

Synopses

Key transformational programs are on their way modernizing aviation to the next frontier in terms of Communication, Navigation, Surveillance, Information Management Avionics, RPAS integration, Coordinated effort lead by ICAO ASBU through its Global Air Navigation Plan (GANP) and FAA through its Next Generation Air Transportation System (NEXTGEN) with the NGIP and EU/SESAR master Plan is changing aviation to the benefit of its users and making it more sustainable. The Panel will discuss the key mandates and how they impact current fleets in the 2020 aviation context: ADS-B Out, FANS 1/A+, CVR etc...

MODERATOR



Abdoulaye N'Diaye
(France)
President & CEO, Aviation Industry Executive
AMNGROUP

Abdoulaye is a seasoned aviation industry executive with total aviation approach encompassing Ground Airport Infrastructure, ATM to Aircraft Systems, Avionics, Commercial, State/Military Aircraft, Drone and Regulatory/Standardization/Certification.



During his 32 year experience in the heart of the western military-industrial complex in France, the UK, USA, Belgium and Spain, he has been committed to the design development and certification of key aviation programs including: B-737-HUD, CASA 295, A330-MRTT/FSTA, A380-AFDX, C-130 CNS/ATM, SES-SESAR, ICAO-ASBU.

Abdoulaye was de Former Executive Director of European Organization of Civil Aviation Equipment EUROCAE and played a major role in the progress of Single European Sky Air Traffic Management Research program deployment and its initial Pilot Common Project as well as a critical role in the European RPAS insertion Roadmap, while transforming the organization and enlarging its cooperation agreements to ICAO, Eurocontrol, EASA and EC

KEY SPEAKERS



Hette Hoekema
(Netherlands)
Chief Expert - Avionics & Electrical Systems
EASA

Hette Hoekema is the Chief Expert Avionics and Electrical Systems at EASA. In this role he is responsible for the development of, and consistent application of regulations, guidance and policies in the area of Avionics, Electrical Systems, Flight Controls, Development Assurance and the development of Software and Airborne Electronic Hardware.



Hette has a strong airline background, starting his career at KLM Engineering&Maintenance.

Since joining EASA, he has focused his activities on Communication, Navigation and Surveillance, including in the development of the Surveillance and Navigation parts of CS-ACNS. He has maintained close ties with the ATM and Flight Operations expert community, both within and outside of EASA.



John Nunes
(USA)
Aerospace Security Solutions & Advanced UAS Programs
FAA's Team Safety Representative

John's career path over the last forty years consists of twenty years in public safety, over thirty years in IT security infrastructure and seven years as director of infrastructure, platform and security overlapping public safety, aviation and the private sector. Never far from the cockpit, in early 2013 John started integrating UAVs into Public Safety Operations. Working closely with the FAA and coordinating with ATCT, FSDOs, Homeland Security and public safety agencies, John has provided invaluable aviation support for Major Airports and natural disasters.



A certificated pilot with over 1000 hours in complex, high performance and multi-engine aircraft, John has also logged in excess of 4000 hours in numerous UAVs.

John is an FAA FAA's Team Safety Representative (SME UAS), a Western District Public COA Specialist and an IPTM (International Police Technology & Management) instructor. John also served as Chairman of the Tempe Aviation Commission working closely on NEXTGEN bridging the divide between FAA and the public.



Fábio Camacho
(Portugal)
Head of Unmanned Aircraft Systems Department
ANAC's Representative

Fábio has spent the past twelve years, focusing on air traffic control and air operations. During his professional career, he has worked as an air traffic controller, licensed flight operations officer, coordinator of international flight operations, operational procedures instructor, and has auditor in ATM/ANS and UAS domains (safety supervision).



He has participated in various working groups at the international level. During these engagements, Fábio was involved in several regulatory tasks, replied to consultations, contributed and participated in international meetings. He has been representing ANAC in European Commission Expert Group for Aviation Safety, Civil Aviation Conference (ECAC), European Aviation Safety Agency (EASA) in UAS, U-space, SPN and ATM/ANS (TeB's) matters, EUR Region ICAO's coordination group (2018/2019), and in Joint Authorities for Rulemaking on Unmanned Systems. In addition to his work, Fábio has a internal leadership role as Head of Unmanned Aircraft Systems Department, and he is the Focal Point for U-space Services Local Single Sky Implementation.

Synopsis

Discussion of the implementation context and developments related with the modernisation of European aviation infrastructure (digitalisation, connectivity and automation). Related deployment programme, regulatory context, funding opportunities and expectations for future deployment and how will it be governed and organised. Network-level activities and developments.

Focus on one specific domain by describing current level of EGNOS/SBAS service available in Europe, expected evolution, operational use and benefits for navigation and PBN and its funding aspects.

