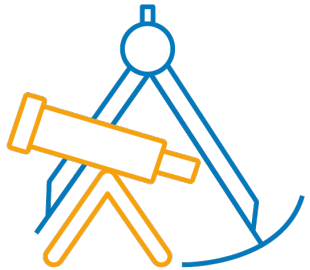
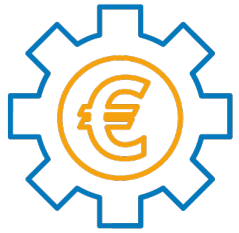
ESO’s impact and sustainability efforts

ESO’s impact areas



Science and engineering



Economy and innovation

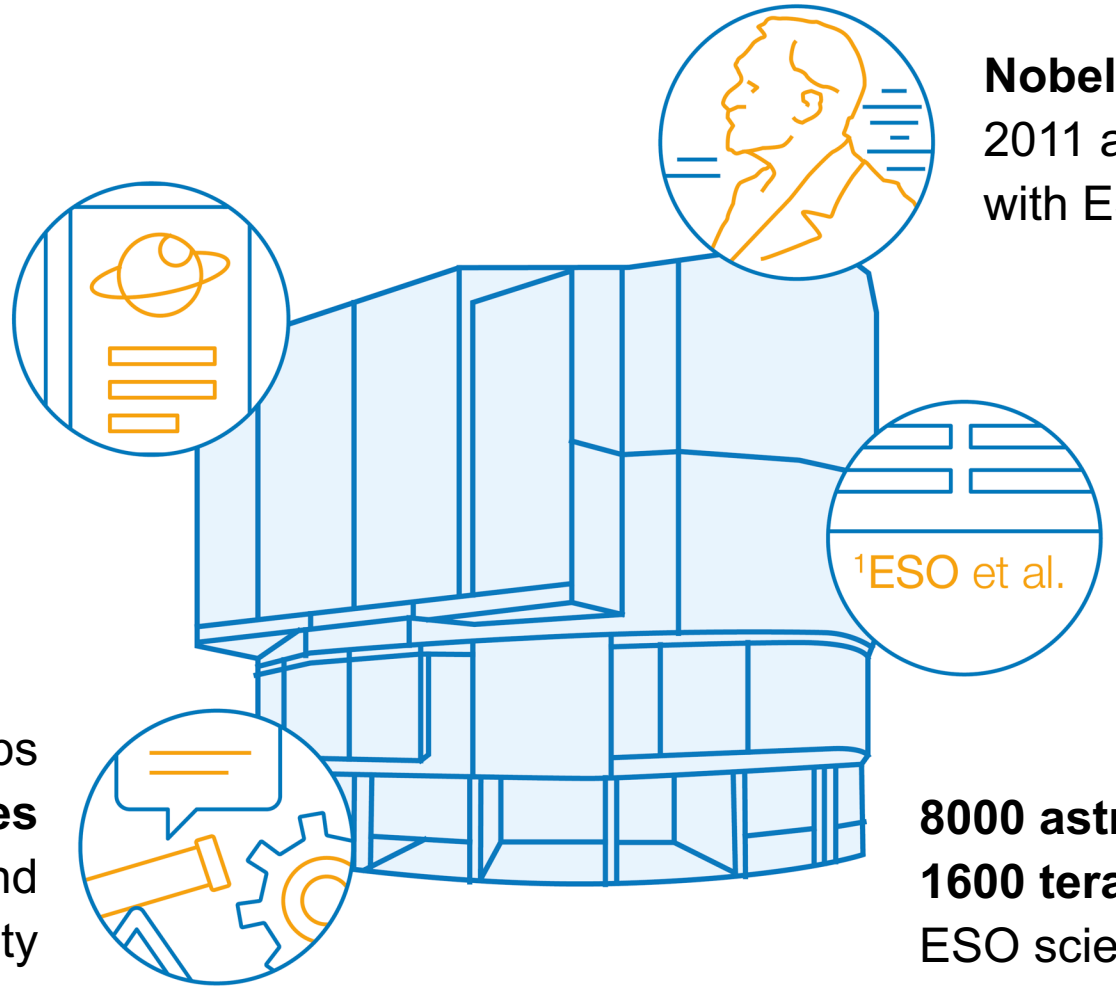
Talent development

Education and outreach

International collaboration and policy

Science and engineering

Over **2500 proposals** each year for the use of ESO telescopes



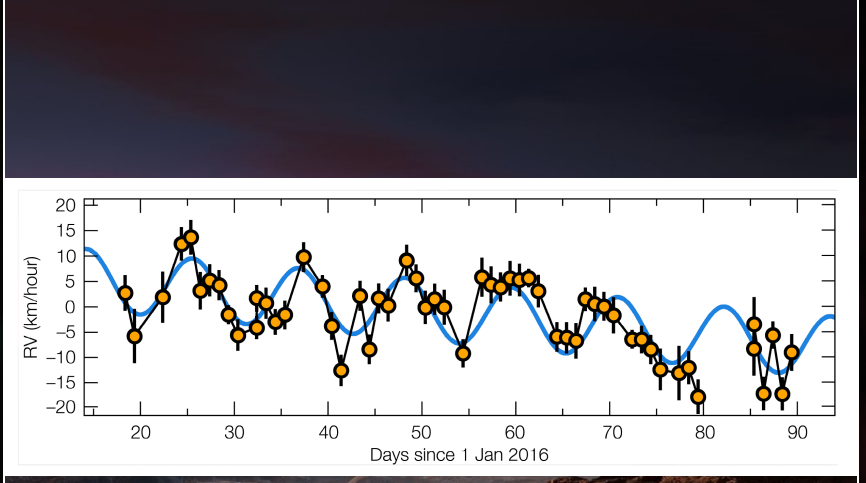
Nobel Prizes in Physics in 2011 and 2020 for research with ESO telescopes

ESO enables **over 1000 referred publications** each year

ESO develops **telescope technologies** and **engineering** and **managerial** capacity

8000 astronomers downloaded **1600 terabytes** of data from the ESO science archive

First image of an exoplanet



Closest exoplanet to us

Planet formation

Credit: ESO/L. Calçada

Credit: EHT Collaboration

First image of a black hole

Credit: ESO/S. Gillessen et al.

