Incorporated Conferences

Fourteenth Australian Aeronautical Conference

Chair: **Noel Martin**
Deputy Chair: **Paul Heuer**

The fourteenth Australian Aeronautical Conference brings together a broad range of interests from aviation and aerospace communities, both civil and military, in Australia and internationally. This year's conference consists of complementary streams canvassing ideas, research and experiences on topics such as Aviation Operations, Space Technologies, Unmanned Air Systems, Material Sciences, Propulsion, Avionics, Aeronautics and Systems Engineering. The conference is the pre-eminent forum for the discussion of ideas for the future of aerospace in Australia. Each day, the conference will run multiple parallel streams of presenters selected from an impressive array of papers submitted from industry, government and academic institutions in Australia, Asia, USA, Europe and the Middle East. This year the program will be blended with that of the third Asia-Pacific International Symposium on Aerospace Technology (see below), providing delegates of both conferences with a richer experience.

Seventh DSTO International Conference on Health & Usage Monitoring (HUMS2011)

Chair: **David Forrester**
Co-Chair: **Graham Forsyth**

This is the seventh in the HUMS series of conferences conducted since 1999 by DSTO in conjunction with the Australian International Airshow. HUMS2011 will feature a record number of conference formal papers covering HUMS and CBM and other monitoring programs for helicopters, fixed-wing aircraft, land vehicles and other mechanical equipment. Techniques included range from usage monitoring, health (condition) monitoring, rotor track and balance, vibration analysis and structural loads monitoring as well as such items as cost-benefit models and data management schemes. After the two days at the Congress venue, HUMS2011 will continue on the Thursday with papers and site visit at the Airshow conference centre at Avalon Airport near Geelong. HUMS2011 is run by a committee comprising representatives of the major areas within Air Vehicles Division of DSTO.

Third Asia-Pacific International Symposium on Aerospace Technology (APISAT 2011)

Chair: **Cees Bil**
Deputy-Chair: **Don Love**

The Asia-Pacific International Symposium of Aerospace Technology (APISAT) is an initiative by the national aerospace societies in Korea (KSAS), Japan (JSASS), China (CSAA) and Australia (RAeS). After the successful APISAT symposium in Japan in 2009 and China in 2010, the 3rd Asia-Pacific International Symposium of Aerospace Technology will be held in Australia for the first time and incorporated with the 14th Australian International Aerospace Congress. APISAT covers a range of topics in aeronautics and astronautics, including aerodynamics, aerospace design, aero engines, structures and materials, satellite control, spacecraft propulsion and ATM/CNS. The symposium provides an opportunity for researchers from Asia-Pacific nations and other countries to present their achievements in aerospace R&D and to reflect on aerospace matters concerning our region. The Third Asia-Pacific International Symposium of Aerospace Technology is an excellent forum to learn about world-class aerospace research and development activities and to interact with aerospace leaders from our region and beyond.

Program

MONDAY 28 February 2011

1730 - 1900	Registration Desk Open
	Welcome Reception, Level 1 Foyer, Melbourne Convention Centre **The Hon Richard Dalla-Riva** *Minister for Employment & Industrial Relations, Minister for Manufacturing, Exports & Trade*

TUESDAY 1 March 2011

0730 - 1730	Registration Desk Open / Arrival Tea and Coffee (Level 1 Foyer)		
0815 - 0915	**OPENING PLENARY SESSION**		
Room	Meeting Rooms 109 & 110		
Chair	Don Love		
0815 - 0835	Congress Opening Address: **The Right Hon the Lord Mayor Robert Doyle** **The Hon Warren Snowdon, Member for Lingiari** *Minister for Veterans' Affairs, Minister for Defence Science and Personnel, Minister for Indigenous Health*		
0835 - 0915	Congress Plenary Address: **Chris Deeble** *Defence Materiel Organisation* AUSTRALIA Managing Complex Programs - The Wedgetail Experience		
0915 - 0920	*Move between sessions*		
0920 - 1000	**Keynote Address 1**	**Keynote Address 2**	**Keynote Address 3**
Room	Meeting Room 105	Meeting Room 106	Meeting Rooms 109 & 110
Chair	David Forrester	Cees Bil	Noel Martin
	Terry Saunder *Directorate General Technical Airworthiness* AUSTRALIA ADF Experience with HUMS	**Junichiro Kawaguchi** *Japan Aerospace Exploration Agency* JAPAN **Trevor Ireland** *Australian National University* AUSTRALIA Hayabusa's Challenge : Unprecedented Round-Trip to An Extraterrestrial Object and Project's Strenuous Efforts poured during its 7 Years' Cruise	**Gerard Walles** *USN NAVAIR* USA Open Systems Architecture, Strategy and Complexity
1000 - 1030	**Morning Tea** (Level 1 Foyer)		

