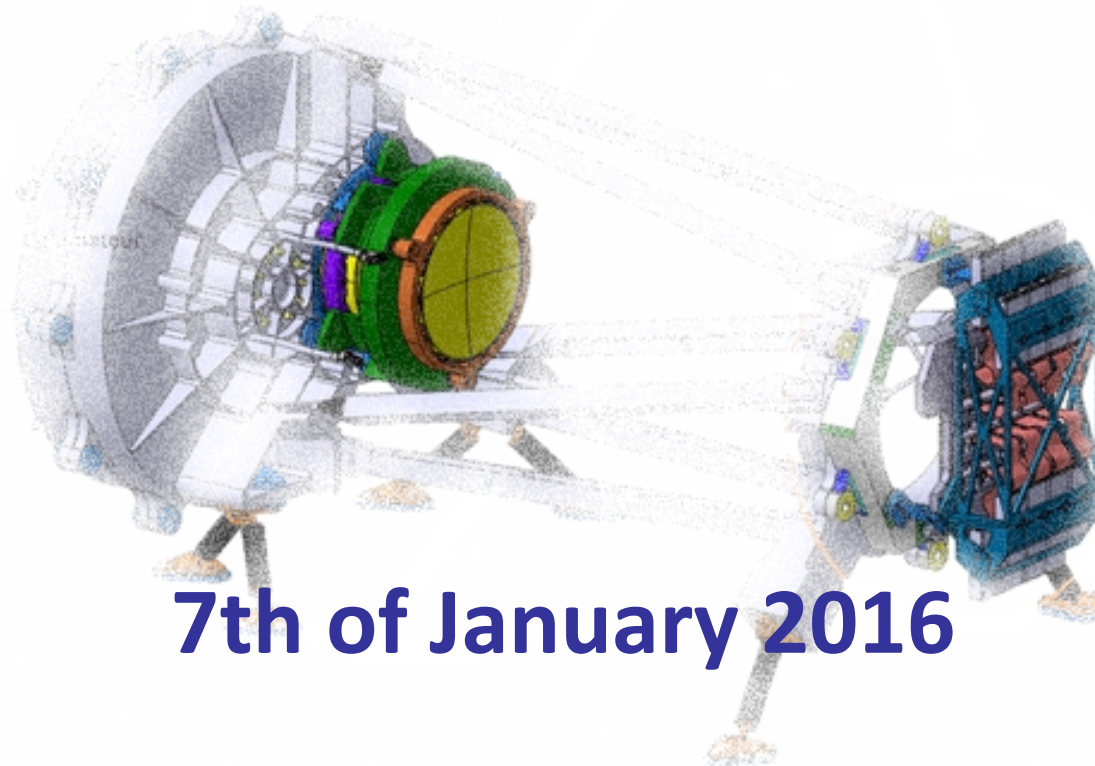


NISP STATUS



7th of January 2016



NISP PROGRESS STATUS

STUDIES

- All subsystems PDR OK
- Detailed design phase started; Start of the subsystems CDR
 - ✓ 2 CDR's are done. 2 CDR's are in progress. The others CDR's are expected for to be concluded for May 2016
- Instrument CDR KO expected for May 2016

