

“The Strategic Capability partnership between BAE Systems and Cranfield University supports an integrated research and technology programme, key staff recruitment and the delivery of specific training and education programmes.”¹

- University of Cranfield’s Website

University of Cranfield’s Military Projects 2001 - 2006

Overall Statistics

Total no. of projects	Minimum amount received from Projects	Ranking by: a) no. of projects b) amount (£)	Top 3 funders (by no. of projects)	Top 3 departments (by no. of projects)
73	£382,907,327	a) 11th= b) 1st	1) EPSRC 2) BAE Systems 3=) QinetiQ 3=) MoD 3=) Rolls Royce	1) Engineering 2) Applied Sciences 3) Defence College of Management and Technology

Defence College of Management and Technology (DCMT)

Source/ Sponsor/ Partner	Project	Amount	Dates
Ministry of Defence	Defence Education of Service and Civilian Personnel: Postgraduate Education and Training for around 4,000 Students per year from across the Defence Community. Subcontractors within the contract include: <ul style="list-style-type: none"> • Open University, and • King's College, London 	£? £366,000,000	1996 – July 2006 Aug 2006 - 2028 ²
EPSRC and BAE Systems Plc	MTP99: MSc in Systems Engineering (Full and Part Time Variants)	£296,738	Feb 2000 - Aug 2003 ³
Ministry of Defence	Sponsorship for 1,500 Postgraduate and Undergraduate Students – Mostly at the Defence College of Management and Technology	£?	Since 2001 ⁴
EADS and GKN	Student Bursaries, mostly at the Defence College of Management and Technology	£?	Since 2001 ⁵
EPSRC	Unsteady Features of Twin-Jet STOVL Ground Effects	£60,262	Oct 2001 - Sept 2004 ⁶
EPSRC,	Shaped Charge Jet Interaction with	£62,640	Oct 2001 -

Source/ Sponsor/ Partner	Project	Amount	Dates
QinetiQ Ltd and others	Passive Sandwich Assemblies		June 2005 ⁷
Ministry of Defence Consortium led by Aerosystems International. Other members include: <ul style="list-style-type: none"> • Birmingham University • Brunel University • Lockheed Martin UK, • MBDA Ltd • VP Defence Ltd 	Defence Human Factors Group Technology Centre (HFI - DTC)	£?	Apr 2003 Onwards ⁸
EPSRC and NASA Langley Research Centre	Measurement and Dynamic Modelling of Flapping Wings of Free- Flying Eristalis Hoverflies	£117,690	Nov 2003 – Nov 2006 ⁹
EPSRC and BAE Systems Plc	DARP: Efficient Life Cycle Management of Resin Infused Primary Composite Structures. Workpackage 6A	£135,802	May 2004 – May 2007 ¹⁰
EPSRC ¹¹	Controllable Demonstrator for Insect- like Flapping Wing Micro Air Vehicles (MAVs)	£269,268	Feb 2006 – Feb 2009 ¹²

School of Materials and Medical Sciences, Shrivenham Campus

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, Ministry of Defence and British Aerospace Plc	Smart Flapping Wings for Autonomous Micro Air Vehicles	£235,410	Apr 1999 - July 2002 ¹³

School of Engineering

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, BAE Systems Operations Ltd and others	IMI: Macro Team Concept (MACRO)	£364,399	May 1998 - Oct 2001 ¹⁴
EPSRC and Rolls Royce Plc	Planar Doppler Velocimetry Instrumentation for Gas Turbine Aerodynamic Applications	£287,652	Oct 1999 – Apr 2003 ¹⁵
EPSRC and Smiths Industries	MTP99: Avionics Option Within Aerospace Dynamics	£95,594	Feb 2000 - Sep 2003 ¹⁶
DERA, EADS and BAE Systems	MOB - A Computational Design Engine Incorporating Multi- Disciplinary Design and Optimisation for Blended Wing Body	£?	Mar 2000 Onwards ¹⁷

