



# DASIA 2016

The International Space System Engineering Conference

A large purple rectangular graphic containing illustrations of blue flowers on the left, a 3D cityscape of Tallinn in the center, and a rocket launch icon in the top right. The dates "10, 11, 12 of May" are written in light blue on the right side. The word "Tallinn" is in orange and "Estonia" is in light blue at the bottom center.

10, 11, 12  
of May

Tallinn  
Estonia



*in co-ordination with:*





|       |  |
|-------|--|
| 07:30 | Registration & welcome coffee  |
| 09:30 | DASIA 2016 : Opening by F.HASS including a presentation of 'Estonian Space Related Activities' |
| 10:15 | by Madis Võõras, Head of Estonian Space Office   |

## Room A

10:15 Presentation of ESA/EU PERASPERA concerning Robotics by G. VISENTIN

### A1 S/W CODING TOOLS - CHAIRED BY M. PROCHAZKA

11:15 Domain specific languages for efficient satellite control software development

*Andreas Wortmann, Martin Beet – OHB-System AG, Germany*

11:45 Porting of MicroPython to LEON platforms

*David Sanchez de la Llana, ESA ESTEC, The Netherlands; Damien George, "George Robotics LTD, United Kingdom*

12:15 VxWorks 6.9 for LEON

*Daniel Cederman, Daniel Hellström - Cobham Gaisler, Sweden*

13:00 LUNCH

### A2 S/W DEVELOPMENT SUPPORT - CHAIRED BY R. BLOMMESTIJN

14:00 Inspector – a supporting tool for AIT\_AIV phase

*Michał Tanaś, Joanna Modławska - ITTI Sp. z o.o., University of Poznań, Poland; Oskar Baksalary - University of Poznan, Poland; Krzysztof Samp, Michał Pokojński - ITTI Sp. z o.o., Poland; Jakob Livschitz – ESA/ESTEC, The Netherlands*

14:30 Benefits of MBSE in the System to Software transition

*R. de Ferluc, F. Bergomi, J. Chauvin, G. Bourgeois - Thales Alenia Space France*

### A3 PROCESSOR REAL TIME SIMULATION & CONTROL - CHAIRED BY PH. ARMBRUSTER

15:00 Validating a Timing Simulator for the NGMP Multicore Processor

*Javier Jalle - Barcelona Supercomputing Center (BSC), Barcelona, Universitat Politècnica de Catalunya (UPC), Barcelona, Spain; Jaume Abella - Barcelona Supercomputing Center (BSC), Barcelona, Spain Luca Fossati, Marco Zulianello - European Space Agency, The Netherlands; Francisco J. Cazorla - Spanish National*

15:30 COFFEE BREAK

### A3 PROCESSOR REAL TIME SIMULATION & CONTROL - CHAIRED BY PH. ARMBRUSTER

16:00 Control Loop Processor (CLP) – Platform for hard real-time space applications

*Marco Ruiz, Jean-Brieuc Feron, Henri de la vallée Poussin - BEM - S.A.B.C.A., Belgium*

### A4 FDIR & FMEA DESIGN - CHAIRED BY PH. LACAN

16:30 Design of FDIR logic for EUCLID – is there a royal road?

*Cristina Ostorero, Chlewicki Grzegorz, Annamaria Piras - Thales Alenia Space, Italy*

17:00 Integrating FMEA in a Model-Driven Methodology

*Fabio Scippacercola, Roberto Pietrantuono, Stefano Russo - DIETI, Università degli Studi di Napoli Federico II, Italy; Alexandre Esper, Nuno Silva - Critical Software SA, Portugal*

17:30 Composable Framework Support for Software-FMEA through Model Execution

*Imre Kocsis, András Pataricza - Budapest University of Technology and Economics - Hungary; Francesco Brancati, Francesco Rossi - Resiltech SRL, Italy*



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| 10:15 | by Madis Võõras, Head of Estonian Space Office in Room A                                       |

