# ADCSS 2013 - Day 2 – CAN bus in Space Session Wrap-up

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ESTEC
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# CAN bus in Space session – Wrap-up

1. **Present**: The SAVOIR Advisory Group has inserted the CAN in the list of the busses of the Reference Functional Architecture considering the CAN features ideal for some applications (Telecom applications, Sensor bus controlled by the RTU)
2. **Future**: In space avionics we are witnessing a change from highly centralized intelligence to distributed autonomous functions, thanks to the availability of high capacity FPGAs and microcontrollers that offload tasks alternatively concentrated in the on- board computer. CAN is considered an enabler for these new architectures.
3. Example of **applications of CAN in space** (Telecom, Exploration, Launchers and small satellites) are completing the session
4. This worshop focuses on the status of availability of **Standard** (ECSS), **Building Blocks** (Ip core, ICs, …) and modern **design tools** for the design, development, production and maintenance of CAN bus networks.

# Presentations of 22/10/2013 1 of 2

## CAN/CANopen applications: Past, present, and future

Presenter: Mr. H. ZELTWANGER General Manager of CIA

The keynote speech has provided an overview about the history and the use of CAN in the past and today. The CAN physical layer is very robust and the data link layer protocol guarantees a reliable data exchange. This is why CAN has been successful in so many different application fields (automotive, industrial, commercial). CAN FD (Flexible Data-Rate) has been presented as a solution in applications that require a higher data-rate.

## The ECSS standard - CAN Bus extension for Space

Presenter: Mr. C. BOLEAT ASTRIUM

This presentation has provided an overview on the CAN/CANOpen Protocol and example of applications of CAN in SPACE (the next generation E3000 for telecoms, Sentinel 1 for Earth observation and the Exomars rover for science and space exploration) that have inspired and driven the ECSS CAN WG work

# Presentations of 22/10/2013 2 of 2

## Where and when can we use CAN?

Presenter: Mr. G. Furano ESA ESTEC

Analysis of the features and characteristics of CAN and CANOpen that make this bus an adequate solution for some present applications (Telecom) and an enabler for some more modern architectures, where functions and intelligence decentralization has a driving role.

First overview of the CAN components (ISO CAN transceivers, ETM) and solutions for Space

## ECSS Standard public review procedure

Presenter: Mr. S. BURY ESA ESTEC

The ECSS-E-ST-50-15 is entering into public review. Details on the ECSS process have been presented.

# Day 2 programme

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| 09:00 | Wrap up of Session 1 (00h10') | Mr. MAGISTRATI, Giorgio (ESA/Data Systems Division) |
| 09:10 | Supporting developments - HW/SW stacks for ECSS CAN (00h10') | Mr. VALVERDE CARRETERO, Alberto (ESA/Data Systems Division) |
| 09:20 | Supporting developments - IP Cores (00h10') | Mr. FOSSATI, Luca (ESA/Data Systems Division) |
| 09:30 | Supporting developments testbeds - VECTOR Tools (00h40') | Mr. FREDERIC, Vidy (VECTOR Gmbh) |
| 10:10 | Supporting Developments - CAN Bus - Integrating Soft IP Cores into Rad Hard Products (00h15') | Mr. ANDERSSON, Jan (Aeroflex Gaisler) |
| 10:25 | Supporting developments testbeds - Protocol Validation System (00h10') | Mr. KOLLIAS, Vangelis (TELETEL SA) |
| 10:35 | Coffee Break/Product Demos (00h30') | |
| 11:05 | CAN in Space applications - Telecom Satellite - Payload (00h20') | Mr. DALENQ, Jean (Astrium) |
| 11:25 | CAN in Space applications - The EXOMARS CAN bus solutions (00h20') | Mr. CARAMIA, Maurizio (Thales Alenia Space) |
| 11:45 | CAN In Space Applications - Thales Telecom Platform (00h15') | Mr. BUSSEUIL, Jacques (Thales Alenia Space) |
| 12:00 | CAN in Space applications - Use of CAN Bus in the VEGA Launcher Autonomous Telemetry Systems. (00h20') | Mr. ORTIX, Francesco (Temis) |
| 12:20 | CAN in Space applications - Small Satellite Platforms (00h20') | Mr. STANTON, David (SSTL) |
| 12:40 | Roundtable (00h20') | Mr. FURANO, Gianluca (ESA/Data Systems Division)<br>Mr. TAYLOR, Chris (ESA/Data Systems Division)<br>Mr. MAGISTRATI, Giorgio (ESA/Data Systems Division) |
| 13:00 | Lunch Break (01h00') | |