EVENT GUIDE
Includes Final Programme

2017 SAE AEROSPACE STANDARDS SUMMIT

EMERGING TECHNOLOGIES AND THE ENABLING ROLE OF STANDARDS

25–26 April, 2017
EASA Headquarters Building, Airbus Room
Konrad-Adenauer-Ufer 3, 50668, Cologne, Germany

STANDARDS MATTER. AND SO DO YOU.

Standards are published documents that set out specifications and procedures to ensure products and systems are safe, reliable, and consistently perform the way they were intended. They serve to protect... support innovation...boost production and productivity... make businesses more competitive...link businesses to the world... complement regulation and make markets work better....and, reward individual participants personally and professionally.

Standards matter—and so does the ongoing need for involvement from people like you to participate in the development of these technical documents for the aerospace industries.

SAE International is a 112-year, industry-driven, consensus-based standards development organization responsible for publishing more aerospace and ground vehicle standards than any other organization. Seven thousand volunteer committee members from around the globe provide expertise for standards on critical aerospace issues ranging from fuel to weather conditions and ground vehicle issues on materials to engine power and energy mandates. Hundreds of its current technologies are used and referenced in European, US and international certification and regulatory documents and elsewhere around the world.

For the important work of standards, SAE International and the mobility industry is currently in need of experts or professionals with the technical expertise to participate on the following standards development committees. If you possess the technical knowledge as related to these committees, we urge you to contact us. **Because standards matter and so do you.**

Learn more, express interest at + 1.724.772.7161 or sae.org/standardsdev/aeroexperts.htm

SAE INTERNATIONAL AEROSPACE STANDARDS DEVELOPMENT COMMITTEES CURRENTLY SEEKING YOUR TECHNICAL EXPERTISE.

- AC-9M Cabin Air Management
- Electric Aircraft Steering Group
- AMS-AM Additive Manufacturing
- AE-7 Aerospace Power Systems
- AMS-P17 Composite Materials
- HM-1 Integrated Vehicle Health Monitoring
- G-33, Configuration Management
- G-47, Systems Engineering
- EIMI, Enterprise Information Management & Interoperability

P140189

SPONSORS

Thank you to the following companies who have generously chosen to support this SAE International event.

SAE AEROSPACE STANDARDS SUMMIT

CONTENTS

Sponsors	1
General Information	3
Summit Overview	3
Technical Programme	4

EMERGENCY PROCEDURES DURING THE EVENT NAME

During the event attendees are to follow the established emergency guidelines of the facility where the emergency occurs. **Based on the location of the incident, report emergencies to the nearest venue representative and/or security personnel if available, or report to the SAE registration area.**

Should a catastrophic event occur, attendees should follow the safety and security instructions issued by the facility at the time of the event. This includes listening for instructions provided through the public address system and following posted evacuation routes if required.

In the event of an emergency or a major disruption to the schedule of events at the event, attendees and exhibitors may call this number to receive further information about the resumption of this event. Updates will also be provided via the SAE website at www.sae.org.

SAE EMERGENCY HOTLINE

+49.221.899904144
+49.221.899904314
+44.7798.826443

Attendees are permitted to bring camera equipment onto the show floor. Exhibitors retain the right to restrict photography of their products or displays and such decisions are within the discretion of the exhibitor and are not controlled by SAE International.

Open exchange of ideas

The purpose of this session is to provide an open exchange of ideas. Remarks made by participants or members of the audience cannot be quoted or attributed to the individual or their company unless express permission has been granted by the individual and their company. Any record of remarks, discussion, or photographs may not be used unless express permission has been granted by the individual and their company.

Consent to use of images

Please note that photographs and video taken by or on behalf of SAE International of event activities and attendees shall be the property of SAE International. By registering for an SAE International event, you consent to the use by SAE International of any photograph or video in which you appear, including for promotional purposes, in print, digital, or other format, without notice or compensation to you.

P17104213

GENERAL INFORMATION

REGISTRATION HOURS

Registration Hours

EASA Foyer

Tuesday, 25th April
08:00 – 08:30

Wednesday, 26th April
08:00 – 08:15

Registration Fees

Delegates	€120
Technical Programme Participant	FREE

All attendees receive admittance to technical sessions, networking breaks, luncheon, and dinner.

Technical Sessions

Airbus Room

Tuesday, 25th April
08:40 – 17:30

Wednesday, 26th April
08:15 – 12:30

NETWORKING OPPORTUNITIES

Networking Lunch

Boeing Room 1

Tuesday, 25th April
12:00 – 13:00

Networking Breaks

Boeing Room 1

Tuesday, 25th April
10:00 – 10:30
14:15 – 14:45

Wednesday, 26th April
10:00 – 10:15

Networking Dinner

XII Apostel Restaurant
Heumarkt 68-72
Cologne 50667

Tuesday, 25th April
18:30 – 20:30

2017 SAE AEROSPACE STANDARDS SUMMIT ORGANIZING COMMITTEE

Andy Pickard, Rolls-Royce

Robert Ireland, Airlines for America

Pascal Thalin, Thales

Pierre-Charles Rolland, Airbus

Robby O'Dell, Gulfstream

Laura Hitchcock, The Boeing Company

Isabelle Caron, Rolls-Royce

Richard Minter, EASA

Massimo Cavaliere, CIRA

Olaf Ronsdorf, Lufthansa Tecknik

Derek Jones , BAE Systems

SUMMIT OVERVIEW

25 APRIL, 2017	26 APRIL, 2017
Keynote Addresses	Keynote Addresses
Networking Break	Cybersecurity
IoT and Digital Manufacturing	Networking Break
Group Luncheon	Nano Materials
Novel Vertical Flight	Wrap up
Networking Break	Conclusion
Model Based Systems Engineering (MBSE)	
Wireless Networking	
Evening Networking Dinner	

