



U N I V E R S I D A D
C O M P L U T E N S E
M A D R I D



A pan-European vision of large astronomical facilities: The role of current observatories in new member states

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Outline

- Large astronomical facilities in the 80's
- The arrival of 8-10m telescopes
- ASTRONET: Monitoring the change
- Current Status of mid-size OIR telescopes
- Lessons learnt and the role of current observatories in new member states

Observatories in the 80's



One multipurpose 4m telescope:

- Large suite of instruments:
WF camera, spectrograph,
nIR, others
- Open to Visitor instruments
- Complex operations and large staff
- Few days observing runs
- Visiting observers



La Silla 3.6m

Observatories in the 80's

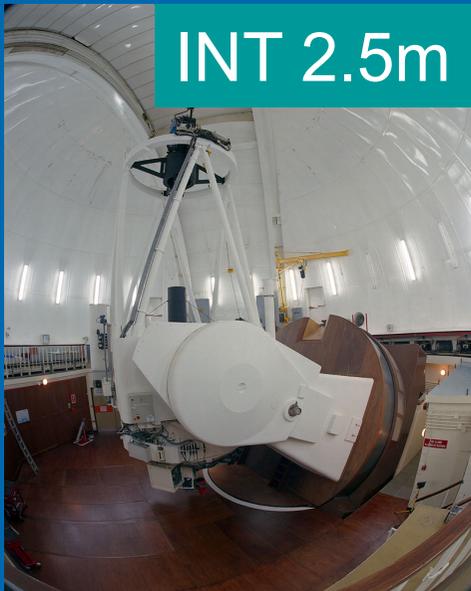
La Palma



Several 1-2m telescopes:

- Suite of instruments
- Complementary to 4m
- Complex operation, large staff
- Short obs. Runs
- Visiting astronomers

INT 2.5m



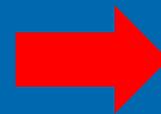
The 8-10m class revolution



- 1998 – 2000 VLT 4x8m
- 2009 GTC 10.4m

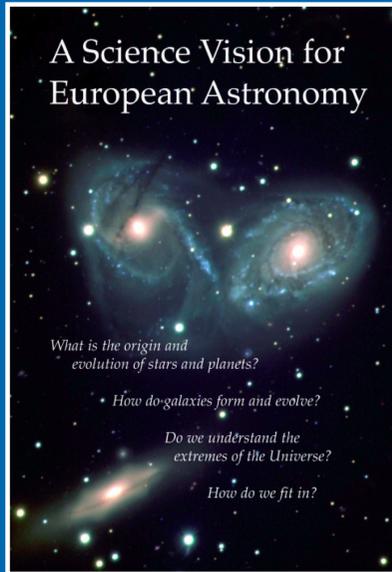
The 8m telescopes play the role of multipurpose telescope

- Large suite of instruments
- Open to Visitor instruments
- Few days observing runs
- Visiting observers



BUT 2-4m Major crisis
(i.e. ING 2008, 50% cut)

“A Grand Vision for Astronomy”



2008 & 2013: ASTRONET Science Vision

identifies key areas where instrumental developments (massive MOS) will be needed.



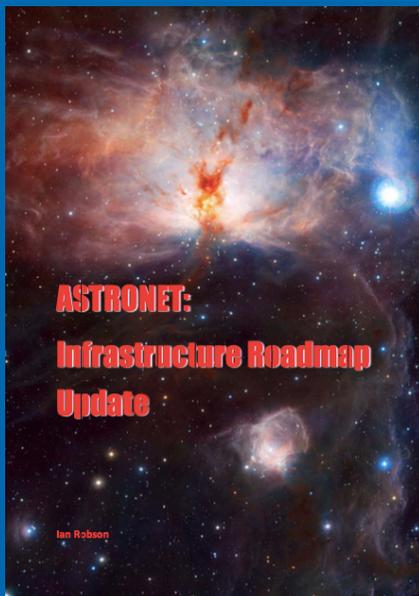
- Specialization
- Coordination

“A strategic Plan for European Astronomy”



2009 & 2014: ASTRONET Roadmap

- WF MOS spectrograph
- Optimization of access to existing telescopes



ASTRONET/OPTICON ETSRC

ETSRC: European Telescope Strategic Review Committee on Europe's 2-4m telescopes over the decade

- Common strategy for 2-4m (optical/nIR) telescopes at the European Level (identified by both SV and RM)
- How could best contribute to the delivery of the SV and how could do so cost effectively.