Source/ Sponsor/ Partner	Project	Amount	Dates
	Configurations		
EPSRC and BAE Systems	An Investigation into the "Decomposition-Intergration" Problem in Complex Product Development Programmes (COPE). The COPE Project has worked in collaboration with BAE Systems: <ul style="list-style-type: none"> Avionics Division on a product update for the Royal Navy and Future Concepts Group 	£178,140	Dec 2001 - Nov 2004 ¹⁸
EPSRC, Westland Helicopters Ltd and BAE Systems Plc	Non-Colocational Space Discretisation for Meshless Methods	£29,306	May 2002 - Oct 2002 ¹⁹
Funded by HEFCE In collaboration with: <ul style="list-style-type: none"> NASA QinetiQ University College London BAE Systems 	Turbomachinery, Icing & Gas Turbine Instrumentation – Atmospheric Icing Technology	£?	Mar 2003 Ongoing ²⁰
EPSRC and BAE Systems Plc	DARP: Modelling Failure Initiation and Damage Progression in RTM Structures	£127,385	Oct 2003 - Apr 2007 ²¹
Ministry of Defence	Fatigue Life Prediction Under Random Vibration Loads (WLA)	£?	2004 - 2005 ²²
Consortium led by Airbus with over 50 industrial partners including: <ul style="list-style-type: none"> Rolls Royce Plc EADS BAE Systems Eurocopter 	Virtual Aeronautical Collaborative Enterprise (VIVACE) Project within the Engineering Design Group. <i>“Cranfield University, plays a significant part (€1.2M), [...] in Multidisciplinary Design and Optimisation, Distributed Information Systems Infrastructure for Large Enterprises, and Design to Objectives.”</i>	€70,000,000 €1,200,000	Jan 2004 Onwards ²³
EPSRC and QinetiQ (Malvern)	Basic Technology: Controlled Electron Transport Through Single Molecules	£247,684	Oct 2004 - Oct 2008 ²⁴
Sponsor: Dstl/ MoD Collaborators include: <ul style="list-style-type: none"> Brunel University University of Birmingham 	Human Factors Integration Defence Technology Centre (HFI – DTC) Analysis of C4I Activity in the RAF Boeing E3D (Sentry) Aircraft	£?	2005 ²⁵
BAE Systems	Low-Cost Composite Sandwich	£?	2005 - 2006

Source/ Sponsor/ Partner	Project	Amount	Dates
	Structures		²⁶
EPSRC, Rolls Royce Plc and others	Advanced Marine Electric Propulsion Systems (AMEPS)	£131,619	Feb 2005 - Feb 2008 ²⁷
BAE Systems Project undertaken with: • University of Southampton • University College, London	Mechanics and Structures Engineering Courses: Tutor-led Online Training for Engineers	£?	Feb 2005 Onwards ²⁸
EPSRC and AWE Plc	Computational and Theoretical Modelling of Shock-Induced Instability and Mixing Across Material Interfaces	£242,609	Oct 2005 - Jan 2009 ²⁹
EPSRC, Rolls Royce Plc, Dowty Propellers (Smiths Group) and others	NSF: Fatigue, Damping and Impact Properties of Textile Composites	£161,820	Apr 2006 - Apr 2009 ³⁰
EPSRC, AWE Plc	Multiscale Modelling of Meso and Nano Scale Interfacial Dynamics Phenomena	£249,728	Oct 2006 - Oct 2009 ³¹
BAE Systems	Requirements Decomposition, Customer Models and Processes, Engineering Design Group	£?	Current as of May 2007 ³²
Rolls Royce	University Technology Centre in Performance Engineering	£?	Current as of May 2007 ³³
Funded by: EPSRC, MoD, BAE Systems, AWE Plc, QinetiQ, Eurocopter and others	Fluid Mechanics and Computational Science Group (FMaCS). Collaborators include: • Los Alamos National Lab, • Naval Research Lab (USA), • Imperial College, London, and • Queen Mary College (IRC, University of London)	£?	Current as of May 2007 ³⁴
Rolls Royce	Taking Time and Cost out of an Aero-Engine Test Programme by Artificial Intelligence and Tip Timing for Condition Monitoring of High Cycle Fatigue (HCF) in Gas Turbine Aero Engines	£?	2005 ³⁵
EPSRC, and Rolls Royce	Effects of Rub Grooves on Abradable Honeycomb Labyrinth Seals and Endwall Effects on Development of Boundary Layers in Axial	£?	2005 ³⁶

