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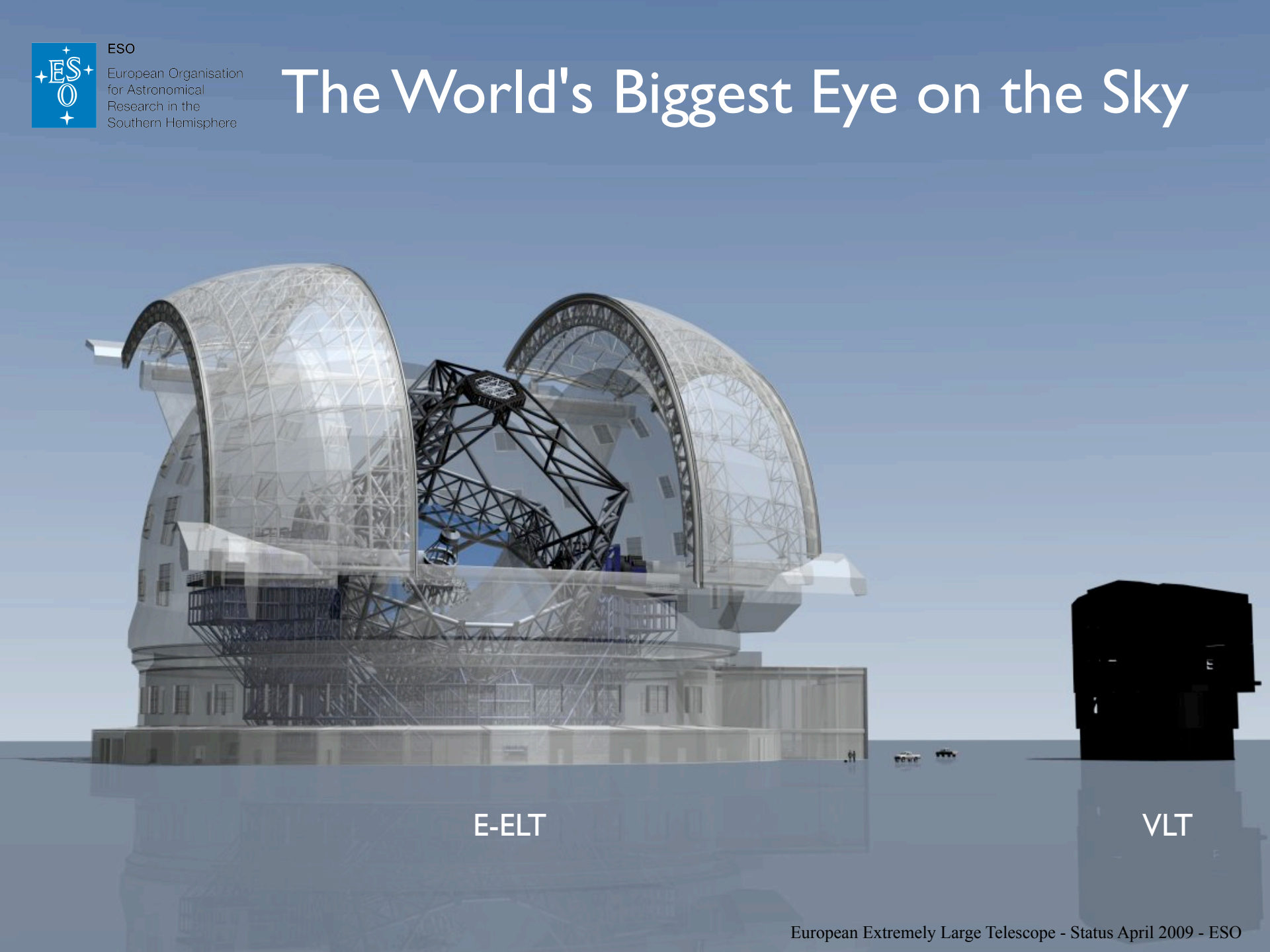
The World's Biggest Eye on the Sky