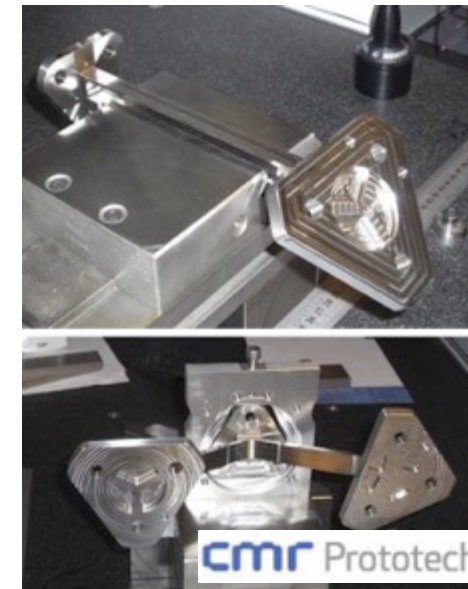
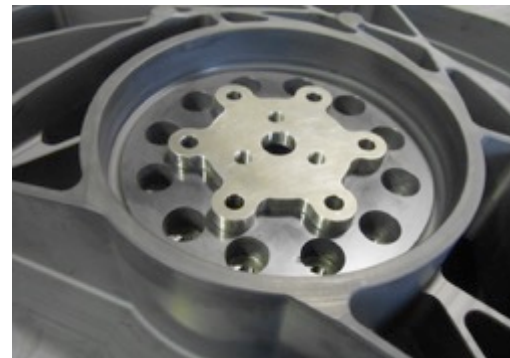
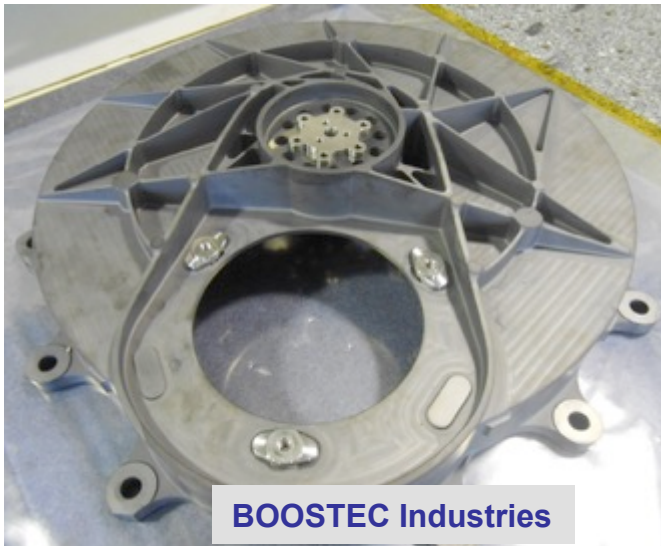
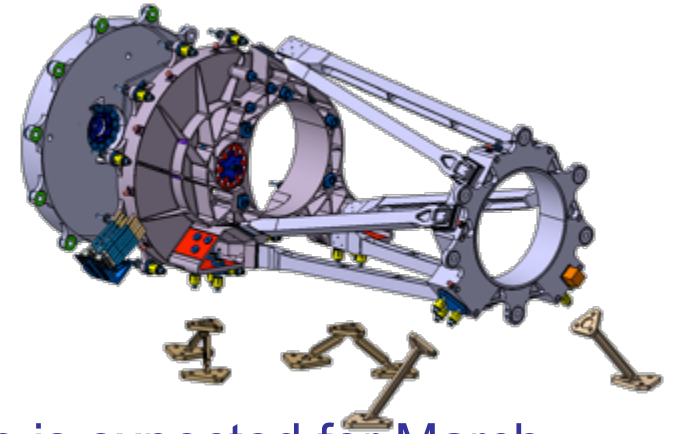
HARDWARE

- Many subsystems demonstration models and breadboard models have been tested

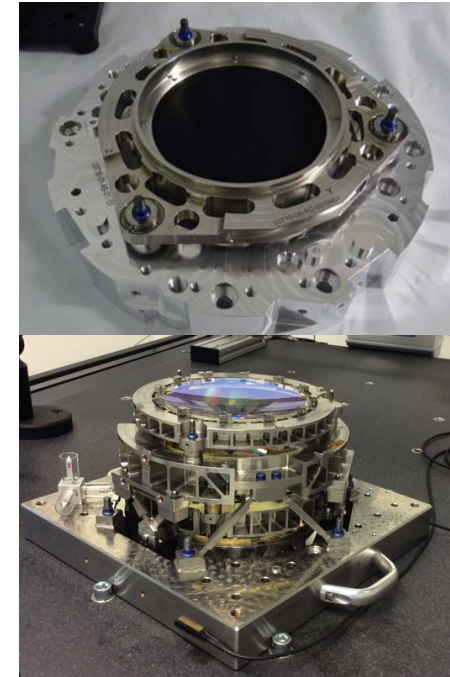
Subsystem	KO / Doc Delivery	RID's delivery to SS team	RID's answer	RID's discussion
NI-OA	23/10/15	30/10/15	06/11/15	09/11/15
NI-DPU	20/11/15	07/12/15	15/12/15	17/12/15
NI-GS	15/11/15	05/01/16	10/01/16	14/01/16
NI-CM	21/12/15	20/01/16	27/01/16	03/02/16
NI-GWA	22/01/16	28/01/16	03/02/16	09/02/16
NI-FWA	22/01/16	28/01/16	05/02/16	11/02/16
NI-CU	15/01/16	27/01/16	08/02/16	15/02/16
NI-ICU	29/01/16	12/02/16	19/02/16	23/02/16
NI-SA & NI-TC	29/01/16	05/02/16	12/02/16	19/02/16
NI-FPA	18/02/16	25/02/16	03/03/16	08/03/16
NI-ICU_ASW	05/05/16	15/05/16	22/05/16	26/05/16
NI-DPU_ASW	25/02/16	06/03/16	13/03/16	17/03/16
VGS PDR	04/11/15	11/11/15	16/11/15	17/11/15



➤ Structure and Thermal STM

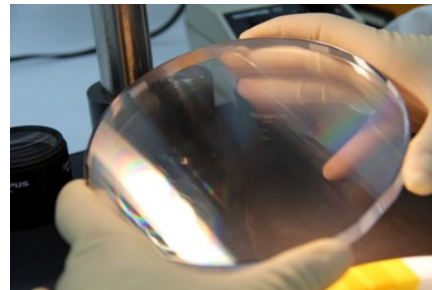
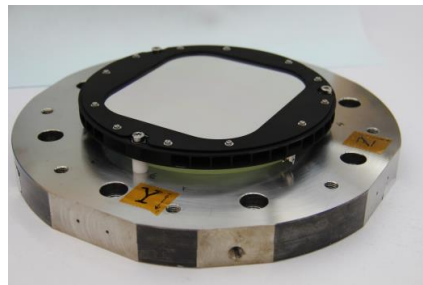
- ✓ STM = 99% FM design
- ✓ ALL SiC parts are now manufactured
- ✓ The complete integrated and glued structure is expected for March 2016 at LAM