1030 - 1200	Session 1A	Session 1B	Session 1C	Session 1D	Session 1E	Session 1F	Session 1G	Session 1H	Session 1I	Session 1J
Room	101	102	103	104	105	106	107	108	109 &110	111 &112
Theme	Aerospace Design	Propulsion	Avionics	CBM	Helo Technologies	UAVs	Structures	Materials	Aerodynamics	Aircraft Control
Chair	Kevin Goldsmith	Nigel Smith	Paul Johnson	Ian Jennions	Albert Wong	Matt Garratt	Brian Falzon	Richard Chester		Farhan Faruqi
1030 - 1100	A Communities of Practice Perspective on Aerospace Engineering **Jan Drobik** *Defence Science & Technology Organisation* AUSTRALIA	Dynamic Model of a Novel Ducted Fan Configuration **Miles Colman** *University of Tokyo* JAPAN	An Investigation of Pitot Tube and Multi Hole Pressure Probe Performance Using a Wet Weather Wind Tunnel Test Section* **Terrance Flynn** *University of New South Wales* AUSTRALIA	Critical Systems Engineering Perspectives for the Development and Implementation of Enterprise Health Management Solutions **Roger Vodicka** *Defence Science & Technology Organisation* AUSTRALIA	The Minimum Flight Routine for Helicopter Rotor Track and Balance **Nick Lieven** *University of Bristol* UNITED KINGDOM	Semi-Automatic Calibration of a Strap Down Attitude and Heading Reference System **Anselm Fatiaki** *Defence Science & Technology Organisation* AUSTRALIA	Solving Structural Interaction Equations in the Digital Age* **Nicholas Bardell** *GKN Aerospace Engineering Services* AUSTRALIA	Tree Joints: Biomimetic Insights for Aerospace Composite Joint Design* **Lauren Burns** *RMIT University* AUSTRALIA	An Efficient Strategy to Incorporate Designer-Preferences in Automated Airfoil Design* **Robert Carrese** *RMIT University* AUSTRALIA	Advanced Aircraft Automation Tasks Requiring Switched Mode Control* **Onvaree Techakesari** *Australian Research Centre for Aerospace Automation* AUSTRALIA
1100 - 1130	Australian Aviation Pioneers Celebrated in Centennial Year of Powered Flight **Stratos Patsikatheodorou** *RMIT University* AUSTRALIA	Development of an Infra-Red Suppression System for ch 47d Chinook Helicopters* **Gary Dolan** *GKN Aerospace Engineering Services* AUSTRALIA	Approaches to Performance Evaluation of Airborne Mission Systems in the Acquisition Process* **Kiril Uzunov** *Defence Science & Technology Organisation* AUSTRALIA	Autonomic and Sense and Respond Logistics: Evidence from the USA and UK* **Ray Hingst** *University of Southern Queensland* AUSTRALIA	Rotorcraft Weight and Center of Gravity Estimation **Nicole Apetre** *Technical Data Analysis Inc* USA	Precise Autonomous Aerial Payload Delivery System Integrated with UAV and UGV **Oleg Yakimenko** *Naval Postgraduate School* USA	Filtering Methods to Determine Reliability-Based Hot Spots of Aircraft Structure **Harry Millwater** *University of Texas* USA	Design Trade Study on Composite Sandwich Cryogenic Pressure Vessels **Yoshiki Morino** *Waseda University* JAPAN	Numerical Study of Synthetic Jets with Dual Circular Orifices* **Hamed Riazi** *University of New South Wales* AUSTRALIA	Using Pulsed Jet of Fresh Air to Control CO2 Concentration in an Air Cabin* **Chaofan Wu** *University of New South Wales* AUSTRALIA
1130 - 1200	Improved Preliminary Sizing Method for Multidisciplinary Aircraft Design Optimization **Nhu Van Nguyen** *Konkuk University* KOREA	Investigation of Multiple Orifice Air Jet Vortex Generators for Flow Control* **Simon Shun** *University of New South Wales* AUSTRALIA	A Terrain Following Navigation Algorithm Using Terrain Elevation Data **Keeyoung Choi** *INHA University* KOREA	Overview of In-situ Environmental Monitoring and Corrosion Sensing Systems for Aircraft Environmental Degradation Management **Steve Galea** *Defence Science & Technology Organisation* AUSTRALIA	Use of Artificial Neural Networks for Helicopter Load Monitoring* **Catherine Cheung** *National Research Council Canada* CANADA	Scientific Application and Design of Small Unmanned Aircraft Systems* **Andreas Scholtz** *Institute of Aerospace Systems* GERMANY	Shape Estimation Approach for the General Structure Based on the Strain Data **Hong-Il Kim** *Korea Advanced Institute of Science & Technology* KOREA	Experimental Investigation of an Energy Absorbing Composite Sandwich Web* **Mathew Joosten** *University of New South Wales* AUSTRALIA	An Examination of Suitability of Multi Hole Pressure Probe Technique in Skin Friction Measurement in Three Dimensional Turbulent Flow* **Jason Lien** *University of New South Wales* AUSTRALIA	On the Influences of an Increased ILS Glide Slope on Noise Impact, Fuel Consumption and Landing Approach Operation* **Reinhard Koenig** *German Aerospace Center* GERMANY