European Extremely Large Telescope - Status April 2009 - ESO

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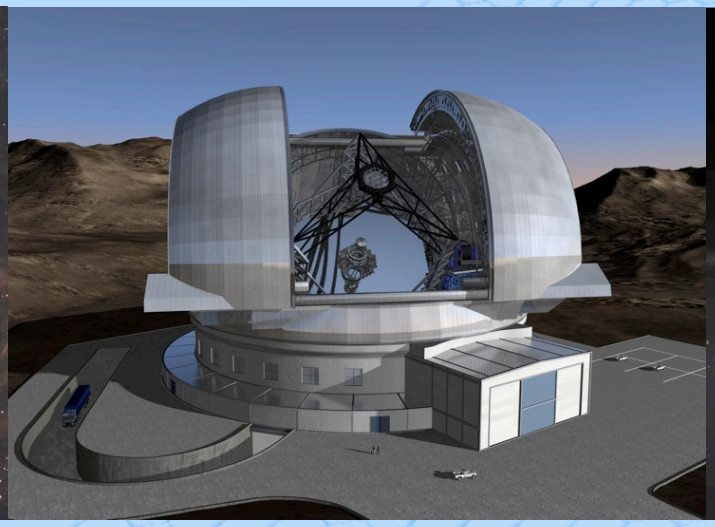
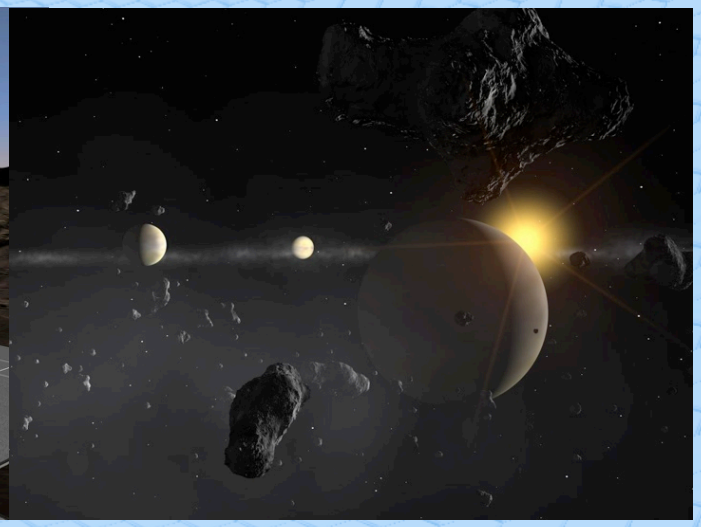
The E-ELT Project

- The E-ELT will be the largest optical-infrared telescope in the World
- The project is in the detailed design phase, with the plan to start construction in 2011, and to have first light 7 years later
- Construction cost: about 1 Billion Euro
- Top priority of European ground-based astronomy

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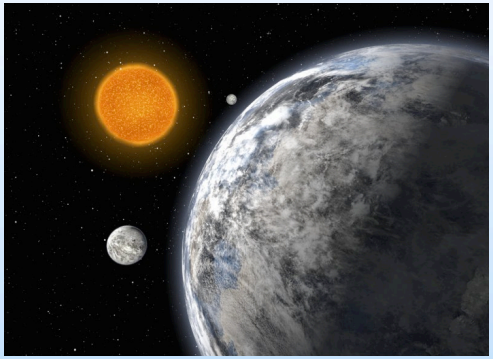
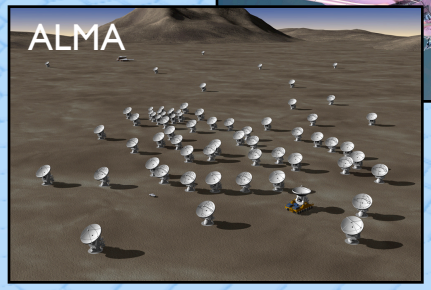
The Science

- Contemporary science: exo-planets, planet formation, resolved stellar populations beyond the Local Group, black holes, the physics of high redshift galaxies, the expansion of the universe, ...