TECHNICAL PROGRAM

See page 6 for speaker biographies and session abstracts

TUESDAY, 25th April, 2017 — Airbus Room

Time	Title
08:45	**Keynote Addresses** *Moderator: Richard Minter, EASA* *Keynote Presenters:* *Rachel Daeschler, EASA* *David Schutt, SAE International* *Pascal Medal, EASA*
09:45	**Outputs from Previous Summits** *David Alexander, SAE International*
10:00 - Networking Break - Boeing 1 Room	
10:30	**IoT and Digital Manufacturing** *Moderator: Richard Fernandes, ATOS* *Presenters and Panelists:* *Paul Clarke, ATI* *Richard Fernandes, ATOS* *Akin Keskin, Rolls-Royce* *Joerg Garske, IBM*
12:00 - Group Luncheon - Boeing 1 Room	
13:00	**Novel Vertical Flight** *Moderator: Manfred Reichel, EASA* *Presenters and Panelists:* *Manfred Reichel, EASA* *Kyle Martin, GAMA* *Stephan Wolf, Volocopter*
14:15 - Networking Break-Boeing 1 Room	
14:45	**Model Based Systems Engineering** *Moderator: Alan Harding, INCOSE* *Presenters and Panelists:* *Alan Harding, INCOSE* *Duncan Kemp, UK MoD* *Isabella Panella, UTAS* *Stephan Marwedel, Airbus* *Colin Harrison, UTAS (Panelist)*
16:15	**Wireless Networking** *Moderator: Robby O'Dell, Gulfstream* *Presenters and Panelists:* *Friedhelm Runge, EASA* *Uwe Schwark, Airbus* *Bahareh Zaghari, Southampton University*
18:30 - Networking Dinner - XII Apostel Restaurant	

TECHNICAL PROGRAM

WEDNESDAY, 26th April, 2017 — Airbus Room

Time	Title
08:15	**Welcome** *Richard Greaves, Meggitt PLC*
08:25	**Keynote Addresses** *Moderator: Andy Pickard, Rolls-Royce* *Keynote Presenters:* *Giorgio Cioni, NATO*
09:15	**Cybersecurity** *Moderator: Richard Greaves, Meggitt PLC* *Presenters and Panelists:* *Richard MacFarlane, ICAO* *Cyrille Rosay, EASA* *Susan Cabler, FAA* *Stephan Marwedel (Panelist)* *Giuseppe Zorzino, Consultant* *Ruben Flohr, EC*
10:30 - Networking Break - Boeing 1 Room	
11:00	**NanoMaterials** *Moderator: Laura Hitchcock, The Boeing Company* *Presenters and Panelists:* *Alexis Lambourne, Rolls -Royce* *Olha Sereda, CSEM SA* *Giuseppe Gigli, Researcher, to be confirmed* *Simon Waite, EASA (Panelist)*
12:15	**Wrap up**
12:30	**Concludes**

SPEAKER BIOGRAPHIES AND SESSION ABSTRACTS

All sessions located in the Airbus Room

Keynote Session

Tuesday, 25th April
08:45

ABSTRACT
Standards play a major role in military acquisition as well as civilian aircraft certification processes. The Keynote presentations will discuss the interaction of standards and regulations in order to enable successful introduction of emerging technologies.

David L. Schutt, PhD
Chief Executive Officer, SAE International

David Schutt, PhD, is the CEO and oversees the global management and operations of the +$150M SAE Group, consisting of SAE International (SAEI), The Performance Review Institute (PRI), the Industry Technologies Consortia (ITC) and several subsidiaries and joint ventures.

SAE International is non-for-profit educational and scientific organization dedicated to advancing mobility technology and design engineering to better serve humanity. Its more than 128,000 members, including engineers, business executives, educators, and students from more than 100 countries, develop technical standards, publish authoritative literature, and share information and exchange ideas for advancing the engineering of mobility systems. SAE is the world's resource for designing, building, maintaining and operating self-propelled vehicles for use on land or sea, in air or space.

The Performance Review Institute is a trade association that advances the interests of industry through development of performance standards and administration of quality assurance, accreditation, and certification programs; as well as related activities for the benefit of industry, government and the public. It provides a full range of programs and services designed to improve manufacturing process and product quality by adding value, reducing total cost and promoting collaboration between global stakeholders in the mobility and other interested industries.

The SAE Industry Technologies Consortia (ITC) is a trade association with a mission to build industry infrastructure tailored to the respective technology, market and industry member groups while satisfying time horizons and providing the responsible resources to enable achievement of industry objectives. Within the SAE ITC, the Defense Automotive Technologies Consortium (DATC), administers as an Other Transaction Authority (OTA), a US Government mechanism to engage non-traditional defense contracts to quickly and efficiently integrate innovative automotive technologies into military ground vehicles, ultimately resulting in speed of adoption of commercial technologies and improved defense capabilities.

Dr. Schutt serves on a variety of not-for-profit and for-profits boards, national commissions and local business organizations. Prior to joining SAE International in 2007, Schutt worked at the American Chemical Society (ACS) in several executive management positions.

Dr. Schutt holds a doctorate in physical chemistry from Princeton University and a bachelor's degree from Calvin College. He also earned an M.B.A. from Johns Hopkins University.

Keynote speakers and Executive Panelists:

Pascal Medal
Chief Engineer, EASA

Started his career as Project Certification Manager at DGAC-F.

He then worked for the DGAC OPS department, specifically in the following domains

- JAA Equipment Sub Committee (EQSC) JAR OPS 1, representing DGAC
- Flight Simulation Training Device
- AWO (JAR OPS subpart E) a

From March 2001 to early February 2004, appointed JAA OPS Sectorial team coordinator at JAA Hoofddorp. During this period he was the JAA member of the International MMEL policy WG and Chairperson for the JAA MEL Policy WG (responsible for the drafting of JAA MEL (TGL 26). P.Medal then started his activities at EASA in March 2004, as Large Aeroplane section Manager.

From September 2007 to September 2014, he was Head of the Experts Department (C2), Responsible for the management of Airworthiness experts, OSD experts and FSTD experts.

