INAF ISTITUTO NAZIONALE DI ASTROFISICA
NATIONAL INSTITUTE FOR ASTROPHYSICS

Status of VST: Project Overview

Activities from Nov. 2009 up to Dec. 2010

Massimo Capaccioli & Giacinto De Paris

VST Public Surveys and GTO Programs Review
Garching, September 28 & 29, 2010

INAF ISTITUTO NAZIONALE DI ASTROFISICA
NATIONAL INSTITUTE FOR ASTROPHYSICS

VST Project Team

(from July 2007 to date)

Principal Investigator
(M. Capaccioli)

Project Engineer
(P. Schipani)

Project Manager
(G. De Paris)

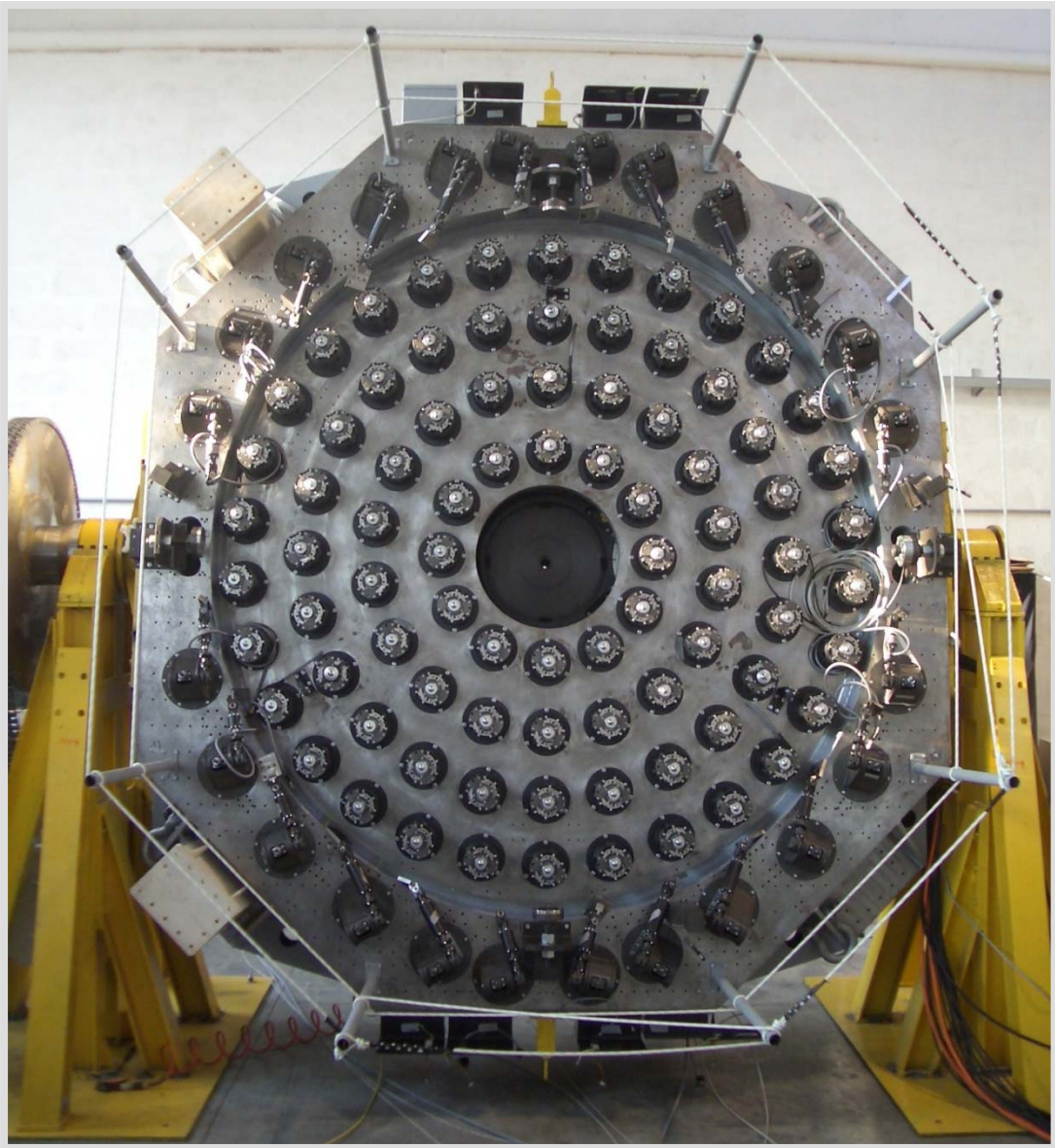
AIV Manager
(D. Fierro)