Specific impact on military aviation.

MODERATOR

 Jorge Pereira (Portugal) <i>Head of Civ-Mil CNS Unit EUROCONTROL</i>	 Since June 2002, Jorge Pereira has been assigned to the EUROCONTROL Organisation as the Head of Civil-Military CNS Coordination Unit within the Civil-Military ATM Coordination Division (CMAC). His technical activities embrace Communications, Navigation and Surveillance (CNS), Data Processing, Spectrum and support to Interoperability Rule-Making and Standardisation. Jorge Pereira leads a technical team focusing on military-military and civil-military CNS interoperability and technology convergence, providing civil-military CNS interoperability contributions to rule making, research and deployment initiatives. In his portfolio of activities there is also direct support to Stakeholders and International Organisations including the provision of military technical CNS advice and guidance. His activities deliver and maintain migratory roadmaps and technical CNS guidance to address civil-military system interoperability challenges leading to a reduction of aviation infrastructure modernisation impacts upon civil and military organisations mitigating related costs and technological mismatches. He promotes, in particular, concepts leading to the dual use of avionics equipage for State aircraft, performance based compliance/performance equivalence, CNS infrastructure rationalisation, convergence of CNS technologies between civil and military as well as innovative research to limit the impact of aviation modernisation upon military organisations. Jorge Pereira is the Chairman of the EUROCONTROL Civil-Military CNS/ATM Interoperability Focus Group (CNS FG). Jorge Pereira holds a Master degree on Electronics and Telecommunications Engineering by the Lisbon Engineering Institute (ISEL). He progresses PhD/Doctorate studies at the Brussels University (ULB) on the application of software defined radio technologies to aviation.
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KEY SPEAKERS

 Ramón Raposo (Spain) <i>SESAR Deployment Programme Execution Manager SESAR Deployment Manager</i>	 Ramón Raposo is an aerospace professional, passionate for delivering real change to the European Skies. He currently works as Execution Manager of the SESAR Deployment Programme within the Strategy and Programme Management Department. In this role, Ramón and his team, bringing together experts from the ATM community, synchronise and coordinate nearly 350 Implementation Projects across Europe targeting the implementation of the Pilot Common Project (EU 716/2014). In terms of financial effort, they result in almost 3 Billion Euros of investments from the ATM stakeholders and 1,5 Billion Euros of EU grants. With this aim, he manages the engagement with 93 stakeholders within 27 EU Member States and 5 Third Countries. In parallel with this activity, his unit monitors the overall implementation of the PCP Regulation, identifying risks for a successful deployment and helping stakeholders in the identification of suitable mitigation actions. With a background in Aeronautical Engineering from the Polytechnic University of Madrid and a Master of Business Administration from the Spanish School of Industrial Organisation, his international profile has been consolidated over a varied professional experience of 15 years. His broad perspective of Air Traffic Management has been built around different pillars of the aviation industry: before SDM, as a Systems Engineer for Research & Development projects in NATS, as a consultant on Airport and Air Navigation Operations at Isdefe, Flight Operations Engineer in Spanair and at the Operations Department of Valencia Airport.
 Paul Bosman (Belgium) <i>Head of (ATM) Infrastructure Division. EUROCONTROL</i>	 Paul Bosman is with Eurocontrol since more than 25 years and currently the Head of (ATM) Infrastructure Division. This newly created Division in the Network Manager Directorate aims, in close cooperation with all ATM stakeholders to Manage & Support European ATM/CNS planning, deployment, reporting and monitoring programmes digitising the SES European Sky. Key activities are CNS (incl CPDLC, ADS- & PBN deployment), SWIM, EAD, Cyber et cetera. He is also chair of the European High Level Group on Artificial Intelligence.
 Pablo Haro (Spain) <i>Group Coordinator – GNSS Isdefe</i>	 Pablo Haro works as a consultant for the European satellite navigation agency (GSA) on applications of EGNOS and Galileo for aviation, in particular, CNS, search and rescue (SAR) as well as drones. He holds over 25 years' experience in air navigation, working for the European Commission, the GSA, the SESAR Joint Undertaking, the European Satellite Services Provider (ESSP) as well as Spain's Civil Aviation Authority and the Spanish Air Navigation Service Provider (ENAIRES). He is Assistant Professor at the Aerospace Engineering Department of the UC3M university as well as expert for the Horizon 2020 programme. He holds a M. Sc. degree in Aeronautical Engineering from the Technical University of Madrid.