P.Medal has been involved in the development of standardisation bodies since 2004.

He is the Chairperson of the EASA Internal International Standardisation Committee (IISC) since end 2014.

He represents EASA in the EUROCAE council and in the European ATM Standardisation Coordination Group.

Since September 2014, P.Medal is the EASA Chief Engineer.

SPEAKER BIOGRAPHIES AND SESSION ABSTRACTS

Keynote Session (continued)

Rachel Daeschler
EASA

Experience and competencies:

1. Career to date

Deputy Strategy and Safety Management Director and Head of Safety Intelligence and Performance Department, EASA (since 1st September 2014)

Certification Manager Large Aeroplanes, Certification Directorate, EASA (2010-2014)

Section Manager Airworthiness Directives, safety management and research , Certification Directorate, EASA (2007-2010)

Project Certification Manager Large Aeroplanes, Certification Directorate, EASA (2004-2007)

Deputy Head of Reims Area Control Centre, DGAC-France (2003-2004)

Deputy Head of Large Aeroplane Certification Office, DGAC-France (2000-2003)

Project Certification Manager Large Aeroplanes, DGAC-France (1996-1999)

2. Education

Master Aircraft Airworthiness, France (1996)

Engineer Ecole Nationale de l'Aviation Civile, France (1996)

Engineer Ecole Polytechnique, France (1994)

NOTES

SPEAKER BIOGRAPHIES AND SESSION ABSTRACTS

Outputs from Previous Summits

Tuesday, 25th April
09:45

David Alexander

David Alexander has been with SAE International and its affiliates for 11 years and is based in London, UK. In May 2016, he assumed the role of Director, Aerospace Standards. In this role, David is responsible globally for the operation of the SAE Aerospace Standards program and its staff, the management support for the SAE Aerospace Council and for liaisons with key organisations around the world. This also involves leveraging standards to work across the SAE International portfolio.

Supported by SAE staff in London, Paris and Brussels, this includes the relationships with European industry, EASA and other key aviation stakeholders in Europe. This includes working with the European and global aerospace community on new standards development as well as global strategy and outreach for SAE.

David Alexander has also acted as the SAE staff lead for both Integrated Vehicle Health Management (IVHM) and Electric and More Electric Aircraft, and the associated technologies: establishing the strategic IVHM and Electric Aircraft Steering Groups with industry leaders. He also facilitates the General Assembly of the International Aerospace Quality Group (IAQG).

Prior to joining the SAE Aerospace Standards operation, David worked on the Nadcap accreditation programme through SAE's affiliate organisation PRI, and he holds a BA (Hons) degree from the University of Manchester in French & Russian studies.

NOTES

SPEAKER BIOGRAPHIES AND SESSION ABSTRACTS

IoT and Digital Manufacturing Session

Tuesday, 25th April
10:30

ABSTRACT
Aerospace has long been at the forefront of digital technology, however, the adoption of Digital Manufacturing, or Industry 4.0, techniques has the potential to benefit Aerospace throughout the lifecycle covering design, engineering, manufacture, operation to disposal. Benefits that can be enabled by Digital Manufacturing include; reduced time to market, cost reduction, improved productivity and quality, collaboration across the supply chain, improved modelling and simulation supporting product design and evolution. The Digital Manufacturing session will discuss some of the opportunities, challenges and approaches that are being adopted by Aerospace and illustrate how the adoption of standards will enable the realisation of key concepts such as the 'Digital Twin' and how this is enabled through a communications infrastructure.

Moderator and Speaker:
Richard Fernandes
Aerospace and Defence

Richard Fernandes is a vastly experienced business technologist who has worked with a range of Aerospace and Defence clients across the world to identify, create and deliver value-add IT solutions. Richard, who is qualified as a pilot and trained as a control systems software engineer, is a seasoned consultant with superb commercial awareness and a focus on delivering projects that drive a meaningful impact for clients.

Presenters and Panelists:

Paul Clarke,
Aerospace Technology Institute - Lead Technologist

Paul Clarke is Lead Technologist at the Aerospace Technology Institute. Paul's role focuses on leading multi-disciplinary technology initiatives for the UK aerospace sector, to develop strategic programmes with industry and increase both UK capability and growth. Paul's primary activities include thought leadership in digital transformation, product verification and international strategy.

Paul has spent the last few months working with the aerospace community to examine digital transformation across all areas of the value chain, highlighting how the aerospace sector is developing its digital strategy; identifying key technology trends, and providing clarity around their application. Paul's research and findings have been published as an ATI White Paper. The paper provides the sector with a digital framework that establishes both market-led business opportunities and digital capability drivers, enabling companies to assess where they are on the digital journey.

Paul comes from a technical and operational background, having worked in both space and aerospace. Paul has undertaken various roles, including Lead Mechanical Engineer for EXOMARS Mars Rover and R&T Manager for GKN Aerospace, responsible for the development and delivery of the Boeing 787 electro-thermal wing ice protection system.

Akin Keskin
Rolls-Royce

1994-2001: TU-Berlin Study of Aeronautics and Astronautics

2001: RRD/TU-Berlin Master Thesis (Dipl.-Ing.) in Parametric Aerofoil Design

2001-2003: RRD Aerothermal Methods Group Focus on Parametric Design, CFD, Design Systems 2003-2006: RRD/Cottbus UTC VIT R&T Project and Research Assistant 2006-2009: RRD Compressor Aerodynamic Group Focus on Design Systems, CFD, Optimization, Long Term Research 2007: Cottbus UTC PhD in Process Automation and Multi-Objective Optimization for Turbomachinery Design 2009-2012: RR plc (Derby) TURBOSTREAM (Turbines /Cambridge) GPDS Global Lead HPTD Team Lead Hi5 Global Team Lead

2012-2014: RRD DSE Hi5 Global Team Lead 2014-now: RR plc (Derby) Chief of Virtual Engine Design Systems

2015-now: Engineering Associate Fellow – Design Systems and Methodologies

Joerg Garske
IBM

Joerg Garske is the Director Connected Enterprise in the Global Automotive, Aerospace & Defense Industry.

