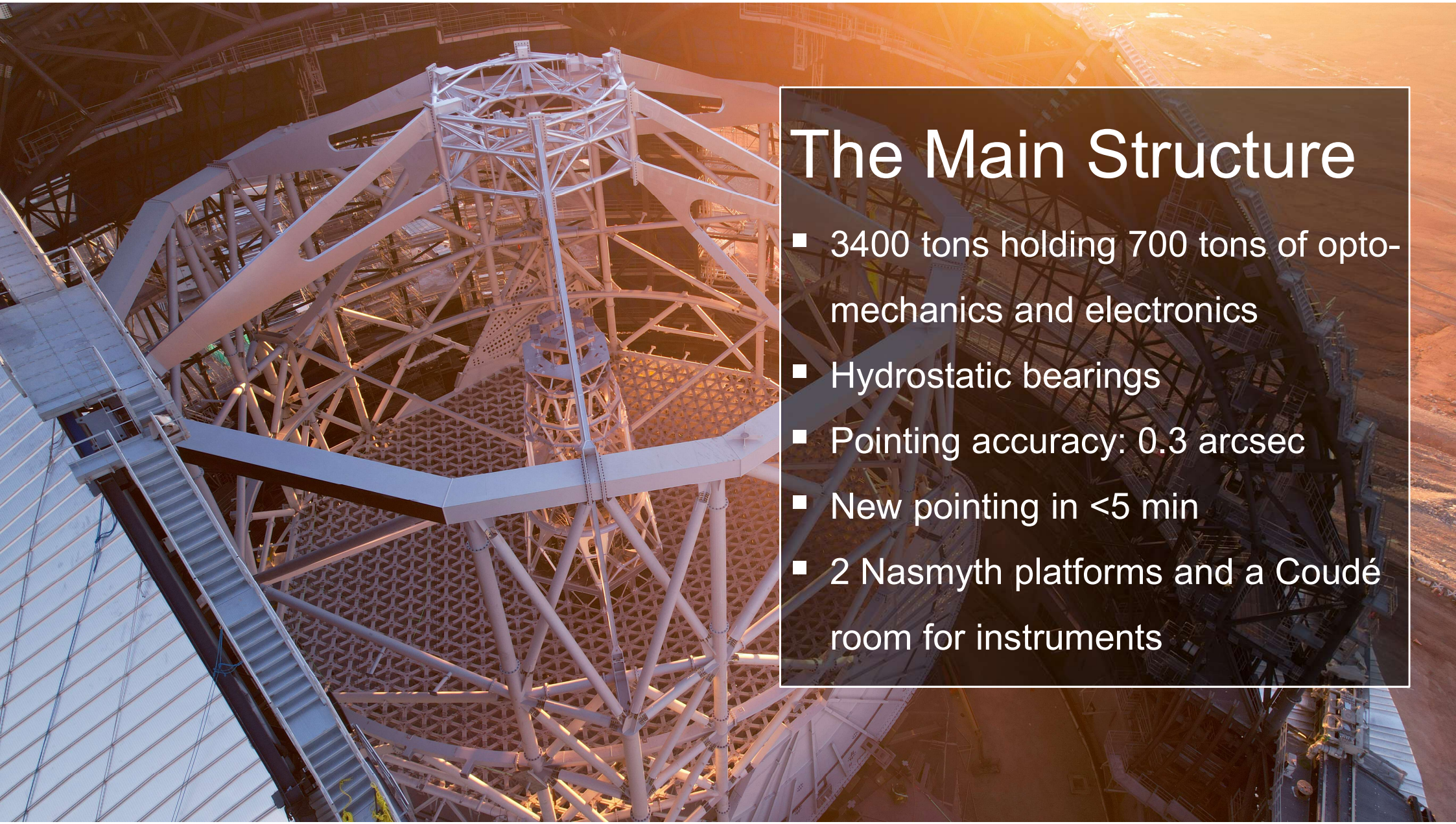
M1 segment crane test

Air handling construction

Electronics & Control late




CIMOLAI

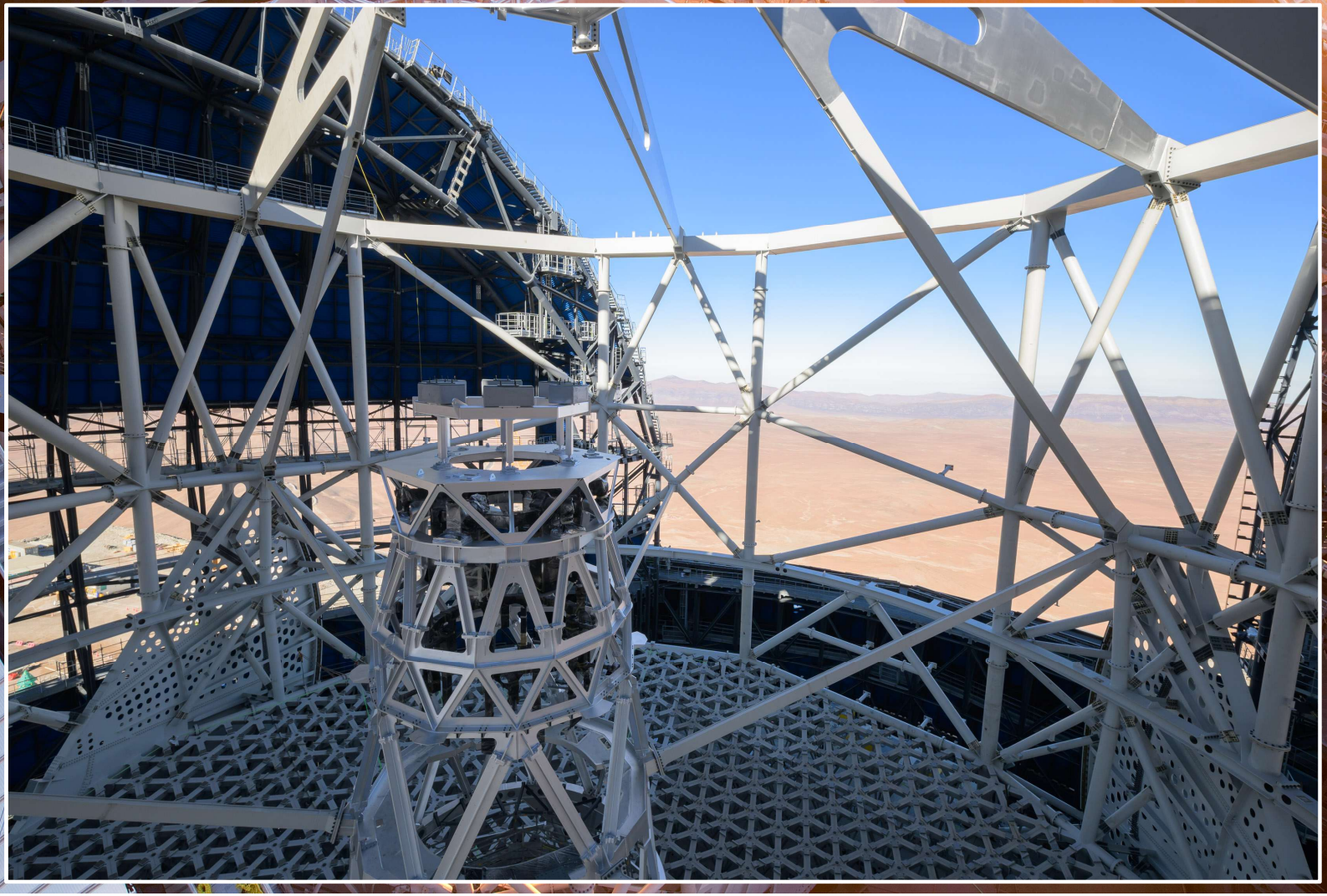


The Main Structure

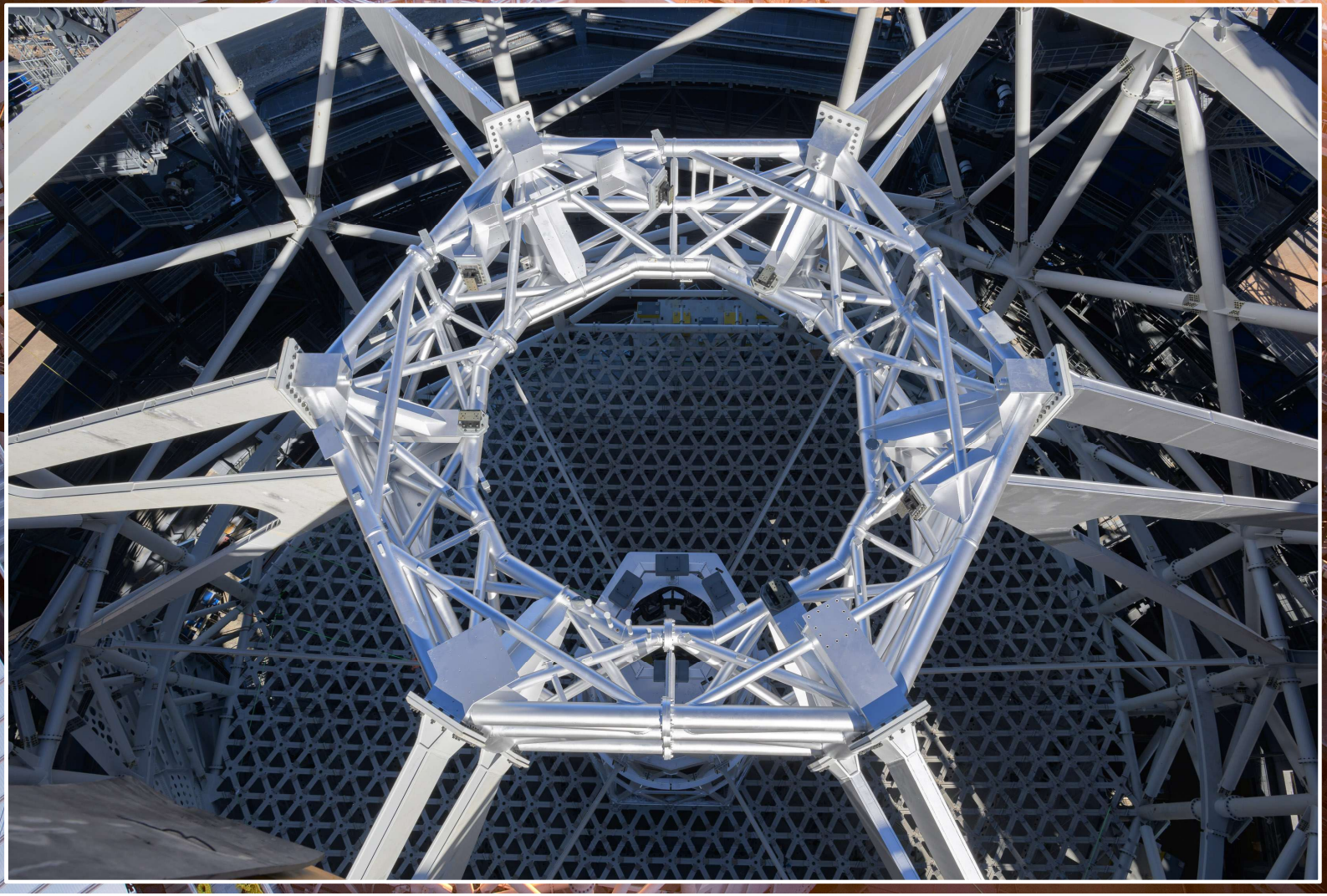
- 3400 tons holding 700 tons of opto-mechanics and electronics
