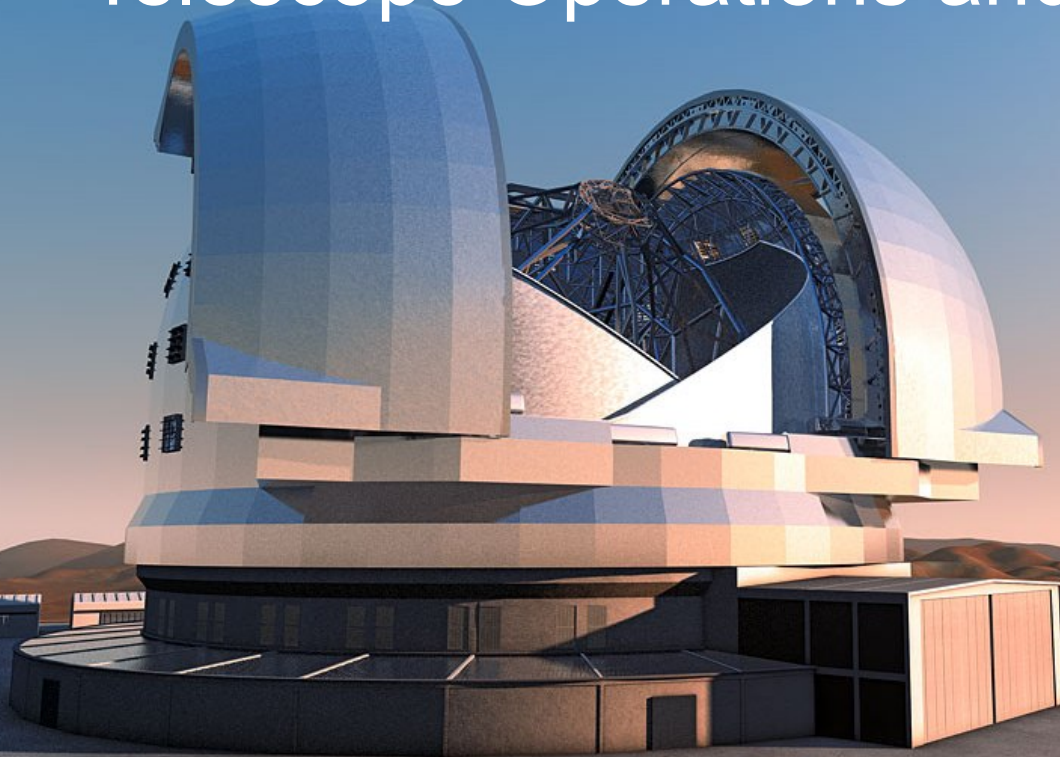


Telescope Operations and Environment



Andreas Kaufer, Director of Operations, ESO

ESO Sites

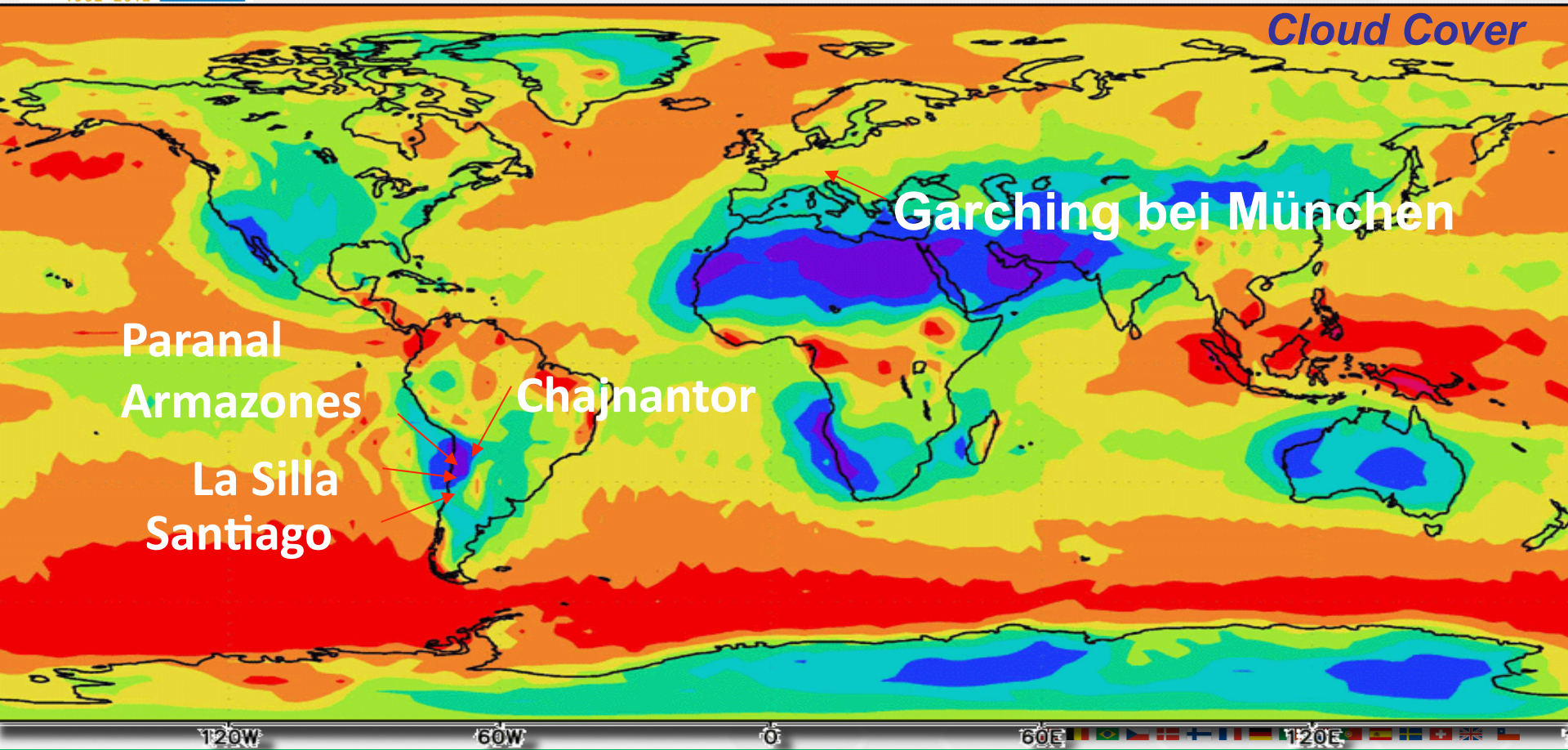
**Paranal
Armazones**

**La Silla
Santiago**

Chajnantor

Garching bei München

ESO Sites



Armazones and Paranal



