

## About Defence Technology Centres (DTCs)

Defence Technology Centres (DTCs) are virtual centres of excellence in broad technology areas. Participants see a return on their investment in science and technology through exploitation in future defence equipment and wider civilian applications.

The strategic aim of DTCs is to provide more rapid pull-through of low technology maturity level research into the MoD's defence equipment programme. The Defence Technology Centre initiative is an exemplar for research collaboration between Government, UK Defence, Small-Medium Sized Enterprises and Universities.

Both the SEAS & EMRS DTCs will deploy up to £30 million of MoD research funds over a six year period. Industry provides MoD with a matching contribution in-kind – knowledge of their internally funded research.

Each DTC is tasked with achieving the following generic outcomes:

- Generate knowledge, via research, appropriate to future UK Defence needs in the relevant domains.
- Enable earliest exploitation of knowledge generated for the benefit of UK Defence
- Enable the knowledge generated to be used by MoD for internal UK government purposes
- Enable knowledge generated in the civil sector to be used within the DTC
- Enable the knowledge generated by the DTC to be exploited for the benefit of the civil sector

## About the SEAS DTC Research Programme:

The SEAS DTC research programme has been created to address the following science and technology outcomes for Autonomous Systems:

- potential for meeting different mission needs
- increased ability to act without human intervention in a wider range of circumstances
- discrimination between objects of interest and potential interference
- improved speed and endurance
- reduced need for mission-control based communications
- moderately high survivability
- reduced logistics burden
- reduced system whole life costs and increased ease of upgrade
- safe operation (in particular when operating in conjunction with manned vehicles)
- increased public acceptability

The research programme is organised into six research themes: Algorithms & Architectures; Mission Planning & Decision Making; Sensor Exploitation; Communications & Control; Propulsion, Power Generation and Energy Management and, Systems Engineering Research. For more information, see the SEAS DTC web site: <http://www.seasdtc.com>

## About the EMRS DTC Research Programme:

The EMRS DTC research programme has been created to address the following science and technology outcomes within Electro-Magnetic Remote Sensing:

- day and night, all weather capability
- long range operation
- rapid, large area search capability
- detection of low signature targets
- detection of camouflaged / concealed targets
- affordable, robust systems for military platforms
- covert operation
- multi-function / ID capability

The research programme is organised into four research themes: RF Systems, Electro-Optic Systems, Transduction Devices and Materials and Transducer Embedded Processing. For more information, see the EMRS DTC web site: <http://www.emrsdtc.com>

## The Joint SEAS-EMRS DTC Technical Conferences:

The SEAS and EMRS DTCs are holding unclassified technical conferences at which the work of the DTCs will be disseminated. The Conferences will be held at the Edinburgh International Conference Centre (EICC) on 13-14 July 2006 and will run in parallel, sharing common ticketing and organisation.

A joint exhibition will be held on both days of the conferences in the Cromdale Hall (Level -2). Furthermore, there will be a number of product demonstrations in the Galloway Suite Rooms (Level +1). Delegates will be able to move freely between conference sessions of the two conferences, choosing from approximately 100 technical papers, thus building their own programme from a mix of technical papers, exhibits and product demonstrations.

On the evening of Thursday 13 July 2006 a networking reception will be held for all delegates in the Cromdale Hall of the EICC. The networking reception is being sponsored by SELEX Sensors and Airborne Systems Ltd. This will afford all delegates the opportunity to network with the broad community of interest that the DTCs have brought together. Following the networking reception there will be a conference dinner, available as a costed option, which will be held at "The Signet", at the heart of historic Edinburgh. Early booking is recommended for those delegates who want to attend the conference dinner, which is available in delegate packages "A", "B" & "E", see opposite. The musical entertainment at the Conference Dinner is being sponsored by the SEAS DTC.

## Who Should Attend?

The joint SEAS and EMRS DTC Technical technical Conference conferences should be attended by:

- potential exploiters of DTC funded research
- potential providers of research to the DTC programmes
- members of the broad military and civil community of interest, including its underlying key technologies, systems and sub-systems

The cycle of project completion and initiation means that research funds will become available through the DTCs' respective calls for proposals this autumn. The conferences will provide potential bidders with an opportunity to review the current programmes and discuss ideas for further research with both DTC management teams and scientists.