Source/ Sponsor/ Partner	Project	Amount	Dates
	Compressors, Turbomachinery		
Funded by; <ul style="list-style-type: none"> European Union European Aerospace Industry Industrial consortium includes: <ul style="list-style-type: none"> EADS BAE Systems Rolls Royce DERA 	Application of Laminar Flow Technology on Transport (ALTTA) Framework V Research Programme	£?	Current as of Jan 2007 ³⁷

Engineering Systems Department

Source/ Sponsor/ Partner	Project	Amount	Dates
Cranfield University and Hayes Diversified Technologies (HDT)	Diesel Military Motorcycle. Initial Order for 522 Received from US Marines	£?	2004/ 2005 ³⁸

School of Aerospace Power & Sensors, Shrivenham Campus

Source/Sponsor/Partner	Project	Amount	Dates
EPSRC, Westland Helicopters Ltd and QinetiQ Ltd	Flapping Flight Aerodynamics of Autonomous Micro Air Vehicles	£212,779	Oct 2000 - Sept 2003 ³⁹

Aeronautical Engineering

Source/ Sponsor/ Partner	Project	Amount	Dates
BAE Systems Virtual University (VU), developed in consultation with EPSRC	Strategic Partnership in Aeronautical Engineering, through University Partnership Programme. <i>"It is expected that each Partnership will involve a number of other universities."</i>	£?	Dec 2001 Onwards ⁴⁰

School of Applied Sciences (formerly Industrial & Manufacturing Science, SIMS)

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, Vosper Thornycroft (UK) Ltd, BAE Systems-lfs Ltd and others	"Curennet" Network on Real-Time Cure Monitoring in Manufacturing of Composite Structures	£51,280	Apr 1998 - Apr 2001 ⁴¹
EPSRC, Matra Bae Dynamics (UK) Ltd,	IMI: Jigless Aerospace Manufacture (JAM)	£315,427	Jun 1998 - May 2001 ⁴²

Source/ Sponsor/ Partner	Project	Amount	Dates
British Aerospace Plc, BAE Systems Operations Ltd and others			
EPSRC, British Aerospace Plc and Dstl (Farnborough)	Damage Monitoring in Carbon Fibre Composite Materials using Self Sensing Electrical Techniques	£192,395	Oct 1999 - June 2003 ⁴³
EPSRC, BAE Systems Plc and others	Monitoring and Modelling Tools for the Study of Strain Development in Curing Composites	£286,807	Feb 2000 - Jan 2003 ⁴⁴
EPSRC, BAE Aerostructures and others	Developing an Integrated Costing Approach for Conceptual Design Evaluation (ICOST)	£256,022	July 2000 - Dec 2001 ⁴⁵
EPSRC, DERA Malvern and others	Microengineered Radiation Collector Arrays For Uncooled Thermal IR Detectors	£275,688	July 2000 - Mar 2004 ⁴⁶
EPSRC, GKN Westland Aerospace (IoW) and others	Managing Product New Development as a Complex System of Decisions	£144,613	Oct 2000 - Sept 2003 ⁴⁷
EPSRC, ASTRIUM and others	Thin Film Piezoelectric Actuation for Microengineered Microwave Components: Fabrication Packaging and Testing	£192,365	Oct 2000 - Dec 2003 ⁴⁸
EPSRC and Ministry of Defence	Weld Processing Design and Durability of Welded Aircraft Assemblies	£376,769	Oct 2000 - Dec 2003 ⁴⁹
EPSRC, British Aerospace and others	Piezoelectric Microactuators for Smart Micro-Air Vehicles (SMAV)	£251,378	Oct 2000 - June 2004 ⁵⁰
EPSRC, BAE Systems Plc and others	MTP: In Company Training in Reliability Engineering and Risk Management in Design	£99,036	Feb 2001 - Jan 2004 ⁵¹
EPSRC, British Aerospace and others	(MTP) IT for Product Realisation	£318,505	Apr 2001 - Mar 2004 ⁵²
Science Research Investment Fund (SRIF) Supported by: • QinetiQ Ltd • Rolls Royce Plc and others	National High Temperature Surface Engineering Centre (NHTSEC), part of the Materials Science Department	£?	2002 Ongoing ⁵³
EPSRC, QinetiQ Ltd and Rolls Royce Plc	DARP: Advanced Aero-Engine Materials (ADAM) - Next Generation Single Crystal and Lifting Methodologies	£249,522	Apr 2003 - Mar 2007 ⁵⁴