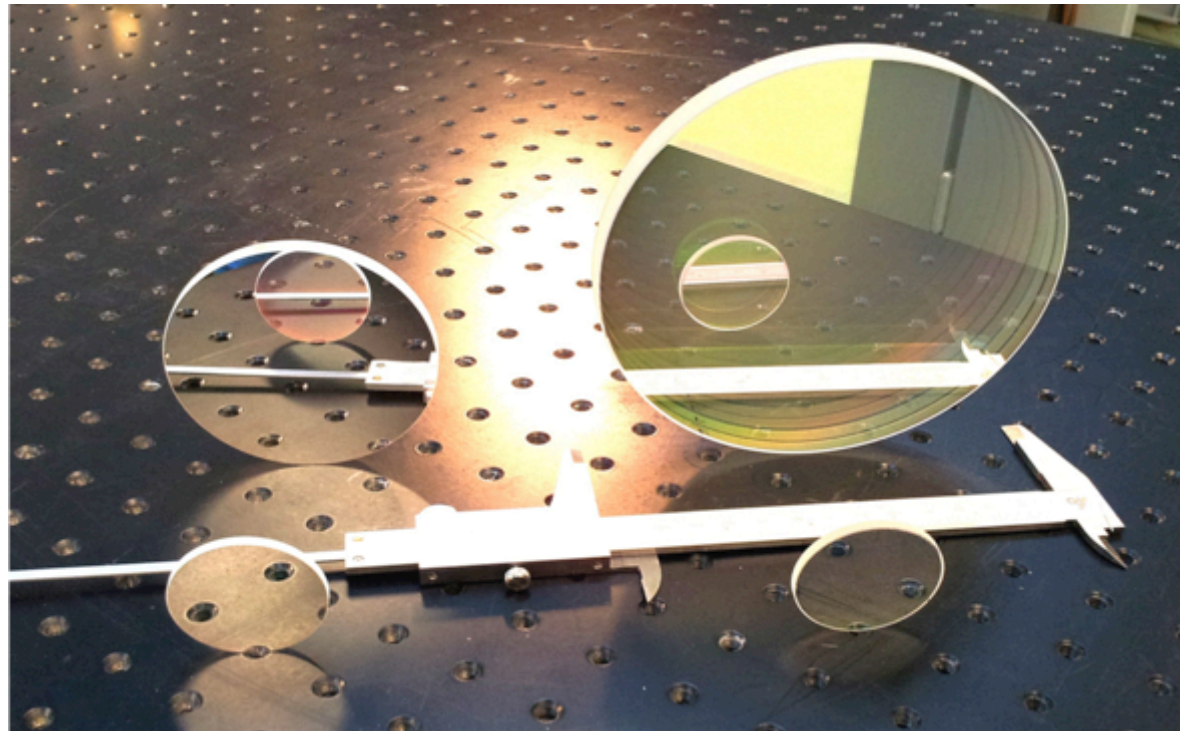
- OPTICS (MPE) 
 - ✓ DRB STM done
 - ✓ EQM lens manufacturing done. In spec
 - ✓ Scaled model of the NI-OA is built and tested
 - ✓ Very good performances measured



- GRISM  
 - ✓ The Engineering model (EM) of the NI-GS has been fully integrated with a baffle and tested (Thermal & vibration)
 - ✓ SILIOS company has been chosen as the grating manufacturer (very good transmission performance obtained with one prototype scale 1)

