## DRAFT PROGRAM MATRIX

### SUNDAY 24 February 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700 - 1930</td>
<td>Registration opens – Promenade Foyer</td>
<td></td>
</tr>
<tr>
<td>1800 - 1930</td>
<td>Welcome Reception – Promenade Foyer</td>
<td></td>
</tr>
</tbody>
</table>

### MONDAY 25 February 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>0700-1730</td>
<td>Registration opens – Promenade Foyer</td>
<td></td>
</tr>
<tr>
<td>0805-1005</td>
<td>Opening Plenary session – Promenade Room 1&amp;2</td>
<td></td>
</tr>
<tr>
<td>0805-1005</td>
<td>Congress Opening Address</td>
<td></td>
</tr>
<tr>
<td>1005-1030</td>
<td>Morning tea – Promenade Foyer</td>
<td></td>
</tr>
<tr>
<td>1030-1210</td>
<td>Concurrent session 1</td>
<td>60 minutes plenary session</td>
</tr>
</tbody>
</table>

### Concurrent session 1

<table>
<thead>
<tr>
<th>Breakout 1</th>
<th>Breakout 2</th>
<th>Breakout 3</th>
<th>HUMS 1</th>
<th>ISSFD 1</th>
<th>ISSFD 2</th>
<th>ISSFD 3</th>
<th>ISSFD 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRUCTURES AND MATERIALS 1</td>
<td>AERODYNAMICS 1</td>
<td>SIMULATION</td>
<td>OPENING AND KEYNOTE 1</td>
<td>ATTITUDE DYNAMICS &amp; CONTROL 1</td>
<td>FORMATION FLYING &amp; SATELLITE CONSTELLATIONS 1</td>
<td>ASTRODYNAMICS 1</td>
<td>FLIGHT DYNAMICS OPERATIONS 1</td>
</tr>
<tr>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
</tr>
<tr>
<td>Promenade Room 1</td>
<td>Promenade Room 2</td>
<td>Promenade Room 3</td>
<td>M3 &amp; M4</td>
<td>M7 &amp; M</td>
<td>M6</td>
<td>M1 &amp; M2</td>
<td>M9 &amp; M10</td>
</tr>
</tbody>
</table>

| 0805-1005 | Opening Plenary session – Promenade Room 1&2 |                            |
| 1005-1030 | Morning tea – Promenade Foyer                  |                            |

| 0805-1005 | Opening Plenary session – Promenade Room 1&2 |                            |
| 1005-1030 | Morning tea – Promenade Foyer                  |                            |

| 1030-1210 | Concurrent session 1                           |                            |

### Opening Plenary session – Promenade Room 1&2

**Congress Opening Address**

Plenary presentations

1 TBA  
2 TBA  
3 TBA

**Morning tea – Promenade Foyer**

**Conference Plenary / Breakout session 1**

| 1005-1030 | 200 minutes plenary session inclusive of 5-minute Q&A |

| 1005-1030 | morning tea – Promenade Foyer | |

**Chair: TBA**

**Promenade Room 1**

**Promenade Room 2**

**Promenade Room 3**

**M3 & M4**

**M7 & M**

**M6**

**M1 & M2**

**M9 & M10**

**6 Degree of Freedom Dynamic Demonstrator for Structural Testing**

Angus Manning  
**DST Group**

**A Rapid, Low-Cost Approach for Airplane Aerodynamic Database Development Using CFD and Wind Tunnel Data**

Niall O’Shea  
**Boeing Aerostructures Australia**

**A Model-Based Digital Twin Concept for Aircraft System Failure Detection**

Omar Hazbon Alvarez  
**RMIT University**

**KEYNOTE PRESENTER TBA**

**KEYNOTE PRESENTER Enhancement of the Spacecraft Attitude Dynamics Capabilities via Combination of the Inertial Morphing and Reaction Wheels**

