The European Southern Observatory

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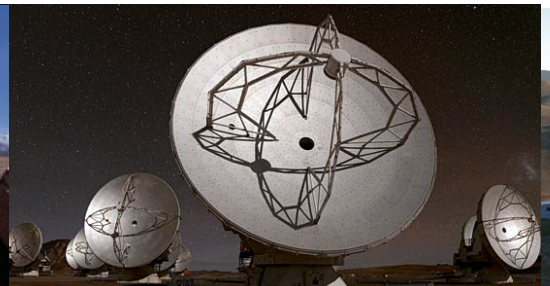
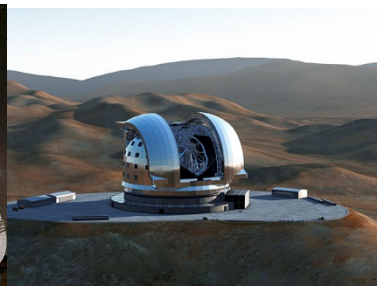
European Southern Observatory

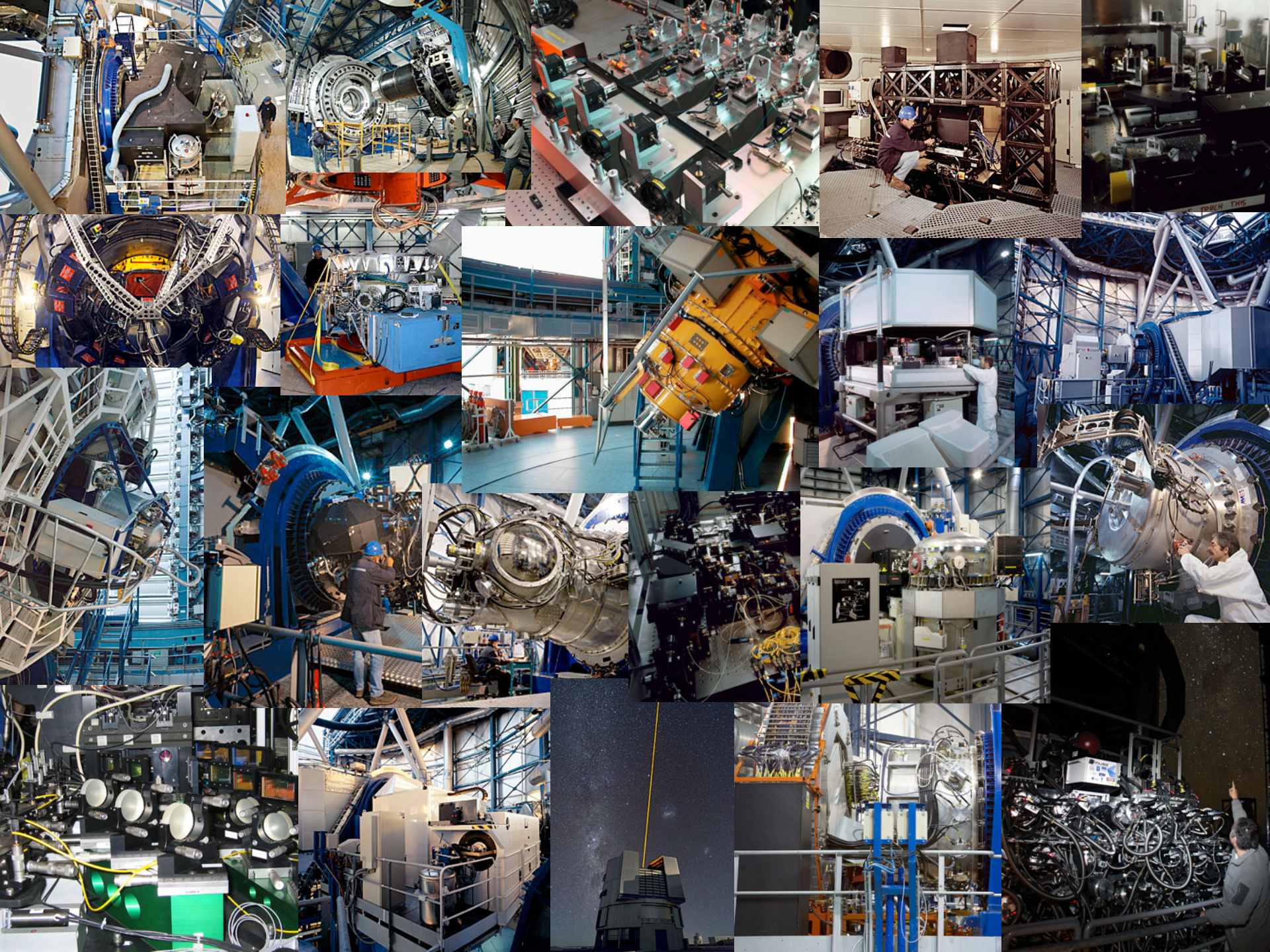
- 1962
  - ESO created by five countries with the goal to build a large telescope in the southern hemisphere
    - Belgium, France, Germany, Sweden, The Netherlands
  - This became the 3.6m telescope on La Silla (1976)
- 2015
  - 15+1 Member States (~30% of the world's astronomers)
  - VLT on Paranal is world-leading ground-based system
  - ALMA (in partnership) on Chajnantor in early operations
  - Construction of 39m E-ELT on Armazones has started