INAF staff
C. Arcidiacono, S. D'Orsi (*electrical plants*), J. Farinato (*AUs*), D. Magrin, L. Marty (*SW*), Ragazzoni (*optical alignments*), G. Umbriaco

Industrial support
Tomelleri, ADS, EIE

Since October 1, 2010, the **VSTceN** will be closed and the **VST Project** reassigned to the Capodimonte Astronomical Observatory @ Naples

April of 2009 - Shipment of the fully integrated cell + auxiliary units (AUs) + handling tools etc.



MV CCNI Magallanes

SPECs

The following **error data** have been considered to compute the **image quality**:

- Tracking error = **0.1 arcsec RMS**
- Error on axial force settings = **±0.5**
- Max. M2 error along Z (causing defocus): **0.5 µm**
- Max. M2 decenter error along X/Y (causing coma): **5 µm**
- Max. M2 tilt around the pole error (causing coma): **0.5 arcsec**
- Image motion due to hexapod control: 0.06 arcsec RMS
- D80 degradation between consecutive active optics corrections: 0.12 arcsec
- Corrector decenter: 0.1 mm
- Corrector displacement along Z: 0.8 mm
- Camera tilt: 10 arcsec
- Camera displacement along Z: 0.2 mm
- M1 displacement along Z (compensated by M2): 1 mm
- M1+ M2 decenter: 0.3 mm
- M2 surface deformation due to astatic levers support system
  after low order symmetry 0 subtraction

Image quality (D80, no seeing, no Omegacam): **0.50/0.55 arcsec** (Lens/ADC @ 0°)