Armazones and Paranal

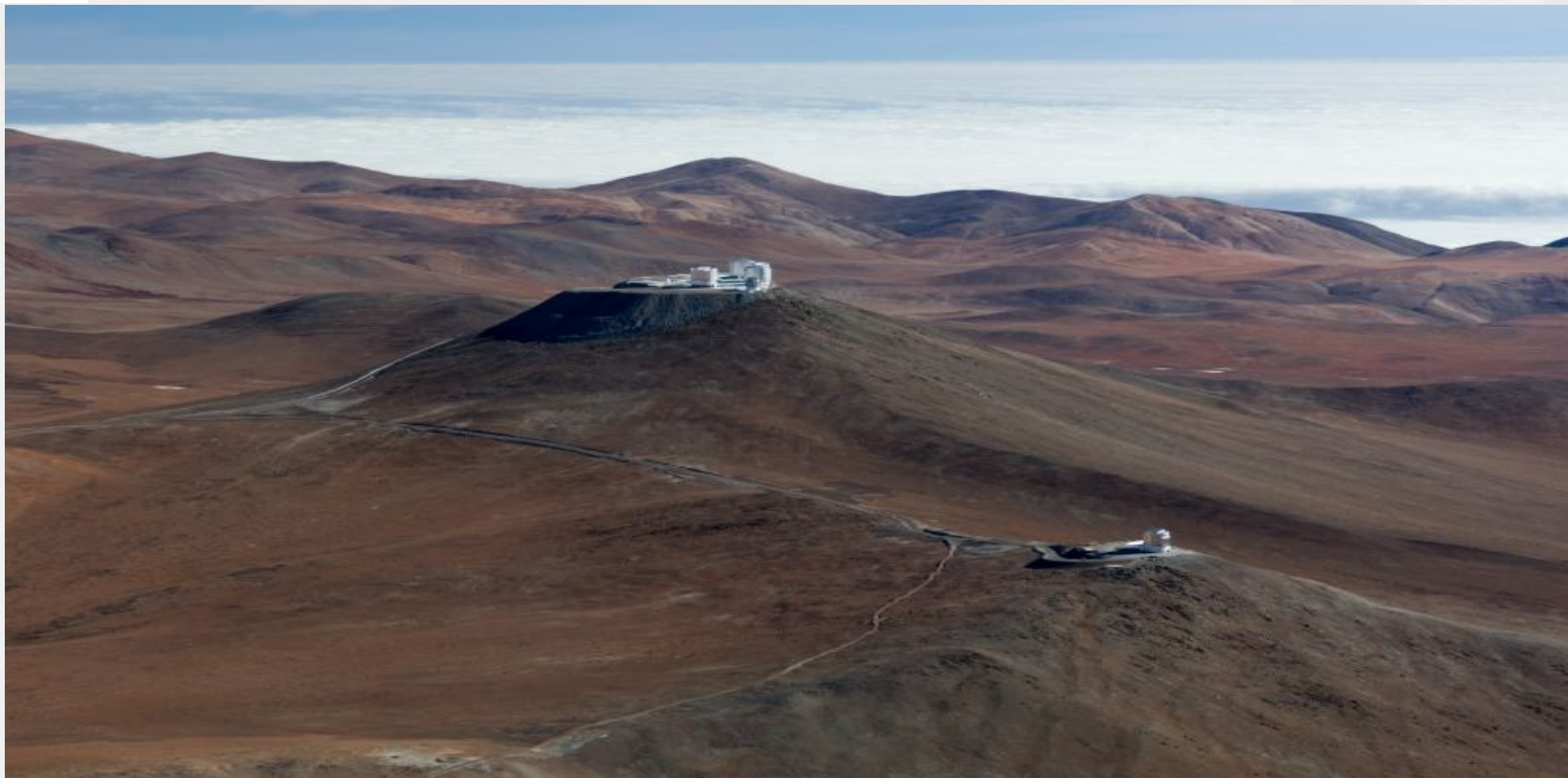


Paranal Construction



ESO PR PHOTO 36/00 (20 DECEMBER 2000)

Paranal Telescope Area



Paranal Basecamp



Paranal Very Large Telescope

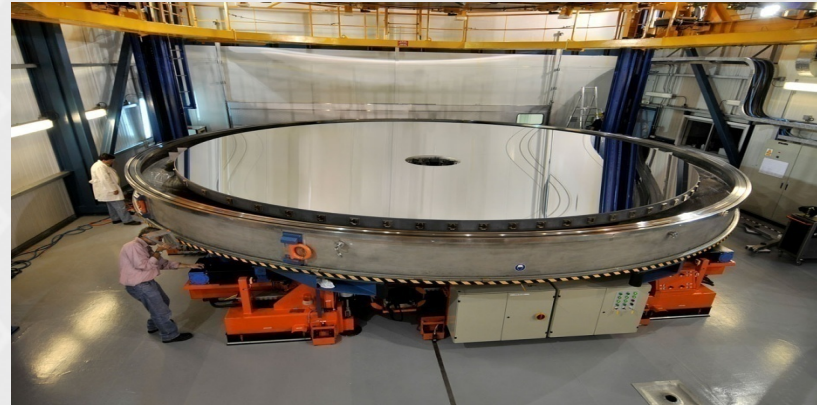


Telescope Platform (2640m alt.)

