



ASI report to SpaceOps CaL

21 May 2013

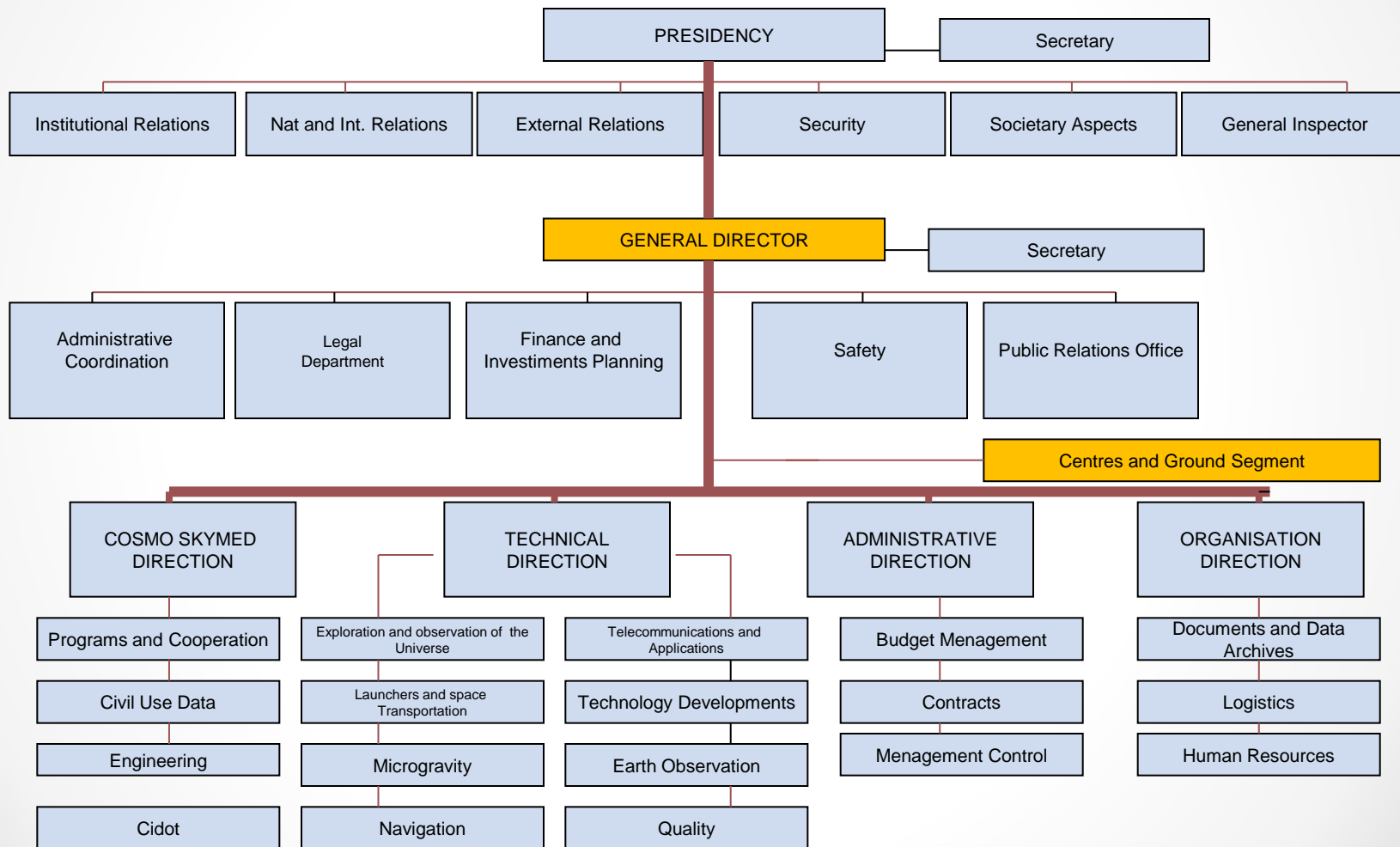
Pasadena Convention Center

Claudio Canu



Italian Space Agency

Structural Organisation





1 – Organization changes



New ASI headquarter:
Via del Politecnico s.n.c.
00133 Rome



1 – Organization changes

On 10th May 2013 Mr Fabrizio Tuzi has been appointed ASI Director General

Since 1st March 2013, Mr Roberto Ibba, former head of ASI Ground Segment dept., has been replaced by:

- Mr Fabrizio Tosone, a.i. head of GBA Unit
fabrizio.tosone@asi.it
- Mrs Barbara Negri, a.i. manager of satellite services at BSC
barbara.negri@asi.it



2 – Key events or critical information

The MLD-2 antenna of the Broglio Space Centre in Malindi had a major failure of the mechanical train in late December 2012.

Due to this major failure, since February 2013 ASI is operating MLD-1 antenna (dedicated contract with the University of Rome) in order to provide services from the Broglio Space Centre to the routine missions (NuSTAR and SWIFT – NASA and AGILE - ASI) and to provide services for launches support, TG1/SZ10 flight support.

In parallel, the repair service activities for MLD-2 were started with the direct intervention of the antenna manufacturer VIASAT.

The antenna will be back fully operational by June 2013.



3 – Communication assets

ASI is procuring the new MLD-3 antenna. The antenna shall be operational by the end of 2014 at BSC (Malindi-Kenya).

S-Band:

- TX 2025-2120 MHz
- RX 2200-2300 MHz
- RX tracking 2200-2300 MHz

Main TX performances:

- Nominal Antenna gain (@ feed port interface): 45,5 dBi
- Polarisation: RHCP, LHCP selectable
- XPD: better or equal to 24 dB

Main RX performances:

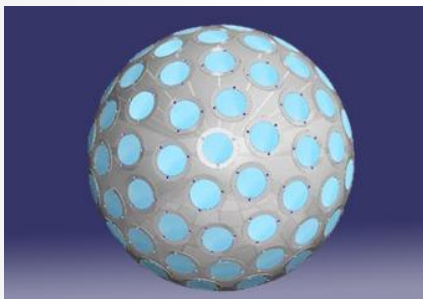
- Nominal Antenna gain (@ LNA input): 46,5 dBi
- Polarisation: RHCP, LHCP simultaneous
- XPD better or equal to 24 dB

G/T:

- G/T 26 dB/°K at 2200 MHz @20° EL
as a minimum at 23°C, clear sky, 36%, relative humidity, and in the absence of external interferers