SPECs

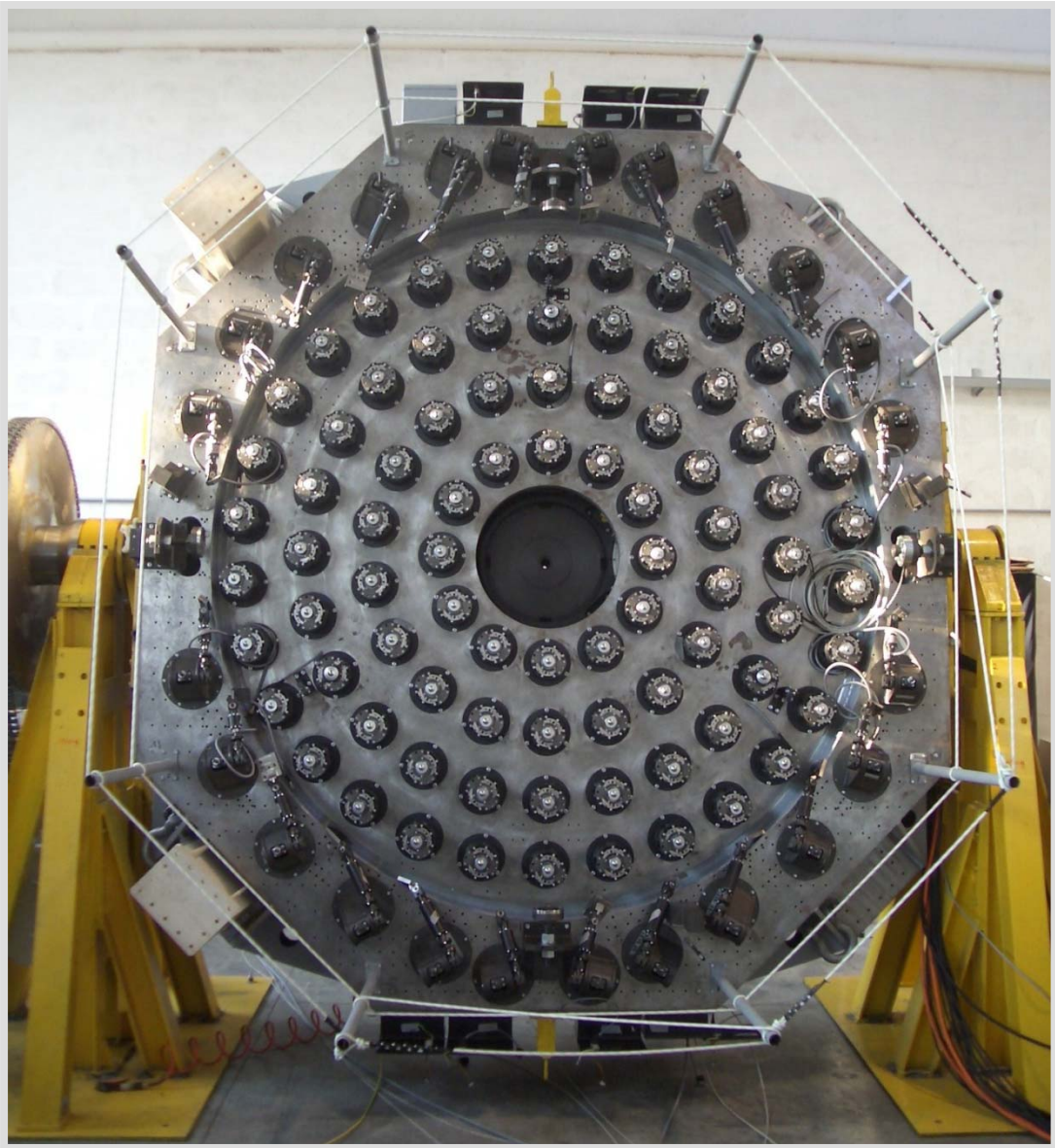
The following **error data** have been considered to compute the **image quality**:

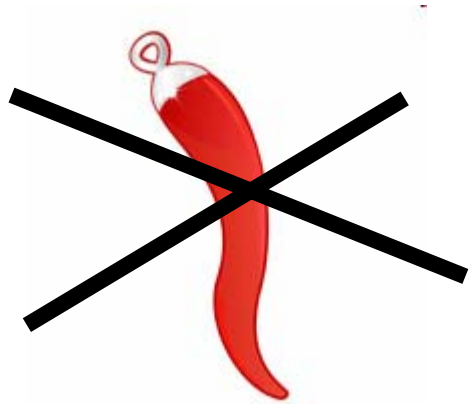
- Tracking error = **0.1 arcsec RMS** (preliminarily **verified** by ESO)
- Error on axial force settings = **±0.5 N** (**± 0.2 N** @ Tomelleri)
- Max. M2 error along Z (causing defocus): **0.5 µm** (**0.3 µm** @ ADS)
- Max. M2 decenter error along X/Y (causing coma): **5 µm** (**2 µm** @ ADS)
- Max. M2 tilt around the pole error (causing coma): **0.5 arcsec** (**0.2 arcsec** @ADS)
- Image motion due to hexapod control: 0.06 arcsec RMS (comp.)
- D80 degradation between consecutive active optics corrections: 0.12 arcsec (comp.)
- Corrector decenter: 0.1 mm (TBC)
- Corrector displacement along Z: 0.8 mm (TBC)
- Camera tilt: 10 arcsec (TBC)
- Camera displacement along Z: 0.2 mm (TBC)
- M1 displacement along Z (compensated by M2): 1 mm (TBC)
- M1+ M2 decenter: 0.3 mm (TBC)
- M2 surface deformation due to astatic levers support system after low order symmetry 0 subtraction (TBC)

