

**EMRS DTC Projects List - September 2008**

<b>Theme</b>	<b>Project Title</b>
RF	Fundamental performance limitations of radar networks
RF	Multi perspective target detection, location and classification
RF	Signal Processing for Airborne Bistatic Radar
RF	Radar Based Non Co-operative Target Recognition
RF	TeraHertz Study Programme
RF	Robustness of Low Probability of Exploitation
RF	Novel MMIC Structures For Microwave & mm-Wave ICs
RF	Electro-Magnetic Actuators Using MEMS
RF	New Technologies for low-cost Direction Finding and ESM
RF	Bistatic Synthetic Aperture Radar with Emitters of Opportunity
RF	ESM and Passive Radar Convergence
RF	Auto Calibration of Phased Arrays
RF	Re-deployable HF Surface Wave Radar
RF	Coherent Clutter Modelling
RF	Sea Spikes and FAR Reduction in Maritime Radars
RF	Ultra Wideband and Radar co-existence
RF	Improved Detection of Low Observable Targets
RF	Ultra Low Phase Noise Local Oscillators
RF	Non-Linear Synthetic Aperture Radar Techniques
RF	Forward scattering micro-sensors
RF	Electro-Magnetic Remote Sensing for Stand Off Battle Damage Assessment
RF	Compact Tuneable Terahertz Source
RF	Interrupted SAR
RF	Dual Polarised Array Antennas
RF	Tomography & Polarimetric Interferometry for enhanced target detection and identification for foliage penetrating airborne SAR
RF	Multi-Octave Phased Array Apertures
RF	Adv. Tech. for Clutter & Jammer Suppression for SAR Processing
RF	Electronically controlled, metamorphic antenna
RF	Networked Adaptive Beamforming Techniques for Airborne Radar
RF	Mode Locked Fibre-Laser Generation of Ultra Low Phase Noise LO
RF	MIMO Radar - Prospects and Constraints
RF	Digital Phased Array Radiometer for Longer-Range Body Scanning
RF	Terahertz 3D Imager (T3D)
RF	Littoral sea clutter
RF	Collision Avoidance MIMO Radar for UAV's
RF	Wideband transmit/receive modules for phased array antennas
RF	Multi Function Rf Systems for UAVs - System Concept Study (Edinburgh)
RF	Multi Function Rf Systems for UAVs - System Concept Study (Capability Green)
RF	Multi Function Rf Systems for UAVs - System Concept Study (Basildon)
RF	Multi Function Rf Systems for UAVs - System Concept Study
RF	3D Mapping of Buildings with stand-off Polarimetric FMCW SAR radar.
RF	Non-linear imaging radar for IED detection
RF	Multi-Scan Spatio-Temporal Discrimination for Small Target Detection in Clutter

Theme	Project Title
EO	Pulsed Laser Systems for 3D Active Imaging
EO	Multimode LOs for Improved Signal-Noise in Coherent Lidar
EO	Frequency Agile Visible & IR Laser Sources
EO	Active Multispectral Imaging
EO	Temporal Sensors for Long Range Recognition and ID
EO	Avalanche Photodiodes
EO	Intra-cavity adaptive-optic control of lasers
EO	Photonic Fibres for Active Sensor systems
EO	Algorithmic Temperature Referencing for TI Cameras
EO	Diffraction Grating Modelling
EO	Optical Aperture Synthesis Study Activity
EO	Affordable 2D IR Detectors
EO	Scene/Target Simulation - Hyperspectral/Polarmetric Sensors
EO	Hyperspectral Algorithm Development
EO	Spectrally Integrated Image Analysis
EO	High Power, Broad Band Semiconductor Laser Based IR Sources
EO	CameoSim Imagery
EO	Retroreflective Optical Communications
EO	Self-Optimising Illuminators and Sensors
EO	An Electrically Driven Solid State 8-14um Band Modulator
EO	Infrared Quantum Dot Intersubband Photodetectors
EO	Hybrid Fibre-Bulk Pulsed Erbium Laser Source
EO	Scene Based Atmospheric Correction Methods for LWIR Hyperspectral
EO	Multi Colour Infra Red Detectors
EO	Hyperspectral Anomaly Detection and Un-Mixing in Fat-Tailed Clutter
EO	Active Imaging for Target Detection
EO	Hyperspectral Detection Through Sonic Transformation
EO	Optical Aperture Synthesis for Long Range Identification
EO	Polarimetric Imager
EO	Detector for LWIR Hyperspectral Imagers
EO	Covert Scanning of Low Signature Targets
EO	MEMS beam steering for high power fibre lasers
EO	Long wave, low cost imaging based on novel detectors using dilute nitrides
EO	Multispectral-Polarimetric Sensing For Detection of Difficult Targets
EO	Novel low voltage InAs avalanche photodiodes for affordable 2D IR photodetectors
EO	Dual Band IR Sensors
EO	InAs Quantum Dots for IR Photo-Detectors (QDIPs)
EO	Conversion of Lab Set-Up for Field Demonstratable Camera
EO	Atmospheric Invariants for Hyperspectral Image Correction
EO	Infrared Photodiodes Based on Type II Superlattices
EO	Invariant deconvoluted sub-pixel hyperspectral target ID
EO	Frame selection using wavefront sensor metrics
EO	Fielding of Selex Passive Imaging IR Sensors
EO	Field Demonstration:Selex IRIS, Selex 3D Imaging, Selex Dual Mode Imaging
EO	IRIS Participation in Trial for EO Technologies for EMRS DTC
EO	Sensor Systems for Close Combat Demonstration
EO	Reducing Apparent Noise in Wavefront Encoding Reconstruction Algorithms
EO	Atmospherically Independent Spectral Material Identification using Parsimonious Features