- Synergies with other top facilities: ALMA, JWST, survey telescopes, SKA, ...

- Discoveries: opening new parameter space in spatial resolution and sensitivity, ...





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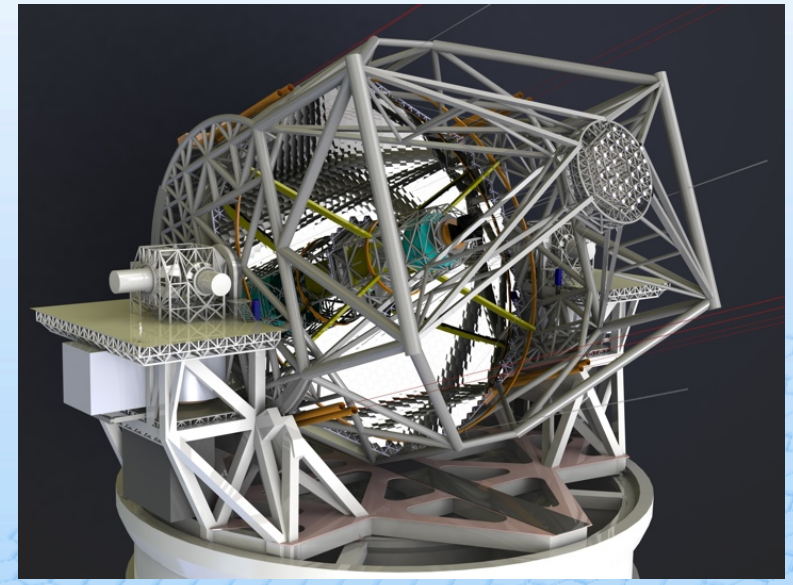
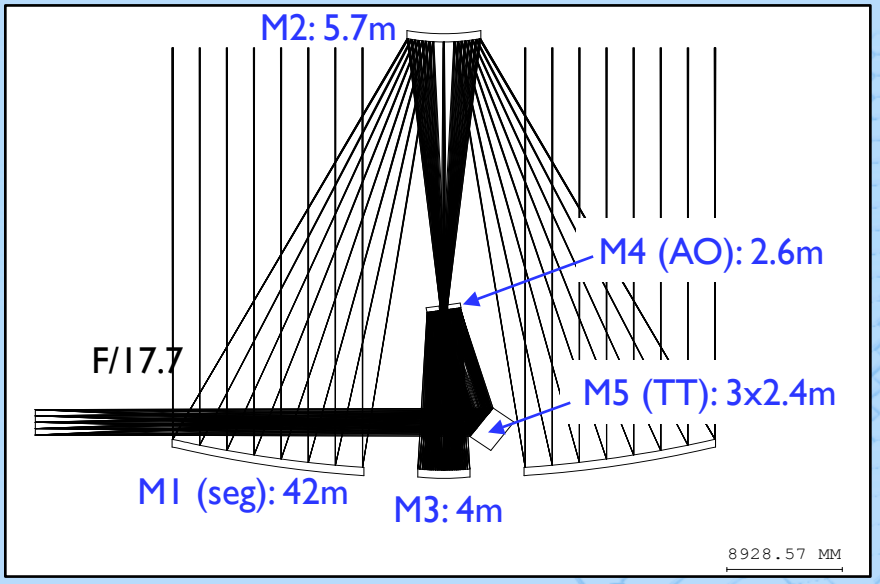
The Telescope

- Nasmyth telescope with a segmented primary mirror of 42 m diameter
- Nearly 5000 tons of structure
- Two instrument platforms of the size of tennis courts
- Six laser guide stars





- Novel 5 mirror design to include adaptive optics in the telescope
- Classical 3-mirror anastigmat + 2 flat fold mirrors [M4,M5]
- Outstanding image quality

