

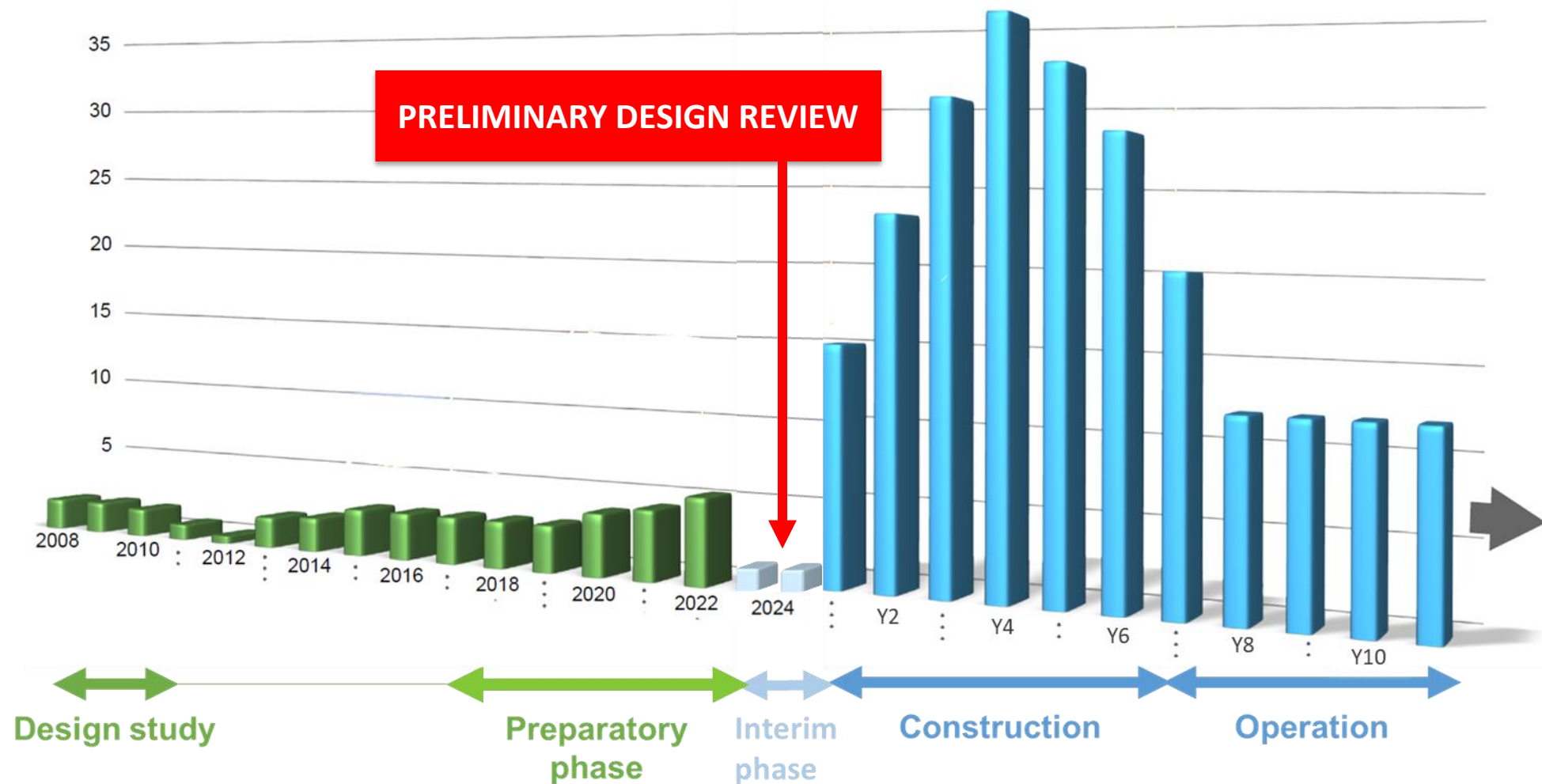


european solar telescope



**Acercando a la Industria al universo del  
Instituto de Astrofísica de Canarias**

**Miguel Núñez (EST systems engineer)**  
migueln@iac.es

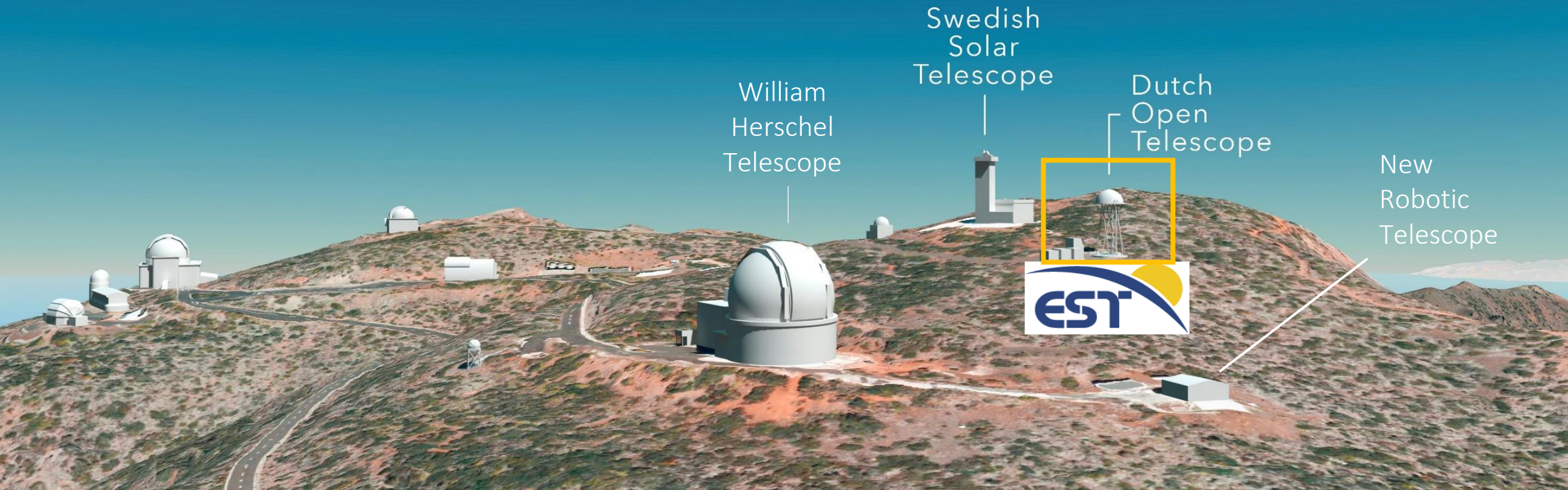


- Conclude PRELIMINARY DESIGNS.
- DOCUMENTATION for the construction procurement and construction permits.



