

ASTRI-CTA: e uno!

Telescopio SST-2M a SLN:



Mauro Fiorini

AstroSiesta

06 Novembre 2014

Cherenkov Telescope Array

Low-energy section:

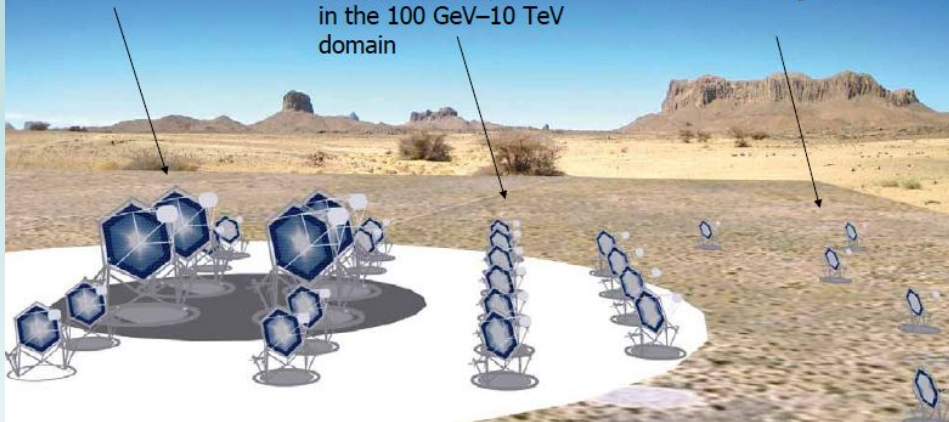
few O(24) m tel. (LST)
=> push low threshold
- Parabolic reflector
- FOV: O(5) degrees
- O(0.09 deg/pix)
- f/d: O(1.2)
energy threshold
of some 10 GeV

Core-energy array:

many O(12) m tel. (MST)
=> workhorse of CTA
-> push cost & reliability
- Davies-Cotton reflector
- FOV: O(8) degrees
- O(0.18 deg/pix)
- f/d: O(1.4)
O(1 km²) area
mCrab sensitivity
in the 100 GeV–10 TeV
domain

High-energy section:

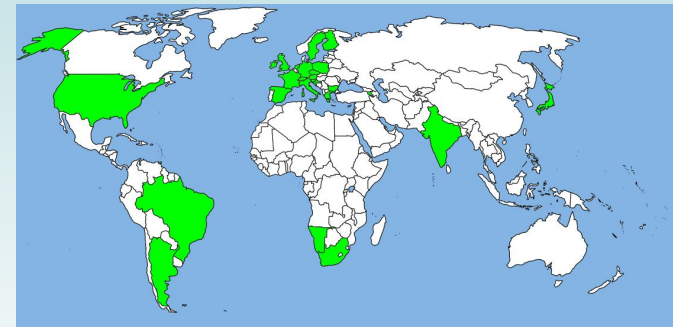
many O(6) m tel. (SST)
=> push low-cost
- Davies-Cotton reflector
(or Schwarzschild-Couder)
- FOV: O(10) degrees
- O(0.25 deg/pix)
- f/d: O(1.2-1.5)
O(10 km²) area at
multi-TeV energies



CTAO GMBH (a luglio 2014)

Founded in late July with

- Germany (DESY)
- Italy (INAF)
- Switzerland (Uni Zurich)



A **factor of 10** more sensitive than current IACT. Substantially better angular resolution (3' @ 1 TeV), source location accuracy (5" @ 1 TeV), and energy resolution (10% @ 1 TeV), larger field of view and much wider energy coverage.

About 100 telescopes divided in 3 kinds: Large Size Telescope, **LST** (to tens of GeV), Medium Size Telescope, **MST** (to a tens of TeV), Small Size Telescope, **SST** (up to 100 TeV).