Pavel Trivailo  
**RMIT University**

**Accurate Osculating/Mean Orbital Elements Conversions for Spaceborne Formation Flying**

Gabriella Gaia  
**Politecnico Di Milano**

**Connecting Low-Energy Orbits in the Saturn system**

Elena Fantino  
**Khalifa University of Science and Technology**

**The Flight Dynamics Contribution to the Selection of MASCOT Landing Site on the Surface of the Asteroid Ryugu**

Laurence Lorda  
**CNES**

---

*Please note this program is subject to change*
### DRAFT PROGRAM MATRIX

<table>
<thead>
<tr>
<th>Acoustic metamaterials for absorbing aeronautical noise</th>
<th>Aerodynamic testing using the Defence Science and Technology Group wind tunnels</th>
<th>A Simulation Environment for Air-vehicle Swarming</th>
<th>Spatial Formation of High Inclined Orbits with Use of Gravity Assists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jingwen Zhao RMIT University</td>
<td>Malcolm Jones DST Group</td>
<td>Robert Porter DST Group</td>
<td>Alexey Gruschevskii Keldysh Institute of AppliedMathematics of RAS</td>
</tr>
<tr>
<td>Advanced Helicopter Structural Research Facility</td>
<td>Digital Thread Implementation at Boeing Aerostructures Australia</td>
<td>Defence Aviation Safety Authority (DASA) perspectives on HUMS</td>
<td>TRICOM-1R Flight Dynamics Analysis: Angular Momentum Oscillation of Spinning Satellite in Highly Elliptical Orbit</td>
</tr>
<tr>
<td>Christopher Dore DST Group</td>
<td>Andrew Sheppard Boeing Aerostructures Australia</td>
<td>Rashmin Gunaratne DASA-ADF</td>
<td>Takayuki Hosenuma The University of Tokyo</td>
</tr>
<tr>
<td>An Empirical Model to Predict the Effect of Thermal Exposure on the Tensile Mechanical Properties of 7000 Aluminium Alloys</td>
<td>Modelling of a small internal combustion aero engine</td>
<td>A viable opportunity for fielding an aircraft structural health monitoring system</td>
<td>Drag-Free and Attitude Control System in LEO using Cold Gas Propulsion System: a feedback from the MICROSCOPE mission Stéphanie Delavault CNES</td>
</tr>
<tr>
<td>Suzana Turk DST Group</td>
<td>Ioan Porumb University of South Australia</td>
<td>Marcel Bos NLR</td>
<td>Sentinel-SP Loose Formation Flying with Suomi-NPP: LEOP, Orbit Acquisition and Orbit Maintenance Dirk Kuliper CGI Deutschland Ltd. &amp; Co. KG</td>
</tr>
<tr>
<td>Kathryn Niessen DST Group</td>
<td>Chance McColl Technical Data Analysis, Inc. (tda)</td>
<td>James Cycon Lockheed Martin Corporation</td>
<td>Avoidance of radiofrequency interferences with Metop-A and Metop-B during Metop-C early operations Pier Luigi Righetti Eumetsat</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Day 1**

| 1210-1310 | Lunch – Promenade Foyer |
| 1310-1450 | Concurrent session 2 |

**Conference Plenary / Breakout session 1**

<table>
<thead>
<tr>
<th>Breakout 2</th>
<th>Breakout 3</th>
<th>HUMS 1</th>
<th>ISSFD 1</th>
<th>ISSFD 2</th>
<th>ISSFD 3</th>
<th>ISSFD 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRENGTHS AND MATERIALS 2</td>
<td>AEROSPACE DESIGN 1</td>
<td>REGULATIONS, POLICY AND AIRWORTHINESS 1</td>
<td>STRUCTURAL LOADS AND HEALTH MONITORING 1</td>
<td>ATTITUDE DYNAMICS &amp; CONTROL 2</td>
<td>FORMATION FLYING &amp; SATELLITE CONSTELLATIONS 2</td>
<td>ASTRODYNAMICS 2</td>
</tr>
<tr>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
</tr>
</tbody>
</table>

**Analysis of the Life-**

- Hazard Assessment of An evaluation of the Software Assisted Satellite Attitude Orbital design of Reconciliation of Bepi Colombo: Flight