Paranal – La Silla

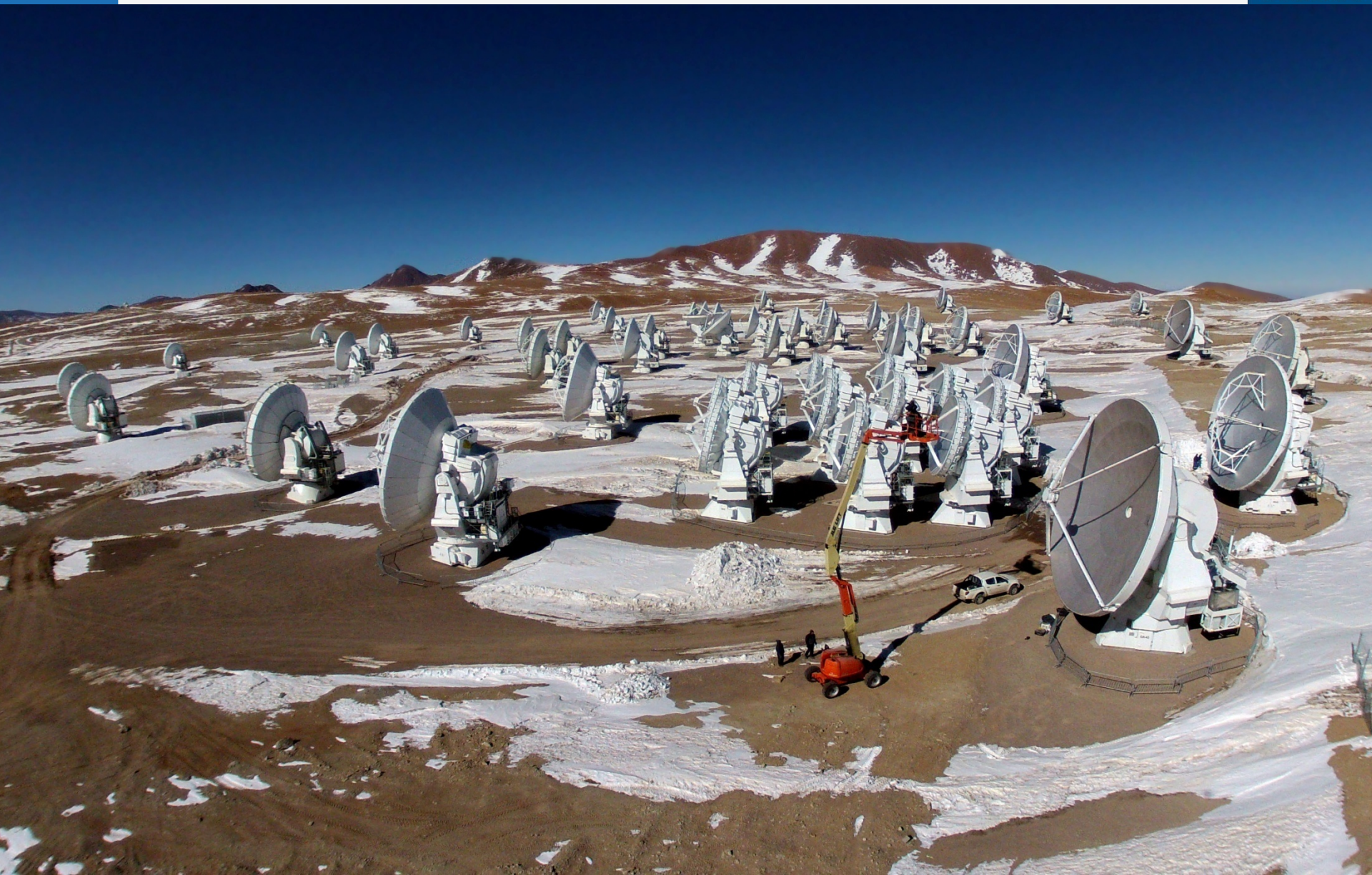

VISTA
VST
4 UTs
4 ATs
Control building



ALMA

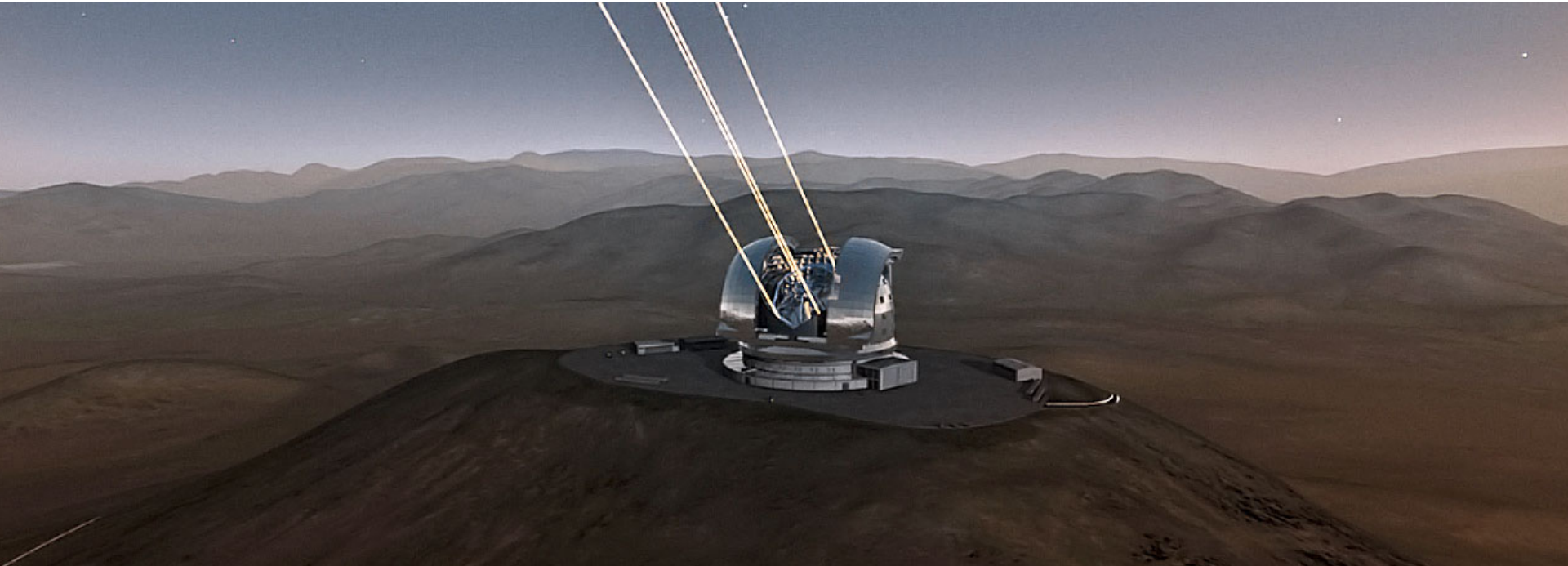
- Atacama Large Millimeter/submillimeter Array
  - 54 x 12m + 12 x 7m antenna's on Chajnantor at 5050m
  - 7 – 0.35 mm (30-900 GHz) in 10^{+} atmospheric windows
  - World's most powerful radio interferometer
  - Cold Universe: formation of planets, stars and galaxies
- Global partnership
  - North America (37.5%), East Asia (25%) & ESO (37.5%)
  - In cooperation with Chile

Antenna Array at 5050m



E-ELT

- Largest optical/infrared telescope in the world
  - 39m segmented primary mirror: transformational step
  - Science: exo-earths, deep universe, resolved populations
  - On Armazones, as integral part of the Paranal system
- Construction on track for first light in 2024



Armazones and Paranal

Long-term strategy for ESO

- Moderate further growth in membership
  - Countries with high-quality scientific communities that are keen to join, bring added value, and government support
- Continue to operate and build world-class facilities
  - Optical, radio and other ‘messengers’
    - CTA has selected Paranal area as site for Southern array
  - Balance multi-purpose telescopes and experiments
  - Can be ‘all-ESO’ or in partnership

CTA and ESO (1)

- CTA Project selected their preferred sites in July
  - Paranal: 99 telescopes of 4-6, 10-12, 24m over 10 km^2
  - La Palma: smaller array
- Selection subject to successful conclusion of negotiations with host, i.e., ESO for CTA-South

CTA and ESO (2)

- Advantages of Paranal site
  - ESO's experience in large RI operation outside Europe
  - Sharing of infrastructure, logistics, administration
  - Staff synergies: construction, maintenance, ops
    - Best achieved with as much standardization as possible
- Several negotiation and technical meetings
  - ESO reviewed CTA Operations Plan
  - ESO hosted CTA Project office on Paranal
  - ESO technical inspection of prototypes
  - Next formal negotiation meeting at end of April
- Mutual willingness to pursue siting on Paranal

Conclusion

- ESO operating CTA-South would provide exciting expansion to the overall programme
  - Opens a new window on the Universe
  - Paranal is the best site in the South
- ESO is well-positioned to help make CTA a reality
  - In the framework of an agreement that establishes CTA-S as a new facility integrated in Paranal Observatory
- This is fully in-line with ESO's mission of building and operating world-class facilities for astronomy and to foster collaboration in astronomy