**ICETI 2011 Keynote Speeches**

11th November (Friday) Keynote Speeches

**“Developments in Nano Unmanned Aerial Systems”**



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There is a growing realization by military planners that to win the insurgency wars of the future, forward units will have to operate within the close confines of urban conurbations and for prolonged periods of time with minimal support. Micro/Nano Air vehicles (MAV/NAVs) are rapidly developing to become an integral component of a soldier’s real-time information and intelligence gathering capability on enemy strength, dispositions and tactics.

The recent MoD Nano UAS UOR tender (Feb 2011) called for an air element of <60 g with a minimum range of 300 m and an endurance of at least 20 min. A major obstacle faced by many MAV/NAV developers, when trying to create a fully autonomous and soldier compatriot system, is the advancement of equivalent scale sensor platforms combining Detect, Sense and Avoid (DSA) sub-systems. The few existing systems currently in use at the MAV/NAV scale encompass, at best, a semi-autonomous level of operation, usually without DSA.

The next generation of MAV/NAVs used in combat/reconnaissance missions, intended for use within close proximity to insurgents, will be required to be fully autonomous; carrying out a complete mission using on-board sensing, information processing, control and (re)configuration.

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**Experience:**

Dr Prior has been working in the field of Robotics for the past 23 years. His research interest in autonomous military systems relates to a shortlisted entry to the MoD Grand Challenge event in the summer of 2008, where he led a team to design, develop and construct a novel unmanned aerial vehicle, which consisted of a co-axial tri-rotor arrangement. On the basis of this, he founded the Autonomous Systems Lab at Middlesex University and has been researching with a small team of staff/students working on defence-related robotic technologies. He is currently supervising two PhD students, one in the area of Unmanned Ground Vehicles and the other in the area of Unmanned Aerial Vehicles. He is the editor of the International Journal of Micro Air Vehicles and has published widely on the subject. Current work involves a collaboration with a defence contractor, BCB International Ltd, working on the design and development of a series of Nano UAS platforms which were demonstrated and flown at the recent DSEi exhibition at the Excel Centre in London (September 2011).

Further information can be found via this link: <http://www.eis.mdx.ac.uk/research/robotics/>