## Observatorio del Roque de Los Muchachos

La Palma, Canary Islands, Spain



William  
Herschel  
Telescope

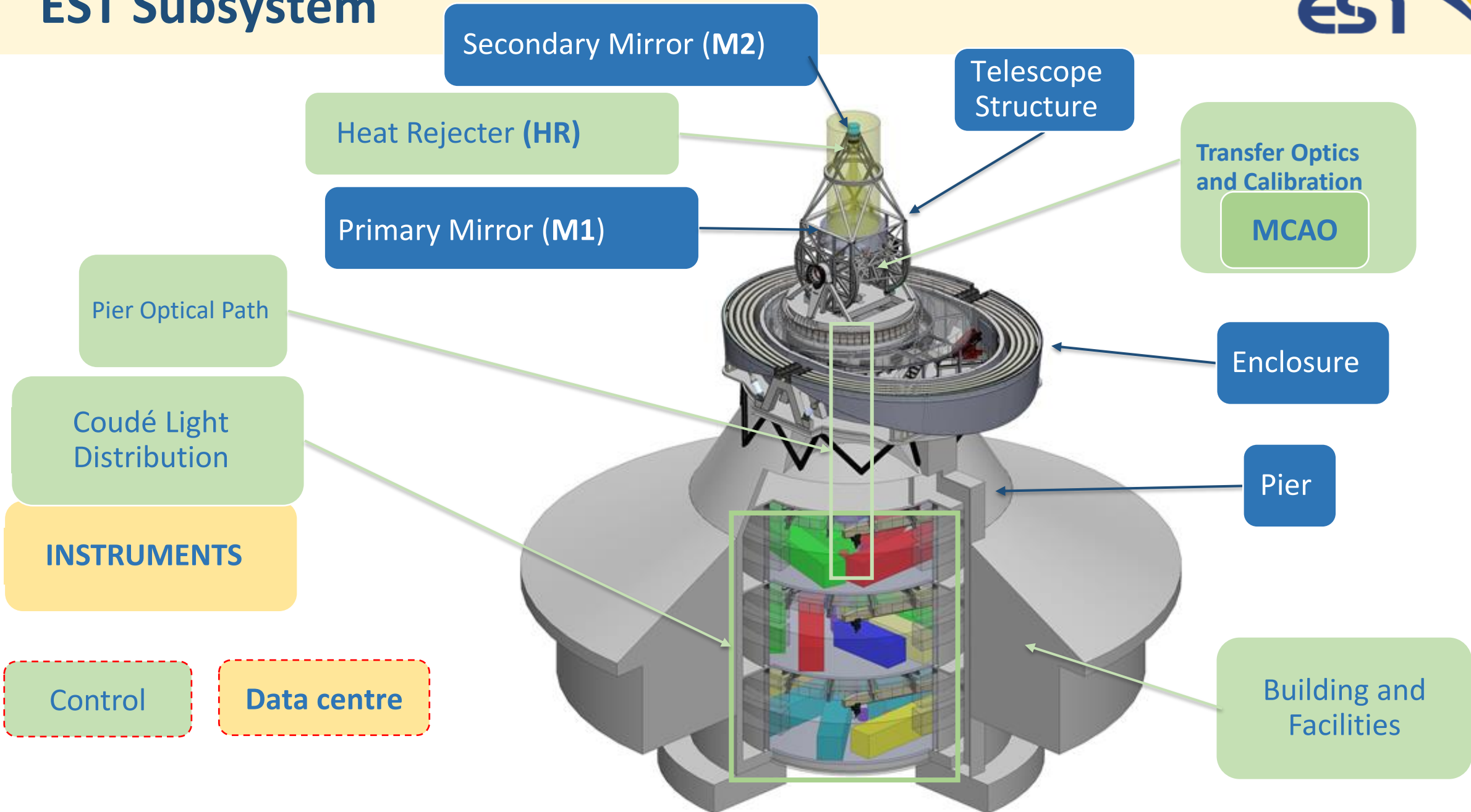
Swedish  
Solar  
Telescope

Dutch  
Open  
Telescope

New  
Robotic  
Telescope



# EST Subsystem

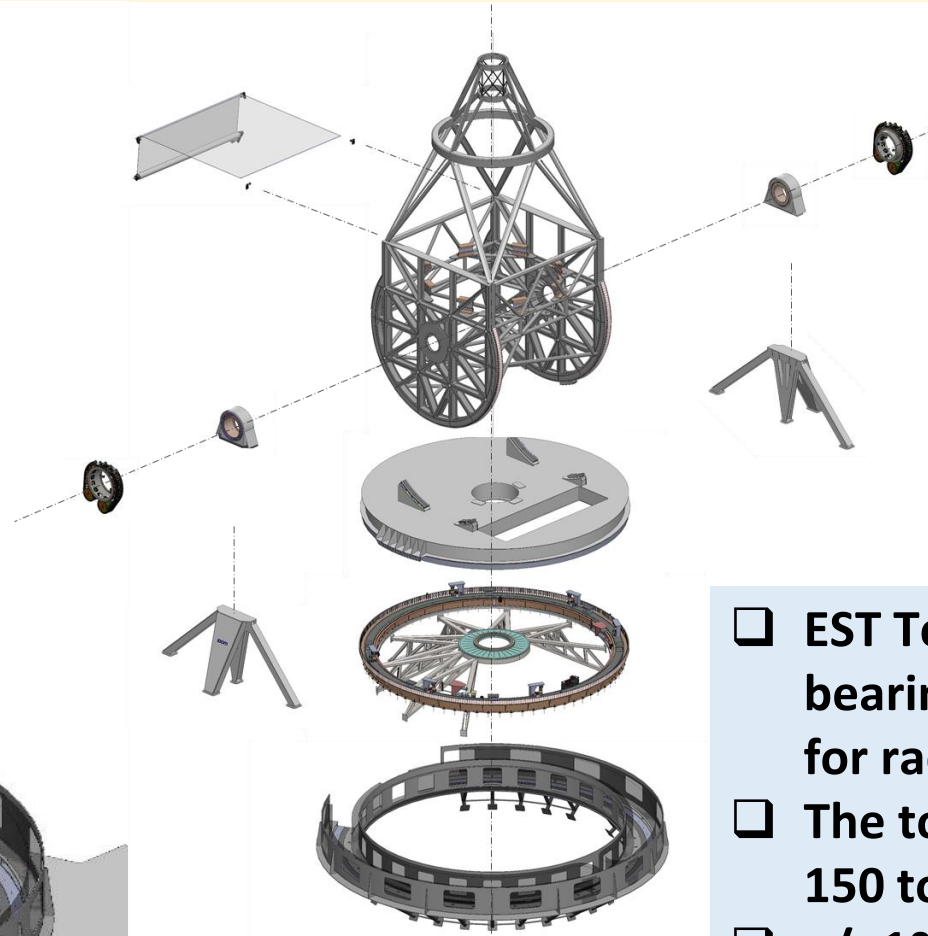
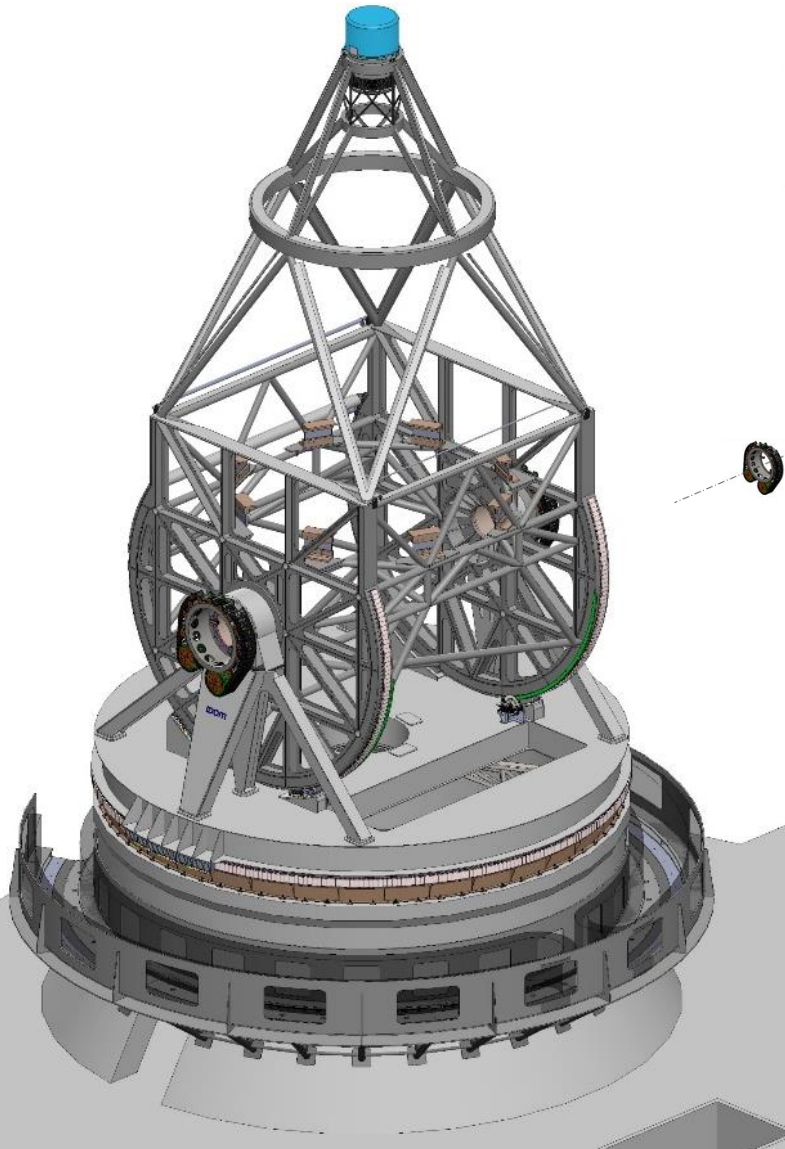