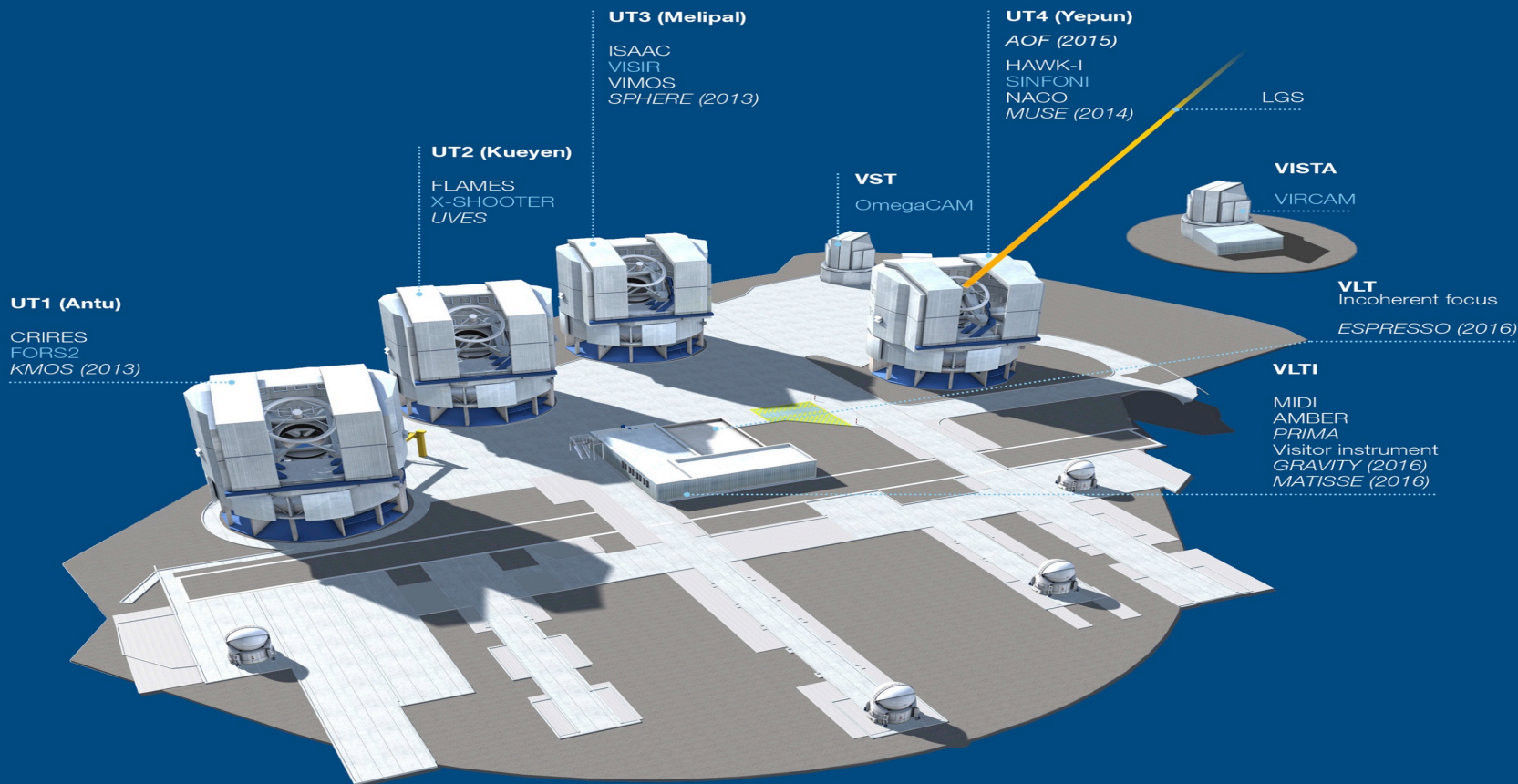




4 x 8.2m Unit Telescopes

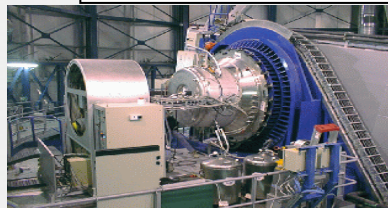


Integrated System

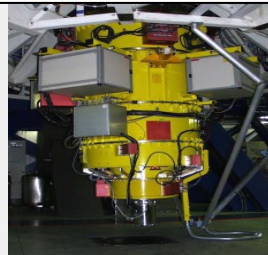


Integrated System

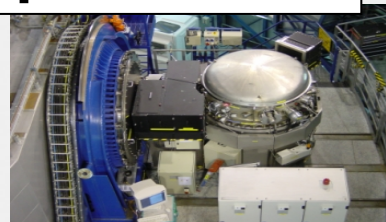