Black hole at the centre of the Milky Way

Credit: ESO/L. Calçada

Accelerating Universe

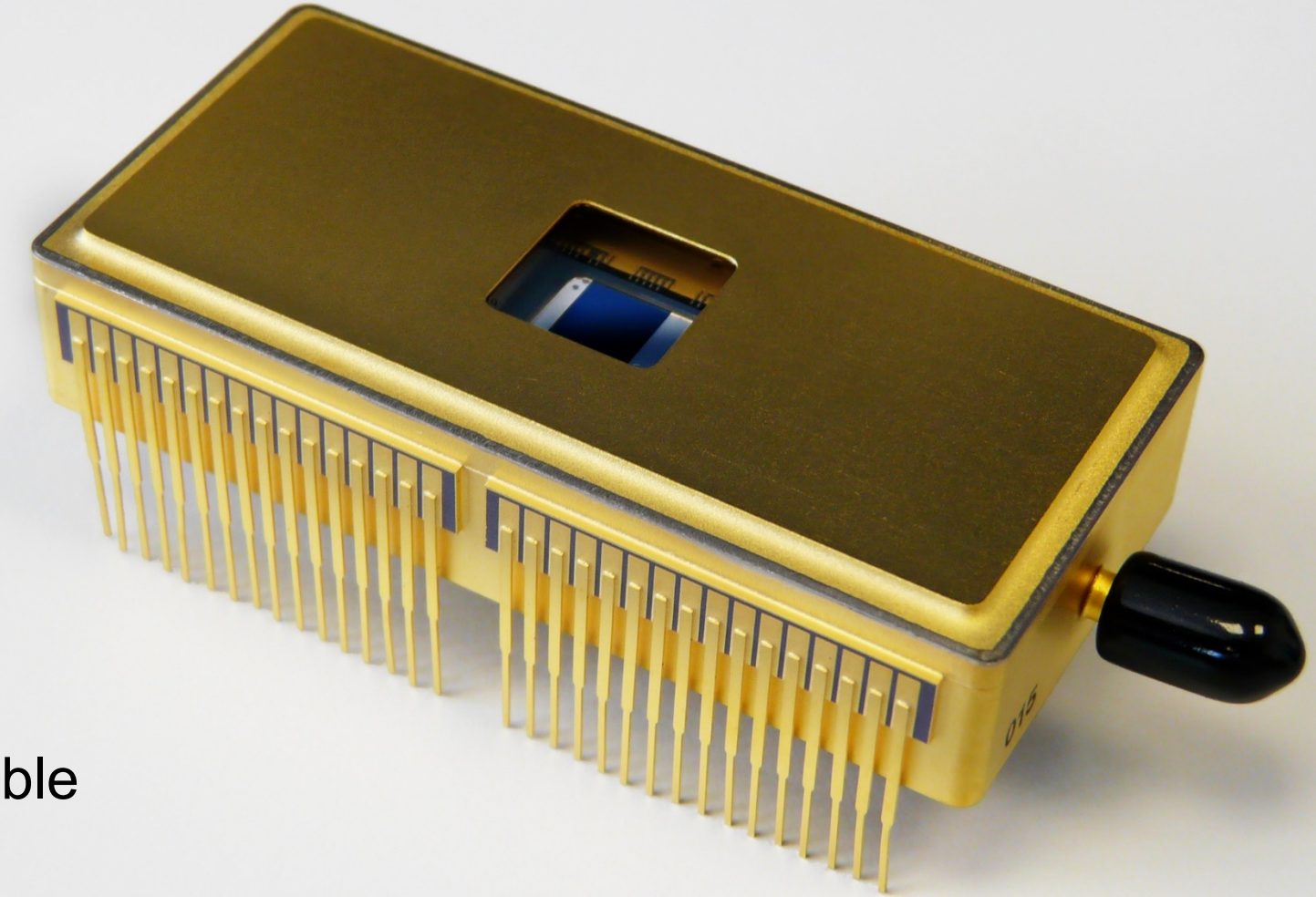
ESO PUBLIC

Technology and innovation at ESO

ESO promotes the emergence **of new technologies and