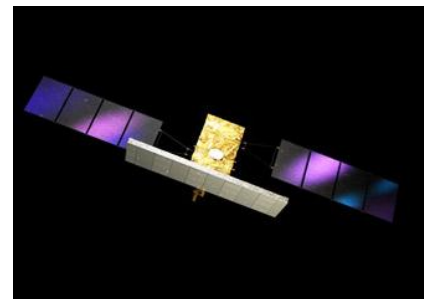


4 – ASI Missions



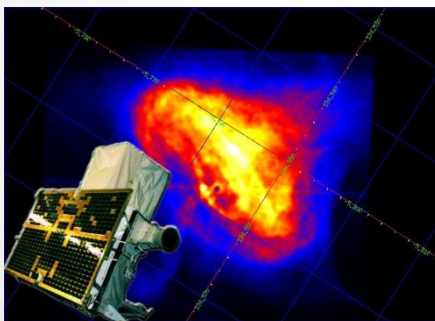
LARES

Launch date: feb 2012
Fundamental Physics



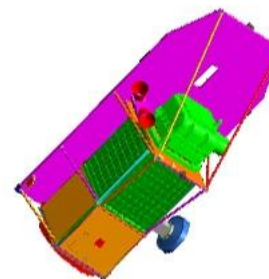
COSMO-SkyMed

Since 2010
Earth Observation



AGILE

Launch date: 2007
High Energy Astrophysics



PRISMA

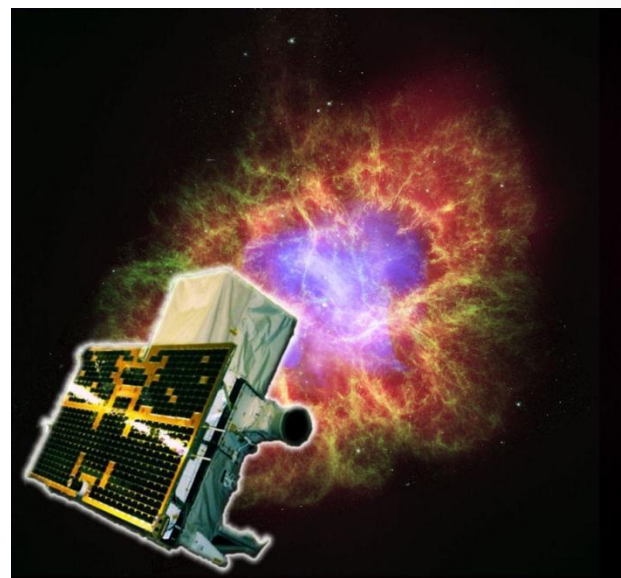
TBD
Earth Observation



4 – ASI Missions

AGILE

- successfully launched on April 23, 2007 from the Indian base of Sriharikota and was inserted in an equatorial orbit with a very low particle background.
- observation of the gamma-ray Universe
- gamma-ray imager (sensitive in the energy range 30 MeV - 50 GeV), a hard X-ray imager (sensitive in the range 18-60 keV), a Calorimeter (sensitive in the range 300 keV - 100 MeV) and an anticoincidence system
- AGILE provides crucial data for the study of Active Galactic Nuclei, Gamma-Ray Bursts, pulsars, unidentified gamma-ray sources, Galactic compact objects, supernova remnants, TeV sources and fundamental physics by microsecond timing.

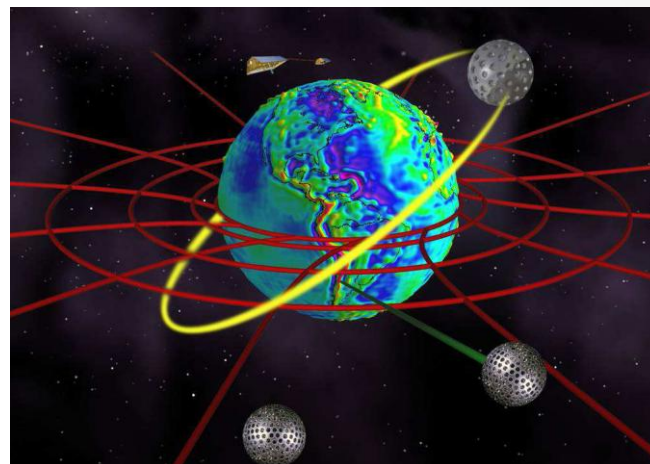




4 – ASI Missions

LARES MISSION OBJECTIVES:

- Lense-Thierring effect measurement with 1% accuracy
- Support to VEGA launcher qualification process
- ALMASat-1 deployment



VEGA MAIDEN FLIGHT OBJECTIVES:

- Launch service qualification
- Environment levels demonstration
- Vehicle functions demonstration
- Flight operations
- Validation of predictions
- Flight opportunity

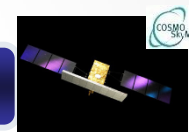
Joint activities!



4 – ASI Missions

EO Operational Missions

CSK - COSMO-SkyMed 1, 2, 3, 4

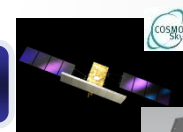


ROSA (Radio Occultation for Sounding the Atmosphere)



EO Future Missions

CSG - COSMO-SkyMed Second Generation (2016)



PRISMA – PRecursores IperSpettrale della Missione Applicativa (2017)