Synopses

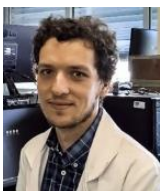
Smart materials have the ability to adapt to the environmental conditions according to the design requirements. The adjustments are designed and performed in order to increase the efficiency or safety of the structure. Combining "smart structures" with the "sophistication" achieved in materials science, information technology, measurement science, sensors, actuators, signal processing, nanotechnology, cybernetics, artificial intelligence, and biomimetics, one can talk about Smart Intelligent Structures. In other words, structures which are able to sense their environment, self-diagnose their condition and adapt in such a way so as to make the design more useful and efficient.

In this panel it will be presented the significant improvements in structures and future materials contributing to aircraft total weight reduction, manufacturing cost and, above all, operational cost. It also helps to improve the aircraft's life cycle and reduce its maintenance costs.

MODERATOR

 António Reis (Portugal) <i>Engineering Director</i> OPTIMAL STRUCTURAL SOLUTIONS	 António is an Aerospace Engineer which developed a career in the lightweight composite structure industry. This career started in Airbus De as a structural engineer, working in projects like the A400M and the A350XWB. After Airbus, moved to McLaren Racing to work in the F1 program, here with a strong emphasis in advanced composite structures. Left McLaren in 2007, as Deputy Head of Calculation, to develop its own project in Portugal. OPTIMAL STRUCTURAL SOLUTIONS started in 2008, focused on the development and manufacture of composite structures. At OPTIMAL, António, is one of the shareholders and Director.
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KEY SPEAKERS

 Prof. Krzysztof Koziol (UK) <i>Head of Enhanced Composites and Structures Centre</i> CRANFIELD UNIVERSITY	 Krzysztof holds a Chair in Composites Engineering at Cranfield University. As the Head of the Enhanced Composites and Structures Centre he is overseeing over 60 projects in advanced materials, composites engineering and manufacturing. Krzysztof's career spanning polymer science, materials and nanotechnology, with engineering degree in Chemistry and PhD in Materials Science from Cambridge University. Over the past 20 years he has been pioneering development, implementation and manufacturing of carbon-based nanomaterials with specific focus on carbon nanotubes and graphene, leading EU programs on new generation lightweight high performance electric conductors, poised to replace copper and aluminium, developing novel functional carbon nanomaterials and multifunctional composite structures and BEIS funded large scale manufacture of sustainable hydrogen. Krzysztof graduated 18 PhD students, published over 150 journal papers and authored 16 patents.
 Prof. João Tedim (Portugal) <i>DEMaC- Aveiro Institute of Materials</i>	 João Tedim is an assistant professor at CICECO-Aveiro Institute of Materials and Department of Materials and Ceramic Engineering, University of Aveiro. He holds a PhD in Physical Chemistry by the University of Leicester (UK, 2009) and has worked for more than one decade in the development of micro and nanomaterials with controlled release ability, new pre-treatments and smart coatings for different applications, including the aeronautical industry. His current research interests focus on coatings with multiple functionalities including active corrosion protection, anti-fouling and corrosion detection.
 Maria Rodríguez Gude (Spain) FIDAMC	 Maria holds a PhD in Materials Engineering. She joined the Foundation for the Research, Development and Application of Composite Materials (FIDAMC) in 2011 and since then she was involved in the physic-chemical characterization of aeronautical composite materials and participated in several R&D projects. Her main research field is the research of new polymeric materials, mainly integrating nano-reinforcements, and she coordinates the activities of FIDAMC as a partner of the Graphene Flagship project. She also participates in the development of multifunctional coatings for anti-ice protection.

Synopsis

Advanced digital technologies such as Artificial Intelligence (AI) and Digital Twins (DT) are tools that could be used to synchronize, monitor, and improve all processes related to Aircraft Maintenance, Repair, and Overhaul (MRO). Collected data from all operations (i.e. inspections, repairs, etc) on an aircraft provides the foundation for building a database for future machine learning to automatically and increasingly accurately identify and suggest solutions. Furthermore, a digital twin enables the simulation of liabilities that may occur during the life of an aircraft, enabling monitoring and diagnosis. This then makes it possible to make credible 'fly / no-fly' decisions quickly and provide maintenance services with valuable information, as well as to a potential prognostic health management (PHM) strategy to be formed.

MODERATOR



Prof. Nico Avdelidis (Greece)
Head of IVHM Centre
CRANFIELD UNIVERSITY

Professor Avdelidis has contributed extensively in several research areas including the area of UAV inspections and monitoring (as an Associate Professor in Autonomous Systems Sensing at Cranfield University between 2017 to 2018), automated NDT systems (working in various industrial positions including the aerospace and robotics industry), as well as advanced imaging inspection techniques for aircraft structures (as a Research Professor at Université Laval, Quebec, Canada since 2008). Since July 2020 he has joined Cranfield as a Professor and the Head of the IVHM (Integrated Vehicle Health Management) Centre and with the facilities currently under use and development in Cranfield, such as the Digital Aviation Research Technological Centre, with its own hangar to accommodate aircraft, as well as fully equipped hangar for inspection and health diagnostics (hangar of the future concept) will be also looking into using digital twins in order to create a digital model of the aircraft and continually update the performance model with feedback from real life testing and operations, enhancing the management and operation of the aircraft.