KEY AERO Papers | HUMS Papers | APISAT Papers

Presentation titles marked with an * indicates the paper has been Peer Reviewed

1200 - 1300	**Seated Buffet Lunch** (Banquet Room 202, Level 2)									
1210-1220	**Dennis Shymko,** *Australian Ukrainian Space Industries (AUSI) Sea Launch*									
Chair	Nathan Poyner									
1300 - 1340	**Keynote Address 4**					**Keynote Address 5**				
Room	Meeting Rooms 109 & 110					Meeting Room 106				
Chair	Ken Anderson					David Graham				
	Mark Shuart *NASA Langley Research Center* USA New Builiding Blocks for Aerospace: Advanced Materials and Processing Technologies.					**John McCormick** *Civil Aviation Safety Authority* AUSTRALIA Addressing the Current and Future Challenges in Aviation Safety				
1340 - 1345	*Move between sessions*									
1345 - 1515	**Session 2A**	**Session 2B**	**Session 2C**	**Session 2D**	**Session 2E**	**Session 2F**	**Session 2G**	**Session 2H**	**Session 2I**	**Session 2J**
Room	101	102	103	104	105	106	107	108	109 &110	111 &112
Theme	Space	Propulsion	Avionics	Propulsion CM	Helo Structures	Uninhabited Aerial Systems	Structures	Materials	Aerodynamics	Aircraft Systems
Chair	Ian Tuohy	Albert Wong	Graham Smith	Nathan Poyner	Nick Lieven	Jan Drobik	David Saunders	Greg Bain	Patrick Redmond	Arvind Sinha
1345 - 1415	SCRAMSPACE : Scramjet-based Access-to-Space Systems **Russell Boyce** *University of Queensland* AUSTRALIA	Numerical Characterisation of Transient Particle-Laden Supersonic Jets* **Shuo Li** *Monash University* AUSTRALIA	Multi-core CPUs for Mission Computing and Software* **Michael Mathers** *Defence Science & Technology Organisation* AUSTRALIA	Super Hornet – F414 Engine Condition Monitoring System (ECMS) **Matthew Williams** *TAE* AUSTRALIA	Implementation of Structural Health Monitoring for the USMC CH-53E **Jason Thomas** *NAVAIR* USA	Deconflicting the Unmanned Sky: An Analysis of UAV Deconfliction Data **Keirin Joyce** *Australian Army* AUSTRALIA	Developing Crashworthy Composite Helicopter Structures: A Building Block Approach* **Mathew Joosten** *University of New South Wales* AUSTRALIA	The Effect of Ply Thickness and Notch Size in CFRP Tension Specimens* **Adrian Orifici** *RMIT University* AUSTRALIA	Multi-Objective Design Exploration and its Application to Formula One Airfoils* **Matthew Watts** *RMIT University* AUSTRALIA	Modeling of Aircraft Ground Taxiing at Congested Airport **Ryota Mori** *Electronic Navigation Research Institute* JAPAN
1415 - 1445	Attitude Guidance and Control for a Spinning, Asymmetrical Rocket Payload **Michael Creagh** *The University of Queensland* AUSTRALIA	Model-based Engine Fault Diagnosis Using Vibration Sensor **Ji-Hyuk Yang** *Inha University* KOREA	System Design and Development of a MEMS Air Data Attitude and Head Reference System Based on Self-Adaptive Kalman Filter **Shao-Hua Zhu** *Flight Automatic Control Research Institute* CHINA	An Alternative Approach for Setting Wear Debris Limits **Andrew Becker** *Defence Science & Technology Organisation* AUSTRALIA	Flight Testing of Wireless Sensing Networks for Rotorcraft Structural Health and Usage Management Systems* **Steven Arms** *MicroStrain Inc* USA	Development of a Micro Turboprop to Extend Altitude Capabilities of Small UAVs* **Dries Verstraete** *The University of Sydney* AUSTRALIA	Investigation of Stiffener Run-out Failure* **Brian Falzon** *Monash University* AUSTRALIA	Developments in Structural Proof Testing Methodologies for Aircraft Composite Components* **Alexander Herman** *RMIT University* AUSTRALIA	Formula 1 Aerodynamics: Versatility of the NLF(1)-0414F Airfoil at Low Reynolds Numbers* **Pascual Marques** *Edge Hill University* UNITED KINGDOM	Simulation of Aerial Refuelling in a Distributed Synthetic Environment **Peter Ryan** *Defence Science & Technology Organisation* AUSTRALIA

