

# Study War No More

## University Data and Methodology

### *Page Contents*

2	University of Birmingham
12	University of Bristol
26	Cambridge University
58	University of Cardiff
64	University of Cranfield
79	Durham University
83	Edinburgh University
93	University of Glasgow
105	University of Hull
111	Imperial College London
126	King's College London
131	University of Leeds
141	University of Liverpool
150	London School of Economics
152	Loughborough University
168	University of Manchester
179	Newcastle University
191	University of Nottingham
199	University of Oxford
215	Queen's University Belfast
223	Sheffield University
235	University of Southampton
251	University of Swansea
257	University College London
272	University of Warwick
281	University of York
290	Notes and comments on university data

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[caat.org.uk](http://caat.org.uk) [www.for.org.uk](http://www.for.org.uk)

*"We have particularly strong links with...BAE Systems, QinetiQ and Dstl...Our research is funded roughly 50:50 by the Engineering and Physical Sciences Research Council (EPSRC) and industry/EU."*<sup>1</sup>

- University of Birmingham website

## University of Birmingham'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)
59	£11,606,978	a) 15th b) 12th	1) EPSRC 2) Rolls Royce 3) QinetiQ	1) Metallurgy and Materials 2) IRC in Materials Processing 3) Electrical and Electronic Engineering

### Electronic, Electrical and Computer Engineering

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, DTI, QinetiQ, and others	Research in Modelling and Analysis of Systems Group	£?	May 2003 <sup>2</sup>
EPSRC, and BAE Systems Advanced Technology Centre	Advanced Microwave Devices for Frequency-Agile Applications	£210,332	Nov 2005 – Nov 2008 <sup>3</sup>
EPSRC, and Thales Research Ltd	Ultra Wide Band Signature Analysis for Detection of Weapons and Explosives	£204,366	Feb 2006 – Feb 2008 <sup>4</sup>
BAE Systems, DTI, QinetiQ, and others	Miltrans: Research, Design and Development of a Range of Antennas Based on a Laminated Metallic Fabrication Technique	£?	Recently completed as of Nov 2006 <sup>5</sup>
EPSRC, Ministry of Defence, BAE Systems, QinetiQ, and others	Research Funding for the Communications Engineering Group	Totals £1,000,000 in current grants and contracts	Current as of Nov 2006 <sup>6</sup>
QinetiQ, and BAE Systems	Superconducting Delay Lines	£?	Current as of May 2007 <sup>7</sup>
QinetiQ	Underwater Ad Hoc Networking (UAN)	£?	Current as

Source/ Sponsor/ Partner	Project	Amount	Dates
			of May 2007 <sup>8</sup>

### **Metallurgy and Materials**

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, and Rolls Royce Plc	Oxide Spallation and the Integrity of the Thermal Barrier Coating Systems	£168,810	Jan 1998 – Jun 2001 <sup>9</sup>
EPSRC, Ministry of Defence, and BAE Systems Plc	Corrosion of Welds in High Strength Aluminium Alloys	£161,483	June 1999 – Oct 2002 <sup>10</sup>
EPSRC, Rolls Royce Plc, and others	Durability Design Methodology for Structural Components Cast from Magnesium Alloys	£203,735	Oct 1999 – Sept 2002 <sup>11</sup>
EPSRC, Rolls Royce Plc, and others	The Fundamentals of Investment Casting	£642,387	Nov 1999 – Oct 2002 <sup>12</sup>
EPSRC, Ministry of Defence, and Rolls Royce Plc	Fracture, Fatigue and Durability of High Strength Titanium Aluminides	£246,550	Apr 2000 – Mar 2003 <sup>13</sup>
EPSRC, Rolls Royce Plc, and others	Integrated Process Modelling for Gas Turbine Manufacture. Project involves fundamental research by: <ul style="list-style-type: none"> <li>University of Cambridge (Materials Science and Metallurgy Department),</li> <li>University of Birmingham, and</li> <li>Imperial College London</li> </ul>	? (NB £297,329 awarded to University of Cambridge)	Oct 2000 – Sept 2003 <sup>14</sup>
EPSRC, Ministry of Defence, BAE Systems Plc, Rolls Royce Plc, and others	Engineering Doctorate Centre: Engineered Metals for High Performance Applications in Aerospace and Related Technologies	£697,012	Oct 2001 – Mar 2004 <sup>15</sup>
EPSRC, and Rolls Royce Plc	Microstructure/ Property Relationships in B2 Nb (Al, V) Alloys for High Temperature Structural Use	£173,186	Dec 2001 – Nov 2004 <sup>16</sup>
EPSRC, and Rolls Royce Plc	Thermal Cycling of TiAl-Based Alloys	£62,991	Oct 2002 – Sept 2005 <sup>17</sup>
EPSRC, QinetiQ Ltd, and Rolls Royce Plc	DARP: Advanced Aero-Engine Materials (ADAM) DARPS Programme: Titanium MMC Behaviour and Lifting Studies	£214,192	Apr 2003 – Sept 2006 <sup>18</sup>
EPSRC, Ministry of Defence, BAE Systems, Rolls Royce Plc,	Engineering Metals for High Performance Applications in Aerospace and Related Technologies	£837,760	Oct 2003 – Mar 2004 <sup>19</sup>

Source/ Sponsor/ Partner	Project	Amount	Dates
and others			
EPSRC, Rolls Royce Plc, and others	The Oxidation Of SmCo-Based Permanent Magnets	£149,034	Apr 2005 – Apr 2008 <sup>20</sup>
EPSRC, and Rolls Royce Plc	Research Chairs: EPSRC/ Rolls-Royce Star Appointment in Casting Technology	£653,533	May 2005 – Apr 2010 <sup>21</sup>
EPSRC, Vosper Thornycroft (UK) Ltd, Westland Helicopters Ltd, and others	Self-Sensing Fibre Reinforced Composites: A Novel Technique for Process and Structural Health Monitoring	£328,954	Oct 2005 – Sept 2008 <sup>22</sup>
EPSRC, QinetiQ Ltd, Rolls Royce Plc, and others	Alloys By Design - A Materials Modelling Approach	£506,275	Oct 2006 – Mar 2010 <sup>23</sup>
QinetiQ (Malvern)	Damage Detection in Carbon Fibre Composite Structures Using Polymer Fibres and Triboluminescent Damage Sensors	£?	Current as of May 2007 <sup>24</sup>

### **Manufacturing and Mechanical Engineering**

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, and Rolls Royce Plc	High Speed Milling of Nickel Based Superalloys	£188,277	Apr 1998 – Mar 2001 <sup>25</sup>
EPSRC, Rolls Royce Plc, and others	Machining of Nickel Based Superalloys using Mounted Grinding Points fitted to a High Speed Maching Centre	£95,371	Sept 1999 – Aug 2001 <sup>26</sup>
EPSRC, Rolls Royce Plc, and others	Feasibility Study on the Design/ Evaluation of a Duplex HSM/ EDM System for Rapid Production of Components	£83,696	Dec 1999 – May 2001 <sup>27</sup>
EPSRC, BAE Systems Plc, and others	Quality Surface Wrapping for Manufacture	£120,967	Dec 2000 – Mar 2004 <sup>28</sup>
EPSRC, BAE Systems Plc, Rolls Royce Plc, and others	Point-Based Plug-Ins to Enhance the Quality of Geometric Data for Computer Aided Engineering	£289,957	Sept 2001 – Jan 2005 <sup>29</sup>
EPSRC, and Rolls Royce Plc	Visiting Fellowship: The Interaction of Solidification and Infiltration in Metal Matrix Composite Processing	£53,540	Mar 2006 – Sept 2006 <sup>30</sup>

### **School of Computer Science**

Source/ Sponsor/ Partner	Project	Amount	Dates
QinetiQ, and DTI	A Future Of Reliable Wireless Ad Hoc Networks of Roaming Devices (FORWARD)	£80,000 approx.	2003 – 2005 <sup>31</sup>
EPSRC, and QinetiQ (Malvern)	Automated Verification of Probabilistic Protocols with PRISM (Probabilistic Symbolic Model Checker)	£181,509	Apr 2003 – June 2006 <sup>32</sup>
EPSRC, DTI, Rolls Royce, QinetiQ, and others	A Midlands e-Science Centre of Excellence Proposal: Modelling and Analysis of Large Complex Systems	£150,092	Sept 2003 – Dec 2005 <sup>33</sup>
Thales	Case Studentship with Thales	£3,629	2005/ 2006 Financial Year <sup>34</sup>
EPSRC, QinetiQ (Malvern), and others	UbiVal: Fundamental Approaches to Validation of Ubiquitous Computing Applications and Infrastructures	£510,904	Oct 2006 – Mar 2010 <sup>35</sup>

### **IRC in Materials Processing**

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, Rolls Royce Plc, and others	Low Cost Near Net-Shape Manufacture of Turbine Engine Ring Components	£181,022	Mar 1998 – Mar 2001 <sup>36</sup>
EPSRC, and Rolls Royce Plc	Atomisation, Spray Forming and Processing of Ti-Based Alloys	£370,635	Oct 1999 – Sept 2002 <sup>37</sup>
EPSRC, and Rolls Royce Plc	Novel Oxide Fibres for Ceramic Matrix Composites	£139,704	Oct 1999 – Sept 2002 <sup>38</sup>
EPSRC, Ministry of Defence, Rolls Royce Plc, and others	Net Shape Casting of TiAl Components	£324,529	Sept 2000 – Aug 2003 <sup>39</sup>
EPSRC, and Rolls Royce Plc	Ductility and Cracking in High Nb TiAl Alloys	£216,046	Apr 2001 – Mar 2004 <sup>40</sup>
EPSRC, and Rolls Royce Plc	Process and Alloy Development of Beta Ti Alloys	£250,537	Jan 2002 – Jan 2005 <sup>41</sup>
EPSRC, QinetiQ Ltd, Rolls Royce Plc, and others	Development and Evaluation of Novel Low Cost Oxide/ Oxide CMC Components For Gas Turbine Engines	£202,268	Jul 2002 – Mar 2006 <sup>42</sup>
DTI, Rolls Royce, and	Net Shape HIPping of Engineering Components (ADAM-DARPs)	£?	2003 – 2007 <sup>43</sup>

Source/ Sponsor/ Partner	Project	Amount	Dates
QinetiQ			
EPSRC, QinetiQ Ltd, Rolls Royce Plc, and others	Modelling, Microstructure and Properties of Nickel Superalloys Processed by Centrifugal Spray Deposition	£264,004	Jan 2003 – Dec 2005 <sup>44</sup>
EPSRC, Rolls Royce Plc, and others	FARADAY: Developing a Paste Formulation Criterion	£69,118	Apr 2004 – Mar 2007 <sup>45</sup>
EPSRC, Rolls Royce Plc, QinetiQ, Ministry of Defence, and others	A Feasibility Study of Bonding of Powder Silicides for Application to Aero and Land-Based Turbines. Part of DTI Funded Powermatrix Faraday Initiative	£284,753  £312 from Rolls-Royce  £4,200 from QinetiQ	Oct 2004 – Sept 2007.  2005/ 2006 Financial Year  2005/ 2006 Financial Year <sup>46</sup>
EPSRC, Rolls Royce Plc, and others	Measurement and Modelling of Electrical, Transport and Phase-Change Phenomena and Application to Vacuum Arc Remelting for Optimal Material Quality	£169,410	Dec 2006 – Dec 2009 <sup>47</sup>

### **Business Strategy and Procurement**

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, Rolls Royce Plc, and others	IMI Competitive Advantage Through Supply Performance	£228,971	Jan 2001 – Feb 2003 <sup>48</sup>

### **School of Physics and Astronomy**

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, and Dstl	Ion and Electron Swarm Studies of Relevance to Plasma Processing	£148,202	Apr 1999 – Sept 2002 <sup>49</sup>
EPSRC, and Dstl	Sensitive and Selective On-Line Trace Gas Analysis Using a Proton Transfer Reaction-Mass Spectrometer	£47,430	Jul 2001 – Jul 2004 <sup>50</sup>
EPSRC, and BAE Systems	Spherical Superconducting Torsion Balance as a Detector in a Precision Determination of Casimir Force	£?	Current as of May 2007 <sup>51</sup>

### **Centre of Excellence for Research in Computational Intelligence (CERCIA)**

Source/ Sponsor/ Partner	Project	Amount	Dates
Industrial partners of the centre include: <ul style="list-style-type: none"> <li>• BAE Systems,</li> <li>• QinetiQ,</li> <li>• Rolls Royce, and</li> <li>• Thales</li> </ul>	The Centre for Excellence for Research in Computational Intelligence and Applications	£?	2003 to present <sup>52</sup>

### **School of Mathematics**

Source/ Sponsor/ Partner	Project	Amount	Dates
QinetiQ (Rosyth)	Cavitation and Bubble Dynamics. Project involves 3 studentships during the period 2000 to 2003	£120,000	2001 – 2003 <sup>53</sup>

### **Chemical Engineering**

Source/ Sponsor/ Partner	Project	Amount	Dates
QinetiQ	Production of Ultra-Fine Energetic Materials	£?	Current/ Recent as of May 2007 <sup>54</sup>

### **Sport and Exercise Science**

Source/ Sponsor/ Partner	Project	Amount	Dates
QinetiQ	Metabolic Responses in Acute Bouts of Exercise During Pregnancy and Postpartum	£61,151	2005/ 2006 Financial Year <sup>55</sup>
QinetiQ	Exercise metabolism in pregnant women	£260,000	Current as of Jan 2007 <sup>56</sup>

### **Medicine**

Source/ Sponsor/ Partner	Project	Amount	Dates
QinetiQ	Metabolic Responses in Acute Bouts of Exercise During Pregnancy and Postpartum	£48,441	2005/ 2006 Financial Year <sup>57</sup>

### **Engineering**

Source/ Sponsor/ Partner	Project	Amount	Dates
BAE Systems	Millimetric Transceivers for Transport Applications – Foresight Vehicle Programme	£843	2005/ 2006 Financial Year <sup>58</sup>

Source/ Sponsor/ Partner	Project	Amount	Dates
Rolls Royce	Faraday: Developing a Paste Formulation Criterion	£13	2005/ 2006 Financial Year <sup>59</sup>
Dstl	Case Award	£1,359	2005 – 2006 Financial Year <sup>60</sup>

### **Other projects of note**

Projects starting 2007			
EPSRC, QinetiQ (Malvern), and others	Automated Quantitative Software Verification with PRISM (Probabilistic Symbolic Model Checker)	£583,565	Jan 2007 – June 2010 <sup>61</sup>
EPSRC, and Smiths-Detection	Fundamentals, Development and Applications of Ion Mobility Spectrometry (IMS) for Enhanced Trace Detection of Threat Agents	£527,052	Mar 2007 – Feb 2011 <sup>62</sup>

### **Notation**

? Denotes projects whose value we were unable to discover.

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*“Critical aspects of the UK's defences are to be strengthened through a six-year research partnership led by General Dynamics UK and involving several leading companies and universities, including the University of Bristol. The Ministry of Defence is on the partnership board and is contributing about half the cost. The first three years' programme, costing some £27 million, is already under way.”<sup>1</sup>*

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### 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)
101	£12,109,941	a) 6th  b) 11th	1) QinetiQ  2) EPSRC  3) Dstl	1) Aerospace Engineering  2) Mechanical Engineering  3) Electrical and Electronic Engineering

### Aerospace Engineering

Source/ Sponsor/ Partner	Project	Amount	Date
EPSRC and GKN Westland Aerospace (IoW)	Platform Grant for Aerospace Composite Structures	£433,362	Apr 2000 - Mar 2004 <sup>2</sup>
EPSRC and Westland Helicopters Ltd	Modelling Lay-Up Effects of Hollow Composite Closed Sections Subject to Multiple Loads	£62,191	Jul 2000 - Jan 2002 <sup>3</sup>
QinetiQ Ltd	Development of Geometry During Cure	£119,925	Mar 2002 Onwards <sup>4</sup>
EPSRC and Westland Helicopters Ltd	Fatigue Life Prediction for Fibre Reinforced Plastics Under Complex Loading	£65,579	Mar 2002 - Aug 2005 <sup>5</sup>
QinetiQ	Aerodynamics Data Extraction from 5-DOF Wind Tunnel Rig	£27,056	Aug 2002 Onwards <sup>6</sup>
EPSRC, BAE Systems Operations Ltd and QinetiQ Ltd	Unsteady Aerodynamics Simulation by Flight Control System Intergration with Structure-Coupled CFD	£148,562	Oct 2002 - May 2006 <sup>7</sup>
EPSRC, BAE Systems Plc and others	Scaling Effects in Notched Composites	£194,717	Mar 2003 - Sep 2006 <sup>8</sup>
Department of Trade and	PUMA DARP: Unsteady	£242,187	Apr 2003

Industry LINK	Aerodynamics Prediction and Simulation for Airframe and Turbomachinery Applications		Onwards <sup>9</sup>
Defence Science Technology Laboratory	Novel Flow Devices	£7,500	Sept 2003 Onwards <sup>10</sup>
Rolls Royce Plc	Composite Methods Development	£58,252	Jan 2004 Onwards <sup>11</sup>
QinetiQ Ltd	FE Correlation Updating of the Lynx XZ649 Airframe	£103,299	Jan 2004 Onwards <sup>12</sup>
EPSRC and Westland Helicopters Ltd	DARP: Towards Robust and Cost Effective Approaches to Rotorcraft Design	£228,113	Jan 2004 - Sep 2008 <sup>13</sup>
QinetiQ Ltd	Quantitative Assessment of Pendulum Support Rig	£100,157	Sept 2004 Onwards <sup>14</sup>
Defence Science Technology Laboratory	Wind Tunnel Testing in Support of NATA RTO AVT-102 Task Group	£19,620	Sept 2004 Onwards <sup>15</sup>
EPSRC and Westland Helicopters Ltd	Safety-Based Optimal Design in Structural Dynamics	£29,262	Oct 2004 - Sep 2007 <sup>16</sup>
EPSRC, University of Bristol, Oxford University and Smiths Group	Smiths Aerospace University Technology Strategic Partnership (UTSP)	Total initial Investment of £1,250,000	2005 <sup>17</sup>
Defence Science Technology Laboratory	Undertake and Report on an Evaluation of Aerodynamic Modelling Tools Applicable to UCAVS	£5,000	Feb 2005 Onwards <sup>18</sup>
EPSRC, Smiths Group*, Oxford University and others	Smiths Aerospace Research and Technology Partnership on Composites and Metallics (SmartComp). 4 researchers will be appointed; 3 at Bristol and, in addition, one senior Research Fellow and 7 PhD studentships not funded under this grant have been committed to the Partnership. Also includes secondment of staff between the universities and Smiths and regular joint seminars	£1,095,146	Jan 2006 - Dec 2010 <sup>19</sup>

### **Computer Science**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
EPSRC and BAE Systems Plc	REVERB - Reverse Engineering the Vertebrate Brain. Involves: <ul style="list-style-type: none"> <li>University of Sheffield,</li> <li>University of Manchester,</li> <li>University of Bristol,</li> </ul>	£?  NB Project has included a £1,893,234	Apr 2005 - Apr 2010 <sup>20</sup>

	<ul style="list-style-type: none"> <li>University of Cambridge,</li> <li>University of Wales, Aberystwyth,</li> <li>Oxford University, and</li> <li>University of Dundee</li> </ul>	award to the University of Sheffield's Adaptive Behaviour Research Group within its Psychology Department	
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## **Chemistry**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
QinetiQ Ltd	The Dielectric Response of Stable Coni Particles	£49,660	Apr 2001 <sup>21</sup>
EPSRC, Smiths Industries and others	AEROFED: An Evaluation of a Research Opportunity to Realise a Low Voltage, Field Emission Display for use as a Multi-Functional Avionic Flat Panel. Under LINK Scheme	£159,083	Sep 2001 - Aug 2004 <sup>22</sup>
Ministry of Defence	Ventilation of Pollution out of Urban Streets	£90,612	Oct 2001 <sup>23</sup>

## **Electrical and Electronic Engineering**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
QinetiQ Ltd	Space Time Coding for Broadband Wireless Access	£139,440	Dec 2001 <sup>24</sup>
QinetiQ Ltd	Signal Recovery in Interference Ltd Communication Systems	£179,949	Jan 2003 <sup>25</sup>
QinetiQ Ltd	A Single Photon Source Characterisation Facility and Novel Single Photon Sources	£75,950	Oct 2003 <sup>26</sup>
Defence Science Technology Laboratory	Propagation Modelling: Review and Recommendations	£20,000	Jan 2004 <sup>27</sup>
QinetiQ Ltd	Compact Drive Technologies of a Hybrid-Electric Tracked Vehicle	£32,000	Sept 2004 <sup>28</sup>
Defence Science Technology Laboratory	Short Range Urban Propagation Project	£39,500	Feb 2005 <sup>29</sup>
QinetiQ Ltd	Ex-Drive	£178,000	Dec 2005 <sup>30</sup>

## **Mathematics**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
QinetiQ Ltd	Vector Valued Locally Stationary Wavelet Processes	£117,000	Jan 2001 <sup>31</sup>
QinetiQ Ltd	Calculation on Narrowband	£10,238	Mar 2001 <sup>32</sup>

	Wavefields		
QinetiQ Ltd	Mathematical Research in Chaos Theory at Bristol University for Determining Radar Cross Section Characteristics of Chaotic Engine Ducts	£212,952	Apr 2001 <sup>33</sup>
GKN Westland Helicopters	Towards Robust and Cost Effective Approaches to Rotorcraft Design: DARP	£136,400	Nov 2004 <sup>34</sup>
EPSRC, BAE Systems (Strategic Partnership) and others	Autonomous Learning Agents for Decentralised Data and Information Networks (ALADDIN).  Involves:  <ul style="list-style-type: none"> <li>• Imperial College London</li> <li>• University of Southampton</li> <li>• University of Bristol</li> <li>• Oxford University</li> </ul> Under scheme University of Southampton received £5,469,161 for Decentralised Data and Information Systems Research	£?	2005 - 2010 <sup>35</sup>

