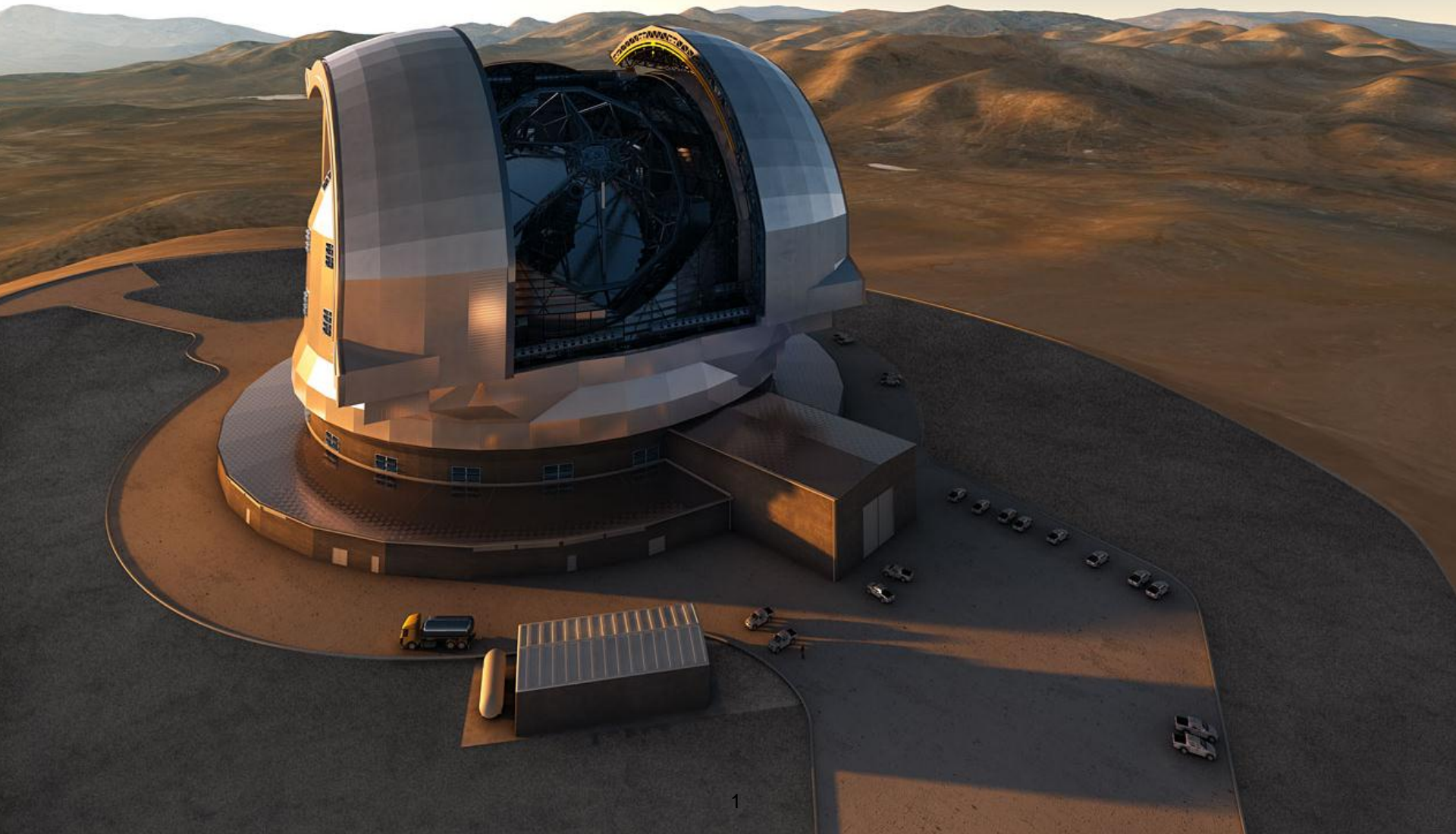


# Exo-planets with the E-ELT



# European Southern Observatory

## ■ 1962

- ESO created by five Member States with the goal to build a large telescope in the southern hemisphere
  - Belgium, France, Germany, Sweden and The Netherlands
- This became the 3.6m telescope on La Silla (1976)