Last Updated: 5/11/2018, *Please note this program is subject to change*
<table>
<thead>
<tr>
<th>Program Matrix</th>
<th>Authors</th>
<th>Keywords</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limiting location of a Military Transport Aircraft Fatigue Test</td>
<td>Kai Maxfield DST Group</td>
<td>Turbulence: Initial Results, Jorg Schluter, Deakin University</td>
</tr>
<tr>
<td>Australian Civil Aviation Safety Authority (CASA)</td>
<td>Richard Yeun, RMIT University</td>
<td>DEMATEL method, Scheduling Theory</td>
</tr>
<tr>
<td>Hawk Mk127 Strain Gauge Serviceability Assessment</td>
<td>Josh McFarlane, RAE Systems Australia</td>
<td>Control with a six Control Moment Gyro cluster tested under Microgravity Conditions, Hélène Evain CNES</td>
</tr>
<tr>
<td>Formulation flight to keep relative distance applied to space gravitational wave antenna B-DECIGO</td>
<td>Shuhei Matsushita The University of Tokyo</td>
<td></td>
</tr>
<tr>
<td>Space Debris TOPEX/Poseidon Attitude Motion: Interplay of Conservative, Damping and Propelling Torques</td>
<td>Vladimir Sidorenko Keldysh Institute of Applied Mathematics</td>
<td></td>
</tr>
<tr>
<td>Deployment and Maintenance of Solar Sail- Equipped Cubesat Formation in LEO</td>
<td>Dmitry Pritykin Skolkovo Institute of Science and Technology</td>
<td></td>
</tr>
<tr>
<td>Sun-synchronous repeat ground tracks and other useful orbits for future space missions</td>
<td>Sung Wook Paek Samsung Sdi</td>
<td></td>
</tr>
<tr>
<td>Dynamic Operations during Launch and Early Orbit Phase</td>
<td>Frank Budnik ESA</td>
<td></td>
</tr>
<tr>
<td>Assessing the effect on structural integrity of undetected damage within composite structure via the F/A-18A/B Hornet Outer Wing Static Test (HOSAT)</td>
<td>Crystal Forrester DST Group</td>
<td>Crystal Forrester DST Group</td>
</tr>
<tr>
<td>Low speed aerodynamics of pitching airfoil using Proper Orthogonal Decomposition</td>
<td>Arpan Das RMIT University</td>
<td></td>
</tr>
<tr>
<td>Coevolution strategies for Airlines Industry based on Game theory</td>
<td>Iryna Heiets RMIT University</td>
<td></td>
</tr>
<tr>
<td>Individual Aircraft Tracking: Towards a Digital Twin</td>
<td>Oleg Levinski DST Group</td>
<td></td>
</tr>
<tr>
<td>Space Debris T0PEX/Poseidon Attitude Motion: Interplay of Conservative, Damping and Propelling Torques</td>
<td>Vladimir Sidorenko Keldysh Institute of Applied Mathematics</td>
<td></td>
</tr>
<tr>
<td>Deployment and Maintenance of Solar Sail Equipped Cubesat Formation in LEO</td>
<td>Dmitry Pritykin Skolkovo Institute of Science and Technology</td>
<td></td>
</tr>
<tr>
<td>Sun-synchronous repeat ground tracks and other useful orbits for future space missions</td>
<td>Sung Wook Paek Samsung Sdi</td>
<td></td>
</tr>
<tr>
<td>Dynamic Operations during Launch and Early Orbit Phase</td>
<td>Frank Budnik ESA</td>
<td></td>
</tr>
<tr>
<td>C-130J-30 Wing Fatigue Test and Implementation</td>
<td>Ross Stewart GinetIQ</td>
<td>Bio-inspired flapping wing micro air vehicles material properties and evolutionary fabrication, Nahid Chitaz UNSW</td>
</tr>
<tr>
<td>Defining Autonomy - A Safety Certification Perspective</td>
<td>Reece Clothier Boeing Research &amp; Technology</td>
<td></td>
</tr>
<tr>
<td>Effects of Atmospheric Excitation on Vibration Based Condition Monitoring Methods for Hybrid-Electric Aircraft Propulsion Systems</td>
<td>Philipp Schilt Siemens AG</td>
<td></td>
</tr>
<tr>
<td>Dynamic analysis of gravitationally coupled orbit-attitude dynamics about an irregular-shaped asteroid</td>
<td>Yue Wang Beihang University</td>
<td></td>
</tr>
<tr>
<td>Modeling and analysis of gravitationally coupled orbit-attitude dynamics about an irregular-shaped asteroid</td>
<td>Yue Wang Beihang University</td>
<td></td>
</tr>
<tr>
<td>Trajectory and orbit design for the Venera-D mission</td>
<td>Kovalenko Space Research Institute of the Russian Academy of Sciences (IRAS)</td>
<td></td>
</tr>
<tr>
<td>ExoMars 2016 – Flight Dynamics commanding during the aerobraking operations for the Trace Gas Orbiter</td>
<td>Robert Guilianyá Jané GMV INSYSN at ESA/ESOC</td>
<td></td>
</tr>
<tr>
<td>Damping properties of cork/fibre reinforced polymer composites</td>
<td>Jose Silva RMIT University</td>
<td>CFD-Coupled 6-DOF Attitude &amp; Trajectory Analysis for Hypersonic Air Vehicles, Julian Fernandez Gonzalez, Escalante</td>
</tr>
<tr>
<td>Efficient consumption of Civil Airworthiness Authorities' products and services using Airworthiness Recognition</td>
<td>James Herringer DASA</td>
<td></td>
</tr>
<tr>
<td>The Concept of Monitoring System for Individual Mi B Helicopter with Integrated Sensor Network</td>
<td>Artur Kurnyta AFIT Poland</td>
<td></td>
</tr>
<tr>
<td>Spinning Cubesats Launchers</td>
<td>Nevsan Sengil University of Turkish Aeronautical Association</td>
<td></td>
</tr>
<tr>
<td>HRWS -- A Control Theoretical Analysis of Formation Flight with Inter-satellite Lorentz Forces</td>
<td>Hao Zhang Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences</td>
<td></td>
</tr>
<tr>
<td>Using Telemetry to Navigate the MarCO Cubesats to Mars</td>
<td>Brian Young Jet Propulsion Laboratory / California Institute of Technology</td>
<td></td>
</tr>
<tr>
<td>Exomars 2016 – Flight Dynamics operations for the targeting of the Schiaparelli module Entry Descent and Landing and the Trace Gas Orbiter Mars orbit insertion</td>
<td>Robert Guilianyá Jané GMV INSYSN at ESA/ESOC</td>
<td></td>
</tr>
<tr>
<td>Derivation of shell knockdown factors of grid-stiffened cylinders with various thickness ratios</td>
<td>Han-Il Kim Chungnam National University</td>
<td>Current knowledge of corrugated dragonfly wing structures and future measurement methodology, Nasim Chitsaz University of South Australia</td>
</tr>
<tr>
<td>Improved Technical Airworthiness Taxonomy: Capturing Business Intelligence to Support an Effective Safety Management System</td>
<td>Ben Whitting DASA</td>
<td></td>
</tr>
<tr>
<td>Low Power, Low Cost, Lightweight, Multichannel Optical Fiber Interrogation Unit for Structural Health Management of Rotor Blades</td>
<td>Edgar Mendez Redondo Optics Inc.</td>
<td></td>
</tr>
<tr>
<td>The Pioneer 10 Spin Anomaly as an Observation Artefact</td>
<td>Craig Watkins Informative Technology Innovations</td>
<td></td>
</tr>
<tr>
<td>FLEX tandem with Sentinel</td>
<td>Itziar Barat Deimos @ Esr</td>
<td></td>
</tr>
<tr>
<td>On-Orbit Mass Property Estimation for Cargo Spacecraft using Operation Data before Machine Learning</td>
<td>Ali Noumi JAXA</td>
<td></td>
</tr>
<tr>
<td>Past Results and Future Missions of STARS Series Satellite</td>
<td>Shashiro Kohri Shizuoka University</td>
<td></td>
</tr>
<tr>
<td>Concurrent Session 3</td>
<td>Breakout 2</td>
<td>Breakout 3</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------</td>
<td>-----------</td>
</tr>
<tr>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
</tr>
<tr>
<td>Promenade Room 1</td>
<td>Promenade Room 2</td>
<td>Promenade Room 3</td>
</tr>
</tbody>
</table>