13 Instruments in Operation



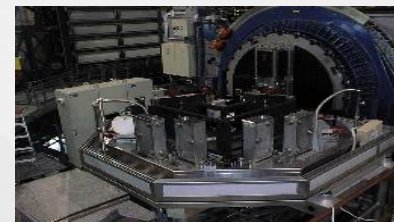
ISAAC



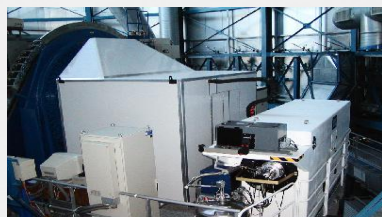
FORS



CRIRCS



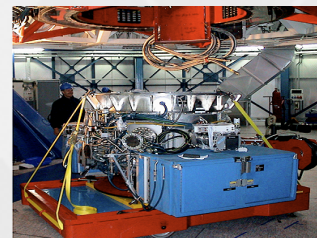
UVES



FLAMES



VIMOS



VISIR



SINFONI



NACO



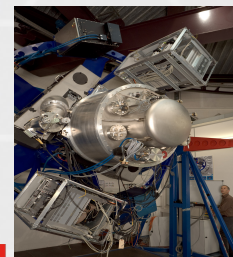
HAWKI
14



MIDI

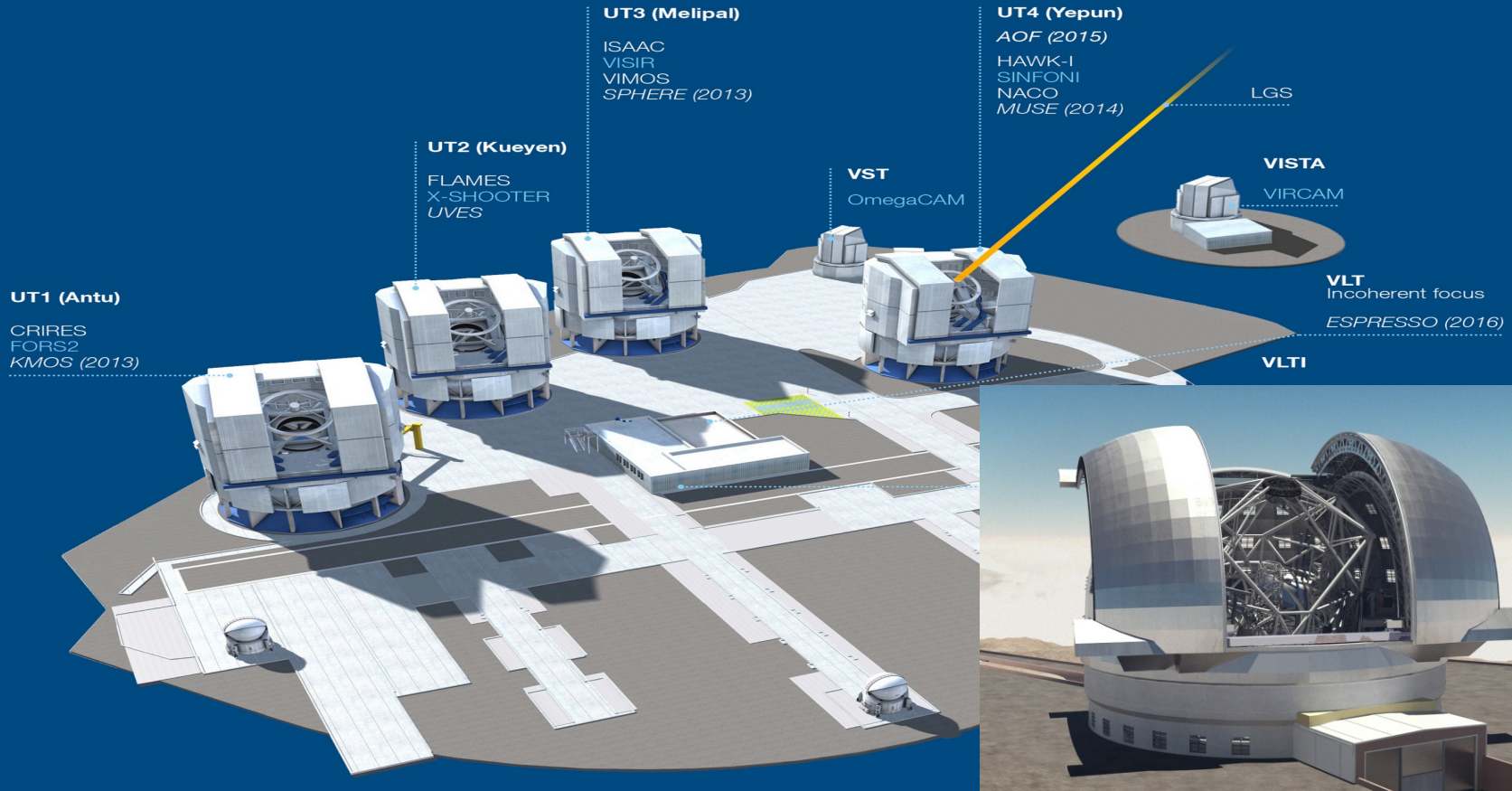


AMBER

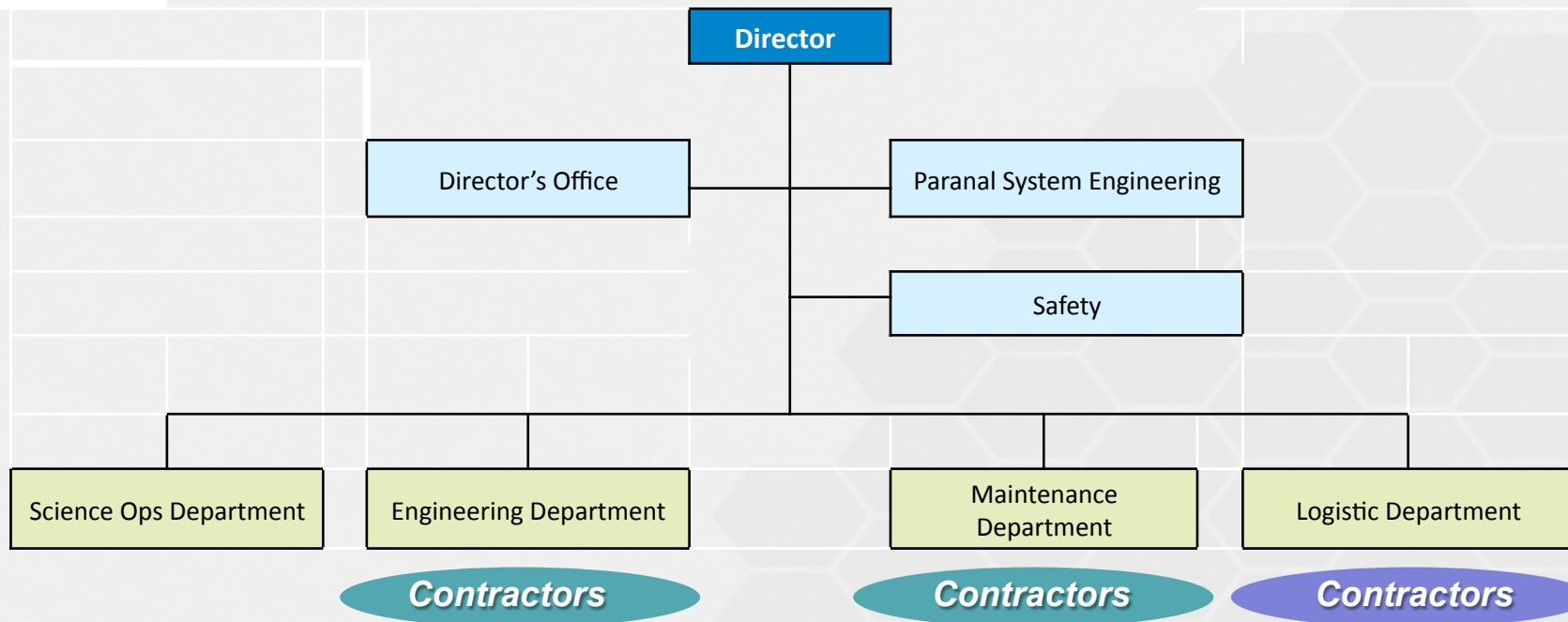


XSHOOTER

Integrated System (w/ EELT)