## Room B

10:15 Presentation of ESA/EU PERASPERA concerning Robotics by G. VISENTIN in Room A

### B1 ENERGY CONSERVATION IN POWER CONV. & IN PROCESSING - CHAIRED BY H-V. HEYER

11:15 HI-rel point of load module

*Didier Gambart, Charles Sellier, Esther Garcia Sanchez, Nicolas Perrot - , 3D PLUS, France*

11:45 Adapting energy consumption thanks to SW dynamics

*Julien GALIZZI – CNES, France*

### B2 RAD HARD./LOW WEIGHT/HIGH PERFORMANCE SDRAM & ADC - CHAIRED BY H-V. HEYER

12:15 Radiation Hardened DDR2 SDRAM Solution

*Pierre-Xiao Wang, Charles Sellier - 3D PLUS, France*

13:00 LUNCH

### B2 RAD HARD./LOW WEIGHT/HIGH PERFORMANCE SDRAM & ADC - CHAIRED BY H-V. HEYER

14:00 Phaser high speed, high frequency electro-photonics ADC for space enabled router

*Juan Manuel Rodríguez Bejarano, Ángel Álvaro Sánchez, Manuel Sánchez Renedo, Raúl Regada Álvarez – Thales Alenia Space, Spain*

### B3 COTS & LOW TRL FOR PROCESSING AND RAD HARD - CHAIRED BY G. ESTAVES

14:30 TCLS ARM for space

*Jean-Luc Poupat - Airbus Defence & Space, France; Benoit Leroy, Tim Helfers - Airbus Defence & Space, Germany*

15:00 High Performance COTS based Computer for Regenerative Telecom Payloads

*Olivier Notebaert, Lyonel Barthe, Olivier Prieur, Jean-Luc Vanhove- Airbus Defence & Space, France*

15:30 COFFEE BREAK

### B4 RAD HARD/LOW WEIGHT/HIGH PERFORMANCE PROCESSORS - CHAIRED BY J-L. POUPAT

16:00 Atmel's Rad Tolerant MCU, ATmegaS128 AVR available and perspectives

*Nicolas Ganry, Eric Tinlot – Atmel Aerospace, France*

16:30 GR740: Rad-Hard Quad-Core LEON4FT System-on-Chip Validation Results

*Javier Jalle, Magnus Hjorth, Jan Andersson - Cobham Gaisler, Sweden. Beatrice Reynaud, Kamel Kerkour, Remy Chevallier - STMicroelectronics, France. Roland Weigand, Luca Fossati - ESA/ESTEC, The Netherlands*

17:00 Space debris detection on the HPDP, a coarse-grained reconfigurable array architecture for space

*Diego Andres Suarez, Josef Weidendorfer - Technische Universität München, Germany. Tim Helfers, Daniel Bretz, Jens Utzmann - Airbus Defence and Space GmbH, Germany*

17:30 Scalable sensor data processor: development and validation

*R. Pinto, L. Berrojo, E. Garcia - Thales Alenia Space, Spain; R. Trautner – ESA/ESTEC, The Netherlands; G. Rauwerda, K. Sunesen - 3Recore Systems BV, The Netherlands; S. Redant, G. Thys – IMEC, Belgium; J. Andersson, F. Hernandez, S. Habinc – Cobham Gaisler AB, Sweden; J. López - Arquimea Ingeniería, S.L.U., Spain*

18:00 A common DPU platform for ESA JUICE mission instruments

*Martin Aberg, Daniel Hellström, and Arne Samuelsson – Cobham Gaisler, Sweden; Felice Torelli – ESA/ESTEC, The Netherlands*

May 10<sup>th</sup>, 2016

May 10<sup>th</sup>, 2016

# Room A



## A5 INSTRUMENT CONFIGURATIONS - CHAIRED BY U. HOCH

### 08:30 MEDA, the new instrument for Mars environment analysis

Jose F. Moreno-Alvarez - Airbus Defence and Space, Crisa, Spain Antonio Peña-Godino - Airbus Defence and Space, Crisa, Spain, Jose Antonio Rodriguez-Manfredi - Centro de Astrobiología (CSIC-INTA), Spain