- Hydrostatic bearings
- Pointing accuracy: 0.3 arcsec
- New pointing in <5 min
- 2 Nasmyth platforms and a Coudé room for instruments

Main Structure assembly is very advanced

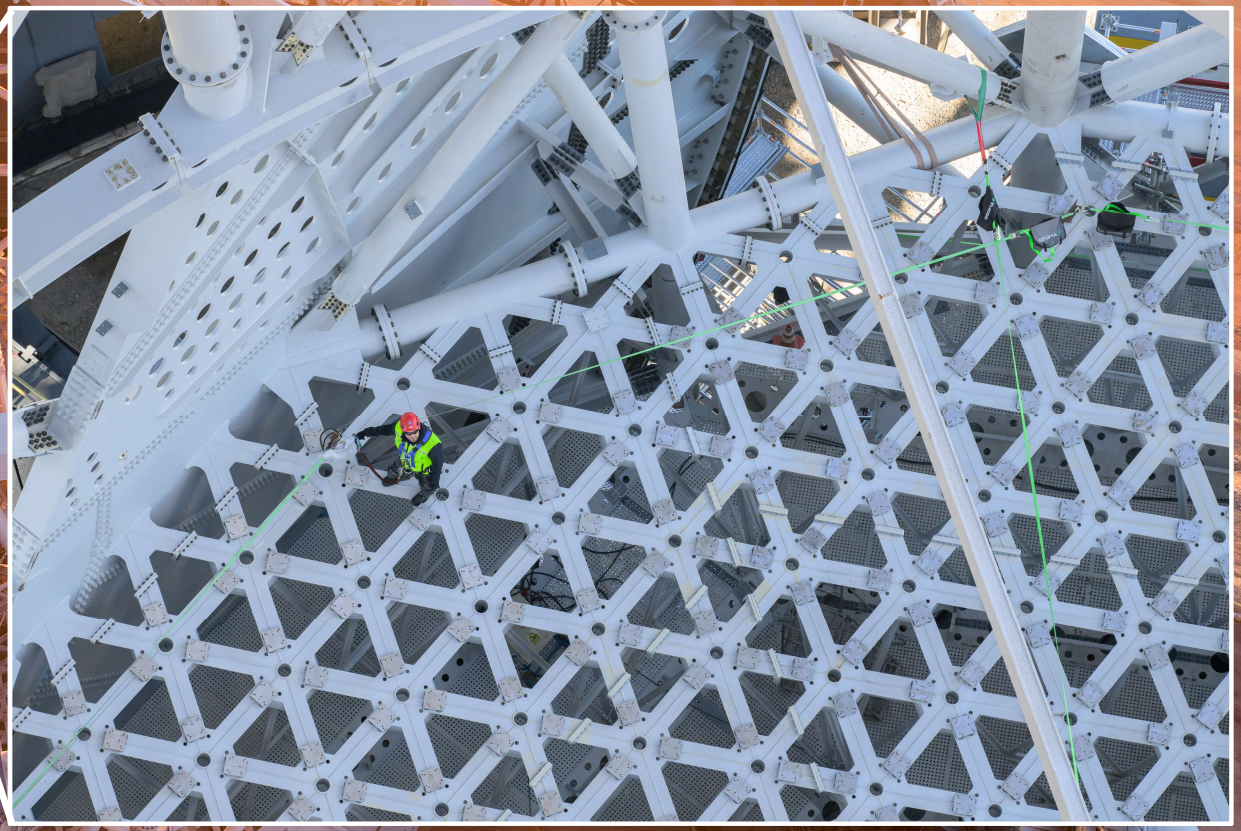
LRU Tower (M3/M4/M5)