He is responsible for strategy, development and execution plans for the IBM industry solution offerings in this domain and has worked with many of the major players in Aerospace & Defense to drive business value and support the transformation to new operational and service models. Garske is engaged with clients to shape and implement leading edge industry solutions for Smarter Manufacturing and Smarter Services helping these companies to leverage more information and to benefit from new insights in the era of Big Data and e-Enabled Aircraft. His focus is being a trusted advisor to senior line of business management throughout the aviation ecosystem.

He graduated from the Hamburg University of Applied Science as a mechanical engineer in 1987. After 4 years with CADAM Inc (a subsidiary of Lockheed) he joined IBM in 1991 and has held various engineering, solutions sales and management roles in his over 25 years of experience.

SPEAKER BIOGRAPHIES AND SESSION ABSTRACTS

Novel Vertical Flight Session

Tuesday, 25th April
13:00

ABSTRACT
From small personal hover boards to large transport helicopters, vertical lift technologies push the technological frontier. Almost every aspect of vertical lift aircraft are researched - aerodynamics, controls, powertrain, electrification, distributed propulsion, and new structures – to improve performance and efficiency. The rapid pace of high tech consumer electronics developments combined with the unmanned aircraft configuration flexibility offer innovative designs at all scales. Vertical lift aircraft serve important roles, and novel technologies expand capabilities beyond conventional barriers.

Moderator:
Manfred Reichel
Section Manager CT.2.2, CS-23 Aeroplanes, EASA

Manfred is Section Manager within the European Aviation Safety Agency (EASA), responsible for the CS-23 aeroplanes with piston engine and electric propulsion. He joint EASA more than 10 years ago as a Project Certification Manager in General Aviation, taking care of aircraft types under CS-LSA, CS-VLA and CS-23, and also airships. In 2015 he became Section Manager for CT.2.2. He is engaged in the reorganisation of CS-23 and is also heavily engaged in electric propulsion for more than two years now.

Before EASA he spent 15 years in the small aeroplane industry in Austria and Germany, dealing with flight test, non-electric systems, DOA, serial production support, final inspection and, throughout that time, type certification of modern type design worldwide.

Presenters and Panelists:

Kyle Martin
GAMA, Director of European Regulatory Affairs

Kyle is responsible for GAMA's activities related to regulatory requirements and policies in Europe governing the design, certification, operation and maintenance of general aviation aircraft. He works closely with the European Aviation Safety Agency (EASA) and serves on several of the Agency's advisory bodies and rulemaking groups. He also works closely with other prominent regulatory agencies such as the FAA to promote regulatory harmonisation and mutual recognition in order to reduce the burden of validation and duplicated industry oversight.

Based in Brussels, Kyle Martin joined GAMA from the Aerospace and Defence Industries Association of Europe (ASD) in September 2016, where he most recently served as Civil Aviation Manager. Prior to joining ASD, he served as a project systems engineer and whole engine design engineer for Rolls-Royce in the United Kingdom. A native of Northern Ireland, he received his master's degree with honours in aeronautical engineering from the University of Bristol.

Stephan Wolf
Co-Founder & Managing Director

As a software developer specializing in networks he designed the central nervous system of the Volocopter. His idealism in broadening our technical horizons advanced the development of the Volocopter to a key extent. His work for Siemens in the field of industrial automation over a period of many years and multiple awards as a Microsoft Most Valuable Professional just represent a few milestones in his career.

SPEAKER BIOGRAPHIES AND SESSION ABSTRACTS

Model Based Systems Engineering Session

Tuesday, 25th April
14:45

ABSTRACT
The MBSE process should support open standards for system architecture modelling and tool interoperability. These open standards should be used to specify the System Architecture Model and to serve as a lingua franca among Systems Engineers and other stakeholders (Software Engineers, Electrical Engineers, Mechanical Engineers, Customers, etc.).

As a result MBSE should
- Facilitate communication among various stakeholders across the System Development Life Cycle
- Capture and manage corporate Intellectual Property related to system architectures, designs, and processes
- Compare and contrast "As Is" and "To Be" solutions
- Provide scalable structure for problem solving
- Furnish rich abstractions to manage size and complexity
- Explore multiple solutions or ideas concurrently with minimal risk
- Detect errors and omissions early in System Development Life Cycle, including virtual testing

The session will explore some of these points and where additional standards may be required to support them.

Moderator:
Alan Harding
INCOSE

Alan Harding is the 2016-2018 President of the International Council On Systems Engineering (INCOSE), the global professional society for systems engineering. He is a practicing systems engineer with over 30 years of experience in defence and security applications. His specialist interest areas include capability, systems-of-systems, architecture, and competency development.

Alan Harding is the head of the information systems engineering discipline for the BAE Systems Military Air and Information business in the UK. He was also appointed a BAE Systems Global Engineering Fellow in November 2010, recognising his professional expertise and activities promoting systems within the company and in the wider UK and international community.

Presenters and Panelists:

Duncan Kemp
Chief Systems Engineer and the Defence Equipment & Support (DE&S) Fellow for Systems Engineering in the UK Ministry of Defence

Duncan Kemp has over 20 years' experience in designing and implementing complex organisational capabilities. Duncan is currently leading a major initiative to develop an in-house technical support capability to provide Systems Engineering support to DE&S delivery teams.

Previously Duncan was chief systems engineer for rail in the UK Department for Transport. He was responsible for initiating a strategic review of UK rail, which identified over £850M p.a. savings due to the adoption of better systems approaches. Within rail Duncan supported major programmes such as Thameslink and High Speed 2 in the development if their whole system approaches. He was also the chair of the cross-industry system reliability improvement group, which identified approaches to double capacity on existing infrastructure at increased levels of reliability.