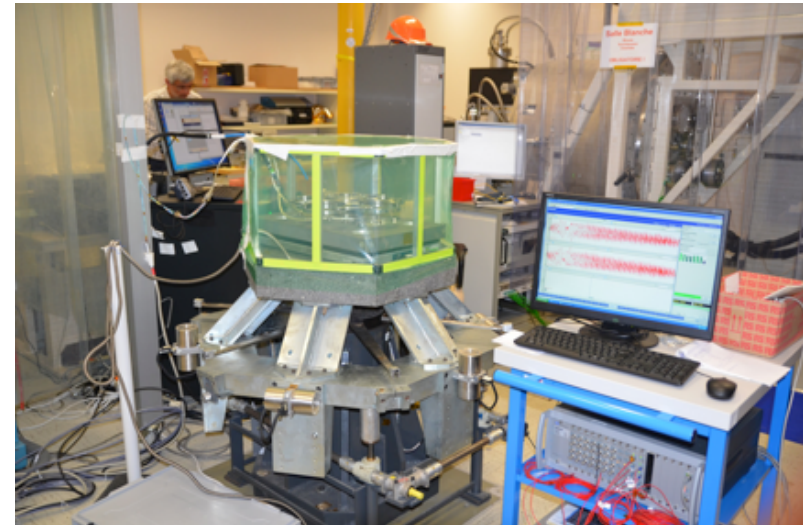
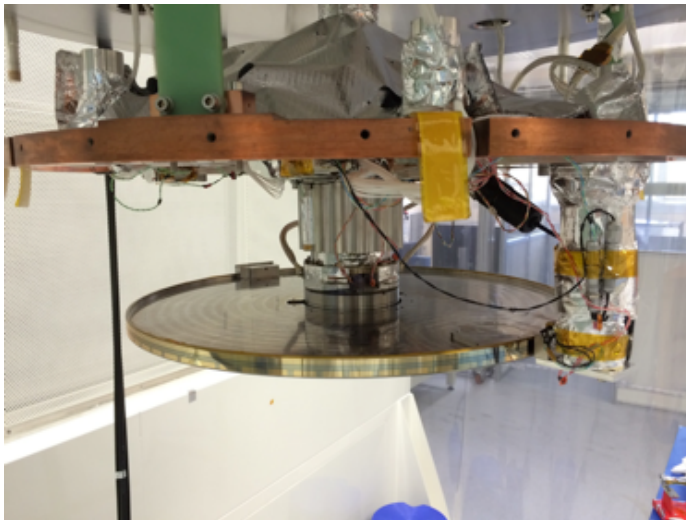


- FILTER 
 - ✓ Y-prototype (left in image),
 - ✓ H-prototype (right) up to 140mm in IAD technique.
 - ✓ Performances in line with the requirements



➤ CRYOMECHANISM ■ ■

- 2 STM produced and tested
- The BBM integration is now completed
- performances motion profile measurements at operating conditions done and OK
- Concern about bearing friction and “high” exported torque to be treated. Different solutions for bearing modification are under evaluation

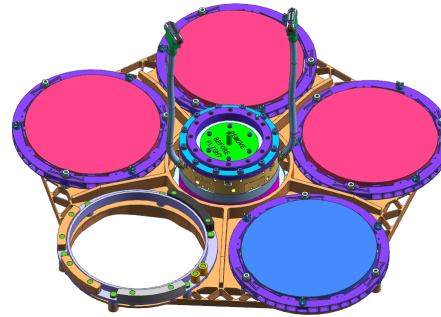




NISP STATUS

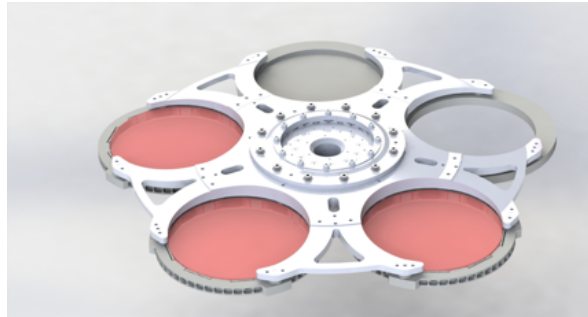
➤ GWA 

- GWA STM DRB done



➤ FWA 

- Is tested and ready for shipment to LAM.