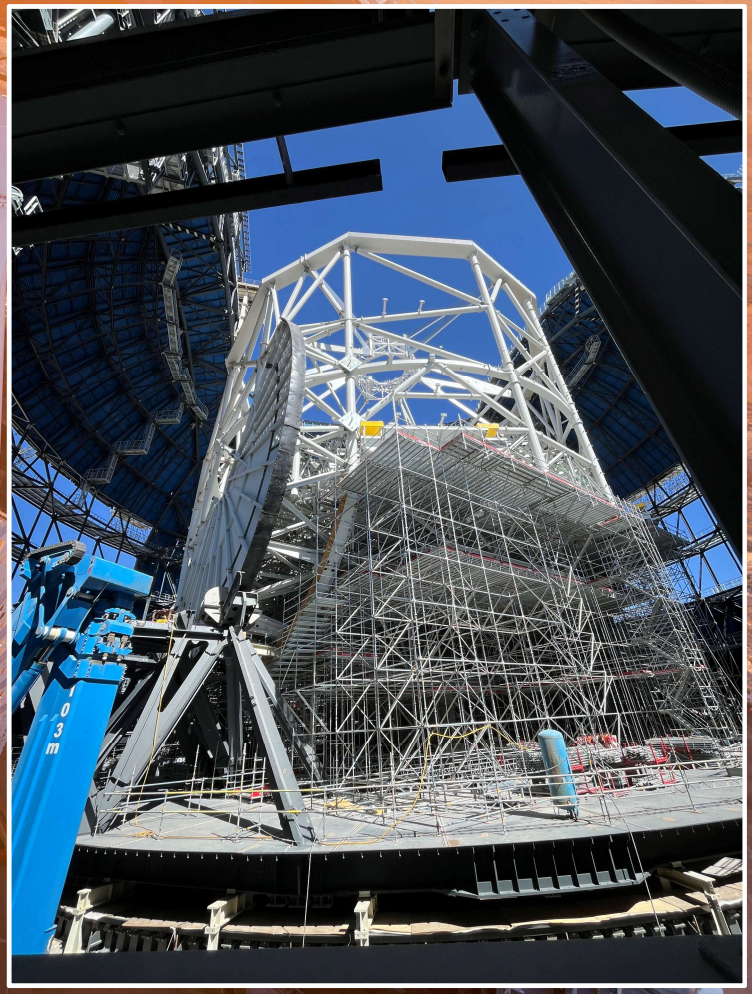
M2 Crown + Spiders



M1 support structure

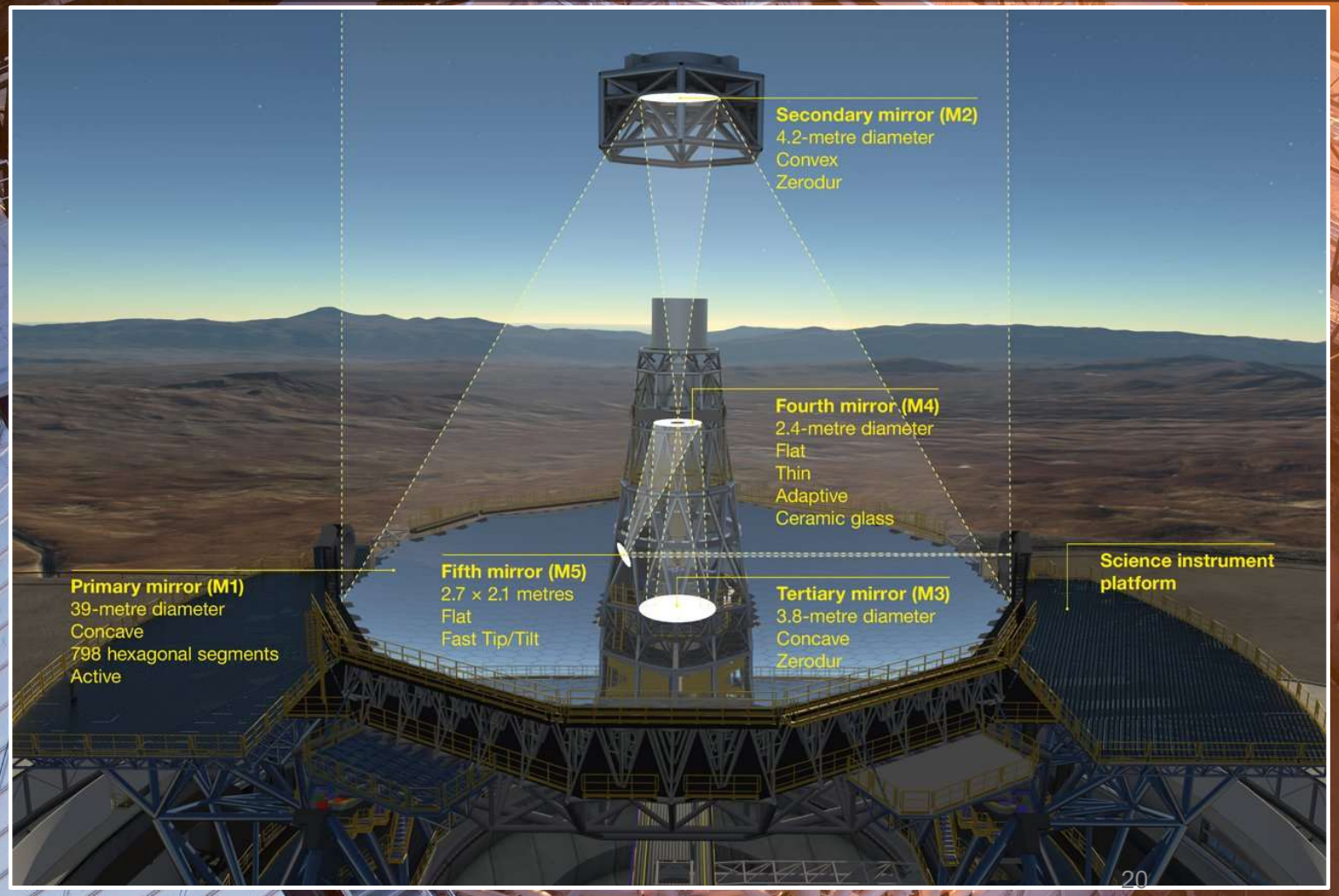


Nasmyth Platforms



Hydrostatic bearing system assembly

Opto-mechanics



M1 segments production

- All M1 blanks produced (SCHOTT)

M1 segments production

- All M1 blanks produced (SCHOTT)
- All segment supports finished (VDL)

M1 segments production

- All M1 blanks produced (SCHOTT)
- All segment supports finished (VDL)
- All positioning actuators done (PI)

M1 segments production

- All M1 blanks produced (SCHOTT)
- All segment supports finished (VDL)
- All positioning actuators done (PI)
- All Edge Sensors at Paranal (micro-epsilon)

M1 segments assemblies status

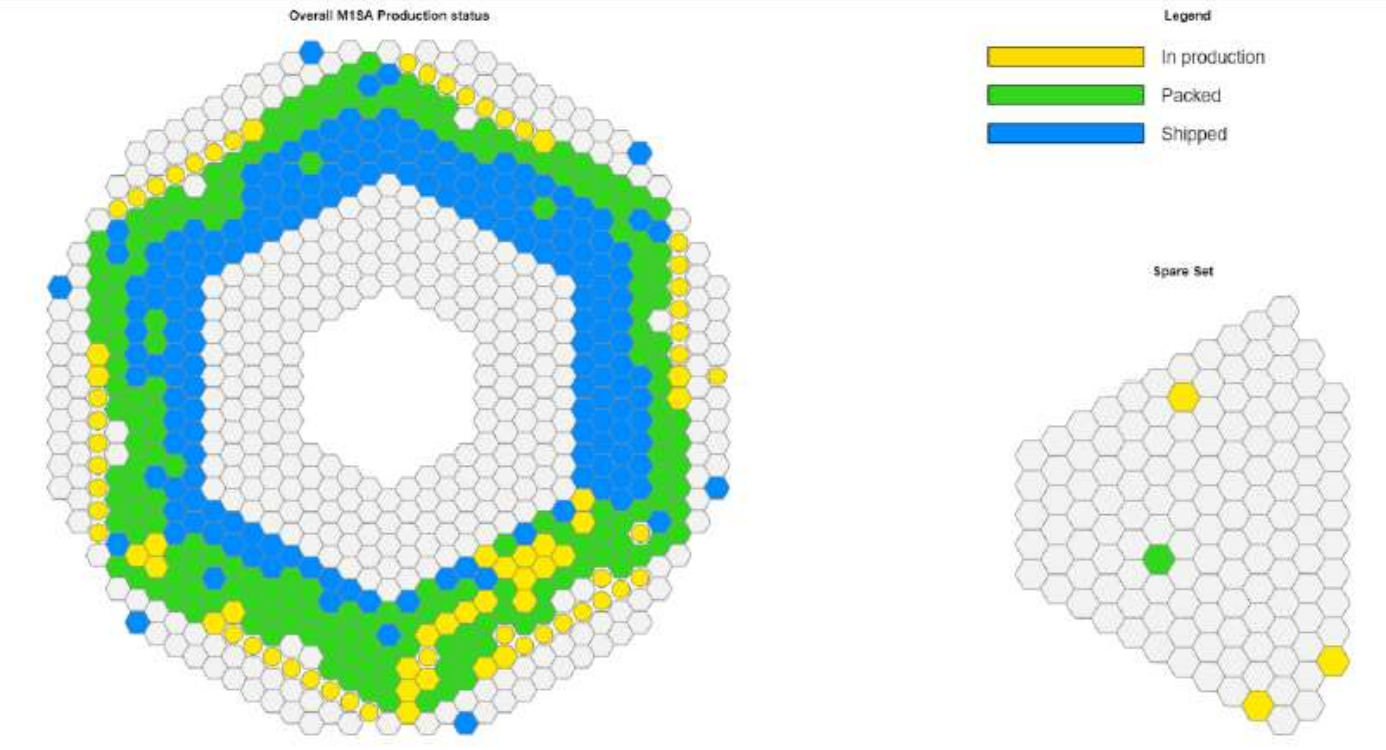
As of mid-February:

- Produced: 364 (+81 in production)
- On-site: 180
- Coated: 162 (+10 with issues)

Production 7/week at Reosc

Fantastic optical quality

Some quality issues occurred and are being solved



M1 segments assemblies status

As of mid-February:

- Produced: 364 (+81 in production)
- On-site: 180
- Coated: 162

Production 7/week at Resoc

Fantastic optical quality

Some quality issues occurred and are being solved

M1 segments assemblies status

As of mid-February:

- Produced: 364 (+81 in production)
- On-site: 180
- Coated: 162

Production 7/week at Reosc

Fantastic optical quality

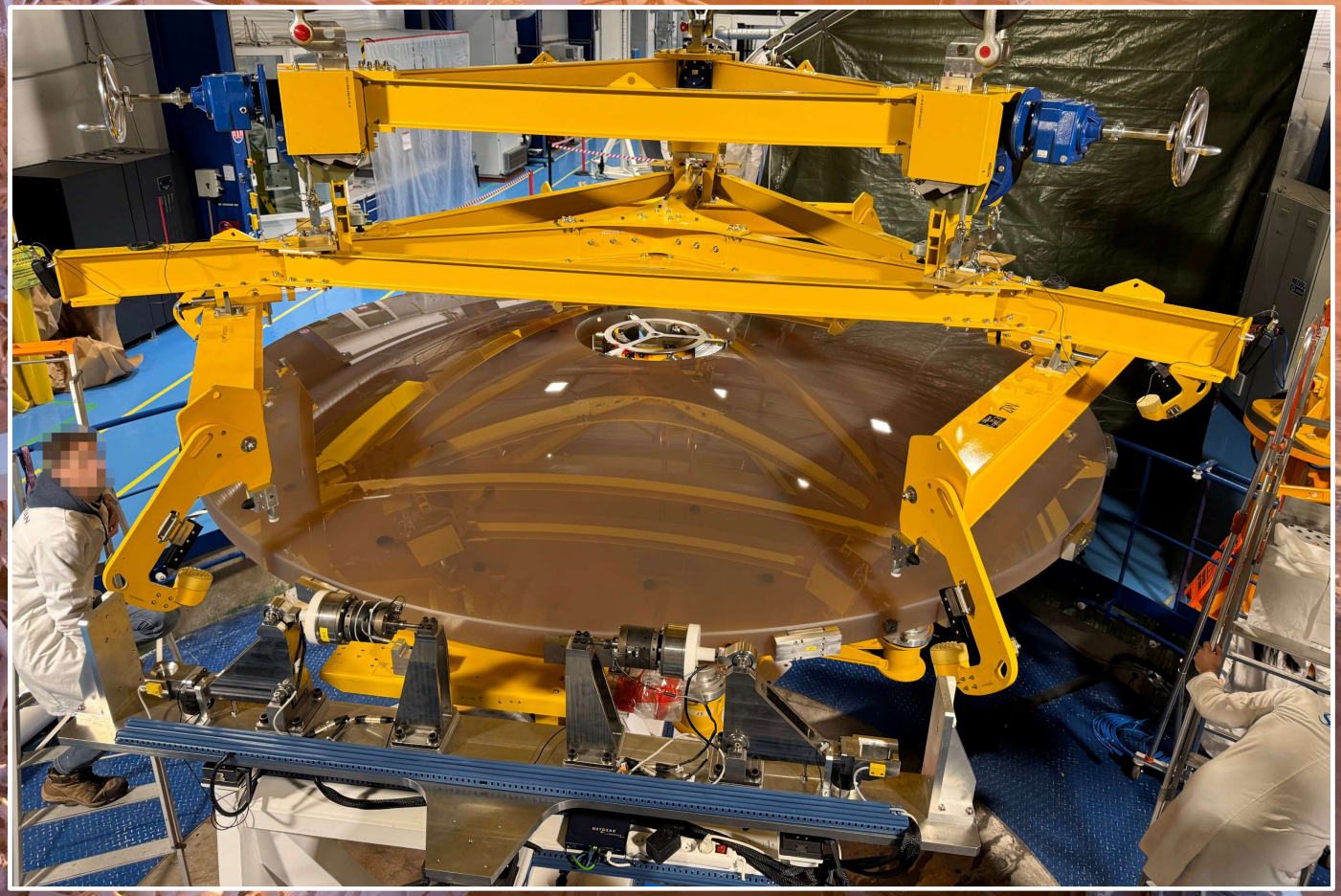
Some quality issues occurred and are being solved