Professor Avdelidis is also a collaborator on the oN-DuTy Programme in Canada and a member on various industrial committees and advisory boards. His expertise spans NDT monitoring and diagnostics, robotic and autonomous systems in MRO, advanced sensing and imaging technologies, and vehicle systems monitoring. Finally, he has extensive knowledge in IP management and commercialization (route to market) in various technological domains, such as non-destructive testing and evaluation, imaging, diagnostics and monitoring systems, composite aerospace structures, robotics and autonomous systems, and artificial intelligence.

KEY SPEAKERS



Harald Kokelkoren
(Netherlands)
Director
ILIAS SOLUTIONS

After graduating from the Royal Netherlands Military Academy, with a degree in Military Business Management and Electronics, Harald took on several positions as a Technical Officer at the RNLAf. He ran the Planning & Scheduling section of the Electronics Depot and as Chief Maintenance Engineering for Guided Weapon Systems he ran the upgrade program for the HAWK. At Volkel Air Base he was responsible for the I-Level Maintenance of a fleet of 70 F-16s. After his military career Harald joined PwC (then Coopers & Lybrand) which had just acquired ILIAS. Harald executed several Business Improvement projects as Business Consultant and was Project Manager for the ILIAS implementation for the NATO AWACS fleet. Harald left PwC in 2001 to start VisionWaves with two business partners. VisionWaves was named 'Cool Vendor in Business Intelligence' by Gartner in April 2008 in recognition for the company's innovation outside traditional BI solutions. VisionWaves was sold in 2015, after which Harald became a shareholder and executive board member at ILIAS Solutions.



At ILIAS Solutions Harald is in charge of Business Development. ILIAS Solutions delivers Resource Management Solutions for the military; from Operations to Maintenance to Inventory & Supply Chain to Procurement & Budgeting as well as Training. In Belgium, the full Defense Force is facilitated by ILIAS, it is the core ERP. The NATO AWACS fleet is supported by ILIAS since the year 2000, the Chilean Air Force the past 15 years and Lockheed Martin has implemented it on several cases; F-35, F-16 and C-130.

Harald lives in the Netherlands with his Danish spouse Nadine and their three children Phillip, Carmen and Olivia.



João Raposo
(Portugal)
School of Aerospace
CRANFIELD UNIVERSITY

João Raposo is a Project Manager of the School of Aerospace at Cranfield University, participating in several national and European research, development and innovation projects, namely in the field of maintenance and inspection, such as the ComInnova project that addresses the automated inspection and repair of composite aircraft structures. At Cranfield University – School of Aerospace, he is also the Search and Optimisation module delivery lead, of the Applied Artificial Intelligence MSc. He joined Cranfield in November 2016, coming from Jaguar Land Rover where he was programme quality lead in new powertrain development programmes, taking the projects from initial strategic plan to production.



For the past 10+ years, the main work has been managing and coordinating European research projects, since FP7 (and CIP) to H2020 programmes, having worked both in Portugal and in the UK. He is also a project evaluator and reviewer for the European Commission, under the Executive Agency for SMEs, European Innovation Council pilot.

João has an MSc in Mechanical Engineering from Instituto Superior Técnico, University of Lisbon, specialized in optimization where the main research field was on Multi-Criteria Decision Aid. He also has post-graduations in Project Management and Lean Six Sigma, and Advanced Studies Diploma (PhD curricular credits) in Sustainable Energy Systems from the MIT – Portugal Programme.



Jürgen Donders
(Netherlands)
Partner
Gordian Logistic Experts

Jürgen Donders (1969) is one of the partners at Gordian Logistic Experts B.V., a service logistics management consultancy, IT and services company, specialized in spare parts and service supply chain management.



Gordian wants to be able to assist its customers from start to finish in service and spare parts supply chain processes. From problem definition to implementation and securing of the recommended solutions. Problem or goal definition, analysis and recommended solutions are the basis of the advisory processes. Gordian has proven tools and methods to make these steps as efficient as possible. This includes modeling, stock management tools and templates for a logistics audit. The recommended direction is always practical and realistic. If possible already in the form of a pilot or prototype.

Jürgen studied economics and logistics at the Royal Military Academy and then gained 12 years of practical experience in various positions on operational units, the depot and the staffs of the Royal Netherlands Air Force. Jürgen has also been sent to Eritrea for a period of almost 7 months as part of the UNMEE operation. In his last position with the Royal Netherlands Air Force, Jürgen fulfilled the position of Squadron Commander of the Logistics Squadron at Leeuwarden Air Base. After his Air Force career, Jürgen worked for 2 years at Thales Nederland B.V. as Manager Logistics Engineering within the ILS department.