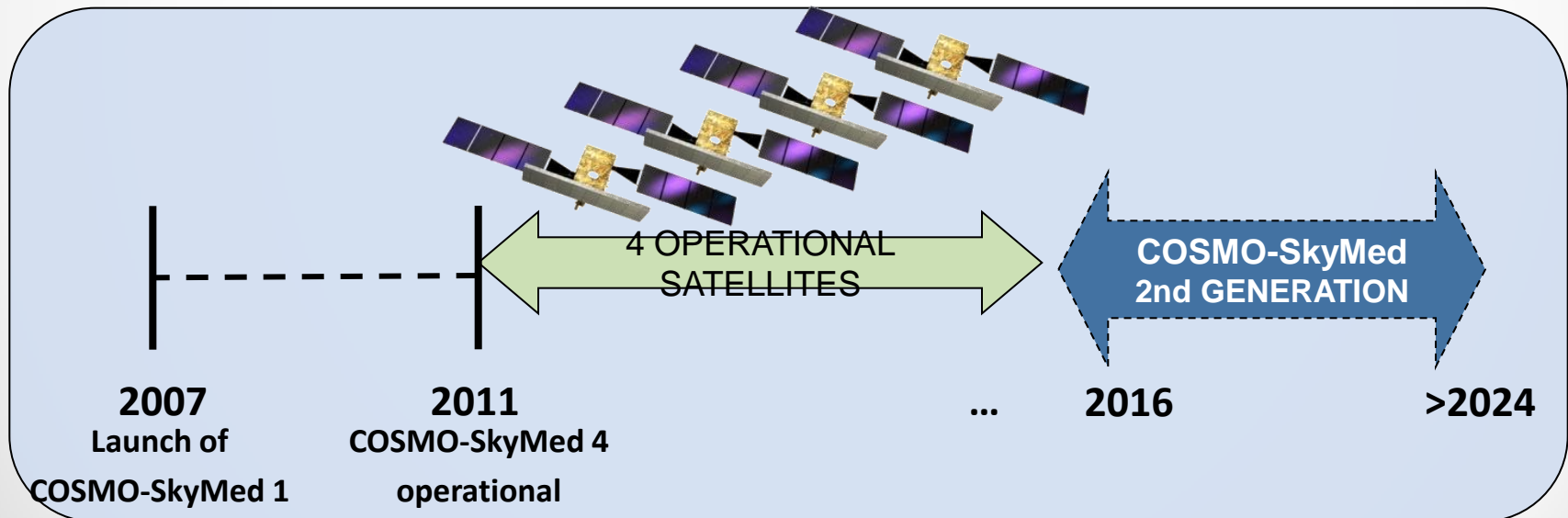
OPIS - Optical System for Imagery and Surveillance (2018)
Earth Explorer Missions, Sentinels Missions, Meteorological Missions





4 – ASI Missions

- ❑ COSMO-SkyMed constellation is FULLY DEPLOYED AND OPERATIONAL since mid 2011.
- ❑ CSG satellites will replace the CSK satellites that reached their end of life.
- ❑ With the launch of the first CSG satellite planned in mid 2016 and the second one year later, CSG will provide operational continuity at least until 2024.