## Registration and Booking Information:

Conference bookings are being organised on behalf of both DTCs by BIP Solutions. The BIP Solutions team will take your registration, booking and payment. This can be made on line, or by telephone, facsimile or by post on the booking form provided with this notice to:

BIP Solutions  
Park House  
300 Glasgow Road  
Shawfield  
Glasgow G73 1SQ  
tel: 0845 270 7095  
fax: 0141 331 2792  
contact: Joanne Wood  
e-mail: [Emrs@bipsolutions.com](mailto:Emrs@bipsolutions.com)

An electronic copy of the registration form is also available at: <http://www.emrsdtc.com/conferences/2006/conferences.htm>

Payment can be made by credit card, debit card or by cheque. Please note that we can only accept bookings accompanied with payment.

## Conference Fee:

The DTCs have created a number of delegate package types to allow us to meet individual delegate needs. Details of these packages and early booking discounts are below:

Package Type	Book before 30 Apr 06	Book before 30 May 06	Book before 30 June 06
A	£325 + VAT	£350 + VAT	£375 + VAT
B	£295 + VAT	£320 + VAT	£345 + VAT
C	£275 + VAT	£300 + VAT	£325 + VAT
D	£245 + VAT	£270 + VAT	£295 + VAT
E	£150 + VAT	£150 + VAT	£150 + VAT
F	£100 + VAT	£100 + VAT	£100 + VAT

**Package "A":** Full Package; Attend both SEAS & EMRS DTC Conferences, Exhibition, Product Demonstrations, Networking Reception, Conference Dinner and receive both Conference Proceedings.

**Package "B":** Attend both Conferences, Exhibition, Product Demonstrations, Networking Reception, Dinner and receive one Conference Proceeding (SEAS or EMRS).

**Package "C":** Attend both Conferences, Exhibition, Product Demonstrations, Networking Reception and receive two Conference Proceedings (SEAS & EMRS) but not attend the Conference Dinner.

**Package "D":** Attend both Conferences, Exhibition, Product Demonstrations, Networking Reception and receive one Conference Proceeding (SEAS or EMRS) but not attend the Conference Dinner.

**Package "E":** Attend the Exhibition & Product Demonstrations only plus the Networking Reception and Conference Dinner.

**Package "F":** Attend the Exhibition & Product Demonstrations only and the Networking Reception but not attend the Conference Dinner.

## Planning Your Trip:

The conferences are organised over a Thursday and Friday to enable delegates to plan a longer stay in Edinburgh or Scotland as part of their visit. A comprehensive set of online resources, including information on accommodation, travel, map and visitor attractions is available at: <http://www.emrsdtc.com/conferences/2006/conferences.html>

For information on planning a holiday in Scotland see:

Visit Scotland: <http://www.visitscotland.com>  
Edinburgh & Lothians Tourist Board: <http://www.edinburgh.org>  
Telephone helpline: +44 (0) 845 225 5121  
e-mail: [info@visitscotland.com](mailto:info@visitscotland.com)

## Conference Location:

The conference will be held at the Edinburgh International Conference Centre (EICC) which is located in the centre of Edinburgh. The main entrance of the EICC is on Morrison Street, served by a convenient drop-off point for cars, coaches and taxis. The EICC is just a short walk from Princes Street, Edinburgh Castle and the Royal Mile. There are several car parks close to the centre. The centre is also within walking distance of Haymarket train station. For further information on the venue, including a map, see: <http://www.eicc.co.uk>