expertise,** leading to new markets, jobs and industrial collaborations

Credit: ESO/L. Calçada

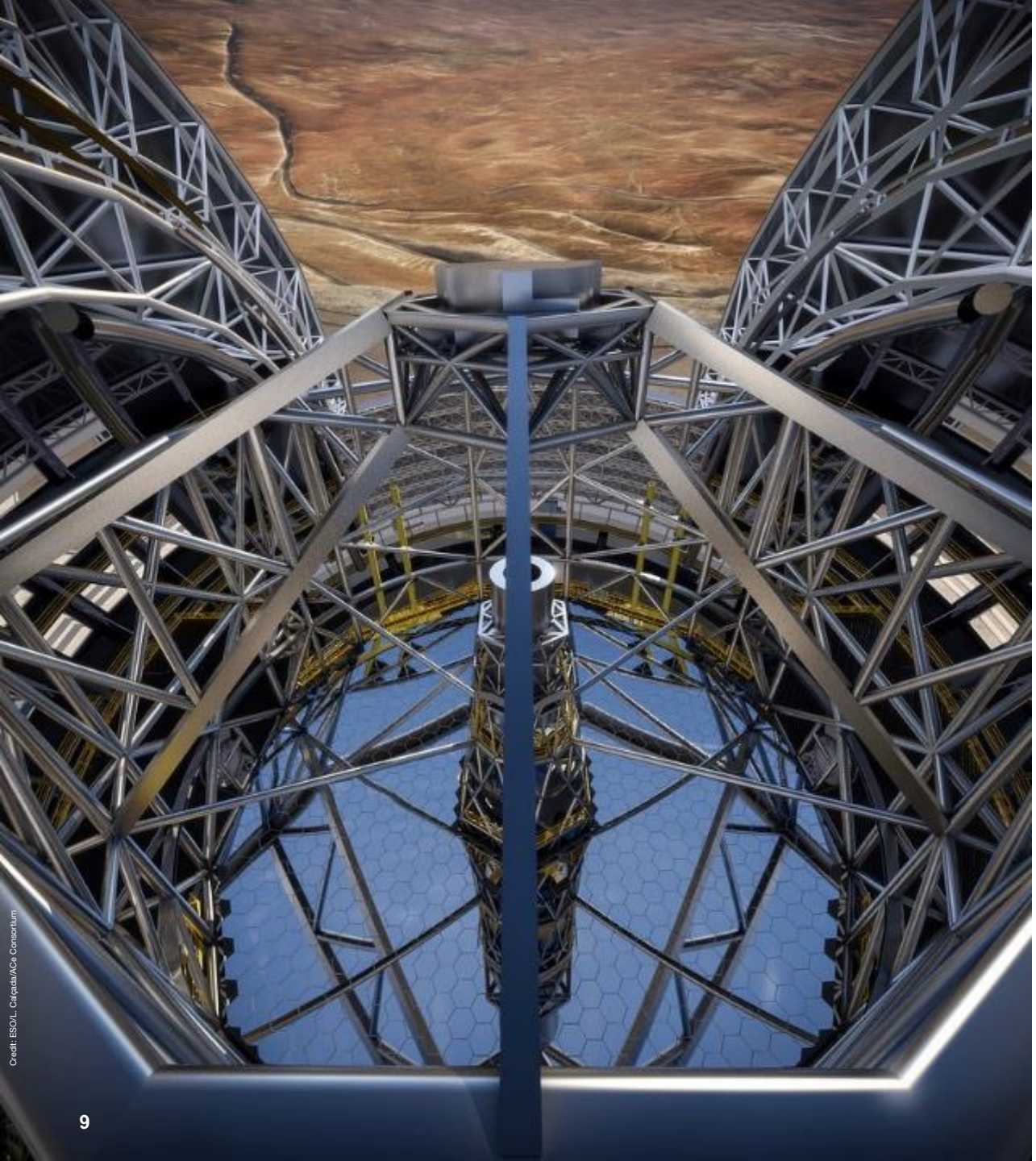
New **high-speed**
and low-noise detectors
for astronomy, also applicable
to life sciences research