# Telescope Structure



**IDOM**

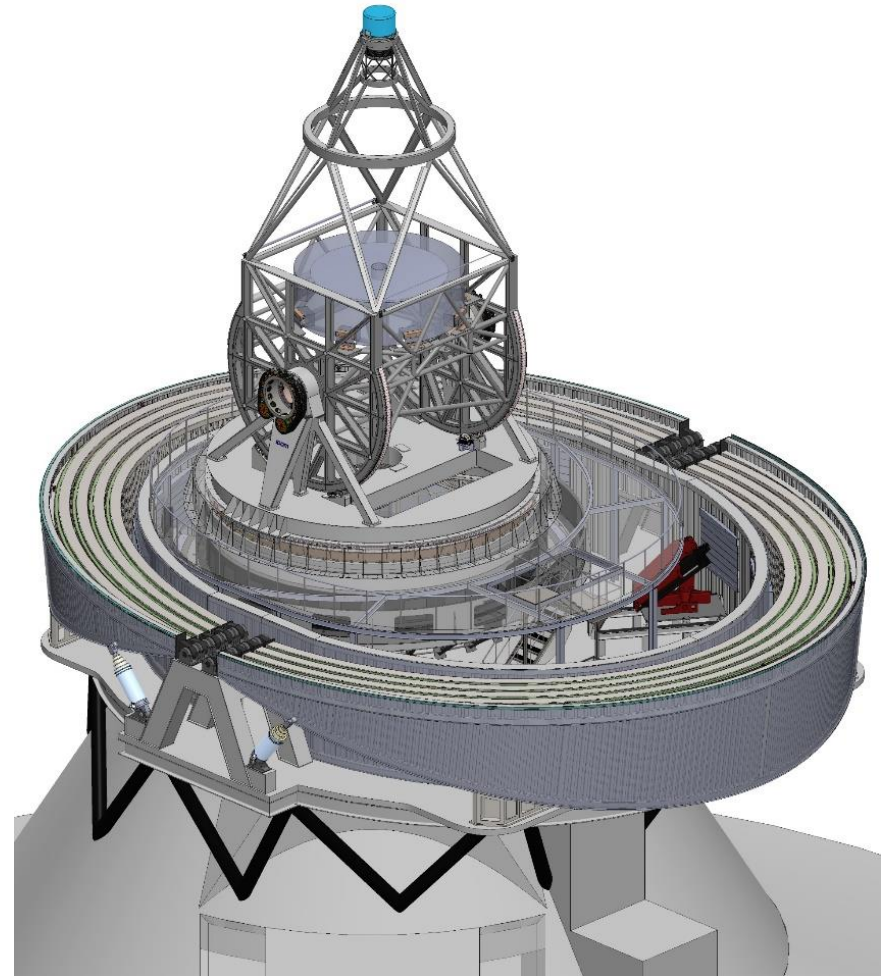
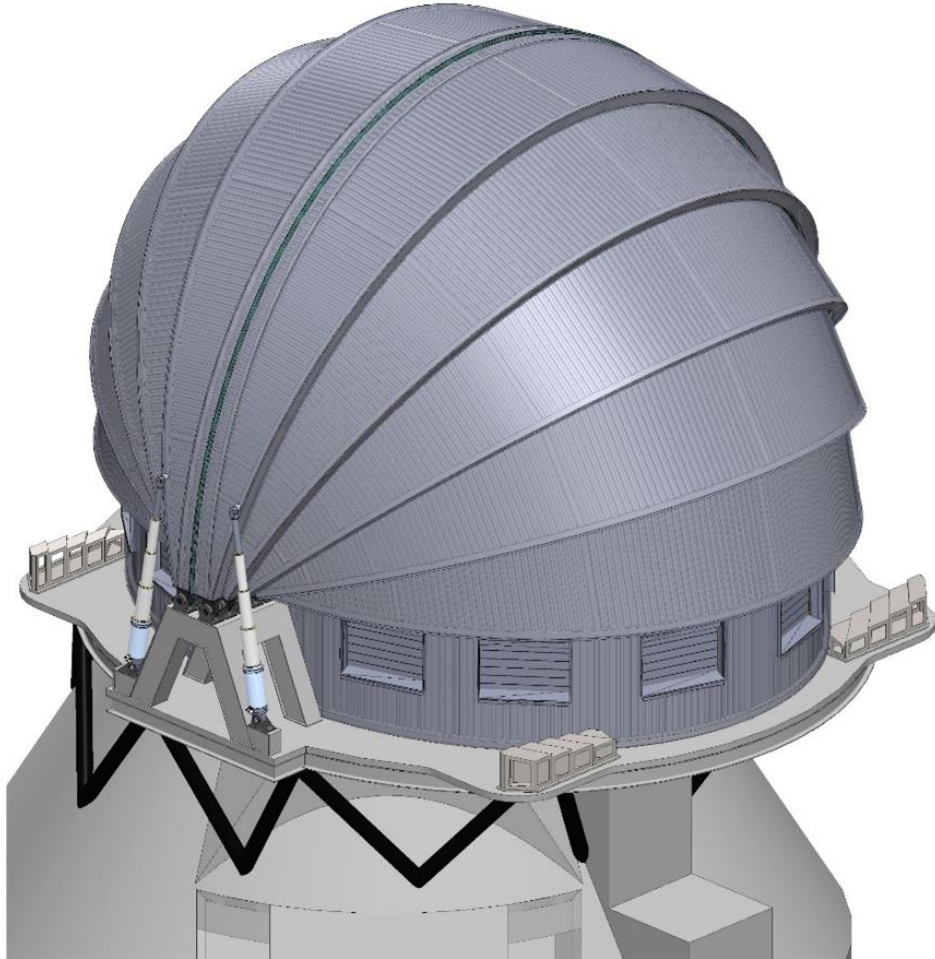


- ❑ EST Telescope Mount with hydrostatic bearings for axial loads and rolling bearing for radial loads.
- ❑ The total weight of the telescope mount is 150 tons.
- ❑ +/- 1°C surface thermal control.