1445 - 1515	Control of Mechanical Ground Support Equipments for Korean Launch Complex **Ilhyung Jung** *Korea Aerospace Research Institute* KOREA	Static and Dynamic Characteristics of a Flow Regulator for the Thrust Control of a Liquid Rocket Engine **Taekyu Jung** *Korea Aerospace Research Institute* KOREA	A Vibrotactile Acceleration Vector Indicator to Assist High Accuracy Hovering **Ken Friedl** *The University of Tokyo* JAPAN	Enhancing Propulsion System Condition Monitoring for the RNZAF **Adrian Weller** *NZDF* NEW ZEALAND	Structural Health Monitoring and Damage Detection of the Helicopter Main Rotor Blades with the Structure Integrated Sensors **Krzysztof Dragan** *Air Force Insititute of Technology* POLAND	Bi-mode Bio-inspired UAV - Is It Possible?* **Derrick Ho** *The University of Sydney* AUSTRALIA	Preliminary Aerodynamic Design Space of a Box-Wing Passenger Aircraft* **Ishan Roy Salam** *RMIT University* AUSTRALIA	The Effect of Clearance on Single Lap Countersunk Composite Joints* **Adrian Orifici** *RMIT University* AUSTRALIA	Empirical Study of Flat Plate Trailing Edge Flow and Noise* **Danielle Moreau** *The University of Adelaide* AUSTRALIA	Flight Testing of an Augmented Separation Management System Providing Separation Protection During Failure of the Central Communication Network* **Jiezhen Sean Fan** *Queensland University of Technology* AUSTRALIA
1515 - 1545	**Afternoon Tea** (Level 1 Foyer)									
1545 - 1715	**Session 3A**	**Session 3B**	**Session 3C**	**Session 3D**	**Session 3E**	**Session 3F**	**Session 3G**	**Session 3H**	**Session 3I**	**Session 3J**
Room	101	102	103	104	105	106	107	108	109 &110	111 &112
Theme	Space	Propulsion	Avionics	Techniques	CBM Helo	UAVs	Structures	Materials	Aerodynamics	Aircraft Systems
Chair	Russell Boyce	Cees Bil	Paul Heuer	Roger Vodicka	Rob Crowe	Jennifer Palmer	Len Meadows	Paul Chang		Noel Martin
1545 - 1615	Heat Dissipation Considerations of a Horizontal Take-off Launcher During Re-entry into the Earth's Atmosphere* **Haoyang Cheng** *University of New South Wales* AUSTRALIA	Combustion Modelling of JP10 in a Mach-6 Scramjet Engine* **Farid Christo** *University of South Australia* AUSTRALIA	The Quality of Service and Network Management of a Multi-TDL Network System **Yulin Ding** *Defence Science & Technology Organisation* AUSTRALIA	Spin Test Monitoring Using Blade Tip Timing Measurement **Wenyi Wang** *Defence Science & Technology Organisation* AUSTRALIA	Using HUMS Data to Manage the Fatigue Life of Rotorcraft Critical Dynamic Components **David White** *Avion Solutions* USA	Polarisation Compassing for UAV Navigation* **Kent Rosser** *Defence Science & Technology Organisation* AUSTRALIA	The F/A-18A/B Hornet Outer Wing StAtic Test Program (HOWSAT) **Galen Needham** *RAAF* AUSTRALIA	Fatigue Properties of Impact Damaged Composites Reinforced with Z-Pins **Mohamad Dali Isa** *Malaysian Institute Of Aviation Technology* MALAYSIA	Winglet Design for a Fairchild Merlin III Using CFD Analysis* **Kai Lehmkuehler** *University of Sydney* AUSTRALIA	Large Aircraft Takeoff and Approach Path Optimization out of Challenging Airports* **Bertrand Masson** *Qantas Airways/ University of New South Wales* AUSTRALIA
1615 - 1645	Motion Estimation of Target Spacecraft Using Modular Unscented Filtering **Kwangyul Baek** *Korea Advanced Institute of Science & Technology* KOREA	LES of Enhanced Mixing and Combustion by Angled Fuel Injection Induced Streamwise Vortices in a Model Strut Supersonic Chamber **Man Zhang** *AVIC Commercial Aircraft Engine Co. Ltd* CHINA	Time-Delay Control for Integrated Missile Guidance and Control **Bong-Gyun Park** *Korea Advanced Institute of Science & Technology* KOREA	Optimization of PHM System for Electronic Assemblies Using Maintenance Aware Design Environment Software* **Chris Stecki** *PHM Technology* AUSTRALIA	Integrated Software Platform for Diagnostics and Prognostics with Air Vehicle HUMS **Carl Byington** *Impact Technologies* USA	Is a Small UAV with Extended Altitude Capabilities Feasible?* **Dries Verstraete** *The University of Sydney* AUSTRALIA	Probabilistic Risk Analysis for the C-130 CW-1 Location **Ribelito Torregosa** *Defence Science & Technology Organisation* AUSTRALIA	A Revolutionary Approach to the Analysis of Buckling of Thin Cylindrical Shells* **Leonard John Hart-Smith** AUSTRALIA	Airfoil Stall Suppression by Use of Smart Structure Sensor Actuators for NACA 631-012 **Kenichi Rinoei** *University of Tokyo* JAPAN	Assessing Free Flight Airspace Complexity using Nautical Minute Discretisation* **Paul Simon** *RMIT University* AUSTRALIA

KEY AERO Papers | HUMS Papers | APISAT Papers

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1645 - 1715	Tracking Accuracy Characteristics of the Long Range Tracking Radar in NARO Space Center **Hyokeun Lee** *Korea Aerospace Research Institute* KOREA	Reliability & Efficiency Researches on Equivalent Experiments of Heat Exchangers Used On Aircrafts **Liang Hu** *Nanjing Engineering Institute of Aircraft Systems* CHINA	The Integration Problem or the Problem with Integration* **Ryan Hales** *Defence Science & Technology Organisation* AUSTRALIA	C-130J-30 In-Flight Propeller Balancing System **Brian Rebbechi** *Defence Science & Technology Organisation* AUSTRALIA	MRH 90 HUMS Implementation Verification and Validation **Ashley Tuck** *QinetiQ* AUSTRALIA	The Australian Army and Unmanned Aircraft: A Short History **Keirin Joyce** *Australian Army* AUSTRALIA	A Study on Multi-Functional Structure Using Rectangular Grid Structure **Juhun Rhee** *Korea Aerospace Research Institute* KOREA	Finite Element Modelling of Multi-layer Composites Using MicroCT Scan Results* **Luke Djukic** *Cooperative Research Centre for Advanced Composite Structures Ltd* AUSTRALIA	Numerical Prediction of Massive Separation Unsteady Flows around Bluff-bodies **Zhixiang Xiao** *Tsinghua University* CHINA	
1900 - 2300	**Congress Dinner, Plaza Ballroom, Regent Theatre** **Congress Dinner Keynote 6** **Matt Hall** *Matt Hall Racing* AUSTRALIA									