Credit: P. Balard/INSU-CNRS/ESO

Novel **high-power lasers** for adaptive optics,
also applicable in space situational awareness
and optical satellite communications

Credit: Roland Bacon/ESO

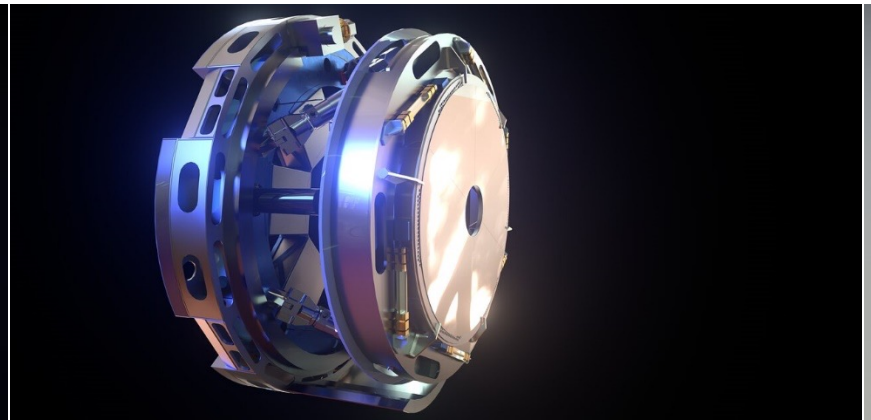


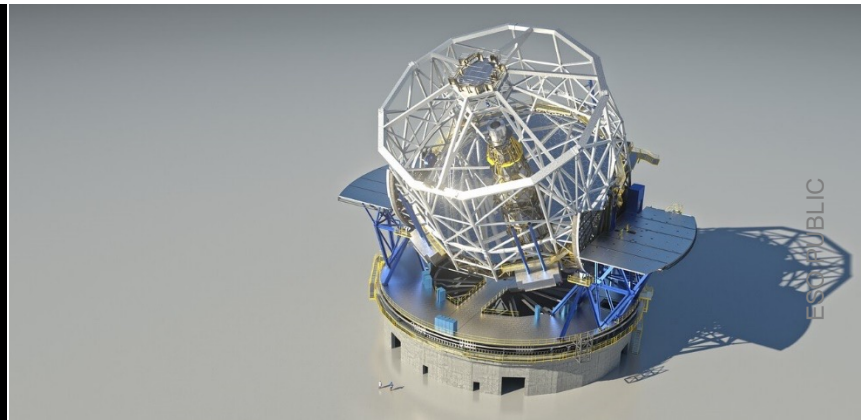
ESO’s ELT technology innovations

ESO’s ELT is pushing the state of the art in technology beyond what was possible before, opening new business markets for industry in the Member States