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, QinetiQ (Malvern) and others	Ferroelectric Thin Films for MEMS - Electrical and Mechanical Properties	£134,220	Oct 2003 - Sept 2006 ⁵⁵
Collaborators include: • QinetiQ	<i>FrameOne</i> : Damage Assessment, Repair Strategy and Design for Minimal Frame Damage for First Production Vehicle with Carbon Fibre Spaceframe	Up to £1,200,000 SIMS will receive £603,000	Apr 2004 - Apr 2006 ⁵⁶
EPSRC and BAE Systems Operations Ltd	Integrated Programme of Research in Aeronautical Engineering	£4,567,816	Jun 2004 - May 2009 ⁵⁷
EPSRC, and BAE Systems Advanced Technology Centre	Advanced Microwave Devices for Frequency-Agile Applications	£208,208	Oct 2005 - Oct 2008 ⁵⁸
Collaborators include: British Aerospace Defence Ltd, GKN Westland Aerospace (IoW) and others	Automated Manufacture of Integrated Composite Components (AMICC), within the Centre for Lightweight Studies	£392,803	1999 - 2001 ⁵⁹
EPSRC, BAE Airbus and others	Novel High Speed Machine Tool Spindle Bearings	£?	Current as of May 2007 ⁶⁰

Innovation Manufacturing Research Centre (Part of School of Applied Sciences)

Source/Sponsor/Partner	Project	Amount	Dates
Thales Optics Ltd. University Collaborators include: • University of Birmingham • University of Huddersfield • University of West England (UWE) • University College London • University of Liverpool John Moore • Leeds Metropolitan University	• Precision Engineering Network (UKPEN) The Network has led to two Cranfield IMRC supported projects, one with Thales Optics	£?	Jan 2003 - Dec 2005 ⁶¹
Collaborator: BAE Systems	Affordable Manufacturing Processes for SMART Composite UCAV Airframes	£?	Jun 2004 - May 2007 ⁶²

Source/Sponsor/Partner	Project	Amount	Dates
Collaborators include: • Thales Optics (UK) Ltd	Free Form Surface Manufacture for Next Generation IR Optics	£?	Jul 2004 - Jun 2007 ⁶³
Collaborators include: • DERA • Essex University • UMIST • University of Liverpool • BAE Systems • Rolls Royce • Bombardier • MoD	Cost Effective Welding for Aerospace (Project CEMWAM) IMI: ARC WELDING PROCESS IMPROVEMENT FOR AIRFRAME APPLICATIONS (CEMWAM II)	£? £286,234	? April 1999 - Dec 2001 ⁶⁴
Collaborators include: • Agusta-Westland Helicopters • GKN Plc	Composite Material Process Monitoring and Residual Strain Measurement using Optic Fibre Grating Sensors	£?	Current as of May 2007 ⁶⁵

School of Management

Source/ Sponsor/ Partner	Project	Amount	Dates
QinetiQ	Information Systems Research Centre, within School of Management	£?	Since 2000 ⁶⁶
EPSRC, Ministry of Defence and others	Teamworking and Cultural Change Construction - Developing a Service Delivery Approach	£290,296	Jan 2001 - Dec 2001 ⁶⁷

Department of Enterprise Integration

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC's Innovative Manufacturing Research Centre at Cranfield. Current Network Members include: • BAE Systems Integrated Systems Technologies • De Montfort University • Queen's University • Rolls Royce • Wolverhampton University	Network of Excellence in Affordability Engineering	£?	Mar 2005 Onwards ⁶⁸

National Soil Research Institute, Silsoe Campus

Source/ Sponsor/ Partner	Project	Amount	Dates
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Source/ Sponsor/ Partner	Project	Amount	Dates
Science Research Investment Fund (SRIF)*, QinetiQ, Dstl and others	Off-Road Vehicle Dynamics Facility, Off-Road Test Facility	£1,200,000	Nov 2003 Onwards ⁶⁹