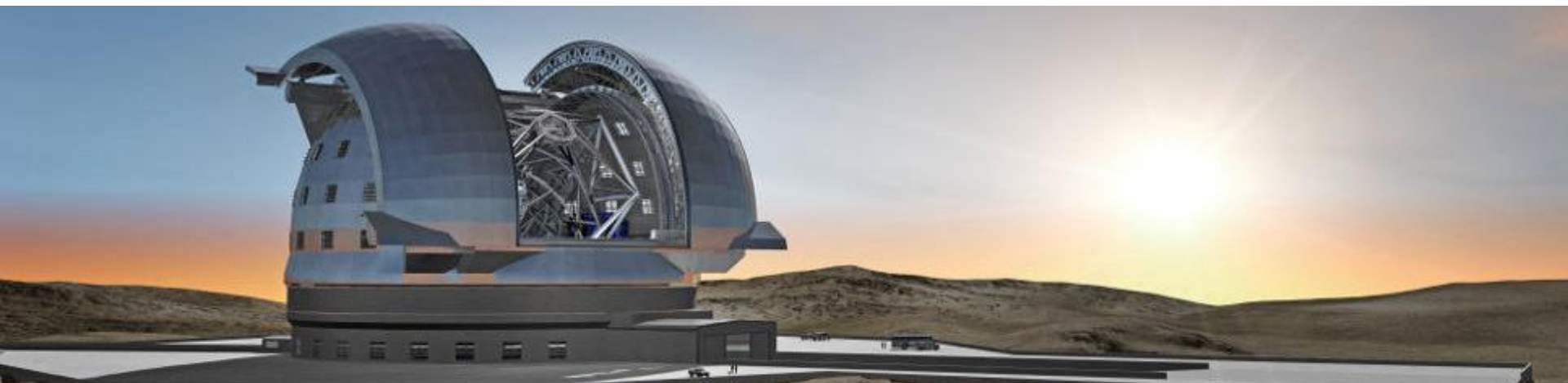
## ■ 2014

- 14+1 Member States (~30% of the world's astronomers)
- Paranal is the world-leading ground-based observatory
- ALMA (in partnership) on Chajnantor almost completed
- Construction of 39m E-ELT on Armazones to start soon



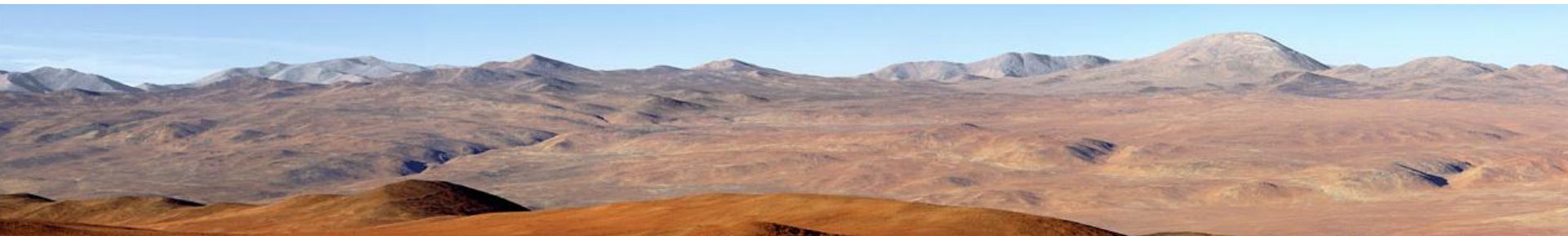
# E-ELT

- Largest optical/infrared telescope in the world
  - 39m segmented primary mirror: transformational step
  - Science: exo-earths, deep universe, resolved populations
  - Design essentially complete, incl. instrumentation roadmap
  
- Project
  - Construction 2014-2024, on Cerro Armazones
    - *As integral part* of the Paranal Observatory ('one more telescope')
  - ESO cost: ~1100 MEUR incl. instruments and contingency



# E-ELT Programme

- Funding comes from
  - Regular ESO income
  - Additional contributions from 14 Member States
  - Accession of Brazil (entrance fee + annual contributions)
    - Ratification making good progress in Chamber of Deputies
  
- E-ELT Programme *approved* in Dec 2012
  - When required two-thirds majority (10 MS) was reached
  - 13 Member States have now formally committed
    - Spain's participation pending approval by Council of Ministers
    - This would bring total commitment to ~735 MEUR
    - Not counting extra funding in MS for instrumentation development





# Brazil (1)

- ESO file being examined by Chamber of Deputies
  - President Rousseff asked for ratification on 19 Feb 2013
  - Has to pass four committees plus Plenary discussion
  - Subsequent process in Senate normally 4-6 weeks
- Committee for Foreign relations & National defense
  - *Relator* appointed 4 Mar, positive report submitted 4 Jul
  - Approved 11 Sep 2013