### **Mechanical Engineering**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
EPSRC, Rolls-Royce Plc and others	The Ultrasonic Detectability and Sizing of Rough, Partially Closed Cracks in Real Structures	£214,115	Jan 2003 - Sep 2006 <sup>36</sup>
Rolls-Royce Plc	Acoustic Emission for the Localisation of Damaged Regions in Structures as part of the NDE Process	£24,000	Mar 2004 Onwards <sup>37</sup>
EPSRC, Rolls-Royce Plc and others	Accoustic Emission for the Localisation of Damaged Regions in Structures as Part of the NDE Process	£165,033	Sep 2004 - Aug 2007 <sup>38</sup>
Ministry of Defence	Innovative Valve Study	£35,000	Jan 2005 Onwards <sup>39</sup>
EPSRC, Rolls-Royce Plc, QinetiQ Ltd and others	Reliable Measurement of Residual Stress in Large Engineering Components	£186,501	Jan 2005 - Dec 2007 <sup>40</sup>
Rolls-Royce Plc	Flexible Arrays	£23,000	Aug 2005

			Onwards <sup>41</sup>
Ministry of Defence	Multiscale Approaches to Enhance Materials Performance	£487,674	Oct 2005 Onwards <sup>42</sup>
EPSRC, BAE Systems Advanced Technology Centre and others	Efficient Structural Health Monitoring Using Sparse Distributed Sensor Arrays	£206,026	Jan 2006 - Dec 2008 <sup>43</sup>
Ministry of Defence	Shock Tolerant Actuator Mounting	£24,779	Feb 2006 Onwards <sup>44</sup>
EPSRC, QinetiQ Ltd and others	Kissing Bonds in Adhesive Joints: a Holistic Approach for Nonlinear Ultrasonic Detection, Joint Mechanics and Surface Chemistry	£114,037	Oct 2006 - Sep 2009 <sup>45</sup>
EPSRC, Westland Helicopters Ltd and others	The Adaptive Control of Generalised Dynamically Substructured Systems	£492,949	Nov 2006 - Oct 2009 <sup>46</sup>

### **Experimental Psychology**

Source/ Sponsor/ Partner	Project	Amount	Date
QinetiQ Ltd	Cognitive Workload Assessment – Support to DARPA	£134,102	Jan 2002 Onwards <sup>47</sup>
QinetiQ Ltd	Measurement and Analysis of EEG Activity and Behavioural Data Collected in Response to a Dual Task Procedure	£32,958	Mar 2002 Onwards <sup>48</sup>
QinetiQ Ltd	Work Associated with DARPA	£5,181	Apr 2002 Onwards <sup>49</sup>
EPSRC, QinetiQ Ltd and Dstl (Farnborough)	Computational Model & Psychophysical Validation of Perceived Differences between Natural Visual Images	£147,083	Mar 2004 - Feb 2007 <sup>50</sup>
GKN Westland Helicopters	Wireless Intelligent Sensing Devices for Health Monitoring	£419,911	Apr 2005 Onwards <sup>51</sup>

### **Clinical Science at South Bristol**

Source/ Sponsor/ Partner	Project	Amount	Date
QinetiQ Ltd	Studies of the Behavioural Effects of Fear - Performance Measures	£35,392	Sept 2001 Onwards <sup>52</sup>
QinetiQ Ltd	Studies on the Behavioural Effects of Fear	£25,059	Jan 2003 Onwards <sup>53</sup>

### **University Fundraising Arm**

Source/ Sponsor/ Partner	Project	Amount	Date
Smiths Group Plc	Chair in Anaesthesia - donated	£125,000	Since 2001



	through Bristol's fundraising arm		Onwards <sup>54</sup>
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### **School for Policy Studies**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
Ministry of Defence	MoD Postgraduate Research Fellowship	£32,620	Feb 2001 Onwards <sup>55</sup>

### **Interface Analysis Centre**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
Ministry of Defence	Environmental Remediation of Heavy Metals and Radionuclides	£171,659	Feb 2006 Onwards <sup>56</sup>

### **Governance Research Centre**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
Ministry of Defence	Potential Generic Adversaries Report	£39,110	Dec 2002 Onwards <sup>57</sup>

### **Division of Farm Animal Science**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
Defence Science Technology Laboratory	Canine Olfaction Programme	£14,339	Jun 2003 Onwards <sup>58</sup>
Defence Science Technology Laboratory	Research into the Tracking and Trailing of Dogs	£35,110	Oct 2003 Onwards <sup>59</sup>
Defence Science Technology Laboratory	Enhanced Canine Handler Selection	£142,690	Jan 2004 Onwards <sup>60</sup>
Defence Science Technology Laboratory	Research on Detection Dog Selection Procedures	£8,598	Feb 2004 Onwards <sup>61</sup>
Defence Science Technology Laboratory	Dog Husbandry and Housing	£89,650	Apr 2004 Onwards <sup>62</sup>
Defence Science Technology Laboratory	Extension - Enhanced Canine Handler Selection	£21,865	Oct 2005 Onwards <sup>63</sup>

### **Community Based Medicine**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
Defence Science Technology Laboratory	Analysis of Sleep Recordings	£15,000	Jul 2003 <sup>64</sup>

## **Geographical Sciences**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
Defence Evaluation & Research Agency	Assessments of Gaung: A Satellite/ GIS Based Surface Saturation Retrieval Methodology	£14,999	Jan 2001 <sup>65</sup>

## **Miscellaneous**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
BAE Systems	?	£40,853	FY 2000/ 2001 <sup>66</sup>
BAE Systems	?	£0	FY 2001 to 2005 <sup>67</sup>
Boeing	?	£0	FY 2000 to 2005 <sup>68</sup>
Cobham Plc	?	£0	FY 2000 to 2005 <sup>69</sup>
European Aeronautical Defence & Space Company	?	£0	FY 2000 to 2005 <sup>70</sup>
Finmeccanica	?	£0	FY 2000 to 2005 <sup>71</sup>
GKN Plc	?	£38,681	FY 2000/ 2001 <sup>72</sup>
GKN Plc	?	£36,966	FY 2001/ 2002 <sup>73</sup>
GKN Plc	?	£0	FY 2002 to 2004 <sup>74</sup>
GKN Plc	?	£41,297	FY 2004/ 2005 <sup>75</sup>
QinetiQ	?	£0	FY 2000/ 2001 <sup>76</sup>
QinetiQ	?	£325,676	FY 2001/ 2002 <sup>77</sup>
QinetiQ	?	£380,308	FY 2002/ 2003 <sup>78</sup>
QinetiQ	?	£366,872	FY 2003/ 2004 <sup>79</sup>
QinetiQ	?	£425,998	FY 2004/ 2005 <sup>80</sup>
Rolls-Royce	?	£11,750	FY 2000/ 2001 <sup>81</sup>
Rolls-Royce	?	£0	FY 2001 to 2004 <sup>82</sup>
Rolls-Royce	?	£95,471	FY 2004/ 2005 <sup>83</sup>
Smiths Group Plc	?	£0	FY 2000 to

			2005 <sup>84</sup>
Thales Group	?	£0	FY 2000 to 2005 <sup>85</sup>
VT Group	?	£0	FY 2000 to 2005 <sup>86</sup>
Ministry of Defence	?	£7,294	FY 2000/ 2001 <sup>87</sup>
Ministry of Defence	?	£39,535	FY 2001/ 2002 <sup>88</sup>
Ministry of Defence	?	£17,248	FY 2002/ 2003 <sup>89</sup>
Ministry of Defence	?	£0	FY 2003 to 2005 <sup>90</sup>
Defence Science Technology Laboratory	?	£0	FY 2000 to 2002 <sup>91</sup>
Defence Science Technology Laboratory	?	£9,320	FY 2002/ 2003 <sup>92</sup>
Defence Science Technology Laboratory	?	£138,142	FY 2003 to 2004 <sup>93</sup>
Defence Science Technology Laboratory	?	£127,915	FY 2004 to 2005 <sup>94</sup>
Defence Evaluation & Research Agency	?	£486,388	FY 2000/ 2001 <sup>95</sup>
Defence Evaluation & Research Agency	?	£189,023	FY 2001/ 2002 <sup>96</sup>
Defence Evaluation & Research Agency	?	-£47,250^	FY 2002/ 2003 <sup>97</sup>
Defence Evaluation & Research Agency	?	£0	FY 2003 to 2005 <sup>98</sup>
Defence Bills Agency	?	£0	FY 2000 to 2002 <sup>99</sup>
Defence Bills Agency	?	£79,932	FY 2002/ 2003 <sup>100</sup>
Defence Bills Agency	?	£95,995	FY 2003/ 2004 <sup>101</sup>
Defence Bills Agency	?	£41,125	FY 2004/ 2005 <sup>102</sup>

## **Notation**

\* In May 2007 Smiths Group completed the sale of its aerospace business, containing the bulk of its military-related production, to General Electric.

^ Projects with '£' showed this notation in the original data source. They have not been included in the monetary total for the university.

? Denotes projects whose value we were unable to discover.

FY Financial year

## **Endnotes**

<sup>1</sup> "Defence consortium announced". [University of Bristol](http://www.bristol.ac.uk/news/2003/322). <http://www.bristol.ac.uk/news/2003/322>. 30 April 2007.

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- <sup>2</sup> "Details of Grant". Engineering and Physical Science Research Council.  
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- <sup>4</sup> Elizabeth Gabbett. Acting Information Rights Manager, University of Bristol. 11 May 2006. Sent to Fellowship of Reconciliation.
- <sup>5</sup> "Details of Grant". Engineering and Physical Science Research Council.  
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- <sup>6</sup> Elizabeth Gabbett. Acting Information Rights Manager, University of Bristol. 11 May 2006. Sent to Fellowship of Reconciliation.
- <sup>7</sup> "Details of Grant". Engineering and Physical Science Research Council.  
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- <sup>9</sup> Elizabeth Gabbett. Acting Information Rights Manager, University of Bristol. 11 May 2006. Sent to Fellowship of Reconciliation.
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- <sup>11</sup> Elizabeth Gabbett. Acting Information Rights Manager, University of Bristol. 11 May 2006. Sent to Fellowship of Reconciliation.
- <sup>12</sup> Elizabeth Gabbett. Acting Information Rights Manager, University of Bristol. 11 May 2006. Sent to Fellowship of Reconciliation.
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- <sup>15</sup> Elizabeth Gabbett. Acting Information Rights Manager, University of Bristol. 11 May 2006. Sent to Fellowship of Reconciliation.
- <sup>16</sup> "Details of Grant". Engineering and Physical Science Research Council.  
<http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=GR/T03376/01>. 27 January 2007.
- <sup>17</sup> "Press Release: Strategic partnership between Smiths, Oxford and Bristol University". Smart Composites.  
<http://users.ox.ac.uk/~pgrant/Smartcomp.html>. 27 January 2007.
- <sup>18</sup> Elizabeth Gabbett. Acting Information Rights Manager, University of Bristol. 11 May 2006. Sent to Fellowship of Reconciliation.
- <sup>19</sup> "Details of Grant". Engineering and Physical Science Research Council.  
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<http://users.ox.ac.uk/~pgrant/Smartcomp.html>. 27 January 2007.
- <sup>20</sup> "Multi-disciplinary, multi-centre project involving Sheffield, Manchester, Bristol, Cambridge, Aberystwyth, Oxford, Dundee and BAE Systems PLC". Adaptive Behaviour Research Group, Sheffield University.

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<sup>27</sup> Elizabeth Gabbett. Acting Information Rights Manager, University of Bristol. 11 May 2006. Sent to Fellowship of Reconciliation.

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<sup>31</sup> Elizabeth Gabbett. Acting Information Rights Manager, University of Bristol. 11 May 2006. Sent to Fellowship of Reconciliation.

<sup>32</sup> Elizabeth Gabbett. Acting Information Rights Manager, University of Bristol. 11 May 2006. Sent to Fellowship of Reconciliation.

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<sup>35</sup> "Multi-disciplinary, multi-centre project involving Southampton, Imperial, Oxford, Bristol and BAE Systems PLC". Autonomous Learning Agents for Decentralised Data and Information Networks (ALADDIN). <http://www.aladdinproject.org/>. 27 January 2007. And; "Details of Grant". Engineering and Physical Science Research Council. <http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=EP/C548051/1>. 27 January 2007.

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- <sup>43</sup> "Details of Grant". [Engineering and Physical Science Research Council](http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=EP/C541960/1). <http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=EP/C541960/1>. 27 January 2007.
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*“BAE Systems is the latest company to join the Corporate Liaison Programme. This builds upon multiple research collaborations already established between the company and the University of Cambridge in a variety of fields. In fact, BAE Systems represented the second largest industrial sponsor of research in the aerospace sector within the University in 2002/3.”<sup>1</sup>*

- Cambridge University Website

## Cambridge University 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)
283	£42,565,637	a) 1st  b) 3rd	1) Rolls Royce  2) EPSRC  3) QinetiQ	1) Engineering  2) Physics  3) Metallurgy

### School of Engineering

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, British Aerospace Defence Ltd, Caterpillar (UK) Ltd, ASTRIUM, Westland Helicopters Ltd, Rolls Royce Plc and others	Cambridge Engineering Design Centre (EDC)	£1,821,682	Oct 1997 – Sept 2001 <sup>2</sup>
EPSRC, Rolls Royce Plc and others	Industrial Make vs Buy Decisions	£155,482	Jan 1998 – Jan 2001 <sup>3</sup>
EPSRC, BAE Systems Operations Ltd and others	Strategic Technology Management: Linking Technology Resources to Company Objectives	£271,948	Apr 1998 – July 2001 <sup>4</sup>
EPSRC and Rolls Royce Plc	Predicting Wake-Passing Transition in Turbomachinery using an Intermittency-Conditioned Modelling Approach	£173,414	June 1998 – May 2001 <sup>5</sup>
EPSRC, Rolls Royce Plc and others	Joint Research Equipment Initiative [JREI]: Application of Laser Doppler Anemometry to Turbomachinery External Aerodynamic and Combustion	£70,441	June 1998 – May 2001 <sup>6</sup>

Source/ Sponsor/ Partner	Project	Amount	Dates
	Flows		
EPSRC, GKN Westland Design Services Ltd and others	Signposting Tool to Assist Risk - Reduced Tendering	£210,113	Sept 1998 – Sept 2001 <sup>7</sup>
EPSRC and Rolls Royce Plc	Effects of Unsteadiness on Transistion and Laminar Separation in Turbomachines	£116,823	Jan 1999 – Dec 2001 <sup>8</sup>
EPSRC and BAE Systems	DARP: Shock Boundary Layer Interaction: Direct Simulation and Experiment	£67,953	Oct 1999 – Sept 2002 <sup>9</sup>
EPSRC and Rolls Royce Plc	DARP: Development of Prediction Methods for Turbine Blade Heat Transfer and Film Cooling Flows	£158,045	Jan 2000 – Dec 2002 <sup>10</sup>
EPSRC, GKN Westland Aerospace (IoW) and others	IMI Manufacturing Infrastructure Development in the Aerospace Sector (MIDAS - Part Ii)	£122,122	Mar 2000 – Sept 2001 <sup>11</sup>
EPSRC, BAE Systems Plc, Ministry of Defence and others	Draping of Engineering Prepregs and Reinforced Thermoplastics (DEPART). Programme run jointly with University of Nottingham	£169,682	Mar 2000 – Mar 2003 <sup>12</sup>
EPSRC, Westland Helicopters Ltd and Thales Underwater Systems Ltd	Transonic Helicopter Noise	£180,458	Mar 2000 – Sept 2003 <sup>13</sup>
EPSRC, Rolls Royce Plc and others	IMI: DARP: Knowledge Capture, Sharing Reuse in the Design Process (KCSR)	£167,883	May 2000 – Sept 2001 <sup>14</sup>
EPSRC, Rolls Royce Plc and others	ESR21: Oscillations in Staged Premixed Combustors	£191,468	May 2000 – Apr 2003 <sup>15</sup>
EPSRC, Rolls Royce Plc and others	The Effect of Enterprise Context upon Manufacturing Leadership Behaviour	£84,218	Oct 2000 – Mar 2004 <sup>16</sup>
EPSRC, Honeywell Inc and GKN Automotive Ltd	Global Manufacturing Virtual Networks: A New Architecture for Manufacturing Systems	£407,964	Nov 2000 – Oct 2003 <sup>17</sup>
EPSRC, Dstl and British Aerospace Plc	A Unified Approach to the Assessment of Structural Integrity with Application to Optimal Design	£191,962	Nov 2000 – Aug 2004 <sup>18</sup>
EPSRC,	Towards World Class	£122,442	Mar to Sept 2001 <sup>19</sup>

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
BAE Systems Plc and others	Performance in Planning, Scheduling & Control: from Progress Chasers to Responsive Teams		
EPSRC and Rolls Royce Plc	Stability and Transition to Turbulence of Flows Around Rotating Cones	£162,153	Mar 2001 - June 2004 <sup>20</sup>
EPSRC, DERA, Rolls Royce Plc and others	The Relationship between Heat Transfer and Aerodynamics for Film-Cooled Axial Turbine Tip-Clearance Flow	£104,124	Mar 2001 - Dec 2004 <sup>21</sup>
EPSRC, GEC – Marconi, GKN Automotive Ltd and Rolls Royce Plc	Manufacturing Futures	£252,723	April to Sept 2001 <sup>22</sup>
EPSRC, Rolls Royce Plc, BAE Systems Plc and others	Communication and Design Process Planning for New Product Development (COMMAND PLAN)	£358,410	Oct to Dec 2001 <sup>23</sup>
EPSRC, BAE Systems and others	Cambridge Engineering Design Centre	£4,350,001	Oct 2001 - Sept 2006 <sup>24</sup>
EPSRC, QinetiQ Plc, Rolls Royce Plc, GKN Plc, BAE Systems and others	Cambridge Manufacturing and Technology Centre	£2,950,005	Oct 2001 - Sept 2006 <sup>25</sup>
EPSRC, Rolls Royce Plc and others	Combustion Dynamics	£172,848	Jan 2002 – Dec 2003 <sup>26</sup>
EPSRC and Rolls Royce Plc	Professorship of Experimental Combustion	£501,589	Dec 2002 – Sept 2005 <sup>27</sup>
EPSRC and BAE Systems Plc	Innovative Manufacturing Technology Research Centre	£2,577,534	July 2003 – Mar 2007 <sup>28</sup>
EPSRC and Rolls Royce Plc	Jet Noise	£171,135	Oct 2003 – Mar 2007 <sup>29</sup>
EPSRC, BAE Systems Operations Ltd, QinetiQ Ltd, Rolls Royce Plc and others	DARP: Unsteady Aerodynamics Prediction and Simulation for Airframe and Turbomachinery Applications (PUMA) DARP	£143,678	Dec 2003 – Nov 2006 <sup>30</sup>
EPSRC, QinetiQ Ltd and others	Design Optimisation of Textile Composite Structures (DotComp)	£211,954	Jan 2004 – Dec 2006 <sup>31</sup>

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
BAE Systems	BAE-RR (UTP) University Technology Partnership Research Programme	£35,087	Between Aug 2004 and July 2005 <sup>32</sup>
BAE Systems	Synthesis and Characterisation of 3-Dimensional Nanostructures, Student Grant	£11,250	Between Aug 2004 and July 2005 <sup>33</sup>
BAE Systems	Magnetic Properties of Novel Carbon Materials	£1,847	Between Aug 2004 and July 2005 <sup>34</sup>
BAE Systems (Operations) Ltd	Computer Generated Holograms for Generating Symbols and Images. Student Grant	£9,489	Between Aug 2004 and July 2005 <sup>35</sup>
BAE Systems (Operations) Ltd	BAE Systems/ Cambridge Support Solutions Partnership - Service and Support Engineering and Management/ 1 - 3	£89,165	Between Aug 2004 and July 2005 <sup>36</sup>
BAE Systems (Operations) Ltd	Holographic Techniques to Increase Viewing Angle	£5,593	Between Aug 2004 and July 2005 <sup>37</sup>
DARPA (USA)	HTK Rich Audio Transcription	£498,742	Between Aug 2004 and July 2005 <sup>38</sup>
Defence Research Agency (MoD)	Blind Signal Separation Study	£3,985	Between Aug 2004 and July 2005 <sup>39</sup>
Defence Research Agency (MoD)	Flight Control for Flexible Aircraft	£3,246	Between Aug 2004 and July 2005 <sup>40</sup>
Dstl	Submarine Simulation Model for Specification Model for Specification/ Optimisation of Hybrid Power Sources	£1,181	Between Aug 2004 and July 2005 <sup>41</sup>
Dstl	System Modelling VTB and MATLAB	£14,496	Between Aug 2004 and July 2005 <sup>42</sup>
Dstl	Development of Model Predictive Control to Include Set-Point Uncertainty	£17,915	Between Aug 2004 and July 2005 <sup>43</sup>
Dstl	Deployable Structures Research	£5,000	Between Aug 2004 and July 2005 <sup>44</sup>
EADS Astrium Ltd	Large Deployable SAR Reflector Technology	£359	Between Aug 2004 and July 2005 <sup>45</sup>
EADS Astrium Ltd	GTSP Low Frequency Antenna Technology Study	£19,062	Between Aug 2004 and July 2005 <sup>46</sup>
EADS Astrium Ltd	BNSC Low Cost Hinge Development Study	£2,872	Between Aug 2004 and July 2005 <sup>47</sup>
EADS Astrium Ltd	Membrane Antenna:- Mechanically Deployed	£61	Between Aug 2004 and July 2005 <sup>48</sup>