ESO’s ELT technology innovations

- New large coated silicon-carbide mirrors, with applications to aviation and space missions
- New cooling system for delicate locations inside the telescope that is safer and environmentally friendly
- Novel seismic isolation for superheavy structures, applicable to civil engineering

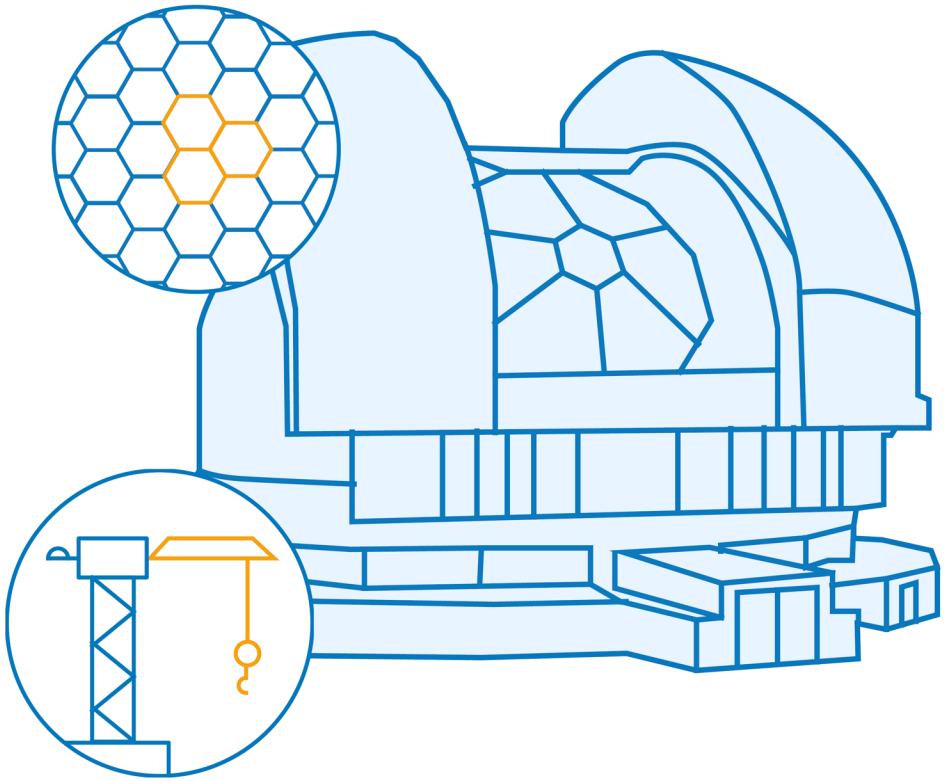




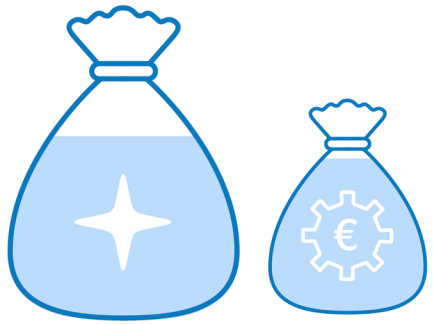
Economy and innovation impact

ESO technologies applied in optics, intercontinental data transfer, medicine, imaging, sensor and detector technology

80% of the € 1.3 billion ELT construction budget is for contracts with industry



60% of the ESO budget is for design and construction of telescopes and instruments



