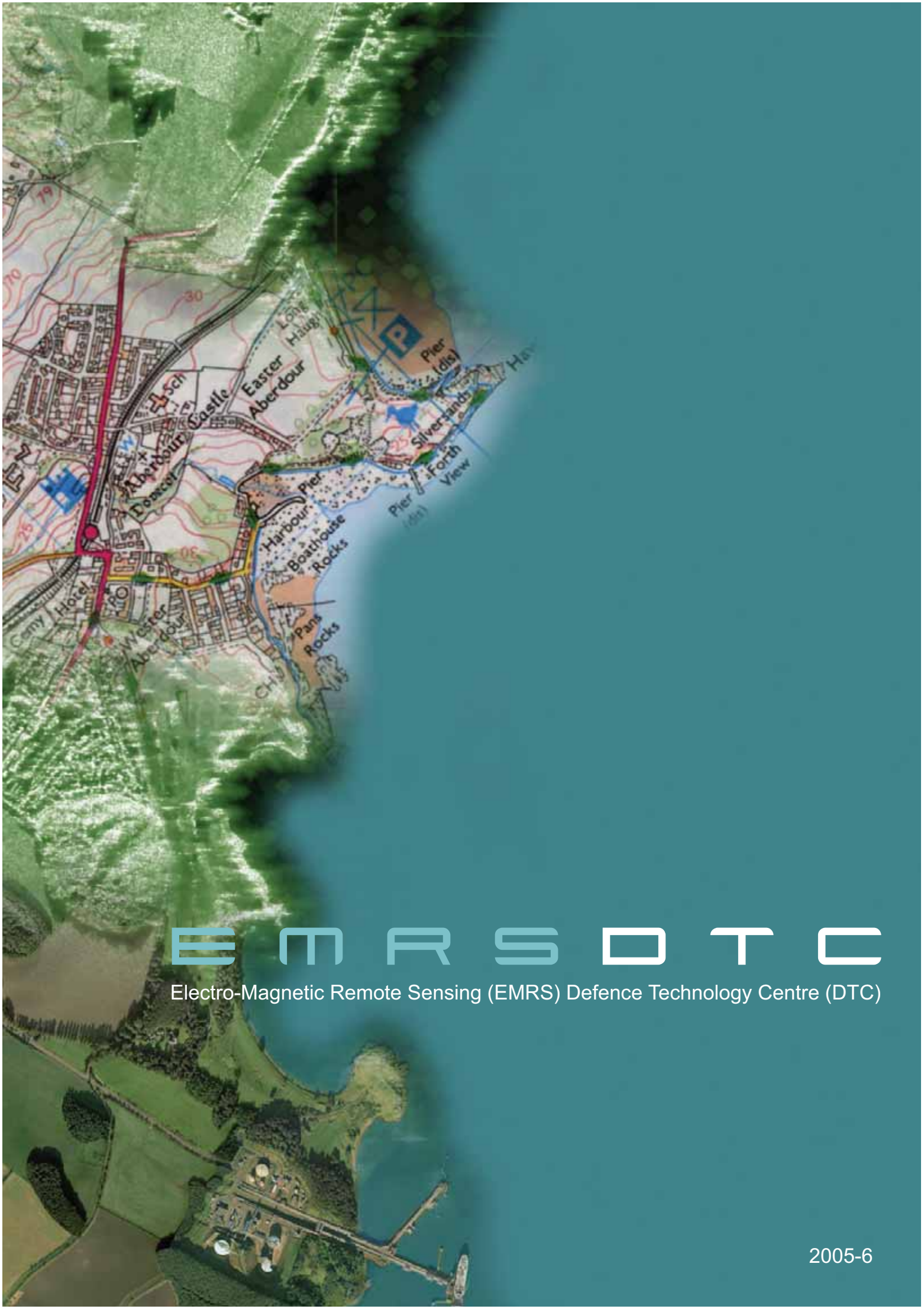

EMRS DTC

Electro-Magnetic Remote Sensing (EMRS) Defence Technology Centre (DTC)