Paranal Site Operations



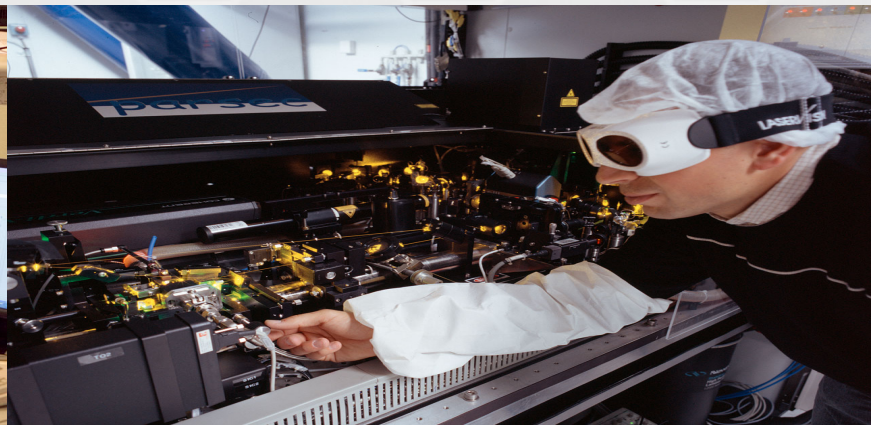
Availability: 365 days+nights / year

Technical Downtime: <3%

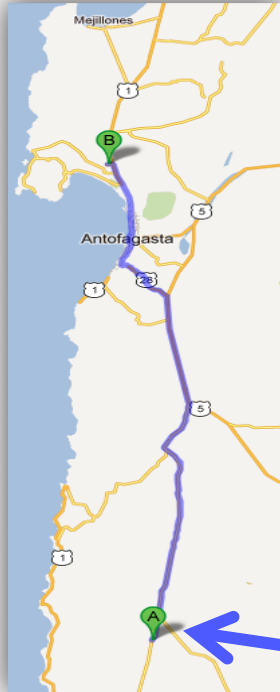
Cost: 24 MEur / year

Paranal Site Operations

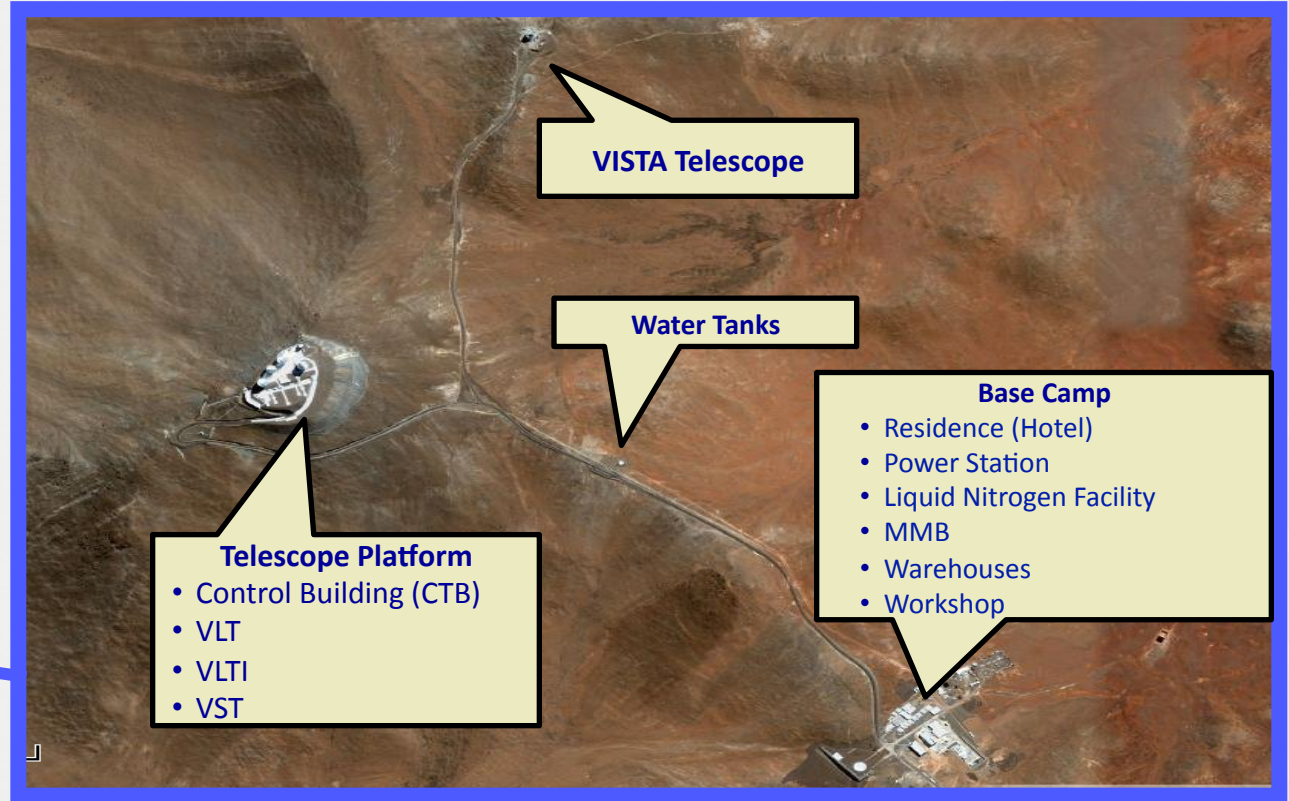
- Paranal is maintained and operated today by ~180 ESO staff members:
 - 25 scientists (international staff members)
 - 20 engineers (international staff members)
 - 135 operators, engineers and technicians (local staff members)



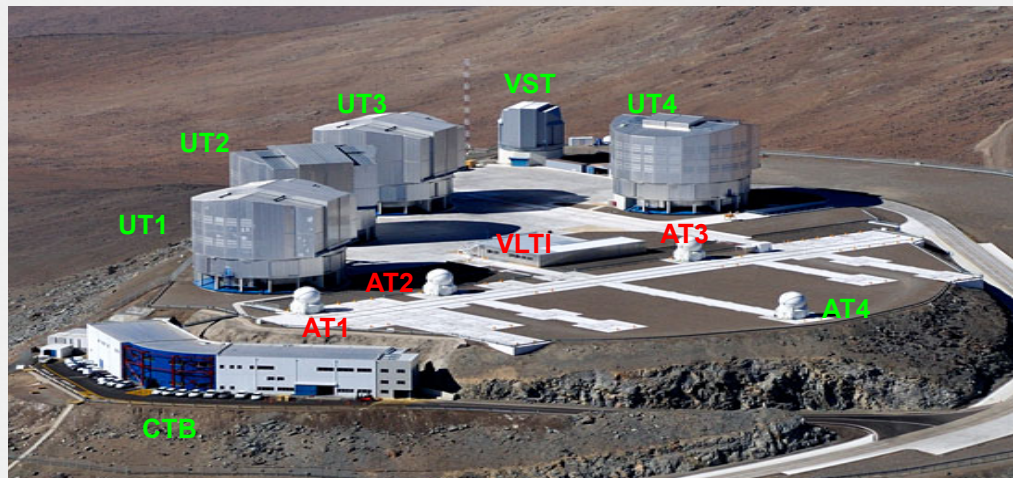
Paranal Site Operations



~150 km



Paranal Site Operations



Site Operations: Residence

- Capacity:
120 rooms



Site Operations: Logistics

■ Monthly Services

➤ Travel Coordination & Reception	530 Trips
➤ Taxis Santiago	520 OW rides
➤ Air Tickets	305 roundtrips
➤ Ground Transport	510 RT seats
➤ Lodging	4630 ON Stays
➤ Board	9450 Meals
➤ Water Supply	80 Trucks 40m ³
➤ LPG Supply	500.000 Liters
➤ Building & Site Maintenance	
➤ Vehicles Maintenance	80 Cars
➤ Security	

Site Operations: Logistics

■ Monthly Services



S
OS
S
/S

40m³

Site Operations: Power Generation

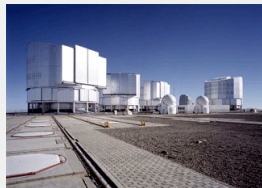
■ Multifuel Turbine

- 6 Million liters LPG/year
- Average production: 1.15 MW (10 GWh/year)



Site Operations: Strategy

■ Maintenance & Engineering



Support Science Ops
under ESO standards

Keep PAO at the forefront
of astronomical research

- ✓ Availability & Reliability.
- ✓ Certification & Warranty.
- ✓ Quick response.
- ✓ Rationalization.