A joint technical conference with the EMRS DTC

Sponsored by  
**ScottishEnterprise**

# SEAS DTC

SYSTEMS ENGINEERING FOR AUTONOMOUS SYSTEMS DEFENCE TECHNOLOGY CENTRE

## Annual Technical Conference & Exhibition

Edinburgh International Conference Centre

13th - 14th July 2006



SEAS DTC

SEAS DTC



SEAS DTC

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Time	Algorithms and Architectures / Sensor Exploitations	Systems Engineering Research / Mission Planning & Decision Making	Propulsion, Power Generation and Energy Management / Communications and Control
08:00		Registration: Strathblane Hall (Level 0) Morning Coffee: Cromdale Hall (Level-2)	
09:15	<b>Pentland Auditorium: Plenary Session 1 (Level+2)</b>		
10:30	<b>Cromdale Hall: Coffee/Tea Break (Level-2)</b>		
10:55	Estimation of Localisation Quality for Single Platform SLAM <b>Richard Alexander</b> (BAE Systems)	Flexible Integration Architectures: Groundwork on Approaches for AV Interoperability <b>Bob Young</b> (Loughborough University)	Small Scale Recuperators for UAVs <b>Torbjorn Lindquist</b> (Rolls-Royce)
11:20	Visual Exploration of Buildings <b>Chris Harris</b> (Roke Manor Research)	Autonomous Systems and Military Challenges - How might we Assess Applicability? <b>Doug Healey</b> (Blue Bear Systems Research)	Fuel Cells for Autonomous Vehicles <b>Nigel Brandon</b> (Imperial College)
11:45	Using Vision for Outdoor SLAM / Towards Higher-Order Mapping of Workspaces by Scene Classification <b>Paul Newman</b> (Oxford University)	Impact of Different Cultural Attribute Sets on SAS Decision Structures and Interfaces <b>Garys Stiemieniuch</b> (Loughborough University)	Very Long Duration Propulsion Systems <b>Ben Palethorpe</b> (Rolls-Royce)
12:10	Oxford Demonstration (In Strathblane Hall)	SEER-related Demonstration (In Pentlands Auditorium)	Predictive Traction Power Systems Management for Autonomous Vehicles <b>David Ward</b> (MIRA)
12:35	<b>Cromdale Hall: Lunch Break (Level-2)</b>		
13:20	<b>Pentland Auditorium: Plenary Session 2 (Level+2)</b>		
14:35	<b>Cromdale Hall: Coffee/Tea Break (Level-2)</b>		
15:00	Simulated Engine for Distributed Navigation Research <b>Ioseba Tena Ruiz</b> (Heriot Watt University)	Adaptable Software Architectures and Task Syntheses for UAVs <b>Jeff Magee</b> (Imperial College)	Ultra-Compact Intelligent Electrical Networks <b>Stephen Long</b> (Rolls-Royce)
15:25	Reactive Data Gathering <b>Chris Lloyd</b> (BAE Systems ATC)	An Investigation of Novel Reconfiguration Methods for use in Autonomous and Semi-autonomous Vehicles <b>Chris Edwards</b> (Leicester University)	Towards a Reference Architecture for Agent-based Power Management for Unmanned Vehicles <b>Martyn Fletcher</b> (Agent-Oriented Software)
15:50	Cooperative Planning Architectures for Multi-Vehicle Autonomous Operations <b>Jonathan Evans</b> (Heriot Watt University)	A Knowledge Based Decision Support Framework to aid Autonomous Vehicle Systems Mission Objectives <b>Robin Alcock</b> (Loughborough University)	Morphing Wing Technologies Research <b>Luca Lorenzini</b> (Imperial College)
16:15	Co-Operative Decision Strategies Applied to a Distributed Sensor Network <b>Anthony Waldoock</b> (BAE Systems ATC)	Securing Autonomous Systems <b>Zia Hayat</b> (Southampton University)	Compliant Limb Running to Support Future UGVs <b>Rick Hyde</b> (Bristol University)
16:45 - 19:00	<b>Cromdale Hall: Reception and Networking (Level-2)</b>		