>25 Countries
>132 Institutes
>1000 Persons
> 220 FTEs

Astrofisica con Specchia a Tecnologia Replicante Italiana

Progetto Bandiera finanziato dal MIUR nel 2011 per un totale di 8 MEuro per sviluppare una tecnologia di “replica” per specchi e nuovi rivelatori per astrofisica VHE

Fondi assegnati ad ASTRI da INAF

2011	2.820 M€	2012	1.841 M€	2013	1.338 M€	2013	1.150 M€
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Totale a disposizione per il progetto: 7.149 M €

Il main-goal nel 2011 ERA la realizzazione di un prototipo E2E del telescopio SST-2M

Nel 2012 si è deciso di realizzare il telescopio prototipo a Serra La Nave (OACT) + tre telescopi per il Mini-Array da installare sul sito South di CTA

Contributo da parte di Brasile e Sud Africa per il Mini-Array

**Inst. de Astronomia, Geofisica e Ciencias
Atmosfericas Universidade de Sao Paulo**



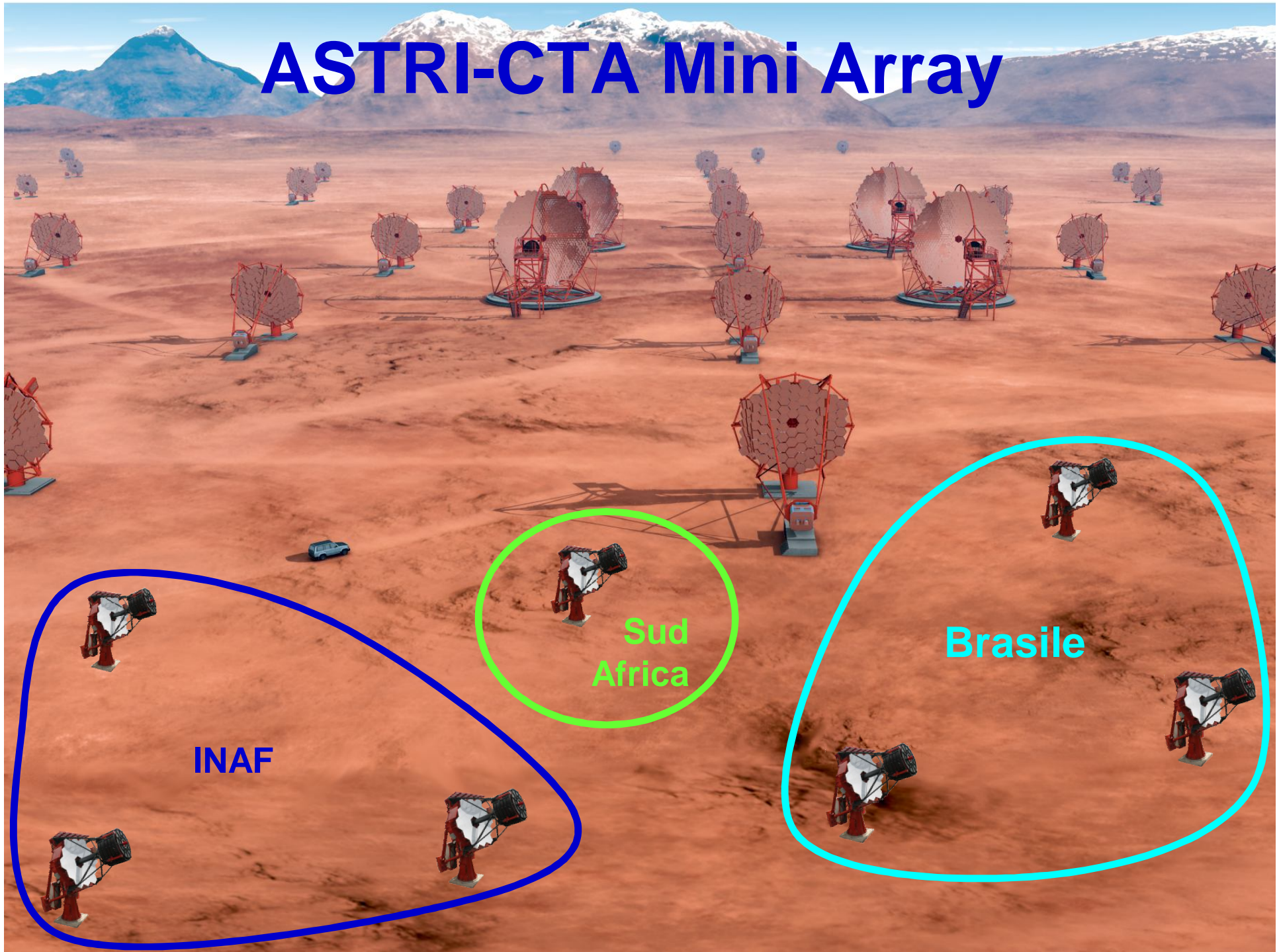
**North-West University
Potchefstroom**



**Wits University
Johannesburg**



ASTRI-CTA Mini Array

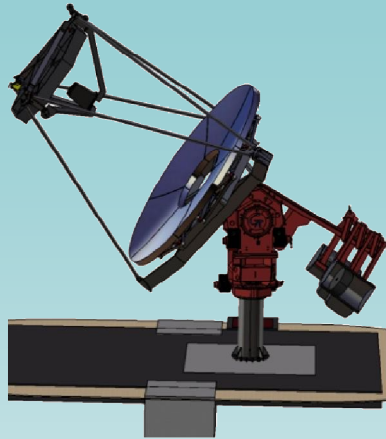


INAF

Sud
Africa

Brasile

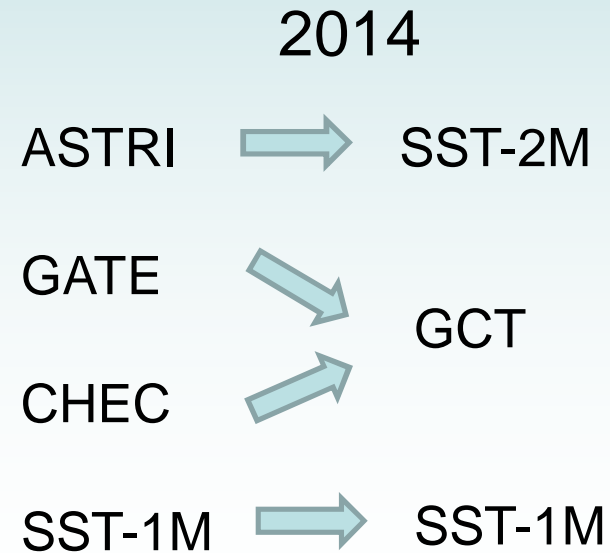
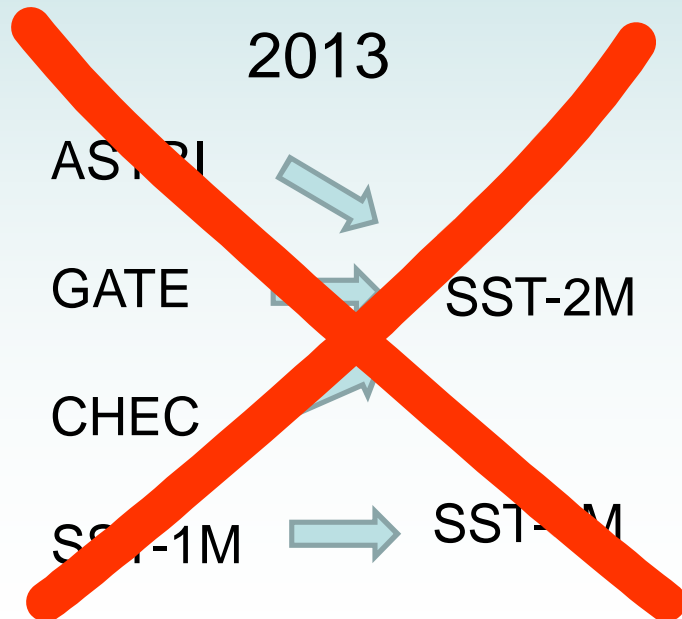
Competitori per SST