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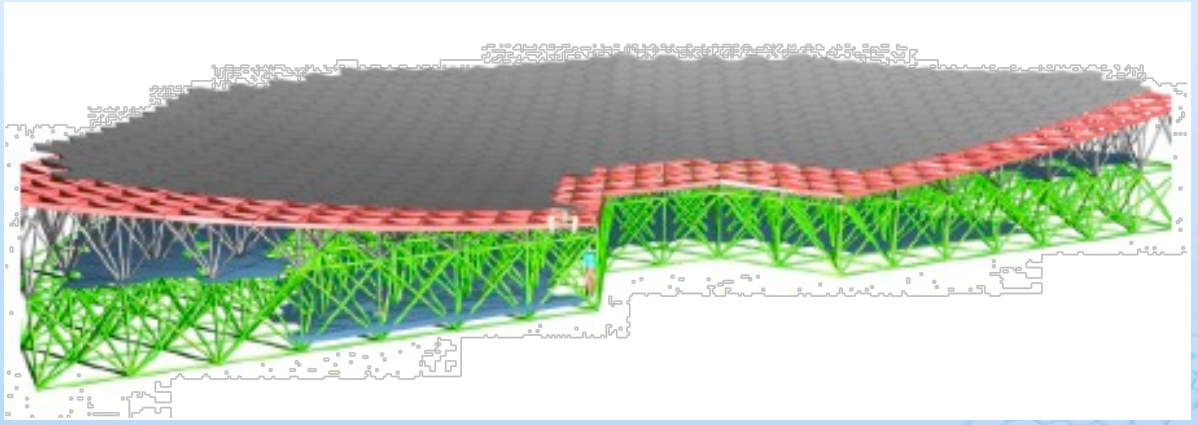
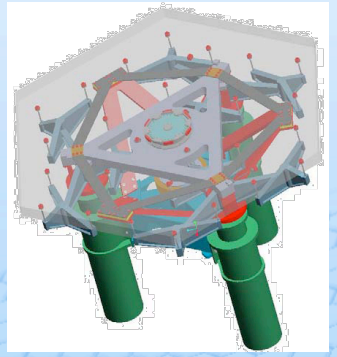
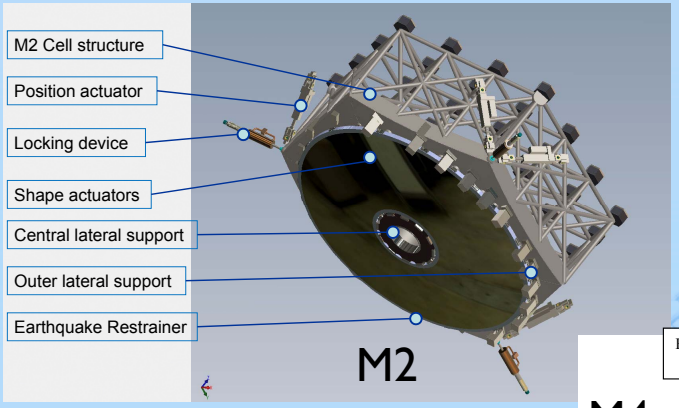
The Mirrors

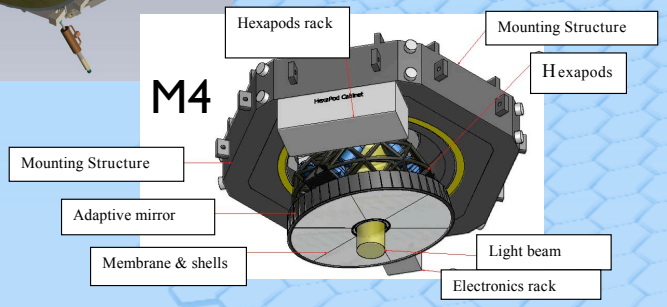
- Primary mirror: 42m ∅, 984 segments of 1.4m, 1200 m^2







- Secondary: 5.6m ∅, 156 axial supports
- Tertiary: 4m ∅, controls f-ratio



- M4: 2.6m ∅ flat, adaptive with 6000-8000 actuators
- M5: 3x2.4m, flat, tip-tilt