Duncan is a chartered engineer and Fellow of the Institution of Engineering and Technology. He was one of the authoring team on the SE Vision 2025 and the lead author for the INCOSE UK Capability SE Guide. He has presented keynote addresses, papers and been a panellist at a range of national and international conferences. Duncan is currently the INCOSE UK outreach director.

SPEAKER BIOGRAPHIES AND SESSION ABSTRACTS

Isabella Panella
UTAS

Isabella Panella graduated in 2002 in Aerospace Engineering (BEng 1st Class Hons) from the Royal Melbourne Institute of Technology, Vic. Australia.

After graduating, she started her career in the defence market in UK, joining QinetiQ plc as flight control engineer. She started working in autonomous systems, specifically unmanned aircraft, and she became a subject matter expert in autonomy.

She then grew in the role of system engineering and technical manager, becoming Head of Applied Research in Selex Galileo, Chief of Systems in Rolls Royce plc., and currently working as Systems Engineering Manager in UTAS Actuation Systems and Propeller Systems.

Stephan Marwedel
Airbus

Stephan Marwedel works as a security engineer at Airbus in Germany and is responsible for the development and application of model-based systems

engineering within the architecture and integration department. His main interests are early design validation and architecture optimization of cyber physical systems. He is currently involved several research projects concerned with application of model-based engineering principles to the validation of cyber security architectures for civil aircraft systems. He is a frequent speaker at technical conferences on modeling and simulation topics and has published several research papers on the subject.

Furthermore, he is a member of the AEEC Network Infrastructure and Security (NIS) working group on behalf of Airbus.

He holds a Master's degree in physics from the University of Hamburg.

Colin Harrison
UTAS

I have a Master's degree in Mechanical and Manufacturing Engineering.

My current role is Programme Chief Engineer on Bombardier C Series High Lift (Flaps And Slat) System.

In the past I have been:

Programme Chief Engineer on the A350 Electric Trust Reverser Actuation System (TRAS)

Engineering Manager responsible for the engineering teams on Eclectic Actuation systems for aero engines.

Technical Lead for the Weapons Bay Door Drive System on JSF

All the above included significant integration of Mechanical and Electronic/Software/Firmware

Also but not limited to ...

Technical Lead A340 TRAS

Technical CRJ700 TRAS

Technical Lead Embraer 145 TRAS

Principle Development Engineer

Etc etc

I have worked since graduation at Wolverhampton for 27 years. Mainly picking up the pieces of a system , integrating it and getting in a position to clear for flight, have been involved in the initial system definition from proposals to design review.

NOTES

SPEAKER BIOGRAPHIES AND SESSION ABSTRACTS

Wireless Networking Session

Tuesday, 25th April
16:15

ABSTRACT
The ever-increasing push for in flight real time connectivity for passengers, crew and airframes/engines to the ground/satellites is leading to a greater need for compatible communications standards. With many of the available frequencies already in use researchers are looking to other means of communication between engine and airframe. This session will also explore the regulatory status and standardization efforts on Wireless Avionics Intra-Communications (WAIC) that are currently being worked. WAIC is concerned with safety related onboard wireless communications between avionics or cabin electronics systems and/or their subsystems.

Moderator:
Robby O'Dell
Program Manager II Advanced Flight Deck Programs – Gulfstream Aerospace Corporation

Robby O'Dell is currently Program Manager II for Advanced Flight Deck Programs at Gulfstream Aerospace Corporation. Since 2013, Robby has been responsible for all activities related to new technology development and deployment within the Gulfstream flight deck. His responsibilities include leading a cross-functional team (Engineering, Flight Operations, Procurement, Contracts, Preliminary Design, Sales and Marketing, Certification, Product Support) to evaluate and mature technology to the appropriate readiness levels for consideration on the aircraft, to coordinate with customers to determine specific requirements, and to prepare Gulfstream aircraft for future regulations through interfacing with standards developing organizations and regulatory agencies (FAA, EASA, etc.).

In addition, Robby is the founder and chair of the Gulfstream Industry Committee Council that is responsible for all strategic planning initiatives related to efforts with standards developing organizations. His industry committee efforts include being the Gulfstream representative on the SAE Aerospace Council, a contributing member to the SAE HM-1 Integrated Vehicle Health Management (IVHM) committee, a liaison on the SAE G-20 Airport Lighting committee, and a contributing author to multiple SAE books including "IVHM – Business Case Theory and Practice" and "Integrated Vehicle Health Management: Implementation and Lessons Learned." He has also directed the application of multiple patents during his career.

Previously in 2009, Robby was selected to lead the Gulfstream Aircraft Health and Trend Monitoring research and development team. As Program Manager, his responsibilities included the planning, development, certification, and integration of the G650 Aircraft Health and Trend Monitoring System (AHTMS) and the deployment of ground based infrastructure to support the Gulfstream AHTMS service.

In 2008, Robby accepted a program manager position within Gulfstream Sustaining and Government Programs where he was responsible for entry-into-service support for the G200 NetJets fleet of aircraft. In addition, he led multidiscipline teams to analyze in service issues, identify root cause, certify solutions, and develop fleet retrofit directives.

Robby began his career in 2004 at Gulfstream as an electrical engineer working on various avionics and air data systems for the G450 and G550 aircraft.

Robby earned a Bachelor's degree in Biomedical Engineering, a Master's degree in Electrical Engineering, and a Master's Degree in Business Administration, all from Mercer University.

Presenters and Panelists:

Friedhelm Runge
EASA

Friedhelm Runge, a German national, graduated as an electrical engineer for control systems from the University of Braunschweig. He worked 16 years in aviation industry in aircraft modifications especially for special mission systems but as well for GPS equipment. He joined EASA in 2005 as Project Certification Manager in the Parts and Appliances Section, became Avionics Systems Section manager and became the Chief Expert Avionics and Electrical systems. Within that position he is responsible for the development of the EASA position in the Avionics domain and coordinates the EASA participation to standards development in the avionics area.