Time	Algorithms and Architectures / Sensor Exploitations	Systems Engineering Research / Mission Planning & Decision Making	Propulsion, Power Generation and Energy Management / Communications and Control
08:45	Efficient Representation of Multi View Data <b>Mike Brookes</b> (Imperial College)	Mission Planning and Decision Making Epoch Planning Concepts <b>Jo Thoms</b> (BAE Systems Insyte)	Enhanced AV/SAV Swarm Effectiveness <b>Derek Long</b> (Roke Manor Research)
09:10	Analysis of Registration Requirements & Techniques for Imaging Sensor Suites on UAVs <b>Moira Smith</b> (Waterfall Solutions)	Human Centred Perspectives on Mission Planning for Autonomous Systems <b>Jeremy Hinton</b> (BAE Systems ATC)	Synchronised Environment for Operator Awareness over Intermittent Telemetry Links <b>Ben Smith</b> (Heriot Watt University)
09:35	Search Pattern Evaluation for UV Sensor Suites <b>Chris Angell</b> (Waterfall Solutions)	Commander Trust in Autonomous Systems: The Role of Implicit Instructions and System Feedback <b>Victoria Chapman</b> (QinetiQ)	A Model Based Approach to Landing UAVs <b>Ed Sparks</b> (Roke Manor Research)
10:00	Detecting Salient Places in Urban Environments using Multi-spectral Data <b>Ingmar Posner</b> (Oxford University)	Evolutionary Approach to Human Interaction with Increasingly Autonomous Systems <b>Peter Wilkinson</b> (BAE Systems Air Systems)	Safe Behaviour of Autonomous Vehicles <b>George Purcell</b> (Roke Manor Research)
10:25	<b>Cromdale Hall: Coffee/Tea Break (Level-2)</b>		
10:50	Robust Phase Correlation Methods for Sub-pixel Feature Matching <b>Jian Guo Liu</b> (Imperial College)	Potential for the use of Deconfliction Techniques and Algorithms Developed in the Civil Domain to the Management of Autonomous Vehicles <b>Bob Lewis</b> (SELEX Sistemi Integrati)	Resilient Real-time Communications Across Meshed Networks Under Adverse Conditions <b>Andrew Reeve</b> (Roke Manor Research)
11:15	Novel Statistical Approaches to the Quantitative Combination of Multiple Edge Detectors <b>Tania Stathaki</b> (Imperial College)	Decision Making Framework <b>Christopher Watson</b> (BAE Systems CORDA)	Management Architecture and Mission Specification for Unmanned Autonomous Vehicles <b>Eskinder Asmare</b> (Imperial College)
11:40	Towards Resource Certified Image Processing Software <b>Kevin Hammond</b> (St Andrews University)	Towards a Generic Architecture for Multi-vehicle Autonomy <b>Malcolm Strens</b> (QinetiQ)	Robust Application-Layer Data Exchange Protocols for Networks of Semi-Autonomous Vehicles <b>Duc Minh Le</b> (Imperial College)
12:05	<b>Cromdale Hall: Lunch Break (Level-2)</b>		
12:50	An Overview of the Sensor Requirement Relaxation and Image Volume Registration Innovation Studies for the SEAS DTC <b>Moira Smith</b> (Waterfall Solutions)	Stochastic Task-assignment Models <b>Berc Russtem</b> (Imperial College)	Resilient Distributed Control of AV/SAV Swarms and Mission Execution in the Presence of Unreliable Communications <b>Derek Long</b> (Roke Manor Research)
13:15	Vision Based Control of Rotary Wing Vehicles <b>Chris Jones</b> (Bristol University)	Provision of Robust Behaviour in Teams of UAVs - A Conceptual Model <b>Martyn Fletcher</b> (Agent-Oriented Software)	Dynamic Agent-Based Dynamic Communications Management for AV <b>Felicity Dornon</b> (BAE Systems ATC)
13:40	Fault Tolerant Autonomous Decision Making for Unmanned Vehicles <b>Pedro Patron</b> (Heriot Watt University)	A Position Paper on Designing Interaction to Support Appropriate Trust of Autonomous Systems in People Collaborating with Them <b>Rachid Hourizi</b> (Bath University)	MITL (Man In The Loop) Landing System <b>James Habershon / Keith Markham</b> (MBDA)
14:05	<b>Cromdale Hall: Coffee/Tea Break (Level-2)</b>		
14:30	<b>Pentland Auditorium: Plenary Session 3 (Level+2)</b>		
16:10	<b>Cromdale Hall: Coffee and Networking (Level-2)</b>		