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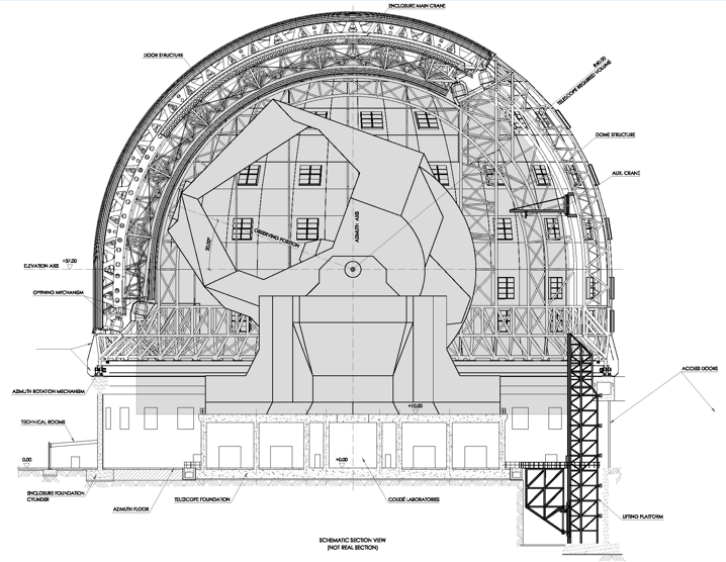
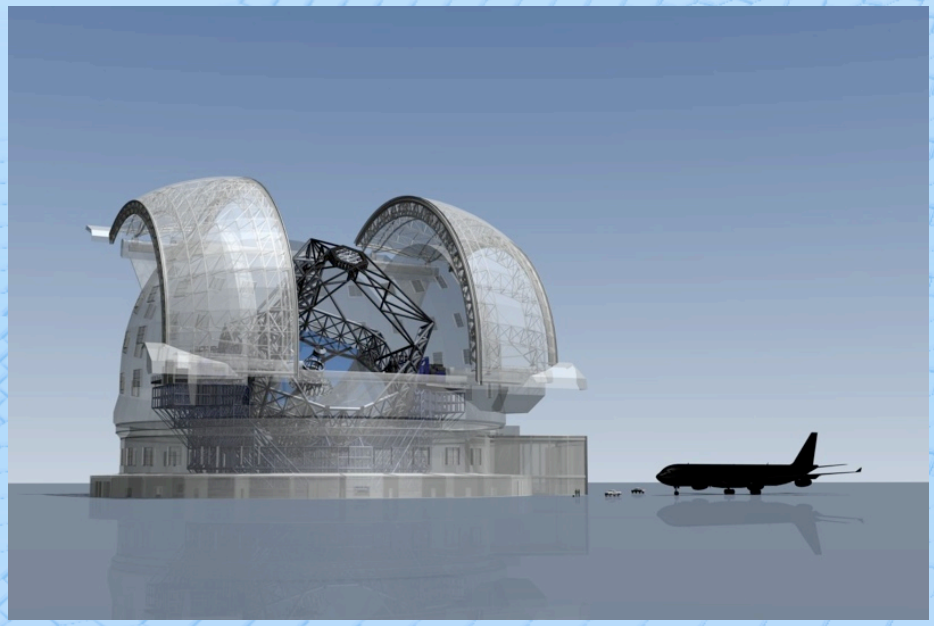
The Dome



- The E-ELT dome: base of 100m diameter, and 80m high
- The size of a football stadium

- Close to 4000 tons of steel
- Fully air-conditioned and wind shielded
- Equipped with several heavy duty cranes and a lifting platform for instruments