GATE/CHEC (Francia/GB)
Dal 2014 GCT



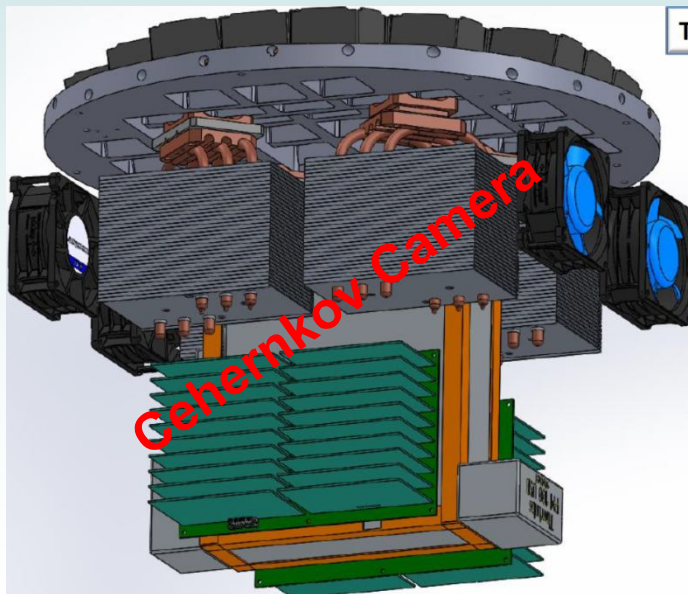
SST-1M (Svizzera/Polonia)
Inaugurato il 2 giugno 2014




“Difficult to see CTA operating three different SSTs” (W. Hoffman)

ASTRI: prototipo SLN + MA

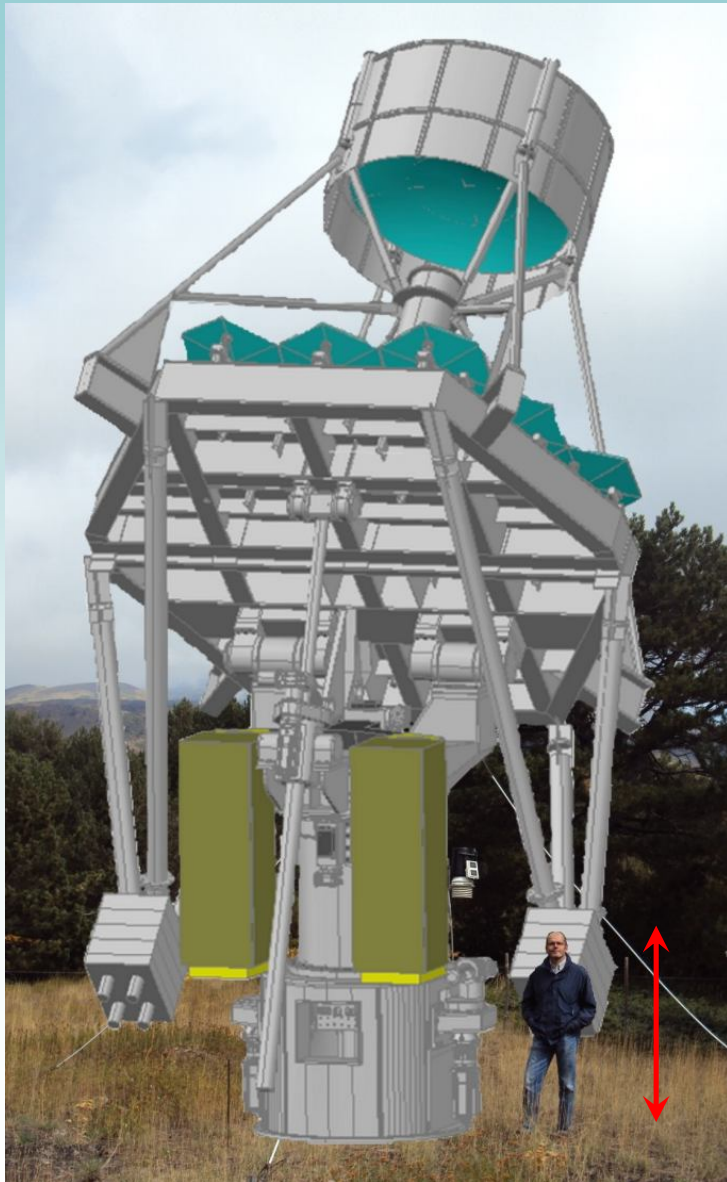
- Struttura meccanica prototipo + ottiche a SLN
- Commissioning telescopio (entro 2014)
- CTA SST Reviews (prossima 26/11/2014)
- Installazione + test camera Cherenkov (2015)
- Validazione scientifica prototipo (2015)
- Reassessment progetto struttura meccanica (2015)
- Costruzione 3 telescopi INAF per MA (2015-16)



	Cherenkov Telescope Array Technical Design Report	CTA Ref: MAN-PO/140530 Version: 0 Draft.15 Date: 30/10/14 Page: 1/164															
ASTRI Technical Design Report																	
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Distribution <input type="checkbox"/> Open																	
History																	
1.0	30 May 2014	First draft															
2.0	30 October	Second draft. Please. General review of the doc.															