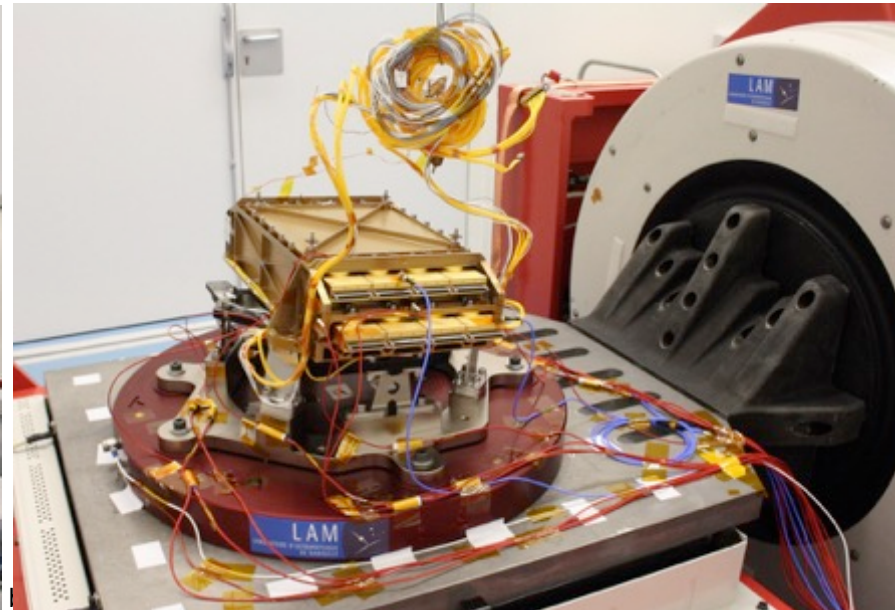
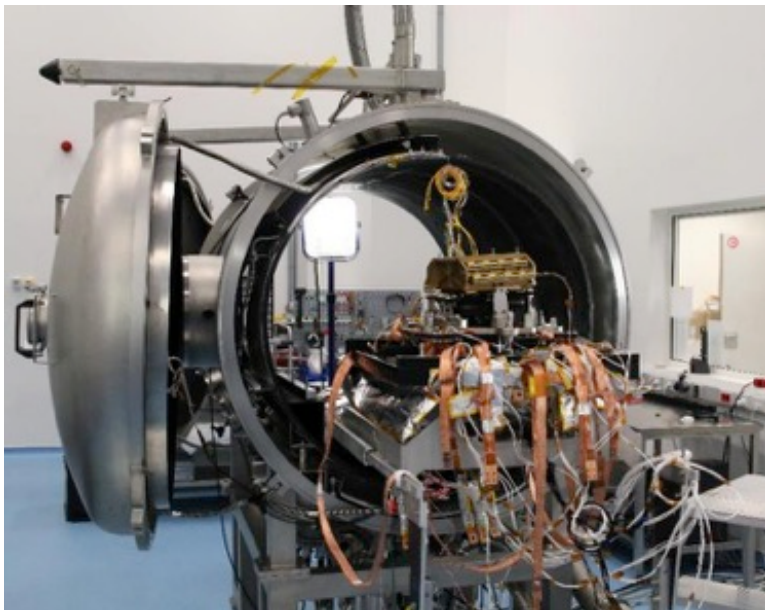
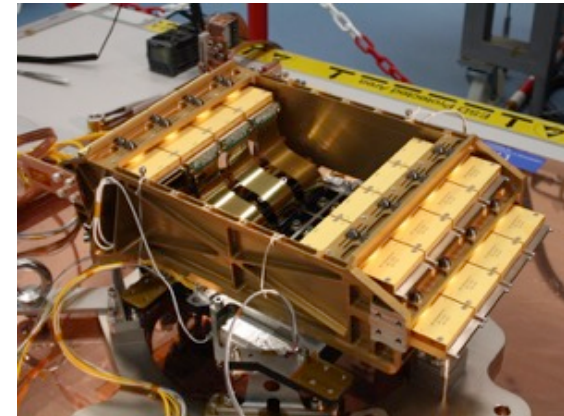
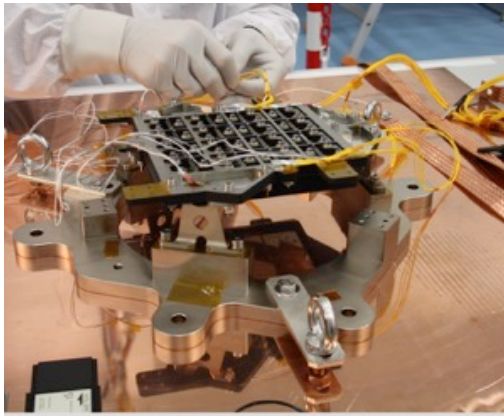


➤ Calibration Unit 

- Has been shipped to LAM.



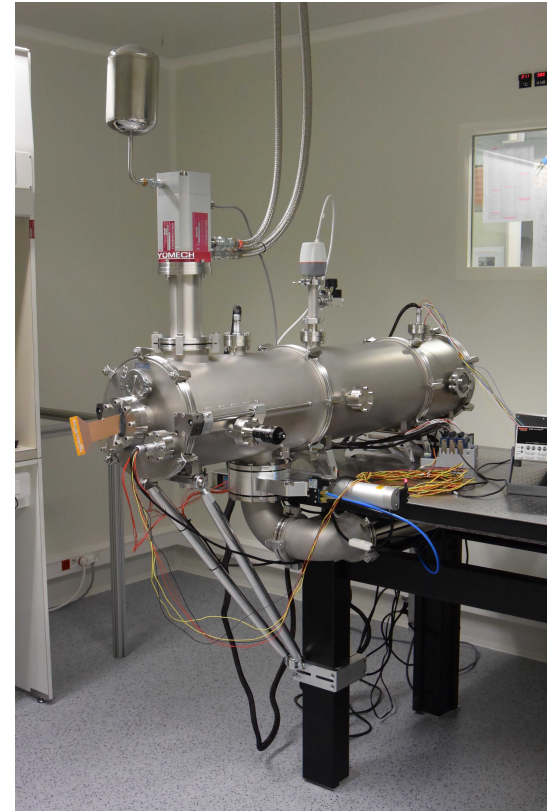
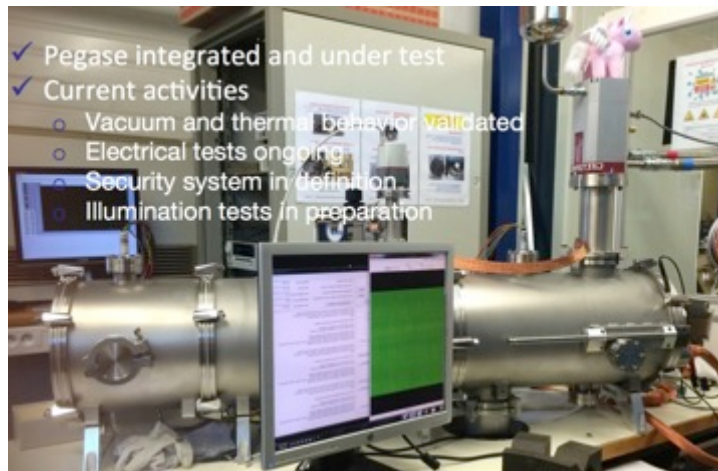
- NI-DS : Demonstration Model ■ ■
 - TB/TV done and OK. Good noise and dark performances achieved (comparable to the one measured at TIS and DCL); Low EMC conducted susceptibility sensitivity of the SCS measured