**Developing Experimental Techniques for Detecting Composite Failure Modes and Fatigue Crack Growth in an Aircraft Panel**

**Michael Forsey**

Graphene as an Enabler in Aerospace Design

**Stephen Russo**

QinQiQ

**Douglas Williams**

Air Force PC-9/A Ageing Aircraft Challenges

**David Crossman**

Air Training and Aviation Commons Systems Program Office

**Extending the Helicopter System Efficiency by Integrating HUMS with Crew Fatigue/Storm/Real-Time Monitoring Capabilities**

**Marco Gazzana**

Leonardo Helicopters

**METEOSAT**

Range antennas relocation: performance assessment and compensation using telescopes data service

**Stefano Pessina**

Eumetsat

**Multi-Objective Optimisation of NRHO-LLO Orbit Transfer via Surrogate-Assisted Evolutionary Algorithms**

**Hideaki Ogawa**

RMIT University

**Dawn’s final mission at Ceres: Navigation and Mission Design Experience**

**Dongsuk Han**

Jet Propulsion Laboratory / California Institute of Technology

**Effect of surface finish and surface roughness on the operational life of additively manufactured parts**

**Rhy Jones**

Dept Of Mechanical And Aerospace Engineering

Performance of Electric VTOL Hovering Craft

**Graham Dorrington**

RMIT University

**Protecting infant airline passengers from injury in a severe but survivable accident**

**Adam Shrimpton**

DASA

**Collision probabilities of tethers and sails against debris or spacecraft**

**Ricardo García-Pelayo**

Universidad Politécnica De Madrid

**Introducing CBM+ on M13A5A Power pack utilising HUMS data**

**Vishwanath Wickramanayake**

LEA CAGS

**Consider Probability Hypothesis Density Filtering for Multiple Space Objects Tracking**

**Yang Yang**

RMIT University

**Surrogate-Based Multi-Fidelity System Design Optimisation for Cislunar Missions**

**Hideaki Ogawa**

RMIT University

**Aeroshaking the ExoMars TGO:** The JPL Navigation Experience

**Dongsuk Han**

Jet Propulsion Laboratory / California Institute of Technology

**Enhanced Teardown of a PC-9/A Wing Main Spar Cap with Miss-Drills**

**Ben Main**

DST Group

Reducing durability test duration though the lead crack framework

**Loris Molent**

DST Group

**Qualifying the Digital Pilot**

**Reece Clothier**

Boeing Research & Technology

**Concepts in Using Heavy Cargo Aircrafts for Aerial Firefighting Operations**

**Anil Ravindran**

RMIT University

**Heiltune Integrated Vehicle Health Monitoring – Scalable Aircraft Health Monitoring**

**Paul Hutchinson**

Heiltune

**Aeolus Orbit Control Strategy: Analysis and Final Implementation**

**Miguel Martin Serrano**

Scisys

**Optimized transfers between Earth-Moon invariant manifolds**

**Laurent Beauregard**

Isae-supeaero

**VFR-into-IMC Accidents: An Analysis of Human and Weather-related Factors**

**Graham Wild**

RMIT University

**Forensic Analysis of Damage found during the Teardown of a Military Transport Aircraft Fatigue Test Article**

**Douglas Williams**

DST Group

Aircraft safety and passenger anthropometry – evaluating emergency egress times of different passenger profiles

**Damien Melis**

RMIT University

**Regulating Safety Management Systems: Common issues and solutions for the future**

**Joshua Hamson**

DASA

**Software Development to Deliver a Super Hornet and Growler Deployable Engine Life Management Capability**

**Robert Findlay**

BAE Systems

**Navigation Challenges during ExoMars Trace Gas Orbiter Aeroshaking Campaign**

**Gabriele Belli Deimos Space**

**Optimal far rendezvous strategy in the cis-lunar space**

**Mani Vinayak**

Gopalan Singaman Iae-supeaero

**Sentinel-3 orbit control strategy**

**Daniel Aguilar Taboada**

Eumetsat

**Fracture analysis of Composite scarf repairs-A simple method**

**Amar Garg**

Boeing Aerostructures Australia

Virtual Design Optimisation and Testing (VDOT) Framework for Innovative Sustainment