Source/ Sponsor/ Partner	Project	Amount	Dates
	Superstructure		
Office of Naval Research via University of California	Mechatronic Materials and Systems	£54,699	Between Aug 2004 and July 2005 <sup>49</sup>
US - Office of Naval Research International Field Office	Science and Design of Blast Resistant Sandwich Structures	£103,850	Between Aug 2004 and July 2005 <sup>50</sup>
US - Office of Naval Research International Field Office	Studentship: The Science and Design of Erosion-Resistant Thermal Barrier Coatings	£271,000	Between Aug 2004 and July 2005 <sup>51</sup>
Office of Naval Research via University of California	Studentship: Optimisation Tools and Methods for VTB	£8,017	Between Aug 2004 and July 2005 <sup>52</sup>
QinetiQ	Analysis of Deployable Breadboard Booms	£5,114	Between Aug 2004 and July 2005 <sup>53</sup>
QinetiQ	Extended and Joint Object Tracking and Identification	£64,476	Between Aug 2004 and July 2005 <sup>54</sup>
QinetiQ	Robust Interpretation of Structure Information. Student Grant	£8,537	Between Aug 2004 and July 2005 <sup>55</sup>
QinetiQ	Cambridge Vehicle Dynamics Vehicle Consortium	£32,518	Between Aug 2004 and July 2005 <sup>56</sup>
QinetiQ	Validation of Aircraft Models for Flight Control, Student Grant	£7,556	Between Aug 2004 and July 2005 <sup>57</sup>
QinetiQ	Studentship: Fabrication and Characterisation of Optically Addressed Spatial Light Modulators	£11,485	Between Aug 2004 and July 2005 <sup>58</sup>
QinetiQ	Data Fusion using Particle Filters	£2,000	Between Aug 2004 and July 2005 <sup>59</sup>
Rolls Royce Plc	LES for LLP Gas Turbine Combustion Instability	£22,575	Between Aug 2004 and July 2005 <sup>60</sup>
Rolls Royce Plc	Intermediate Pressure Turbulent Combustion	£68,938	Between Aug 2004 and July 2005 <sup>61</sup>
Rolls Royce Plc	Highly Loaded Compressor Blades, CASE Student Award	£12,456	Between Aug 2004 and July 2005 <sup>62</sup>
Rolls Royce Plc	SUFCLEMP - Superconducting Fault Current Limiter for Electrical Marine Propulsion	£48,276	Between Aug 2004 and July 2005 <sup>63</sup>
Rolls Royce Plc	ATAP-10: Combustion Instability	£69,066	Between Aug 2004 and July 2005 <sup>64</sup>
Rolls Royce Plc	Flame Ignition and Stability in a Gas Turbine Combustion. CASE Studentship	£10,286	Between Aug 2004 and July 2005 <sup>65</sup>
Rolls Royce Plc	Modelling Ignition and Autoignition in Two-Phase	£8,409	Between Aug 2004 and July 2005 <sup>66</sup>

Source/ Sponsor/ Partner	Project	Amount	Dates
	Flows. CASE Studentship		
Rolls Royce Plc	Computational Design for Gas Turbine Combustion Systems. RR Case Studentship	£5,193	Between Aug 2004 and July 2005 <sup>67</sup>
Rolls Royce Plc	Infrastructure to Design and Optimise Cooled Turbine Components	£10,614	Between Aug 2004 and July 2005 <sup>68</sup>
Rolls Royce Plc	Water-Injected and Wet Cycles: Industrial Case Studentship	£6,037	Between Aug 2004 and July 2005 <sup>69</sup>
Rolls Royce Plc	Development and Testing of High -Speed Valves	£88	Between Aug 2004 and July 2005 <sup>70</sup>
Rolls Royce Plc	LP Turbine Blading Studies	£13,707	Between Aug 2004 and July 2005 <sup>71</sup>
Rolls Royce Plc	Fuel Cell Offgas Burner. Student Grant	£16,633	Between Aug 2004 and July 2005 <sup>72</sup>
Rolls Royce Plc	Low Noise Fan OGV Design. Student Grant	£24,165	Between Aug 2004 and July 2005 <sup>73</sup>
Rolls Royce Plc	Jet Noise Studentship	£2,387	Between Aug 2004 and July 2005 <sup>74</sup>
Rolls Royce Plc	ATAP-10 IP Turbine	£182,781	Between Aug 2004 and July 2005 <sup>75</sup>
Rolls Royce Plc	Completion of Core Compressor Stability Work. Student Grant	£2,756	Between Aug 2004 and July 2005 <sup>76</sup>
Rolls Royce Plc	Investigation of Combustion and Instabilities in New Generation Injectors	£5,524	Between Aug 2004 and July 2005 <sup>77</sup>
Rolls Royce Plc	RCSC9 Air Platform Propulsion Technology Research	£8,239	Between Aug 2004 and July 2005 <sup>78</sup>
Rolls Royce Plc	ATAP-10: Altitude Relight and Pullaway	£83,736	Between Aug 2004 and July 2005 <sup>79</sup>
Rolls Royce Plc	ATAP-10: Enhanced Performance Through Aerodynamics: Optimisation of New Generation of Injectors	£50,599	Between Aug 2004 and July 2005 <sup>80</sup>
Rolls Royce Plc	ATAP-10: HP Turbine Aerodynamic Research - Shroud Designs	£23,517	Between Aug 2004 and July 2005 <sup>81</sup>
Rolls Royce Plc	Rich Combustion of Kerosene in Porous Media	£2,000	Between Aug 2004 and July 2005 <sup>82</sup>
Rolls Royce Plc	Investigation of Instabilities in Fuel Cell Combustor System	£2,572	Between Aug 2004 and July 2005 <sup>83</sup>
Rolls Royce Plc	Three Dimensional Unsteady	£10,383	Between Aug 2004

Source/ Sponsor/ Partner	Project	Amount	Dates
	Flows in Compressors. Student Grant		and July 2005 <sup>84</sup>
Rolls Royce Plc	Analysis and Optimisation of Humidified Power Cycles. Student Grant	£7,890	Between Aug 2004 and July 2005 <sup>85</sup>
Rolls Royce Plc	Profiled End Walls in Compressors	£8,563	Between Aug 2004 and July 2005 <sup>86</sup>
Rolls Royce Plc	CASE Studentship: Modelling Fuel Cell Offgas Combustor	£5,015	Between Aug 2004 and July 2005 <sup>87</sup>
Rolls Royce Plc	CFD Mesh Generation	£8780	Between Aug 2004 and July 2005 <sup>88</sup>
Rolls Royce Plc	Turbo Machinery Aerothermal Dynamics (UTC) University Technology Centre	£696	Between Aug 2004 and July 2005 <sup>89</sup>
Rolls Royce Plc	The British Aerospace: Rolls Royce University Technology Partnership for Design	£40,165	Between Aug 2004 and July 2005 <sup>90</sup>
Rolls Royce Plc	Interactions of Intakes and Fans	£12,472	Between Aug 2004 and July 2005 <sup>91</sup>
Rolls Royce Plc	Aerodynamic Behaviour and Design of Bleed Slots	£12,323	Between Aug 2004 and July 2005 <sup>92</sup>
Rolls Royce Plc	3D Separations in Compressors - Part 2	£18,554	Between Aug 2004 and July 2005 <sup>93</sup>
Rolls Royce Plc	Particulate and Vapour Deposition in Gas Turbines Fired on Coal-Derived Gases	£241	Between Aug 2004 and July 2005 <sup>94</sup>
Rolls Royce Plc	Engine Rag Cavity Calculation	£438	Between Aug 2004 and July 2005 <sup>95</sup>
Rolls Royce Plc	DTI/ RR Fans Collaborative Research Programme (2 grants)	£9,084	Between Aug 2004 and July 2005 <sup>96</sup>
Rolls Royce Plc	DTI/ RR Hydra-Computational Fluid Dynamics for Design and Optimisation of the Low Pressure Compression System	£16,694	Between Aug 2004 and July 2005 <sup>97</sup>
Rolls Royce Plc	Compressors Systems Technology Acquisition and Research	£85,208	Between Aug 2004 and July 2005 <sup>98</sup>
Rolls Royce Plc	UGTP Master Budget Part 1 Infrastructure	£200,673	Between Aug 2004 and July 2005 <sup>99</sup>
Rolls Royce Plc	RR Turbine Leakage (04/01 – 03/04)	£556	Between Aug 2004 and July 2005 <sup>100</sup>
Rolls Royce Plc	RR Compressor System	£0	Between Aug 2004 and July 2005 <sup>101</sup>



<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
Rolls Royce Plc	Studentship	£6,524	Between Aug 2004 and July 2005 <sup>102</sup>
Rolls Royce Plc	Solid Oxide Fuel Cell Modelling. Student Grant	£5,712	Between Aug 2004 and July 2005 <sup>103</sup>
Rolls Royce Plc	Trent 900 IP Turbine Research	£2,436	Between Aug 2004 and July 2005 <sup>104</sup>
Rolls Royce Plc	RR Combustion Dynamics JREI (Joint Research Equipment Initiative)	£242	Between Aug 2004 and July 2005 <sup>105</sup>
Rolls Royce Plc	Professorship of Aerothermal Technology	£505,741	Between Aug 2004 and July 2005 <sup>106</sup>
Rolls Royce Plc	CASE Top-Up: CFD and Modelling of Turbulent Combustion. Student Grant	£4,667	Between Aug 2004 and July 2005 <sup>107</sup>
Rolls Royce Plc	Combustion Instabilities Support (Muscles, ICLEAC, LOPOCOTEP)	£2,247	Between Aug 2004 and July 2005 <sup>108</sup>
Rolls Royce Plc	Trent 900 High-Aspect Ratio Rotor for IP Turbine Rig	£6,992	Between Aug 2004 and July 2005 <sup>109</sup>
Rolls Royce Plc	Design and Investigation of Turbulent Combustor. CASE Top Up, Student Grant	£1,307	Between Aug 2004 and July 2005 <sup>110</sup>
Rolls Royce Plc	Pressure-Gain Combustion in Gas Turbine	£17,674	Between Aug 2004 and July 2005 <sup>111</sup>
Rolls Royce Plc	UGTP CFD Support	£7,407	Between Aug 2004 and July 2005 <sup>112</sup>
Rolls Royce Plc	Hydra Solo Travel Support	£3,792	Between Aug 2004 and July 2005 <sup>113</sup>
Rolls Royce Plc	Extension: Student Grant	£2,580	Between Aug 2004 and July 2005 <sup>114</sup>
Rolls Royce Plc	Studentship: Integrated Products and Services (IPAS)	£21,609	Between Aug 2004 and July 2005 <sup>115</sup>
Rolls Royce Plc	Compressor Leading Edges. Student Grant	£13,553	Between Aug 2004 and July 2005 <sup>116</sup>
Rolls Royce Plc	Whittle Lab Infrastructure Support 2005	£82,814	Between Aug 2004 and July 2005 <sup>117</sup>
Rolls Royce Plc	Kausis Consultancy: Advice on Combustion Technologies	£11,026	Between Aug 2004 and July 2005 <sup>118</sup>
Rolls Royce Plc	Pressure Gain Combustor	£678	Between Aug 2004 and July 2005 <sup>119</sup>
Rolls Royce Industrial and Marine Gas Turbines Ltd	Aspirated Compressors. CASE Student Top-Up	£8,160	Between Aug 2004 and July 2005 <sup>120</sup>

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
US Navy	Micromechanics-Based Design of Sandwich Panels. Student Grant	£30,633	Between Aug 2004 and July 2005 <sup>121</sup>
US Navy	Advanced Thermal Management Concepts with Micro-Architectural Materials	£63,884	Between Aug 2004 and July 2005 <sup>122</sup>
US Navy	Cellular Foam Sound Absorbers for Controlling Combustion Instability and Naval Shin Noise	£125,759	Between Aug 2004 and July 2005 <sup>123</sup>
US Navy	Discussion Meeting on Discrete Dislocation Plasticity	£366	Between Aug 2004 and July 2005 <sup>124</sup>
US Navy	Synthetic Multifunctional Materials	£1,464	Between Aug 2004 and July 2005 <sup>125</sup>
EPSRC, Rolls Royce Plc and others	An Experimental Study of Unsteady Wake-Induced Boundary Layer Transition in Turbomachinery	£171,248	Oct 2005 - Sept 2008 <sup>126</sup>
EPSRC, QinetiQ Ltd and others	Active Multi-Axle Steering of Heavy Goods Vehicles	£511,248	Jan 2006 - Jan 2009 <sup>127</sup>
EPSRC, Thales Research Ltd and others	Smart Infrastructure: Wireless Sensor Network System for Condition Assessment and Monitoring of Infrastructure	£777,034	Oct 2006 - Sept 2009 <sup>128</sup>

### **School of Physics**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
AWE	Piezo-Electric Probes, Fundamentals and Application. Student Grant	£8387	Between Aug 2004 and July 2005 <sup>129</sup>
AWE	Hopkinson Bar Data for Steels	£353	Between Aug 2004 and July 2005 <sup>130</sup>
AWE Plc	CASE Studentship	£5,394	Between Aug 2004 and July 2005 <sup>131</sup>
AWE Plc	Mechanical Properties and Microstructural Characterisation of PBX's	£73,982	Between Aug 2004 and July 2005 <sup>132</sup>
AWE Plc	Gas Gun Experiments for 'Effect of Protective Padding on Lateral Stress Gauge Measurements'	£4,780	Between Aug 2004 and July 2005 <sup>133</sup>
AWE Plc	Taylor Impact of Heated Specimens	£3,610	Between Aug 2004 and July 2005 <sup>134</sup>
AWE Plc	Porous Graphite - Material Studies	£4,356	Between Aug 2004 and July 2005 <sup>135</sup>

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
AWE Plc	Characterisation of Sand: Grain Size and Humidity	£692	Between Aug 2004 and July 2005 <sup>136</sup>
AWE/ Hunting- BRAE Ltd	Microstructural Studies of PBX Formulations	£757	Between Aug 2004 and July 2005 <sup>137</sup>
AWE/ Hunting- BRAE Ltd	Shock Properties of Granular Materials	£33	Between Aug 2004 and July 2005 <sup>138</sup>
DARPA via University of Leeds	Vertical Cavity Silicon - Geranium Quantum	£37,940	Between Aug 2004 and July 2005 <sup>139</sup>
Defence Research Agency (MoD)	The Physical Characteristics of Cryogenic Formulations (2 separate grants)	£4,989	Between Aug 2004 and July 2005 <sup>140</sup>
Defence Research Agency (MoD)	Dynamic Properties of Concretes and Cements (2 separate grants)	£1,309	Between Aug 2004 and July 2005 <sup>141</sup>
Dstl	Energetic Materials Research	£27,475	Between Aug 2004 and July 2005 <sup>142</sup>
Dstl	Assistance in Instrumenting Targets for Trial (2 separate grants)	£3,437	Between Aug 2004 and July 2005 <sup>143</sup>
Dstl	Research Collaboration: Mechanical Properties of PBX's for Constitutive Model Development	£24,911	Between Aug 2004 and July 2005 <sup>144</sup>
Dstl	Flash Powder Studies	£13,568	Between Aug 2004 and July 2005 <sup>145</sup>
Dstl	Shock Response of Ceramics	£2,793	Between Aug 2004 and July 2005 <sup>146</sup>
Dstl	Mechanical Properties of PBX's for Constitutive Model Development	£8,543	Between Aug 2004 and July 2005 <sup>147</sup>
QinetiQ	High Strain Rate Testing of Materials, Including Studentship (3 separate grants)	£17,895 (£13,932 for Studentship)	Between Aug 2004 and July 2005 <sup>148</sup>
QinetiQ	Fellowship	£110,330	Between Aug 2004 and July 2005 <sup>149</sup>
QinetiQ	Research Studying the Measurement of the Dynamic Properties of Concretes and Cements Using Plate Impact Tests	£2,258	Between Aug 2004 and July 2005 <sup>150</sup>
QinetiQ	Provision of VISAR for Use at Fort Halstead	£1,229	Between Aug 2004 and July 2005 <sup>151</sup>
QinetiQ	Shock Physics of Materials for Hydrocode Research: The Functioning of Impact Triggers	£1,878	Between Aug 2004 and July 2005 <sup>152</sup>

Source/ Sponsor/ Partner	Project	Amount	Dates
	(2 separate grants)		
QinetiQ	High Velocity Impact of Materials	£1,346	Between Aug 2004 and July 2005 <sup>153</sup>
QinetiQ	Research for Second Stage Microthruster Proof Concept Research	£958	Between Aug 2004 and July 2005 <sup>154</sup>
QinetiQ	Initiation on Novel Explosives using Laser Ignition	£1,054	Between Aug 2004 and July 2005 <sup>155</sup>
QinetiQ	New Impact Erosion Resistance Materials	£479	Between Aug 2004 and July 2005 <sup>156</sup>
QinetiQ	Impact Erosion Resistance of CVD Diamond and Coated Optics	£4,204	Between Aug 2004 and July 2005 <sup>157</sup>
US Army	Plasma - Propellant Interactions (2 separate grants)	£7,946	Between Aug 2004 and July 2005 <sup>158</sup>
US Army	Silicon Quantum Information Processing	£32,498	Between Aug 2004 and July 2005 <sup>159</sup>
US Navy	Shock Properties of Sand	£580	Between Aug 2004 and July 2005 <sup>160</sup>

**School of Applied Mathematics and Theoretical Physics, Pure Applied Mathematics and Theoretical Physics, and Mathematical Statistics**

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC and Rolls Royce Plc	A Mathematical Investigation of Resonant Phenomena in Gas Turbines	£112,057	Jun 1998 - Dec 2001 <sup>161</sup>
EPSRC and Rolls Royce Plc	Development and Validation of Aeroacoustic Models for Fan Noise	£124,143	Apr 1999 - Dec 2002 <sup>162</sup>
AWE Plc	William Pennt Fellowship: Mixing in Stratified Flows	£16,999	Between Aug 2004 and July 2005 <sup>163</sup>
AWE Plc	Case Studentship - Arrays of Interacting Thermals	£5,171	Between Aug 2004 and July 2005 <sup>164</sup>
AWE Plc	Case Studentship - Monotone Integrated Large Eddy Simulations or Turbulent Convective Flows	£5,170	Between Aug 2004 and July 2005 <sup>165</sup>
BAE Systems	Radar Backscattering for Statistically Rough Surfaces	£346	Between Aug 2004 and July 2005 <sup>166</sup>
Office of Naval Research	Detection of Submerged Sound Sources (NICOPS)	£13,081	Between Aug 2004 and July 2005 <sup>167</sup>
Rolls Royce Plc	CASE Studentship: Wave Propagation and Resonance in Aeroengines	£4,055	Between Aug 2004 and July 2005 <sup>168</sup>

Source/ Sponsor/ Partner	Project	Amount	Dates
US Army	Study of Buffer Size in Internet Routers	£1,584	Between Aug 2004 and July 2005 <sup>169</sup>
US Navy	Anomalous Dynamic Failure of Composites and Sandwich Structures	£6,518	Between Aug 2004 and July 2005 <sup>170</sup>
US Navy	Dynamics of Interfaces and Structures	£9,612	Between Aug 2004 and July 2005 <sup>171</sup>
EPSRC and Rolls Royce Plc	Mathematical Modelling and Computational Engineering Prediction of Turbomachinery Broadband Noise	£187,657	Sept 2006 - Sept 2009 <sup>172</sup>
EPSRC, Boeing, Thales Research Ltd and others	Pervasive Mobile Environmental Sensor Grids	£409,416	Oct 2006 - Sept 2009 <sup>173</sup>

### **School of Chemistry**

Source/ Sponsor/ Partner	Project	Amount	Dates
AWE Plc	PhD Studentship/ Polymer Brushes as Molecular Adhesives. Student Grant	£38,107	Between Aug 2004 and July 2005 <sup>174</sup>
AWE/ Hunting- BRAE Ltd	Experimental Data Requirements for the Palladium Hydride System	£16,020	Between Aug 2004 and July 2005 <sup>175</sup>
Dstl	Studentship: Polyamine Dendrimers	£26,542	Between Aug 2004 and July 2005 <sup>176</sup>
Dstl	Fabrication of Integrated Optical Waveguides as a Precursor to the Potential Development of Microcantilever	£0	Between Aug 2004 and July 2005 <sup>177</sup>
US Navy	Vibrational Studies Using Reaction Path and Reaction Surface Hamiltonians	£1,458	Between Aug 2004 and July 2005 <sup>178</sup>
AWE Plc	Synthesising Novel Heterocyclic Systems to Study Alternatives to Isocyanates for Producing Polyurethanes	£16,555	Between Aug 2004 and July 2005 <sup>179</sup>
AWE/ Hunting- BRAE Ltd	Studentship – Novel Polyurethane Precursors	£1,235	Between Aug 2004 and July 2005 <sup>180</sup>

### **School of Chemical Engineering**

Source/ Sponsor/ Partner	Project	Amount	Dates
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Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, Rolls Royce Plc and others	Faraday: Developing a Paste Formulation Criterion	£72,333	Oct 2003 - Mar 2007 <sup>181</sup>
AWE Plc	Pyrolysis of Oils	£9,902	Between Aug 2004 and July 2005 <sup>182</sup>
Rolls Royce Plc	Industrial Case Award: Combustion Thermometry. Student Grant	£10,632	Between Aug 2004 and July 2005 <sup>183</sup>
Rolls Royce Plc	Industrial Case Award with Rolls Royce: Combustion Instabilities	£9,593	Between Aug 2004 and July 2005 <sup>184</sup>
Rolls Royce Plc	Support for the CARS System	£9,758	Between Aug 2004 and July 2005 <sup>185</sup>
EPSRC and Rolls-Royce Fuel Cell Systems Ltd	Development of a Novel Wavelength Agile Laser Sensor for Solid Oxide Fuel Cell Diagnostics	£232,864	Oct 2005 - Oct 2008 <sup>186</sup>

### **School of Materials Science and Metallurgy**

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, DARPA, European Office of Aerospace Research and Development and others	Materials Electrochemistry Research Programme. Collaborators from: <ul style="list-style-type: none"> <li>University of Nottingham and</li> <li>Imperial College London</li> </ul>	£?	Since 2000 <sup>187</sup>
EPSRC, British Aerospace, Dstl, Rolls Royce and others	Composites and Coatings Research Programme. Collaborators include: <ul style="list-style-type: none"> <li>Cranfield University</li> <li>University College London and</li> <li>University of Manchester</li> </ul> Involves an Advances EPSRC Research Fellow and a number of other students. Associate members include a Dstl employee.	£?	Since 2002 <sup>188</sup>
EPSRC and Dstl	Mechanical and Magnetic Properties of Fibre Network Materials	£?	2003 – 2006 <sup>189</sup>
EPSRC, QinetiQ Ltd and Rolls Royce Plc	DARP: Advanced Aeroengine Materials (ADAM) - Next Generation Single Crystal and Lifting Methodologies	£464,666	Apr 2003 - Sept 2007 <sup>190</sup>

