

European Forum of Astronomical Communities in the New Member States

The ESO perspective



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Mission

- ◇ Develop + operate world-class observing facilities for astronomical research
- ◇ Organise collaborations in astronomy

1962

- ◇ ESO created by five Member States: BE, FR, DE, SE, NL
- ◇ Goal: build a large telescope in southern hemisphere
 - ◇ This became the 3.6-m telescope on Cerro La Silla (1976)

2017

- ◇ 15+1 ESO Member States (~30% of world's astronomers), may increase further
- ◇ VLT on Paranal is world-class ground-based system
- ◇ APEX (in partnership)
- ◇ ALMA (in partnership) on Chajnantor heading towards full operations
- ◇ Construction of 39-m ELT on Armazones has started
- ◇ Cherenkov Telescope Array South: ready to sign hosting agreement





VISTA

4 UTs

4 ATs

VST

Observing proposals

- ◇ ~900 proposals every six months
- ◇ Oversubscription factor ~3+
- ◇ Time allocated on basis of scientific merit

Survey telescopes



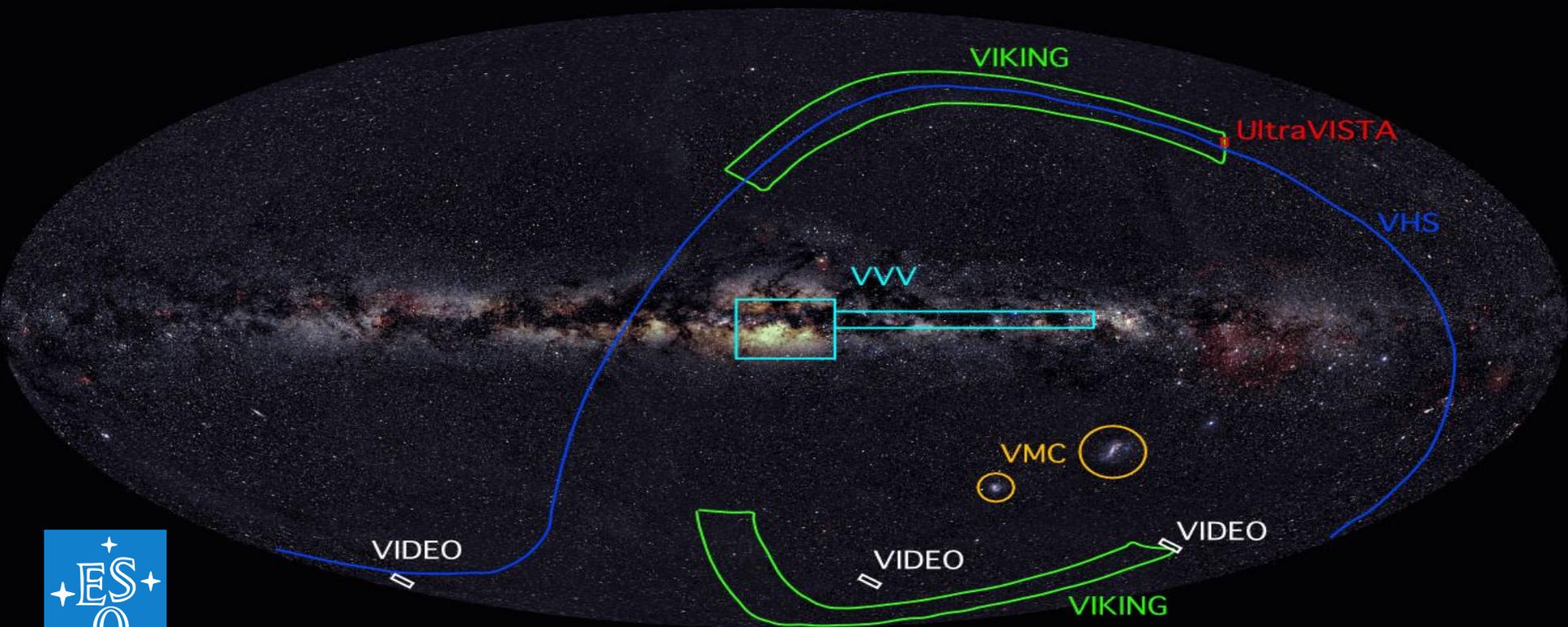
VISTA 4.1m for infrared
VIRCAM, 8k x 8k, FOV 1.6