2005-6

EMRS DTC
Supervisory Board

Dr Alvin Wilby
Chairman, EMRS DTC Supervisory Board
SELEX Sensors & Airborne Systems Ltd

Dr Brian Wardrop
EMRS DTC Research Director

Dr Paul Holbourn
SELEX Sensors & Airborne Systems Ltd

Professor Simon Watts
Thales UK Ltd

Dr Wolfgang Bösch
Filtronic Plc

Bryan Rickett
Roke Manor Research

Professor Peter Grant
University of Edinburgh

Professor Hugh Griffiths
University College London

Professor Bill Bardo
Research Director SEAS DTC

Dr David Joynson
Ministry of Defence

Dr David Hull
Ministry of Defence

Origins of the EMRS DTC

Defence Technology Centres (DTCs) are virtual centres of excellence in broad technology areas considered by MoD to be likely to provide a high return to UK defence, and in which there is a significant research base outside the MoD. Each DTC is managed by a consortium of industrial partners, who are responsible for defining and exectuting its programme of research.

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 the DTC initiative is to provide more rapid pull-through of low technology maturity level research into the MoDs defence equipment programme.

The Electro-Magnetic Remote Sensing (EMRS) Defence Technology Centre (DTC) will deploy £30 million of research funding over the six-year period from April 2003 to April 2009. The defence industry partners in the EMRS DTC consortium will match MoD's funding with contributions in kind of £30 million.

The EMRS DTC Research Programme is focussed at Technology Readiness Levels 1-3, and as such the focus of the programme is on pre-proof of concept research.

The EMRS DTC is managed by an industrial consortium comprising: SELEX Sensors & Airborne Systems Ltd., Thales UK Ltd., Roke Manor Research Ltd. and Filtronic Plc. The DTC contract was awarded to SELEX Sensors & Airborne Systems Ltd. as prime contractor

Chairman's Statement

The EMRS DTC is now approaching the end of our initial three year term. Although it was recognised that a full six year term would be required to fully demonstrate the effectiveness of this new, collaborative research model, we are now confident that the significant benefits of the EMRS DTC model are allready present.

The openness of the EMRS DTC model has enabled broad participation by Universities, Research Centres and SMEs in this DTC. The open, but completed, entry process to the EMRS DTC research programme has ensured that high quality science has prospered.

These benefits have been fostered under an "umbrella" constructed by MoD and industry working in partnership. the creation of the EMRS DTC has enabled the science base to focus a strong "technology-push" onto a receptive, industry led funding body. The result has been the creation of a high quality, market orientated research programme.

The continuing interest in the EMRS DTC research programme has been evident through attendance at out Annual Technical Conferences. These events have succeeded in drawing over 300 delegates from across the UK, USA, Australia, France, Sweden, Italy and Singapore. Moreover the EMRS DTC has been working in conjuction with MoD to establish formal International Research Collaborations with the defence laboratories of several nations. These efforts are now coming to fruition.

In summary, it is apparent that under the EMRS DTC model, the potential is there for all parties to win.

Alvin Wilby
Chairman, EMRS DTC Supervisory Board

Research Director's Statement

Two annual cycles of the EMRS DTC have now been completed, and significant achievements obtained:

The EMRS DTC has created and managed a research programme consisting of 72 projects drawn from 37 organisations.

The research portfolio has been assembled from over £45 million of research proposals recieved to date. Research projects usually run for between one and three years. However, achieving the best possible research programme within a finite budget requires a rigorous review process that continually monitors all research projects. Those that do not continue to meet their original expectations are concluded to make way for new projects.

A close working relationship has been formed between Technical Advisors from the MoD's Defence Science & Technology Labratort (dtsl) and the EMRS DTC Theme Leaders.

Many of out projects are now reporting significant scientic results, and several are attracting attention from companies interested in sponsoring the transition from basic to applied research. We anticipate that the second three-years of the EMRS DTC will see increasing focus on the exploitation of research output and the identification of market opportunities for technology insertion.

Lastly, we see the Annual Technical Conference as providing a strong link in the DTC yearly cycle, encoraging the science base to improve the quality of the research programme through their responses to the autumn call for research proposals.