# Enclosure

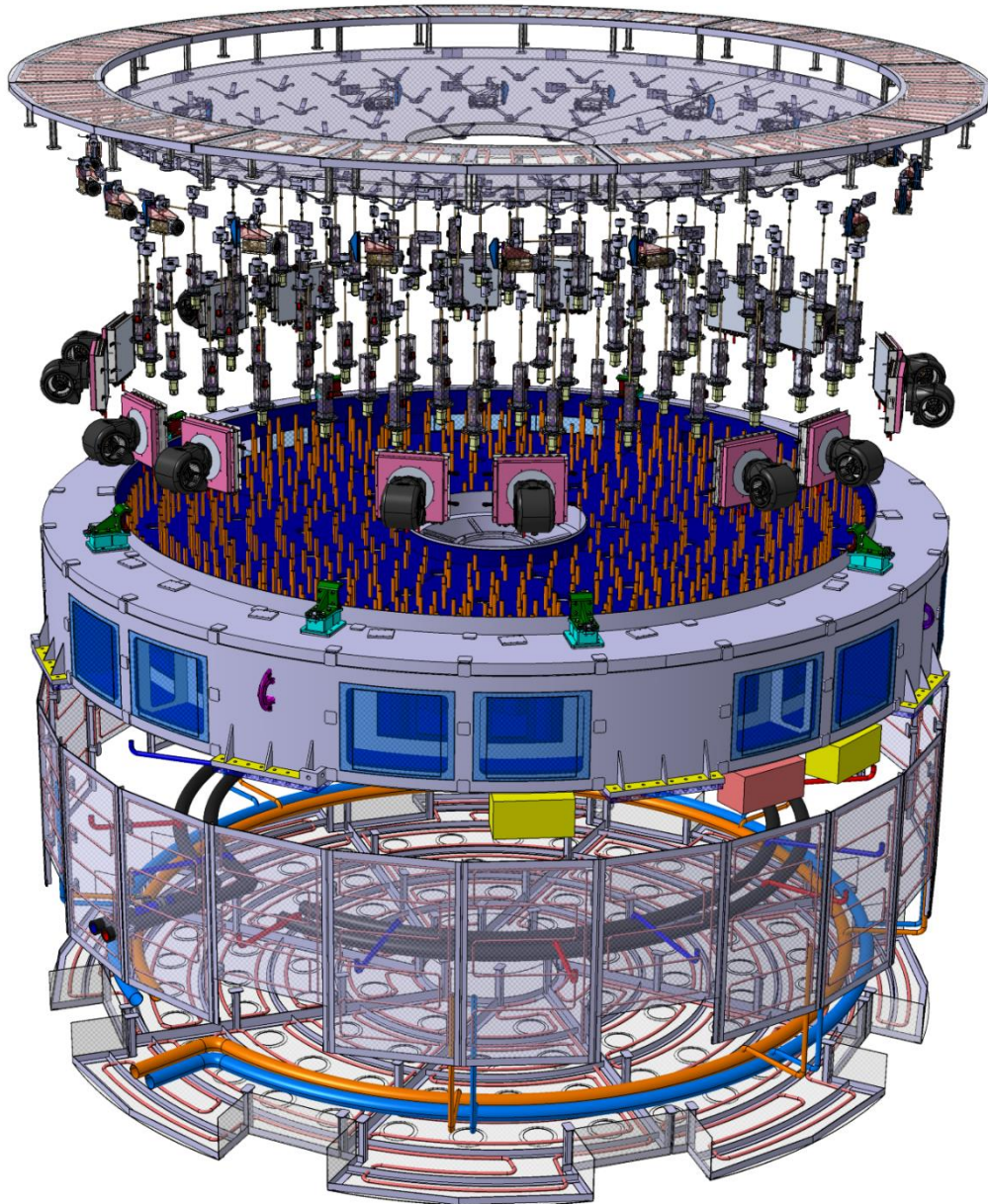


**IDOM**





# Primary mirror (M1)

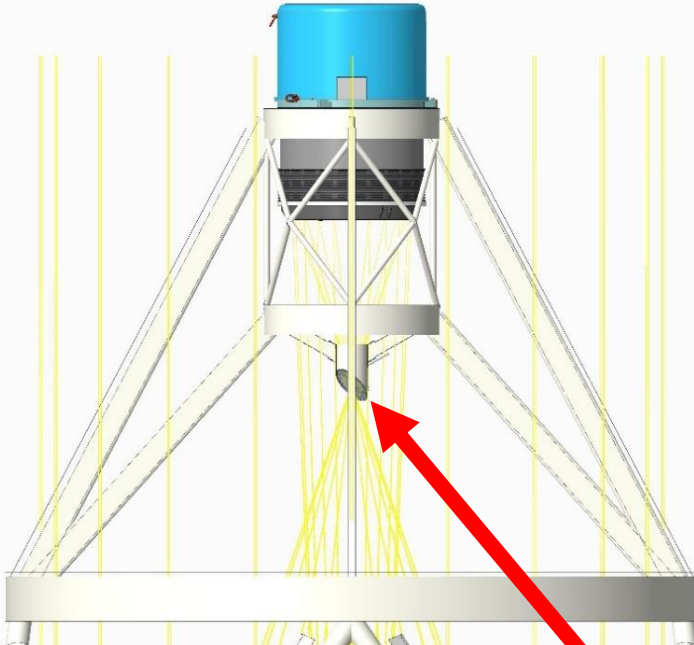


- ❑ 80 Axial electromechanical actuators with tripods.
- ❑ Air jet impingement thermal control.
- ❑ 60 nm RMS Surface Front Error.

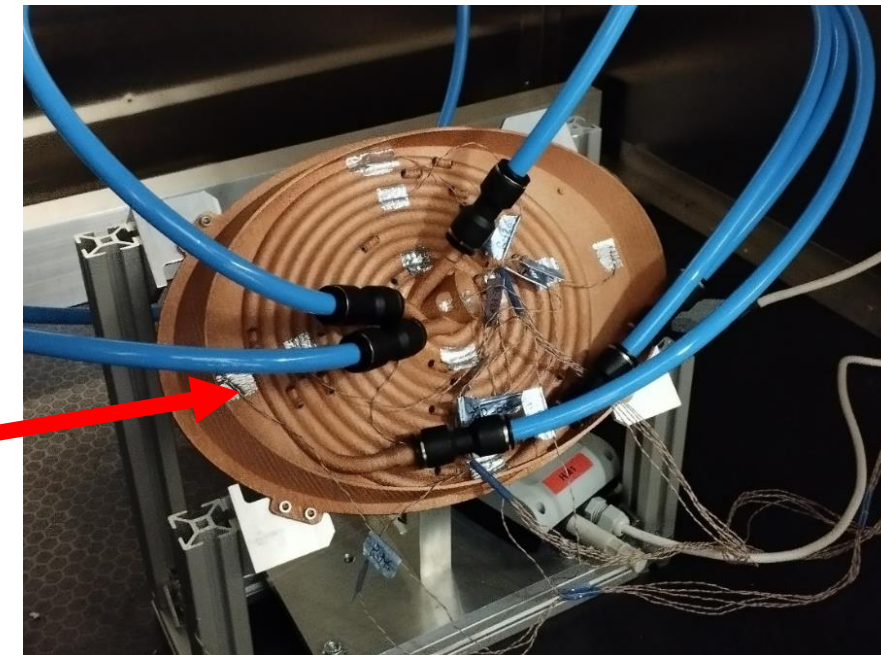
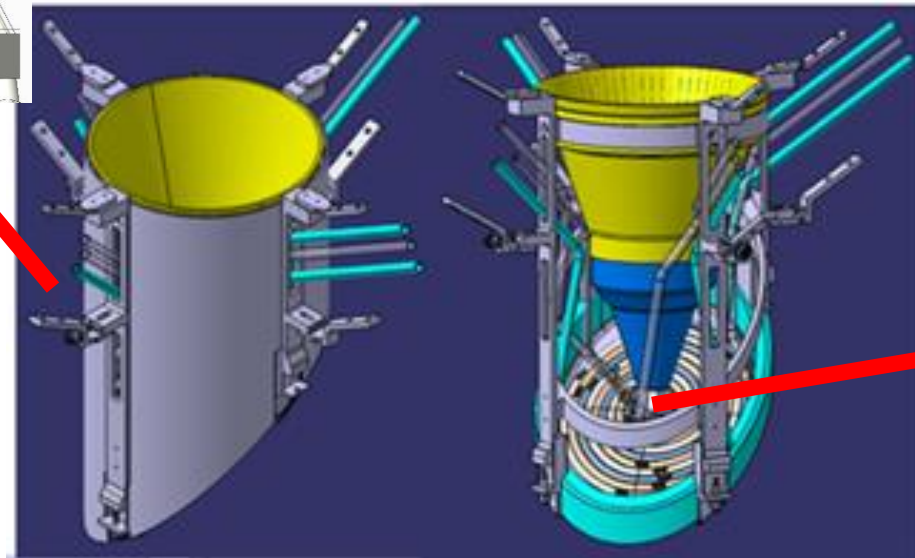




# Heat Rejecter (field stop)



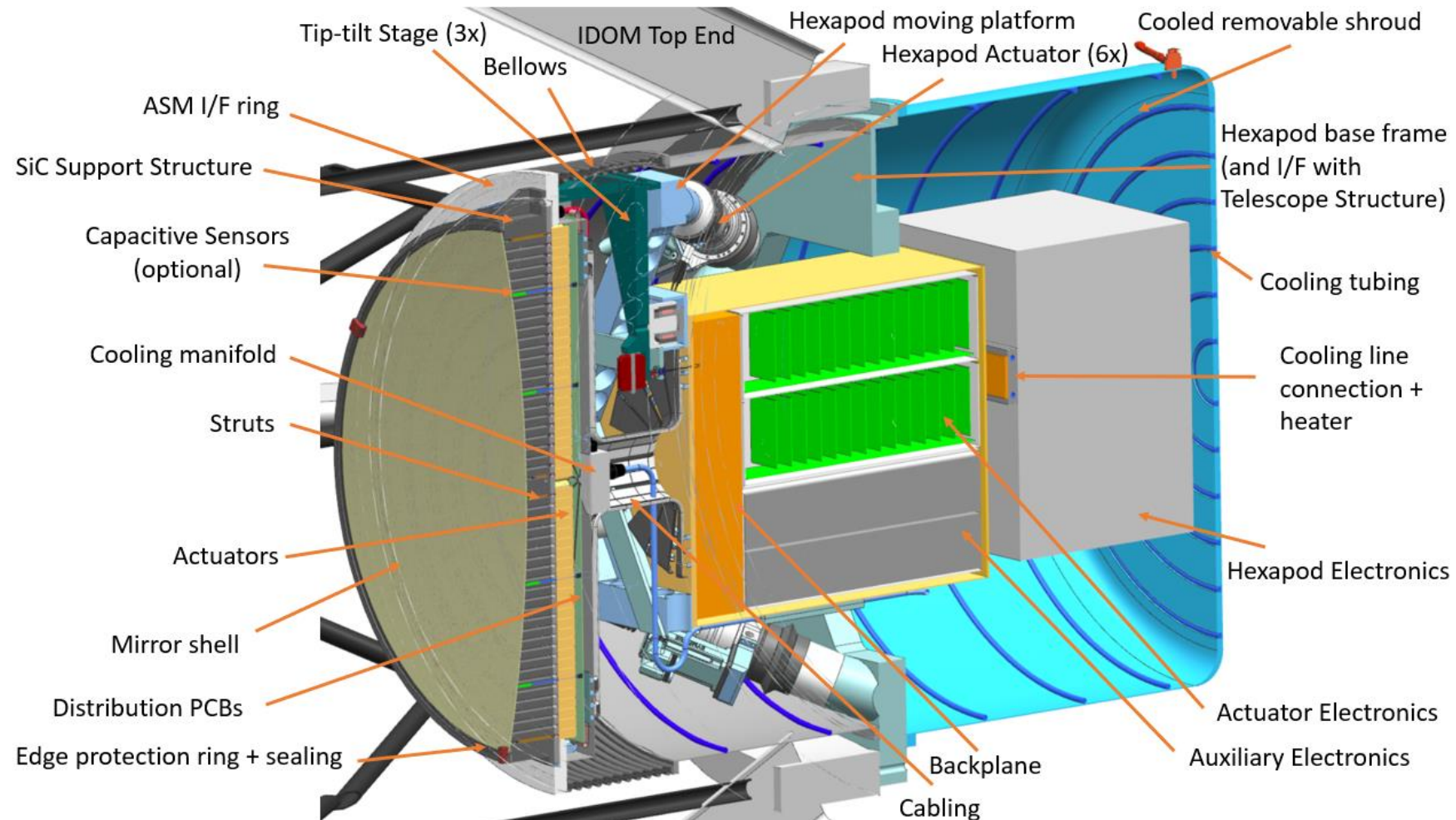
- ❑ +/- 3°C Optical surface thermal control.
- ❑ Nominal FoV diameter: 6.2 +/- 0.05 mm (203 arcsec at F1).



