ThalesAlenia Space
A Thales / Finmeccanica Company

ADCSS – 2010

Generic Specifications for OBCs and RTUs (GeSOR) Roundtable

Thales Alenia Space View

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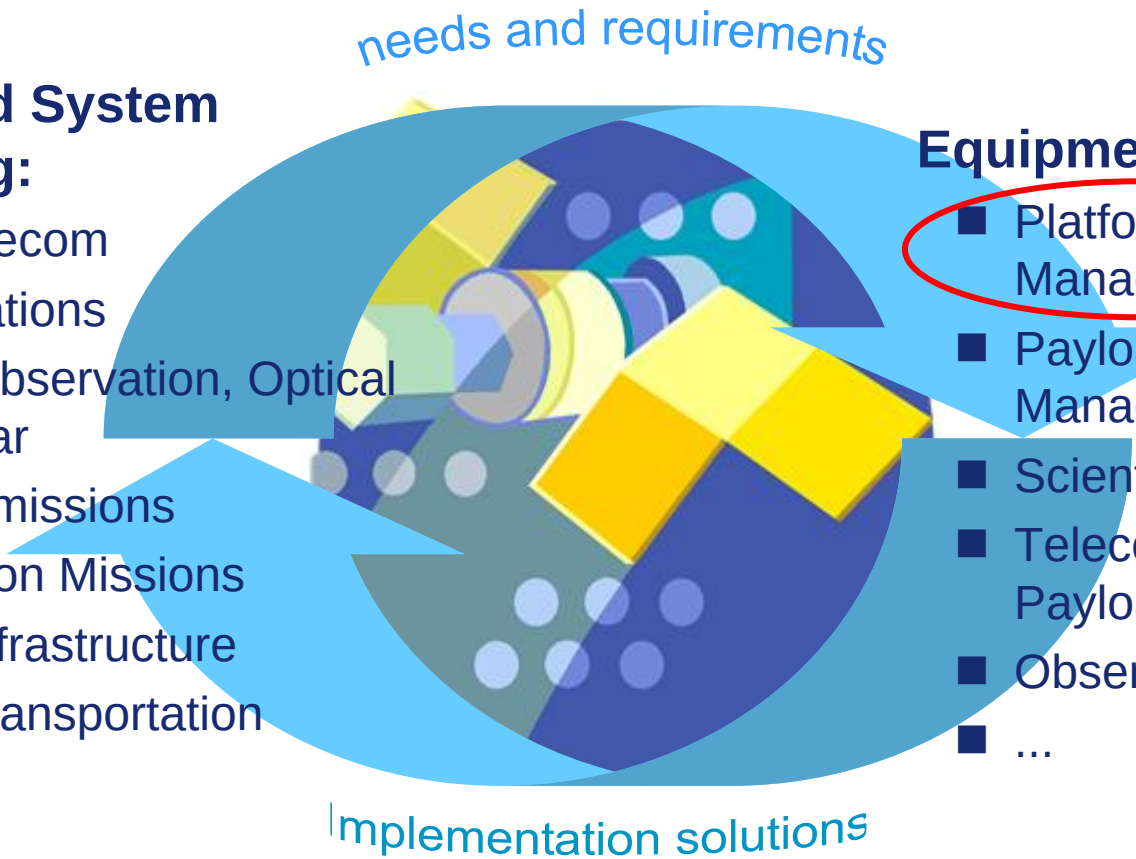
THALES

Mission and System Engineering:

- GEO Telecom
- Constellations
- Hearth Observation, Optical and Radar
- Science missions
- Exploration Missions
- Space Infrastructure
- Space Transportation
- ...



Equipment Developers:

- Platform Data Management
- Payload Data Management
- Scientific Payloads
- Telecommunication Payload
- Observation sub-systems
- ...

