CAN IN SPACE WORKSHOP

ESTEC, 10TH OF MARCH 2016

Introduction

Space avionics systems 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.

The glue of this change are the command and control buses, and a similar process led in the late 80s to the development and successive adoption of CAN as an automotive and industrial automation bus.

The CAN workshop will include tutorials, exhibits together with presentations on CAN bus physical and protocol layers. The first return on experience at one year from publication of ECSS-E-ST-50-15C will be given, as well as an update on flying and about-to-fly CAN applications.

Additionally an overview of modern design tools and method commonly used by automotive industry in design, development, production and maintenance of CAN bus networks for safety critical applications will be given.

Objective

The objectives of this workshop are the following:

- ➢ To establish dialogue between those at the forefront of this technology and the Space Agencies who wish to benefit from the progress being made.
- ➢ To identify the main achievements and challenges posed by this technology.
- ➢ Learn of new and emerging applications such as low end satellites (cubesats, LEO supercostellations).
- ➢ To promote fruitful exchange of ideas within the community itself.
- ➢ To see how best the Agency can harness the expertise here in Europe to achieve advances in
- ➢ specific targeted space applications.
- ➢ To learn from other harsh environments where this technology is being employed.

The workshop will be a full one day workshop, starting 9:00 on Thursday 10 March and finishing 18:00 on the same day.

Workshop will be split into a number of sessions, each one addressing different elements, covering:

- ➢ Application needs and expected performances across the domains of Telecom, Earth Observation and Scientific satellites, as well as Cubesat and minisatellites.

- ➢ Evaluation of proposed protocol standard, role of CANOpen and alternatives for specific applications.
- ➢ Results from ESA hardware and software activities, starting from components development, followed by feasibility demonstrators and finishing with flight experience.
- ➢ Standardisation and product assurance processes.

Ample Q&A time will be kept to to open the workshop for discussion.

Workshop Agenda

Thursday – 10th March : ESTEC Einstein Room

09:00 Welcome and Introduction

Space Needs and Opportunities

09:10 : The future of Classical CAN and CAN FD in aerospace applications – Holger Zeltwanger (CAN in Automation)
09:55 : CAN @ Thales – Beyond Exomars (Maurizio Caramia - Luca Bolognino)
10:20 : CAN @ Thales – Use of CAN in the frame of NEOSAT program (Stéphane Cael, Angel Grau Llovera)
10:50 : Coffee Break
11:10 : CAN @ Airbus – Telecom Perspective (Jean Dalenq - Francois Vinet)
11:40 : CAN in Cubesats/Minisats survey (TUDelft - J.CarvajalGodinez@tudelft.nl)
12:15 : CAN in Minisatellites (LuxSpace, Klaus Schwarzenbarth, schwarzenbarth@luxspace.lu)
12:35 : CAN in Minisatellites (SITAEL - giovanni.tuccio@sitael.com)
13:00 : Lunch @ ESTEC Canteen

Technology

14:00 : CAN backplanes and DPC (TAS-B - christophe.sala@thalesaleniaspace.com)
14:20 : CAN Transceiver and components (Aeroflex - teo.delellis@aeroflex.com)
14:40 : CAN Transceiver (Intersil - cboucher@intersil.com)
15:00 : CAN Transceiver and components (Texas Instruments - b-sorianosaura@ti.com)
15:20 : CAN Components (ATMEL - eric.tinlot@atmel.com)
15:40 : CAN Test Equipment (Vector - Frederic.Vidy@vector.com)
16:10 : Coffee Break
16:30 : CAN for scientific payloads: the DREAMS experience (TEMIS - Luca Marrocchi / CISAS - Alessio Aboudan)
16:50 : STT-systemtechnik Radio Transponder with CAN (franz.thaller@stt-systemtechnik.de)

Towards the Future

17:10 : CAN SavoirSAT Testbed and CANOpen Software Stack Tests (ESA)
17:40 : Panel Discussion

For more information on The European Space Agency and how to get here please visit the ESA web site

http://www.esa.int/About_Us/ESTEC/How_to_get_to_ESTEC

Registration for this workshop is free of charge but required through the indico web site, since we will need to compile a list of meeting participants for the Security Office at ESTEC. If you are an external visitor to ESA and you would like to participate, please register in advance.
In order to gain access to ESTEC you will need to bring with you a valid identification document (passport or driver's license). This will need to be presented at the visitors office located in front of the ESTEC main entrance, where you will be issued a badge to allow you access to ESTEC. Allow at least 15 minutes to get your badge at the entrance.

Contact Persons

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