Coating plant fully operational

M2 and its cell

M2 polishing completed with excellent quality 60nm WFE

Ready for system test with its cell in April



M2 and its cell

M2 polishing completed with excellent quality 60nm WFE

Ready for system test with its cell in April

M2 cell verification for system tests granted

Delivery to Reosc in coming days

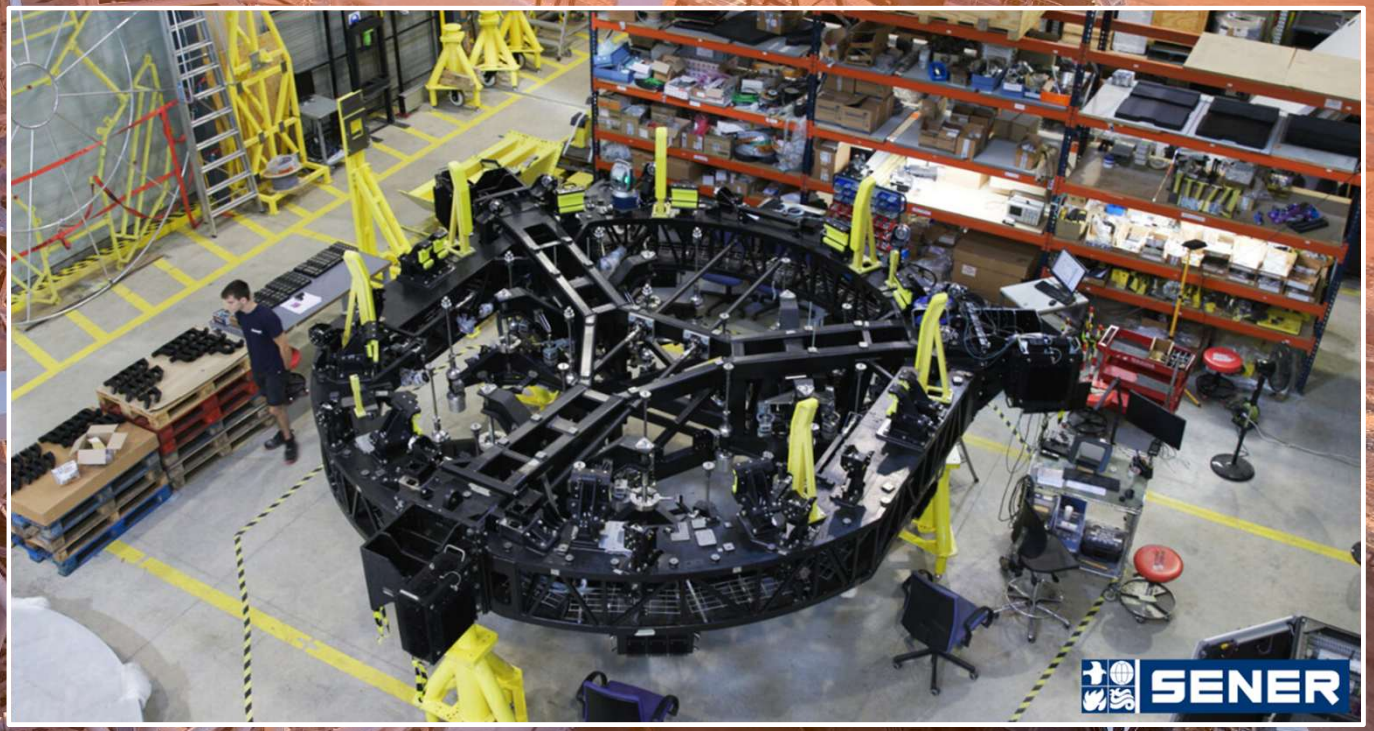
M3 and its cell

M3 polishing 3rd run on-going – 3 more to go

M3 and its cell

M3 polishing 3rd run on-going – 3 more to go

M3 Cell reaching end of integration



M4 deformable mirror

All M4 shells (x12) are finished

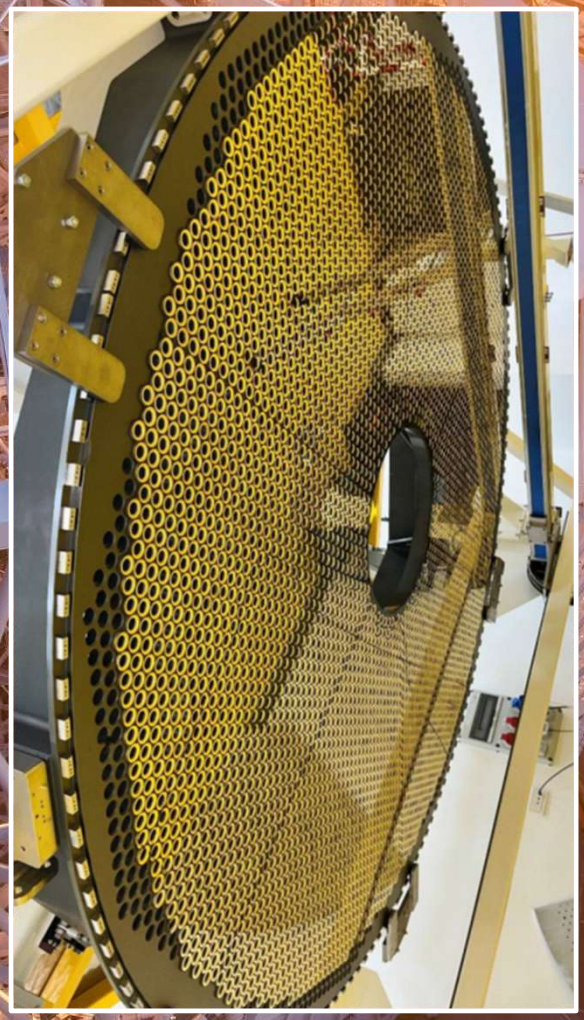
M4 deformable mirror

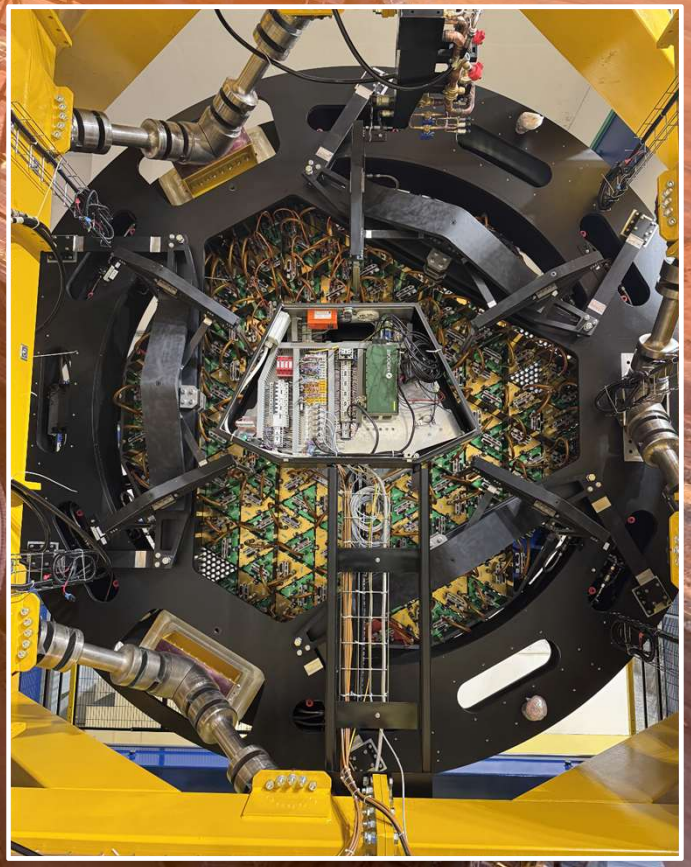
All M4 shells (x12) are finished

All membrane interfaces bonded

M4 arrived at Microgate

Actuators bricks being integrated





M5 tip-tilt mirror

M5 SiC blank now in polishing at Safran Reosc (very delicate process !!)

Second blank with improved CVD accepted

M5 tip-tilt mirror

M5 SiC blank now in polishing at Safran Reosc (very delicate process !!)

Second blank with improved CVD accepted

M5 cell at ESO Garching for control test

M5 tip-tilt mirror

M5 SiC blank now in polishing at Safran Reosc (very delicate process !!)

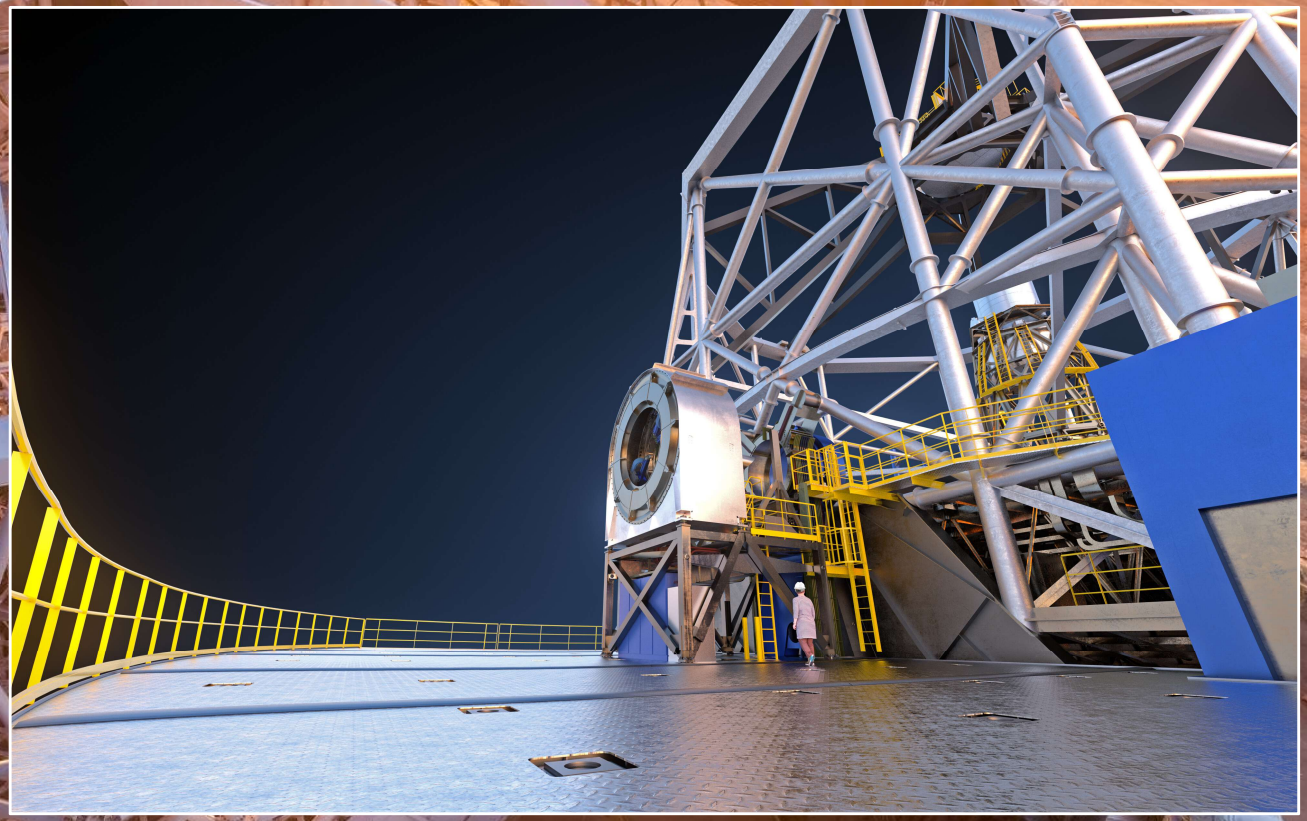
Second blank with improved CVD accepted

M5 cell at ESO Garching for control test

Risk mitigation: zerodur smaller commissioning M5 in production

Pre-focal stations (PFS)

Host the 3 guide probes + M6 for lateral ports



Pre-focal stations (PFS)