<http://www.camara.gov.br/proposicoesWeb/fichadetramitacao?idProposicao=565530>

- Next three committees in parallel
  - Science, Finance, Constitutional Matters
    - *Relator* for Science appointed 19 Sep 2013
    - *Relator* for Finance appointed 26 Sep 2013
    - *Relator* for Constitutional Matters appointed 20 Nov 2013

<http://www.camara.gov.br/proposicoesWeb/fichadetramitacao?idProposicao=591830>



# Brazil (2)

## ■ Status

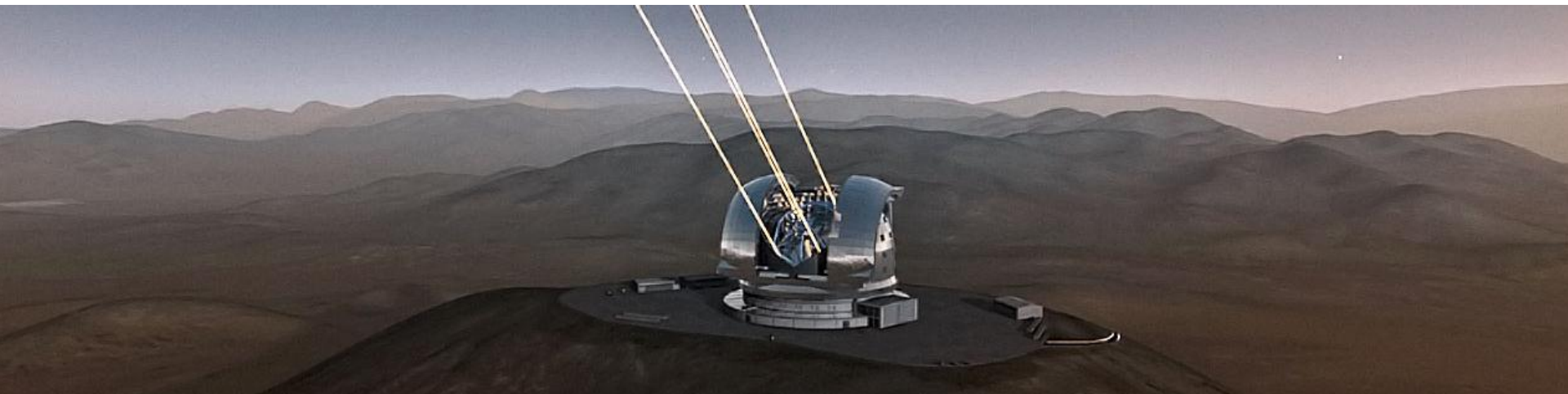
- Science Committee: Approved 13 Nov 2013
  - Based on very positive report posted on 8 Nov, updated 12 Nov
- Committee for Constitutional Matters
  - Positive report posted 5 Dec 2013
- Financial Committee
  - Much preparatory work done, report expected Feb 2014

## ■ Contacts with Brazilian government

- Regular video conferences with Ministry of Science
- Joint WG to provide needed factual information
- Two Brazilian observers attended Dec 2013 Council
- Encouragement by MS Ministers continues

# E-ELT Construction

- Spending on major items authorized once 90% of cost-to-completion pledged (975 MEUR)
  - Reached once Brazil ratifies Accession Agreement
  - Initial civil works (road + platform) can be started sooner
- Baseline procurement plan is being implemented
  - Contract for construction of road and platform signed
    - Work will start 3 Mar 2014; completion mid 2015
  - CfT for construction of Dome & Main Structure: Q1 2014



# E-ELT Instrumentation

## ■ Instrumentation

➤ Roadmap contains seven planned instruments

➤ First-light instruments

- ELT-CAM (MICADO)
- ELT-IFU (HARMONI)
- Both in Phase B design

➤ Next

- ELT-MIR (METIS)
- ELT-MOS
- ELT-HIRES
- Expect all three to be in Phase B soon

## ■ Construction philosophy

➤ ‘VLT model’ of consortia working closely with ESO

Year	ELT-IFU	ELT-CAM	ELT-MIR	ELT-4 (MOS or HIRES)	ELT-5 (MOS or HIRES)	ELT-6	ELT-PCS
2012	Decide science requirements, AO architecture.		VISIR start on-sky	Develop science requirements for MOS/HIRES			Call for Proposals for ETD
2013			TRL Review	Call for Proposals for MOS/HIRES			
2014							
2015				Selection ELT-MOS/HIRES		Call for Proposals	
2016							
2017							TRL check
2018							TRL check
2019						Selection	TRL check
2020							TRL check
2021							TRL check
2022 Tel. technical first light							
	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.						