Source/ Sponsor/ Partner	Project	Amount	Dates
Rolls-Royce, QinetiQ, MoD, DTI and EPSRC (DARP)	High Temperature Alloys Research Programme. Collaborators include: <ul style="list-style-type: none"> <li>University of Birmingham</li> <li>University of Manchester</li> <li>University of Swansea</li> <li>University of Oxford and</li> <li>Imperial College London</li> </ul>	£?	Since 2003 <sup>191</sup>
Dstl	Energy Absorption During Ballistic Impact of Novel, Lightweight Sandwich Panels with Metallic Fibre Cores	£?	2004 – 2007 <sup>192</sup>
DARPA via Imperial College	Near Net Shape Titanium	£396	Between Aug 2004 and July 2005 <sup>193</sup>
Dstl	Studentship: Keronite Plasma Electrolytic Oxide Coatings	£4,399	Between Aug 2004 and July 2005 <sup>194</sup>
Dstl	Studentship: Actuation of Highly Porous and Permeable Metals Made from Fibre Analysis	£7,221	Between Aug 2004 and July 2005 <sup>195</sup>
Dstl	Studentship: Research into Hybrid Stainless Steel Assemblies	£37,533	Between Aug 2004 and July 2005 <sup>196</sup>
QinetiQ	Gordon Laboratory	£5,435	Between Aug 2004 and July 2005 <sup>197</sup>
QinetiQ	Advanced Aeroengine Materials (ADAM) - Next Generation Single Crystal and Lifting Methodologies	£6,405	Between Aug 2004 and July 2005 <sup>198</sup>
QinetiQ	Studentship	£1,250	Between Aug 2004 and July 2005 <sup>199</sup>
Rolls Royce Plc	Joining A1 and Ti	£1,558	Between Aug 2004 and July 2005 <sup>200</sup>
Rolls Royce Plc	ADAM (Advances Aeroengine Materials) Next Generation Single Crystal and Lifting Methodologies	£6,776	Between Aug 2004 and July 2005 <sup>201</sup>
Rolls Royce Plc	Thermomechanical Fatigue of Single Crystal Superalloys	£3,531	Between Aug 2004 and July 2005 <sup>202</sup>
Rolls Royce Plc	Rolls Royce UTC University Technology Centre	£111,217	Between Aug 2004 and July 2005 <sup>203</sup>
US Army	Modelling of Percolation in Carbon Nanotube Polymer Composites	£25,524	Between Aug 2004 and July 2005 <sup>204</sup>

### **School of Physiology**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
EPSRC, QinetiQ Ltd and Dstl (Farnborough)	Computational Model and Psychophysical Validation of Perceived Differences between Natural Visual Images	£159,135	Mar 2004 - July 2007 <sup>205</sup>
Defence Research Agency (MoD)	Human Visual Parameters of Volumetric Imaging	£13,312	Between Aug 2004 and July 2005 <sup>206</sup>

### **School of Biochemistry**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
Defence Research Agency (MoD)	Development of Molecular Tools for the Analysis of Bacillus	£209	Between Aug 2004 and July 2005 <sup>207</sup>

### **School of Biotechnology**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
Dstl	Synthesis of DNA MIMICSN - Amendment 2 Onwards	£3,556	Between Aug 2004 and July 2005 <sup>208</sup>
Dstl	Investigate the Use of Smart Polymers for the Detection of Liquid Chemical Warfare (CW) Agents Couples	£17,515	Between Aug 2004 and July 2005 <sup>209</sup>

### **School of Veterinary Medicine**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
Dstl	Analysis of Humoral and Cell Mediated Immunity in MCE Vaccinated with Francisella Tularensis LVS	£5,432	Between Aug 2004 and July 2005 <sup>210</sup>

### **Computer Laboratory (Computer Science)**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
Thales Research and Technology UK Ltd	Studentship: Shared Media Spaces for Remote Collaboration	£7,930	Between Aug 2004 and July 2005 <sup>211</sup>

### **School of Earth Sciences**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
QinetiQ	Accurate Refraction Modelling in Complex 3D Media	£78	Between Aug 2004 and July 2005 <sup>212</sup>



## **Isaac Newton Institute**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
Office of Naval Research International Field Office	Entanglement and Transfer of Quantum Information Conference	£10,416	Between Aug 2004 and July 2005 <sup>213</sup>

## **School of Public Health and Primary Care**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
QinetiQ	Defence Technology for Health Histopathology Database Management System Demonstrator	£1,184	Between Aug 2004 and July 2005 <sup>214</sup>

## **Miscellaneous**

<b>Source/ Sponsor/ Partner</b>	<b>Amount</b>	<b>Dates</b>
Atomic Weapons Establishment (9 separate grants)	£219,047	2001 to 2002 <sup>215</sup>
Atomic Weapons Establishment (15 separate grants)	£210,010	2004 to 2005 <sup>216</sup>
Atomic Weapons Establishment Plc (9 separate grants)	£220,405	2000 to 2001 <sup>217</sup>
Atomic Weapons Establishment Plc (14 separate grants)	£190,168	2002 to 2003 <sup>218</sup>
Atomic Weapons Establishment Plc (16 separate grants)	£204,633	2003 to 2004 <sup>219</sup>
Atomic Weapons Establishment/ Hunting - BRAE Ltd (2 separate grants)	£44,980	2000 to 2001 <sup>220</sup>
Atomic Weapons Establishment/ Hunting - BRAE Ltd (2 separate grants)	£41,112	2001 to 2002 <sup>221</sup>
BAE Systems	£16,874	2001 to 2002 <sup>222</sup>
BAE Systems (5 separate grants)	£220,494	2002 to 2003 <sup>223</sup>
BAE Systems (5 separate grants)	£113,452	2003 to 2004 <sup>224</sup>
BAE Systems (6 separate grants)	£152,085	2004 to 2005 <sup>225</sup>
BAE Systems (Land and Sea Systems) Ltd	£35,998	2001 to 2002 <sup>226</sup>
British Aerospace (3 separate grants)	£159,944	2000 to 2001 <sup>227</sup>
British Aerospace (3 separate grants)	£97,722	2001 to 2002 <sup>228</sup>
DARPA (3 separate grants)	£537,079	2004 to 2005 <sup>229</sup>
DARPA (USA)	£7,384	2000 to 2001 <sup>230</sup>
DARPA (USA) (3 separate grants)	£114,437	2001 to 2002 <sup>231</sup>
DARPA (USA) (2 separate grants)	£658,294	2002 to 2003 <sup>232</sup>
DARPA (via Imperial College)	£36,719	2001 to 2002 <sup>233</sup>
DARPA (via University of Leeds)	£18,282	2001 to 2002 <sup>234</sup>
DARPA via Leeds University	£27,485	2002 to 2003 <sup>235</sup>
Defence Advance Research Projects Agency (3 separate grants)	£725,295	2003 to 2004 <sup>236</sup>

<b>Source/ Sponsor/ Partner</b>	<b>Amount</b>	<b>Dates</b>
Defence Finance and Accounting Service	£22,881	2004 to 2005 <sup>237</sup>
Defence Research Agency (MOD) (42 separate grants)	£1,110,624	2000 to 2001 <sup>238</sup>
Defence Research Agency (MoD) (4 separate grants)	£20,212	2004 to 2005 <sup>239</sup>
Defence Science and Technology Laboratory (8 separate grants)	£422,871	2001 to 2002 <sup>240</sup>
Defence Science and Technology Laboratory (15 separate grants)	£201,205	2002 to 2003 <sup>241</sup>
Defence Science and Technology Laboratory (15 separate grants)	£224,914	2003 to 2004 <sup>242</sup>
Defence Science and Technology Laboratory (14 separate grants)	£219,156	2004 to 2005 <sup>243</sup>
EADS Astrium Limited (2 separate grants)	£49, 235	2003 to 2004 <sup>244</sup>
EADS Astrium Ltd (3 separate grants)	£39,625	2002 to 2003 <sup>245</sup>
EC via Rolls Royce	£9,464	2001 to 2002 <sup>246</sup>
European Aeronautic Defence & Space (2 separate grants)	£22,354	2004 to 2005 <sup>247</sup>
GKN Westland Helicopters	£2,250	2001 to 2002 <sup>248</sup>
GKN Westland Helicopters Ltd	£10,192	2002 to 2003 <sup>249</sup>
GKN Westland Helicopters Ltd	£2,558	2003 to 2004 <sup>250</sup>
NATO	£6,002	2000 to 2001 <sup>251</sup>
Office of Naval Research (3 separate grants)	£106,923	2002 to 2003 <sup>252</sup>
Office of Naval Research (4 separate grants)	£264,668	2003 to 2004 <sup>253</sup>
Office of Naval Research (6 separate grants)	£190,335	2004 to 2005 <sup>254</sup>
QinetiQ (29 separate grants)	£835, 459	2001 to 2002 <sup>255</sup>
QinetiQ (36 separate grants)	£722, 471	2002 to 2003 <sup>256</sup>
QinetiQ (20 separate grants)	£497,716	2003 to 2004 <sup>257</sup>
QinetiQ (10 separate grants)	£258,611	2004 to 2005 <sup>258</sup>
Rolls Royce Ltd (45 separate grants)	£1,255,641	2001 to 2002 <sup>259</sup>
Rolls Royce	£19,545	2002 to 2003 <sup>260</sup>
Rolls Royce (69 separate grants)	£1,959,536	2004 to 2005 <sup>261</sup>
Rolls Royce AB	£12,764	2002 to 2003 <sup>262</sup>
Rolls Royce AB	£27,094	2003 to 2004 <sup>263</sup>
Rolls Royce Industrial and Marine Gas Turbines Ltd (2 separate grants)	£6,300	2003 to 2004 <sup>264</sup>
Rolls Royce Limited (2 separate grants)	£13,530	2000 to 2001 <sup>265</sup>
Rolls Royce Ltd (38 separate grants)	£982,822	2000 to 2001 <sup>266</sup>
Rolls Royce Ltd (50 separate grants)	£1,039,468	2002 to 2003 <sup>267</sup>
Rolls Royce Plc (67 separate grants)	£1,235,601	2003 to 2004 <sup>268</sup>
Thales Research and Technology	£7,930	2004 to 2005 <sup>269</sup>

Source/ Sponsor/ Partner	Amount	Dates
The Boeing Company (4 separate grants)	£47,215	2003 to 2004 <sup>270</sup>
U.S. Army (4 separate grants)	£77, 848	2000 to 2001 <sup>271</sup>
U.S. Army (5 separate grants)	£236,470	2001 to 2002 <sup>272</sup>
U.S. Army (9 separate grants)	£266, 791	2001 to 2002 <sup>273</sup>
U.S. Navy (7 separate grants)	£142,803	2000 to 2001 <sup>274</sup>
US Army (5 separate grants)	£244, 749	2002 to 2003 <sup>275</sup>
US Army (3 separate grants)	£340,399	2003 to 2004 <sup>276</sup>
US Army (4 separate grants)	£53,547	2004 to 2005 <sup>277</sup>
US Navy (8 separate grants)	£335, 367	2002 to 2003 <sup>278</sup>
US Navy (9 separate grants)	£209,966	2003 to 2004 <sup>279</sup>
US Navy (4 separate grants)	£109,578	2004 to 2005 <sup>280</sup>
NATO (2 separate grants)	£2,478	2001 - 2002 Financial Year <sup>281</sup>
Boeing (4 separate grants)	£240,131	2004 – 2005 Financial Year <sup>282</sup>
General Dynamics United Kingdom (2 separate grants)	£185,215	2004 – 2005 Financial Year <sup>283</sup>
General Dynamics United Kingdom Ltd (2 separate grants)	£142,832	2003 – 2004 Financial Year <sup>284</sup>

### **Other projects/ information of note**

#### **Cambridge University's FOI response**

- Much of the response (that which included full project details i.e. project title/ department) Cambridge University gave to our FOI request, only concerned expenditure that was recorded by the University in a limited timeframe – between 1st August 2004 and 31st July 2005. This is important as it shows that there was a significant amount of information relevant to our report that we did not have access to, which could have increased the total data we were able to present.

#### **Projects sponsored by Government Communications Headquarters (GCHQ)**

- We discovered several projects conducted at Cambridge University between 2001 and 2006 which were sponsored by GCHQ. We did not include these projects in our report because it was not clear that they had likely or potential military applications. These projects are available to view on request.

### **Notation**

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

### **Endnotes**

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- <sup>194</sup> Ian Troupe. Freedom of Information Officer, University of Cambridge. 13 July 2007. Sent to Fellowship of Reconciliation.
- <sup>195</sup> Ian Troupe. Freedom of Information Officer, University of Cambridge. 13 July 2007. Sent to Fellowship of Reconciliation.
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- <sup>198</sup> Ian Troupe. Freedom of Information Officer, University of Cambridge. 13 July 2007. Sent to Fellowship of Reconciliation.
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<sup>277</sup> Ian Troupe. Freedom of Information Officer, University of Cambridge. 13 July 2007. Sent to Fellowship of Reconciliation.

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<sup>281</sup> 'Financial Management Information for the year ended 31 July 2002'. Cambridge University Reporter. <http://www.admin.cam.ac.uk/reporter/2002-03/special/10/>. 1 December 2006. Page 14, Sections G - H.

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<sup>283</sup> 'Financial Management Information for the year ended 31 July 2005,' Cambridge University Reporter. <http://www.admin.cam.ac.uk/reporter/2005-06/special/08/>. 1 December 2006. Page 3: Section I: Research Grants and Contracts.

<sup>284</sup> 'Financial Management Information for the year ended 31 July 2004'. Cambridge University Reporter. <http://www.admin.cam.ac.uk/reporter/2004-05/special/09/>. 1 December 2006. Page 3, Section J: Research Grants and Contracts.

*"The University has signed a major partnership with leading defence security and technology company QinetiQ. The strategic partnership will enable QinetiQ to access University expertise and maintain an active involvement in its latest research innovations. In return QinetiQ, which has a strong UK customer base and is expanding in the USA, will provide expertise on technology transfer."*<sup>1</sup>

- Cardiff University Website

## University of Cardiff'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)
44	£2,860,183	a) 16th b) 20th	1) QinetiQ 2) MoD 3) Dstl	1) Engineering 2) Business School 3) Computer Science

### School of Biosciences

Source/ Sponsor/ Partner	Project	Amount	Date
Defence Science and Technology Laboratory	Development of the Methods for the Concentration of Bacteria and Effecting Bacteria-Wall Contact in a Flow Liquid Using Ultrasonics (2 separate grants)	£37,488	Apr 2000 to Jun 2003 <sup>2</sup>
Defence Science and Technology Laboratory	Ultrasonic Disruption of Vegetative Bacterial Cells and Spores (2 separate grants)	£83,018	Jul 2002 to Jun 2004 <sup>3</sup>
Defence Science and Technology Laboratory	Cell Disruption in Small Volumes by Ultrasonic Cavitation (2 separate grants)	£122,694	Sept 2004 to Dec 2006 <sup>4</sup>
Defence Science and Technology Laboratory	Small Investigation into the Production of Ultrasound Concentration Cell	£44,000	Nov 2004 to Aug 2005 <sup>5</sup>
Defence Science and Technology Laboratory	Development of Cell Disruption Programme	£28,300	Oct 2005 to Mar 2006 <sup>6</sup>
Defence Science and Technology Laboratory	Development of Prototype Biosensor	£109,154	Oct 2005 to Sept 2007 <sup>7</sup>

### Cardiff Business School

Source/ Sponsor/ Partner	Project	Amount	Date
EPSRC,	IMI: Product Introduction Process	£126,588	Nov 1997 –

Smiths Industries, Rolls-Royce Plc, and others	Simulation in the Extended Enterprise (PIPSEE)		Feb 2001 <sup>8</sup>
GKN Westland Transmissions, and other partners	Learn 2: Learn Research Network (2 separate grants)	£98,000	Jun 2000 to May 2002 <sup>9</sup>
Rolls Royce	4 Postgraduate Student Fees	£?	Since 2001 <sup>10</sup>
Smiths Group Plc	1 Postgraduate Student Fees	£?	Since 2001 <sup>11</sup>
Ministry of Defence	2 Postgraduate Student Fees	£?	Since 2001 <sup>12</sup>
GKN Plc	1 Postgraduate Student Fees	£?	Since 2001 <sup>13</sup>
QinetiQ	1 Postgraduate Student Fees	£?	Since 2001 <sup>14</sup>
Defence Logistics Organisation	Lean Programme Support	£352,000	Sept 2003 to Apr 2008 <sup>15</sup>

### **School of Chemistry**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
Defence Science and Technology Laboratory	Non-Corrosive Surface Active Catalysts in Decontamination	£154,883	Apr 2003 to Oct 2005 <sup>16</sup>
Dstl, EPSRC, and others	Funding for McKeown Group Projects: Application of Organic Synthesis to the Preparation of Materials with Interesting and Unusual Properties	£?	Current as of June 2007 <sup>17</sup>

### **School of City and Regional Planning**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
Ministry of Defence	2 Postgraduate Student Fees	£?	Since 2001 <sup>18</sup>

### **School of Computer Science**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
Defence Evaluation and Research Agency, and QinetiQ Ltd	Wireless Network Design	£17,400	Oct 2000 to Oct 2003 <sup>19</sup>
Rolls-Royce	2 Postgraduate Student Fees	£?	Since 2001 <sup>20</sup>
Defence Evaluation and Research Agency, and QinetiQ Ltd.	Dynamic Network Design	£52,565	Aug 2001 to Jun 2002 <sup>21</sup>
BAE Systems (Operations) Ltd, and other partners	E-Science Core Programme: Cardiff Regional Centre	£302,500	Apr 2003 to Apr 2006 <sup>22</sup>
Ministry of Defence (Data and Information Fusion – Defence Technology Centre)	Low Dimensional Hierarchical Subspace Modelling of High Dimensional Multi-Sensor Data	£54,000	Oct 2003 to Sept 2006 <sup>23</sup>
Ministry of Defence (Data and Information Fusion – Defence	Statistical Fusion of Data	£162,738	Oct 2003 to Sept 2006 <sup>24</sup>

Technology Centre)			
EADS Defence and Security Systems Ltd	Optimising Sensor Networks for Data Fusion	£80,000	May 2005 to May 2009 <sup>25</sup>

### **School of Engineering**

Source/ Sponsor/ Partner	Project	Amount	Date
Ministry of Defence	5 Postgraduate Student Fees	£?	Since 2001 <sup>26</sup>
QinetiQ	1 Postgraduate Student Fees	£?	Since 2001 <sup>27</sup>
Rolls Royce Plc	Magnetic Testing of Cobalt Iron	£3,200	Aug 2003 to Oct 2003 <sup>28</sup>
Defence Science and Technology Laboratory	Summarise the Existing Literature on Blunt Trauma	£20,000	Oct 2003 to Oct 2004 <sup>29</sup>
Ministry of Defence (Data and Information Fusion – Defence Technology Centre)	Characterisation, Modelling and Mitigation of Impairments Produced by Radio Channels, Sensors and Communication Equipment for Data Fusion	£274,928	Oct 2003 to Sept 2007 <sup>30</sup>
QinetiQ	RF Measurement on GaN Transistors and Passives	£41,031	Sept 2004 to Jun 2006 <sup>31</sup>
Rolls Royce Plc	Magnetic Testing of Co-Fe Toroids	£2,045	Oct 2004 to Dec 2004 <sup>32</sup>
EPSRC, and QinetiQ (Malvern)	Precision Measurement and Correction of Microphone Non-Linear Distortion	£62,295	Nov 2005 – Oct 2006 <sup>33</sup>
EADS Defence and Security Systems Ltd	Diagnostic Rhyme Testing	£35,404	Dec 2005 to Feb 2006 <sup>34</sup>
BAE Systems and NASA	Co-Funding for Aerospace and Lightweight Structures Projects	£?	NASA funded work Since 1981 <sup>35</sup>

### **School of History and Archaeology**

Source/ Sponsor/ Partner	Project	Amount	Date
Ministry of Defence	Assessment of Wall Paintings	£222	Mar 2000 to Mar 2005 <sup>36</sup>

### **School of Medicine**

Source/ Sponsor/ Partner	Project	Amount	Date
Ministry of Defence	Therapeutic Manipulation of Ventricular and Vascular Function in Hypertension and Marfan Syndrome	£5,455	Aug 2004 to Aug 2006 <sup>37</sup>

### **Physics and Astronomy**

Source/ Sponsor/ Partner	Project	Amount	Date
EPSRC, QinetiQ (Malvern),	Transverse and Vertical Cavity Quantum Dot Lasers	£72,436	Oct 1998 – Sep 2001 <sup>38</sup>

and others			
QinetiQ	Growth on Silicon	£39,878	Apr 2001 to Apr 2002 <sup>39</sup>

### **School of Psychology**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
QinetiQ	Isolation of Further Processes that Generate Task Interference Based on the Cognitive Streaming Hypothesis	£25,140	Apr 2002 to Sept 2002 <sup>40</sup>
QinetiQ	Cognitive Streaming and Air Traffic Management	£130,082	Apr 2002 to Apr 2004 <sup>41</sup>
Ministry of Defence (Data and Information Fusion – Defence Technology Centre)	Designing Integrated Displays to Support Team Situation Awareness	£222,248	Oct 2003 to Sept 2006 <sup>42</sup>
QinetiQ	Effectiveness of Coaching Techniques in Military Training	£100,491	Nov 2005 to Dec 2006 <sup>43</sup>

### **Various Departments: Data & Information Fusion Defence Technology Centre (DIF – DTC)<sup>1</sup>**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
<p>Consortium Leader: General Dynamics UK Ltd</p> <p>Private Sector partners: QinetiQ, and others</p>	<p>Data &amp; Information Fusion Defence Technology Centre</p> <p>University Membership includes:</p> <ul style="list-style-type: none"> <li>• University of Bristol,</li> <li>• University of Cambridge,</li> <li>• Cranfield University,</li> <li>• University of De Montfort,</li> <li>• Imperial College London,</li> <li>• University of Surrey, and</li> <li>• University of Southampton</li> </ul> <p>The Overall Work of the DTC Follows a Number of Themes:</p> <ul style="list-style-type: none"> <li>• Agents and DIF Architectures</li> <li>• Multi-Dimensional Fusion</li> <li>• Multi-Sensor Management</li> <li>• Situation Awareness, Human Factors</li> <li>• Tracking and Target Management</li> </ul>	£?	Current as of 7 <sup>th</sup> April 2006 <sup>44</sup>

### **Miscellaneous**

<sup>1</sup> Please see School of Computer Science, School of Engineering and School of Psychology for details of individual projects within these departments.

Source/ Sponsor/ Partner	Project	Amount	Date
Ministry of Defence	14 Undergraduate Students Fees	£?	Since 2001 <sup>45</sup>

## **Notation**

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

## **Endnotes**

<sup>1</sup> "Partnership underlines University innovation". News and Events. <http://www.cardiff.ac.uk/newsevents/17366.html>. 1 May 2007.