- ✓ Projects

Shared Effort
Maint Dept & Eng Dept
+
Rational Outsourcing

Site Operations: Strategy

■ Maintenance & Engineering

• **ESO Staff** : 'Core Business' ...

- ✓ Maintenance: Telescope Systems, Instruments, critical equipment.
- ✓ Critical Technical Operations: Coating, Instrument Calibrations, etc.

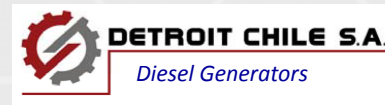


• **Contractors**: 'Maintenance Partner' → Contract + SOW + SLA

- ✓ Execution of WP in non critical/low complexity levels: Telescopes, Facilities.
- ✓ Technical Support: Tech-ops; Eng Projects, PAO Projects.



• **OEM* Tech Rep** : 'Commercial Equipment (COTS)' → specialization, warranty, rationalization of resources



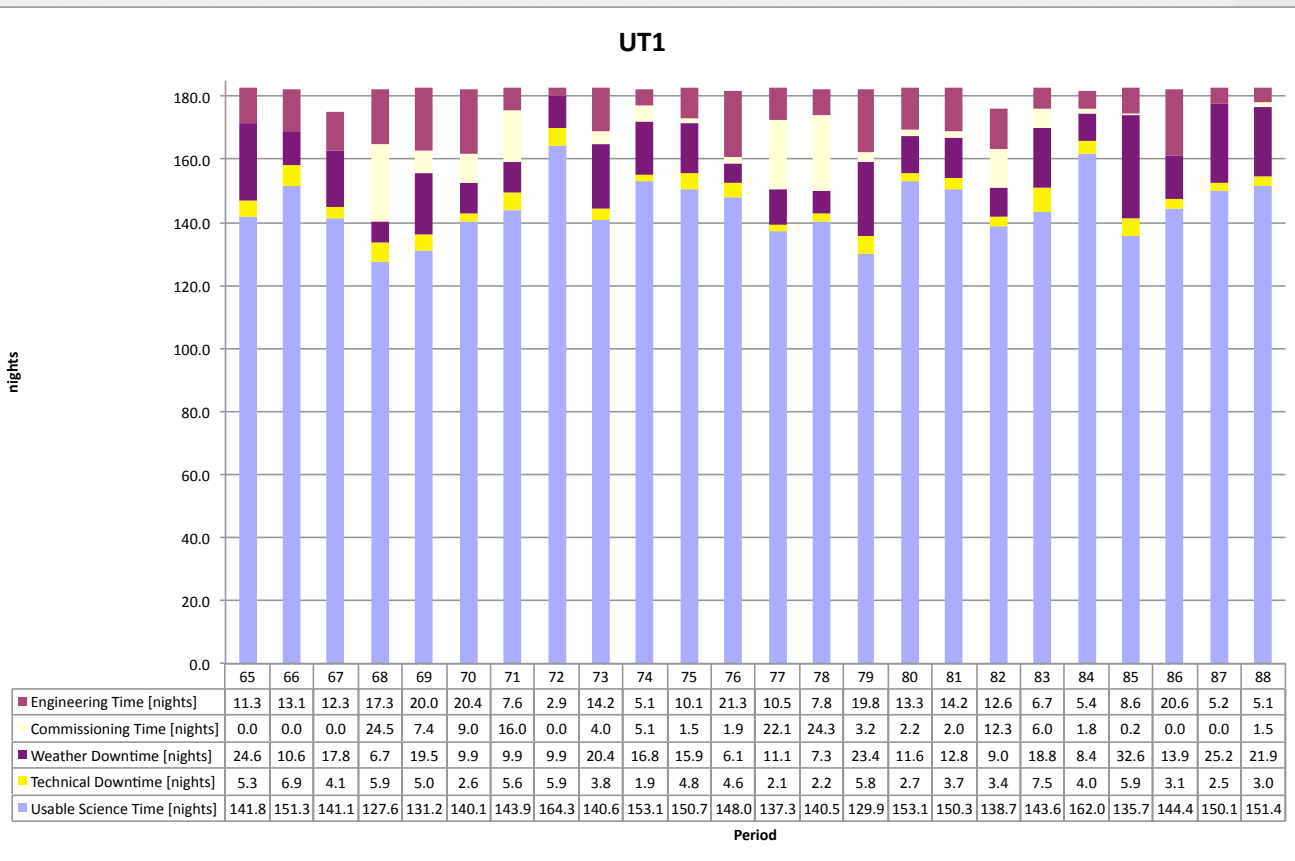
*: OEM : Original Equipment Manufacturer

Mix

Site Operations: Planning



Site Operations: Performance



Operations: Science Statistics