### 09:00 CMOS Microcamera for Space Applications (3DCM681)

Didier Gambart, Charles Sellier, Esther Garcia Sanchez, Nicolas Perrot - , 3D PLUS, France; C. Vermontois, A. Bardoux - Centre National d'Etudes Spatiales (CNES), France

### 09:30 A microcontroller distributed architecture for the actuator drive electronics on board the Exomars rover

José Felipe González Sánchez, Ángel Otero Rubio; Ana Solano Ros, Carlos Lucena Fernández, Ricardo Moreno Ruano, Raúl Regada Álvarez, Thales Alenia Space, Spain

## 10:30 COFFEE BREAK

## A6 AUTONOMOUS MISSIONS IXV & EXOMARS - CHAIRED BY A. ROSSIGNOL

### 11:00 The IXV Avionics & Software Architecture for the On-Board Management of the Autonomous Re-Entry Vehicle

Giovanni Malucchi, Roberto Angelini - Thales Alenia Space, Italy; Stephane Dussy - ESA, France

### 11:30 Exomars 2016 Mission Management: Command & Control Strategy For TGO and EDM Operations

Stefano Petraz, Maurizio Costa, Andrea Asberto - Thales Alenia Space, Italy

### 12:00 ExoMars 2016 Entry Descent and Landing Module Avionics and GNC architecture and their validation

A. Amelio, S. Portigliotti, M. Montagna, G. Palermo, F. Rame, G. Passarelli, D. Granà - Thales Alenia Space, Italy; O. Bayle, T. Blancquaert, D. Sanchez, D. Temperanza, L. Lorenzoni - ESA/ESTEC, The Netherlands

### 12:30 Exomars Visloc - the visual localisation system for the Exomars Rover

R. Ward, W. Hamilton - Scisys Ltd, United Kingdom; N. Silva, V. Pereira - Airbus DS Ltd, United Kingdom

## 13:00 LUNCH

### PANEL SESSION: ROBOTICS : WHICH ROADMAP - CHAIRED BY A. ROSSIGNOL

- 14:00 • Projects and R&D studies for Exploration/Orbital & Rover Systems by B. Maediger and A. Merlo
- 15:30 • Discussion in plenum versus roadmap needs  
Additional panel participant is G. Visentin

## 15:30 COFFEE BREAK

### PANEL SESSION: STANDARDISATION OF AVIONICS/DATA SYSTEMS: DO WE FOLLOW THE RIGHT APPROACH? - CHAIRED BY PH. ARMBRUSTER CHAIRED

- 16:00 • Presentation of SAVOIR concepts, H/W & S/W
- 17:30 • Panel discussion on applicability and needs in using SAVOIR related standardisation  
Additional panel participants are M. Hernek and M. Prochazka

Gala Dinner and Entertainment hosted by Eurospace  
Meeting point and time: 7:00 pm in the lobby of the Swissôtel

# Room B



## B5 OB S/W REF. ARCHITECTURES - CHAIRED BY G. LAUTENSCHLÄGER

### 08:30 On-board Software Reference Architecture for Payloads

Victor Bos - SSF, Finland; Ana Rugina - ESA/ESTEC, The Netherlands; Adam Trcka - Evolsys, Czech Republic

### 09:00 GERICOS: a generic framework for the development of on-board software

Philippe Plasson, Christopher Cuomo, LeeRoy Malac-Allain, Gary Gabriel - Laboratory of Space Studies and Instrumentation in Astrophysics (LESIA), France

### 09:30 European Space Software Repository ESSR

Jakob Livschitz, Robert Blommesteijn - ESA/ESTEC, The Netherlands

## B6 OB REF. ARCHITECTURES - CHAIRED BY O. NOTEBAERT

### 10:00 A Flexible Hardware Test and Demonstration Platform for the Fractionated System Architecture YETE

Florian Kempf, Tobias Mikschl, Klaus Schilling - University of Würzburg, Germany; Tristan Tzschichholz, Alexander Hilgarth, Roland Haber - Zentrum für Telematik e.V., Germany