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- <sup>20</sup> R Robertson. Information Rights Manager, Cardiff University. Email sent to Fellowship of Reconciliation, 24 May 2006.
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- <sup>24</sup> R Robertson. Information Rights Manager, Cardiff University. 7 April 2006. Sent to Fellowship of Reconciliation.
- <sup>25</sup> R Robertson. Information Rights Manager, Cardiff University. 7 April 2006. Sent to Fellowship of Reconciliation.
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- <sup>41</sup> R Robertson. Information Rights Manager, Cardiff University. 7 April 2006. Sent to Fellowship of Reconciliation.
- <sup>42</sup> R Robertson. Information Rights Manager, Cardiff University. 7 April 2006. Sent to Fellowship of Reconciliation.
- <sup>43</sup> R Robertson. Information Rights Manager, Cardiff University. 7 April 2006. Sent to Fellowship of Reconciliation.
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- <sup>45</sup> R Robertson. Information Rights Manager, Cardiff University. Email sent to Fellowship of Reconciliation, 24 May 2006.

*"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."*<sup>1</sup>

**- 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"> <li>• Open University, and</li> <li>• King's College, London</li> </ul>	£?  £366,000,000	1996 – July 2006  Aug 2006 - 2028 <sup>2</sup>
EPSRC and BAE Systems Plc	MTP99: MSc in Systems Engineering (Full and Part Time Variants)	£296,738	Feb 2000 - Aug 2003 <sup>3</sup>
Ministry of Defence	Sponsorship for 1,500 Postgraduate and Undergraduate Students – Mostly at the Defence College of Management and Technology	£?	Since 2001 <sup>4</sup>
EADS and GKN	Student Bursaries, mostly at the Defence College of Management and Technology	£?	Since 2001 <sup>5</sup>
EPSRC	Unsteady Features of Twin-Jet STOVL Ground Effects	£60,262	Oct 2001 - Sept 2004 <sup>6</sup>
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 <sup>7</sup>
Ministry of Defence  Consortium led by Aerosystems International. Other members include:  <ul style="list-style-type: none"> <li>• Birmingham University</li> <li>• Brunel University</li> <li>• Lockheed Martin UK,</li> <li>• MBDA Ltd</li> <li>• VP Defence Ltd</li> </ul>	Defence Human Factors Group Technology Centre (HFI - DTC)	£?	Apr 2003 Onwards <sup>8</sup>
EPSRC and NASA Langley Research Centre	Measurement and Dynamic Modelling of Flapping Wings of Free-Flying Eristalis Hoverflies	£117,690	Nov 2003 – Nov 2006 <sup>9</sup>
EPSRC and BAE Systems Plc	DARP: Efficient Life Cycle Management of Resin Infused Primary Composite Structures. Workpackage 6A	£135,802	May 2004 – May 2007 <sup>10</sup>
EPSRC <sup>11</sup>	Controllable Demonstrator for Insect-like Flapping Wing Micro Air Vehicles (MAVs)	£269,268	Feb 2006 – Feb 2009 <sup>12</sup>

### **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 <sup>13</sup>

### **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 <sup>14</sup>
EPSRC and Rolls Royce Plc	Planar Doppler Velocimetry Instrumentation for Gas Turbine Aerodynamic Applications	£287,652	Oct 1999 – Apr 2003 <sup>15</sup>
EPSRC and Smiths Industries	MTP99: Avionics Option Within Aerospace Dynamics	£95,594	Feb 2000 - Sep 2003 <sup>16</sup>
DERA, EADS and BAE Systems	MOB - A Computational Design Engine Incorporating Multi-Disciplinary Design and Optimisation for Blended Wing Body	£?	Mar 2000 Onwards <sup>17</sup>

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"> <li>Avionics Division on a product update for the Royal Navy and</li> <li>Future Concepts Group</li> </ul>	£178,140	Dec 2001 - Nov 2004 <sup>18</sup>
EPSRC, Westland Helicopters Ltd and BAE Systems Plc	Non-Colocational Space Discretisation for Meshless Methods	£29,306	May 2002 - Oct 2002 <sup>19</sup>
Funded by HEFCE  In collaboration with: <ul style="list-style-type: none"> <li>NASA</li> <li>QinetiQ</li> <li>University College London</li> <li>BAE Systems</li> </ul>	Turbomachinery, Icing & Gas Turbine Instrumentation – Atmospheric Icing Technology	£?	Mar 2003 Ongoing <sup>20</sup>
EPSRC and BAE Systems Plc	DARP: Modelling Failure Initiation and Damage Progression in RTM Structures	£127,385	Oct 2003 - Apr 2007 <sup>21</sup>
Ministry of Defence	Fatigue Life Prediction Under Random Vibration Loads (WLA)	£?	2004 - 2005 <sup>22</sup>
Consortium led by Airbus with over 50 industrial partners including: <ul style="list-style-type: none"> <li>Rolls Royce Plc</li> <li>EADS</li> <li>BAE Systems Eurocopter</li> </ul>	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 <sup>23</sup>
EPSRC and QinetiQ (Malvern)	Basic Technology: Controlled Electron Transport Through Single Molecules	£247,684	Oct 2004 - Oct 2008 <sup>24</sup>
Sponsor: Dstl/ MoD  Collaborators include: <ul style="list-style-type: none"> <li>Brunel University</li> <li>University of Birmingham</li> </ul>	Human Factors Integration Defence Technology Centre (HFI – DTC) Analysis of C4I Activity in the RAF Boeing E3D (Sentry) Aircraft	£?	2005 <sup>25</sup>
BAE Systems	Low-Cost Composite Sandwich	£?	2005 - 2006

Source/ Sponsor/ Partner	Project	Amount	Dates
	Structures		<sup>26</sup>
EPSRC, Rolls Royce Plc and others	Advanced Marine Electric Propulsion Systems (AMEPS)	£131,619	Feb 2005 - Feb 2008 <sup>27</sup>
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 <sup>28</sup>
EPSRC and AWE Plc	Computational and Theoretical Modelling of Shock-Induced Instability and Mixing Across Material Interfaces	£242,609	Oct 2005 - Jan 2009 <sup>29</sup>
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 <sup>30</sup>
EPSRC, AWE Plc	Multiscale Modelling of Meso and Nano Scale Interfacial Dynamics Phenomena	£249,728	Oct 2006 - Oct 2009 <sup>31</sup>
BAE Systems	Requirements Decomposition, Customer Models and Processes, Engineering Design Group	£?	Current as of May 2007 <sup>32</sup>
Rolls Royce	University Technology Centre in Performance Engineering	£?	Current as of May 2007 <sup>33</sup>
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 <sup>34</sup>
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 <sup>35</sup>
EPSRC, and Rolls Royce	Effects of Rub Grooves on Abradable Honeycomb Labyrinth Seals and Endwall Effects on Development of Boundary Layers in Axial	£?	2005 <sup>36</sup>

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

### **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 <sup>38</sup>

### **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 <sup>39</sup>

### **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 <sup>40</sup>

### **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	"Curenet" Network on Real-Time Cure Monitoring in Manufacturing of Composite Structures	£51,280	Apr 1998 - Apr 2001 <sup>41</sup>
EPSRC, Matra Bae Dynamics (UK) Ltd,	IMI: Jigless Aerospace Manufacture (JAM)	£315,427	Jun 1998 - May 2001 <sup>42</sup>

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 <sup>43</sup>
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 <sup>44</sup>
EPSRC, BAE Aerostructures and others	Developing an Integrated Costing Approach for Conceptual Design Evaluation (ICOST)	£256,022	July 2000 - Dec 2001 <sup>45</sup>
EPSRC, DERA Malvern and others	Microengineered Radiation Collector Arrays For Uncooled Thermal IR Detectors	£275,688	July 2000 - Mar 2004 <sup>46</sup>
EPSRC, GKN Westland Aerospace (IoW) and others	Managing Product New Development as a Complex System of Decisions	£144,613	Oct 2000 - Sept 2003 <sup>47</sup>
EPSRC, ASTRIUM and others	Thin Film Piezoelectric Actuation for Microengineered Microwave Components: Fabrication Packaging and Testing	£192,365	Oct 2000 - Dec 2003 <sup>48</sup>
EPSRC and Ministry of Defence	Weld Processing Design and Durability of Welded Aircraft Assemblies	£376,769	Oct 2000 - Dec 2003 <sup>49</sup>
EPSRC, British Aerospace and others	Piezoelectric Microactuators for Smart Micro-Air Vehicles (SMAV)	£251,378	Oct 2000 - June 2004 <sup>50</sup>
EPSRC, BAE Systems Plc and others	MTP: In Company Training in Reliability Engineering and Risk Management in Design	£99,036	Feb 2001 - Jan 2004 <sup>51</sup>
EPSRC, British Aerospace and others	(MTP) IT for Product Realisation	£318,505	Apr 2001 - Mar 2004 <sup>52</sup>
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 <sup>53</sup>
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 <sup>54</sup>

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 <sup>55</sup>
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 <sup>56</sup>
EPSRC and BAE Systems Operations Ltd	Integrated Programme of Research in Aeronautical Engineering	£4,567,816	Jun 2004 - May 2009 <sup>57</sup>
EPSRC, and BAE Systems Advanced Technology Centre	Advanced Microwave Devices for Frequency-Agile Applications	£208,208	Oct 2005 - Oct 2008 <sup>58</sup>
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 <sup>59</sup>
EPSRC, BAE Airbus and others	Novel High Speed Machine Tool Spindle Bearings	£?	Current as of May 2007 <sup>60</sup>

### **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	<ul style="list-style-type: none"> <li>Precision Engineering Network (UKPEN)</li> </ul> <p>The Network has let to two Cranfield IMRC supported projects, one with Thales Optics</p>	£?	Jan 2003 - Dec 2005 <sup>61</sup>
Collaborator: BAE Systems	Affordable Manufacturing Processes for SMART Composite UCAV Airframes	£?	Jun 2004 - May 2007 <sup>62</sup>

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 <sup>63</sup>
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 <sup>64</sup>
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 <sup>65</sup>

### **School of Management**

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

### **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 <sup>68</sup>

### **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 <sup>69</sup>

### **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 <sup>70</sup>
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 <sup>71</sup>
Defence Academy UK.  Staff have close working relationships with: <ul style="list-style-type: none"> <li>Ministry of Defence</li> </ul> Industry contacts include: <ul style="list-style-type: none"> <li>BAE Systems</li> <li>EADS</li> <li>Thales</li> <li>Dstl</li> <li>QinetiQ</li> </ul>	Resilience Centre: Designed to Coordinate Management Advice and Training on Risk and Security and Resilience Matters	£?	July 2004 Onwards <sup>72</sup>
Defence Academy UK.  Consortium members include: <ul style="list-style-type: none"> <li>EADS (South Africa &amp; Germany)</li> <li>BAE Systems Operations Limited</li> <li>Thales (Norway)</li> <li>EADS Astrium</li> </ul>	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 <sup>73</sup>

### **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 <sup>74</sup>



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

### 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 <sup>76</sup>

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 <sup>77</sup>

Applied Mathematics and Computing Group	
<ul style="list-style-type: none"> <li>The Applied Mathematics and Computing Group (AMAC)'s Academic/ Industrial Steering Committee present members include representatives from QinetiQ and Airbus UK.<sup>78</sup></li> </ul>	
Boeing Company	
<ul style="list-style-type: none"> <li>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><sup>79</sup></li> </ul>	

### 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).

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- Durham University website

## Durham University 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)
23	£1,606,253	a) 21st  b) 24th	1) BAE Systems  2) EPSRC  3) Dstl	1) Engineering  2) Chemistry

### Agility Group

Source/ Sponsor/ Partner	Project	Amount	Year
BAE Systems (Operations) Ltd via Leica	Laser Checks On Chester Press	£2,000	Oct 2005 <sup>2</sup>

### School of Biological and Biomedical Sciences

Source/ Sponsor/ Partner	Project	Amount	Year
Dstl	Investigation of Effects of Resuscitation	£26,289	Sept 2002 <sup>3</sup>
Dstl (Porton Down)	Effects of Thoracic Primary Blast Injury	£60,324	May 2004 <sup>4</sup>

### Durham Business School

Source/ Sponsor/ Partner	Project	Amount	Year
Thales via Newcastle University	MSc in Major Project Management	£15,000	2004 - 2005 <sup>5</sup>

### School of Chemistry

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and Dstl – Joint Grants Scheme	Synthesis, Supramolecular Ordering, Charge - Transfer and Optical Properties of New Pthalocyanines	£242,829	June 2000 - Jan 2004 <sup>6</sup>
NATO	NATO Conference	£45,000	Mar 2001 <sup>7</sup>
QinetiQ	Synthesis of Novel Electrical Organic	£59,074	Oct 2001 <sup>8</sup>



Source/ Sponsor/ Partner	Project	Amount	Year
	Materials		
EPSRC and QinetiQ (Malvern)	Basic Technology: Controlled Electron Transport Through Single Molecules	£258,391	Oct 2004 - Sept 2008 <sup>9</sup>
QinetiQ	Molecular Electronic Gas Sensors	£5,000	Feb 2005 <sup>10</sup>

### **School of Engineering**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and BAE Systems Plc	Development of Special Boundary Elements for Diffraction of Very Short Waves	£135,087	Sept 2000 - Sept 2003 <sup>11</sup>
BAE Systems (Operations) Ltd	SOW: Concept Analyst Development Prog: Phase 1	£133,250	June 2002 <sup>12</sup>
EPSRC and BAE Systems Plc	Development of Special Finite Elements for Electro-Magnetic Wave Scattering of Very Short Waves	£207,533	Sept 2002 - Oct 2005 <sup>13</sup>
Rolls Royce	Advanced Technology Acquisition Programme	£187,000	Nov 2003 <sup>14</sup>
BAE Systems and others	EPPIC Faraday Partnership: Centre for Electronic Systems	£?	2004 onwards <sup>15</sup>
Northern Defence Industries Ltd	NDI Research	£13,000	Jan 2005 <sup>16</sup>
EPSRC and BAE Systems CASE Award	Enabling Concept Analyst Software to Solve Boundary Element Method (BEM) Problems in Real-Time	£?	Current as of April 2006 <sup>17</sup>
Rolls Royce	Research Doctoral Thesis Related to Secondary Flows in Axial Flow Turbines in collaboration with Rolls Royce	£?	Current as of April 2006 <sup>18</sup>
EPSRC and BAE Systems Sowerby Research Centre	Research in Computational Mechanics focusing on Concept Analysis Software and Wave Defraction Modelling. Research undertaken in collaboration with: • University of Wales (Swansea)	£?	Current as of March 2007 <sup>19</sup>
Astrium	CAPABLE Space Collaborative Research Project within the Design and Manufacturing Research Group (DMRG)	£?	Current as of April 2007 <sup>20</sup>

### **School of Health**

Source/ Sponsor/ Partner	Project	Amount	Year
Dstl (Porton Down)	To Study Effects of Crush & Haemorrhage	£22,000	Oct 2004 <sup>21</sup>



Source/ Sponsor/ Partner	Project	Amount	Year
Dstl (Porton Down)	To Study the Effects of Thoracic Primary	£56,000	Jan 2005 <sup>22</sup>

### School of Physics

Source/ Sponsor/ Partner	Project	Amount	Year
Defence Logistics Organisation	Wideband Thermal Modelling	£138,476	July 2001 <sup>23</sup>
NATO	NATO Programme for Security Through Science; offers Support for International Collaboration between Scientists of the Euro–Atlantic Partnership Council and aims to contribute to Security, Stability and Solidarity among Nations by applying Cutting-Edge Science to Problem Solving	£?	Current as of Sept 2006 <sup>24</sup>

### Other information of note

#### **Northern Defence Industries Ltd**

- Durham University is a member of Northern Defence Industries Ltd<sup>25</sup> whose partners include BAE Systems, Boeing and Thales. *“NDI is a business development company that matches the capability of over 200 companies with the procurement requirements of the global defence and aerospace industry. NDI provides support to international prime contractors, the Ministry of Defence [and others...] who require visibility of quality suppliers that can provide collaborative integrated solutions to meet industrial participation and offset obligations. NDI has established a high profile presence in the global defence and aerospace market place by delivering what we say we will.”* <sup>26</sup>

### Notation

? Denotes projects whose value we were unable to discover.

### Endnotes

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*"[Artificial Intelligence Applications Institute] AIAI's clients and collaborators include: ...Boeing, ...BAE Systems... GEC Marconi, ...Lockheed Martin, ...QinetiQ, ...Rolls-Royce & Associates. ...AIAI also works with government agencies such as: ...DERA/ DSTL, GCHQ, ...RAF, ...DARPA, ...US Naval Research Laboratory, US Army, US Airforce Research Laboratory, US Pacific Command."*<sup>1</sup>

- **Edinburgh University website**

## **Edinburgh University Military Projects 2001 - 2006**

### **Overall Statistics**

<b>Total no. of projects</b>	<b>Minimum amount received from Projects</b>	<b>Ranking by: a) no. of projects b) amount (£)</b>	<b>Top 3 funders (by no. of projects)</b>	<b>Top 3 departments (by no. of projects)</b>
70	£6,963,426	a) 12th b) 15th	1) BAE Systems/ Selex  2=) QinetiQ  2=) Thales	1) School of Engineering and Electronics  2) School of Informatics  3) School of Medicine

### **School of Chemical Engineering**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
EPSRC and Dstl	Multiscale Modelling of Transport in Nanoporous Carbons: Towards De Novo Design	£186,800	Feb 2003 - June 2006 <sup>2</sup>

### **School of Engineering and Electronics**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
EPSRC, BAE Systems Electronics Ltd and others	Improving the Link between Design and Test for Miniature Silicon Backplane Liquid Crystal Displays	£211,752	June 1999 to Feb 2003 <sup>3</sup>
QinetiQ	Part-Time Postgraduate Studentship	£28,869	2000 to 2002 <sup>4</sup>
Selex BAE Systems	4 Undergraduate Scholarships	£1,000 (each)	2001 to 2002 <sup>5</sup>
Thales	2 Undergraduate Scholarships	£1,000 (each)	2001 to 2002 <sup>6</sup>
EPSRC, DERA Malvern	Programmable Analogue and Mixed Signal VLSI for System	£227,050	June 2001 - Nov 2004 <sup>7</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
and others	Level Integration		
QinetiQ Ltd (R81708)	Performance of Direction of Arrival Algorithms for CDMA Signals	£25,000	Nov 2001 <sup>8</sup>
Selex BAE Systems	Approximately 2 8-month Industrial Placements for 5 <sup>th</sup> Year Students per year	£?	2001 to Present <sup>9</sup>
Thales	Approximately 2 8-month Industrial Placements for 5 <sup>th</sup> Year Students per year	£?	2001 to Present <sup>10</sup>
Selex BAE Systems	4 Undergraduate Scholarships	£1,000 (each)	2002 to 2003 <sup>11</sup>
Thales	1 Undergraduate Scholarship	£2,000	2002 to 2003 <sup>12</sup>
BAE Systems	Sponsorship of Major Fellowship, Head of RAEng Research Institute for Digital Communications	£?	2002 to 2007 <sup>13</sup>
BAE Systems (R81872)	Strategic Alliance in Signal and Information Systems	£29,999	Nov 2002 <sup>14</sup>
Selex BAE Systems	4 Undergraduate Scholarships	£1,000 (each)	2003 to 2004 <sup>15</sup>
Thales	1 Undergraduate Scholarship	£2,000	2003 to 2004 <sup>16</sup>
BAE Systems Ltd	Contact-less Energy Transfer for Power Applications	£?	April 2003 to Oct 2005 <sup>17</sup>
BAE Systems (R81956)	Research Studentship to I Papastergiou – Power Supply Topologies	£13,300	Jan 2003 <sup>18</sup>
BAE Systems^ (R81894)	Over Sampling Noise Shaping Analogue to Digital Conversion Programme	£74,000	Feb 2003 <sup>19</sup>
BAE Systems (R81939)	Attachment 5: Algorithms for Radar and Multi-Sensor Processing	£444,485	Apr 2003 <sup>20</sup>
BAE Systems^ (R81946)	Signal Processing for Airborne Bistatic Radar	£89,337	Oct 2003 <sup>21</sup>
BAE Systems^ (R81949)	Attachment 7: Bistatic Space - Time Adaptive Processing for Ground Moving Target Indication	£66,000	Oct 2003 <sup>22</sup>
BAE Systems^ (R81952)	Attachment 9: Bistatic Aperture Imaging and Moving Target Detection	£66,000	Oct 2003 <sup>23</sup>
BAE Systems^ (R81953)	Attachment 11: Multi Sensor Target Tracking and Track	£66,000	Oct 2003 <sup>24</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
	Fusion		
Selex BAE Systems	5 Postgraduate Studentships (supported to different amounts)	Total of £384,674	2003 to 2006 <sup>25</sup>
EPSRC, QinetiQ Ltd and others	Supergen Marine Consortium	£2,609,267	Oct 2003 to Sept 2007 <sup>26</sup>
Selex BAE Systems	25 Undergraduate Scholarships (supported to different amounts)	Total of £28,000	2004 to 2005 <sup>27</sup>
Thales	1 Undergraduate Scholarship	£2,000	2004 to 2005 <sup>28</sup>
EPSRC, QinetiQ (Malvern) and others	Integration of Microelectromechanical Systems (MEMS) with Electronics in Silicon Carbide for Harsh Environments	£236,244	Dec 2004 to May 2008 <sup>29</sup>
Selex BAE Systems	17 Undergraduate Scholarships (supported to different amounts)	Total of £19,000	2005 to 2006 <sup>30</sup>
Thales	1 Undergraduate Scholarship	£2,000	2005 to 2006 <sup>31</sup>
EPSRC, BAE Systems Avionics Ltd and others	Boiling and Condensation in Microchannels	£261,290	Jan 2006 to Dec 2008 <sup>32</sup>

### **School of Informatics**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, British Aerospace Plc and QinetiQ (Malvern)	Probabilistic Models for Sequences	£172,708	Oct 1998 - June 2001 <sup>33</sup>
DARPA (US), Dstl, Boeing, Lockheed Martin Advanced Technology Laboratories, Airforce Research Laboratory Command and Control Directorate and QinetiQ	CoAX - Coalition Agents eXperiment, the Coalition TIE (Technology Integration Experiment)	£?	2000 to 2002 <sup>34</sup>
DERA	Software Agents as Facilitators of Coherent Coalition Operations	£?	2001 <sup>35</sup>
QinetiQ	1 PhD Grant	£4,200	2002 to 2005 <sup>36</sup>
QinetiQ Ltd (R37025)	3D Computational Vision Techniques for Recognition and Navigation	£4,200	Oct 2002 <sup>37</sup>
QinetiQ	Tuition Fees	£2,940	2003 to 2004 <sup>38</sup>
DARPA DAML Programme,	CoSAR-TS - Coalition Search	£?	Jan 2003 -