SPEAKER BIOGRAPHIES AND SESSION ABSTRACTS

Mr. Uwe Schwark
Airbus Operations GmbH

Uwe Schwark was born in Bremen, Germany, on July 9, 1970. He received the Dipl.-Ing. degree in Communications Engineering from the University of Applied Sciences Bremen in 1997. His professional career started in the wireless communications industry. Throughout a period of 9 years in this field he worked in the standardization of UMTS, contributed to and led R&D activities within the courses of EU Framework Programmes 5 and 6 related to the development of 4th Generation mobile radio. He further worked in wireless product development with special focus on RF and digital baseband signal processing. Since 2006 he is a committed engineer in the civil aviation sector with a special focus on telecom regulatory and airworthiness certification aspects for wireless systems. He contributed to the development of the ETSI harmonized standard for "GSM on Board Aircraft" and ECC Report 175 on Ultra-Wideband applications on board aircraft. Since 2007 he is one of the main drivers for the establishment of the necessary regulatory framework for Wireless Avionics Intra-Communications (WAIC). In this role he acted as the European coordinator within CEPT for the preparation for the corresponding agenda item of World Radiocommunication Conference 2015 (WRC-15). WAIC had its major breakthrough at WRC-15 where a globally harmonized 200 MHz wide frequency spectrum allocation was established. Furthermore, he contributed to and is the leading editor of the EUROCAE ED-246 Process Specification for Wireless On-Board Avionics Networks, which is the first certification guidance material for wireless systems used for safety related aircraft functions. Currently he actively contributes to the joint effort of RTCA and EUROCAE on developing a Minimum Operational Performance standard for WAIC systems.

Bahareh Zaghari
University of Southampton

Dr. Bahareh Zaghari is a research fellow at the University of Southampton. Her research is related to energy harvesting and wireless sensor networks. Bahareh graduated with a bachelor degree in electronic engineering, a master degree in advanced mechanical engineering, and a PhD at the Institute of Sound and Vibration Research (ISVR). Bahareh has worked closely with the automotive and aerospace industries during her current academic position, and as part of her previous consultancy roles as a system engineer.

NOTES

SPEAKER BIOGRAPHIES AND SESSION ABSTRACTS

Welcome

Wednesday, 26th April
08:15

Richard Greaves
Meggitt, PLC

Dr. Richard Greaves is Chief of Technology Officer Emeritus at Meggitt PLC.

Meggitt PLC is listed on the London Stock Exchange with revenues in 2016 of £ 1,99m and 12'000+ employees. Richard has played a significant part in Meggitt's Growth and success over the past 20 years in one of the most technologically advanced areas of the business.

Richard is a Physicist obtaining his Honours Degree from University College London and his PhD from Southampton University. His early career was based in the UK Nuclear Industry working in the field of nuclear reactor Control and Instrumentation.

Richard moved into aerospace over 40 years ago and has worked mainly in the field of engine sensing systems. He has chaired a number of technological institutions & committees over the years. Richard has numerous publications to his name with several on Piezo-Electric technology and condition monitoring of engines of which he is a known expert.

He is currently a member (past chairman) of the Board of the IVHM (Integrated Vehicle Health Management) Boeing/ Cranfield University Research Institute and a member of the Brussels based Aerospace and Defense Industries Association of Europe Supply Chain Commission.

Richard is a Chartered Scientist, a Chartered Physicist and a Chartered Engineer. He is a Fellow of the Royal Academy of Engineering (UK), Fellow of the Institute of Physics (UK), Fellow of the Royal Aeronautical Society (UK) & Fellow of SAE International.

In November 2009, Richard received the SAE Technical Standards Board "Outstanding Contribution Award" and in 2015 the "Forest McFarland Award". He has also served a three year term on the Board of SAE International from 2012 to 2014 and was President of SAE International in 2015. He is a member of SAE International Aerospace Council.

NOTES

SPEAKER BIOGRAPHIES AND SESSION ABSTRACTS

Keynote Session

Wednesday, 26th April
09:00

ABSTRACT
Standards play a major role in military acquisition as well as civilian aircraft certification processes. The Keynote presentations will discuss the interaction of standards and regulations in order to enable successful introduction of emerging technologies.

Moderator:
Andrew Pickard
SAE Aerospace Council Chair and Associate Fellow, Systems Engineering, Rolls-Royce

Andrew Pickard joined Rolls-Royce in 1977 after completing a B.A. and M.A. at Cambridge University in Materials Science, and a Ph.D., also at Cambridge University, in Fatigue and Fracture of Metals and Alloys. He worked initially in the area of Fracture Mechanics and fatigue life prediction, and has subsequently worked in the areas of structural analysis, materials behavior, whole engine design, engine control systems and software.

He is a Rolls-Royce Associate Fellow in Systems Engineering, a Fellow of the Institute of Materials, Minerals and Mining, a Chartered Engineer, and a member of the American Institute of Aeronautics and Astronautics, of SAE International and of the International Council on Systems Engineering (INCOSE). He is Chair of the SAE Aerospace Council, represents Rolls-Royce on the INCOSE Corporate Advisory Board, which he chaired in 2010 and 2011, and is currently Chief of Staff for INCOSE.

Dr. Pickard has published a book, 22 papers and 4 articles in the area of fatigue, fracture and materials behavior, and 19 papers in the area of Systems and Software Engineering.

Keynote Speakers and Executive Panelists:

Giorgio Cioni
NATO

Doctor in Political Sciences specialised in international relations, Giorgio Cioni graduated with full marks and laude presenting a thesis on the International Civil Aviation Organisation (ICAO). He also obtained a master degree in Administration and a further master degree on European law.