Alignments

Image quality (D80, no seeing, no Omegacam): **0.50/0.55 arcsec** (Lens/ADC @ 0°)

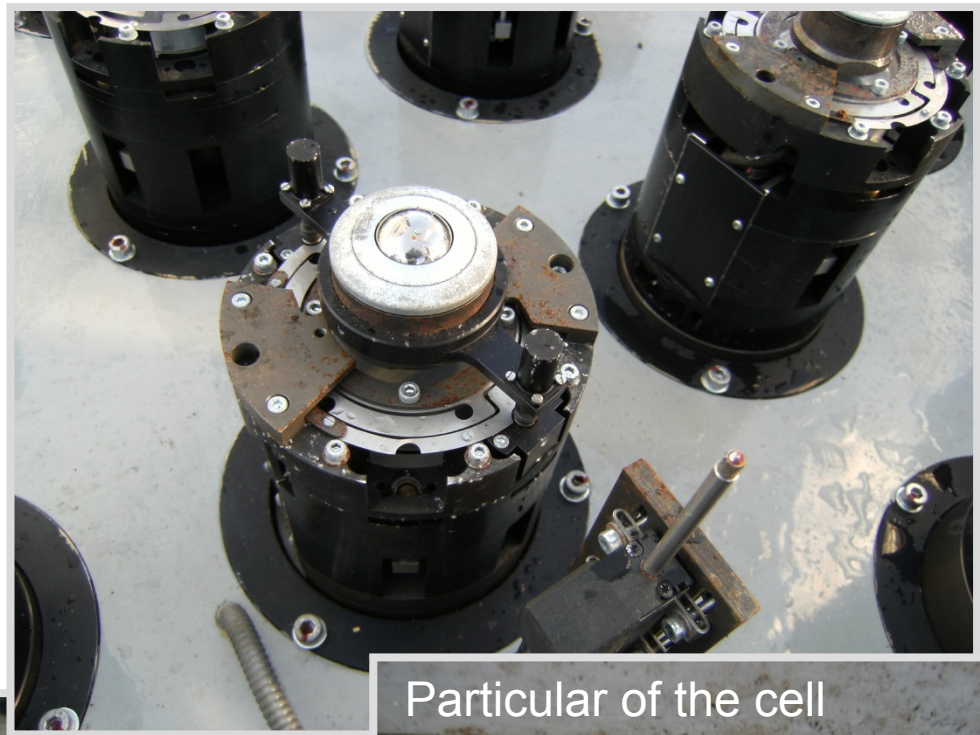
Spring of 2009 - General average: ship at anchor in the roads of Toulon for two months, then …





June 26, 2009 - M1 cell disaster discovery date.

Axial actuator



Particular of the cell

November 12, 2009 - M1 cell repair activities starting date (Tomelleri's, INAF team).

- Struggle with the Insurance Company to be allowed to re-import cell, dummy mirror, etc. to Italy (with additional disasters to the DM)
- Solve budget problems
- Stipulate a new contract with Tomelleri

Checklist of actions

Remaking of electronics and cabling
Repair of the mechanical structure of the cell
Repair of dummy mirror *(spoiled in the way back)*
M1 handling device modifications
Repair and test of the 3 lateral fixed points
Repair and test of the 24 astatic levers
Repair and tests of the 28 safety devices
Repair and test of the 3 axial fixed points
Repair and test of the 81 axial actuators
Integration of the various subsystems in the cell
Test campaign without and with the rotation system


@ Tomelle
March, 20

@ Tomelleri's
April 1, 2010


@ Tomeller
April 1, 201

May, 2010 - End of the tests: same performances as cell # 1
Cell ready to be shipped again to Paranal.