In addition to his work, Jürgen also studied business administration, obtained NEVI-2 (procurement) and APICS CPIM and followed the master's degree in Transport and Logistic Management at the TIAS in Tilburg.



Hobivola A. Rabearivelo
(Canada)
Chief Strategy & Partnerships Officer
BI Expertise

Hobivola A. Rabearivelo is Chief Strategy & Partnerships Officer and project manager at BI Expertise, a company specialised in artificial intelligence technologies based in Quebec City, Canada.



BI Expertise develops machine learning-based solutions for industries with high operational constraints. With a strong customer-centric approach, it develops hardware and software solutions for the defence and security, health and aviation industries. In 2018, the company became the Canadian winner of the *United-Kingdom and Canada AI Innovation Challenge* for proposing a solution to help aircraft manufacturers improve wing aerodynamics and anti-icing systems with machine learning. BI Expertise also helps companies of all size integrate artificial intelligence technologies by providing strategic and technical support services, and by participating in collaborative research and innovation projects. Its clients span from insurance companies to manufacturers in the recycling industry.

Hobivola joined BI Expertise in 2018, where he has been managing project to develop solutions to help aircraft manufacturers improve wing aerodynamics and anti-icing systems with machine learning, support firefighters cyber-physical systems based on artificial intelligence technologies, or provide composite structures inspectors with machine learning-based tools. Prior to joining BI Expertise, he worked as analyst and project manager for organisations of all size in a variety of industries, ranging communication to international security to community organisations. Hobivola holds a M.A. in International Studies from Université Laval (Canada) and a graduate degree in Geoeconomics and Strategic Intelligence from IRIS Sup (France).

Synopsis

MRO companies are using a variety of robotic solutions to speed up the inspection and repair of aircraft.

One of the more time-consuming tasks faced by aircraft maintenance, repair and overhaul (MRO) companies is inspecting the exterior of an aircraft to assess its required maintenance needs.

An aircraft must be taken out of service and inspected for damage due to real or suspected incidents in the air (lightning, ice, bird strikes), during take-off and landing (FOD on the runway and possibly now also from rogue drones at airports) and while stationary (collision with service vehicles or accidental collisions with other aircraft). To speed up inspections, MRO providers have been looking at alternative ways of looking at the outside of an aircraft that does not involve having to get a person up off the ground.

MODERATOR

 General José Lourenço da Saúde (Portugal) PORTUGUESE AIR FORCE	José Lourenço da Saúde is Major-General Aeronautical Engineer of the Portuguese Air Force and invited full professor at the University of Beira Interior, Portugal, where he has been giving lectures in the subject of aircraft maintenance and manufacturing. He has more than 30 years of experience in the aeronautical sector, with positions at OGMA Aeronautical Industry of Portugal where he hold several engineering positions as head of manufacturing, aircraft project and aero-engines. Later he was director of civil aviation (A320, BA146 and ERJ 145) and director of logistics. At the Air Force in addition of being maintenance fleet manager he was director of Engineering and Director of Airworthiness of Weapons Systems. He has also been Director of Quality in the private sector, in particular in Civil Aviation Pilot School and in Regional Aircraft Company. Presently he is national coordinator of the aeronautical branch of the Portuguese Association of Chartered Engineers. 
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KEY SPEAKERS