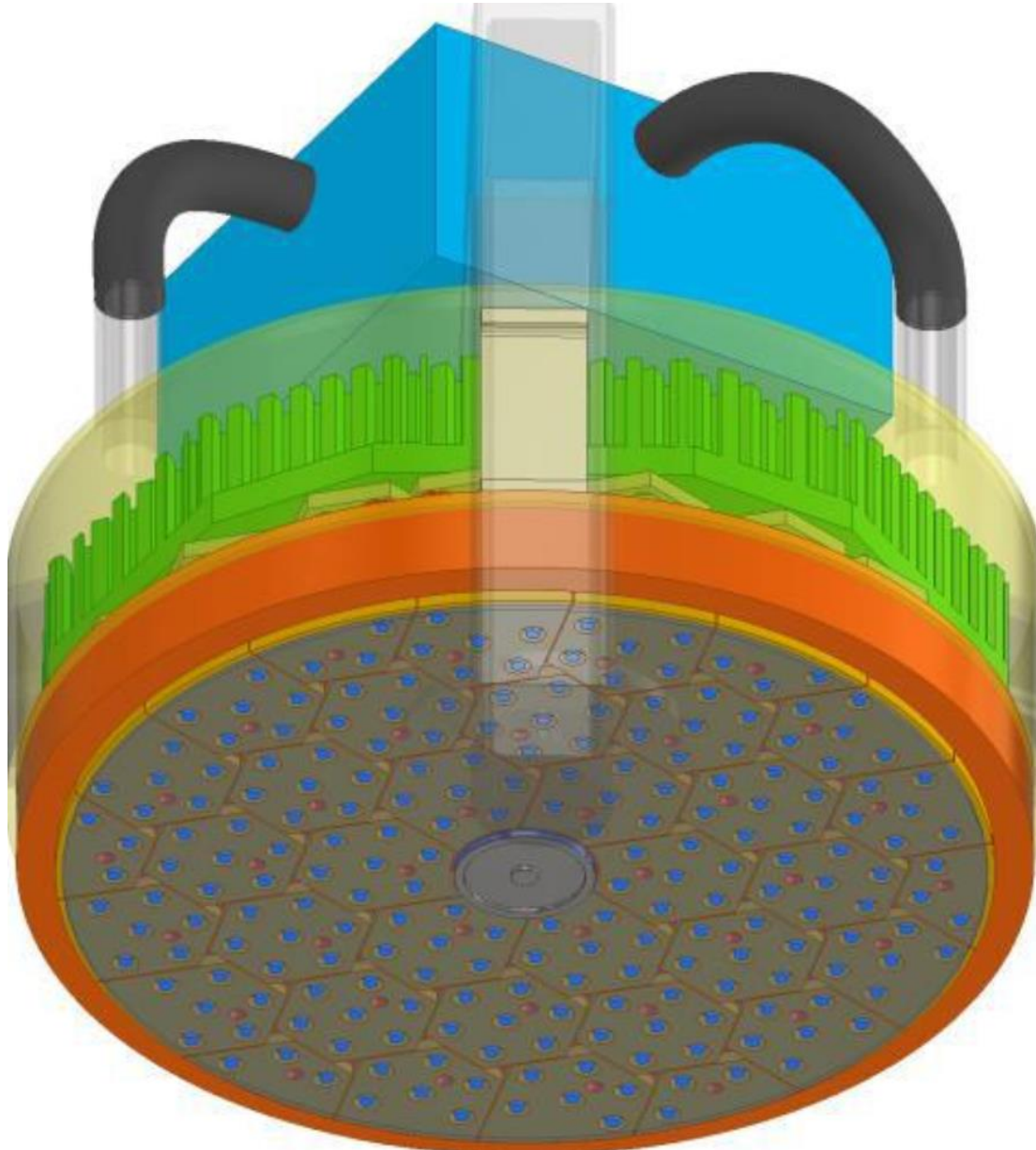


# Adaptive secondary mirror (M2)

- ❑ Inter-actuator pitch 16 mm.
- ❑ 2000 actuators deformable mirror



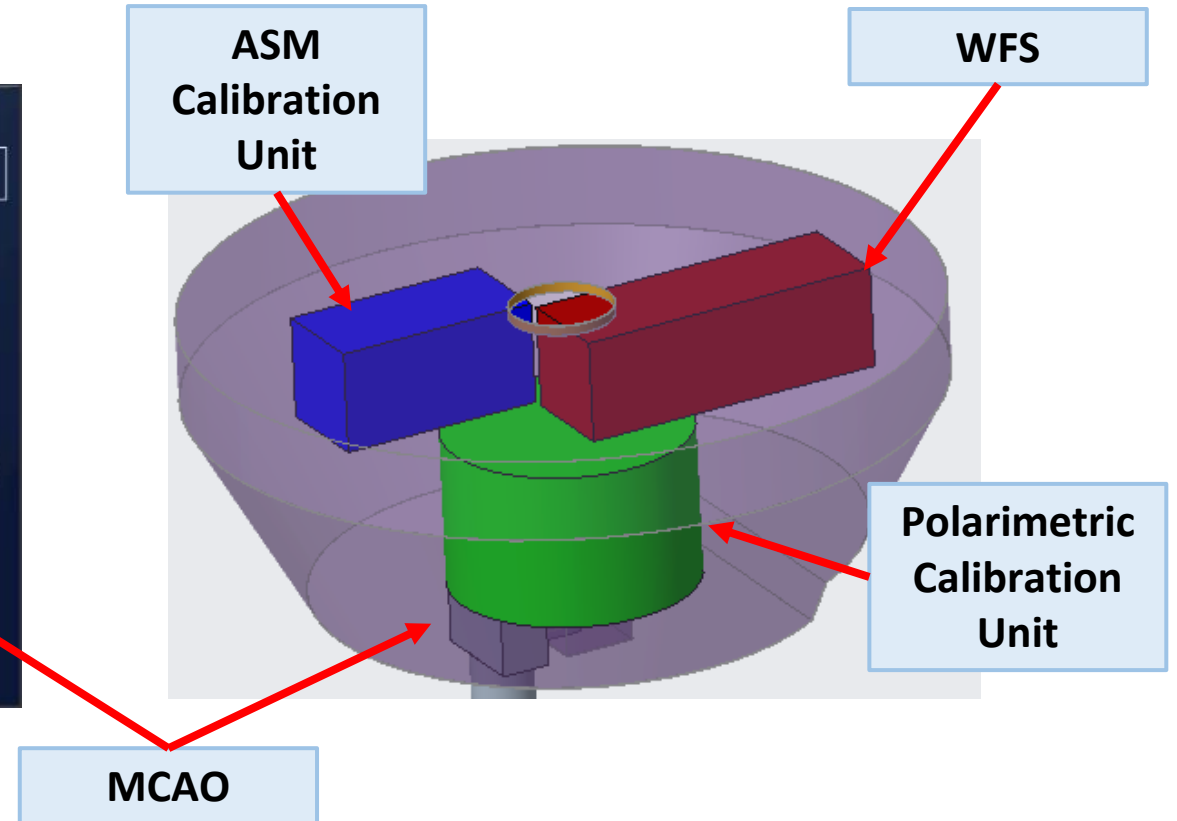
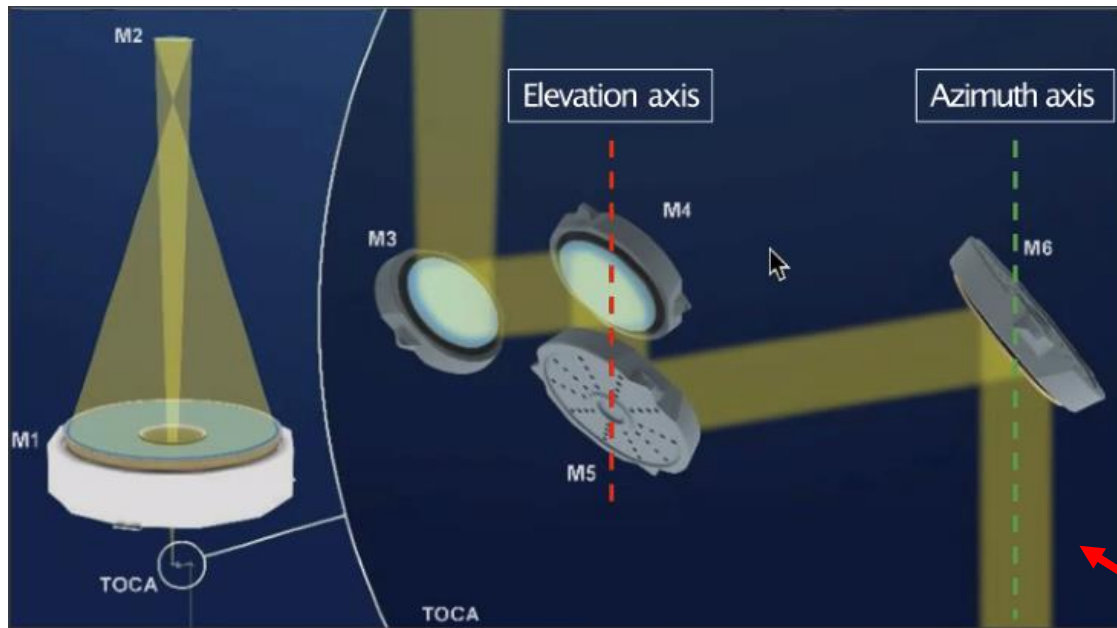
# Adaptive secondary mirror (M2). New prototype