Source/ Sponsor/ Partner	Project	Amount	Year
Space and Naval Warfare Systems Center (US), and Air Force Research Laboratory (US)	and Rescue - Task Support		Dec 2006 <sup>39</sup>
Office of Naval Research (US)	A Proposal for Extending and Evaluating Model of Flexible Robust Mixed Initiative Tutorial Dialogue	£213,436	Feb 2004 to June 2005 <sup>40</sup>
Office of Naval Research (US)	Asynchronous Architectures for Wireless Mobile Computing	£27,206	Apr 2004 to May 2005 <sup>41</sup>
Office for Naval Research (US), Naval Surface Warfare Center and others	Naval Automation and Information Management Technology (NAIMT)	£?	2005 <sup>42</sup>
Office of Naval Research (US)	A Shared Resource for Robust Semantic Interpretation for both Linguists and Non-Linguists	£7,760	July 2005 <sup>43</sup>
EPSRC, QinetiQ (Malvern) and others	INDEED: Interdisciplinary Design and Evaluation of Dependability	£392,988	Dec 2006 to Nov 2010 <sup>44</sup>

### **Management School/School of Economics**

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ	Tuition Fees	£4,924	2003 to 2004 <sup>45</sup>
Selex BAE Systems	Tuition Fees	£5,235	2004 to 2005 <sup>46</sup>

### **School of Mathematics**

Source/ Sponsor/ Partner	Project	Amount	Year
Selex BAE Systems	3 Undergraduate Scholarships	£750-1,500 (each)	2002 to 2003 <sup>47</sup>
Selex BAE Systems	5 Undergraduate Scholarships	£750-1,500 (each)	2003 to 2004 <sup>48</sup>
Selex BAE Systems	5 Undergraduate Scholarships (supported to different amounts)	Total of £5,250	2004 to 2005 <sup>49</sup>

### **School of Medicine**

Source/ Sponsor/ Partner	Project	Amount	Year
Ministry of Defence	Tuition Fees for 1 student	£1,100	2002 to 2003 <sup>50</sup>
Ministry of Defence	6 Students Tuition Fees	£1,125 (each)	2003 to 2004 <sup>51</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
Ministry of Defence	Tuition Fees for a non-EU Student	£18,258	2003 to 2004 <sup>52</sup>
Ministry of Defence	7 Students Tuition Fees	£1,150 (each)	2004 to 2005 <sup>53</sup>
Ministry of Defence	Tuition Fees for a non-EU Student	£16,605	2004 to 2005 <sup>54</sup>
Ministry of Defence	9 Students Tuition Fees	£1,175 (each)	2005 to 2006 <sup>55</sup>
Ministry of Defence	Tuition Fees for a non-EU student	£19,267	2005 to 2006 <sup>56</sup>

### **School of Meteorology**

Source/ Sponsor/ Partner	Project	Amount	Year
BAE Systems (R81618)	Bayesian Techniques in Target Recognition	£20,701	May 2001 <sup>57</sup>

### **Miscellaneous**

Source/ Sponsor/ Partner	Project	Amount	Year
Selex Sensors & Airborne Systems	Scholarships for Undergraduate Students in the School of Engineering & Electronics & the School of Mathematics	£151,250	Jan 2001 to Present <sup>58</sup>
BAE Systems	Brain Campaign Donation	£2,000	Sept 2001 <sup>59</sup>
Thales	RACAL MESL Scholarship	2 x £1,000	Oct 2001 <sup>60</sup>
Thales	RACAL MESL Scholarship	£2,000	Oct 2002 <sup>61</sup>
BAE Systems*	N/A	£106,550	2003/ 2004 Financial Year <sup>62</sup>
Office for Naval Research (US)*	N/A	£432,652	2003/ 2004 Financial Year <sup>63</sup>
BAE Systems	Benefactions	Over £50,000	2003/ 2004 Financial Year <sup>64</sup>
Office for Naval Research (US)*	N/A	£157,854	2004/ 2005 Financial Year <sup>65</sup>
BAE Systems	Benefactions	£1,000 - £4,999	2004/ 2005 Financial Year <sup>66</sup>
Thales	RACAL MESL Scholarship	£2,000	Jan 2004 <sup>67</sup>
Thales	RACAL MESL Scholarship	£2,000	Nov 2004 <sup>68</sup>
Thales	RACAL MESL Scholarship	£2,000	Dec 2005 <sup>69</sup>

## **Moray School House of Education**

Source/ Sponsor/ Partner	Project	Amount	Year
Ministry of Defence	2 Students Tuition Fees	£3,015 (each)	2004 to 2005 <sup>70</sup>
Ministry of Defence	Tuition Fees	£3,870	2005 to 2006 <sup>71</sup>

## **Other projects/ information of note**

<b>Project ending 2000, School of Engineering and Electronics</b>			
Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ Ltd (R81672)	Temporal Retnomorphic Circuits	£28,869	Aug 2000 <sup>72</sup>

<b>Project starting 2007, School of Material and Processes</b>			
Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and United States Air Force	Spatial Analysis of Plasticity Patterns in Micron-Sized Samples	£81,422	Jan 2007 to Mar 2008 <sup>73</sup>

<b>Honorary graduates</b>	
<ul style="list-style-type: none"><li>Honorary graduates recognised by the University of Edinburgh in the 2002/ 2003 Academic year included Professor John G McWhirter, Senior Fellow of the Signal Processing Group, DERA (Doctor of Science).<sup>74</sup></li></ul>	

## **Notation**

^ BAE Systems projects may include/duplicate Selex BAE Systems projects in this department.

\* Total may include projects listed in departments above.

? Denotes projects whose value we were unable to discover.

## **Endnotes**

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*“The [Aerospace Engineering] Department has a high profile in the UK's aerospace industry - our status as a BAE Systems preferred course is testament to this. Only two other UK institutions have been endorsed by BAE Systems in this way”<sup>1</sup>*

**- University of Glasgow Website**

## University of Glasgow 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)
82	£5,262,373	a) 8th  b) 17th	1) QinetiQ  2) BAE Systems  3) EPSRC	1) Aerospace Engineering  2) Electronic and Electrical Engineering  3) Mechanical Engineering

### Department of Aerospace Engineering

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, MoD, DERA and BAE Systems	The Application of Sparse Matrix Techniques to the CFD Based Aeroelastic Bifurcation Analysis of a Symmetric Aerofoil	£?	2002 <sup>2</sup>
British Aerospace Engineering Systems	Best Industrially Relevant Final Year Prize	£100	Annual <sup>3</sup>
QinetiQ	CFD Study of Manoeuvring Delta Wing Configurations	£47,719	Aug 1999 - Aug 2002 <sup>4</sup>
EPSRC, BAE Systems Operations Ltd and QinetiQ Ltd	DARP: Prediction Non-Linear Transonic Flutter Characteristics by Numerical Path-Flowing & Model Reduction	£71,431	Sept 1999 - Aug 2002 <sup>5</sup>
QinetiQ (DERA, Bedford)	CFD Study of Surge Wave Propagation within an Intake/ Duct Design	£47,720	Nov 1999 - Sept 2002 <sup>6</sup>
GKN Westland Plc	Investigation of the use of Miniature Jets on Helicopter Rotor Blades	£14,750	Dec 1999 - Sept 2001 <sup>7</sup>
QinetiQ (DERA Accounts Payable)	DARP: Prediction Non-Linear Transonic Flutter Characteristics by Numerical Path-Flowing & Model Reduction	£21,000	Dec 1999 - Mar 2002 <sup>8</sup>

Source/ Sponsor/ Partner	Project	Amount	Dates
BAE Systems (Operations) Ltd	DARP: Prediction Non-Linear Transonic Flutter Characteristics by Numerical Path-Flowing and Model Reduction	£50,980	Dec 1999 - Aug 2002 <sup>9</sup>
QinetiQ	ACFD Study of Cavity Control using Jets	£15,000	Jan 2000 - Jun 2001 <sup>10</sup>
BAE Systems Plc	BAE Systems Virtual University (with University of Southampton and University of Loughborough)	£?	Feb 2000 - Current <sup>11</sup>
BAE Systems (Land & Sea Systems) Ltd	LPX Aircraft Flight and Wing Distribution Studies	£47,432	Aug 2000 - Sept 2001 <sup>12</sup>
QinetiQ	RANS and LES Simulations of Cavity Flows	£40,927	Sept 2000 - Sept 2001 <sup>13</sup>
QinetiQ – DERA (Purchase Ledger)	The Application of Navier-Stokes Codes to Simulation of Cavity Flows	£50,832	Sept 2000 - Sept 2003 <sup>14</sup>
BAE Systems (Operations) Ltd and Rolls-Royce Plc	Definition of Goals for BAE Systems/ Rolls-Royce Programme of Research in Breakthrough Propulsion Technologies	£5,000 (unclear if 3 separate £5,000 grants, or 1 cumulative grant)	Oct 2000 - ? <sup>15</sup>
Lockheed Martin	Mission Analysis for Future Applications of Solar Sail Technology	£8,679	Oct 2000 - ? <sup>16</sup>
QinetiQ	Enhancement of Helicopter Rotor Blade Performance: Active Flow Control and the Potential for Application of 'Smart' Materials	£18,290	Nov 2000 - Oct 2001 <sup>17</sup>
Westland Helicopters Ltd	Total Funding for Aerospace Engineering from 2001	£151,590	2001 - present <sup>18</sup>
BAE Systems Plc	CVUT Prague-Glasgow University Master Programme	£17,300	Oct 2001 - Sept 2002 <sup>19</sup>
BAE Systems (Operations) Ltd	Sponsorship for Nastran Licence (2 separate grants)	£14,400	Oct 2001 - Sept 2007 <sup>20</sup>
QinetiQ Ltd	Enhancement of Helicopter Rotor Blade Performance: Active Flow Control and the Potential for Application of 'Smart' Materials	£5,994	Dec 2001 - Mar 2002 <sup>21</sup>
Westland Helicopters Ltd	Aerodynamic Modelling For Helicopter Rotors Incorporating 3D Effects (2 separate grants)	£198,660	2002 <sup>22</sup>
Westland Helicopters Ltd	Analysis and Indicial Modelling of Helicopter Tail Rotor Blade Vortex Interaction	£148,965	2002 <sup>23</sup>

Source/ Sponsor/ Partner	Project	Amount	Dates
	(3 separate grants)		
BAE Systems	Treatment of Turbulence for Cavity Flows	£13,200	Jan 2002 - Sept 2004 <sup>24</sup>
QinetiQ	2-D Aerofoil Tests in Argyll Wind Tunnel	£20,540	Feb 2002 - Mar 2002 <sup>25</sup>
BAE Systems (Operations) Ltd	Demonstration of CFD based Aeroelastic Predictions on a Real Aircraft Test Case	£7,000	May 2002 - Jun 2003 <sup>26</sup>
EPSRC and BAE Systems Operations Ltd	RAIS: Demonstration of CFD Based Aeroelastic Predictions on a Real Aircraft Test Case	£29,648	June 2002 - June 2003 <sup>27</sup>
BAE Systems (Operations) Ltd	DARP - PUMA	£90,711	Sept 2002 - Sept 2005 <sup>28</sup>
QinetiQ Ltd	CFD [Computational Fluid Dynamics] Options for Icing and Pitching Aerofoil Calculations	£3,500	Oct 2002 - Sept 2003 <sup>29</sup>
BAE Systems	Prediction of Mean Flow Instabilities Using Unsteady Rans Technology	£22,500	Nov 2002 - Sept 2005 <sup>30</sup>
EPSRC, BAE Systems Operations Ltd, QinetiQ Ltd and Rolls Royce Plc	DARP: Unsteady Aerodynamics Prediction and Simulation for Airframe and Turbomachinery Applications (PUMA) DARP	£198,164	Apr 2003 - Sept 2005 <sup>31</sup>
EPSRC and BAE Systems	Loads and Dynamics: Prediction of Dynamic Loads, within the Glasgow CFD Group. Initial Study into the Simulation and Prediction of Wing Flutter. Collaborators include: <ul style="list-style-type: none"> <li>University of Manchester</li> <li>University of Bristol</li> </ul>	Up to £30 million over 5 years Initial grant £400,000	Apr 2003 - 2008 <sup>32</sup>
BAE Systems Avionics	Effects of Boundary Layer Turbulence of Optical Imaging	£7,000	July 2003 - Sept 2003 <sup>33</sup>
BAE Systems - Technology Centre	BAE Systems Lectureship	£45,443	Sept 2003 - Dec 2005 <sup>34</sup>
BAE Systems	Computational Fluid Dynamics	£22,500	Sept 2003 - Sept 2006 <sup>35</sup>
Westland Helicopters Ltd	Industrial Secondment Scheme	£?	Oct 2003 <sup>36</sup>
EADS Astrium Ltd	ESA SWARM/ APIES Consultancy	£4,085	Nov 2003 - Feb 2004 <sup>37</sup>
QinetiQ Ltd	CFD Based Predictions of Vortical Flows with Application to Flight Control and Stability	£11,304	Nov 2003 - Aug 2005 <sup>38</sup>
Westland Helicopters Ltd	Integrated Analysis of a Flapped Rotor in Forward Flight	£?	Dec 2003 - Nov 2006 <sup>39</sup>

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC and Westland Helicopters Ltd	DARP: Towards Robust and Cost Effective Approaches to Rotorcraft Design	£307,268	Feb 2004 - Jan 2009 <sup>40</sup>
QinetiQ Ltd	Dynamic - Stall Analysis	£18,000	Apr 2004 - Mar 2008 <sup>41</sup>
EPSRC, BAE Systems Operations Ltd and Rolls Royce Plc	Supercomputer Resources for the UK Applied Aerodynamics Consortium	£20,650	June 2004 - Sept 2005 <sup>42</sup>
Westland Helicopters Ltd	Validation of CFD for Flow Control Devices	£?	Aug 2004 - Dec 2004 <sup>43</sup>
EPSRC, Westland Helicopters Ltd, BAE Systems Plc, Dstl (Farnborough), QinetiQ and others	Improved Inverse Simulation using Nonlinear Predictive Methods	£153,285	Oct 2004 - Sept 2007 <sup>44</sup>
EPSRC, EADS Astrium and others	Optimal Interception and Deviation Of Potentially Hazardous Near Earth Objects	£154,012	June 2005 - Oct 2008 <sup>45</sup>
EADS Astrium Ltd	Reliable Preliminary Space Mission Design	£19,821	Dec 2005 - Jul 2009 <sup>46</sup>
EPSRC with DERA/ QinetiQ and BAE Systems	Cavity Flow Aerodynamics. Group research investigations include: <ul style="list-style-type: none"> <li>• Open Cavity Flows</li> <li>• Suppression of Cavity Pressure Oscillations using a Passive Control</li> <li>• Transitional Supersonic Flows</li> <li>• Transitional Subsonic Flows</li> </ul>	£?	Current as of Jan 2007 <sup>47</sup>
EPSRC, Dstl (Farnborough) and others	Nonlinear Sightline Control	£117,725	Sept 2006 - Sept 2008 <sup>48</sup>

### **Department of Naval Architecture and Marine Engineering**

Source/ Sponsor/ Partner	Project	Amount	Dates
QinetiQ – DERA (Purchase Ledger)	Living with Cracks Philosophy for UK Warships	£11,675	Nov 2000 - Dec 2001 <sup>49</sup>
BAE Systems Marine Ltd	Testing and Analysis of Monohull Trimaran and SWATH (3 separate grants)	£18,862	Nov 2001 - Sept 2002 <sup>50</sup>
Ministry of Defence	Structural Reliability and Analysis of Submarine Structures	£20,000	Nov 2001 - Jan 2003 <sup>51</sup>

### **Department of Electronics and Electrical Engineering**



Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, QinetiQ (Malvern) and others	Photonic Integrated Gigabit Switches (PIGS) for 100GB/S Packets	£229,892	May 1998 - Apr 2001 <sup>52</sup>
BAE Systems	Collaborative Training Account (CTA) Doctoral Programme (4 separate grants)	£14,900	Nov 2000 - Sept 2004 <sup>53</sup>
QinetiQ Ltd	Development of Flow Cytometry Chip (2 separate grants)	£113,997	Dec 2000 - Jan 2003 <sup>54</sup>
QinetiQ (DERA Accounts Payable)	External Graduate Student	£5,090	Feb 2002 - Sept 2002 <sup>55</sup>
QinetiQ Ltd	External Graduate Student (4 separate grants)	£11,917.50	Mar 2003 - Mar 2006 <sup>56</sup>
BAE Systems - Technology Centre	M HEMT (Metamorphic High Electron Mobility Transistor High Electron Mobility Transistors) Device Technology (2 separate grants)	£99,986	Sept 2003 - Apr 2005 <sup>57</sup>
EPSRC, QinetiQ (Malvern) and others	Novel Time-Resolved Thermal Imaging: AlGaIn/GaN Heterostructure Field Effect Transistors	£93,448	Sept 2006 - June 2010 <sup>58</sup>

### **Department of Physics and Astronomy**

Source/ Sponsor/ Partner	Project	Amount	Dates
QinetiQ (DERA Malvern)	Investigation of Advanced Magnetoresistive Sensor Elements	£21,000	Mar 2002 - Sept 2004 <sup>59</sup>
BAE Systems	Studies of Magnetic and Electric Fields around Ships	£?	2003 onwards <sup>60</sup>
PPARC CASE Awards and BAE Systems (Operations) Ltd	Applications of Lattice QCD Modelling Techniques to the Analysis of Low Frequency Electromagnetic Signatures of Marine Vehicles	£13,200	Feb 2003 - Jun 2004 <sup>61</sup>
QinetiQ Ltd	TEM of Oxides on Silicon	£16,498	June 2005 - Jul 2006 <sup>62</sup>

### **Department of History**

Source/ Sponsor/ Partner	Project	Amount	Dates
Ministry of Defence	The Army in a Changing Society: Recruitment, Race and Equal Opportunities in the British Army	£45,000	Feb 1999 - Jan 2002 <sup>63</sup>

### **Department of Mechanical Engineering**

Source/ Sponsor/ Partner	Project	Amount	Dates
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Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, QinetiQ and others	Strength Mismatched Laser Welds: a Constraint Based Assessment Method	£117,962	Sept 1999 - June 2003 <sup>64</sup>
Ministry of Defence	Consultancy Support to the Directorate of Standardisation (STAN SPM) - Standards Drafting Review. (12 separate grants)	£43,747	May 2000 - Mar 2006 <sup>65</sup>
EPSRC and Rolls Royce Plc	Control of Vibration by Smart SMA-Embedded Composite Structures	£172,533	June 2000 - May 2003 <sup>66</sup>
Rolls Royce Plc	PWR1 RPV Indexing of Constraint for Underclad Defects	£750	Feb 2001- Apr 2001 <sup>67</sup>
Ministry of Defence	Armoured Vehicles Conference	£1,100	Jan 2004 - Feb 2004 <sup>68</sup>
EPSRC and QinetiQ Ltd	Interrelationships & Visualisations within Symbolic Computational Models & Solutions in Engineering Dynamics	£144,376	May 2005 - Jul 2008 <sup>69</sup>

### **Glasgow University Archaeology Research Division (GUARD)**

Source/ Sponsor/ Partner	Project	Amount	Dates
Ministry of Defence	Excavation of Human Remains, Iraq (F052)	£7,900	Jun 2006 <sup>70</sup>

### **Computing Science**

Source/ Sponsor/ Partner	Project	Amount	Dates
Thales Optics UK Ltd	FARADAY: Real -Time 3D Modelling	£165,772	June 1999 - Sept 2002 <sup>71</sup>
QinetiQ	3D Dynamic Whole Body Measurement	£137,209	Feb 2000 - Feb 2002 <sup>72</sup>
Thales Optronics Ltd	FARADAY Studentship	£13,200	Feb 2000 - Sept 2002 <sup>73</sup>
European Commission and BAE Systems (affiliated organisation)	Multi Agent Control: Probabilistic Reasoning, Optimal Co-Ordination, Stability Analysis and Controller Design for Intelligent Hybrid Systems	£131,524	2000 onwards <sup>74</sup>

### **School of Law**

Source/Sponsor/Partner	Project	Amount	Dates
QinetiQ (DERA Malvern)	Ministry of Defence Contract (tba)	£23,201	Mar 2002 <sup>75</sup>

### **Department of Chemistry**

Source/ Sponsor/ Partner	Project	Amount	Dates
QinetiQ (DERA)	Absorbents for Desulfurisation of Diesel Fuels (3 separate grants)	£51,307	Oct 1998 - Sept 2001 <sup>76</sup>

### **Medicine - Community Based Sciences**

Source/ Sponsor/ Partner	Project	Amount	Dates
Ministry of Defence	Provision of Specialist Clinical Neuro-Psychology Consultancy (4 separate grants)	£88,416	May 2001 - Apr 2006 <sup>77</sup>
Ministry of Defence	Forensic Services in Iraq	£8,933	May 2003 - June 2003 <sup>78</sup>

### **Miscellaneous**

Source/ Sponsor/ Partner	Project	Amount	Dates
BAE Systems	2 <sup>nd</sup> International Conference on Advanced Engineering Design	£?	June 2001 <sup>79</sup>
Scottish Enterprise Glasgow	Research and Enterprise: Defence Sensors Technology Applications Centre (DSTAC)	£156,000	Mar 2005 - Apr 2008 <sup>80</sup>
Scottish Executive	Research and Enterprise: Defence Sensors Technology Applications Centre (DSTAC)	£284,794	Jun 2005 - Apr 2008 <sup>81</sup>
Strathclyde European Partnership	Research and Enterprise: Defence Sensors Technology Applications Centre (DSTAC)	£350,059	Jun 2005 - Apr 2008 <sup>82</sup>
Rolls Royce Plc	Vice-Principal (Biomedical and Life Sciences): School to University Transition in STEM Projects	£5,000	Feb 2006 - Jan 2007 <sup>83</sup>

### **Other projects/ information of note**

<b>EPSRC Supporting Collaboration with military industry</b>
<ul style="list-style-type: none"> <li>83% of Aerospace and Defence EPSRC grants are collaborations, compared to average of 30% across other sectors (Figure current of April 2006). EPSRC collaborates with a range of companies including QinetiQ, DSTL Farnborough, and Augusta Westland Helicopters Ltd. <sup>84</sup></li> </ul>
<b>Defence Sector Initiative Programme</b>
<ul style="list-style-type: none"> <li>The University of Glasgow's Defence Sector Initiative Programme Manager job purpose is as follows: <ul style="list-style-type: none"> <li>To develop technology transfer relationships with industrial &amp; government funders of research relating to the Defence Sector, with a view to increasing the volume &amp; value of research contracts with those funders.</li> <li>To identify areas of market need or potential &amp; to identify areas of research, expertise, know-how or services which could address those needs.</li> <li>To develop supply-chain relationships involving the Universities, Government Departments, major companies &amp; SMEs which will lead to development of research-based technology towards applications in the Defence Sector.</li> </ul> </li> </ul>

- To support SMEs/academics to enter into or win an increased share of defence sector contracts.
- The job will require delivery of outputs defined by external funders of the project.
- They receive a salary of £37,558 - £42,573 p.a. as well as having an annual budget of £300,000 (Sept 2005 – Apr 2008).<sup>85</sup>

## **Notation**

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

## **Endnotes**

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<sup>7</sup> Clare Reilly. Freedom of Information Secretary, University of Glasgow. 8 May 2006. Sent to Fellowship of Reconciliation.