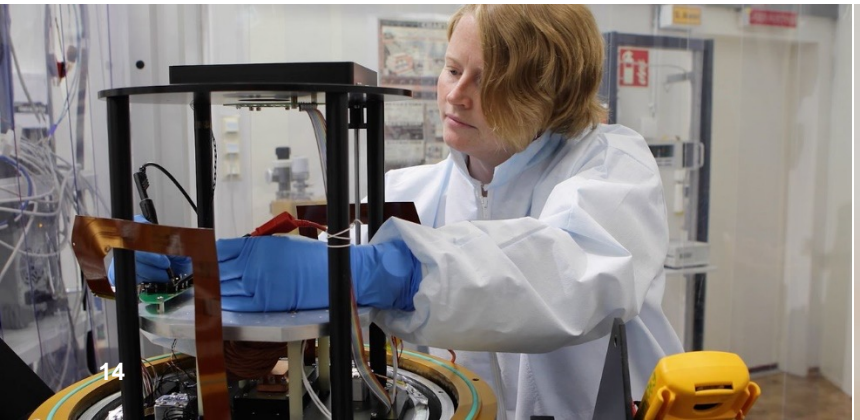
of that, **90%** is used for high-tech innovation led by industry and research in Member States

Talent development

ESO is investing in the **next generations**, offering programmes from undergraduate to post-doctoral level.

Programmes for the next generations

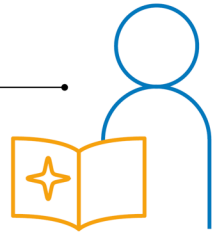
- Competitive studentships and fellowships in astronomy and engineering
- Internships in astronomy, engineering, science communication, science policy and diplomacy, human resources
- Summer research programmes and observing summer schools



Talent development impact

260 students

from more than 40 countries in science and engineering