REPORT BY THE
EUROPEAN TELESCOPE
STRATEGIC REVIEW COMMITTEE
ON EUROPE'S 2-4M TELESCOPES
OVER THE DECADE TO 2020



May 2010

ASTRONET WFS-WG

WFS-WG: Wide-Field Spectrograph Working Group

Two main facilities requested:

- Optical WF-MOS $R=5,000$ in 4m telescopes, both Hemispheres
- Near-IR WF-MOS in 8m telescope

The image shows a document titled 'ASTRONET WFS-WG' with the following details:

Integrating and strengthening the European Research Area
ERANET
Coordination Action
ASTRONET
Coordinating Strategic Planning for European Astronomy
Contract n° 026075
Starting date: 1 September 2005 Duration : 64 months

Deliverable number	D26
Title	Report on a wide field, highly multiplexed spectrograph
Work package	WP 3
Due date	01/03/2010
Submission date	28/09/2011
Organisation name(s) of lead contractor for this deliverable	STFC
Prepared by	G. Kauffmann
Approved by	Board
Released by	J.-M. Hameury
Nature	Report
Revision	V

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)

Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

September 2011

ESO Call for WF Spectroscopic Survey Facilities



- Call in September 2010
- May 2011, ESO selected two phase A studies, among the 7 proposals:
 - MOONS. MOS opt+JH for VLT. → 2019
 - 4MOST. 2.000 Fibre-fed MOS for VISTA. → 2021



28/06/2017

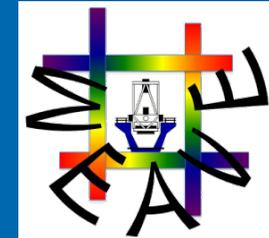
EWASS-Prague



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ASTRONET Common-Action

A new WF-MOS in the North: WEAVE for WHT



- *WHT Enhanced Aperture Velocity Explorer*
 - Proposed WHT Facility instrument
 - Prime Focus Multi-fiber MOS, spectrograph on Nasmyth
 - Multiplex ~ 1000 , MOS, IFU, mini-IFU
 - FOV 2 deg diam
 - $R=5,000 + 20,000$
- 2012: Joint effort of several funding agencies (UK, NL, ES...) to guarantee WEAVE
- mid-2018

4m telescopes in 2012-2017

- Following (in a broad perspective) ETSRC recommendations
- Top priority for instrumentation
- 4m telescopes becoming more specialized
 - Large programs
 - Complex instruments
 - Harps-N, GIANO for TNG 3.5m
 - CARMENES for CAHA 3.5m
 - WEAVE for WHT 4.2m
- Low budget, as automatic as possible