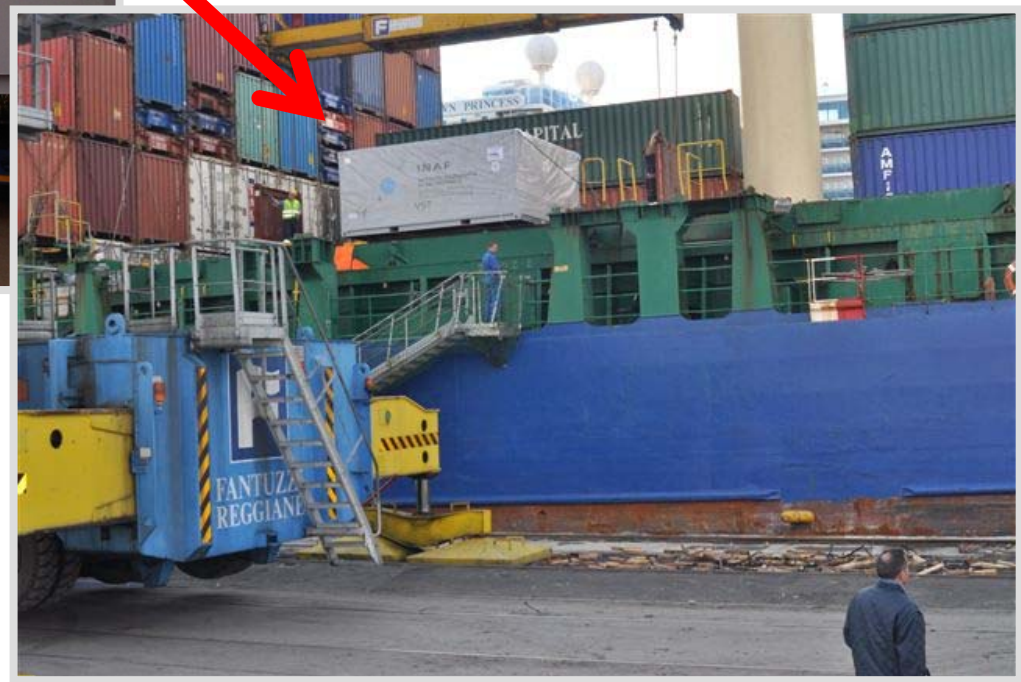
@ Tomelleri's
May 5, 2010

May 10, 2010 - M1 cell successful delivery to Paranal.

6 months after from the start of the reparation activities !

13 months from first shipment!