**Ali Dali**

RMIT University

**Human Error Classification and Management in Aviation Design – A Critical Review**

**Eranga Batuwangala**

RMIT University

**Vibration and Tribology System for Military Aircrafts**

**Mariusz Zokowski**

FIT Poland

**Estimating atmospheric density profiles using orbit determination with a focus on JUICE and Cassini**

**Anne Hickey**

RMIT University

**Angles-Only Robust Closed-Loop Guidance for Spacecraft Rendezvous Proximity Operations via**

**Last Updated: 5/11/2018, *Please note this program is subject to change**
## DRAFT PROGRAM MATRIX

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1800-2300</td>
<td>2019 Congress Dinner at Aerial</td>
</tr>
</tbody>
</table>

**AIAC 2019 Congress Dinner**
Join us to conclude the first two days of the Congress at Aerial. Situated at South Wharf  
Time: 6:00pm – 11:00pm  
Location: 17 Dukes Walk, South Wharf VIC 3006.  
Includes: Canapes, Entrée, Main Course, Dessert with tea and coffee  
Keynote Presenter – TBA
# DRAFT PROGRAM MATRIX

**TUESDAY 26 February 2019**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>0800-0900</td>
<td>Registration opens – Promenade Foyer</td>
<td></td>
</tr>
<tr>
<td>0830-1015</td>
<td>Plenary Presentations – Promenade Room 1&amp;2</td>
<td></td>
</tr>
<tr>
<td>1015-1040</td>
<td>Morning tea – Promenade Foyer</td>
<td></td>
</tr>
<tr>
<td>1040-1220</td>
<td>Concurrent session 4</td>
<td></td>
</tr>
</tbody>
</table>

## Conference Plenary / Breakout session

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Chair</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>0830-0900</td>
<td>Plenary Presentations 1</td>
<td>TBA</td>
<td>Promenade Room 1&amp;2</td>
</tr>
<tr>
<td>0900-1000</td>
<td>Plenary Presentations 2</td>
<td>TBA</td>
<td>Promenade Room 1&amp;2</td>
</tr>
<tr>
<td>1000-1100</td>
<td>Plenary Presentations 3</td>
<td>TBA</td>
<td>Promenade Room 1&amp;2</td>
</tr>
<tr>
<td>1100-1200</td>
<td>Plenary Presentations 4</td>
<td>TBA</td>
<td>Promenade Room 1&amp;2</td>
</tr>
<tr>
<td>1200-1300</td>
<td>Breakout 2</td>
<td>TBA</td>
<td>Promenade Foyer</td>
</tr>
<tr>
<td>1300-1400</td>
<td>Breakout 3</td>
<td>TBA</td>
<td>Promenade Foyer</td>
</tr>
<tr>
<td>1400-1500</td>
<td>Breakout 4</td>
<td>TBA</td>
<td>Promenade Foyer</td>
</tr>
<tr>
<td>1500-1600</td>
<td>HUMS 1</td>
<td>TBA</td>
<td>Promenade Foyer</td>
</tr>
<tr>
<td>1600-1700</td>
<td>ISSFD 1</td>
<td>TBA</td>
<td>Promenade Foyer</td>
</tr>
<tr>
<td>1700-1800</td>
<td>ISSFD 2</td>
<td>TBA</td>
<td>Promenade Foyer</td>
</tr>
<tr>
<td>1800-1900</td>
<td>ISSFD 3</td>
<td>TBA</td>
<td>Promenade Foyer</td>
</tr>
</tbody>
</table>