He is the Head of the Aerospace Capabilities Section of the Defence Investment Division of NATO International Staff with a large portfolio covering relevant matters relating to aviation and aerospace in NATO. He acts as NATO's primary interface with civil aviation organisations and is the focal point for policy development and capability delivery in the areas of Aviation, Airworthiness, Air Armaments, Remotely Piloted Aircraft Systems, Air Traffic Management, Aeronautical Technologies, Airspace integration, Civil-Military Interoperability and Standardisation, Security, Aviation sector's rehabilitation and International Cooperation in support of the full range of NATO missions. In view of his responsibilities, Giorgio Cioni has also been appointed as Capability Facilitator for the development of Roadmaps in key, air related, defence capability areas.

Born in Rome, Giorgio Cioni has a distinguished record of service focused on international relations, political-military security policies and capabilities, aviation and air traffic management.

He served for more than 25 years in the Italian Air Force where, among other qualifications, he was also licensed air traffic controller with all ICAO ratings. After graduating from Staff College, he performed in several positions within the Air Force and the General Staff, including the task to maintain the relations with the Parliament. In 2000, he was assigned to the Italian Delegation to NATO and in 2002 he joined the NATO International Staff.

He is married to Patrizia with a daughter, Charlotte and a son, Maximilian.

SPEAKER BIOGRAPHIES AND SESSION ABSTRACTS

Cybersecurity Session

Wednesday, 26th April
09:15

ABSTRACT
For many years, various industries utilize published cybersecurity guidelines that consist of collections of tools, policies, security concepts, security safeguards, guidelines, risk management approaches, actions, training, best practices, assurance and technologies. The cyber environment includes users, networks, devices, all software, processes, information in storage or transit, applications, services, and systems that can be connected directly or indirectly to networks. The aerospace environment relies more than ever on information flowing through networks both internal and external, airborne and terrestrial. Aviation is undergoing major functional changes to air traffic management systems, aircraft systems, weather data, airport infrastructure, and commerce. The cybersecurity challenges are not fully addressed by current standards, especially in the complex aerospace environment subjected to evolving threats. An objective of cybersecurity standards is to prevent or mitigate attacks and reduce vulnerabilities comprehensively for the aerospace ecosystem.

Moderator:
Richard Greaves
Meggitt, PLC

See biography on page 15.

Presenters and Panelists:

Richard MacFarlane
Deputy Director
Air Navigation Bureau

As Deputy Director, Air Navigation Capacity and Efficiency in the Air Navigation Bureau, MacFarlane is responsible for Airports, Aeronautical Information Management, Air Traffic Management, Communications, Navigation, Surveillance, and Meteorology at the Headquarters of the International Civil Aviation Organization (ICAO). He is personally tasked with putting the international enabling provisions in place for programmes such as CARATS, NextGen and SESAR.

Ruben Flohr
ATM Expert / Systems Engineer

Within the SESAR Joint Undertaking Ruben is covering the topics of architecture, information management and cybersecurity. His role is to assess and guide technical systems development, ensuring a consistent, coherent and complete architectural approach of the “system of systems” across the programme. He has been deeply involved in the development of SWIM and its relation to trajectory based operations. Over the last years his focus increasingly shifted towards cybersecurity. Within the R&D context, his goal is to increase the understanding of cyber resilience, ensuring operational solutions will be “securable” once developed and validated.

SPEAKER BIOGRAPHIES AND SESSION ABSTRACTS

Cyrille Rosay
EASA

Graduated in computer sciences (Paris XI university) and aerospace equipment (Paris IX), Cyrille Rosay is now working as Senior Expert on Avionics and Cybersecurity in the Certification Directorate of the European Aviation Safety Agency since 2006. His task is to focus on cyber security aspects for the airworthiness of civil aircraft, but consist also in the assessment of autopilots, flight management, navigation , communication and surveillance systems. As such he has a comprehensive view on installation, interconnection and utilisation of such system and on the potential threats introduced by cyber security and is actively involved in standardisation groups related to aviation security. Before joining EASA he was working as a software certification expert for the French Defence Agency and before as a project manager, in the same defence agency. He has logged thousands flight hours as a IFR multi-engines pilots during his time in the French MoD.

Susan Cabler
FAA

Susan Cabler is currently serving as the Acting Manager of the Design, Manufacturing and Airworthiness Division of the FAA Aircraft Certification Service, at FAA Headquarters in Washington, DC. Before being apppointed as Acting Manager, Susan served as the Assistant Manager of the Design, Manufacturing and Airworthiness Division and has held this position since 2003. She has served with the FAA since 1994 in several technical and program management positions. As the national policy office governing requirements for all aircraft certification programs, the Design, Manufacturing and Airworthiness Division plays a key role in change leadership within the Aircraft Certification Service. Her Division is responsible for: the engineering and design aspects of 14 CFR Part 21, Certification Procedures for Products and Parts; Individual and Organizational Designee and Delegation Programs; development of technical standards, policy, guidance and regulations for NextGen communication, navigation and surveillance technologies; leadership of the Aircraft Certification Safety Management System; and the introduction of risked-based decision tools for the FAA certification workforce.

Stephan Marwedel
Airbus

See biography on page 12.

Giuseppe Zorzino
CESMA

SPEAKER BIOGRAPHIES AND SESSION ABSTRACTS

Nano Materials Session

Wednesday, 26th April
11:00

ABSTRACT
Nanotechnology offers stronger, lighter weight materials which improve aircraft and engine efficiency, enables multifunctionality of materials, and allows optimization of material and process parameters. Advanced materials such as polymer nanocomposites with carbon nanotubes, metals with nanoscale structure, and nanocoatings are currently utilized in aerospace applications. Ultimately, the maturity and scalability of nanomaterials will change the way aircraft, spacecraft, engines, and satellites are engineered. This session will discuss how standards could provide a framework for advanced materials, manufacturing processes, and systems utilized in critical aerospace applications.