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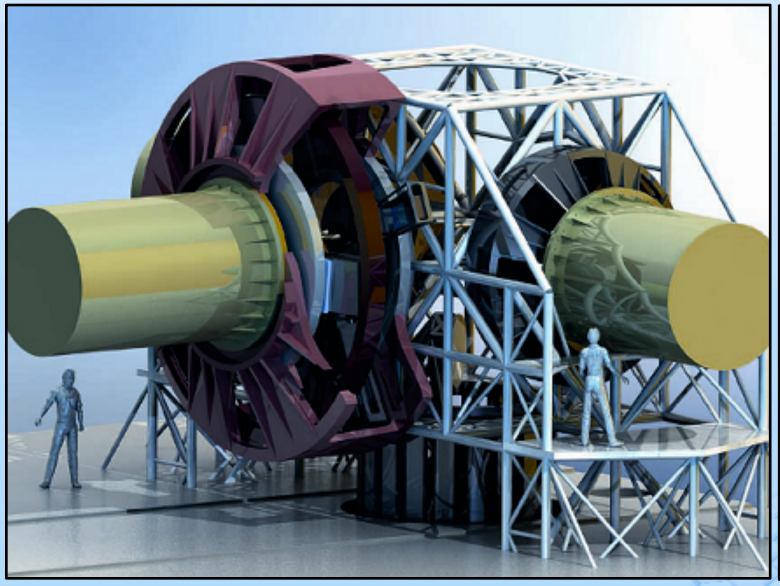
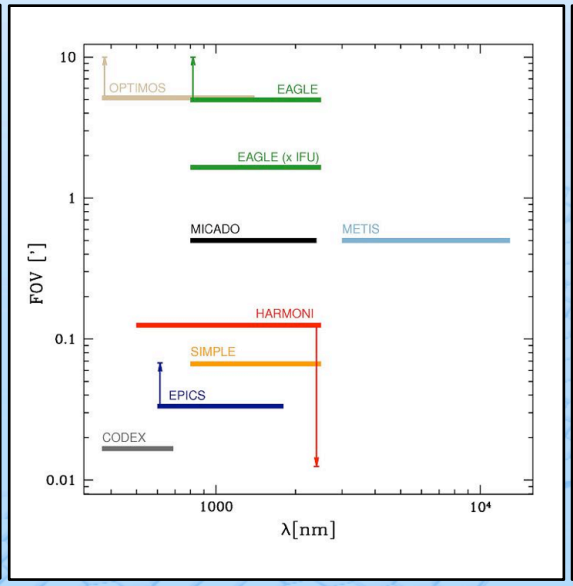
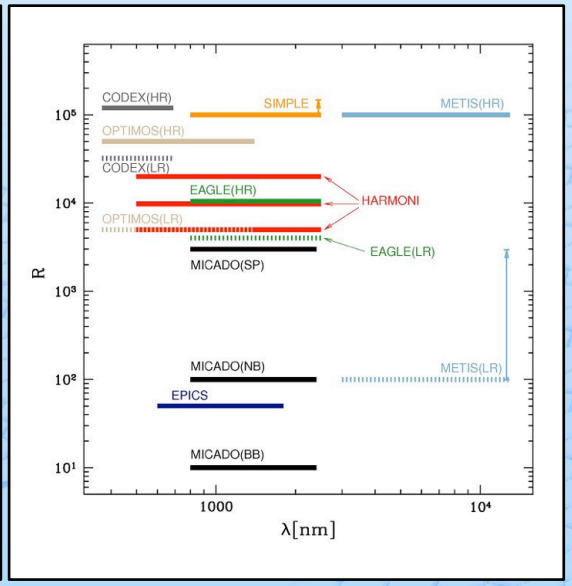
The Instruments

- Telescope can host up to 10 instruments
- Two to three first light instruments are foreseen







- Eight instrument concepts & two post-focal adaptive optics modules are running until end of 2009
- Concepts cover the full parameter space, priorities are being studied

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The Site(s)

- Site decision by end of 2009
- Several sites in Chile, Morocco, the Canary Islands, Argentina, Mexico, ... are being intensively tested
- Selection criteria: impact on science, outstanding atmosphere, but also construction and operations logistics (roads, water, electricity, nearby cities, ...)