Host the 3 guide probes + M6 for lateral ports

Analyze the light to send command to RTC (+10000 actuators)

Sensor arm optics box assembly

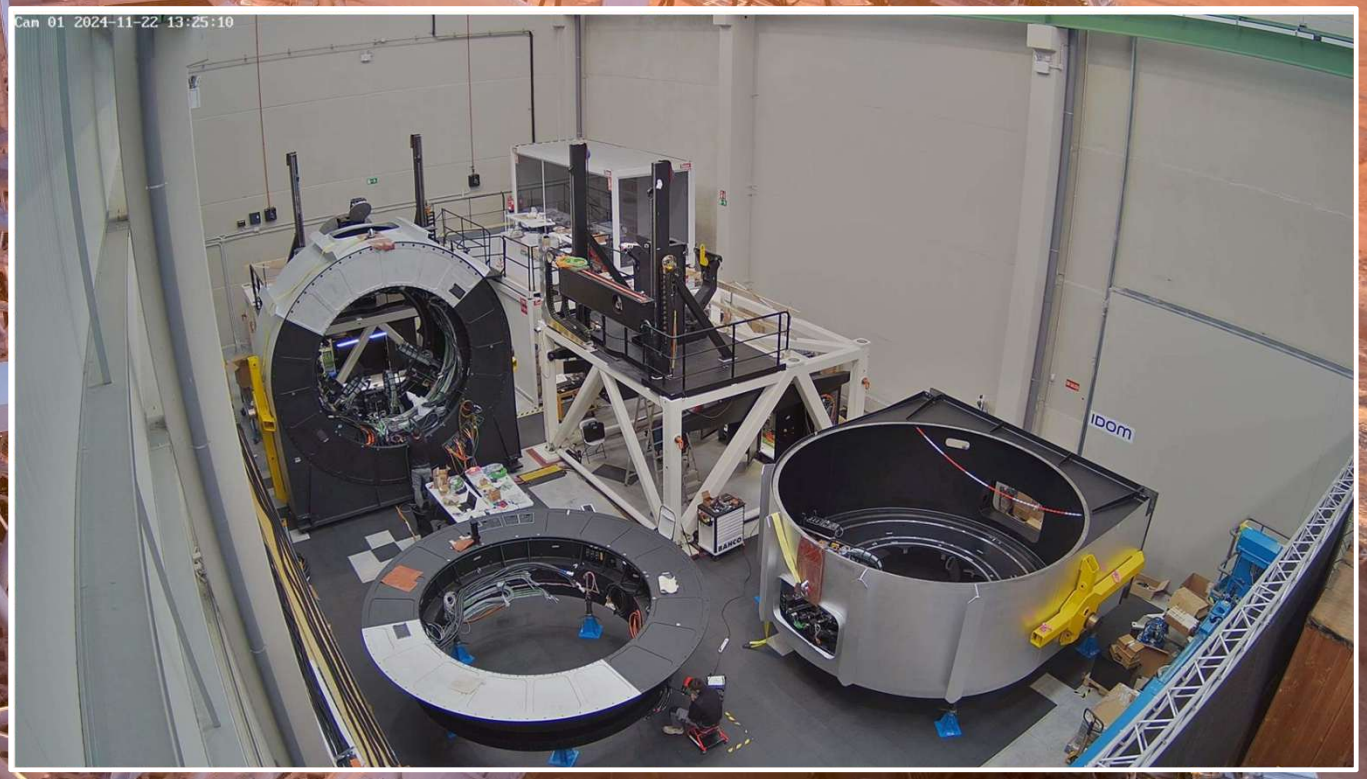
Pre-focal stations (OFS)

Host the 3 guide probes + M6 for lateral ports

Analyze the light to send command to RTC (+10000 actuators)

Factory acceptance this month at IDOM

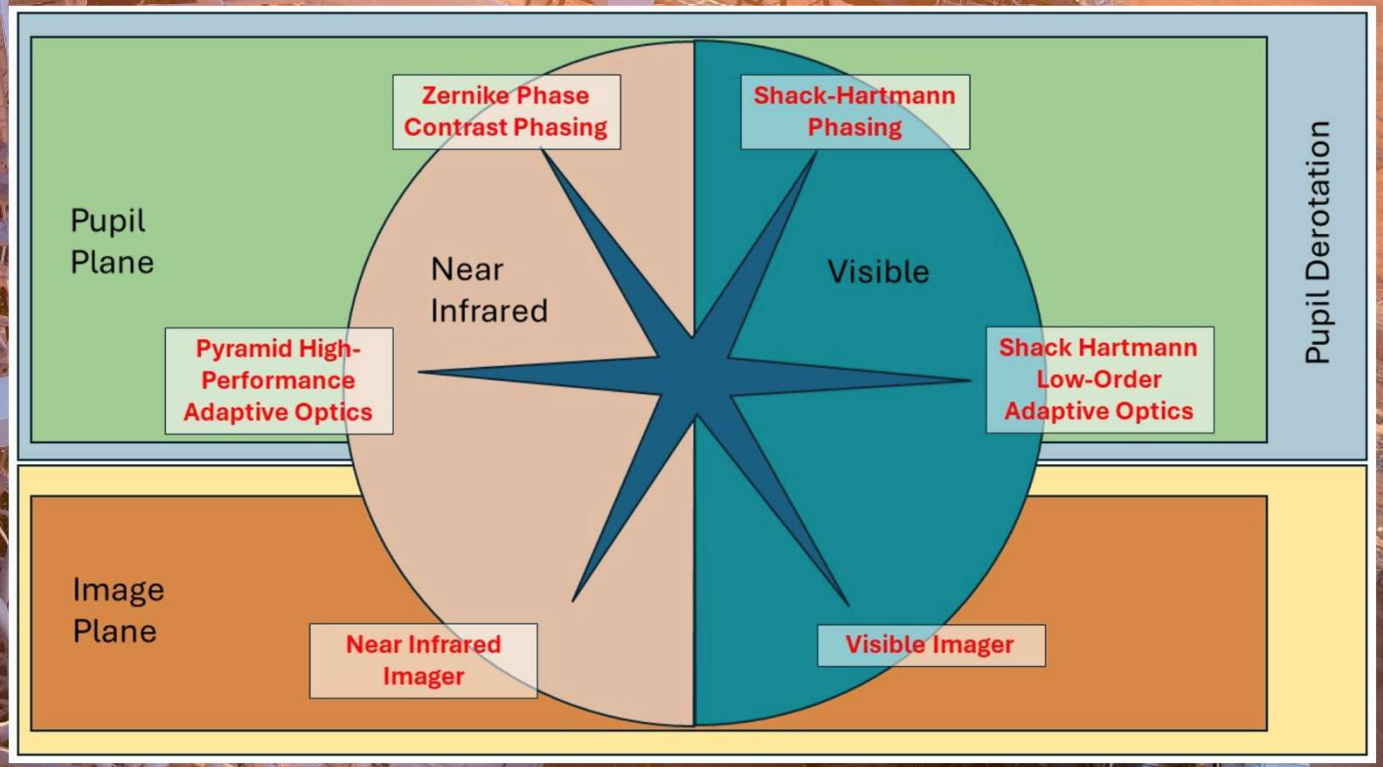
Followed ESO test campaign



Phasing & diagnostic station (PDS)

PDS is the primary metrology tool of the ELT for:

- Phasing the M1
- Demonstrating diffraction limited performance
- Commissioning + operations



Phasing & diagnostic station (PDS)

PDS is the primary metrology tool of the ELT for:

- Phasing the M1
- Demonstrating diffraction limited performance
- Commissioning + operations

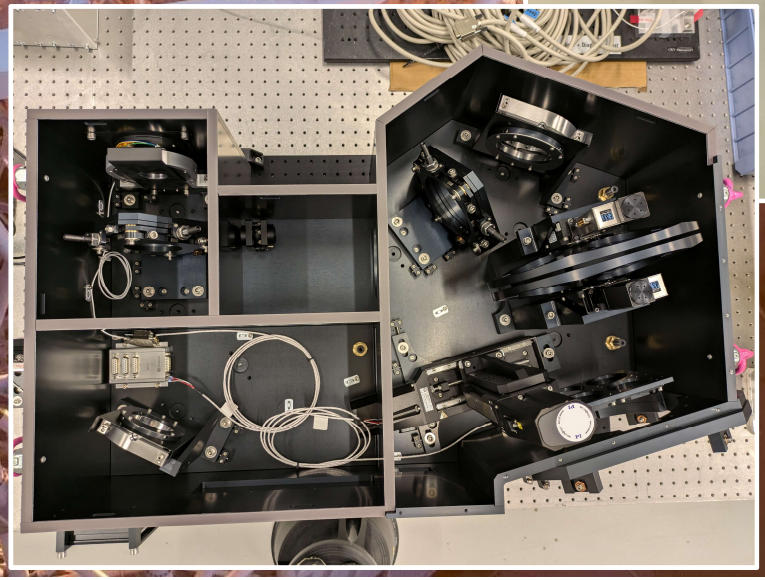
In integration at ESO Garching

Phasing & diagnostic station (PDS)