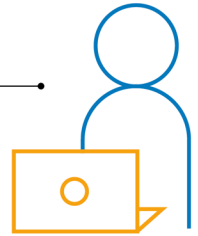


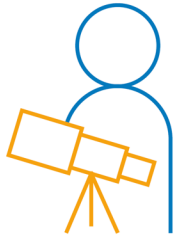
150 postdoctoral fellows

from more than 30 countries

90 interns

in science writing, astronomy, graphic design, engineering, science policy, and administration





800+ ESO alumni

in areas such as astronomy, space exploration, engineering, operations, information technology, education, business development, programme and project management, media & communications

Education and outreach

The ESO Supernova Planetarium & Visitor Centre

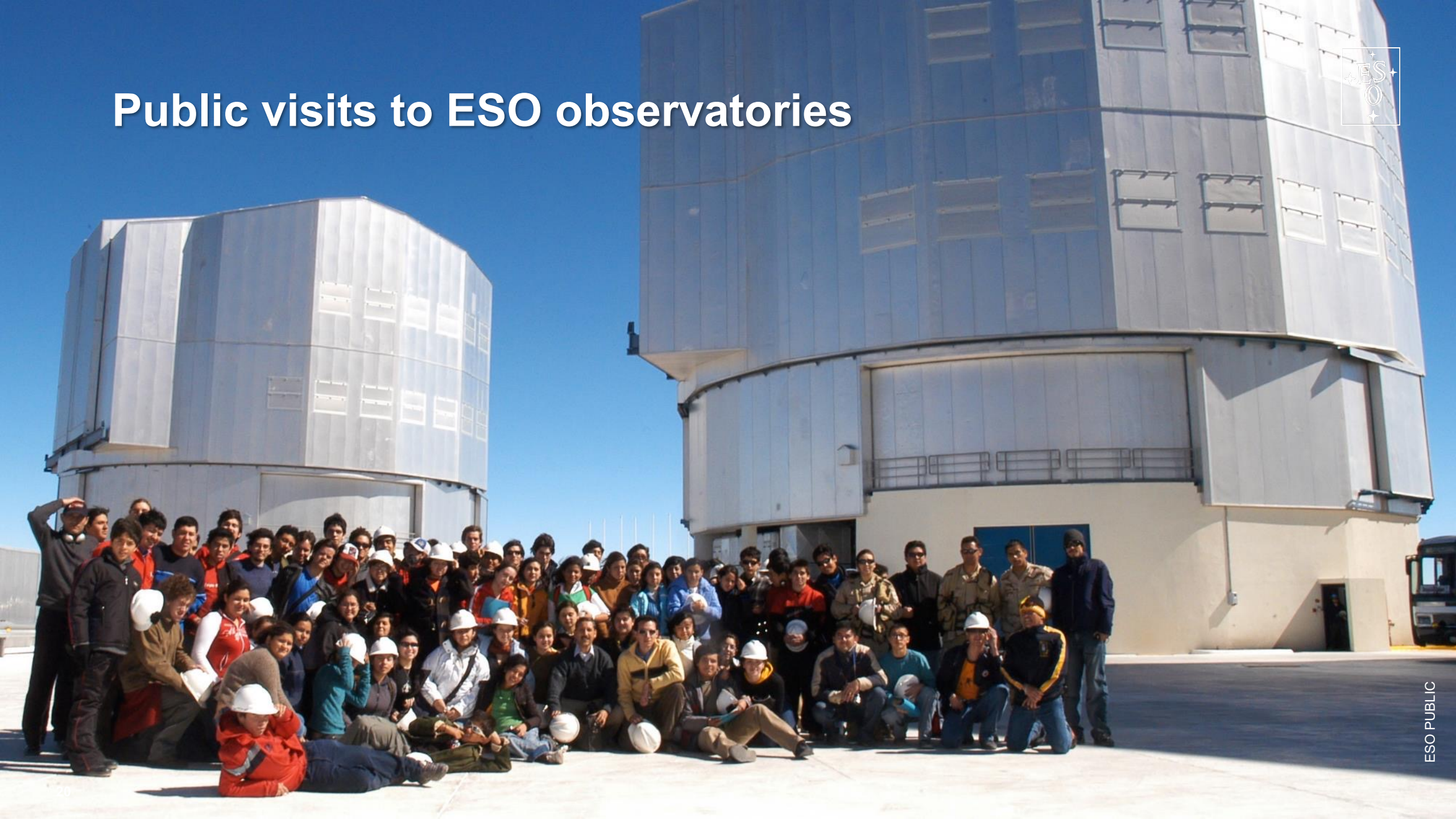
A cutting-edge free astronomy centre **for the public** located at the site of ESO Headquarters in Germany