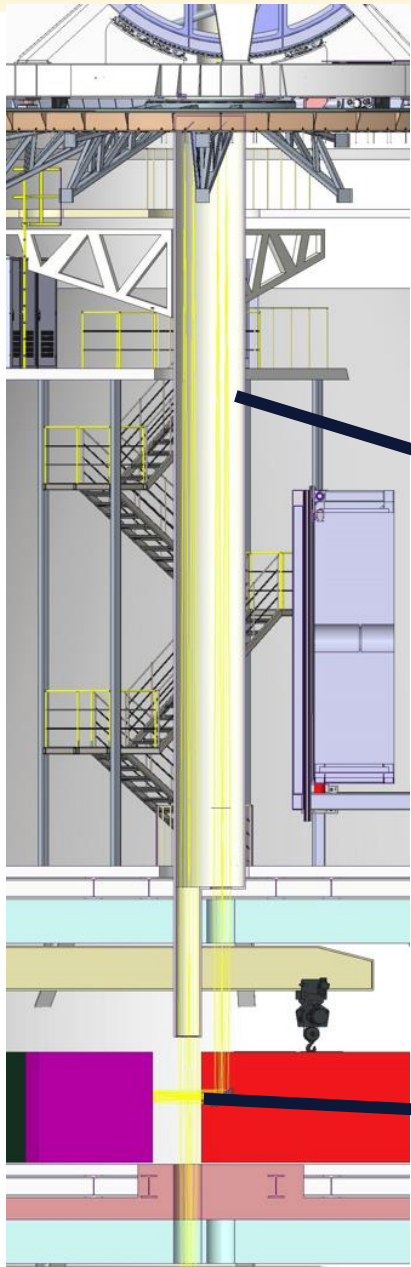
- Voice coil technology used in EELT and GMT
- Magnetic mirror levitation
- 216 actuators prototype



# Transfer Optics, Calibration and MCAO



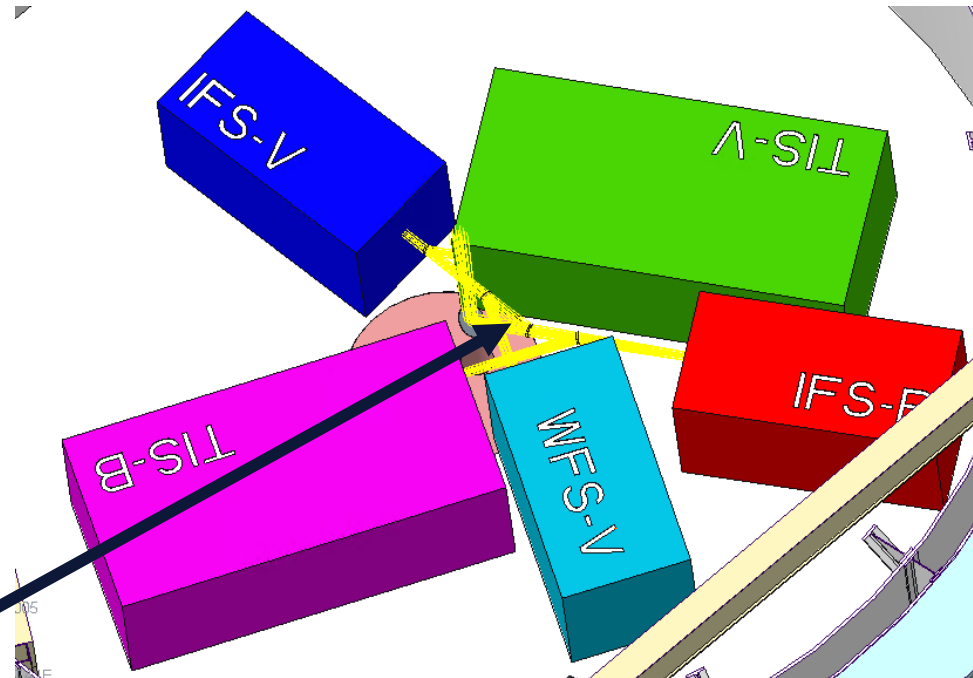
# Pier Optical Path (POP) & Coudé Light Distribution (CLD)