Theme	Project Title
TDM	Thermally Conductive Ceramics for RF Advanced Packaging
TDM	Low Cost Integrated Sensor Technologies
TDM	Integration of High Power devices into LTCC modules
TDM	MHEmt Device Technology
TDM	GaAs MMIC Sub Systems Using Novel Circuit Architectures
TDM	GaN-based Heterostructure HFETs for High Power Operation
TDM	GaN for Next Generation Sensors
TDM	Design and Fabrication of Photonic ADCs
TDM	CVD Diamond MESFETS for RF Power Applications
TDM	Multi-layer Liquid Crystal Polymer Packages for High Power Applications
TDM	Left Handed Materials
TDM	Broadband Microwave Frequency Selective Limiters
TDM	Extension to FEAT Programme - Indium Phosphine Mixed Signal Technology
TDM	UK source for mm-wave imager MMIC technology
TDM	Planar Gunn Diode sources for frequencies at and above 100GHz
TDM	Development Methodology for Highly-Efficient & Ultra-Broadband Remote Sensing Applications
TDM	Technology Groundwork to De-risk Compact Millimetre Wave Imagers for Urban Operations
TDM	High Speed Sampling Downconverters for Radar and EW Applications
TDM	Novel Miniature Reconfigurable Filters for adaptive Ultra Wideband Radar and EW Systems

Theme	Project Title
TEP	Systems Design Tools & Techniques
TEP	Reconfigurable Sensor Processing
TEP	Rapid Deployment Methods
TEP	Dynamic Range Enhancements
TEP	3D Computer Vision
TEP	Application Centric Processing
TEP	Signal Processing Based Sensor Improvements
TEP	Target Confirmation in LWIR Hyperspectral Data with Neural Networks
TEP	Optoelectronic Hybrid Processing for Low Latency
TEP	Analysis of Visual Feature Motion for event and threat detection
TEP	High Performance Architectures for Multi-Channel Sensors
TEP	Rapid development of signal processing applications on heterogeneous platforms
TEP	Visual MTI for UAV applications
TEP	Temporal resolution enhancement from motion
TEP	Compact target descriptors for ATI
TEP	GPS Anti Jamming RF Chip (Non US Source)
TEP	Generic FPGA Vector Processor Methodology
TEP	IR Feature-based Vision Processing
TEP	Sensor signal processing for remote biometric monitoring
TEP	Discriminative Processing For LWIR Polarimetric Imaging
TEP	Use of dual band IR camera to detect IED threats
TEP	Adaptive Spatial/Spectral Algorithms to Help Overcome the IED Threat
TEP	Optimal Detection and Resource Utilisation for IED Discovery at Checkpoints
TEP	Vision Change Detection for Route Monitoring
TEP	Novel View Synthesis for Change Detection of Non-planar Scenes

<b>Theme</b>	<b>Project Title</b>
Precursor	High Power Near IR (1500-1600nm) Laser Diodes
Precursor	Electro Optic Beam Forming
Precursor	Air Bridge Interconnects on Membrane Substrates (AIMS)
Precursor	Utility of Precursor Waveforms
Precursor	Novel Synthetic Aperture Radar Imaging Techniques
Precursor	Covert Path Distortion Correction for EO Systems
Precursor	Hyperspectral Anomaly Detection & Un-Mixing in Fat-Failed Clutter
Precursor	Hyperspectral Detection Through Sonic Transformation
Precursor	Low Loss High Power Compact Multi-way Microwave Switches
Precursor	Micromirrors for High Power Laser Beams
Precursor	MEMS Retroreflecting Modulator for Communication & ID
Precursor	Novel Low-Voltage InAs APDs for Affordable 2D IR Detectors
Precursor	Slow Light Structures for Enhanced Electro-optic Wavelength Conversion
Precursor	Diamond, High Power, Low Loss, MEMS Switches
Precursor	Improved target DRI via a Simpler HS Sub-Pixel Algorithm
Precursor	Terahertz Planar Gunn Diodes
Precursor	Wavefront Sensor Metrics for Frame Selection in Speckle Imaging
Precursor	Uncooled Avalanche Detector Arrays for the SWIR Using SiGe Technology
Precursor	Hyperspectral Spatial Enhancement
Precursor	Spectral Super-Resolution
Precursor	SAR Detection Through Sonic Transformation
Precursor	Lidar-acoustic detection for sniper and mortar fire
Precursor	Novel adaptive and non-linear function recovery method for improved military image analysis
Precursor	Acoustic imaging using multi-beam laser radar

<b>Organisation</b>
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