Department of Defence Management and Security Analysis (DDMSA)

Source/ Sponsor/ Partner	Project	Amount	Dates
Defence Academy UK	Assessing and Researching UK Suicide Bomb Risks. Project within Securities Studies Institute and Resilience Centre	£?	May 2003 Onwards ⁷⁰
Defence Academy UK	DEMOCRITUS Project: Ability to Integrate Teams and Respond to Any Emergency or Crisis That May Occur within or outside the EU	£?	2004 Onwards ⁷¹
Defence Academy UK. Staff have close working relationships with: • Ministry of Defence Industry contacts include: • BAE Systems • EADS • Thales • Dstl • QinetiQ	Resilience Centre: Designed to Coordinate Management Advice and Training on Risk and Security and Resilience Matters	£?	July 2004 Onwards ⁷²
Defence Academy UK. Consortium members include: • EADS (South Africa & Germany) • BAE Systems Operations Limited • Thales (Norway) • EADS Astrium	OASIS [Open Advanced System for Disaster and Emergency Management] Project: Creation of a Civil Crisis Management Methodology and a Command and Control Infrastructure that is Interoperable with NATO Command, Control and Communication Systems	£?	Sept 2004 - Aug 2008 ⁷³

Miscellaneous/ Multi-Departmental/ Things to Note

Source/ Sponsor/ Partner	Project	Amount	Dates
Funded by: EPSRC and BAE Systems Project Overseen by an	(FLAVIIR) Technologies for Future Unmanned Air Vehicles (UAV), as Part of the BAE-Cranfield Strategic Capability Partnership. Managed from Cranfield University, other	Total Project £6,200,000 Nominally split into a 3 year	2004 - 2009 ⁷⁴

Source/ Sponsor/ Partner	Project	Amount	Dates
Independent Steering group, Including Members from: <ul style="list-style-type: none"> Ministry of Defence BAE Systems and others Involves Cranfield University's: <ul style="list-style-type: none"> School of Engineering and School of Applied Sciences 	from Cranfield University, other University partners include: <ul style="list-style-type: none"> Imperial College of Science Technology and Medicine University of Leicester University of Liverpool University of Manchester University of Nottingham University of Southampton University of Wales, Swansea Warwick University University of York 	into a 3-year Research Phase, followed by a 2-year Demonstration Phase.	
Part-funded by: DTI Project Partners include: <ul style="list-style-type: none"> Oxford University QinetiQ 	LifeCAR Project: Fuel Cell Sports Car	Total Project £1,900,000	June 2005 - 2008 ⁷⁵

Other projects/ information of note

Anti-Landmine project, Department of Environmental and Ordnance Systems			
Source/ Sponsor/ Partner	Project	Amount	Dates
DFID, developed in collaboration with Disarmco	Development of Next Generation Anti-Landmine Device: Dragon	£?	2001 - 2005 ⁷⁶

Indirect support to military industry, School of Industrial and Manufacturing Science			
Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC	Cranfield's Innovative Manufacturing Research Centre	£9,859,613	Jan 2007 - Dec 2011 ⁷⁷

Applied Mathematics and Computing Group
<ul style="list-style-type: none"> The Applied Mathematics and Computing Group (AMAC)'s Academic/ Industrial Steering Committee present members include representatives from QinetiQ and Airbus UK.⁷⁸
Boeing Company
<ul style="list-style-type: none"> The Boeing Company established a multi-year research and development relationship in July 2002 with Cranfield University, along with the Universities of Cambridge and Sheffield. <i>"With Cranfield University, Boeing is working on a variety of projects that reflect this university's reputation and expertise in the areas of aviation, aeronautics and aircraft development"</i>. This will include with Cranfield University's wholly owned commercial company, Cranfield Aerospace Ltd. <i>"Boeing is also collaborating with Cranfield on [...] an MBA programme focused on project management for aerospace industry."</i>⁷⁹

Notation

£? Denotes projects whose value we were unable to discover.

* SRIF is a joint initiative between the Office of Science and Technology (OST) and the Department for Education and Skills (DfES) under the Higher Education Funding Council for England (HEFCE).

Endnotes

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