VST 2.6m for optical
OmegaCAM, 16k x 16k, FOV 1.0

Existing VISTA Public Surveys – began 2010 April

VISTA PS



New VISTA Public Surveys – began 2017

Survey name P.I.	Short Title	Filters	Time (hrs)	Area (deg ²)
GW; Tanvir	Kilonova counterparts to Gravitational wave sources	Y J Ks	420	(10)
UltraVISTA; Dunlop	Completing the legacy of UltraVISTA	J H Ks	756	0.75
VVVX; Minniti	Extending VVV to higher Gal lat.	J H Ks	1900	1700
VEILS; Banerji	VISTA Extragalactic Infrared Survey	J Ks	1180	12
CAV; Nonino	Clusters at VIRCAM	Y J Ks	560	72
VISIONS; Alves	VISTA star formation atlas	J H Ks	553	70.5
SHARKS; Oteo	Southern Herschel-Atlas Regions K-band survey	Ks	1200	300



- Second cycle of VISTA surveys; ESO Call in 2015
- 13 LoI submitted by community, oversubscription >2x
- 7 proposals selected by PSP, approved by OPC, then by DG



ALMA

50 x 12m antennas

Frequency range 30-1000 GHz (0.3-10mm)

16 km max baseline (<10 mas)

ALMA Compact Array (4 x 12m and 12 x 7m)



Largest optical/infrared telescope in the world

- 39-m segmented primary mirror: transformational step
- On Armazones, as integral part of the Paranal system

Construction on-track for first light in 2024

- Maximises synergy with JWST et al.

Telescope time

- Applications for telescope time (VLT, 3.6m, NTT, APEX...) can come from outwith ESO Member States
 - ❖ time is awarded on basis of scientific merit
 - ❖ proposals from outside ESO Member States have fair success rate
 - ❖ represent 7.4% of requested time and 3.9% of allocated time
- Opportunity to get involved with time allocation process
 - ❖ excellent learning environment (benefits ESO too)



ESO Science Archive Facility

- Now open to the world, including pipeline reduction software
- Single entry point to data from LSP Observatory (+ APEX)
 - ❖ registration required for data download; 2000+ unique users
- Content
 - ❖ All raw data
 - ❖ Science and calibration data
 - ❖ Public Surveys, Large Programmes: high-level products, including source catalogues
 - ❖ Processed data covering the entire history of selected instruments: spectra (UVES, X-Shooter, HARPS, FEROS), 3D cubes (MUSE), images (HAWK-I), optical interferometry (PIONIER), ...
 - ❖ ALMA data also available, through ALMA Science Portal



Co-operative agreements with institutes in New Member States

- Exchange of scientists and engineers
 - ❖ Training and mentoring
- Hosting of PhD students at ESO

La Silla

- 3.6-m for exoplanet (RV) research with HARPS and NIRPS
- NTT focused on transients in LSST era with SOXS (+ ULTRACAM)
- Small telescopes/robots operated by external consortium
 - ❖ 2.2-m MPG, 1.5-m Danish, 1.2-m Leonhard Euler, TRAPPIST, ExTrA, MASCARA, BlackGEM, ...
- ***Available for telescopes/robots from non-MS countries through an agreement between ESO and country concerned***
 - ❖ Will require agreement from Chile

What can ESO offer New Member States?

Summary

- Telescope time available to astronomers outwith ESO MS
- Data from ESO telescopes available, after (1-yr) proprietary period
- Co-operative agreements with institutes in New Member States
 - ❖ Including possibility of hosting telescopes/robots at La Silla