WEDNESDAY 2 March 2011

0715 - 1730	Registration Desk Open / Arrival Tea and Coffee (Level 1 Foyer)	
0715 - 0815	**Student Breakfast** Meeting Room 107	
0830 - 0910	**Keynote Address 7**	**Keynote Address 8**
Room	Meeting Room 109 & 110	Meeting Room 106
Chair	Gerry Walles	Cees Bil
	Fabrice Rochereau *EADS Australia Pacific* AUSTRALIA Capitalising on Experience to Build Up a Strong Defence and Aerospace Industry : a European Example	**Xiaoping Lu** *Air Traffic Management Bureau* CHINA Development of Air Traffic Management in China
0910 - 0915	*Move between sessions*	

0915 - 1015	Session 4A	Session 4B	Session 4C	Session 4D	Session 4E	Session 4F	Session 4G	Session 4H	Session 4I	Session 4J
Room	101	102	103	104	105	106	107	108	109 & 110	111 &112
Theme	Space	Propulsion	Avionics	V&V and NDT	Bearings	UAVs	Structures	Materials	Aerodynamics	Operations & ATC
Chair	Ian Tuohy	Noel Martin	Arthur Filippidis	Eric Lee	Wenyi Wang	Kent Rosser	Manfred Heller	Murray Scott	Michael Dorman	John Mo
0915 - 0945	Optimal Trajectory Design for D-SEND#2 Vehicle **Hirokazu Suzuki** *Japan Aerospace Exploration Agency* JAPAN	A Simplified Simulation of Turbojet Engines* **Haoyang Cheng** *University of New South Wales* AUSTRALIA	Link 16 Integration into Airborne Mission Systems* **Robert Gulley** *Defence Science & Technology Organisation* AUSTRALIA	KC-30A SHMS Verification and Validation **Ashley Tuck** *QinetiQ* AUSTRALIA	A Systematic Approach to Bearing Health Monitoring **Chris Hickenbottom** *Honeywell Aerospace* AUSTRALIA	Vision Based Collision Avoidance of Multi-Rotor UAVs Using Optical Flow **Dong-Wan Yoo** *Korea Advanced Institute of Science & Technology* KOREA	Updated and Improved Structural Integrity Management for the RAAF AP-3C Maritime Patrol Aircraft Fleet Based on a Comprehensive Program of Testing and Analytical Model Development **Kevin Walker** *Defence Science & Technology Organisation* AUSTRALIA	Vertical Array Milli-Pin System for Alternative Joint Technology* **Paul Chang** *Defence Science & Technology Organisation* AUSTRALIA	Study on Aircraft Configuration Automation and its Application as a Pre-processor for CFD Analysis of Aircraft Aerodynamics **Byoungsoo Kim** *Chungnam National University* KOREA	Aircraft Emission Reduction Through Multi-disciplinary Flight Path Optimisation **Felipe Luis Gonzalez Toro** *Queensland University of Technology* AUSTRALIA
0945 - 1015	A Study of a Precision Soft-Landing Technique for a Human Spacecraft Using a Ram-Air Parachute in Atmospheric Wind Conditions **Michio Ito** *Japan Aerospace Exploration Agency* JAPAN	Analysis of Heat Transfer in Cryogenic Regenerator Using Developed Code and Comparison of the Results with 3-D Simulation by FLUENT* **Saifur Rahman Bakaul** *Air University* BANGLADESH	Dynamic Analysis of a Flapping-Wing Test Stand* **James Harvey** *Defence Science & Technology Organisation* AUSTRALIA	Non-Destructive Testing Techniques for Aerospace Applications **Alison Glover** *Olympus Australia* AUSTRALIA	Evaluation of Vibration Based Health Assessment and Diagnostic Techniques for Helicopter Bearing Components **David Siegel & Jay Lee** *US Army Research Lab / University of Cincinnati* USA	Aircraft Design of an Endurance UAV Testbed for Multiple Mission Requirements **Daniel Paulus** *Institute For Aerospace Systems,TUM* GERMANY	Damping Identification in a Non-Linear Aeroelastic Structure* **Gareth Vio** *University Of Sydney* AUSTRALIA	Electro-thermal Anti-icing Characteristics of Composite Strut of Aeroengine Inlet **Xu Lei** *Shenyang Aeroengine Research Institute* CHINA	Extension of Flutter Margin Evaluation for Discrete-Time Systems **Hiroshi Torii** *Meijo University* JAPAN	Aircraft Sequencing for Minimal Fuel Burn **Adriana Andreeva** *University of Tokyo* JAPAN
1015 - 1045	**Morning Tea** (Level 1 Foyer)									