## 10:30 COFFEE BREAK

## B6 OB REF. ARCHITECTURES - CHAIRED BY O. NOTEBAERT

### 11:00 Open Modular Avionics Architecture for Space Applications and its communication infrastructure

Christopher Carl, Samuel Pletner, Peter M. Behr - Fraunhofer Institute for Open Communication Systems FOKUS, Germany

### 11:30 Spacecraft Onboard Interface Services Current Status and Roadmap

Marek Prochazka, Jorge Lopez, Sabine Krueger - ESA/ESTEC, The Netherlands

### 12:00 The SAVOIR Communication Architecture: current results and way forward

Marco Panunzio, Patricia Lopez-Cueva - Thales Alenia Space France

### 12:30 The CCSDS Proposed Draft Recommended Standard for Electronic Data Sheets

R. Melvin - Scisys Ltd, United Kingdom; M. Perrotin, A. Valverde - ESA/ESTEC, The Netherlands; F. Ahlendorf - Jena Optronik, Germany; E. Durand - Airbus, France; J. Cornforth - Thales, France

## 13:00 LUNCH

### PANEL SESSION IN ROOM A

## 15:30 COFFEE BREAK

### PANEL SESSION IN ROOM A

Gala Dinner and Entertainment hosted by Eurospace  
Meeting point and time: 7:00 pm in the lobby of the Swissôtel

May 11<sup>th</sup>, 2016

May 11<sup>th</sup>, 2016





# Room A

## A7 IMA/STP IMPLEMENTATIONS - CHAIRED BY M. HERNEK

### 08:30 SPCC - Software Elements for Security Partition Communication Controller

HJ Herpel - Airbus DS GmbH, Germany

### 09:00 Space and Time Partitioning with hardware support for Space Applications

S. Pinto - Centro Algoritmi, University of Minho, Guimarães, Portugal, Aerospace Information and Technology, University of Würzburg, Germany. A. Tavares - Centro Algoritmi, University of Minho, Guimarães, Portugal. S. Montenegro - Aerospace Information and Technology, University of Würzburg, Germany

### 09:30 Temporal Duplex-Triplex on COTS processors with XtratuM

Julien GALIZZI - CNES, France; Michel PIGNOL - CNES, France; Miguel MASMANO, Manuel MUNOZ, Javier CORONEL PARADA - FENTISS, France; Thierry PARRAIN, Pierre COMBETTES - elta Technologies Sud Ouest (DTSO), France

## A8 QUALIFYING PARTITIONING - CHAIRED BY R. WARD

### 10:00 Partitioning strategy using static analysis techniques

Yongjin Seo, Hyeon Soo Kim - Chungnam National University, Korea

## 10:30 COFFEE BREAK

## A8 QUALIFYING PARTITIONING - CHAIRED BY R. WARD

### 11:00 Towards formal verification of interrupts and hypercalls

Andrew Butterfield - Lero, Trinity College, Ireland; Alexandre Cortier - Airbus Defence and Space, France; Kevin Hennessy - Trinity College, Ireland; Mike Hinchey - Lero, University of Limerick, Ireland

### 11:30 Qualification Strategy and Plan for Integrated Modular Avionics for Space Separation Kernel

Mark Hann - SciSys UK Ltd, United Kingdom; Régis De Ferluc - Thales Alenia Space, France; Alexandre Cortier - Airbus Defence & Space, France; Andrew Butterfield - School of Computer Science and Statistics, Ireland; Julien Galizzi - CNES, France

## A9 METHODS OF V&V - CHAIRED BY M. MULLET

### 12:00 Fault injection validation of a safety-critical TMR system

Ivano Irrera, Henrique Madeira - University of Coimbra, Coimbra, Portugal; András Zentai, Beáta Hergovics - Prolan, Zrt, Hungary

