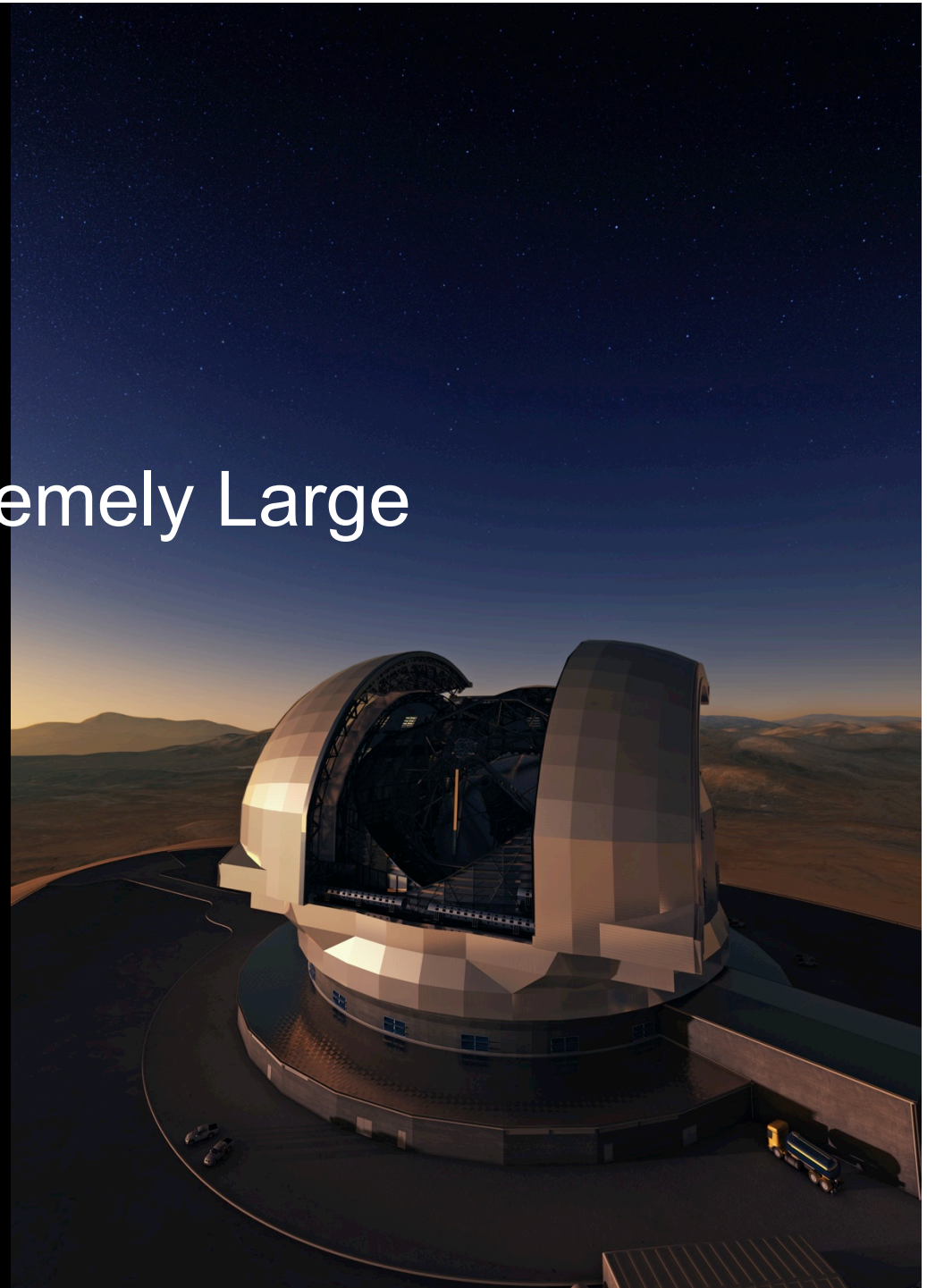


# The European Extremely Large Telescope

Isobel Hook

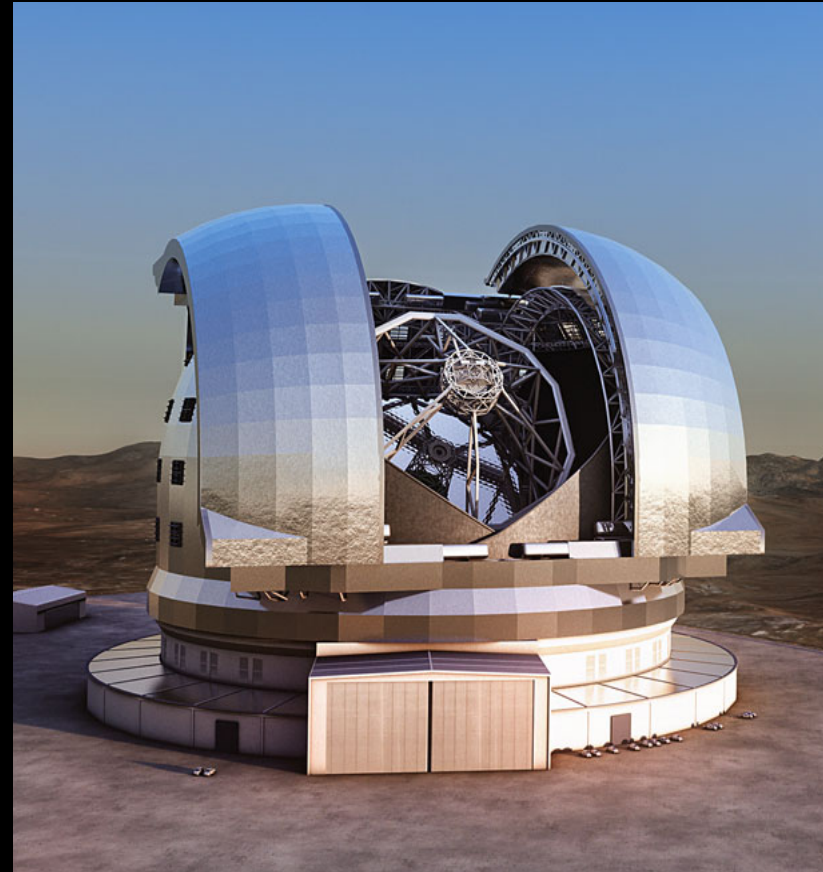
Aprajita Verma

U.K. E-ELT Project Office



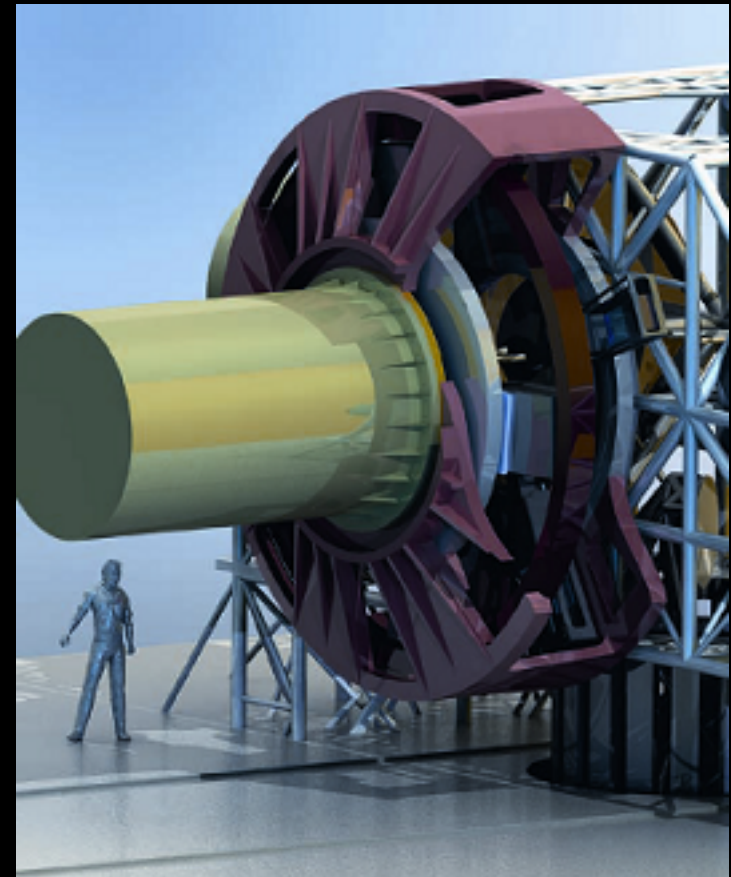
# E-ELT Project and Status

- Jun 2012: ESO Council approved start of the ELT Programme
- Now awaiting Brazilian parliament to complete ratification procedure
- Preparatory work going ahead
- Expected first light ~2023/24



# E-ELT Instrumentation

- Two selected for first light
  - ELT-CAM (MICADO)
  - ELT-IFU (HARMONI)
  - With associated AO systems
- Also planned:
  - At least one MID-IR, MOS & HIRES
  - Exo-planet instrument
  - Open slot 6
- Full instrument suite to be built up over first decade
- Future decision points specified
  - roadmap updated Feb 2014