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1045 - 1215	Session 5A	Session 5B	Session 5C	Session 5D	Session 5E	Session 5F	Session 5G	Session 5H	Session 5I	Session 5J
Room	101	102	103	104	105	106	107	108	109 & 110	111 &112
Theme	Simulation	Propulsion	Vertical Flight	CBM other	Techniques 2	Uninhabited Aerial Systems	Structures	Materials	Aerodynamics	Operations & ATC
Chair	Peter Ryan	Farid Christo	Jeremy Blackwell	Graham Forsyth	David Forrester	Arvind Sinha	Steve Galea	Pud Baburamani	Lachlan Thompson	Kevin Watters
1045 - 1115	Apparent Motion of the Runway Sidelines as a Visual Cue to Flare Timing: An Investigation through Full Flight Simulator Experiments* **Jorg Entzinger** *University of Tokyo* JAPAN	Full Flow-Path Design Optimisation of Axisymmetric Scramjets with Premixed Fuel / Air* **Hideaki Ogawa** *The University of Queensland* AUSTRALIA	Measurement of Rotor Blade Motion using SPR Method **Jae-Won Park** *Korea Advanced Institute of Science & Technology* KOREA	Enabling Condition Based Maintenance with Health and Usage Monitoring Systems **Scott Kilby** *US AMSAA* USA	Joint Time Frequency Vibration Diagnostics of Main and Engine Accessory Gearboxes **Carl Byington** *Impact Technologies, LLC* USA	Flight Envelope of a Tail-Sitter Unmanned Aerial Vehicle **Daisuke Kubo** *Japan Aerospace Exploration Agency* JAPAN	Old Ideas Enabled Through Modern Technology **David Craddock** *Directorate General Technical Airworthiness - Australian Defence Force* AUSTRALIA	Overview of DSTO's Past and Future Research into Corrosion Structural Integrity **Bruce Crawford** *Defence Science & Technology Organisation* AUSTRALIA	Hybrid Airfoil Design for Full-Scale Ice Accretion Test **Tao Guo** *FAI AVIC* CHINA	The Small Scales of Turbulance: A Significant Challenge to Micro Flight* **Simon Watkins** *RMIT University* AUSTRALIA
1115 - 1145	Rapid Automated Aircraft Simulation Model Updating From Flight Data **Geoffrey James Brian** *Defence Science & Technology Organisation* AUSTRALIA	Research on the Cooling Channels of the Preburners for Small Liquid Rocket Engines **Insang Moon** *Korea Aerospace Research Institute* KOREA	Control of Autonomous Quadrotor Helicopters in High Speed Flight **Ryo Hashimoto** *The University of Tokyo* JAPAN	Terrain Regime Identification and Classification for Condition Based Maintenance **Kait Hatton** *US AMSAA* USA	Improved Simulations of Faults in Gearboxes for Diagnostic and Prognostic Purposes using a Reduced Finite Element Model of the Casing* **Nader Sawalhi** *University of New South Wales* AUSTRALIA	Path Planning of UAV Formations using New Potential Field and Cluster Analysis **Takuma Hino** *University of Tokyo* JAPAN	Wing Dry Bay Sizing for Uncontrolled Fire Minimization Due to Uncontained Engine Failure **Yanyan Fu** *First Aircraft Institute of Aviation Industry Corporation of China* CHINA	Characterizing Foreign Object Damage in Ti-6Al-4V for Aerospace Applications **Nicholas Orchowski** *RMIT University* AUSTRALIA	Controlling the Secondary flows in a 90¡Æ Turning Duct using Nonaxisymmetric Endwall and Endwall Boundary Layer Fence **Jongjae Cho** *Pusan National University* KOREA	Three-Dimensional PIV Measurement in Supersonic Flow **In-Seuck Jeung** *Seoul National University* KOREA
1145 - 1215	Progress in Automatic Grid Generation for Accurate Navier-Stokes Simulations **Paulus Lahur** *Research Center of Computational Mechanics Inc* AUSTRALIA	Combustion Analysis of Aluminum with Water **Shikyung Yoon** *Korea Aerospace University* KOREA	Rotor Wake Simulation by Using a Non-Equilibrium Eddy Visocity Model **Young Hwa Kim** *Korea Advanced Institute of Science & Technology* KOREA	The Role of HUMS in the Evolving Generic Vehicle Architecture **Keith Mowbray** *Dytecna Ltd* UNITED KINGDOM	Detachable Acoustic Electric Feedthrough for in Situ SHM Systems **Jeremy Skippen** *Defence Science & Technology Organisation* AUSTRALIA	Vision-Based Hardware-In-the Loop Simulation Test of Vision-Based Net-Recovery for Fixed-Wing Unmanned Aerial Vehicles **Mingu Kim** *Seoul National University* KOREA	Application of Wavelet Transform to Aircraft Safety **Masaru Naruoka** *The University of Tokyo* JAPAN	DSTO – NLR Collaborative Programme on Fatigue Properties of â-annealed Ti-6Al-4V: Preliminary Results **Simon Barter** *Defence Science & Technology Organisation* AUSTRALIA	Multidisciplinary Design Optimization of Hypersonic Aircraft **Yoshinori Matsuno** *The University of Tokyo* JAPAN	A Study on Roll Lock-in Phenomena of a Canard-Controlled Missile with Freely Spinning Tailfins **Young Rok Yang** *Gyeongsang National University* KOREA
1215 - 1315	**Stand-up Buffet Lunch** (Level 1 Foyer)									