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<sup>11</sup> "University of Glasgow selected to link with British Aerospace's Virtual University". University of Glasgow, Press Release. <http://www.gla.ac.uk/press/releases/bavu.html>. 27 January 2007.

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<sup>13</sup> Clare Reilly. Freedom of Information Secretary, University of Glasgow. 8 May 2006. Sent to Fellowship of Reconciliation.

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<sup>15</sup> "Grants, Oct 2000". University of Glasgow, Newsletter

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<http://www.gla.ac.uk:443/newsdesk/newsletter/221/html/research4.html>. 27 January 2007.

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*"The university is actively involved in a wide range of partnerships with organisations and businesses from the public and private sectors, including...BAE Systems"*<sup>1</sup>

- University of Hull website

## University of Hull 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)
30	£2,797,261	a) 20th b) 21st	1) DERA 2) EPSRC 2) QinetiQ	1) Chemistry 2) Engineering 3) Physics

### School of Engineering

Source/ Sponsor/ Partner	Project	Amount	Year
US Army	Blast Sound Absorbing Surfaces	£289,735	May 2000 to Dec 2004 <sup>2</sup>
EPSRC, BAE Systems Operations Ltd and others	Novel Plasma Electrolytic Treatment Processes to Improve the Wear and Corrosion Performance of Light-Alloys	£265,267	Apr 2001 to Jan 2003 <sup>3</sup>
QinetiQ Ltd	The Prediction and Management of Non-Specular RCS Treatments	£13,724	Dec 2001 to Mar 2002 <sup>4</sup>
US Army	Evaluation of Ground Vibrations Induced by Military Sources	£15,513	June to Nov 2004 <sup>5</sup>
Defence Science Technology Laboratory	Non-Linear Acoustic Detection (3 separate grants; 2 extensions)	£136,046	Oct 2004 to June 2006 <sup>6</sup>
DERA (Malvern)	Long-Term Requirement to Model Atmospheric Sound Propagation Over a Long Range in a Complete 3D Environment Including Topography, Atmospheric Refraction and Turbulence	£?	Current as of May 2007 <sup>7</sup>
DERA (Winfrith)	A Theoretical Study of the Effects on Acoustic Source	£?	Current as of May 2007 <sup>8</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
US Army	Localisation Systems of Spatial and Temporal Variations in Wind, Temperature and Atmospheric Turbulence, Over Various Types of Ground Surface  The Effects of Gunfire on the Mechanical and Acoustical Properties of a Porous Layer	£?	Current as of May 2007 <sup>9</sup>

### **School of Physics**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and DERA	Study Of Nanocrystal-Polymer Composites for Blue Light Emitting Diodes	£173,020	Oct 1999 to Sept 2002 <sup>10</sup>
Defence Science Technology Laboratory	Placing Gold Particles into Channels on Chip, to Focus the Microwave Energy	£30,000	Mar to Nov 2005 <sup>11</sup>

### **School of Chemistry**

Source/ Sponsor/ Partner	Project	Amount	Year
DERA	Formulation of Novel Curable Organic Coatings and Adhesives	£167,591	Apr 1999 to Mar 2002 <sup>12</sup>
DERA	Investigation of Novel Curable Organic Coatings	£23,000	Sept 1999 to Aug 2002 <sup>13</sup>
Ministry of Defence	Conjugated Polymers and Oligomers for Luminescent Applications	£59,115	Dec 1999 to Mar 2001 <sup>14</sup>
Ministry of Defence	Development of Optimised Liquid Crystal Components and Mixtures and their Analysis (Volumetric Imaging)	£58,186	Apr 2000 - Mar 2001 <sup>15</sup>
EPSRC and DERA Malvern	Fast Switching Ferroelectric and Antiferroelectric Liquid Crystals for Displays and Photonic Devices	£169,255	June 2000 - Oct 2003 <sup>16</sup>
EPSRC and DERA Malvern	Low Birefringence Ferroelectric Liquid Crystals for Actively Addressed and Reflective Mode Displays	£157,637	June 2000 - July 2003 <sup>17</sup>
EPSRC in association with: • DERA (Farnborough)	Preparation of Novel Macrostructures by	£148,489	Sept 2000 - Sept 2003 <sup>18</sup>

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
and others	Electropolymerisation.		
EPSRC and DERA Malvern	High Tilt Antiferroelectric Liquid Crystals for Novel Optical Device Configurations	£172,361	Oct 2000 - Sept 2003 <sup>19</sup>
Ministry of Defence	Development of Optimised Liquid Crystal Components and Mixtures and their Analysis (Volumetric Imaging)	£135,185	Apr 2001 to Mar 2002 <sup>20</sup>
QinetiQ Ltd	Soft Self Assembly Materials	£100,000	July 2001 to June 2003 <sup>21</sup>
QinetiQ Ltd	Research Flourinated Network Polymers for Signature Control	£24,305	Oct 2001 to Sept 2002 <sup>22</sup>
QinetiQ Ltd	Nematic Liquid Crystals (Minimum of 6 separate grants, including 2 extensions and 1 Postgraduate Research Studentship)	Minimum of £50,925	Oct 2001 to Sept 2004 <sup>23</sup>
Ministry of Defence	Nematic Liquid Crystals of Negative Dielectric Anisotropy	£80,220	Oct 2001 to Sept 2004 <sup>24</sup>
QinetiQ Ltd	Postgraduate Research Studentship	£20,690	Apr 2002 to Mar 2003 <sup>25</sup>
EPSRC and QinetiQ (Malvern)	Liquid Crystals for Applications in Photonic Devices for Telecommunications	£270,019	Nov 2002 - Dec 2004 <sup>26</sup>
EPSRC and QinetiQ (Malvern)	Dual Mode Nematic Liquid Crystal Displays (DMLCD)	£122,339	Nov 2003 - Dec 2004 <sup>27</sup>
Defence Science Technology Laboratory	Disclosure of Chemical Warfare Agents using Photoluminescent Molecular Materials Photoluminescent Sensor	£7,300	May to June 2004 <sup>28</sup>
QinetiQ Ltd	Feasibility Study on Filling Microcavities using Micro Reactor Technology - MicroCav	£12,480	Aug 2005 to Feb 2006 <sup>29</sup>

### **Politics and International Studies Department**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
Ministry of Defence	Concepts of Crimes Against Humanity	£50,000	Jan to July 2002 <sup>30</sup>

### Centre for Educational Studies

Source/ Sponsor/ Partner	Project	Amount	Year
US Army	The Extended Role of Women in Armed Forces	£44,859	Jan to Dec 2001 <sup>31</sup>

### Notation

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

### Other projects/ information of note

Project ending 2000, School of Chemistry			
Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and Dstl (Joint Grant Scheme)	Antiferroelectric Liquid Crystals: Tailoring and Understanding Novel and Unusual States of Matter	£133,120	Jan 1998 - Dec 2000 <sup>32</sup>

Project ending 2000, Centre for Educational Studies			
Source/ Sponsor/ Partner	Project	Amount	Year
US Army	Recruitment to the All-Volunteer Force	£45,356	Feb to Dec 2000 <sup>33</sup>

Award given 1999, Miscellaneous			
Source/ Sponsor/ Partner	Project	Amount	Year
BAE Systems	Women of Achievement Award - Communications and Engineering Section (1999) - Awarded for Overall Achievement in the Field of Engineering	£?	1999 <sup>34</sup>

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*"[The Faculty of Engineering]...is also a foundation member of the MoD's first Defence Technology Centre (DTC) and each centre attracts approximately £30 M[illion] spread across six years. The College has already secured £1.7 M[illion] for the first three years and we expect to increase this figure. It goes without saying that we will be bidding for a similar sum for the second three-year period. There is already strong evidence to suggest that the DTC is spawning numerous other opportunities to work with industry."*<sup>1</sup>

- Imperial College London website

## Imperial College London 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)
95	£24,642,446	a) 7th b) 7th	1) EPSRC 2) MoD 3) BAE Systems	1=) Electrical and Electronic Engineering 1=) Aeronautics 2) Materials

### School of Aeronautics

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Vosper Thornycroft (UK) Ltd, Ministry of Defence, Dowty Propellers (Smiths Group) and others	Numerical Simulation of the Processing of Thick Composite Structures	£217,897	June 1999 – Nov 2002 <sup>2</sup>
EPSRC and Rolls Royce Plc	MTP99: Advanced Computational Methods for Aeronautics Flow Management and Fluid Structure Interaction	£535,913	Sept 2000 – Mar 2004 <sup>3</sup>
EPSRC and British Aerospace Plc	DARP: Development of Turbulence Models for Complex Strain using DNS Data for Separated & 3D Flows	£141,741	June 2001 – Apr 2004 <sup>4</sup>
EPSRC, Ministry of Defence and others	Mode Jumping in Post Buckled Stiffened Composite Aerostructures	£65,974	Sept 2001 – Sept 2004 <sup>5</sup>
Dstl	Research Grant	£?	Since 2001 <sup>6</sup>
QinetiQ	Research Grant	£?	Since 2001 <sup>7</sup>
US Navy	Research Grants (2)	£?	Since 2001 <sup>8</sup>
Defence Science & Technology Laboratory	AEDZ-Aerodynamics Section	£135,000	Mar 2003 <sup>9</sup>
EPSRC, British Aerospace Plc, QinetiQ Ltd and Rolls Royce Plc	DARP: Measurement and Modelling of Turbulent Under-Expanded Jets	£171,326	Sept 2003 – Sept 2006 <sup>10</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, British Aerospace Plc, QinetiQ Ltd and Rolls Royce Plc	DARP: Highly Swept Leading Edge Separations - Computational Investigation	£228,850	Sept 2003 – Aug 2007 <sup>11</sup>
EPSRC, and BAE Systems Plc	DARP: Modelling Failure Initiation and Damage Progression in RTM Structures	£107,597	Oct 2003 – July 2007 <sup>12</sup>
ARL (US army), BAE Systems, Dowty Propellers (Smiths Group), DERA, Dstl, DTI, EADS, EPSRC, Halliburton Energy Services, MBDA, MoD, NATO, Office of Naval Research, Polish Airforce Association, QinetiQ, Rolls Royce, Smiths Aerospace, US Army ERO and Westland Helicopters	The Composites Centre for Research, Modelling, Testing and Training Advances Composites  Funding is approximately: <ul style="list-style-type: none"> <li>• 37% EPSRC,</li> <li>• 17% from MOD and DTI, and</li> <li>• 46% Industry, EEC, and Overseas Organizations</li> </ul>	Total over £6,000,000	2004 –2006 <sup>13</sup>
EPSRC, QinetiQ Ltd and BAE Systems Plc	DARP: Composite Bonded Repairs for Resin Infused Structures: Strength and Fatigue Performance	£182,973	Feb 2004 – Aug 2007 <sup>14</sup>
Dstl	AESZ-Structures Section	£0	Mar 2004 <sup>15</sup>
Defence Science & Technology Laboratory	AESZ-Structures Section	£18,000	Oct 2004 <sup>16</sup>
GKN Westland Helicopters Ltd	AEDZ Aerodynamics Section	£142,709	Oct 2004 <sup>17</sup>
QinetiQ	CFD and Experimental Modelling of Fuel Jet-Injection and Supersonic Mixing in the Presence of Zero and Finite Pressure Gradients, Applicable to Scramjets	£?	Current as of May 2007 <sup>18</sup>
Defence Science and Technology Laboratory	The Effects of High-Altitude Ice on a Re-Entry Vehicle	£?	Current as of May 2007 <sup>19</sup>
Dstl and EPSRC	Three-Dimensional Hypersonic Shock Wave/ Boundary-Layer Interaction Investigation using Theoretical, Computational and Experimental Techniques	£?	Current as of May 2007 <sup>20</sup>
EPSRC and QinetiQ CASE Studentship	Dual-Mode Ramjet/ Scramjet Transition Studies at Hypersonic Speeds Using Computational Methods	£?	Current as of May 2007 <sup>21</sup>



## **School of Materials**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
EPSRC, Ministry of Defence and others	Joint Research Equipment Initiative (JREI): Multi-scale Simulation of Materials Processing	£54,587	Apr 1998 – Apr 2001 <sup>22</sup>
EPSRC, Ministry of Defence, Rolls Royce Plc and others	Improved Reliability of Thermal Barrier Coatings	£189,976	June 1998 – Nov 2001 <sup>23</sup>
EPSRC, Vosper Thornycroft (UK) Ltd, Dowty Propellers (Smiths Group) and Ministry of Defence	Numerical Simulation of the Processing of Thick Composite Structures	£217,897	June 1999 – Nov 2002 <sup>24</sup>
EPSRC, Rolls Royce and others	Solidification Defects in Single Crystal and Secondary Melting Processing of Nickel-Base Superalloys	£242,599	Oct 1999 – July 2003 <sup>25</sup>
EPSRC, Rolls Royce and others	Integrated Process Modelling for Gas Turbine Manufacture	£222,533	Sept 2000 – Feb 2004 <sup>26</sup>
EPSRC, Ministry of Defence and Rolls Royce Plc	Crystallographic Characterisation of Creep Deformation in Sx Superalloys Under Multiaxial Loading	£283,994	Dec 2000 – June 2004 <sup>27</sup>
EPSRC, DERA Malvern and others	(Re) Bco Coated Conductor Processing by Liquid Phase Epitaxy	£222,097	Apr 2001 – Aug 2003 <sup>28</sup>
QinetiQ	Grants to Support 2 Postgraduate Students	£?	Since 2001 <sup>29</sup>
Office of Naval Research	Grants to Support 1 Postgraduate Student	£?	Since 2001 <sup>30</sup>
EPSRC, Rolls Royce and others	Simulation of Microstructural Defects in Investment Cast Turbine Blades	£256,425	Oct 2002 – Mar 2006 <sup>31</sup>
EPSRC, Rolls Royce Plc and others	Quantification of the Conditions Leading to the Formation of Defects in SX Superalloy Processing	£310,399	Apr 2004 – Mar 2007 <sup>32</sup>
EPSRC and Rolls Royce Plc	Effect of Texture on Performance in Ti6Al-4V	£123,648	Oct 2004 – Sept 2007 <sup>33</sup>
EPSRC, Rolls Royce Plc and others	Accounting for Spatial and Temporal Variations of Microstructure on Creep-Related Behaviour of Nickel-Base Superalloys	£367,807	Oct 2005 – Oct 2008 <sup>34</sup>
EPSRC, Rolls Royce Plc and others	Measurement and Modelling of Electrical, Transport and Phase-Change Phenomena and Application to Vacuum Arc Remelting for Optimal Material Quality	£88,445	Oct 2006 – Oct 2009 <sup>35</sup>

### **School of Mechanical Engineering**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
EPSRC, BAE Systems Operations Ltd, British Aerospace Plc and others	Ultrasonic Transducer Design and Communications for Intelligent Monitoring of Structures	£108,112	June 1999 – May 2002 <sup>36</sup>
EPSRC, Westland Helicopters Ltd and others	Behaviour of Lubricants at Asperities in Mixed Lubrication	£209,014	Oct 2000 – Sept 2003 <sup>37</sup>
EPSRC, Rolls Royce Plc and others	Thermosonics - A New, Quick Technique for Crack Detection	£244,360	Sept 2003 – Aug 2006 <sup>38</sup>
Ministry of Defence	MEND – Non-Destructive Testing Group	£8,500	April 2005 <sup>39</sup>
Rolls Royce Plc (Ministry of Defence original funder)	MESM Mechanics of Materials Group	£99,681	Oct 2005 <sup>40</sup>
EPSRC, BAE Systems Advanced Technology Centre and others	Efficient Structural Health Monitoring Systems using Sparse Distributed Sensor Arrays.	£244,372	Oct 2005 – Sept 2008 <sup>41</sup>
BAe, DERA, EPSRC and others	Computational Mechanics Group, Previously known as the Nuclear Power Section	£?	Current as of May 2007 <sup>42</sup>

### **School of Electrical & Electronic Engineering**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
EPSRC, British Aerospace, DERA Malvern and others	Optoelectronic Crosspoint Switch (STAR)	£?	1998 – 2001 <sup>43</sup>
EPSRC, QinetiQ (Malvern) and others	SIGE for MOS Technologies	£204,685	Oct 1998 – Mar 2002 <sup>44</sup>
Funded by MoD and DoD (US)	International Technology Alliance grant	\$2,670,000	2006 (potentially until 2015) <sup>45</sup>
Consortium led by IBM US industry consortium partners include: - The Boeing Company	International Technology Alliance (ITA) in Network and Information Sciences. The ITA brings together leading U.S. and UK commercial and academic organisations in four interconnected areas of research: Network Theory; Security across a System of Systems; Sensor Information Processing and Delivery; and Distributed Coalition Planning and Decision Making.	Total Project Value up to \$135,800,000	

Source/ Sponsor/ Partner	Project	Amount	Year
	<p>The [ITA] is one of the world's largest collaborative technology programmes.</p> <p>UK Academic partners include:</p> <ul style="list-style-type: none"> <li>• Imperial College, London,</li> <li>• University of Aberdeen,</li> <li>• University of Cambridge,</li> <li>• University of Cranfield,</li> <li>• Royal Holloway and Bedford New College (University of London),</li> <li>• University of Southampton, and</li> <li>• University of York</li> </ul>		
QinetiQ (Subcontracted to Microsaic Systems)	RF MEMS for Space	£?	2001 <sup>46</sup>
MoD	<ul style="list-style-type: none"> <li>• Advanced Signal Processing Algorithms</li> </ul>	£42,000	2001 – 2002
	<ul style="list-style-type: none"> <li>• Low Group Delay Compensation Filter Design</li> </ul>	£11,500	2000 - 2001 <sup>47</sup>
EPSRC, DERA Malvern and others	Technologies For Microengineered Power Systems (Tempos)	£211,738	June 2001 – June 2004 <sup>48</sup>
General Dynamics	Grants to support 11 Postgraduate students (8 grants made in total)	£?	Since 2001 <sup>49</sup>
BAE Systems	Grants to support 2 Postgraduate students	£?	Since 2001 <sup>50</sup>
Thales, BAE Systems, QinetiQ and others	EU VICTORIA: Validation on Platform for Integration of Standardised Components, Technologies and Tools in an Open, Modular and Improved Aircraft Electronic System. Associate Contractor: Smiths Aerospace	£?	Dec 2002 – June 2004 <sup>51</sup>
Dstl (Fort Halstead) and EADS/ Astrium	C6oAT's nanowhiskers	£?	2003 <sup>52</sup>
BAE Systems, EADS/ Astrium and others	RF MEMS Filters	£?	2003 <sup>53</sup>
QinetiQ and MoD	C2 Agents	£240,000	Apr 2003 – Sept 2006 <sup>54</sup>
General Dynamics UK Ltd	Adaptive Networks	£55,000	Oct 2003 – Sept 2006 <sup>55</sup>
General Dynamics UK Ltd and MoD	Advanced Data Fusion Systems/Project 6.8 DIF DTC	£486,000	Oct 2003 – Nov 2006 <sup>56</sup>
EPSRC and	Decentralised Data and	£1,100,000	Oct 2005 –

Source/ Sponsor/ Partner	Project	Amount	Year
BAE	Information Systems		Sept 2010 <sup>57</sup>
Thales Research Ltd (Original Funder DTI)	EESB Communications and Signal Processing Research	£121,219	Nov 2005 <sup>58</sup>
MoD and DoD	WP3 on Sensor Networks as part of the International Technology Alliance (ITA)	£1,400,000	Aug 2006 – Sept 2010 <sup>59</sup>
General Dynamics UK Ltd and MoD	Hierarchical Activation for Multiple Model Execution and Recognition (Demiris)	£509,000	Sept 2006 – Aug 2009 <sup>60</sup>
EPSRC, BAE Systems Ltd and MoD	The Behaviour, Performance and Control of Systems of Interacting Collaborative or Adversarial Agents	£?	Current as of May 2007 <sup>61</sup>
EPSRC, MoD and others	Wired and Wireless Autonomic Communications	£?	Current as of May 2007 <sup>62</sup>

### **School of Civil and Environmental Engineering**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Defence Science & Technology Laboratory (MoD)	Residual Strength and Stiffness of Blast Damaged Composite Panels. Included Postdoctoral Research Associate (PDRA) under the Joint Grant Scheme (JGS)	Project Value £238,000	2006 - 2009 <sup>63</sup>