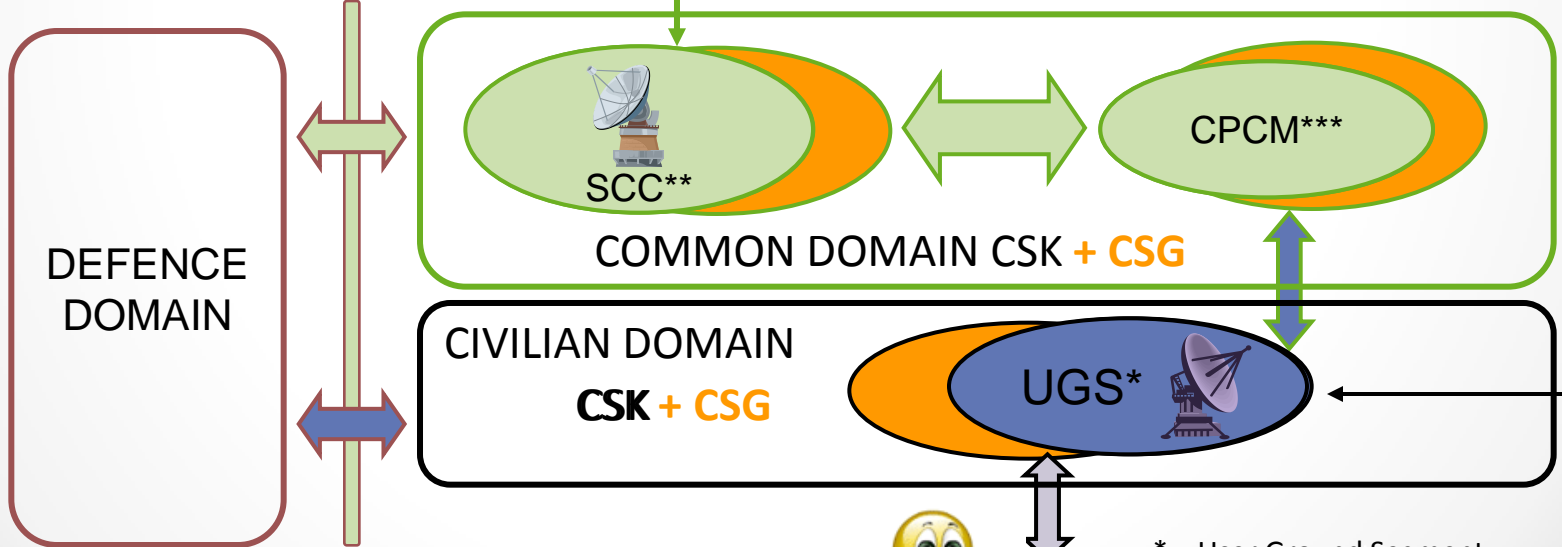


4 – ASI Missions

Space Segment



Ground Segment



- * User Ground Segment
- ** Satellite Control Centre
- *** Planning Centre and Mission Control

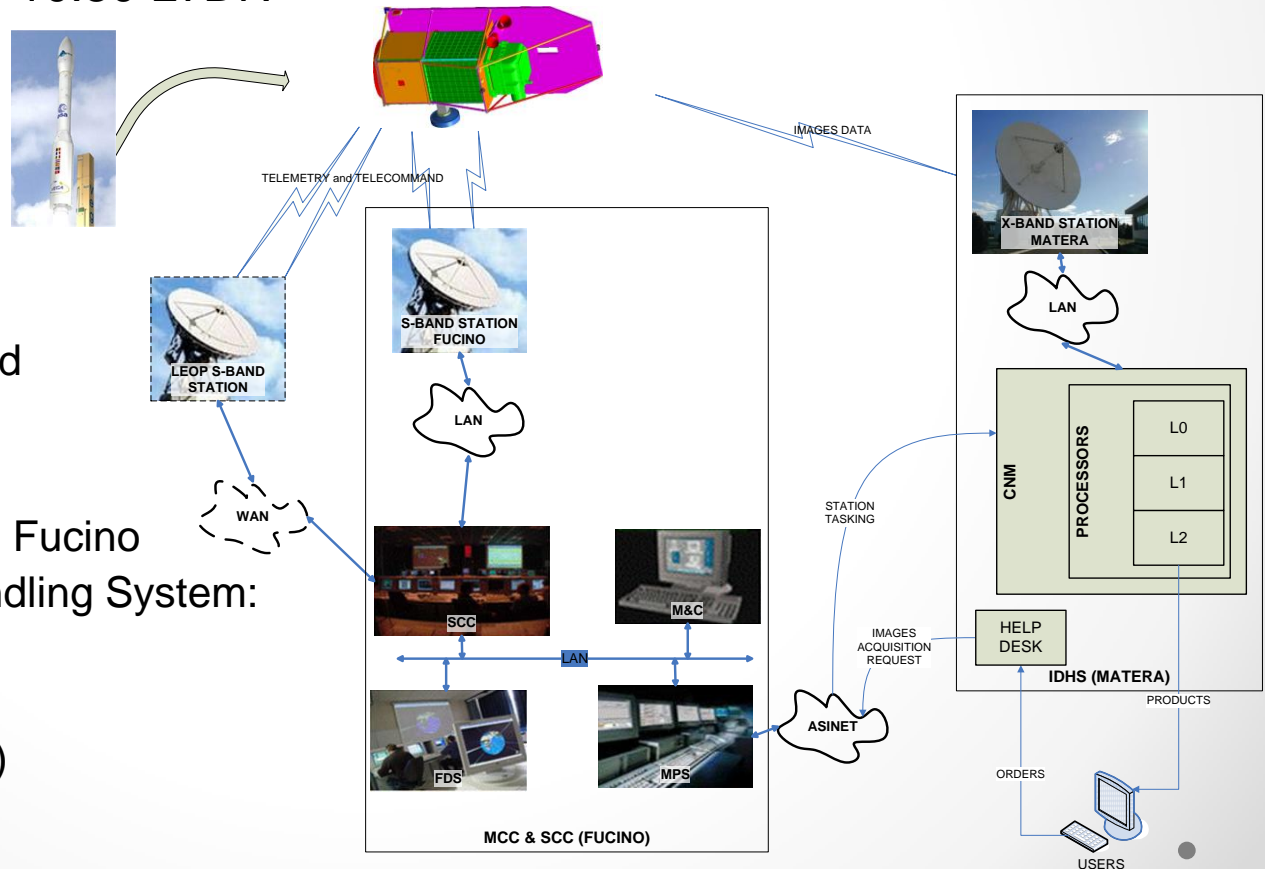
CSG Ground Segment specific Update/Improvements