Moderator:
Laura Hitchcock
Senior Standards Specialist, External Standards Management, Strategy & Policy, The Boeing Company

As Senior Standards Specialist and Corporate Project Manager for External Standards Management, Strategy and Policy, Laura Hitchcock serves as The Boeing Company's enterprise-wide focal for issues regarding government, industry and international standards activities and has responsibility for external standards policy and strategy for the company. She has been working with standards for over 45 years, the last

30 with Boeing's Corporate Standards Organization. Laura leads company efforts to develop strategic standardization management plans and policies that leverage Boeing's standards activities to support corporate goals.

To support Boeing's goals to pro-actively engage with external standards systems, Laura serves on a number of standards related governing bodies. Laura chairs the Strategic Standardization Forum for Aerospace and the US TAG for ISO/TC20 Aircraft and Space Vehicles. She serves on the Board

of Directors for the American National Standards Institute, chairs ANSI's International Policy Committee and has served as Boeing's representative on ANSI's Company Member Forum for the last 19 years. Laura is a recent member of the Board

of Directors for SAE International and immediate past-chair of SAE's Aerospace Council (the governing body over the largest aerospace standards program in the world), and is a member of the SAE Technical Standards Board. She is also ASME's Senior Vice President for Standards and Certification and Chair of ASME's Council on Standards & Certification. Laura is a past member of the IEEE Standards Association's Board of Governors and of ASTM International's Board of Directors.

Laura has authored numerous standards related papers.

Presenters and Panelists:

Alexis Lambourne
Rolls Royce

Al Lambourne Holds a degree in materials engineering from Loughborough University and a PhD from Oxford, He is currently employed as a materials engineer in Rolls Royce's 'Future Technologies Group' (FTG). In this role he manages and executes various aspects of novel materials research, this includes the nano-technology strategy and novel / emerging materials research. Currently his main focus is on magnetic and electrical materials for use in hybrid propulsion across our aerospace, marine, power systems portfolio. Al is currently a Royal Society Industrial research fellow, dividing his time between Rolls-Royce (FTG) and Sheffield University (Electrical Engineering Department). His research seeks to match industrial problems to academic research, and to inject some novel materials solutions into electrical engineering, particularly motor & generator design & hybrid propulsion systems.

Olha Sereda
CSEM S

Olha Sereda received her PhD in Science (Physical-chemistry) from the University of Neuchatel in March 2008. Her doctoral research was focused on the structure determination and physical properties of bimetallic metal-organic frameworks. Olha then carried out post-doctoral research at Institute of Microtechnology investigating the adsorption capacity and adsorption kinetics of organic compounds on different types of MOFs and active carbon.

Since February 2009, Olha joined the Swiss Center for Electronics and Microtechnology (CSEM SA) as R&D engineer. She became section Head of "Material Science and Component Reliability" group in 2014. Olha has a broad experience in various types of materials used microelectronics, photovoltaic, automotive, aerospace, medical and additive manufacturing technologies. In particularly, she has a large experience in establishment of MEMS reliability standards and protocols for space applications. Her scientific interest is focused on material expertise, especially on development and investigations of the nanocomposites and nanoparticles.

SAE International is proud to announce that AMS-STD-595 printed media is available via SAE.org.

SAE's AMS G8 Aerospace Organic Coatings Committee recently published SAE standard AMS-STD-595A.

FED-STC-595C has officially been canceled and superseded by AMS-STD-595A. Both the FED-STD-595 cancelation notice and AMS-STD-595 adoption notice are available in the DLA ASSIST database.

AMS-STD-595A IMPROVEMENTS AND ADDITIONS:

AMS-STD-595A corrects references to the FED-STD-595 document introduced during the conversion to AMS-STD-595TM. Additionally, the revision provides updated color reference media information as well as replaces tristimulus color values with CIELAB color values. **Thirty-Eight** new colors have also been added to the standard by the US Army, Canadian Air Force, and US Marine Corp.

WHY BUY THE AMS-STD-595 2016 PRINTED MEDIA:

1) All type of printed media is subject to degradation and since the printing of the FED-STD-595C by GSA 2008 Printed Media, many colors were found to have changed.
2) 2016 color chips were produced in accordance with CIE LAB data based on 2008 and 2010 proofs stored in a dark and cool environment. All AMS-STD-595A CIELAB color values are verified to be within control of the proofs and data provided, and best resemble the 1984 GSA printing.
3) Compliance with certain active military specifications requires up to date color matching material. For example, the following requirements can be found in the 6 Active documents listed below:

   "After calibration of the instrument, measure the CIE color values of not less than two color number ***** of FED-STD-595 color cards which were received from the Government not greater than **1 year** prior to the date of this use."

- **MIL-PRF-24712B** – COATINGS, POWEDER, THERMOSETTING
- **MIL-PRF-24635E** – COATING SYSTEMS, WEATHER-RESISTANT, EXTERIOR USE
- **MIL-DTL-24607B** – ENAMEL, INTERIOR, NONFLAMING (DRY), CHLORINATED ALKYD RESIN, SEMIGLOSS
- **MIL-DTL-15090E(SH)** – ENAMEL, EQUIPMENT, LIGHT GET (NAVY FORMULA N0.111)
- **MIL-PRF-24763B(SH)** – ENAMEL, EMULSION TYPE, FOR SHIPBOARD USE
- **MIL-DTL-1115E(SH)** – ENAMEL, INTERIOR, ALKYD, WHITE (NAVY FORMULA NO. 30)

ORDERING PRODUCT OR ADDING A COLOR TO THE STANDARD:

To order AMS-STD-595™ color chips and fan decks, visit standards.sae.org/amsstd595a/ or send an email to CustomerService@sae.org or call a Customer Service Associate at +1.877.606.7323 (U.S. and Canada only) or +1.724.776.4970 (outside the U.S. and Canada) for more information.

SAE INTERNATIONAL®

SAVE THE DATE

AEROTECH CONGRESS & EXHIBITION

September 26-28, 2017
Fort Worth, Texas, USA

SAE.ORG/AEROTECH

EXHIBIT. SPONSOR. ATTEND

Executive Leadership provided by

LOCKHEED MARTIN

P1621645