PDS is the primary metrology tool of the ELT for:

- Phasing the M1
- Demonstrating diffraction limited performance
- Commissioning + operations

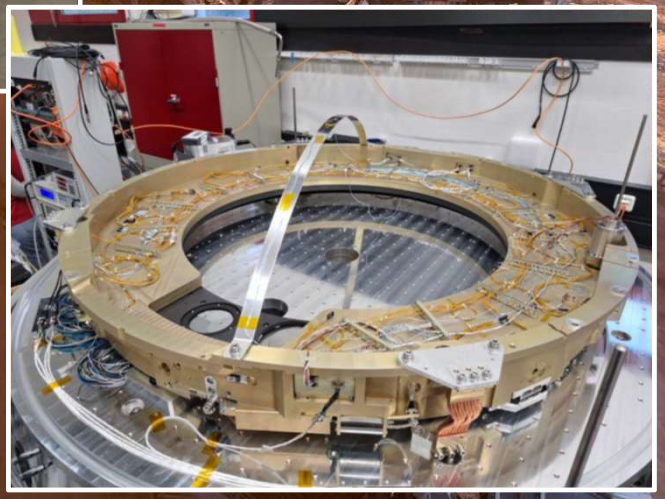
In integration at ESO Garching



Instruments

MICADO:

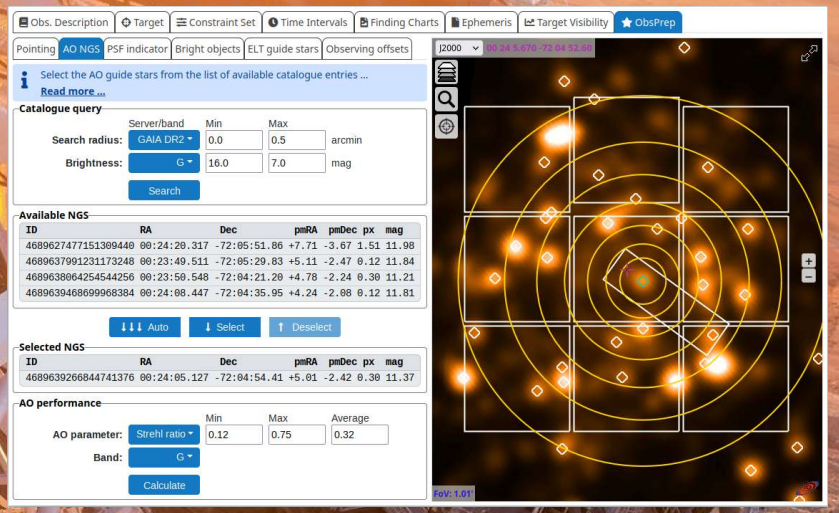
- NIR imager and spectrograph
- Passed FDR and in full construction phase
- Difficulties with cold optics but towards resolution

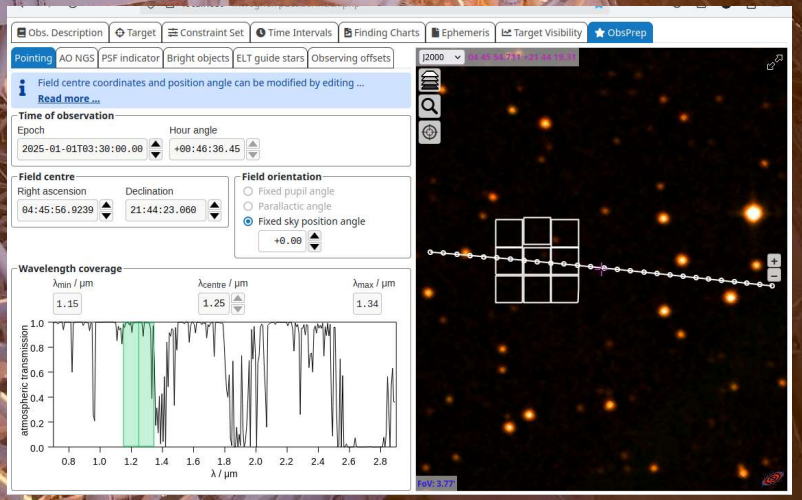


Instruments

MICADO:

- NIR imager and spectrograph
- Passed FDR and in full construction phase
- Difficulties with cold optics but towards resolution
- Observation preparation tools in development





Instruments

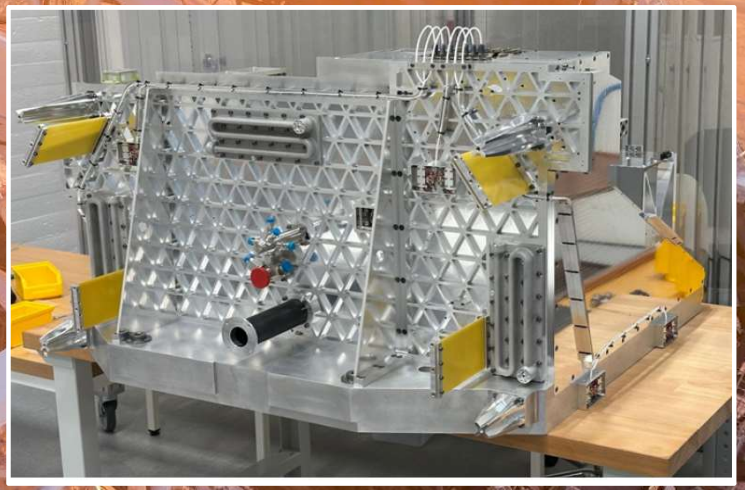
METIS:

- Mid-IR imager and spectrograph
- In full construction phase
- New Geosnap detector was procured

Instruments

METIS:

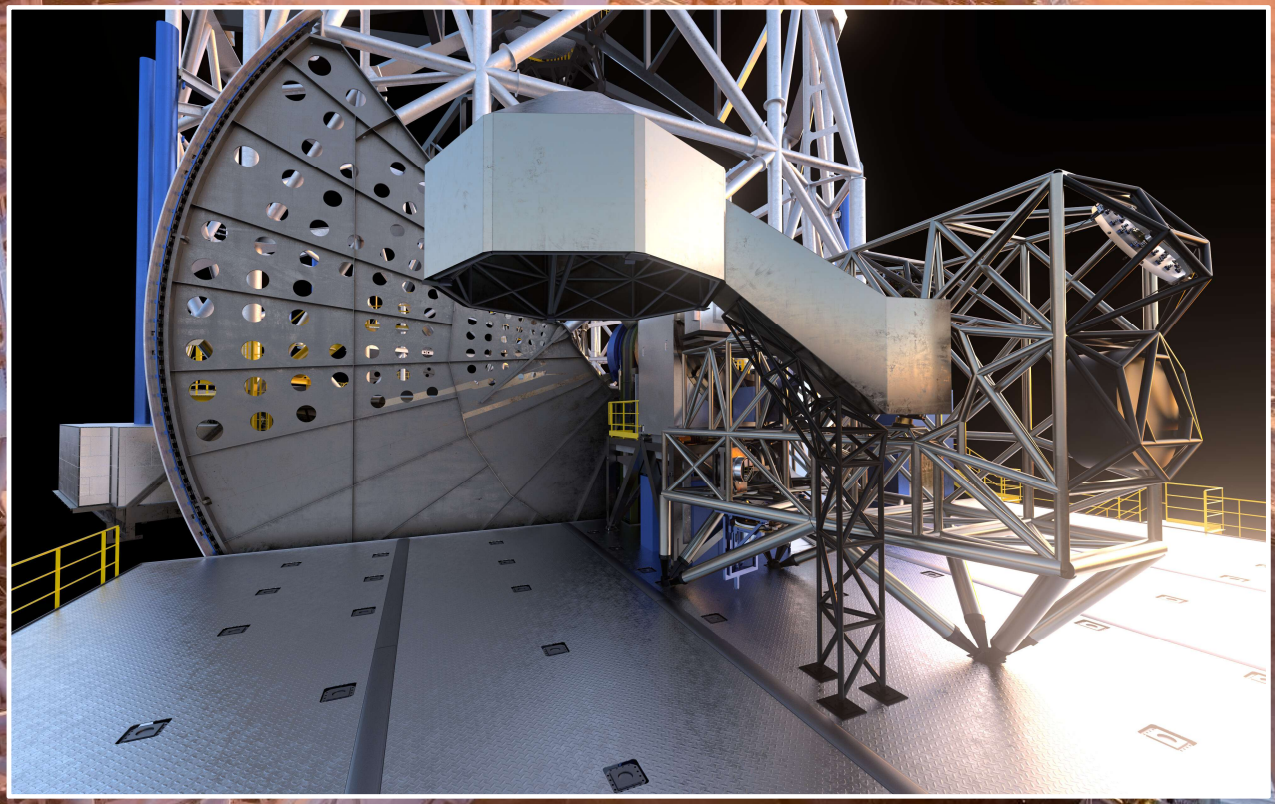
- Mid-IR imager and spectrograph
- In full construction phase
- New Geosnap detector was procured