# E-ELT Instrumentation Roadmap (Feb 2014)

Year	ELT-IFU + LTAO	ELT-CAM + MCAO	ELT-MIR	ELT-MOS	ELT-HIRES	ELT-6	ELT-PCS
2012	Develop science reqmts, AO architecture.						
2013			Develop science requirements for MIR/MOS/HIRES				
2014			VISIR start on-sky. Detector check.	Call for proposals Start Ph A	Call for proposals Start Ph A		Start ETD
2015				Consortium selection for construction	Consortium selection for construction		
2016						Call for Proposals	
2017						Start Ph A	TRL check – start when ready
2018							
2019						Consortium selection for construction	
2020							
2021							
2022							
2023							
	Pre-studies taking the form of Phase-A or delta-Phase-A work and/or ESO-funded enabling technology development (ETD)						
	Decision point						
	Development of Technical Specifications , Statement of Work, Agreement, Instrument Start.						

# E-ELT Project Science Team

- PST is part of the E-ELT project
- UK members I. Hook, R. Kotak, D. Queloz + N. Thatte (as HARMONI PI)
- PST produces “Top Level Requirements” for instruments
  - CAM, IFU: ESO now using these as basis for contract negotiations with HARMONI & MICADO
  - MIDIR, HIRES, MOS: TLR sent to STC for review.
- Future PST work:
  - follow instrumentation development
  - consider operations modes

# UK Programme for the European Extremely Large Telescope

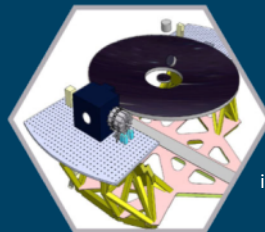
Science



Public Engagement



1<sup>st</sup> light  
instrumentation:  
HARMONI



Industry



1<sup>st</sup> generation  
instruments



# UK E-ELT Activities

- Instrumentation
- Project Office & Project Science
- Industrial liaison
- Supported by STFC grant



By Prof Colin Cunningham (UK ATC) & the UK E-ELT team

[http://www.roe.ac.uk/elt/E-ELT\\_Impact.pdf](http://www.roe.ac.uk/elt/E-ELT_Impact.pdf)

# UK activities: instrumentation

- HARMONI - Diffraction-limited, near-IR IFU with optical extension
  - UK PI (N. Thatte)
  - Completing delta Phase A (summer 2014) considering impact of telescope interface changes
  - Expect to sign construction contract end of 2014 / early 2015
- MOS – Multi Object spectrograph
  - MOSAIC concept : merger of EAGLE and OPTIMOS-EVE
  - White paper produced (Evans et al 2013)
  - Expecting call for concepts in May (?)
- CANARY - AO demonstrator on WHT
  - Successful on-sky runs with mixed LGS+NGS demonstrating open-loop correction
  - Plan to demonstrate split open/closed loop correction using two DMs – essential for MOS



# UK Activities: Instrumentation (cont)

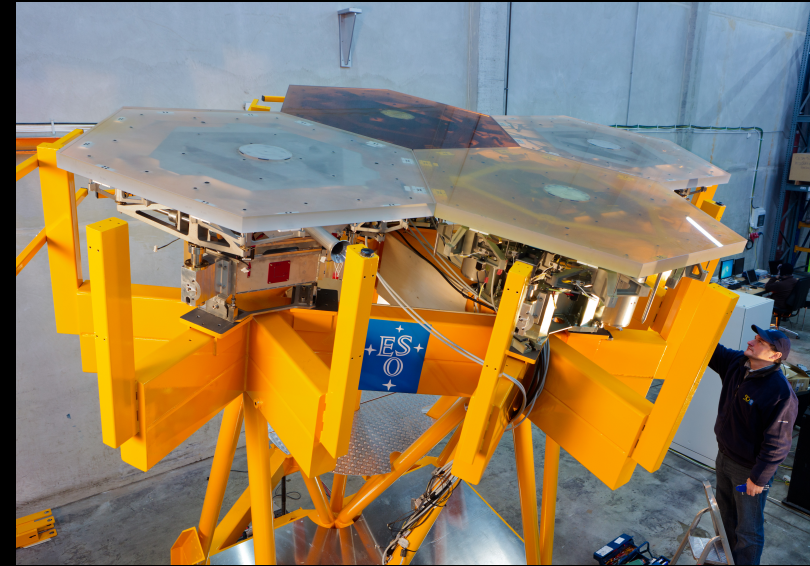
- HIRES – high resolution optical and NIR spectrograph
  - Gathering momentum in UK
  - White paper produced (Maiolino et al 2013)
  - Expecting ESO call for concepts in May (?)
- METIS - Mid-IR (3-14 $\mu$ m) imager & spectrometer
  - UK share ~10%.
  - UK leading L&M band (2.9-5.3 $\mu$ m) high-R IFS
  - Workshop held (see next slide)
  - Preparing for construction start ~Q4 2015
- EPICS – XAO imager/spectro-polarimeter for exo-planets
  - UK work focused on slicer IFS
  - Planning comparative laboratory tests of slicer vs lenslet IFS