POP

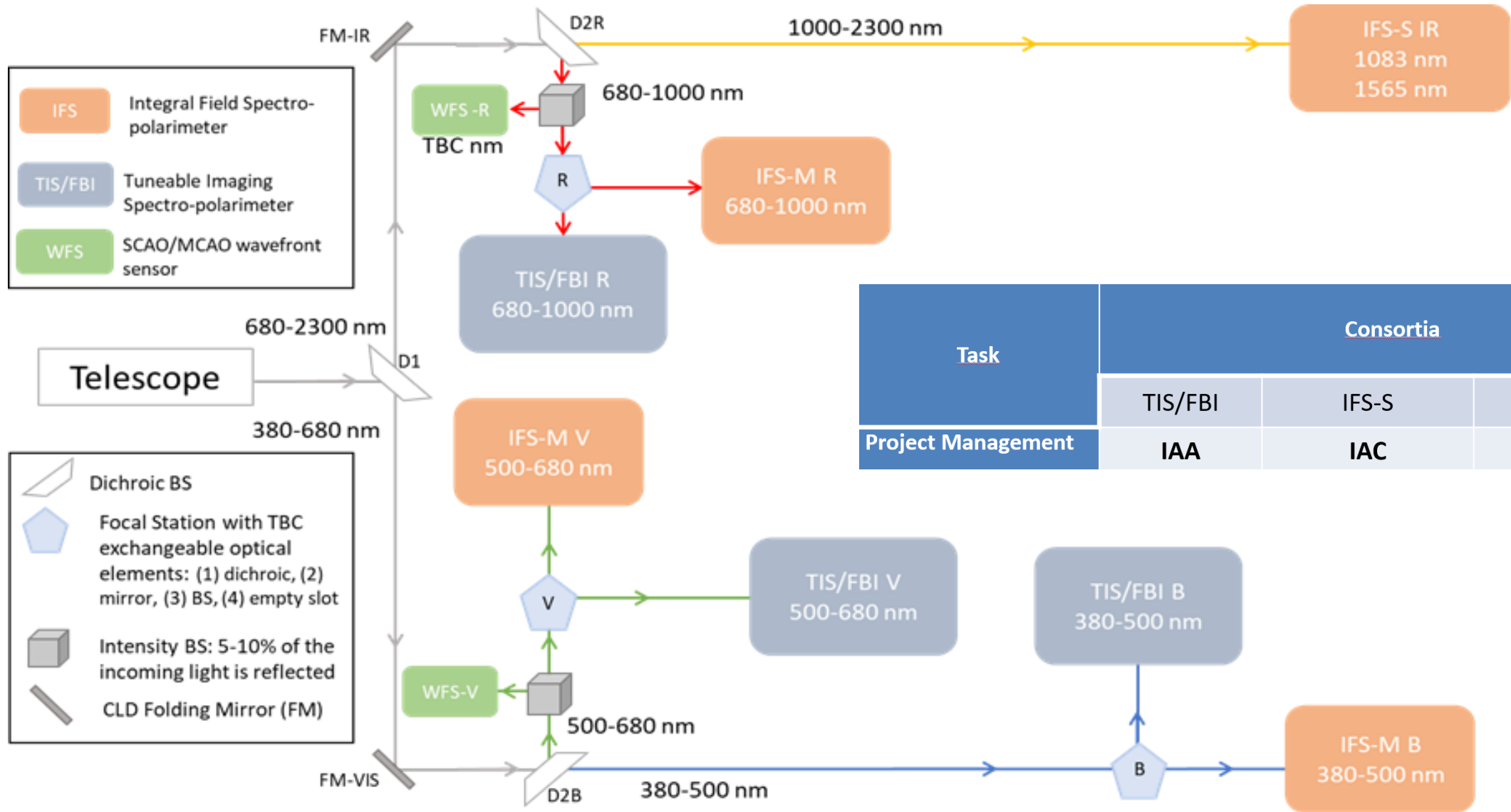
CLD

- ❑ 21 meters vacuum vessel.
- ❑ POP provides a F num. 50 to the F3.



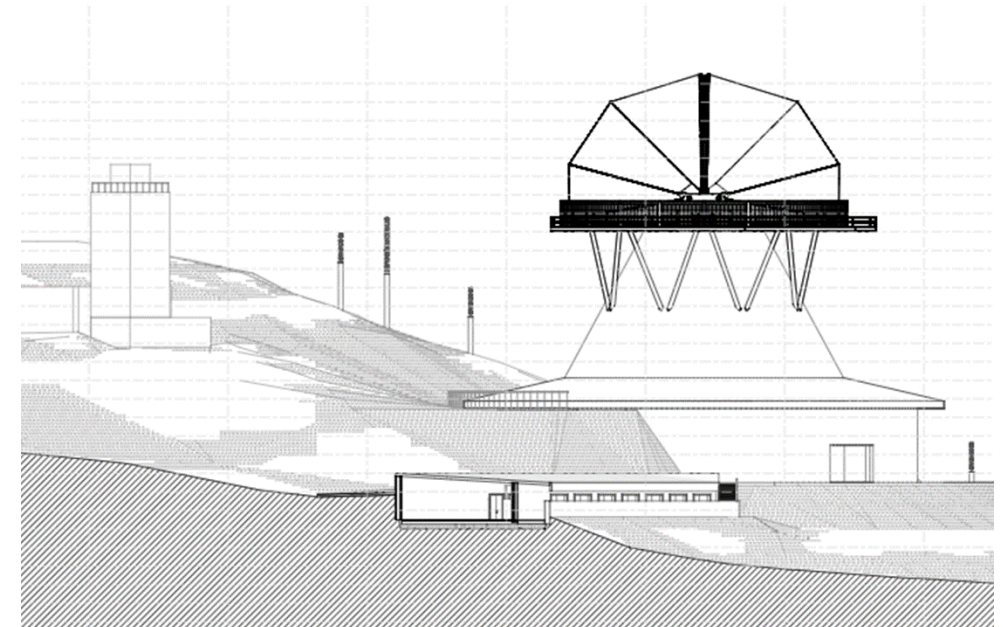
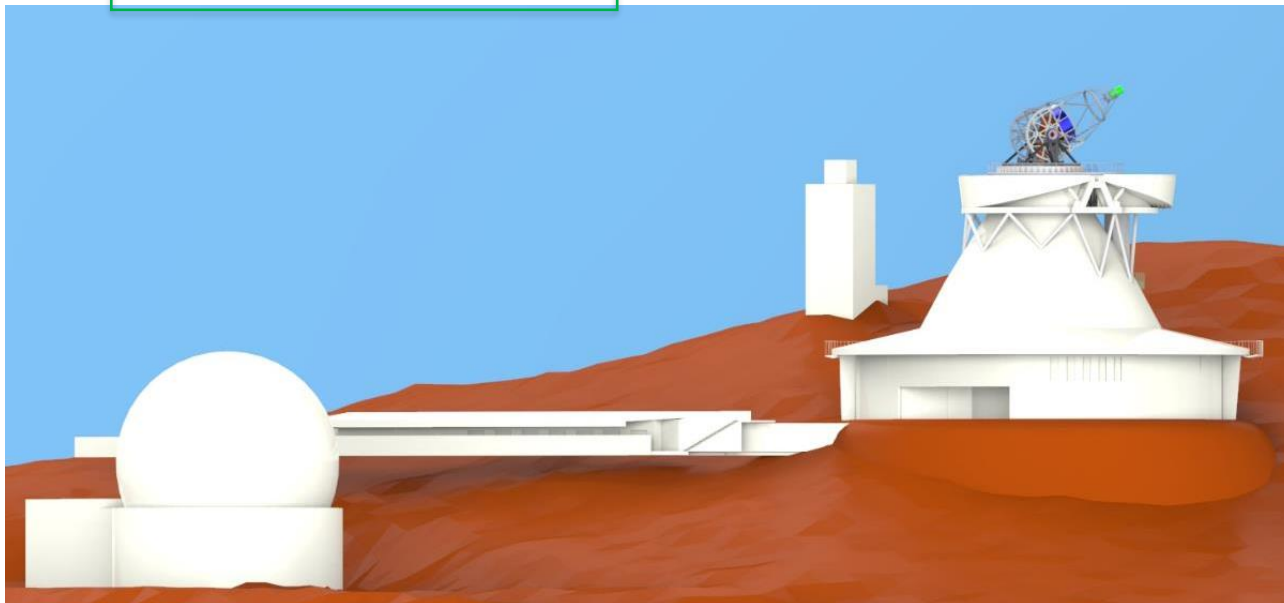
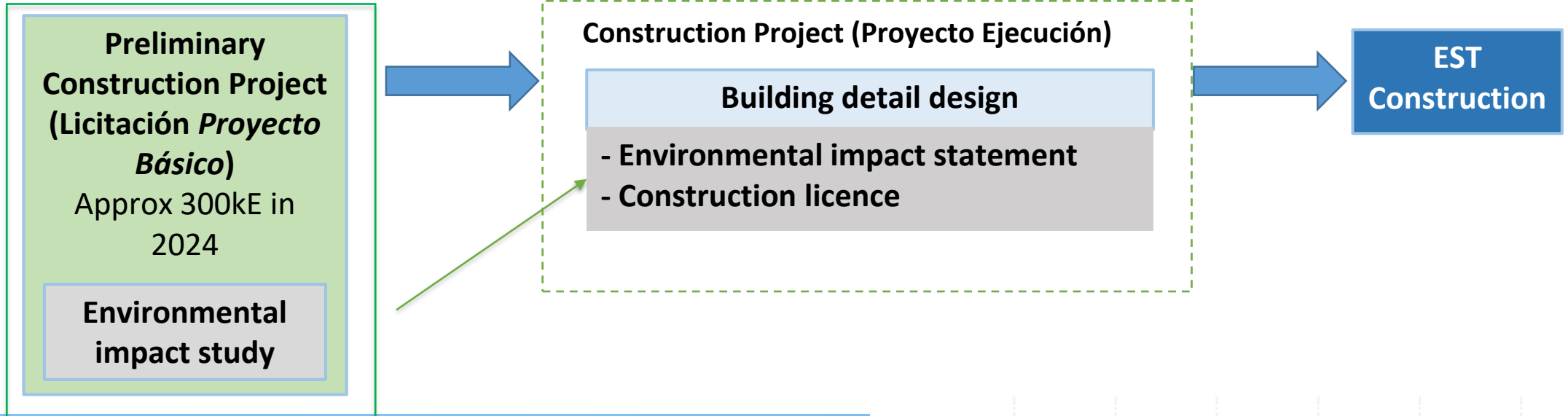