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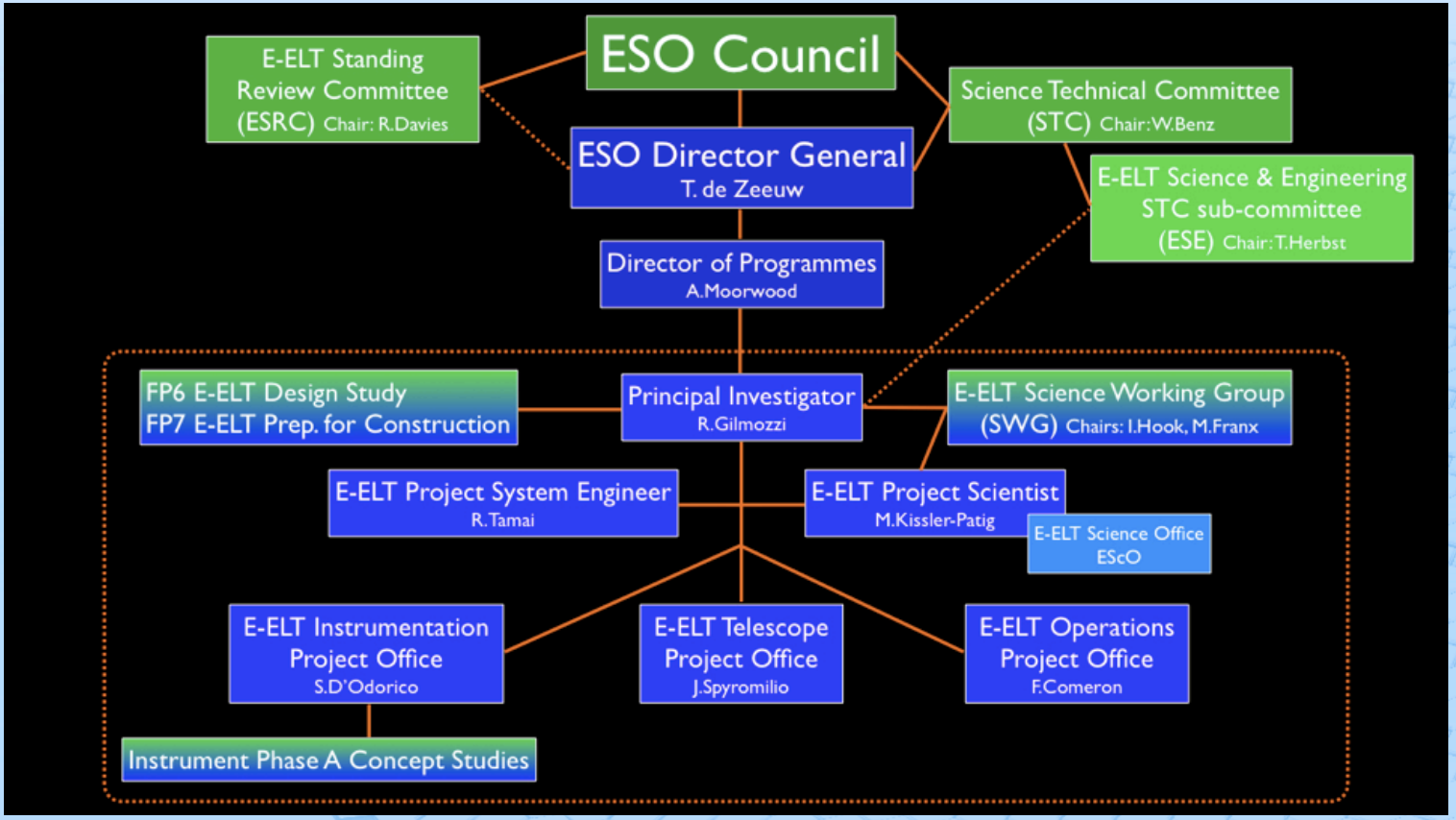
Project Organisation

- Project led by ESO on behalf on its 14 member states
- Strong involvement of member state industries and scientific communities



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More information?

- The public web pages: http://www.eso.org/public/astronomy/projects/e-elt.html
- The science users web pages: http://www.eso.org/sci/facilities/eelt/
- Brochures, Posters, etc: http://www.eso.org/public/outreach/products/publ/brochures/index.html
- Gallery: http://www.eso.org/gallery/v/ESOPIA/EELT
- Watch out for science meetings every year