CTA SST review

ASTRI – Situazione ultima AstroSiesta...



AstroSiesta del 24 Ottobre 2013



A giugno 2014 telescopio montato a SLN

1 AMU
(Arbitrary Measure Unit)

Ricetta per costruire un telescopio (1)



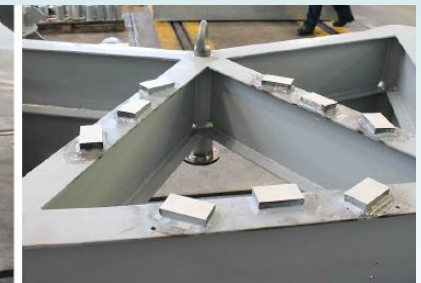
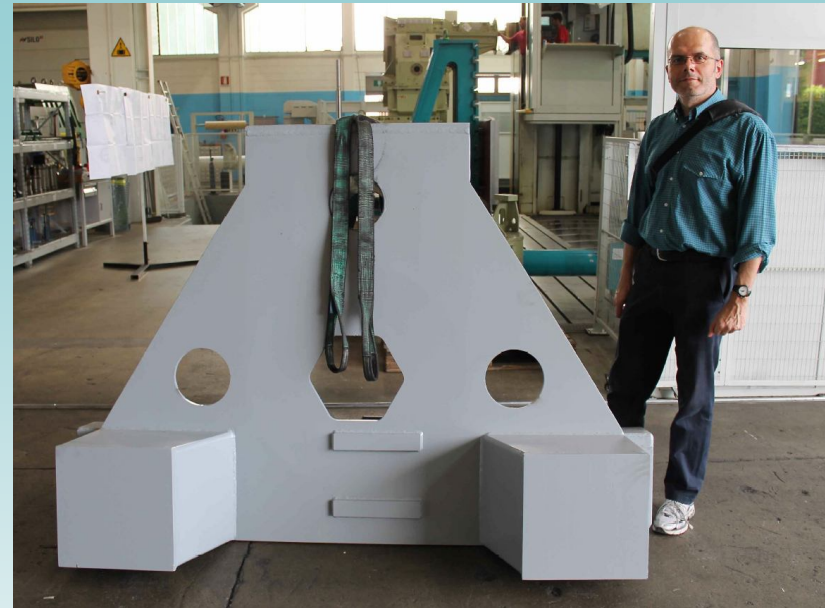
Ricetta per costruire un telescopio (2)



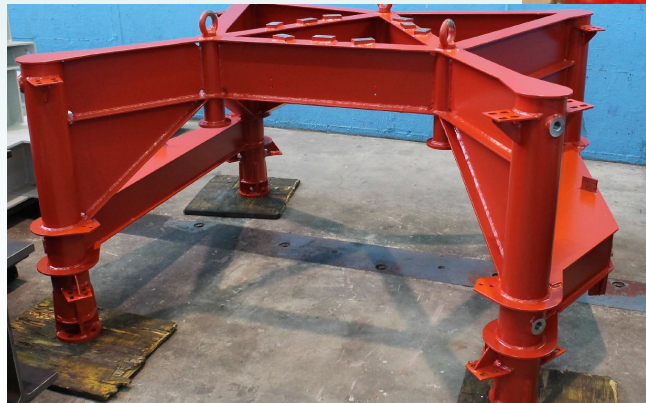
Ricetta per costruire un telescopio (3)



Si dà una mano di vernice di fondo...



