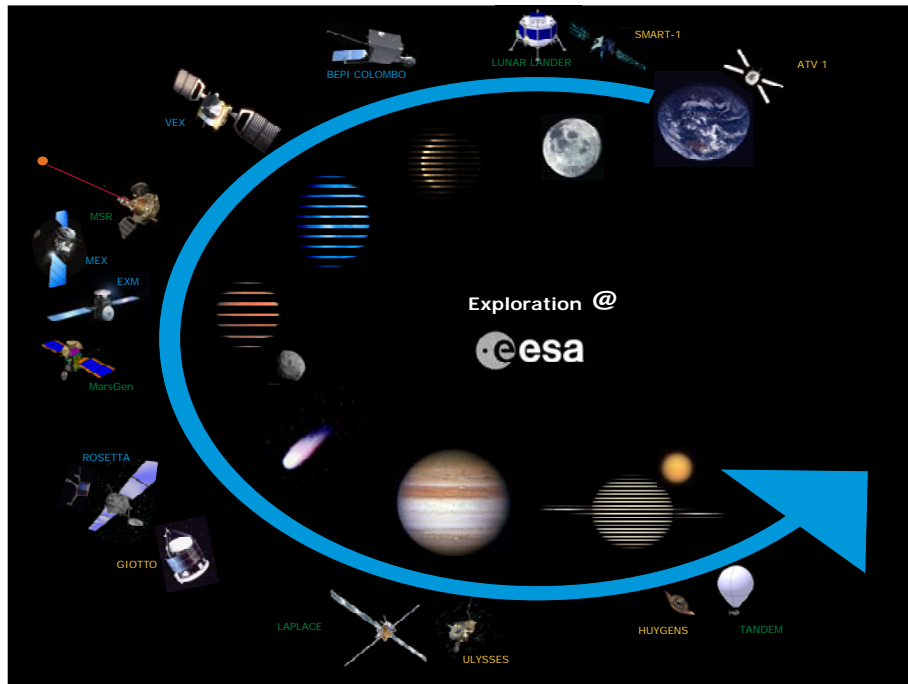


Avionics/GNC Architecture and Sensors Suite for Exploration

A.G.A.S.S.E

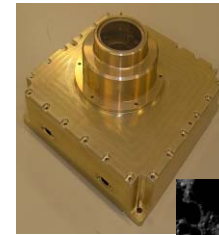
03/11/2010



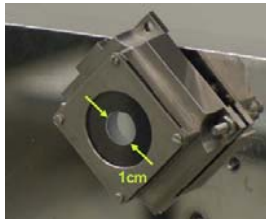
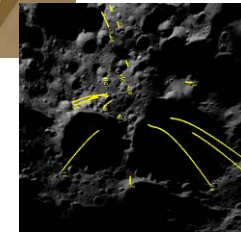
- New class of Exploration missions :
 - MSR and the MREP program
 - Cosmic Vision (LAPLACE)
 - Lunar Lander
- New needs/constraints for GNC :
 - Autonomy
 - Safe and Precision Landing
 - Rendez-Vous
 - Aerobraking
 - Highly integrated and miniaturized avionics

- The objective of the Round Table is to provide a forum for industry to share its experience and views on complex sensors for Exploration Missions in order to optimise the overall Avionics/GNC/Sensor Suite architecture and efficiency.
- Views and opinions are sought from both unit suppliers and users on:
 - Hybridisation of Navigation and Rendez-Vous sensors (optical-based, radar, inertial, GNSS)
 - Performances and limitations of current generation units including processing
 - Areas of improvement perceived as possible via use of new technology
 - Needs and solutions regarding data processing
 - Optimisation of architecture(s) to satisfy different criteria, e.g. reusability, building blocks, miniaturisation
 - Prime and hardware supplier's views on standardisation of interfaces between complex sensors and GNC algorithms (functional) and with avionics (electrical and communication)

- **New GNC solutions :**
 - New sensors (Lidar, Cameras, Altimeter, RF...)
 - « Smart » functions (image processing...)
 - Multiple Sensors-hybridization
 - High-frequency and High processing needs
 - ...



NPAL camera



Sun Sensor on a chip
STM under test

- **... and new Questions regarding avionics:**
 - Where to put the frontier sensors / OBC ?
 - Solutions for high processing functions ?
 - Solutions for miniaturizing the GNC ?
 - How to deal with autonomy ?

- **New GNC solutions :**

7 presentations in total, covering various aspects

20' per presentation

10' for roundtable discussions / questions

- **AGENDA**

| | | |
|-------------|---------|---|
| 14:00-14:10 | ESA | Introduction |
| 14:10-14:40 | GMV | "Multi-sensors based control system for generic autonomous rendez-vous" |
| 14:40-15:10 | DEIMOS | "Validation facility for rendez-vous and aerocapture GNC" |
| 15:10-15:40 | AST (F) | "Architecture, Specification and Re-usability of aided NAV and RDV sensors" |
| 15:40-16:10 | TAS (I) | "Beyond the Aurora Architecture for the new challenging applications [...]" |

16:10-16:20 Coffee break

| | | |
|-------------|---------|---|
| 16:20-16:50 | TAS (F) | "Trend for the use of simpler and cost-effective star trackers and gyros" |
| 16:50-17:20 | CGS | "Experience and views on optimization of Avionics/GNC/Sensors" |
| 17:20-17:50 | UoD | "Image Processing chip for planetary landing applications" |
| 17:50-18:00 | All | Wrap-up |