## Breakouts

<table>
<thead>
<tr>
<th>Time</th>
<th>Breakout 1: Structures and Materials 1</th>
<th>Chair</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>0830-0900</td>
<td>Investigating meso-mechanical failure in composite materials using the semi-conformal Embedded Technique (SET)</td>
<td>Nayee Chowdhury</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A Case Study in Uncertainty Quantification of UAS Behaviours Against Mission Requirements</td>
<td>Valtteri Kallinen</td>
<td></td>
</tr>
<tr>
<td>0900-1000</td>
<td>Modelling and Prediction of Ship Corrosion Defects for Maintenance Planning</td>
<td>Geoffrey Will</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Atmospheric Air Quality Measurement Using Fleet of Multi-Rotor Unmanned Aircraft System</td>
<td>David Tennent</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cognitive Human-Machine Interfaces and Interactions for Cooperative Bushfire Surveillance and Fire-Fighting</td>
<td>Achim Washington</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aircraft Proximity and Well-Clear Volumes Grace Garden Boeing Research &amp; Technology</td>
<td>Xiang Lim</td>
<td></td>
</tr>
<tr>
<td>1000-1100</td>
<td>Challenges to the Risk-based Regulation of Unmanned Aircraft Systems</td>
<td>Achim Washington</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cognitive Human-Machine Interfaces and Interactions for Cooperative Bushfire Surveillance and Fire-Fighting</td>
<td>Achim Washington</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Automatic Ground Collision Avoidance System</td>
<td>Russell Turner</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Development of a GPS receiver for geosynchronous satellites toward autonomous operation</td>
<td>Yu Nakajima</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UK MOD HUMS and Flight Data Exploitation Strategy</td>
<td>Jeff Day</td>
<td></td>
</tr>
<tr>
<td>1100-1200</td>
<td>Breakout 2</td>
<td>Chair: TBA</td>
<td>Promenade Room 2</td>
</tr>
<tr>
<td></td>
<td>A Study of Orbit estimation for a spacecraft by Using the Re-duced order Filter</td>
<td>Irina Cavallari</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Optimizations for In-Flight Orbit Determination of an Autonomous Deep-Space CubeSat</td>
<td>Boris Segret</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reentry Design in a Cislunar Near Rectilinear Halo Orbit</td>
<td>Emmanuel Blazquez</td>
<td></td>
</tr>
<tr>
<td>1200-1300</td>
<td>Breakout 3</td>
<td>Chair: TBA</td>
<td>Promenade Room 3</td>
</tr>
<tr>
<td></td>
<td>Transfer from a Lunar Distant Retrograde Orbit to Mars through Lyapunov Orbits</td>
<td>Irene Cavallari</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rendezvous Design in a Cislunar Near Rectilinear Halo Orbit</td>
<td>Emmanuel Blazquez</td>
<td></td>
</tr>
<tr>
<td>1300-1400</td>
<td>Breakout 4</td>
<td>Chair: TBA</td>
<td>Promenade Room 4</td>
</tr>
<tr>
<td></td>
<td>Rendezvous Design in a Cislunar Near Rectilinear Halo Orbit</td>
<td>Emmanuel Blazquez</td>
<td></td>
</tr>
<tr>
<td>1400-1500</td>
<td>HUMS 1</td>
<td>Chair: TBA</td>
<td>Promenade Room 5</td>
</tr>
<tr>
<td></td>
<td>Rendezvous Design in a Cislunar Near Rectilinear Halo Orbit</td>
<td>Emmanuel Blazquez</td>
<td></td>
</tr>
<tr>
<td>1500-1600</td>
<td>ISSFD 1</td>
<td>Chair: TBA</td>
<td>Promenade Room 6</td>
</tr>
<tr>
<td></td>
<td>Rendezvous Design in a Cislunar Near Rectilinear Halo Orbit</td>
<td>Emmanuel Blazquez</td>
<td></td>
</tr>
<tr>
<td>1600-1700</td>
<td>ISSFD 2</td>
<td>Chair: TBA</td>
<td>Promenade Room 7</td>
</tr>
<tr>
<td></td>
<td>Rendezvous Design in a Cislunar Near Rectilinear Halo Orbit</td>
<td>Emmanuel Blazquez</td>
<td></td>
</tr>
<tr>
<td>1700-1800</td>
<td>ISSFD 3</td>
<td>Chair: TBA</td>
<td>Promenade Room 8</td>
</tr>
<tr>
<td></td>
<td>Rendezvous Design in a Cislunar Near Rectilinear Halo Orbit</td>
<td>Emmanuel Blazquez</td>
<td></td>
</tr>
</tbody>
</table>

*Last Updated: 5/11/2018, *Please note this program is subject to change*
### DRAFT PROGRAM MATRIX

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Chair(s)</th>
<th>Room</th>
<th>Breakout 1</th>
<th>Breakout 2</th>
<th>Breakout 3</th>
<th>Breakout 4</th>
<th>Breakout 5</th>
<th>Breakout 6</th>
<th>Breakout 7</th>
<th>Breakout 8</th>
<th>Breakout 9</th>
<th>Breakout 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1220-1315</td>
<td>Lunch – Promenade Foyer</td>
<td>TBA</td>
<td>Promenade Room 1</td>
<td>M1 &amp; M2</td>
<td>M1 &amp; M2</td>
<td>M3 &amp; M4</td>
<td>M6</td>
<td>M7 &amp; M8</td>
<td>M9 &amp; M10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1315-1455</td>
<td>Concurrent session 5</td>
<td>TBA</td>
<td>Promenade Room 2</td>
<td>HUMS 2</td>
<td>HUMS 1</td>
<td>ISSFD 1</td>
<td>ISSFD 2</td>
<td>Breakout 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(20min presentation inclusive of 5-minute Q&amp;A)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
</tr>
<tr>
<td></td>
<td>Promenade Room 1</td>
<td>Promenade Room 3</td>
<td>M1 &amp; M2</td>
<td>M3 &amp; M4</td>
<td>M6</td>
<td>M7 &amp; M8</td>
<td>M9 &amp; M10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>STRUCTURES AND MATERIALS 5</td>
<td>PROPULSION 1</td>
<td>AVIONICS, ATM &amp; MISSIONS SYSTEMS 2, SYSTEMS SUPPORT AND INFRASTRUCTURE 1</td>
<td>SENSOR TECHNOLOGY &amp; PROGNOSTIC HEALTH MANAGEMENT</td>
<td>DIAGNOSTICS AND PROGNOSTICS 1</td>
<td>ORBIT DYNAMICS &amp; CONTROL</td>
<td>MISSION ANALYSIS &amp; DESIGN 1</td>
<td>UNMANNED AERIAL SYSTEMS 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Please note this program is subject to change*
# DRAFT PROGRAM MATRIX