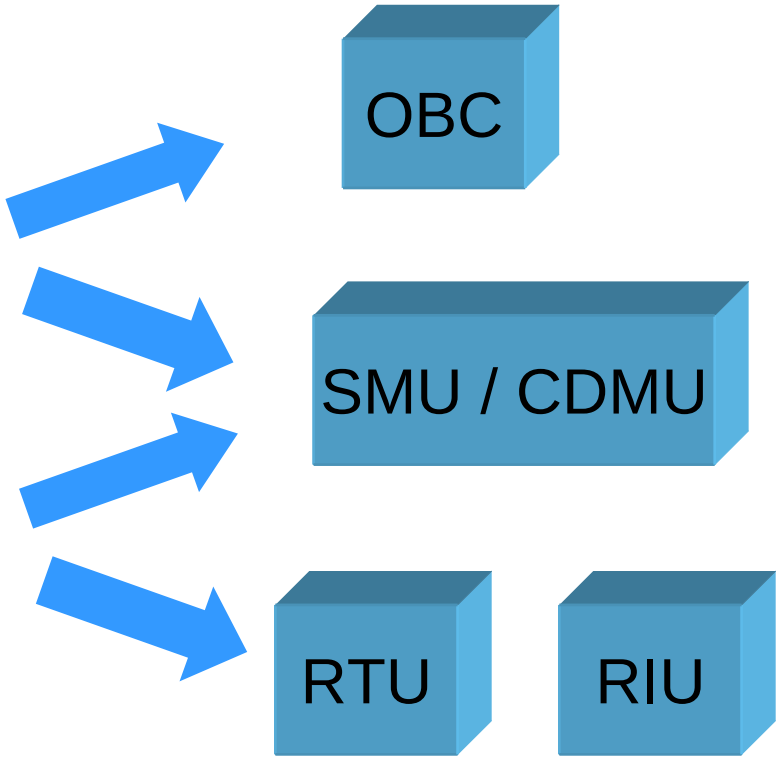
Two major functional blocks:

Central Computer:

- Telemetry & Telecommand
- Processing resources
- FDIR Management

I/O Section:

- HK data acquisition
- Sensors and Actuators management



Always the same or always different ?

Why standardisation ?

- The identified need to work all together toward a common view and reference architecture gave raise to the SAVOIR initiative and related Working Groups
- Thales Alenia Space is participating in and supporting these initiatives
- The specific aim of working on Generic Specifications for OBCs and RTUs is one of the SAVOIR work outcomes.
- Experience has shown in fact that:
  - Similar things are often approached and specified differently
  - Development efforts are sometimes multiplied over different projects
  - Same discussions take place in a “recurrent way”
  - ...
- Next step should be to move the first steps in that direction, first of all identifying the correct way to approach

What is the return we expect from the effort made ?

- An effective tool supporting both System and Equipment level engineering in:
  - Minimizing duplication / multiplication of efforts on different programs
  - Minimize grey areas and / or ineffective discussions
  - Improve reciprocal understanding of:
    - System needs
    - Hardware and Software constraints and capabilities
    - Costs drivers

→ Minimize efforts wasting and as such minimize projects costs

→ Minimize the risk of late requirements or design changes

BUT ...

What shall be avoided ?

On one side:

- Avoid to enter into implementation details
- Avoid to be conditioned by specific design choices:
  - → Start from the problem and not from the product !!!

On the opposite:

- To be so generic to make the resulting spec almost useless in practice

And also:

- Avoid to spend efforts in specifying well consolidated functions

Exceeding in generality

Makes the standard almost empty and useless, ... and then ...

On the Opposite ...

Exceeding in details ...

What about our future System Teams and Tasks ?

And our creative design engineers ?

So in the end ...

The destination of the Standard will be more or less the same !

No way out ?

Too complex objectives ?
Risk of not getting the end ?

The result is again the same !

What we propose to do ?

- Not pursuing the objective of a fully exhaustive and comprehensive specification
- On the opposite, select topics worth to be deepened, and concentrate efforts on them
- A limited set of topics shall be selected to start (new topics can be added at later stage, also considering gained experience)

- Build up a set of thematic mini-specifications or handbooks:
  - Self standing
  - providing the way to overcome an identified problem
  - endorsed by all players (ESA D-TEC and programs, Primes, Equipment suppliers)

- Ensure participation in the working group of adequate representatives of all involved parties
- Identify adequate check points where reporting on work status and ratifying results can be performed

Where to focus ?

- Implementation of new functions or services:
  - Avoid to approach the same problem differently on various projects and development teams, with big efforts and lack of coordination
  - difficulty to get an “a posteriori” convergence and common view

- Revisiting specific topics or requirements which can be commonly recognized as source of problems in several occasions:
  - Too generic requirements
  - Incomplete requirements
  - Very different requirements from one customer to an other one for the same functional objective
  - Hardness to concur on compliance achievement
  - Hard or impossible to demonstrate
  - Verification approach / method not commonly agreed

A very few examples

- Packet Store and Retrieval services
- Built in Test coverage and relevant demonstration methodology
- Security features (euthentication, encryption, ...)
- Boot software functions
- Communications among OBC and RTUs
- ...

Thank You for your attention !!!