NISP STATUS

- DETECTOR TESTS    
- CPPM/IPNL is almost ready for the detector characterization tests

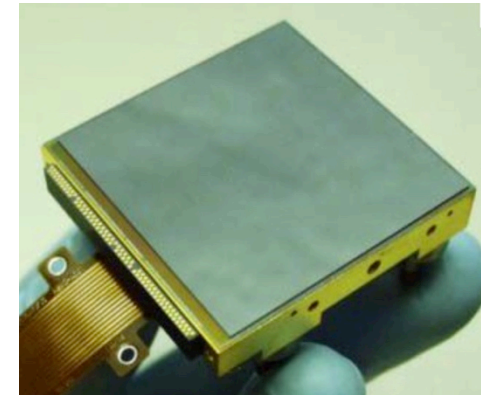
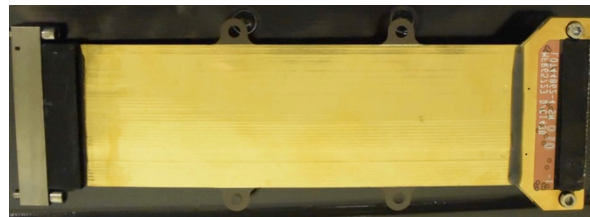
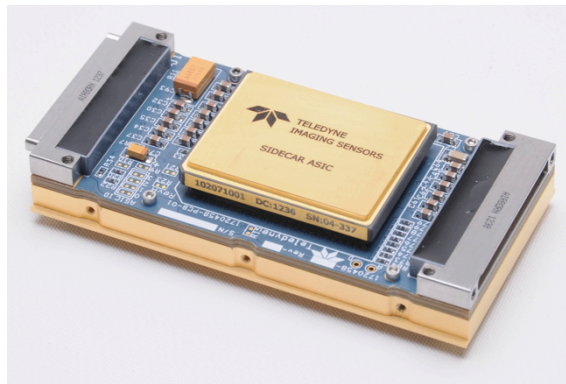




NISP STATUS

➤ Detectors NI-SCS (detector/flex/electronic)

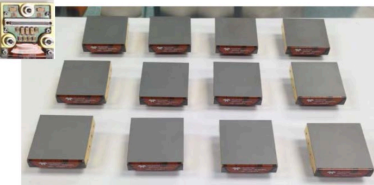
- End of the qualification test for 4 SCS
- Good performances shown by **TELEDYNE**



- 12 FM detectors already produced by TIS



12 flight grade SCA packages were received

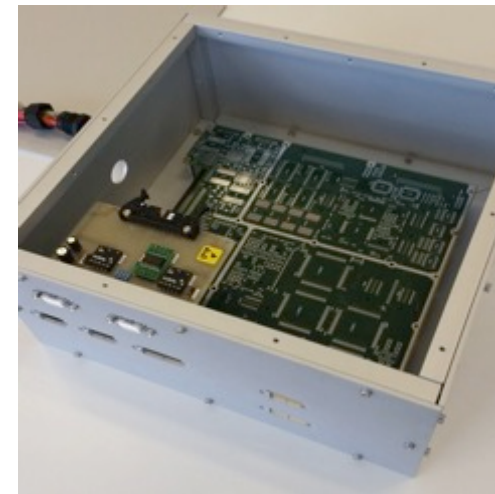
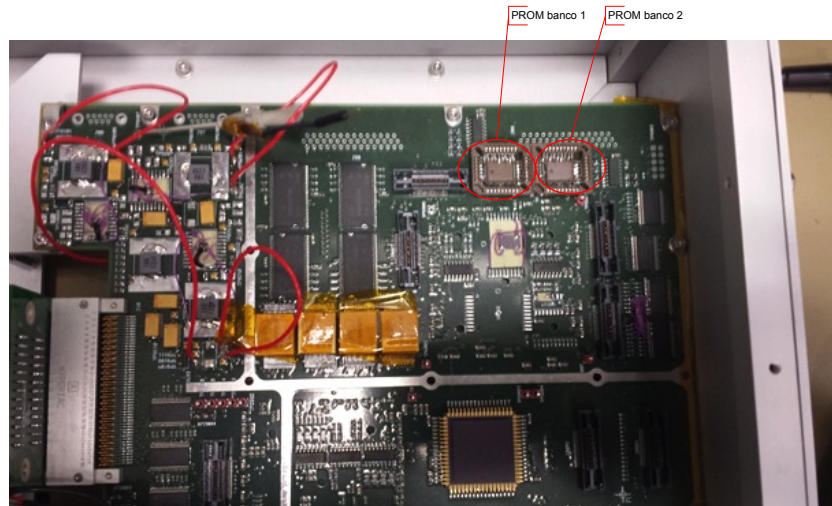