Brian Wardrop
Research Director, EMRS DTC

Objectives

Each DTC is tasked with achieving the following generic outcomes - To:

- 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.

The EMRS DTC research programme has been created to address the following specific 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 and/or concealed targets
- Affordable, robust systems for military platforms
- Covert operation

Principles of Operation

The EMRS DTC operates an open model for participation. The industrial consortium provides “contribution-in-kind” equal in value to direct funds provided by MOD. This action creates an umbrella under which “providers of science” to the EMRS DTC receive full funding and retain full ownership of IP.

The EMRS DTC model is attractive to Universities, technology-rich Small – Medium Sized Enterprises (SMEs) and Research Centres. This attraction is exploited through an annual, open call for research proposals - facilitated through advertising, a strong web presence, mail-shots and regional bidders’ conferences.

The strong technology-push from the science base is met by a highly discriminating “market pull”, as exercised through the Research Theme Leaders of the EMRS DTC. The Research Theme Leaders are the Chief Technology Officers (CTOs) from the Industrial Consortium members. These CTOs manage Industry’s internal applied research programmes – a fact which positions them ideally to manage the transition from basic long term research through applied research and onto technology acquisition.

The EMRS DTC also operates an open model for dissemination of research output. This is performed through the annual EMRS DTC Technical Conference

Bryan Rickett | Stuart Duncan | Stephen McGeoch | Wolfgang Bosch | Tony Kinghorn

Research Programme Structure

The EMRS DTC Research Programme is organised into four research themes:

- RF Systems
- Electro-Optic Systems
- Transduction Devices and Materials
- Transducer Embedded Processing.

RF Systems

The RF Systems Research Theme is led by SELEX Sensors & Airborne Systems Ltd., and is managed by Tony Kinghorn

The RF Systems Research Theme consists of projects in the following areas:

- Target Detection
- Non Co-operative Target Recognition (NCTR)
- Networked Radar Systems
- Radar & ESM Convergence
- Critical Systems Components

The research programme includes the following participating “science provider” organisations:

- University College London
- University of Edinburgh
- BAE Systems ATC
- Sula Systems Ltd.
- University of Birmingham
- ESL Defence Ltd.
- Roke Manor Research Ltd.
- Thales Sensors
- QinetiQ Ltd.
- TW Research Ltd.
- Cranfield University (RMCS)
- Liverpool John Moores University

Electro-Optic Systems

The Electro-optics Research Theme is led jointly by SELEX Sensors & Airborne Systems Ltd., and Thales UK Ltd. and is managed jointly by Stuart Duncan and Stephen McGeoch.

The Electro-Optic Systems Research Theme consists of projects in the following areas:

- Active Imaging
- Hyperspectral Sensing
- Novel Detectors
- Advanced Optical Techniques

The work is focussed on:

- Providing enhanced sensing capability through the introduction of novel sensor concepts and technologies that better exploit the optical environment.
- Improving sensor performance and cost effectiveness.

The research programme includes the following participating “science provider” organisations:

- BAE Systems ATC
- SELEX Sensors & Airborne Systems Ltd
- Thales Optronics Ltd.
- Thales Optics Ltd.
- QinetiQ Ltd.
- Intense Photonics Ltd.
- Waterfall Solutions Ltd.
- University of Strathclyde (IoP)
- University of St. Andrews
- Heriot-Watt University
- Sheffield University
- Imperial College
- University of Southampton (ORC)

Transduction Devices and Materials

The Transduction Devices and Materials research theme is led by Filtronic Plc., and is managed by Dr Wolfgang Bösch.

The Transduction Devices and Materials Research Theme consists of projects in the following areas:

- RF Devices
- Multi-Layer RF Packaging

The work is focussed on:

- Providing access to enhanced RF sensor performance at affordable cost through compound semiconductor technology.
- Improving system performance of RF sensors through innovative RF components and packaging technology.