INAF container leaving Tomelleri's premises and boarding @ Livorno

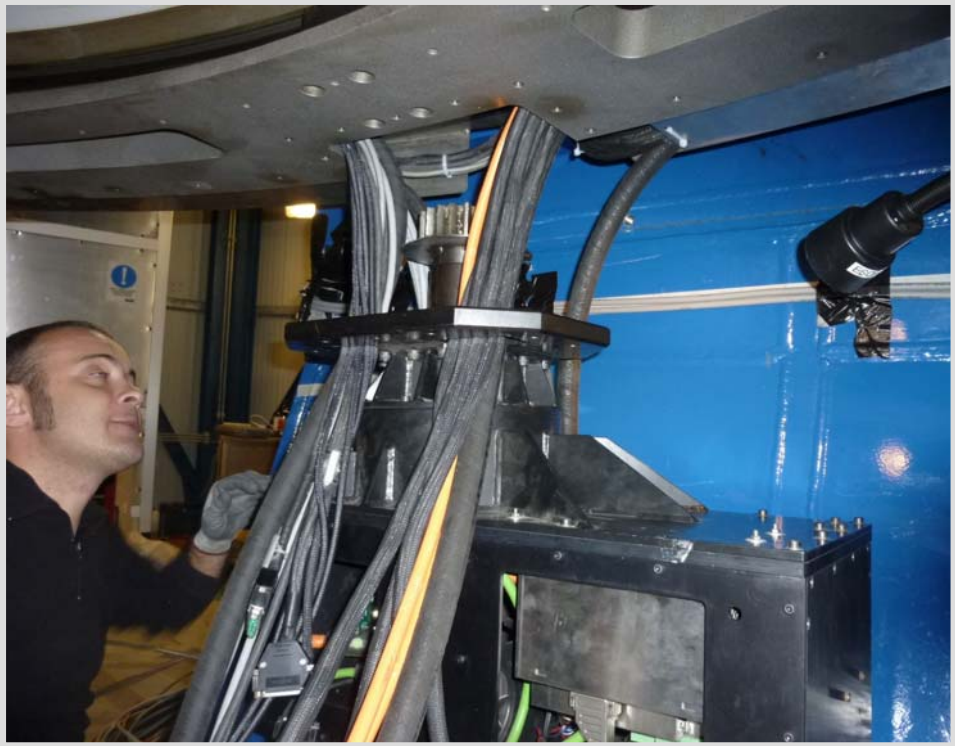


Arrival at Antofagasta
June 19, 2010

June 24, 2010 - Cell inspected @ Paranal.

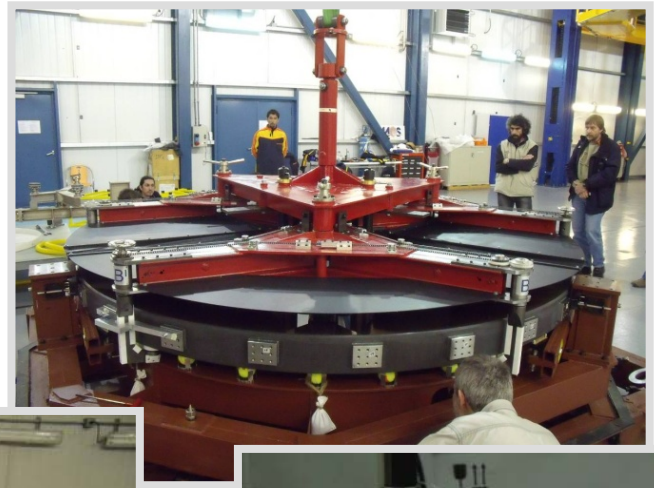
April 27 ÷ May 22, 2010 - work had started again @ Paranal (Fierro, D'Orsi, EIE's):

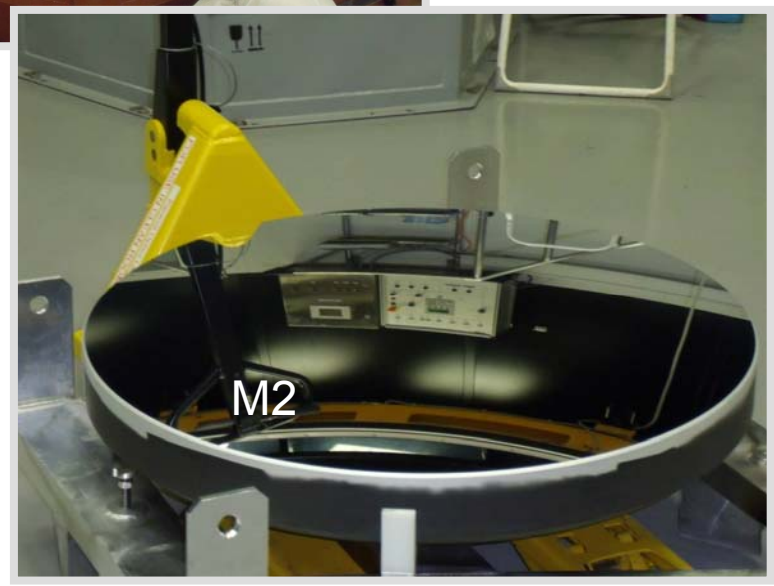
- Cooling system integration (1st phase).
- M2 system disassembling & M2 handling device refurbishment.
- Telescope cabling.



June 2010 (Fierro, D'Orsi, Tomelleri's)

- M1 coating.
- M2 coating.