# UK Activities: Project Office highlights

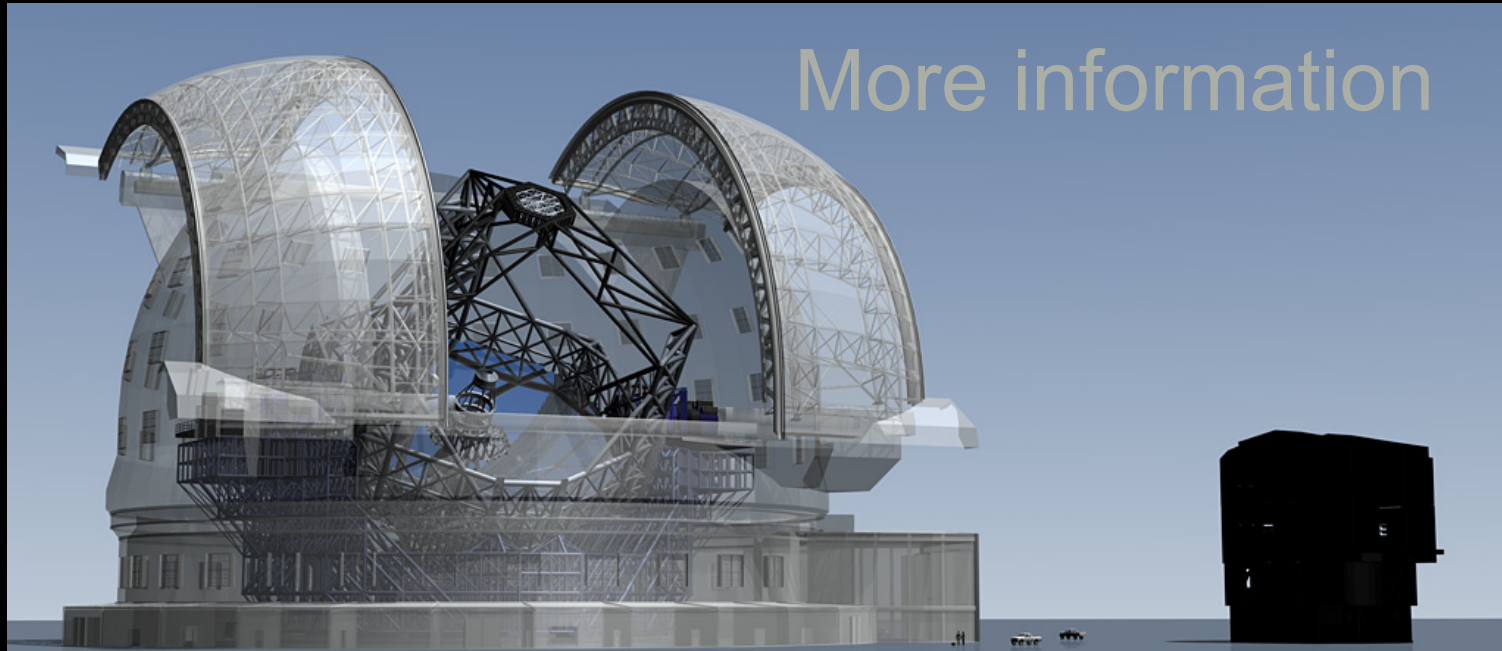
- Industrial liaison
  - Organised “industry day” workshops
  - Keep track of open calls and relevant UK industries
- METIS L&M band workshop, OU, March 2014
  - ~30 participants, focused on L&M IFS science
  - Raised possibility of cross-dispersed mode to increase instantaneous wavelength coverage (at expense of FoV)
- Input to STFC Programmatic review
  - E-ELT ranked  $\alpha 5$  with a recommendation for strong participation
  - Similar high priorities AAP and SSAP reports (which provided input to PR2014).