4 – ASI Missions

PRISMA

- Orbit and lifetime:
 - LEO SSO, 620km, 10.30 LTDN
 - 5 years lifetime
- System elements:
 - 1 “small” Satellite
 - Platform
 - Pan/Hyp Payload
 - PDHT
 - Ground Segment
 - MCC/SCC/FDS: Fucino
 - Image Data Handling System: Matera
 - Launch Segment
 - VEGA (baseline)





4 – ASI Missions

OPSIS space program

- OPSIS: OPTical System for Imagery and Surveillance
- Customer: Italian Space Agency (ASI)
- Prime Contractor: CGS
- Italian DoD as possible additional Customer: formal engagement still to be formalized.
- OPSIS system will be based on a single satellite providing for very high resolution images in the visible and near infrared part of the spectrum
- It will be a dual mission, with the system operated to satisfy users' requests according to relevant priorities
- According to the current schedule, the system is expected to be operational by the end of 2017, for at least 5 years.



4 – Contribution to International Missions (partial list)

GAIA	Sept 2013	DPC @ ALTEC
BEPI-Colombo	Aug. 2014	Payload
Lisa Pathfinder	Mid 2014	PIship, payload, sys eng
Solar Orbiter	2017	Payload
Euclid	2019	Payload, Science GS coord
Planck	2008	Payload, data analysis
Herschel	2008	Payload, contrib. to ICC
Venus Express	2005	Payload
Rosetta	2004	Payload, lander
Exomars	2016, 2018	Payload
PAMELA	2006	Payload
JUNO	2011	Payload
AMS-02	2011	Payload, system
FERMI	2008	Payload, data analysis
DAWN	2007	Payload
VEGA	2012	Design and development
ATHENA-FIDUS	2013?	Payload, Ground Segment
ISS elements		Engineering Support



4 – Missions at BSC

Recent achievements

ASI supports ESA/CNES launches from BSC, using MLD-1 and 2 antennas.

Missions during 2012:

NuSTAR	NASA	13-giu-12	09-feb-15
SZ-9/TG-1	CLTC	16-june-2012	29-june-2012
METOP-B	ESA	17-sept-2012	20-sept-2012
MSG-3	ESA	05-jul-2012	12-jul-2012

Cross support patterns

- ESA missions
- CLTC missions (next SZ-10 in June 2013)
- ARIANE/VEGA/SOYUZ launches
- SWIFT (NASA), NuSTAR (NASA)
- CONAE SAC-D