The research programme includes the following participating "science provider" organisations, working on the following technology areas:

- Wide Band-gap Power Devices:
  - QinetiQ Ltd.
  - Sheffield University
  - Element Six Ltd.
- RF Devices and Circuits:
  - University of Manchester
  - Plextek Ltd.
  - University of Glasgow
  - University of Leeds
  - Filtronic Plc.
- Multi-Layer RF Packaging:
  - AREVA T&D Technology Centre
  - VTT Electronics

Transducer Embedded Processing

The Transducer Embedded Processing research theme is led by Roke Manor Research Ltd., and is managed by Bryan Rickett.

The work is focussed on:

- Methods to support rapid development of sensor systems.
- Reduction of sensor system development cost through reduction in design cycle times.
- Improvement of sensor system design longevity through design capture at high levels of abstraction.
- The application of innovative signal processing methods to provide performance improvements in sensor systems.
- Sensor signal processing techniques for autonomous systems.

The research programme includes the following participating "science provider" organisations:

- Blue Horizon Development Systems Inc.
- Queens University Belfast
- BAE Systems ATC
- Thales Optronics Ltd.
- Roke Manor Research Ltd.

Annual Technical Conference

The EMRS DTC will hold an annual, unclassified Technical Conference at which the work of the DTC will be disseminated.

The EMRS DTC Technical Conference should be attended by:-

- Potential exploiters of EMRS DTC funded research.
- Members of the broad Military and Civil Electro Magnetic Remote Sensing community of interest, including its underlying key technologies, systems and sub-systems.
- Potential providers of research to the EMRS DTC programme.

For further information please refer to:

http://www.emrsdtc.com/conferences.htm

Opportunities exist annually for sponsors and exhibitors.

http://www.emrsdtc.com/exhibit.htm

The 3rd Annual Technical Conference will be held on Thursday 13th and Friday 14th July 2006 at EICC in Edinburgh. This event will be a joint conference with the SEAS DTC.

http://www.seasdtc.com

Annual Call for Research Proposals

The EMRS DTC holds an annual call for research proposals which open in October and closes at end December each year. Work packages commence in April of the following year.

The annual call for research proposals is open to all, and is supported by regional bidders conferences which take part in late October / early November each year.

For further information on the annual call for proposals see:

http://www.emrsdtc.com/proposals.htm

Get Connected, Stay Connected

To recieve regular updates on the activities of the EMRS DTC please register your interest on-line at: http://www.emrsdtc.com/get-connected.htm

For more detailed information please contact:

Neil Whitehall
EMRS DTC Operations Director
SELEX Sensors & Airborne Systems Ltd
Crewe Toll
Edinburgh EH5 2XS

tel: +44 (0) 131 343 8610
fax: +44 (0) 131 343 8110

e-mail: neil.whitehall@selex-sas.com

Designed and Printed by CS&S Publishing Centre, BAE SYSTEMS, Crewe Toll, Edinburgh tel: 0131 343 8102

Dr Brian Wardrop and Professor Bill Bardo present the best Phd paper prize to Lionel Tan (Sheffield University) at the 2nd Annual Technical Conference. Lionel is accompanied by his supervisor Dr John David.

Prof. John Roulston, Prof. Peter Grant and Dr. Brian Wardrop congratulate Andrew Guyette (Institute of Microwaves & Photonics, University of Leeds). Andrew won the prize for best conference paper presented by a PhD. student at the 1st Annual technical Conference.

Prof. John Roulston (former EMRS DTC Chairman) with Prof. Sir Keith O'Nions (former MOD Chief Scientific Advisor) and Lord Bach of Lutterworth (former Minister for Defence Procurement) at the formal launch event of the EMRS DTC in July 2003.

The EMRS DTC Supervisory Board with the Research Theme Leaders at the formal launch event of the EMRS DTC, at the RAF Club, July 2003.

Dr. Alvin Wilby addresses the delegates at the 2nd Annual Technical Conference of the EMRS DTC in June 2005

Prof. John Roulston with the sponsors of the 1st Annual Technical Conference: Tom Lamb (Scottish Development International, Jan Reid Scottish Enterprise, and Douglas Grieg (Scottish Executive).