1315 - 1355	Keynote Address 9					Keynote Address 10				
Room	Meeting Room 109 & 110					Meeting Room 106				
Chair	Brian Falzon					Cees Bil				
	Ian Jennions *Integrated Vehicle Health Management Centre* UNITED KINGDOM The Story So Far, Development of an Integrated Vehicle Health Management Centre					**Jai Moo Kim** *Korea Aerospace Research Institute* KOREA Tiltrotor UAV Development and Ground Test				
1355 - 1400	*Move between sessions*									
1400 - 1530	**Session 6A**	**Session 6B**	**Session 6C**	**Session 6D**	**Session 6E**	**Session 6F**	**Session 6G**	**Session 6H**	**Session 6I**	**Session 6J**
Room	101	102	103	104	105	106	107	108	109 &110	111 &112
Theme	Sustainment	Structures	Control Systems	Data Aquisition/SHM	Helo HUMS	Uninhabited Aerial Systems	Certification & Safety	Materials	Aerodynamics	Systems
Chair	Kevin Goldsmith	Robert Boykett	Noel Martin	Steve Galea	Andrew Becker	Simon Watkins	Geoffrey Brian	Mark Shuart	Robert O'Dowd	Robert Gulley
1400 - 1430	Sustaining Aircraft Structural Integrity: Risk and Value Management* **Eric Wilson** *University of New South Wales* AUSTRALIA	Fatigue-Initiating Discontinuities in Aircraft Structures* **Simon Barter** *Defence Science & Technology Organisation* AUSTRALIA	Control System Design and Optimisation via Genetic Programming* **Anna Bourmistrova** *RMIT University* AUSTRALIA	Next Generation Data Acquisition Technologies for Aging Aircraft* **Niall Heffernan** *ACRA CONTROL* IRELAND	Maneuver/Regime Recognition Validation & Verification Using Visualization Technique **Suresh Moon** *Air Vehicle Engineering, L-3 Communications* USA	Coordination of Mission Roles for Semi-Autonomous UAVs in a Simulated Combat Environment* **Haoyang Cheng** *University of New South Wales* AUSTRALIA	Measurement and Communication of Military Aviation Software Safety Risks **Patrick Redmond** *Australian Defence Force* AUSTRALIA	Application of CT Scanning to Investigate the Failure of Carbon Fibre Composite Bolted Joints* **Garth Pearce** *University of New South Wales* AUSTRALIA	Aerodynamic Improvement of Flap Performance Using Delta-shaped Vortex Generator **Dongyoun Kwak** *Japan Aerospace Exploration Agency* JAPAN	The Static Flight Performance Analysis of a Korea Traditional Kite **Kang Chi-Hang** *Korea Air Force Academy* KOREA
1430 - 1500	Through-Life Support as a Service: The Role of Aircraft Manufacturers* **Luke Webb** *RMIT University* AUSTRALIA	Aircraft Landing Gear Parameter Estimation and Simulation using Elimination Method **Ka Wai Lee** *RMIT University* AUSTRALIA	Application of Genetic Algorithm for Firefighter UAV Airfoil Optimisation* **Adrian Hudiono** *RMIT University* AUSTRALIA	The AUSAM System for Fatigue Crack Monitoring in a Wing Skin: A Case Study **Cédric Rosalie** *Defence Science & Technology Organisation* AUSTRALIA	The Dutch Approach to Force Life Management (FLM) Issues **Lex ten Have** **Arjen Vollebregt** *NLR* THE NETHERLANDS	Aerodynamic Testing of Small, Hovering Entomopters* **Jennifer Palmer** *Defence Science & Technology Organisation* AUSTRALIA	Risk Based Approach to Compliance Assurance **Shaun Norman** *Directorate General Technical Airworthiness* AUSTRALIA	Response Characterisation in CFRP Notched Coupons with Energy-Based Multi-Axial Failure Data* **Andrew Litchfield** *RMIT University* AUSTRALIA	Design of a Small-Scale Supersonic Flight Experiment Vehicle as a Flying Test Bed and Construction of its Prototype for Subsonic Flights **Kazuhide Mizobata** *Muroran Institute of Technology* JAPAN	The Technique Studies on Stability of Rocket Ejection Seat **Ming Wu** *Aerospace Life-Support Industries Ltd* CHINA