Credit: Fotos Britux, Sven Rahm Fotografie

The ESO Supernova Planetarium & Visitor Centre

- Interactive exhibition and planetarium
- Educational workshops and materials for teachers and pupils
- Supporting materials for planetariums and science centres worldwide
- 70 000 visitors per year

Public visits to ESO observatories



Credit: ESO/M. Zamani

Reaching out

- ESO News in 12 languages
- Public astronomical outreach images and video archives
- ESO Science Outreach Network
- Events and Exhibitions
- *The Messenger* – ESO's science and technology journal

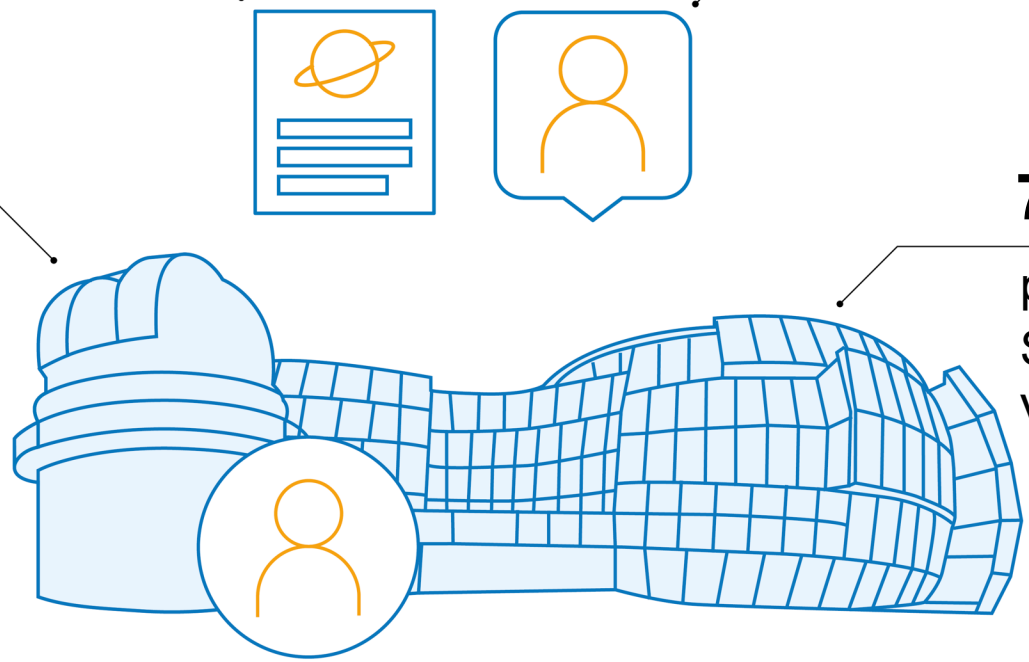
Education and outreach impact

71 press articles

online per day

Half a million

followers on social media



8000 visitors

per year to ESO observatories

70 000 visitors

per year to ESO Supernova Planetarium & Visitor Centre

International collaboration and policy

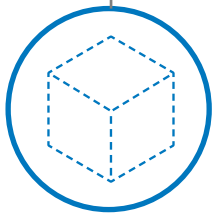
ESO: collaborations for peace

ESO represents a model for **peaceful scientific cooperation** between nations as one of the first intergovernmental scientific organisations

Credit: A. Ghizzi Panizza/ESO

ESO’s policy contributions

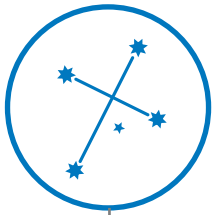
Open data and standards in astronomy



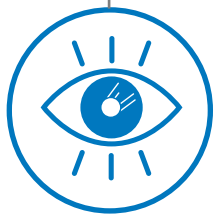
Ethical review processes in science

United Nations Committee on the Peaceful Uses of Outer Space

Impact of satellite mega-constellations



Safeguarding the dark sky



Protecting Earth from asteroids

EIROForum

Protecting the dark and quiet sky

- Study the effects of new satellite constellations
- Petition for the protection of our dark and radio-quiet sky at the UN
- Contribute to the IAU Centre for the Protection of the Dark and Quiet Sky from Satellite Constellation Interference
- Fund regional and national initiatives in Chile on increasing light pollution awareness

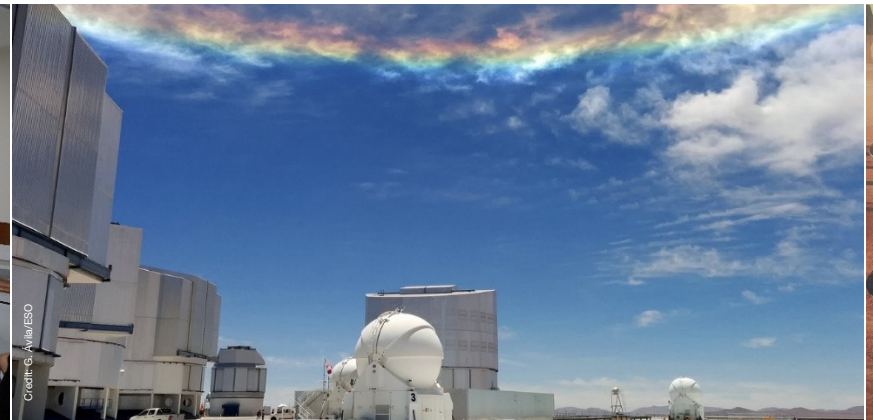
Sustainability

For ESO, a sustainable future addresses **environmental, societal and economic** concerns

Diversity, equity and inclusion

Increase diversity, equity and inclusion

- Increase the percentage of women in technical, engineering, and decision-making positions
- Scale-up efforts to support other diversity dimensions (people with disabilities, LGBTQ+, ethnicity, etc.)
- Develop leadership training and mentoring programmes for under-represented groups
- Create a welcoming and psychologically safe environment, and enable staff to work more effectively and safely through advanced work-life balance policies



Reducing our carbon footprint

ESO is taking immediate action to reduce its carbon footprint, while also changing its operations for long-term impact

Reducing our carbon footprint

- Power La Silla and Paranal observatories by renewable energy
- Heat and cool the ESO Headquarters extension building through concrete core activation
- Reduce business travel by air, instead opting for virtual meetings wherever possible
- Divest from air shipping, preferring sea freight over air
- Integrate sustainability into the design phase of new projects and procurement
- Monitor our emissions regularly and update our plans accordingly