<table>
<thead>
<tr>
<th>Conference Room 1 &amp; 2</th>
<th>Breakout 2</th>
<th>Breakout 3</th>
<th>Breakout 4</th>
<th>HUMS 1</th>
<th>ISSFD 1</th>
<th>ISSFD 2</th>
<th>Breakout 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>STRUCTURES AND MATERIALS 6</td>
<td>PROPULSION 2 AND ADDITIVE MANUFACTURING</td>
<td>AVIONICS, ATM AND MISSIONS SYSTEMS 3</td>
<td>UNMANNED AERIAL SYSTEMS 2</td>
<td>DIAGNOSTICS AND PROGNOSTICS 2</td>
<td>ORBIT DYNAMICS</td>
<td>MISSION ANALYSIS &amp; DESIGN 2</td>
<td>UNMANNED AERIAL SYSTEMS 3</td>
</tr>
<tr>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
<td>Chair: TBA</td>
</tr>
<tr>
<td>Promenade Room 3</td>
<td>M1 &amp; M2</td>
<td>M1 &amp; M2</td>
<td>M3 &amp; M4</td>
<td>M6</td>
<td>M7 &amp; M8</td>
<td>M9 &amp; M10</td>
<td></td>
</tr>
</tbody>
</table>

### OPERAND: Aircraft Buffet Load Prediction Using Nonlinear System Identification Algorithms
- **Michael Candon**
- **RMIT University**

- The Szorenyi Two Chamber Rotary Engine Concept
- Peter King
- Rotary Engine Development Agency

- Achieving Unmanned Aircraft System Sense and-Avoid by Multi Sensor Data Fusion
- Luthfi Nurhakim
- RMIT University

- Validation of an Acoustic Travelling Wave System Through Forced Response Analysis of a Research Blisk
- Mitchell Cosmo
- DST Group

- Wollongong
- AFIT Poland

- Cyclostationary-based tools for bearing diagnostics of helicopter planetary gearboxes
- Konstantinos Gryllias
- KU Leuven Belgium

- Evolutionary Optimization
- Gaurav Vaibhav
- Indian Space Research Organization

- Risk reduction and collision risk thresholds for missions operated at ESA
- Yue Wang
- Beihang University

- DST Group
- UAV navigation over littoral zone in GPS denied conditions

- Aakash Dawadee
- DST Group

### OPERAND: Virtual Sensor Expansion of Flight Measurement Data using Calibrated GVT Models
- **Stephan Koschel**
- **RMIT University**

- Fuel Injection Conversion for a Small Aero Engine
- Matthew O’Neil
- University of South Australia

- Asset Management of an Ageing Aircraft
- Robert Crowe
- Jacobs Australia

- Leverageing Digital Clones for Prognostics Health Management
- Melissa McReynolds
- Sentient Science

- Separation of mechanical source vibrations under variable speed conditions
- Dany Abboud
- Safran Tech

- Simple and efficient algorithm to search through the Gaia catalogue
- Pedro Santana Camprubi
- CGI Deutschland Ltd. & Co. KG

- DST Group
- UAV navigation using visual waypoints: A hardware-in-the-loop approach

- Aakash Dawadee
- DST Group

### Prediction of in-flight loading using neural networks: case study
- **Daniel Franke**
- **DST Group**

- Damage assessment in composite and bonded materials
- Rhys Jones
- Monash University

- Energy Harvesting Inside a Helicopter
- Main Gearbox to Power a HUMS Transducer
- Riyazal Hussein
- DST Group

- Using K-Nearest Neighbour machine learning technique to classify archived Helicopter Wear
- Data
- Eric Lee
- DST Group

- On the chaotic drift in terrestrial orbits
- Jerome Daquin
- University of Padova

- Machine Learning for Atmospheric Drag Prediction of LEO satellites
- Hiroshi Kato
- Japan Aerospace Exploration Agency

- RMIT University
- Wind Tunnel and Launching Test for Bi-modal Unmanned System
- Dian Guo

---

**1455-1520**
- Afternoon tea – Promenade Foyer

**1520-1700**
- Breakout 4
- **Chair: TBA**

- Promenade Room 3
- M1 & M2

- M3 & M4

- M6

- M7 & M8

- M9 & M10

- Low-NOx Flameless Combustor for Gas Turbines: An Experimental and Numerical Study
- Farid Christo
- Deakin University

- Energy Management During Descent Operations: Human Machine Teaming Considerations
- Alessandro Gardi
- RMIT University

- Collision Avoidance with Rules of the Air Compliance for Unmanned Aircraft Detec and Avoid
- Timothy Molloy
- QUT

- Experimental Study of Gearbox Faults using Acoustic Emission Signals
- Chris Mechefske
- Queens University Canada

- An open-source, high-fidelity orbit propagator (HFOP) for asteroid trajectory simulation
- Sung Wook Paek
- Samsung Sdi

- Utilizing the Chaotic Tumbling of CubeSats
- An Graham Dorrington
- RMIT University

- Influence of rotor wake interference on multicopter UAS forward flight performance
- Sam Prudden
- RMIT University

- Real-time system
- Numerical Analysis of Mission Design for Early Warning
- Evaluation of LIDAR