 Dr. George Nikolakopoulos (Sweden) Chair in Robotics and AI Luleå University of Technology	I work as Chaired Professor in Robotics and AI at the Department of Computer Science, Electrical and Space Engineering, Luleå University of Technology, Sweden. In the past I was also affiliated with the NASA Jet Propulsion Laboratory (JPL) at Pasadena, California for contacting collaborative research on Aerial Planetary Exploration. My robotics team participates in the DARPA Grand challenge on Sub-T exploration with the team of CoSTAR lead from JPL/NASA where we have won the 2nd Stage of the competition. I work also as a member of the European Union ARTEMIS Scientific Council (6 members in Europe) in the field of Robotics and AI and I am co-leader of the Luleå University of Technology Excellence area of Intelligent Industrial Processes. Finally, I am the LTU representative at the EuRobotics PPP at the European Commission and I am also a member of the IFAC Technical Committee in Robotics and AI. We have also an active collaboration on Robotics and AI with the HONDA Research Institute at Japan. In 2014, I have been nominated as LTU's Wallenberg candidate in Sweden. In year 2003, I have received the Information Societies Technologies (IST) Prize Award for the best paper that Promotes the scopes of the European IST (known as ICT) sector. I have been several times listed in the TOP 25 most popular publications in Control Engineering Practice from Elsevier. I have received the 2014 Premium Award for Best Paper research in IET Control Theory and Applications, Elsevier in the area of UAVs. My published scientific work includes more than 150 published International Journals and Conferences in the fields of my interest. Finally, I have created the spin offs Widefind (www.widefind.se) and FieldRobotix (https://www.fieldrobotix.com/). For a full list of activities please visit www.gnikolak.com 
 Dr Roger Groves (NL) Aerospace Engineering DELFT UNIVERSITY	Professor Roger Groves is Associate Professor in Aerospace Non-Destructive Testing & Structural Health Monitoring at Delft University of Technology, The Netherlands. He has a PhD in Optical Instrumentation from Cranfield University (2002) and previously worked at the University of Stuttgart before joining TU Delft in 2008. His leads the Aerospace NDT research group at TU Delft. His research aims to develop and demonstrate the next generation of NDT and SHM technologies & algorithms for (i) Automation of NDT in composite manufacturing for preventative quality assurance and (ii) Sensing and decision making for smart and efficient aircraft maintenance. 
 Christopher Colaw (US) Senior Manager, Quality & Mission Success LOCKHEED MARTIN	Chris Colaw is the Senior Manager of Quality & Mission Success at Lockheed Martin and the architect of the Aeronautics Quality Technology vision which delivers Quality 4.0 capabilities, most commonly in the field of inspection, Non-Destructive Testing and Artificial Intelligence, which reduce the cost and span associated with aircraft inspection. Chris leads projects internally and through international university engagement to develop aerial drone based inspection methods that include machine vision and collision avoidance, crawler drone based inspections that include machine vision and anti-access capability, and many other adjacent and new market solutions to enhance Aeronautics' capability to provide safe and accurate inspections. Chris serves as the Chairman of the Southern Methodist University (SMU) Mechanical Engineering Industrial Advisory Board, and is a Board Member of the University of Texas at El Paso (UTEP) Industrial, Manufacturing, and Systems Engineering (IMSE) Industrial Advisory Board. Chris has been a recurring speaker since 2018 with the American Society of Quality on the topic of Quality 4.0 at such gatherings such as world conferences, summits, online TV and webinar spots, and was also featured by Fast Company online magazine as part of the Innovation 360 segment which focused on Lockheed Martin in 2019. 

Synopses

New digital techniques and tools have radically changed the world of design and manufacturing in aerospace. The airline customer is now looking for the same application of new digital tools and techniques to improve productivity throughout the life of the aircraft and in particular to bring changes to MRO processes enabled by digital tools and data to develop the MRO of the future. This Digital MRO panel session will bring together representatives from the manufacturers, the airlines and the MRO to discuss the developments and changes which are happening and explore the vision for the Digital MRO of the future. The creation of ‘digital twins’ at the individual aircraft level opens up new opportunities to record changes made to each individual aircraft during its service life , predicting problems and modelling the impact of modifications before they are made. In a post COVID world with stringent environmental challenges, and the need for much lower operating costs from the airlines, older aircraft are being phased out of service sooner than expected. Modern aircraft are designed with much longer service intervals and less maintenance requirements. These changes at aircraft level further emphasise the need from the airlines for a change from the traditional MRO methods. The use of augmented reality tools with access to online shared data requires advanced digital infrastructure and work processes to be put in place. New robotic devices enabled with new Artificial Intelligence driven solutions can inspect, analyse and make repair decisions without operator involvement. The operators that are there have new digital skills and capabilities. The MRO embraces new digital ware-housing with direct and automated access to the stores and can create a fully auditable part history kept with the digital twin as a complete digital record of change. The session will provide the opportunity to discuss the new technology developments and discuss the roadmap for the transformation to the new digital MRO.

MODERATOR

 Prof. Iain Gray (UK) <i>Director of Aerospace</i> CRANFIELD UNIVERSITY	Iain Gray is the Director of Aerospace at Cranfield University. Iain joined Cranfield University in March 2015 after 7 years as the Chief Executive of InnovateUK. In this role he is responsible for all aspects of learning, executive education and research in Aerospace for the University and for developing the Aerospace Strategy across the University Group. Prior to this, Iain was Managing Director and General Manager of Airbus UK, whose Bristol operation he joined when it was still part of British Aerospace. Iain Gray has an Engineering Science Honours degree from Aberdeen University and gained a Masters of Philosophy at Southampton University. Since then Iain has received Honorary Doctorates from Aston, Bath, Bristol, Aberdeen, Cardiff, Exeter and the University of the West of England. In 2014, he was awarded a CBE for services to innovation. Iain is a Chartered Engineer, a Fellow of the Royal Academy of Engineering; a Fellow of the Royal Society of Edinburgh, a Fellow of the Royal Aeronautical Society and in 2007 was awarded the Royal Aeronautical Society Gold Medal. In 2016 he was awarded the Baird of Bute Award for his contribution towards aviation in Scotland. He is Chair of Aerospace Bristol Museum, a Non-Executive Director for Graphene based company Versarien and is Chairman of technology company CFMS UK Ltd. 
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KEY SPEAKERS