Ricetta per costruire un telescopio (4)



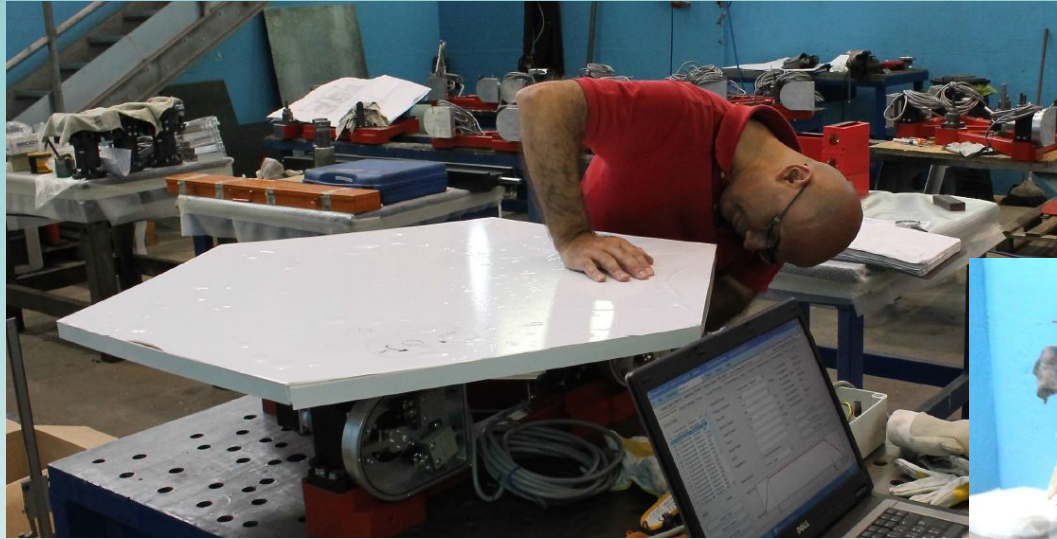
Si dipinge il tutto con i colori preferiti...

Ricetta per costruire un telescopio (5)



Si iniziano a montare
tutti i singoli elementi...

Ricetta per costruire un telescopio (6)



Si montano i segmenti del primario e lo specchio del secondario...

Ricetta per costruire un telescopio (7)



Si montano i sottosistemi in fabbrica e si testano...



Ricetta per costruire un telescopio (8)



Courtesy: E. Cascone

Si smonta tutto e si rimonta il
telescopio a Serra La Nave !

CTA Consortium General Meetings

22-26 September 2014 Hotel Hilton, Recanati, Naxos (ME)