June 2010 (Fierro, D'Orsi, Tomelleri's)

- M1 cell integration & functional tests.

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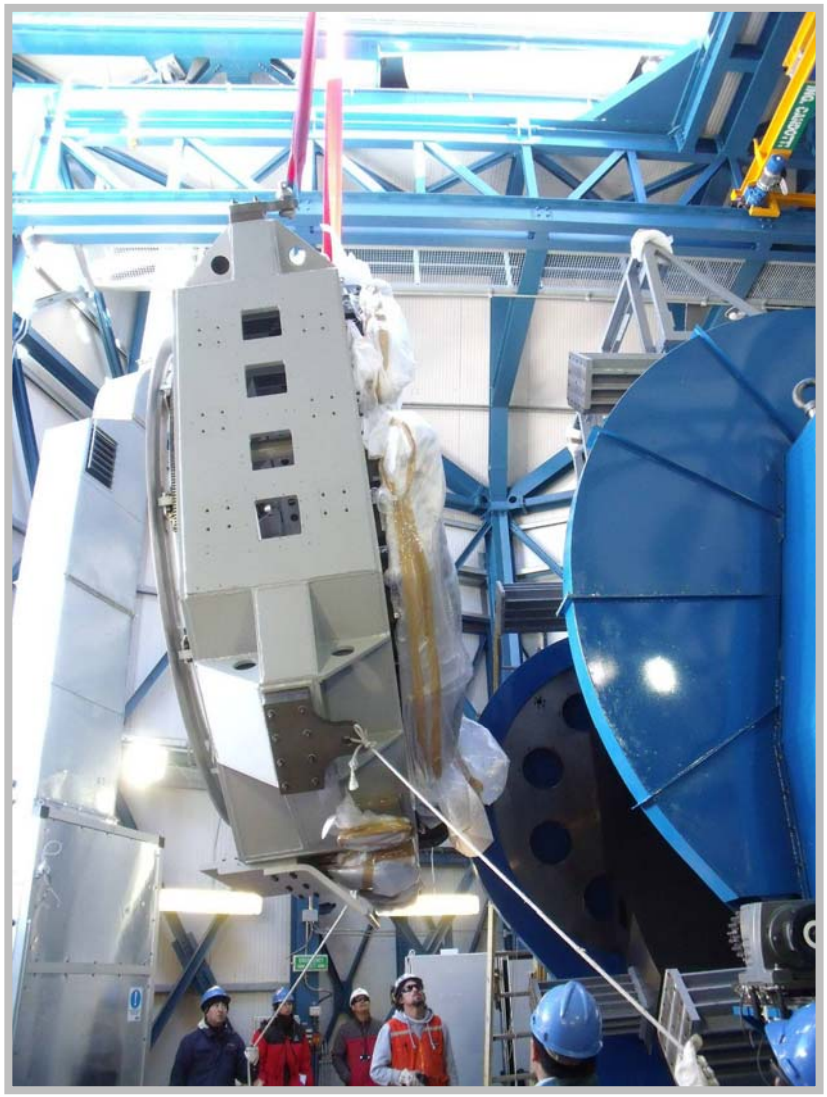
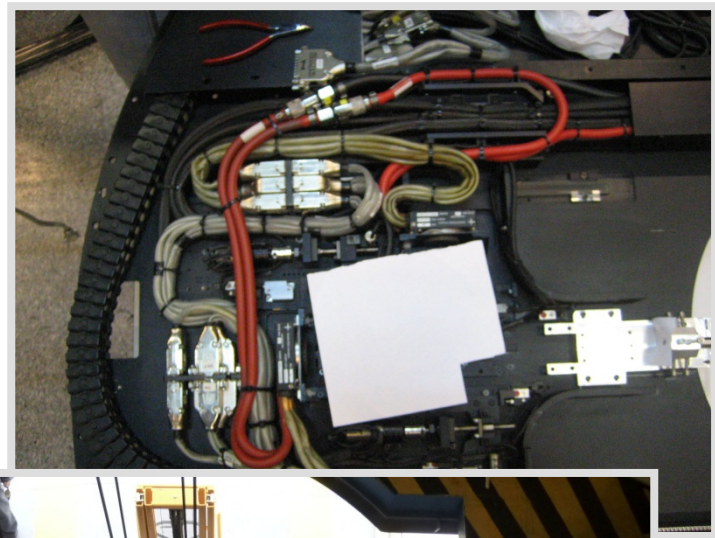
- M1 cell integration & functional tests.