Instruments

MORFEO:

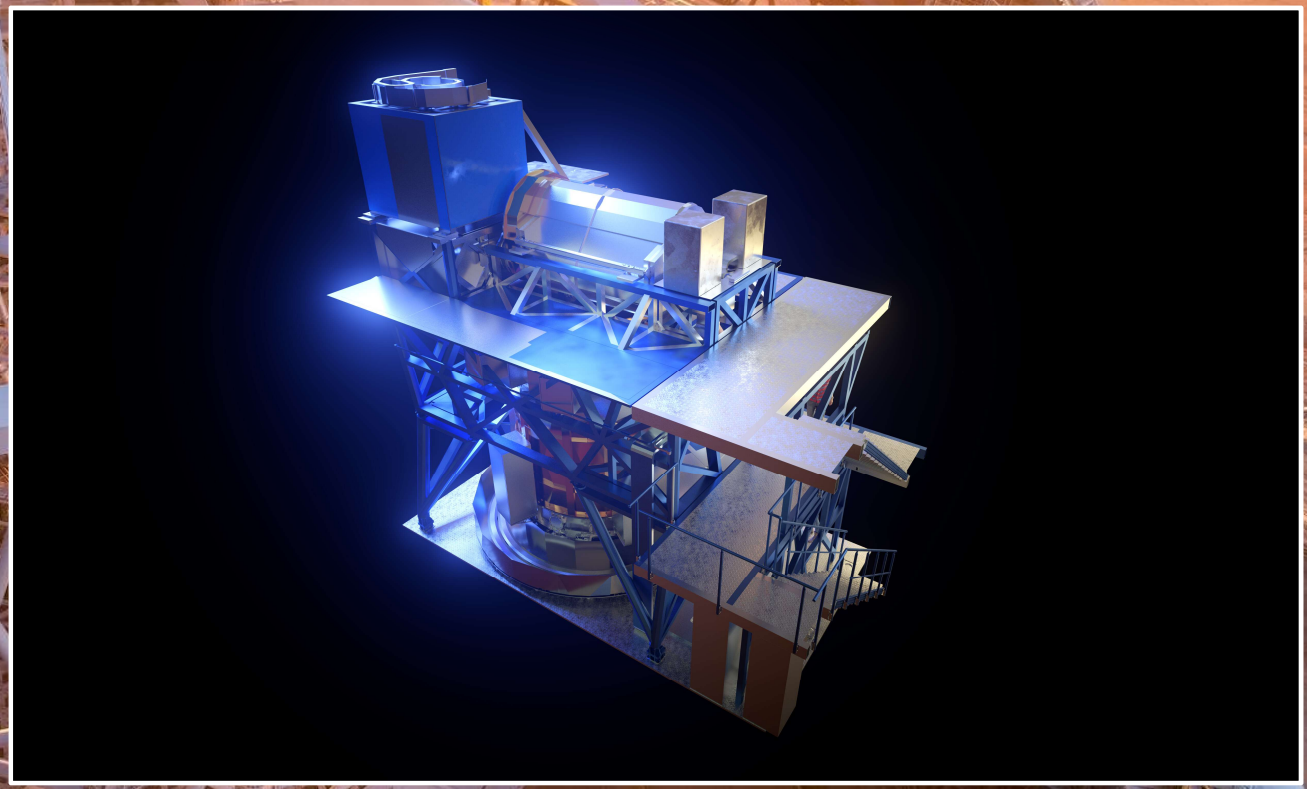
- The MCAO module for MICADO (and HARMONI)
- Passed optics FDR - large optics being procured
- Two large DMs passed FDR
- Preparing full FDR end of this year



Instruments

HARMONI:

- Vis/Near-IR diffraction limited IFU
- In rescoping phase
- Assessing move behind MORFEO



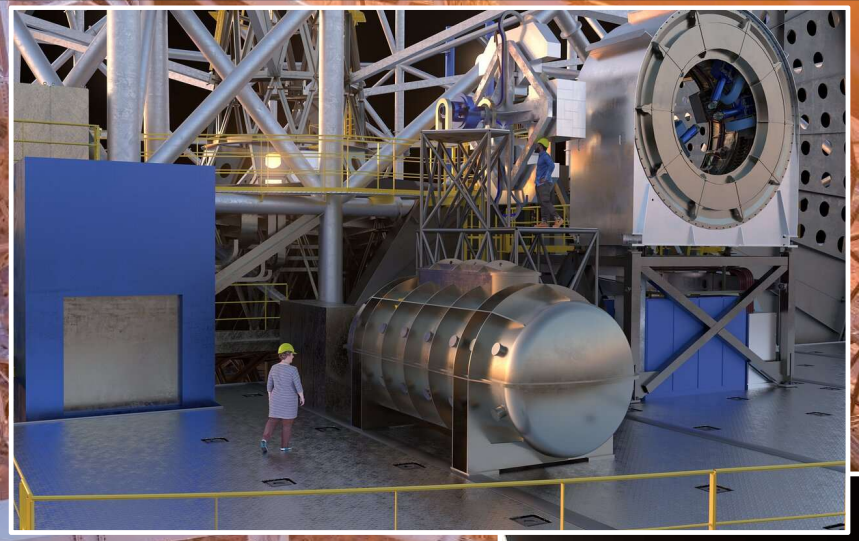
Instruments

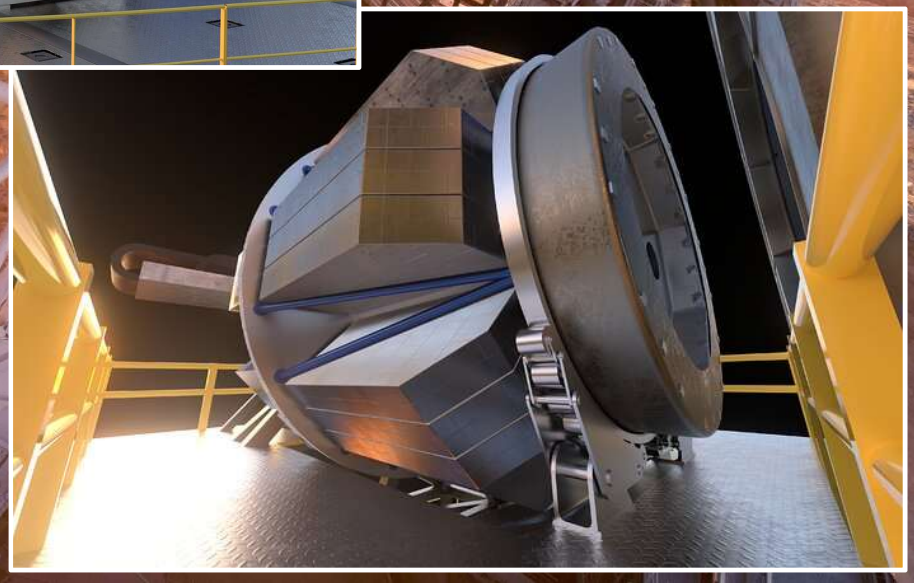
ANDES:

- High resolution visible and near-IR spectrograph
- Preparing for PDR

MOSAIC

- Vis and near-IR MOS
- In System Architecture review





Supporting equipment