

## Presentation of the Reference Architecture consolidation activity (ASRA)

*T. Hult, RUAG*

SAVOIR is supported by an on-going industrial activity where supplier and system integrators work together to refine the Avionics Reference Architecture and propose reference specification for two selected building blocks: the central platform computer (OBC: On-Board Computer) and the data concentrator (RTU: remote terminal unit). The presentation will recall the reference architecture and will present the OBC and RTU reference specification. It will also address the draft Platform/Payload interface specification, and the draft space/ground interface works.

### Software aspects of the reference architecture:

#### Savoir-Faire and related activities

*A. Jung ESA/Estec*



The SAVOIR-FAIRE working group is the sub group in charge of the on-board software reference architecture. It has produced a document describing architectural principles. The following work is supported by several industrial activities:

- CoRDeT and CoRDeT2 consolidate the architectural principles and propose a component model to express the application part of the architecture. They look also at some aspects of the execution platform.
- OSRAC (1+2) investigates the application functional chains and verifies that they can be implemented with the proposed architecture, the component model and the execution platform services.

The presentation will give an overview of the current activities status and achievements. In particular, CoRDeT2 is coming to an end, availing a Space Component Model to describe the application software.

#### Integrated Modular Avionics:

#### Savoir-IMA status and progress

*M. Hernek ESA/Estec*



SAVOIR has launched in 2012 another sub-group in charge of investigating the issues (hardware and software) related to the Integrated Modular Avionics introduction in the reference architectures. This include the hardware architecture (how to configure the existing architecture, to use the existing hardware, is there any missing hardware?) and the software architecture (is the on-board software reference architecture compatible with IMA, what is the impact of Time and Space Partitioning on the execution platform?).

The presentation will introduce the working group Term of References and Work plan and will highlight the first results.

### Relationship between the IMA concept and the On-Board Software Reference Architecture

#### Presentation of the SISTORA activity

*S. Fowell SciSys*

In order to analyse the relationship between the software part of the concept of IMA, and the on-board software reference architecture, Esa has launched a study aiming at listing the compatible points as well as the potential issues and to investigate potential solutions that would be refined in subsequent studies. The presentation will show the final conclusions of the activity.

Savoir-Faire and Savoir-IMA harmonisation strategy

*A. Jung ESA/Estec  
M. Hernek ESA/Estec*

The results of the SISTORA activity will be translated into outlook and plans for the two working groups.

SAVOIR SAIF - AOCS Sensor and Actuator Interfaces WG –

Conclusions and Recommendations:

*Roger Jansson ESA/Estec*



The presentation summarises the work and findings of the SAVOIR SAIF (AOCS Sensor and Actuator InterFaces) working group. The WG has investigated the currently used AOCS data and power interfaces and the possibilities for rationalisation and standardisation of these within Europe. The presentation highlights the recommendations for future work on these data and power interfaces.

**Key Note**

Space Plug & Play Architecture and  
the use of Electronic Data Sheets

*F. Bruhn Ångström Aerospace Corporation Sweden*

This keynote presentation intends to show use cases of the Electronic Data Sheet concept in other contexts, in view of assessing how it will be spun into the Savoir context, namely as support of some of the SOIS services (Device Access Service, Device Virtualisation Service)

Progress in EDS definition (CCSDS, TRP)

*S. Fowell SciSys*

The presentation will highlight the recent activities and results related to the use of the Electronic data Sheet concept in space, in the CCSDS context and in some R&D activities.

Generic AOCS units simulation models

*B. Girouard ESA/Estec  
T. Pattenden Tessella Ltd*

The TRP study “AOCS Unit Simulation Models” has been funded by ESA to prototype generic AOCS sensors and actuator models (gyro, star tracker and reaction wheel). The consortium team led by Tessella Ltd includes Astrium and TAS.

These simulation models are high-fidelity functional models aimed to be used all along the AOCS Verification and Validation cycle, after being validated against real hardware characterisation and test results.

These AOCS unit simulation prototypes will be available to the AOCS community from ESA Members States at the end of the year 2012 with user licenses and a six-month maintenance period. The potential follow-on activities will also be discussed.

## IMA4Space

*M.H. Deredempt      Astrium*

The IMA4SP study intended to assess and prototype in detail the various aspects of the implementation of the IMA concept in spacecraft. Several Partitioning kernels have been evaluated; several case studies have been performed; interesting technical and organisational conclusions have been drawn. The presentation will highlight the principles and results of the study.

## Operability in the SAVOIR context

*M. Mc Kay      ESA/Esoc*

Operability has a large impact on the on-board avionics. Standards such as the ECSS-E-70-11 (operability) or ECSS-E-ST-41 (PUS: Packet Utilisation Standard) are reflecting the way a spacecraft is operated. SAVOIR needs to analyse the impact of operability on the way the avionics is produced, in particular on the cost of equipment, the possibility of reuse, the complexity of the on-board avionics, etc. The presentation will highlight the preliminary findings of the Savoiron investigations. It will illustrate some cost drivers related to current system requirements (SRD and OIRDs), and will explain the impact on the current standards.

## SAVOIR stand point: Astrium view

*R. Roques      Astrium*

Astrium have been conducting in recent years an active harmonisation of avionics architectures to meet customer needs for reduced cost, lower development risks and flexible industrial teamings. The proposed presentation will highlight the links between SAVOIR initiatives and Astrium reference architectures/products as implemented today or as planned in the evolution roadmaps. It will also be addressed which SAVOIR initiatives would need, from Astrium viewpoint, to be refocused or extended or launched for the benefit of future spacecraft programmes.

## SAVOIR stand point: Thales Alenia Space view

*J. Busseuil      TAS*

The proposed presentation will expose TAS views about SAVOIR benefits for the Avionics development, both for short term and long term programs. It will also highlight what have been, from a TAS point of view, the main successful SAG actions, as well as the areas where concrete outputs are lacking. SAVOIR implementation in TAS Avionics will be presented, and relation with targeted avionics cost reduction will be highlighted. Then, specific areas for further SAVOIR actions not yet implemented will be proposed.

NeoSat and SAVOIR: which synergy?

*L. Tanguy Astrium*

*P. Flament TAS*

NEOSAT is the name of the New Generation Platform envisioned for the future telecom platforms commonly developed by Astrium and Thales. Its objectives, in particular the need to have reference architectures, product lines, standardized interface to allow multi-vendor policies, fit well in the Savoir vision.

The presentation will present what NEOSAT is trying to achieve in terms of building blocks and standard interfaces, and how SAVOIR can contribute.

The views from unit suppliers

*C. Jorgensen TERMA*

The SAVOIR concept has been defined with representative of the Suppliers in the SAG, with the expectation of getting better product lines in the future.

The presentation will show how SAVOIR contributes to this objective.