## 13:00 LUNCH

## A9 METHODS OF V&V - CHAIRED BY M. MULLET

### 14:00 Early Results from Characterizing Verification Tools through Coding Error Candidates Reported in Space Flight Software

Ralf Gerlich, Rainer Gerlich - BSSE, Germany; Anton Fischer, Mário Pinto - etamax space GmbH, Germany; Christian R. Prause - Deutsches Zentrum für Luft- und Raumfahrt, Germany

### 14:30 MATTS - A step towards Model Based Testing

HJ Herpel, G. Willich - Airbus DS GmbH, Germany; J. Li, J. Xie, B. Johansen, K. Kvinnesland - DNVGL, Norway; S. Krueger, P. Barrios - ESA/ESTEC, The Netherlands

## A10 QUALITY & COST OF V&V - CHAIRED BY R. GERLICH

### 15:00 Towards an analysis framework for cost & quality estimation of V&V projects

András Pataricza, László Gónczy, Ágnes Salánki - Budapest University of Technology and Economics, Hungary; Francesco Brancati, Rosaria Esposito - ResilTech, Italy

## 15:30 COFFEE BREAK

# Room B



## B7 RISK ANALYSIS FOR SPACE - CHAIRED BY C. JOERGENSEN

### 08:30 Applicability of the Common Safety Method for Risk Evaluation and Assessment (CSM-RA) to the Space Domain

Francisco Moreira, Nuno Silva - CRITICAL Software SA, Portugal

### 09:00 Framework for automation of hazard log management on large critical projects

Lorenzo Vinerbi, P. Arun Babu - ResilTech s.r.l., Italy

## B8 SENSOR NETWORK & INTERFACING - CHAIRED BY H-J. HERPEL

### 09:30 Development and commissioning results of the hybrid sensor bus engineering qualification model

Andreas Huml, Philipp Putzer, Markus Roner, Christian Hülsemeyer, Norbert M. K. Lemke - OHB System AG, Germany

### 10:00 Modular approach enables tighter integration between the Sensor and Front End Electronics providing several performance advantages for Space & Earth

Adam Taylor, e2v - United Kingdom

## 10:30 COFFEE BREAK

## B8 SENSOR NETWORK & INTERFACING - CHAIRED BY H-J. HERPEL

### 11:00 Time Synchronization/Stamping Method with Visible Light Communication and Energy Harvesting Method for Wireless Sensor Network inside Ariane 5 Vehicle Equipment Bay

Hendra Kesuma, Kris Niederkleine, Sebastian Schmale, Tejas Ahobala, Steffen Paul Institute of Electrodynamics and Microelectronics (ITEM) university of Bremen, Germany; Johannes Sebald - Airbus Defense & Space, Germany

## B9 ETHERNET & TTETHERNET - CHAIRED BY P. CORMERY

### 11:30 Overview of activities involving Time Triggered Ethernet technology carried out by ESA ESTEC

Tomasz Szewczyk, Farid Guettache - ESA/ESTEC, The Netherlands; Vangelis Kollias, TELETEL S.A, Greece; Cristina Plettner, Arne Schramm, Erik Stallkamp, Airbus Defence & Space, Germany

### 12:00 Ethernet for Space: an enabler for next generation avionics

Clément Pruvost, Thierry Planche, Olivier Notebaert, Alain Rossignol - Airbus Defence and Space SAS, France; Hans-Juergen Herpel, Andreas Schuettauf - Airbus Defence and Space GmbH, Germany

## 13:00 LUNCH

## B9 ETHERNET & TTETHERNET - CHAIRED BY P. CORMERY

### 14:00 Development status of the rad-tolerant TTEthernet controller

Christian Fidi, Ivan Masar - TTech Computertechnik AG, Austria

## B10 SPACEWIRE & SPACEFIBRE - CHAIRED BY M. ROVATTI

### 14:30 Spacecraft command control with SpaceWire

Luc Planche, Dr. Sylvain Garcésn, Olivier Notebaert, Karl Devillières, Clément Pruvost - Airbus Defence & Space, France; David Jameux, Elena Tremolizzo - ESA/ESTEC, The Netherlands