- Detection and State propagation in Concept
## DRAFT PROGRAM MATRIX

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700-1725</td>
<td>Congress Plenary Closing &amp; Award Presentations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1830-2300</td>
<td>HUM2019 Congress Dinner (HUMS Delegates only, limited seats)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time: 6:30pm – 11:00pm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Location: Vibe Hotel Savoy, Melbourne, 630 Little Collins Street, Melbourne VIC 3000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cost: Included in your registration, please indicate your attendance at time of registration for catering purposes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Includes: Pre-drinks/canapes, Entrée, Main Course, Dessert with tea and coffee</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### The Strategy for a Multi-provider / Multi-user Structural Experimentation Capability within Aerospace Division of DST Group

- **Ben Main**
- **DST Group**

### Identification for fixed wing Unmanned Aerial Vehicle

- **Arpan Das**
- **RMIT University**

### Thermal Loading in Dual-Bell Rocket Nozzles

- **Christopher Hewitt**
- **RMIT University**

### Plant Disease Detection from UAS

- **Hai Pham**
- **RMIT University**

### and X-Band Radar Sensors in a Particle-Dense Environment

- **Ricardo Cannizzaro**
- **DST Group**

### Location of non-artificial defects in rolling element bearing using acoustic emission

- **Francesco Larizza**
- **University of Adelaide**

### in libration point regions of perturbed three body problems

- **Alain Lamy**
- **CNES**

### Uncertain irregular gravity field with differential algebra method

- **Jingliang Feng**
- **Nanjing University**

### Instrumentation for Flapping Wing UAVs and MAVs

- **Alex Lefik**
- **University of South Australia**

### Thermoelastic assessment of impact damaged composites under cyclic loading

- **Cedric Antolis**
- **RMIT University**

### Additive metal solutions to aircraft skin corrosion

- **Neil Mathews**
- **RUG Australia**

### Risk-oriented Systems Engineering Approach to address Cyber Security issues of Civil Aircraft, Air Traffic Management, and Airports Systems

- **Lanka Bogoda**
- **RMIT University**

### Impact of gusts on battery performance in a small electric UAV using hardware-in-the-loop simulation

- **Armit Sethi**
- **University of Sydney**

### Some problems of diagnosis of helicopter Mi-24 from the perspective of HUMS system

- **Andrezj Gebura**
- **AFIT Poland**

### Review of the Draper Semi-analytics Satellite Theory (DSST)

- **Paul Cefola**
- **University of Buffalo**

### Practical considerations and a realistic framework for a Space Traffic Management system

- **Daniel Oltrogge**
- **Analytical Graphics Inc.**

### Comparison of Feature Based and Direct Visual SLAM in High-Attitude UAS Flight

- **David Tennent**
- **RMIT University**

### Qualification of Material Microstructure and Mechanical Performance of Aerospace Additive Manufacturing Parts using Predictive Modeling Tool

- **Behroz Jalalhamedi**
- **Sentient Science**

### Safety Assessment of UAS and Manned Aircraft Encounter with the Application of Dynamic Fault Trees and Monte Carlo Simulation

- **Asma Tabassum**
- **University of North Dakota**

### Indoor Free-flight Experimentation of a Multi-Rotor Uninhabited Aircraft using a Beacon Positioning System

- **Chatura Nagahawatte**
- **DST Group**

### Condition Monitoring of Worm and Worm Wheel Gearbox Using Vibration Measurement Techniques

- **Anil Kumar**
- **AIAI India**

### Periodic corrections in secular Milankovitch theory applied to passive debris removal

- **Aaron Rosengren**
- **University of Arizona**

### Mission Control Center is the key element of the space traffic management technology

- **Aleksey Kutomonov**
- **Roscosmos**

### Proposed workflow to allow Artificial Intelligent Agents for Airborne Systems and Equipment Certification

- **Bernardo Coelho**
- **Leap Australia**

### Experimental characterization of a small internal combustion aero engine

- **Ioan Porumb**
- **University of South Australia**

### Opening the skies for UAVs – an Integrated Airspace of the Future!

- **Emily Hughes**
- **Boeing Research & Technology**

### Inserting Virtual Dynamic Entities into the UAV Challenge Medical Express

- **Robert Porter**
- **DST Group**

### A Comparative Study of Online Impedance Measurement Techniques for a Lithium Polymer Battery Using Equivalent Circuit Models

- **Amrit Sethi**
- **University of Sydney**

### A density based approach to the propagation of re-entry uncertainties

- **Mirko Trisolini**
- **Politecnico Di Milano**

### Reconsideration of the Thermal Contribution to New Horizons Acceleration

- **Craig Watkins**
- **Innovative Technology Informative Technology**

### Contribution to New Horizons Acceleration

- **Mirko Trisolini**
- **University of South Australia**

---

*Please note this program is subject to change*
## WEDNESDAY 27 February 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 0900-01200 | Avalon Technical Presentations  
TBA  
Avalon Airshow |
| 0900-1130 | Workshop: Advancing Structural Simulation to drive Innovative Sustainment Technologies  
Location: Engineers Australia – Discovery Hub Room  
Level 31 600 Bourke St, Melbourne VIC 3000 |

## Thursday 27 February 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 0900-1200 | Avalon Technical Presentations  
TBA  
Avalon Airshow |
| 1400-1600 | Single Aviation Industry Workshop  
Conference Room 2  
Avalon Airshow |