# 7 Instruments organized in 3 consortia



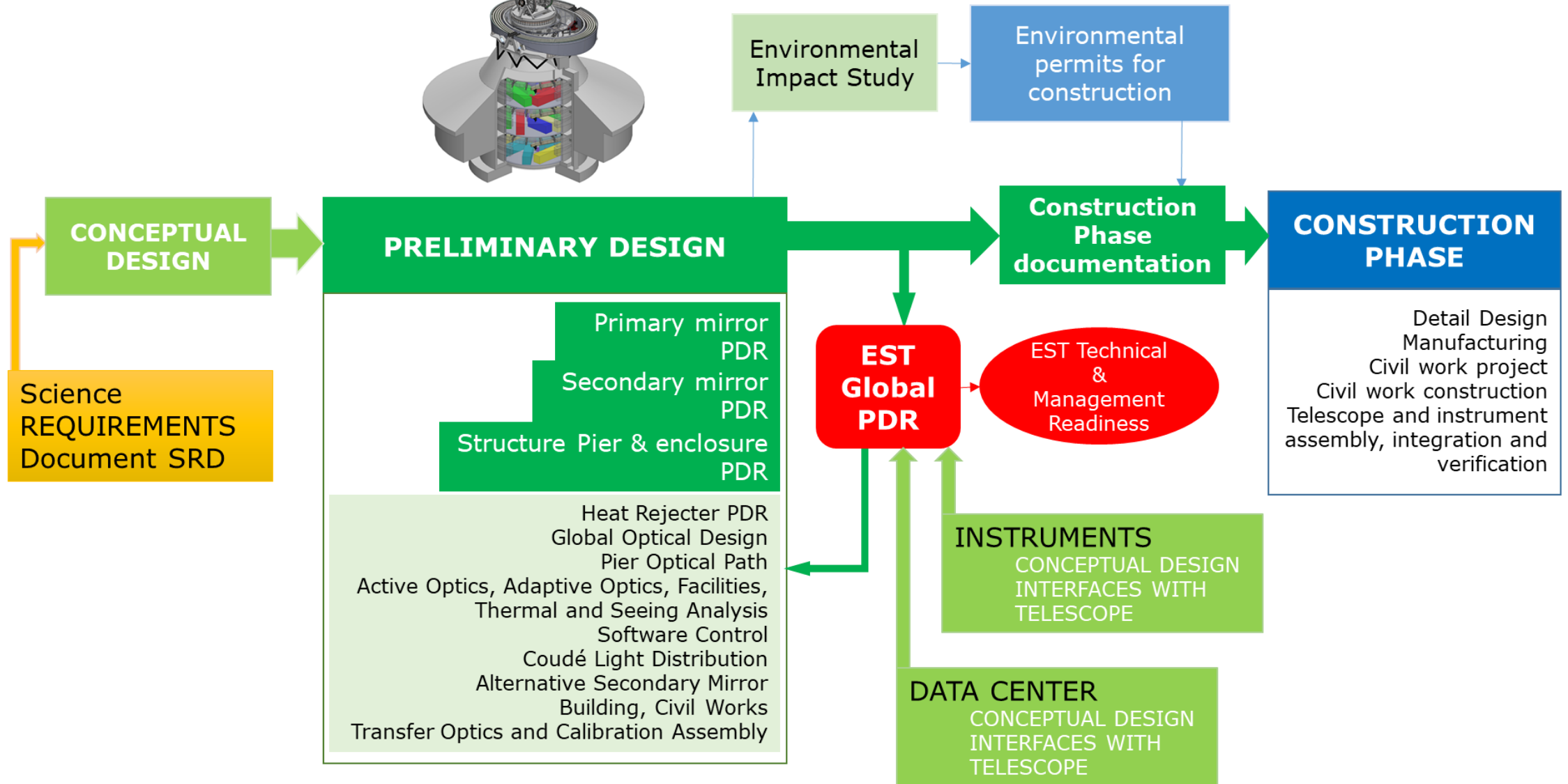
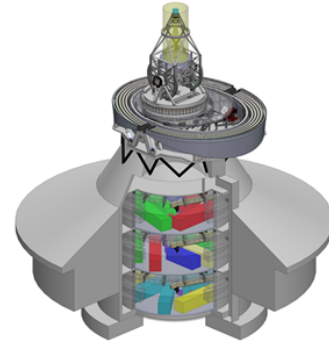
Task	Consortia		
	TIS/FBI	IFS-S	IFS-M
Project Management	IAA	IAC	MPS

# Buildings & Facilities





# EST Preliminary Design Review PDR



# Contributions provided to the Preparatory Phase



## Countries



## Funding Agencies



European Union

European Regional  
Development Fund



European  
Commission



MINISTRY OF EDUCATION,  
YOUTH AND SPORTS



**Gobierno de Canarias**  
Agencia Canaria  
de Investigación, Innovación  
y Sociedad de la Información



Canarias  
**avanza**  
con Europa



Infraestructuras  
Científicas y Técnicas  
Singulares



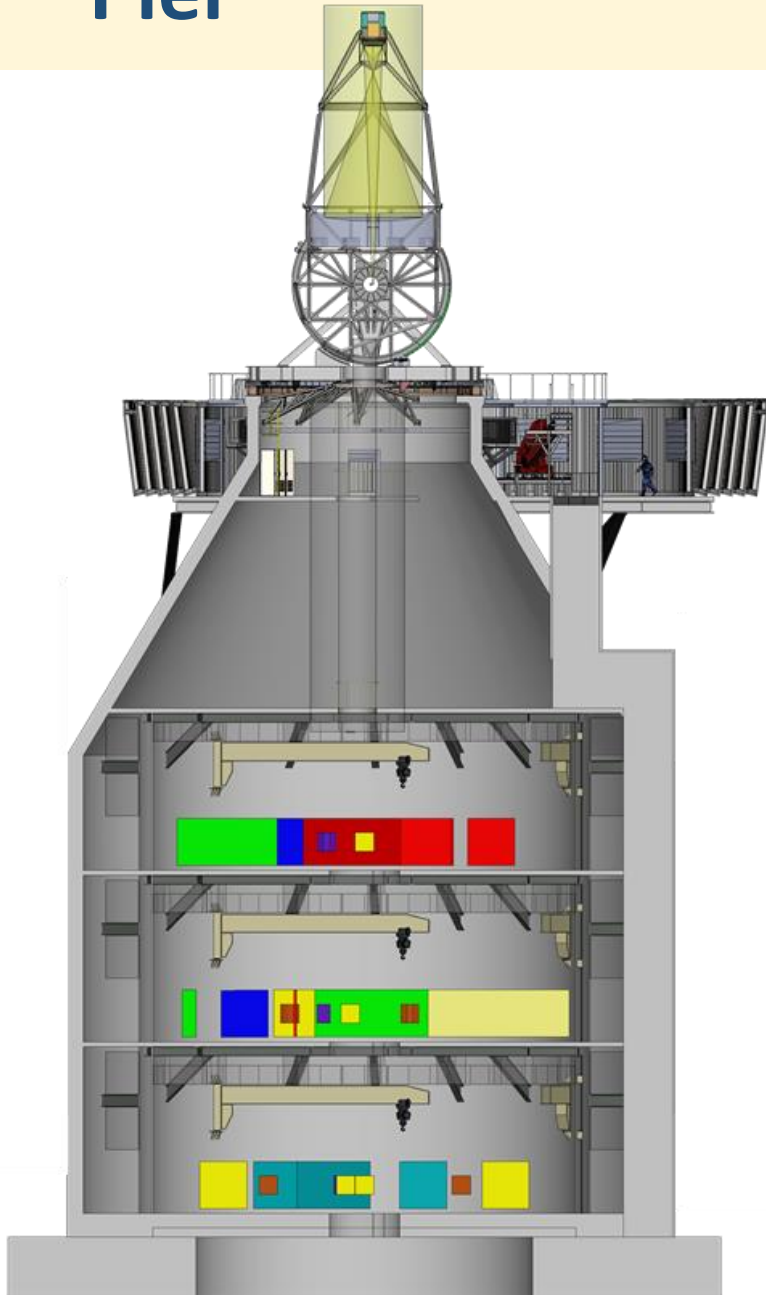
Thank You!



# Pier



**IDOM**



- ❑ Elevation Axis 35 meters from the ground.
- ❑ A single frame tower solution, characterized by 0,7m thick concrete walls, to support telescope and enclosure loads.
- ❑ The pier eigenfrequencies are  $>8\text{Hz}$ .