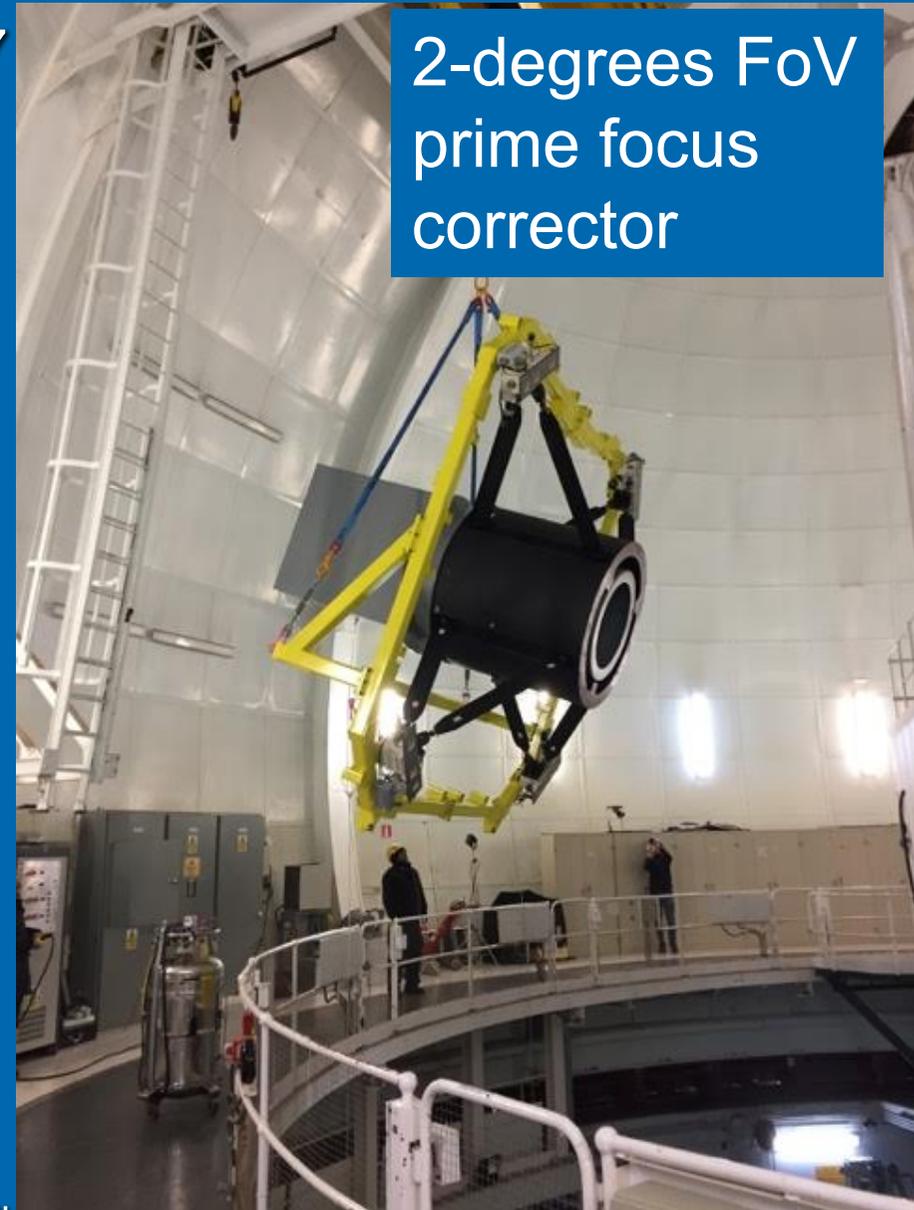
Telescope by telescope: ING

- 30 years operation



Telescope by telescope: ING

- Current agreements cover until 2027
- WEAVE WF-MOS spectroscopy
- Long-term programs
 - 70% of observing time
 - France and Italy will join the consortium
- INT 2.5m will become fully robotic



2-degrees FoV
prime focus
corrector

Telescope by telescope

- NOT. Imaging and spectroscopy of transient sources
ALFOSC, NOTCAM, FIES, X-SHOOTER-like



- TNG. High resolution spectroscopy
HARPS-N and Giano.
Large programmes



- Liverpool Telescope. Time domain Astrophysics
LT-telescope 2 ?



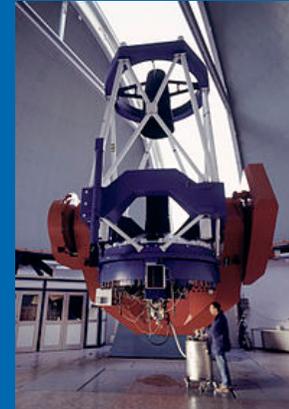
Telescope by telescope



- CAHA: MPG/CSIC agreement until 2018
CAHA35. CARMENES Opt/IR echelle spectrograph. 80% telescope.
CAHA35. PMAS (IFU) and TWIN (two-arm) spectrographs
CAHA22. CAFE (opt echelle), PANIC (WF-IR cam) and CAFOS (opt im & spec)
- January 2017: New instrumentation and legacy projects Workshop
- May 2017: CAHA – China agreement for 60% 2.2m for BH long-term survey

Telescope by telescope

- MPG 2.2m: MPIA/ESO agreement. 2016-2019
WFI (WF Imaging) and FEROS (opt hi-res spec)
GROND (multi-band imager)
No plans for new instrumentation



- Bernard Lyot Telescope. Spectropolarimetry
NARVAL



- OHP. High resolution spectroscopy
SOPHIE@1.93m RV Spectrograph
Large programmes: Earth-sized planets



The role of current observatories in new member states:

Molotai Observatory (Lithuania):
Example of new generation

- Networking: ESO, ASTRONET , archives
- Characterize your observatory
(STARS4ALL H2020 project can help)
- Optimize and simplify your instrumentation
- Be available to the community
- Tackle fundamental problems not for 10m
Long-term projects (see SS02 talks)
- Produce data sets and results
- Keep budget low

25% clear nights

1,65m
HR spectrograph

Web page, access

Photometric time series
Gaia Kepler follow-up

Public archive

4 permanent staff +
20 researchers

ETSRC Recommendations

- Common European TAC
- Combined management & operation for La Palma
- WF Spectrograph on one 4m telescope on each Hemisphere
- International consortia to build instruments for the Northern telescopes
- Rational suite of telescopes/instruments

CTAC and distributed model

CTAC

- ≈ 1500 nights /semester
- ≈ 700 proposals
- ESO OPC sized TAC
- Support from OPTICON needed
- Juste return NEEDED
- Unit of currency TBD
 - Nights ?
 - Adjusted nights ?
 - Budget adjusted nights ?

Distributed model

- Long-term projects with highly specialized instruments
- Instruments as top-priority drivers
- Specialized TACs