- **VERY GOOD** performances measured on 3 FM detectors by NASA



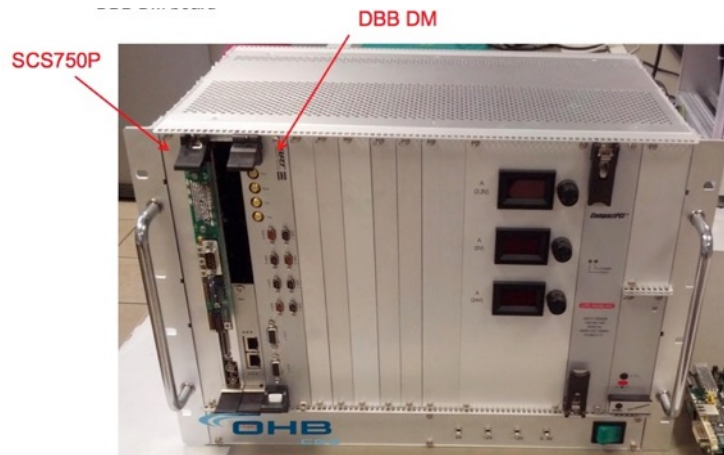
NISP STATUS

- Warm Electronic ICU HW 
 - ✓ ICU Demonstration Model (EBB2 CDPU + setup)



➤ DPU HWs 

- DPU DM is built and tested at CGS
- **First coupling test with real detector/Flex/Sidecar have been done and are OK**





NISP STATUS : MAIN ISSUES

➤ TECHNICAL ISSUES

- Unwanted LED's Photon emission (due to current leakage and EMI effect in the long harness between the calibration source and the electronic)
- To be checked with a specific EMC radiated susceptibility test (managed by LPCS with IPNL/CPPM support)
- Spectro performances (See Anne for more details):
 - Out of field Telescope straylight very high contribution on NISP SNR

➤ PERFORMANCES

- Very good optical performances demonstrated during the last Optical KP

➤ BUDGETS

- ALL NISP budgets are green (with reduced system margin of 6% for the mass budget)