Courtesy: T: Abegg

06 Novembre 2014

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24 Settembre 2014

Serra La Nave: Inaugurazione SST-2M ASTRI



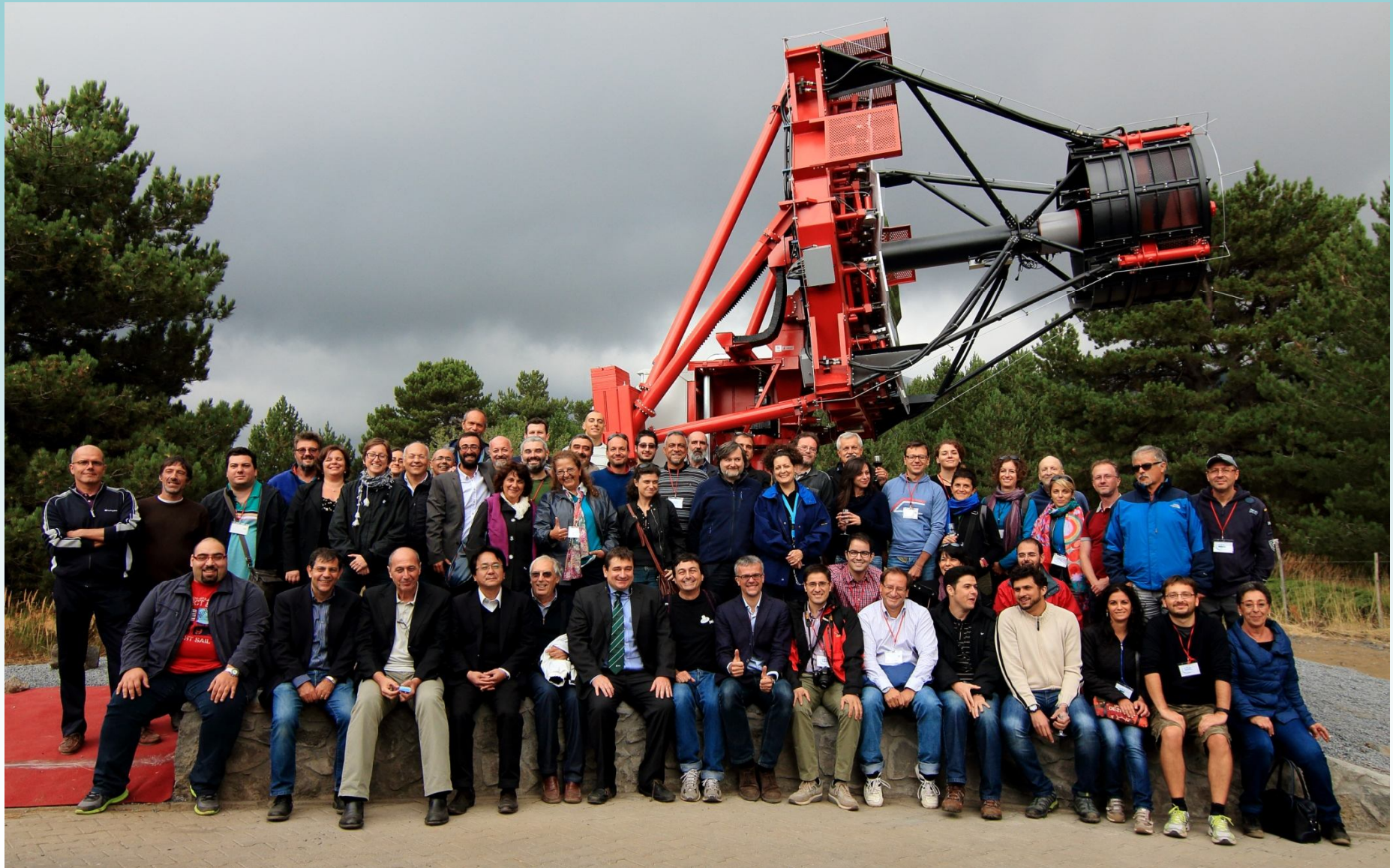
Inaugurazione



06 Novembre 2014

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Foto di gruppo con Telescopio



06 Novembre 2014

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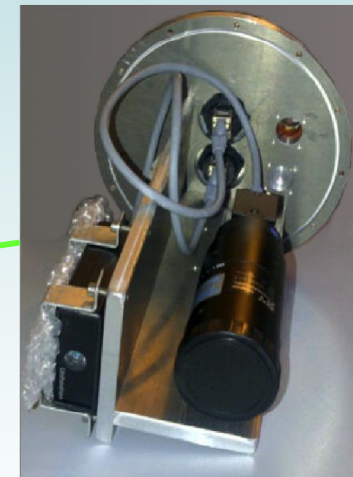
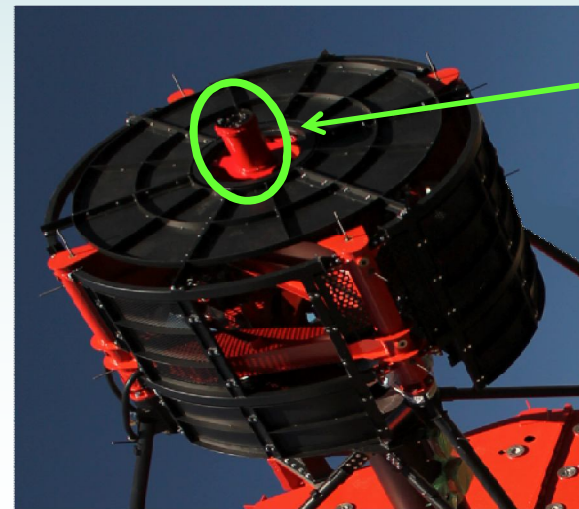
Telescopio bagnato, telescopio fortunato (?)



06 Novembre 2014

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Prima luce?



Pointing Monitoring Camera