 Steve Sheehy (US) <i>Vice President</i> <i>Sustainment</i> <i>Strategies & Business</i> <i>Development</i> LOCKHEED MARTIN	Steve Sheehy is the Vice President for Lockheed Martin Aeronautics’ Sustainment Business Development. In this position, he is responsible for the development of sustainment solutions for U.S. and international customers that best satisfies national requirements at an affordable cost. The sustainment solution will build on an integrated sustainment baseline solution with linkages between the different Lockheed Martin platforms within each country. Steve most recently served as the Director for F-35 Sustainment Strategy and Business Development. He led the F-35 Product Support Integrator (PSI) Campaign, captured direct-commercial sale contracts with F-35 international customers, and developed winning sustainment solutions for large aircraft captures such as Belgium, Finland, Switzerland and Poland. His earlier career experience includes senior manager for F-35 U.S. & International Logistics Sustainment Solutions where he developed the F-35 Integrated Sustainment Plan for each F-35 customer. The detailed Integrated Sustainment Plans focused on the successful base activation from a national perspective which captured processes, tasks, and actions leading up to first aircraft arrival and extending into Full Operational Capability. The plans linked national sovereign requirements and aspirations with the common F-35 sustainment system. Steve began at Lockheed Martin in 2010 following a career in the U.S. Air Force. In May 1984, he graduated from the U.S. Air Force Academy with a Bachelor of Science Degree in Engineering. He then served more than 25 years in the United States Air Force as an Aircraft Maintenance Officer on F-15s, F-16s, U-2s, T-38s and the RQ-4 Global Hawk. His USAF career took him around the globe with operational assignments and deployments in the United States, Germany, Italy, United Kingdom, Turkey, Kingdom of Saudi Arabia, and Korea. He was the Squadron Commander for the 47th Component Repair Squadron and then the 47th Aircraft Maintenance Squadron, both at RAF Lakenheath, United Kingdom. Steve was assigned in staff positions at Headquarters, U.S. Air Force, Washington, DC; Headquarters, Defense Logistics Agency, Fort 
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	Belvoir, Va.; and 3rd Air Force, RAF Mildenhall, United Kingdom. He retired in 2009 as the 9th Maintenance Group Commander at Beale Air Force Base, California. Steve has two master's degrees; Acquisition & Procurement Management from Webster University and National Security & Strategic Studies from the Naval War College. He also has the distinction to be an Air Force Fellow at RAND in Santa Monica, CA. Steve is married to the former Theresa Benzmillier, and they have a grown son.
 Patrick Wood (UK) <i>Chief Technology Officer</i> MARSHAL AEROSPACE	 Patrick Wood joined Marshall Aerospace and Defence Group as the Chief Technology Officer and Group Programme Management Director in January 2019, becoming the CTO and Engineering Director in July 2020. Patrick has over 30 years' experience in the Defence and Space Industry most notably as CEO of Surrey Satellite and Technology Ltd. (SSTL), Head of Global Business Development and Head of UK Space for Lockheed Martin Space and as Senior Vice President of Engineering and Operations for Airbus Defence and Space within the satellites business unit. As the Skynet 5 Programme Director he was responsible for launching and delivering in orbit all the Skynet 5 GEO UK Communications Satellites, in addition to delivering the satellite control centres, network control centres, Maritime sat com terminals and land mobile sat com terminals. In 22 years in the European and UK Space Industry, Patrick has worked on space missions related to communications, navigation (GPS, Galileo, EGNOS), earth observation (optical, IR and Radar), science and launch, from orbits ranging from LEO, MEO, GEO to planetary exploration. Directly leading 4 satellite missions, working directly on 11 satellites and senior leadership responsibility for 52 satellites.
 Joel Ferreira (Portugal) <i>Innovation Manager</i> TAP M&E	 Joel leads a small group of people dedicated to Innovation activities at TAP Maintenance and Engineering, who manage a portfolio of projects in several aviation domains from Digital Transformation to Sustainable Aviation Fuels, Air Traffic Management, among others. In 2015 Joel led an European funded project on digital solutions for MRO with twelve partner institutions among industry, consultancy, research centres and academia, from several EU Member states and a budget to manage of 6 million euros. Joel started his journey at TAP as a maintenance programs engineer. Before joining TAP, Joel developed his project management skills working as a consultant at Accenture Consulting.
 Alexander Althun (Germany) <i>Business Development Digital Services</i> AIRBUS DS	 Alexander Althun is responsible to develop the market for data based services being developed under the Airbus SmartForce portfolio. He joined Airbus in 2008 and since then had a variety of roles in the helicopters business in France and in big system integration projects in the Middle East, where he developed extensive project management experience. Now, in Germany, Alexander sits in the intersection of new technologies and product development. His role emphasizes customer centric product development and focuses on anticipating industry trends, while leading engagements with customers to capture operators' requirements, and ensuring they drive the developments of products based on end-user value generation, in a well-known iterative Agile method. Some of the areas where solutions are being explored relate to predictive maintenance, health monitoring systems, process optimisation, and demand forecasting. While fascinated by technology/aviation and being a certified data analyst and scrum master, Alexander actually graduated in Business from the Catholic University in São Paulo, Brazil and also holds an MBA from the University of Manchester (Alliance MBS) in the UK.