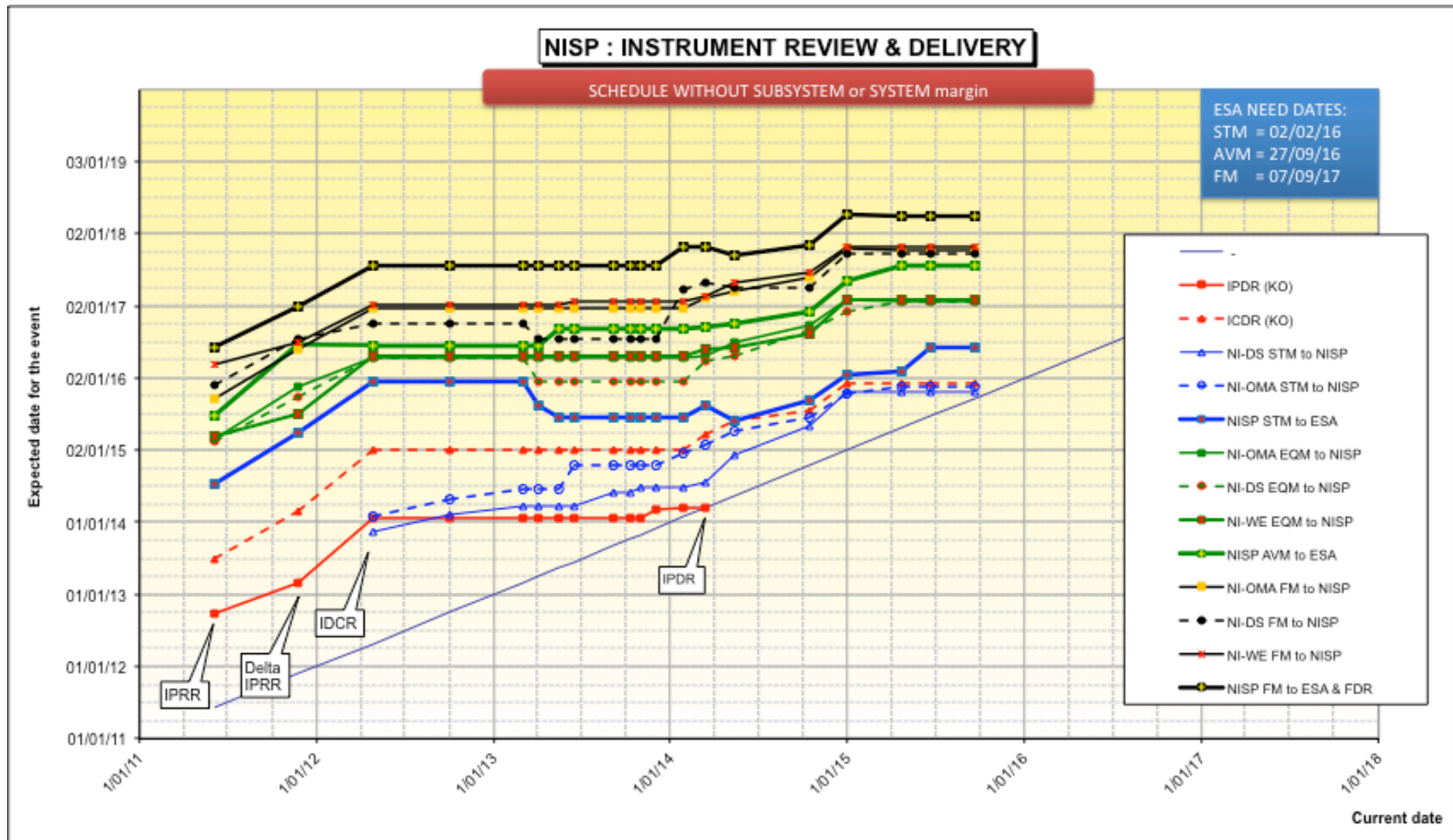
NISP STATUS : PLANNING

- ✧ In december 2014, the NISP delivery date requested by ESA (September 2017) has been announced to be impossible to met.
- ✧ A new date, **April 2018 (earliest possible date)**, has been proposed to ESA. An exercise to include “reasonable” margin has been done. This leads to a delivery date of the NISP FM for **mid of December 2018**. This has been validated by a CNES schedule review board.

✧ **NI-SA, NI-SCS AND NI-DPU ARE IDENTICALLY THE CRITICAL PATH FOR THE NISP FM**



NISP STATUS : PLANNING





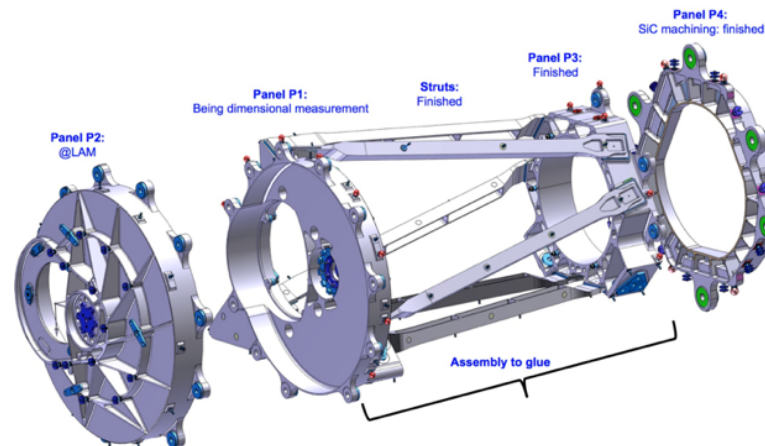
BUT

- Beginning of December 2015, after discussion and negotiation with LAM and Boostec, the NI-SA EQM and FM will have 5 to 6 months of delay with regard to the NISP 2015 schedule. The main reasons are :

1/ late modifications on the NI-SA SiC parts in order to accommodate the baffles, the studs for MLI, the harness interfaces and the modification on the P3 in order to avoid vignetting of the NI-CU.

These modifications are not major with regard to the STM NI-SA structure but they need a long process of convergence between the LAM NI-SA team and Boostec due to SiC manufacturing constraints

2/ the fact that the structure is more complex with regard to what was considered, 2 years ago, in the Boostec estimation. Boostec cannot reduce their manufacturing duration.





NISP STATUS

- To ask for a new delay for the NISP AVM and FM delivery by 6 months is NOT an option. ESA is just under negotiation finalization with industry (TAS-I and AIRBUS) for a Change Notice of MANY M€ called “NISP delay” to treat the NISP delay announced one year ago.
- The only viable option is to downgrade (**NOT SUPPRESSED**) the EQM in an EM (Functional Engineering Model) and to remove to objective to do end to end optical performances test on the EQM
- This EM will be composed of FWA, GWA, CU, DS, ICU and DPU EQM's + interconnecting harness. But NO Optical test nor vibration will be done on this EM
- The EM/PFM scenario add a little risk for NISP BUT it secure the schedule. The NI-SA will be removed from the critical path.
- This EM/PFM scenario should be validated by ECB, ESA and the agencies
- **The delivery of the STM is for July 2016**
- **The delivery of the AVM is for september 2017 (now with some margin).**
- **The delivery of the FM is for april 2018 (without margin).**