July ÷ August 2010 (Farinato, D'Orsi, Marty, Magrin, Tomelleri's, EIE's)

- Auxiliary units bench test (L1 & L2 lenses mounted into ADC corrector, probe optics mounted and aligned).
- Cabling.
- Cooling system integration (2nd phase).



September ÷ October 2010 (Farinato, Fierro, D'Orsi, Marty, Magrin, Umbriaco, Ragazzoni, Arcidiacono, Tomelleri, EIE's)

- Mounting and integration of the AUs under the telescope.
- Functional tests.

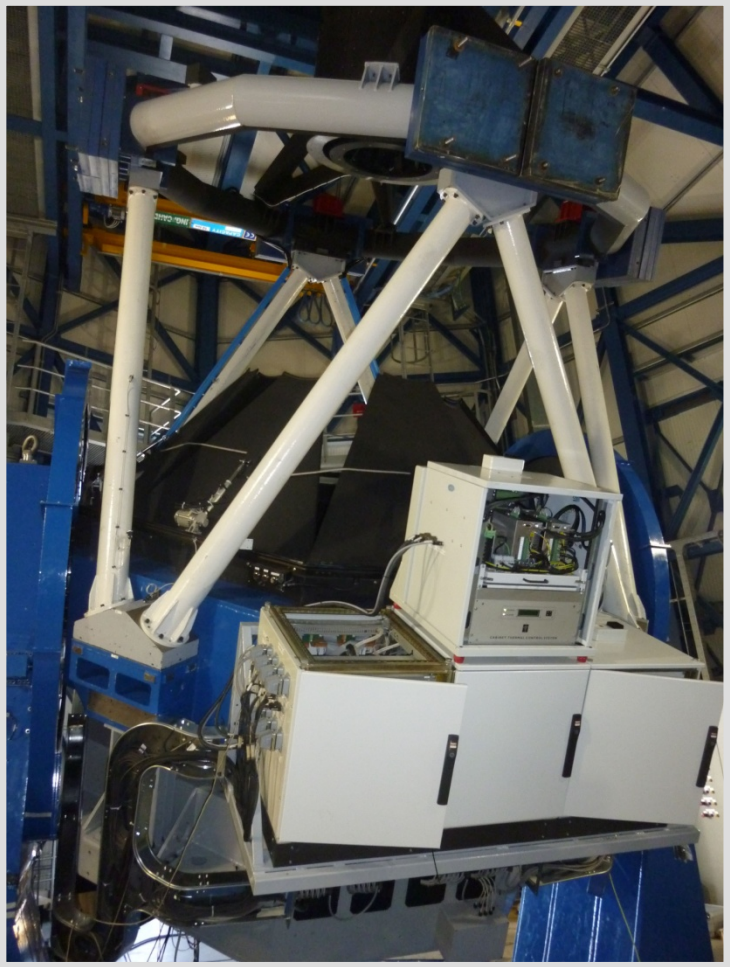
Planned in October:

- Cooling system final integration.
- Functional tests.
- Mechanical pre-alignment.

November ÷ December 2010 (Fierro, Ragazzoni, Arcidiacono, D'Orsi, Marty, Farinato, Magrin, Umbriaco, Tomelleri's)

Planned:

- Mirrors integration into the telescope (***starting from Nov. 8th***).
- Optical alignment (***starting from the end of November***).



Expected in
December 10, 2010
first light with a test camera

60"x80" probe FoV,
2700 smaller than Omegacam FoV