



14 October, 2019

ICAS Focusses on Digital Transformation in Aerospace

The biennial Emerging Technology Forum (ETF) of the International Council of the Aeronautical Sciences (ICAS) was held as part of the ICAS Programme Committee (PC) Meeting from 9 to 13 September 2019 in Melbourne, Australia. It was co-hosted by the Royal Aeronautical Society Australian Division, Engineers Australia and RMIT University. The ETF activities took place in RMIT's historic Storey Hall, located in downtown Melbourne. Joao Azevedo, from Brazil and ICAS PC Chair, led the ETF focusing on *Digital Transformation in Aerospace*, which had the participation of invited leaders and experts in this topic area from around the world. Authorized briefings made by the presenters are available at www.icas.org.

For the first time, the ETF spanned two full days. This emphasizes an ongoing effort by ICAS to provide more technical content on relevant and current issues for the aeronautical industry. The expectation is that such efforts add value to the overall experience in participating in the ICAS community. The ETF was divided into four topic areas: *Cyber-Physical Systems*, *Digital Twin Concepts*, *Digital Factory & Advanced Manufacturing*, and *Digital Product Operations & Sustainment*. Each of these topics spanned one half-day and the talks of each session were capped by a panel discussion. The morning of the first day started with the welcome remarks from Cees Bil, representing the Local Organizing Committee, Shinji Suzuki, ICAS President, and two of the ETF 2019 co-hosts, Mark Skidmore, President of the Royal Aeronautical Society Australian Division, and Calum Drummond, RMIT Deputy Vice-Chancellor Research & Innovation.

The technical event started with the discussion of *Cyber-Physical Systems*. Experts from JAXA Japan, Instituto Tecnológico de Aeronautica, Brazil, Boeing Aerostructures Australia and Defence Science & Technology, Australia, presented their views and reported on the progress towards the use of cyber-physical systems in aeronautical applications. Monday afternoon continued with the discussion of *Digital Twin Concepts*.



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SUMMARIZING MEDIA RELEASE (CONT)

The first lecture, by Dimitri Mavris from the Georgia Institute of Technology, USA, demonstrated the creation of an extremely complex digital twin of the complete Georgia Tech campus. This lecture was followed by Shigeru Obayashi, from Tohoku University, Japan, who discussed the use of data mining for the exploration of the aircraft design space. These talks were followed by the discussion on digital twin from Airbus, France, Dassault Systemes, Australia, and MSC Software, Australia. The last talk of the session featured Mike Kelly, from Lockheed Martin Aeronautics, USA, who stressed that whatever is done in terms of modelling must be relevant for the flight line.

The Tuesday morning session addressed the issues of *Digital Factory & Advanced Manufacturing*. The first talk, by Joao Zerbini, from Embraer, Brazil, demonstrated how his company adopted the digital thread and essentially is digital from design to manufacturing. The other talks in this session, which all came from Australia, looked in detail at several aspects of additive manufacturing and Industry 4.0 approaches for advanced manufacturing, including the serious aspect of certification of additive manufactured aircraft parts. The afternoon of this second day addressed the issue of *Digital Product Operations & Sustainment*. The speakers came from RMIT University, Swinburne University, and Memko, all from Australia, plus Airbus, France, German Aerospace Center (DLR), Germany, and Aviation Industry Corporation of China (AVIC), China. In particular, the DLR talk has specifically addressed the operation of digital design systems towards the digital thread. Xin Guo Zhang, from AVIC, provided an in-depth overview of the efforts for digital transformation in the Chinese aviation industry. The event was concluded with some summarizing remarks by Shinji Suzuki, ICAS President.

An executive summary of the ETF will be used to inform the next ICAS Congress, to be held in Shanghai, China, 14-18 September 2020 (see www.icas2020.com), of the recent achievements and most important challenges and opportunities associated with Digital Transformation issues.



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