Synopsis

The global pandemic COVID-19 changed at least the global life - nearly every industry and most social interaction is affected. Global airline business is down more than 80% in some sectors and most airlines fight desperately to survive these unforeseen crises within the last 7 months.

Forecast markets in these surreal times is the high art of market research. Finding the light at the end of the tunnel and describe what the industry will look like, reaching this - are the questions our industry turns upside down.

This panel will show insight of the top market forecasts in aerospace and aviation. Aviation Week and AeroDynamic Advisory share their experience and outlooks, complemented with a view of Senior Experts in Aviation.

MODERATOR

 José Salvada (Portugal) CCO AEROMECH	José has more than 30+ years of experience in the aviation sector. He started his career at the Portuguese Air Force and later moved on to the Industry, becoming Sales Director at OGMA. José achieved greater success in OGMA, by contributing for the significant growth of the Company in the MRO Sector, with his diverse knowledge of the defence, civil, rotorcraft and business aviation sectors. In the last 18 years José has continuously conducted aviation MRO market studies generating successful business actions plans. Currently, José is the Chief Commercial Officer of AEROMECH, a fast-growing MRO Engineering company located in Portugal. 
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KEY SPEAKERS

 Brian R. Kough (USA) Senior Director AVIATION WEEK	Brian is a senior director/lead analyst for aerospace forecasting, insights and intelligence specializing in MRO aftermarket, supply chain, valuation and consulting for global top-tier OEMs, suppliers, MRO companies and publications. He presents analysis results at conferences worldwide and is responsible for creating online BI products and custom research for clients. Brian provides market insights across both civil and defense aerospace. Previously, he was a consultant in the U.S. defense industry specializing in DoD acquisitions; and prior to that, Brian retired as a lieutenant colonel from the U.S. Marine Corps specializing in strategic transportation, logistics and supply chain. He holds dual Master's degrees in Business and in National Resource Strategy, the later from the U.S. Industrial College of the Armed Forces, National Defense University. Brian holds FAA airman certifications including commercial, multi-engine, instrument, and small UAS privileges on his pilot's certificate. 
 Klaus Mueller (Germany) Senior Sales Consultant AERODYNAMIC	Klaus Mueller has about 32 years of experience as a senior executive in multibillion dollar aerospace firms and actively managing several multimillion projects during his tenure. To date Klaus Mueller is Senior Advisor at AeroDynamic Advisory and MD of KMue Consult, a boutique consultancy for Additive Manufacturing printing advise, M&A activities and strategy and market analysis. He is cooperating as Senior advisory for Bionic Production GmbH and Fraunhofer IAPT, the leading Additive Manufacturing institute in Germany. 
 André Aires de Abreu (Portugal) Senior Sales Consultant AEROFORM	André has more than 40 years of experience in the aeronautic industry. Started as a Portuguese Air force officer dedicated to maintenance and engineering activities, supporting several aircraft fleets, in different levels and functions within the organization. In the latter part of his career he worked in aircraft production, program management, business development, marketing and senior management for several national and international companies and groups. He has a degree in aeronautic engineering, Air Staff and Command Course and several post-graduation courses in management, finance, and marketing. He is currently a senior consultant for several groups in Portugal and abroad. 
 Hans de Graaff (Germany) Sales Director AIRBUS	Hans has 40 years working experience in the commercial and military aerospace industry. He has been leading and directing projects ranging from airworthiness certification flight test, aircraft manufacturing design & development and aircraft leasing. As expatriate in different operating environments around the globe he has been consulting aircraft operators in the operation & use of dedicated aircraft types and models. He joined the EADS group shortly after its creation in the year 2000 driving institutional business development for aircraft, satellites, equipment and system solutions in the commercial and defense & security domain. Currently Hans is heading at Airbus Defense and Space the combat & mission aircraft services sales activities, covering MRO, upgrades and materiel management as well as engineering test & integration services. 