KEY **AERO Papers** **HUMS Papers** **APISAT Papers**

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1500 - 1530	The P-3 Repair Assessment Manual (RAM) **Kevin Watters** *QinetiQ AeroStructures* AUSTRALIA	Gust Alleviation Device Applied to the Sensorcraft Structure **Gareth Vio** *University of Sydney* AUSTRALIA	Fault Tolerant Flight Control System Design for Unmanned Air Vehicles* **Rudaba Khan** *RMIT University* AUSTRALIA	Slotted Circular Microstrip Patch Antenna Application in Strain Based Structural Health Monitoring* **Ali Daliri** *RMIT University* AUSTRALIA	Replacing Obsolete Equipment for Drivetrain Health Monitoring on RAN Sea King Helicopters **Paul Marsden** *Defence Science & Technology Organisation* AUSTRALIA	Geometric Analysis of Optimal Trajectory for 3D Localization by UAVs with Bearing-only Sensor **Jaehwan Pi** *Korea Advanced Institute of Science & Technology* KOREA	The Certification and Qualification Flight Test Campaign of the Tanker KC30 for the RAAF **Miguel Morell** *Airbus Military* SPAIN	Influence of Heat Treatment of Aging on the Mechanical Properties of Aluminium 6063 T5 AND 6061 T6* **Carlos Arturo Bohorquez Avila** *Universidad Libre* COLOMBIA	Pressure Fluctuations Over an Airfoil in Smooth and Turbulent Flow at Low Reynolds Number **Sridhar Ravi** *RMIT University* AUSTRALIA	The Reliability of KUH Full-scale Airframe Static Test **Chang-Won Shul** *Agency for Defense Development* KOREA
1530 - 1600	**Afternoon Tea** (Level 1 Foyer)									
1600 - 1700	**Session 7A**	**Session 7B**	**Session 7C**	**Session 7D**		**Session 7F**	**Session 7G**	**Session 7H**	**Session 7I**	
Room	101	102	103	105		106	107	108	109 & 110	
Theme	Space	Sustainment	Safety	Panel Session		Uninhabited Aerial Systems	Aviation Saftety	Structures	Aerodynamics	
Chair	Lachlan Thompson	Nathan Poyner	Richard Kloeden	Albert Wong		Keirin Joyce	Jeremy Blackwell	Loris Molent	Jan Drobic	
1600 - 1630	Special Overview Briefing: Roscosmos and Australia Perspective Cooperation Trends. **Gennady Raykunov, Nikolay Panichkin, Viktor Ivanov** *Central Research Institute for Machine Building* RUSSIA	A Novel Method for the Prediction of Remaining Useful Life Based on the LSCR Approach* **Sangho Ko** *Korea Aerospace University* KOREA	Study for Initial Attitude Estimation of Gliding Munitions through Observability Analysis of the GPS/INS Algorithm **Jaemin Sung** *Gyeongsang National University* KOREA	HUMS Implementation Phase - Lessons Learned and Outstanding Issues		Preliminary Flight Testing of Autonomous Soaring with the Kāhu UAS* **Jennifer Palmer** *Defence Science & Technology Organisation* AUSTRALIA	Risk Analysis of Safety by Inspection of Ageing Aircraft **Kevin Watters** *QinetiQ AeroStructures* AUSTRALIA	Ageing Aircraft Systems Audit - Fighting the Ageing Process **Robert Boykett** *Defence Science & Technology Organisation* AUSTRALIA	Dynamic Surface Pressure Measurements on a Flapping Wing Model **Simon Watkins** *RMIT University* AUSTRALIA	
1630 - 1700		Optimisation of Maintenance Schedule for Military Helicopter Fleet Using Simplex and Metaheuristic Methods* **Leonard Winata** *RMIT University* AUSTRALIA	Air and Ground Motion Analysis of an Automatic Landing System for an UAV **Ji Tae Kim** *Gyeongsang National University* KOREA	HUMS2011 Conference Wrap-up and Feedback		Unmanned Aerial Vehicle: Development Trends & Technology in Singapore **Sutthiphong Srigrarom** *SIM University* SINGAPORE	Technical Tests Results of the System 'Intrans' for use During the Accident Aircraft **Igor Zalogin** *National Aerospace University* AUSTRALIA	Developments with the F/A-18 FINAL Centre Barrel Test Program **Geoff Swanton** *Defence Science & Technology Organisation* AUSTRALIA	Aerodynamic Modelling of Flapping-Wing Flight* **Aliya Valiyff** *Defence Science & Technology Organisation* AUSTRALIA	

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1700 - 1705	*Move between sessions*
1705 - 1730	**CONGRESS PLENARY CLOSING**
Room	Meeting Rooms 109 & 110
Chair	Noel Martin
1900 - 2300	**HUMS Defence Science & Technology Organisation Conference Dinner** **Studio 3, Crown**

Day 3 - **THURSDAY** 3 March 2011

	Australian International Airshow & HUMS2011 Program
0730 - 0900	**Coach Transfer from Melbourne Convention Centre to AVALON 2011**
0930 - 1230	**HUMS - Technical Briefings at Australian International Airshow AVALON 2011**
0930 - 1000	Onboard Helicopter Rotor Condition Monitoring Systems and Smoothing Algorithms" **Peter Morrish,** *Helitune* and **Steve Pollard,** *University of Bristol*
1000 - 1030	F414 Engine Condition Monitoring System (ECMS) - Program Demonstration **Matt Williams,** *TAE*
1030 - 1100	Next Generation Multi-role Recording: A Reliable, Flexible Solution **Niall Heffernan,** *Acra Control*
1100 - 1130	To be advised
1130 - 1200	Demonstration of Maintenance Aware Design Environment (MADe) Software **Dr Shanna Rudov-Clark,** *PHM Technology*
1500 - 1700	**Coach Transfer from AVALON 2011 to Melbourne Convention Centre**

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