# E-ELT in 2014

- Infrastructure and access road – digging has started!
- Contracts
  - Dome and main structure CfT imminent
  - Several CfT for steps in M1 final design and production
- “Blast off” week of June 16<sup>th</sup> 2014



Top: Work on prototypes at the Hochbrück warehouse: Bottom: impression of Armazones before and after site leveling. Image credit: ESO



## Upcoming Meetings

- OPTICON “Speed and Sensitivity”: Galway, Ireland, 13-16 May 2014
- RASPUTIN: Resolved And unresolved Stellar PopUlaTIoNs: ESO HQ, 13 – 17 October 2014
- First science / HARMONI : Oxford, July 2015 (dates TBD)
- Solar System : ESO HQ, December 2015

ESO E-ELT Science web pages: <http://www.eso.org/sci/facilities/eelt/>

UK Project pages: <http://www.roe.ac.uk/elt/index.html>

The End

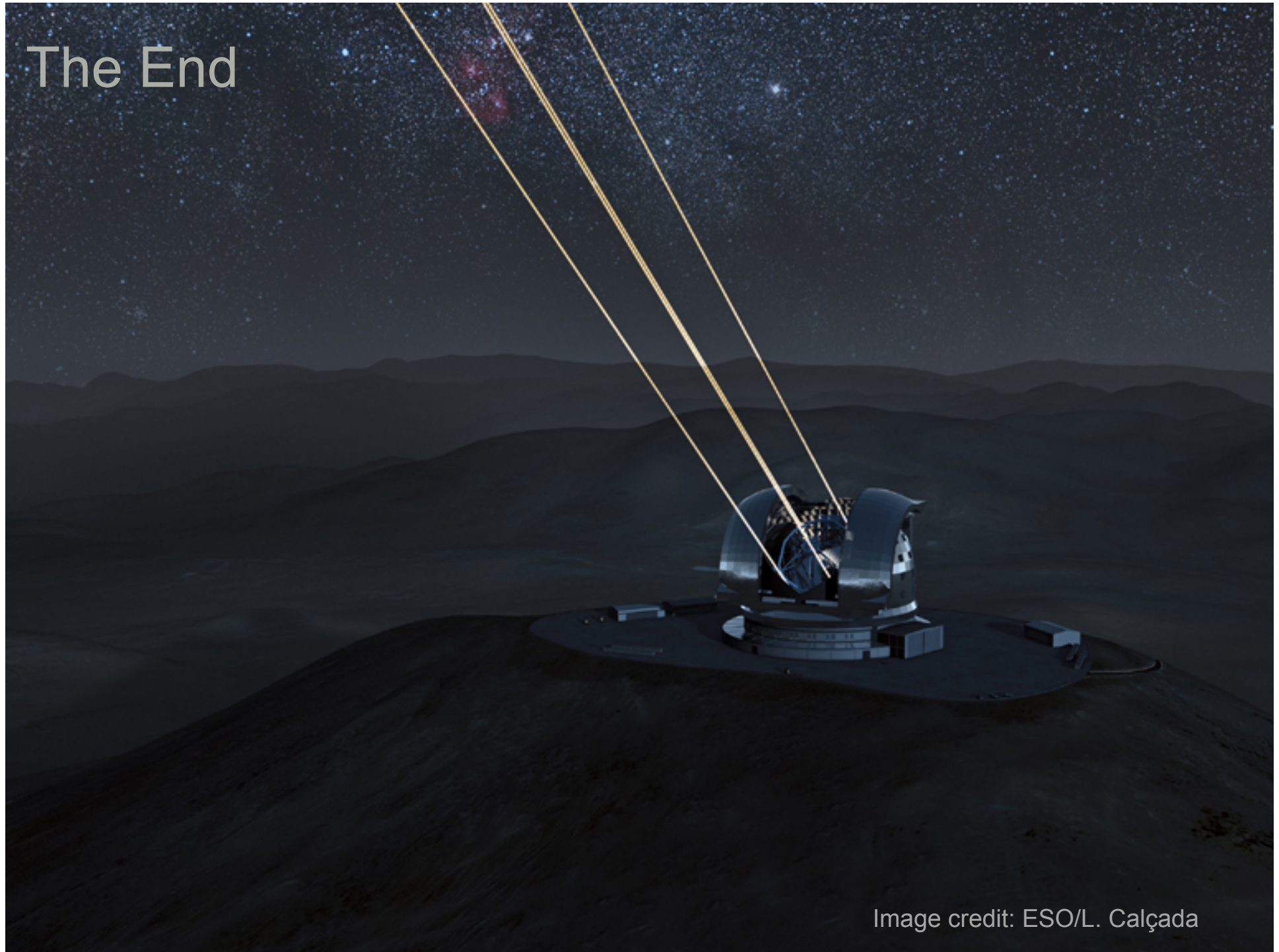


Image credit: ESO/L. Calçada