### 15:00 SpaceFibre: The Standard and the Multi-Lane Layer

Steve Parkes, Chris McClements, David McLaren - University of Dundee, United Kingdom; Albert Ferrer Florit, Alberto Gonzalez Villafranca - Star-Dundee Ltd, United Kingdom

## 15:30 COFFEE BREAK

## B10 SPACEWIRE & SPACEFIBRE - CHAIRED BY F. HASS

### 16:00 SUNRISE: A SpaceFibre Router

Steve Parkes, Chris McClements, David McLaren - University of Dundee, United Kingdom; Albert Ferrer Florit, Alberto Gonzalez Villafranca - Star-Dundee Ltd, United Kingdom

## LOCATION

### SWISSÔTEL TALLINN

Tornimäe 3, 10145 Tallinn

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[www.swissotel.com/hotels/tallinn/](http://www.swissotel.com/hotels/tallinn/)

Please contact us before booking your room in order to get the Dasia 2016 Group Code

## REGISTRATION

**Advance:** Please complete the electronic Conference Registration Form (<http://eurospace.org/dasia-2016.aspx>) and send it to Eurospace before May 1<sup>st</sup>, 2016.

**On site:** The Conference Secretariat will open on May 10<sup>th</sup>, 2016 for late registration, documentation and information, and will remain in operation throughout the Conference

## CONFERENCE FEES

A Conference fee of **940 €** is requested from all participants, including speakers and chairmen. This fee will include lunches, coffee breaks, reception and proceedings.

The fee for a Vendor Display is **€2 200** and includes one attendance fee for the Conference.

## PAYMENT

Before the Conference:

**By cheque:** in Euro to the order of EUROSPACE payable in a French Bank to be sent to:  
**EUROSPACE – 15/17, avenue de Ségur – 75007 PARIS, France.**

**By bank transfer:** in Euro to **EUROSPACE – IBAN: FR76 3006 6100 9100 0103 6680 245 – B.I.C: CMCIFRPP**  
**C.I.C. Paris – Agence Bosquet – 16 ter avenue Bosquet – F-75007 PARIS.**

Charges on bank orders shall be borne by the sender

**In cash or credit card:** In Euro **only** by cash, with a **VISA** or a **MASTERCARD** (AMERICAN EXPRESS will not be accepted)

## CANCELLATIONS

Refunds of 50% will be made if a written request is received **before May 1<sup>st</sup>, at the latest.**

No refunds will be made for cancellations received after this date, but substitutions are possible.

## HOTEL RESERVATIONS

A block reservation has been made at special Conference rates at Swissôtel Tallinn.

It is recommended to reserve hotel accommodation **very rapidly** via the link provided in the **Eurospace website** (<http://eurospace.org/dasia-2016.aspx>).

After March 10<sup>th</sup>, reservation will be on normal request and upon availability.

**Important notice:** The application of DASIA 2016 negotiated rate(s) is subject to the use of the order form specifically provided by the SwissHotel available through the above link. **Please inform your travel agent if necessary.**

**Once the booking confirmed, please contact the hotel directly regarding any subsequential question/change.**

## LANGUAGES

English will be the working language of the Conference. The time allocated for each presentation will include a discussion at the end

## TRAVEL & BANK FACILITIES

Travel and **exchange** arrangements can be made by the Concierge of the Hotel.

## PROCEEDINGS

The Proceedings will be published after the Conference :

On a CD Rom:

And via  
Eurospace server:

Authors are requested to deliver the pdf version of their final paper(s) **by June 1<sup>st</sup>, 2016 at the latest**, via the following address exclusively: **dasia2016@eurospace.org**

## CHAIRMAN & PROGRAMME COMMITTEE

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**Conference Manager: N. Alepton, Eurospace**

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**A. Schuettauf, Airbus Defence & Space ST GmbH**

**R. Ward, SciSys Ltd**