### **School of Physics**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, QinetiQ (Malvern) and others	A SIGE on Insulator Technology for High Speed, Low Power Mobile Communications Applications	£123,647	Sept 1997 – Feb 2001 <sup>64</sup>
EPSRC, Ministry of Defence and others	UK Quantum Optics Network	£51,571	Feb 1998 – Feb 2001 <sup>65</sup>
EPSRC, Los Alamos National Laboratory, DERA Malvern and others	High Field Magnetic Imaging of Superconductors and Other Materials	£252,352	Mar 2001 – Feb 2004 <sup>66</sup>
EPRSC, DTC Research Centre, BAE Systems Avionics (Management) Ltd, DERA Malvern, Thales Optics UK Ltd and others	MTP: Optics and Photonics	£1,384,969	May 2001 – May 2004 <sup>67</sup>
ESPRC, DERA Malvern and others	(Re) Bco Coated Conductor Processing by Liquid Phase Epitaxy (NB included as both 'other investigators' are from Imperial)	£52,490	Sept 2003 – Mar 2004 <sup>68</sup>
Atomic Weapons	PHPL - Plasma Physics Group	£300,815	Oct 2003 <sup>69</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
Establishment Plc			
ESPRC and Dstl	Energetic Protons and Ions from High Intensity Laser Plasma Interactions	£483,459	Jan 2005 – Dec 2007 <sup>70</sup>

### **School of Electronic Materials & Devices**

Source/ Sponsor/ Partner	Project	Amount	Year
ESPRC, British Aerospace Plc and others	IN-Plane and Vertical Cavity Quantum Dot Lasers	£244,785	May 1999 – May 2001 <sup>71</sup>

### **School of Chemistry**

Source/ Sponsor/ Partner	Project	Amount	Year
Atomic Weapons Establishment Plc	CHBBC Biological and Biophysical Chemistry	£118,035	Oct 2002 <sup>72</sup>

### **Chemical Engineering and Chemical Technology**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Rolls Royce Plc and others	Catalyst Configurations for Indirect Internal Reforming of Methane in SOFCS	£189,619	Mar 1998 – Sept 2001 <sup>73</sup>
EPSRC, Rolls Royce Plc and others	Development of an Internally Reforming Solid Oxide Fuel Cell Module	£86,236	Mar 1999 – Aug 2001 <sup>74</sup>
Defence Science & Technology Laboratory QinetiQ and MoD	CEMET- Materials Engineering & Technology Hierarchical Thermoset Composites with Carbon Nanotube Grafted Fibres	£15,400 £?	Mar 2004 <sup>75</sup> Current as of May 2007 <sup>76</sup>

### **School of Molecular Sciences/ Cellular & Molecular Biology**

Source/ Sponsor/ Partner	Project	Amount	Year
Defence Science & Technology Laboratory	LCCM - CMMI	£100,000	Dec 2002 <sup>77</sup>
Defence Science & Technology Laboratory	LCCM - CMMI	£210,000	May 2004 <sup>78</sup>

### **Tanaka Business School**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and QinetiQ	Chair in Technology Transfer in the Physical Sciences	£1,000,000	Established 2005 <sup>79</sup>
NATO Eurofighter and Tornado Management Agency	Maximising the Utility of Business Information Systems in NETMA	£?	Recent as of Mar 2007 <sup>80</sup>
US Navy	An Analysis of Women Junior Officer Retention in the US Navy	£?	Recent as of Mar 2007 <sup>81</sup>
BAE Systems	Learning in a Complex Environment	£?	Recent as of Mar 2007 <sup>82</sup>

### **School of Computing**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
DTC and BAE Systems	Computing, Optimization and Route Planning for Unmanned Vehicles	£?	Current as of Mar 2007 <sup>83</sup>

### **School of Medicine**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
NATO	NATO Advanced Research Workshop: Foresight, Precaution and Risk: Preparing for the Unexpected	£23,000	2005 <sup>84</sup>
NATO Pilot Study and MoD	Managing Effective Risk Response: An Ecological Approach (MERREA)	£69,000	2003 – 2005 <sup>85</sup>
NATO and others	GIS for Emergency Preparedness and Health Risk Reduction: NATO Advanced Research Workshop	£35,000	2000 – 2001 <sup>86</sup>

### **Research Services Division**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
BAE Systems	15 Projects Received Research Funding	£1,157,834	Since Aug 2003 <sup>87</sup>
EADS	1 Project Received Research Funding	£125,000	Since Aug 2003 <sup>88</sup>
GKN plc	1 Project Received Research Funding	£142,709	Since Aug 2003 <sup>89</sup>
QinetiQ	14 Project Received Research Funding	£1,384,430	Since Aug 2003 <sup>90</sup>
Rolls Royce, including their University Technology Centres	17 Project Received Research Funding	£4,050,985	Since Aug 2003 <sup>91</sup>
Smiths Group Plc	1 Project Received Research Funding	£105,000	Since Aug 2003 <sup>92</sup>
Thales Group	Over 2 Projects Received Research Funding	£338,729	Since Aug 2003 <sup>93</sup>
Ministry of Defence	5 Project Received Research Funding	£188,986	Since Aug 2003 <sup>94</sup>
Defence Science Technology Laboratory	7 Projects Received Research Funding	£1,006,855	Since Aug 2003 <sup>95</sup>

### **Miscellaneous**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
EPSRC and BAE Systems	FLAVIIR: Technologies for Future Unmanned Air Vehicles	Total Project £6,200,000	Current 5 year project <sup>96</sup>
Imperial College London Departments involved:	University Partners include: • Cranfield University,	Nominally split into a 3 year research	

<ul style="list-style-type: none"> <li>Control Systems,</li> <li>Aerodynamics,</li> <li>LES and Turbulence and</li> <li>Materials</li> </ul>	<ul style="list-style-type: none"> <li>University of Leicester,</li> <li>University of Liverpool,</li> <li>University of Manchester,</li> <li>University of Nottingham,</li> <li>University of Southampton,</li> <li>University of Wales, Swansea,</li> <li>University of Warwick, and</li> <li>University of York</li> </ul> <p>The FLAVIIR Project's Steering Group includes members from</p> <ul style="list-style-type: none"> <li>Ministry of Defence</li> <li>BAE Systems</li> </ul>	phase followed by a 2 year demonstration phase.	
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### **Notation**

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

### **Other projects/information of note**

<b>Projects ending 2000, School of Biology</b>			
<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
Defence Science & Technology Laboratory	LBPM Plant and Microbial	£158,673.20	Oct 2000 <sup>97</sup>
Defence Science & Technology Laboratory	LCCM - CMMI	£167,876.80	Oct 2000 <sup>98</sup>

<b>Project ending 1999, School of Environmental Science and Technology</b>			
<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
Ministry of Defence	EVMMR – EMMA Research	£121,979	Dec 1999 <sup>99</sup>

<b>Project ending 2000, School of Physics</b>			
<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
EPSRC, QinetiQ (Malvern) and others	SIGE for MOS Technologies	£282,918	Nov 1997 – Oct 2000 <sup>100</sup>

<b>Projects ending 2000, School of Electrical and Electronic Engineering</b>			
<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
EPSRC, QinetiQ and others	SIGE for MOS Technologies (Micropower)	£256,085	Sept 1997 – Sept 2000 <sup>101</sup>
EPSRC, Dstl within a Joint Grant Scheme (JGS) and others	Optimisation of Bulk Micromachined Electrostatic Actuators	£124,339	July 1997 – July 2000 <sup>102</sup>

<b>Project ending 2000, School of Mechanical Engineering</b>			
<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
Atomic Defence Weapons Establishment Plc	MEDY Dynamics of Machines and Structures Group	£60,761.50	Oct 2000 <sup>103</sup>

## Endnotes

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*"The Division, which is part of the School of Physical Sciences and Engineering, has excellent links with industry including: ...BAE Systems...[and] Thales..."<sup>1</sup>*

- King's College London website

## King's College London 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)
19	£1,092,026	a) 22nd  b) 25th	1=) QinetiQ  1=) EPSRC  2=) BAE Systems  2=) MoD	1) War/ Defence Studies  2) Physical Sciences and Engineering

### School of Biomedical & Health Sciences

Source/ Sponsor/ Partner	Project	Amount	Year
Departmental work includes close collaboration with the Royal Navy and Army, QinetiQ Farnborough and others	Aviation Medicine Degrees provided in association with the Medical Branch of the Royal Air Force	£?	Current as of April 2007 <sup>2</sup>

### War Studies Department and Centre for Defence Studies

Source/ Sponsor/ Partner	Project	Amount	Year
Ministry of Defence and NATO	"Researchers within the Centre for Defence Studies have been involved in successful consultancy with government and private industry for over fifteen years."	£?	Current as of May 2004 <sup>3</sup>
Rolls Royce	1 Student Placement	£?	Since 2001 <sup>4</sup>
Ministry of Defence and others	King's Centre for Military Health Research (KCMHR), a joint initiative undertaken with King's College London's Institute of Psychiatry	£?	Current as of March 2007 <sup>5</sup>
NATO	Strategic and Organisational Implications for Euro-Atlantic Security of the Information Warfare Threat, within the International Centre for	£?	1999 – 2002 <sup>6</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
	Security Analysis (ICSA)		

### **Department of Electronic Engineering**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC via King's College London and Matra BAe Systems	Computational Heterogeneously Timed Networks (COHERENT) Collaborative research project with University of Newcastle	Approx. £340,000	July 2001 - 2004 <sup>7</sup>

### **Forensic Science & Drug Monitoring**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Dstl (Fort Halstead) and others	Light It Up: A Nanotechnology Approach for the Acquisition of Forensic Evidence	£178,613	Nov 2006 - April 2009 <sup>8</sup>

### **School of Mechanical Engineering**

Source/Sponsor/Partner	Project	Amount	Year
EPSRC, QinetiQ Ltd and others	Modelling and Estimation of Vehicle-Terrain Interactions for Autonomous Unmanned Ground Vehicles	£322,447	Nov 2003 - April 2007 <sup>9</sup>
EPSRC and DERA	Autonomous Excavation Strategies for Mobile Front End Excavators based on Soil Tool Interaction Modelling. Principles will be tested and demonstrated using computer simulation studies and experimental facilities at DERA	£85,643	Nov 2001 - Oct 2003 <sup>10</sup>

### **Miscellaneous**

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ	3 Student Placements from an unknown University department	£?	Since 2001 <sup>11</sup>
Royal College of Defence Studies	Arrangement to teach students at the RCDS	£?	Since 2001 <sup>12</sup>
Smiths Detection	Consultancy	£1,813 (£2,130 Inc. VAT)	Dec 2005 <sup>13</sup>
Kings College London, DERA, Rolls Royce Plc, BAE Systems Plc, GKN Westland Helicopters,	Defence, Aerospace & Systems Panel as part of the UK Foresight Programme Other organisations involved in the project include:	£?	1999 - 2002 <sup>14</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
Thales, MoD and others	<ul style="list-style-type: none"> <li>• QinetiQ,</li> <li>• Vickers Defence,</li> <li>• University College London,</li> <li>• University of Loughborough,</li> <li>• Cranfield University,</li> <li>• Cambridge University, and</li> <li>• Manchester Metropolitan University</li> </ul>		
BAE Systems and Imperial College, London	TrustCom (EU Framework 6 Project)	£?	Current as of Feb 2007 <sup>15</sup>

### **School of Physical Sciences and Engineering**

Source/ Sponsor/ Partner	Project	Amount	Year
Member organisations include: BAE Systems, Thales and others	Centre for Telecommunications Research (CTR) Virtual Centre of Excellence in Mobile & Personal Communications Limited	£?	1996 - current as of Feb 2007 <sup>16</sup>
Dstl for the UK Ministry of Defence	Untitled project with the Centre for Mechatronics & Manufacturing Systems (CMMS)	£56,421	Feb 2004 - Feb 2007 <sup>17</sup>
EPSRC and QinetiQ	The Centre for Digital Signal Processing Research (CDSPR)	£?	Feb 2002 - May 2007 <sup>18</sup>

### **School of Physics**

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ	Smart X-Ray	£?	Since 2001 <sup>19</sup>
EPSRC, Naval Research Laboratories, University of Bristol and others	Electrically Active Defects and Carrier Trapping in Semiconducting Diamond	£107,089	May 2004 - Dec 2007 <sup>20</sup>

### **Notation**

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

### **Other projects/ information of note**

Project ending 2000, International Centre for Security Analysis			
Source/ Sponsor/ Partner	Project	Amount	Year



DERA	Information Warfare Attack Assessment System (IWAAS), within the International Centre for Security Analysis (ICSA). Includes the involvement of other partners	£?	1997 - 2000 <sup>21</sup>
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<b>School of Social Science and Public Policy</b>
<ul style="list-style-type: none"> <li>King's College London's School of Social Science and Public Policy lists QinetiQ among the organisations it has partnered.<sup>22</sup></li> </ul>

## Endnotes

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# University of Leeds

<http://www.leeds.ac.uk/>

*"The Global Engineering Design Team (GEDT) project is an industrially linked project run over an academic year with a distributed team of high calibre Mechanical Engineering students based in Leeds and Arizona State University supported by Rolls-Royce plc, [...] and Boeing."*<sup>1</sup>

- University of Leeds website

## University of Leeds 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	£3,856,532	a) 11th=  b) 19th	1=) QinetiQ  1=) Rolls Royce  2=) BAE Systems	1) CPD Unit/ SPEME  2) Mechanical Engineering  3) Careers

### School of Computing

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and BAE Systems	White Rose Grid (WRG), E-Science Center of Excellence, WRUC. A Research Proposal in Systems Engineering Addressing the Question: "Are you Prepared for NEC (Network Enabled Capacity)?"	£1,400,000	2003 Onwards (Until at least Apr 2011)
Project collaborators include: <ul style="list-style-type: none"> <li>University of Oxford</li> <li>University of Sheffield</li> <li>University of York</li> <li>University of Loughborough's Aeronautical and Automotive Engineering Department and</li> <li>Rolls Royce</li> </ul>	Distributed Aircraft Maintenance Environment: DAME, builds on this project. (Funded by EPSRC under the UK e-Science Programme)	£272,083	University of Leeds Mar 2006 - Feb 2008
		Total project: £3,096,172 split between the participating universities	Jan 2002 - Sept 2005 <sup>2</sup>

### Institute for Material Research

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ Cody Technology Park	Research into NIR and MID-IR Triple Core Fibres for Sensors/ Multicore Fibres	£18,586	Jan 2002 - June 2002 <sup>3</sup>

### **School of Electronic and Electrical Engineering**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
QinetiQ Cody Technology Park	Characterisation of GPS Signals and Error Sources/ Formation Flying	£25,555	Feb 2001 - Sept 2001 <sup>4</sup>
BAE	Case Award	£4,000	Sept 2001 <sup>5</sup>
QinetiQ	Conference - 1st International Conference on BISAT	£150	Nov 2001 <sup>6</sup>
EADS Astrium Ltd	Galileo Discriminators (2 separate grants)	£85,000	Nov 2001 - Oct 2003 <sup>7</sup>
BAE Systems Stirling Square	Electro Magnetic Remote Sensing - Defence Technology Centre (3 separate grants)	£326,670	Mar 2003 - Mar 2006 <sup>8</sup>
BAE Systems Stirling Square	Solid States Terahertz Sources and Detectors	£5,000	Dec 2003 - Jan 2004 <sup>9</sup>
BAE Systems Stirling Square	Terahertz Imaging and Samples	£5,000	Jan 2004 - Dec 2004 <sup>10</sup>
EPSRC, BAE Systems Electronics Ltd, ASTRIUM, QinetiQ Ltd, Thales Research Ltd and others	Seamless Positioning in All Conditions and Environments - "SPACE"	£157,956	Sept 2004 - Sept 2007 <sup>11</sup>

### **School of Mechanical Engineering**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
EPSRC and Dstl - Joint Grant Scheme (JGS)	Combustion of Droplet Suspensions Relating to Gas Turbine Combustion	£191,473	July 1999 - June 2002 <sup>12</sup>
QinetiQ Cody Technology Park	DERA - Investigation of Individual Wheel Control	£26,500	April 2000 - Mar 2003 <sup>13</sup>
Rolls Royce	Conference - 3rd ASMO UK	£150	May 2001 <sup>14</sup>
Rolls Royce	Conference - 3rd ASMO UK	£165	Jun 2001 <sup>15</sup>
QinetiQ	Conference - 3rd ASMO UK	£180	Jun 2001 <sup>16</sup>
GKN	Conference - DIACS: 42 Volts Colloquia	£75	July 2001 <sup>17</sup>
QinetiQ Cody Technology Park	Investigation of Anisotropic Fracture of Ductile Metals in Tension	£100,281	July 2001 - Mar 2004 <sup>18</sup>
QinetiQ	Consumables for the Flying Wedge	£3,286	Jun 2002 <sup>19</sup>
Rolls Royce	Technical Services	£2,350	Jun 2002 <sup>20</sup>

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
Rolls Royce	Conference - 29th Leeds/ Lyon Tribology Symposium	£780	Aug 2002 <sup>21</sup>
BAE	BS2573 Course (2 separate grants)	£5,864	Mar 2003 <sup>22</sup>
Rolls Royce	Technical Services for Vibration Investigation Project	£3,525	Jan 2004 <sup>23</sup>
BAE	BS2573 Course	£5,464	Mar 2004 <sup>24</sup>
EPSRC, Rolls Royce Plc and others	Fundamental Engine Fuel Studies at Intermediate & High Pressures & Temperatures	£291,206	July 2004 - June 2007 <sup>25</sup>
QinetiQ	Conference - 31st Leeds/ Lyon Tribology Symposium	£785	Aug 2004 <sup>26</sup>
EPSRC, Heriott-Watt University, AWE Aldermaston, Smart Optics Faraday Partnership and others	Optimum Multi-Wavelength Interferometric Sensing: Absolute Metrology from Nanometres to 100m	£249,159	July 2006 - June 2009 <sup>27</sup>

### **School of Fuel and Energy**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
EPSRC and Dstl - Joint Grant Scheme (JGS)	An Investigation into NO-NO2 Conversion and CO Emission from Gas Turbine Exhaust	£133,759	Oct 1998 - June 2001 <sup>28</sup>
EPSRC and Rolls Royce Plc	MTP99: Sustainable Energy Engineering	£434,467	Mar 2000 - Mar 2004 <sup>29</sup>
EPSRC and Dstl - Joint Grant Scheme (JGS)	The Automated Optimisation of Reaction Rate Parameters for Complex Hydrocarbon Chemical Kinetics Scheme	£150,086	Aug 2001 - July 2004 <sup>30</sup>

### **CPD Unit/ SPEME**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
Rolls Royce	Course - Combined Heat and Power in Industry and Commerce	£475	Mar 2001 <sup>31</sup>
QinetiQ	Conference - Ferroelectric Networks	£375	Nov 2001 <sup>32</sup>
QinetiQ	Course - Fire Dynamics and Modelling	£950	Dec 2001 <sup>33</sup>
BAE	Course - Economics of Fire Protection	£795	Mar 2002 <sup>34</sup>
Rolls Royce	Course - Spark Ignition Engine	£325	Nov 2002 <sup>35</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
	Emission		
QinetiQ	Course - Ultra Low NOX Turbine Combustion	£150	Feb 2003 <sup>36</sup>
Rolls Royce	Course - Industrial Air Pollution Monitoring	£1,620	Mar 2003 <sup>37</sup>
Rolls Royce	Course - Engine Emissions Measurement	£330	Jun 2003 <sup>38</sup>
Rolls Royce	Course - Ultra Low NOX Turbine Combustion	£1,730	Dec 2003 <sup>39</sup>
QinetiQ	Course - Fire Dynamics and Modelling	£995	Dec 2003 <sup>40</sup>
QinetiQ	Course - Fire Dynamics and Modelling	£995	Jan 2004 <sup>41</sup>
Thales Group	Conference - MBE 2004 (2 separate grants)	£1,215	July 2004 <sup>42</sup>
Thales Group	Conference - MBE 2004	£50	Aug 2004 <sup>43</sup>
QinetiQ	Conference – BACG (Two separate grants)	£500	Aug 2004 <sup>44</sup>
Rolls Royce	Course - Ultra Low NOX Turbine Combustion	£1,701	Dec 2004 <sup>45</sup>
Rolls Royce	Course - Combustion in Boilers and Furnaces	£600	Mar 2005 <sup>46</sup>
Rolls Royce	Course - Ultra Low NOX Turbine Combustion	£1,791	Nov 2005 <sup>47</sup>

**Keyworth Institute (NB “closely linked with Northern Defence Industries”<sup>48</sup>)**

Source/ Sponsor/ Partner	Project	Amount	Year
Project supported by: <ul style="list-style-type: none"> <li>Rolls Royce Defence Europe</li> <li>Boeing</li> </ul> and others e.g. Honeywell	Development of an enhanced Engine Health Monitoring system to improve the performance and reliability of an RTM322 helicopter engine, as part of the Global Engineering Design Team. The GEDT involves Arizona State University	£?	“GEDT is now in its 7th year (2004 -2005)” <sup>49</sup>
Thales Group	Consultancy	£1,763	Aug 2001 <sup>50</sup>
BAE	International Corporate Leadership Programme	£2,938	Oct 2001 <sup>51</sup>
Rolls Royce	International Corporate Leadership Programme	£6,110	Aug 2002 <sup>52</sup>
Thales Group	International Corporate Leadership Programme	£1,880	Sept 2002 <sup>53</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
BAE	T & S for BS2573 Course	£874	Apr 2003 <sup>54</sup>
Rolls Royce	International Corporate Leadership Programme	£6,110	Oct 2003 <sup>55</sup>
BAE	BS2573 Course	£588	Apr 2004 <sup>56</sup>

### **School of Earth and Environmental Energy & Resources Research Institute**

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ Cody Technology Park	Optimization of Chemical Kinetics using Genetic Algorithms	£147,792	Oct 2000 - Sept 2003 <sup>57</sup>

### **School of Physics and Astronomy**

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ Cody Technology Park	Biomembrance Development	£21,750	Feb 2002 - May 2002 <sup>58</sup>
Rolls Royce	XPS Analyses	£1,576	Aug 2004 <sup>59</sup>

### **Careers Department**

Source/ Sponsor/ Partner	Project	Amount	Year
Thales Group	Yorkshire Graduate Recruitment Fair	£379	Jun 2001 <sup>60</sup>
Rolls Royce	Sponsorship for Launch Event for Finalists	£300	Dec 2001 <sup>61</sup>
QinetiQ	Yorkshire Graduate Recruitment Fair	£472	Jun 2002 <sup>62</sup>
BAE	Yorkshire Graduate Recruitment Fair	£492	June 2002 <sup>63</sup>
BAE	Meet and Greet Day	£88	Nov 2002 <sup>64</sup>
QinetiQ	Careers Day, Careers	£541	Jun 2003 <sup>65</sup>
BAE	Career Admin for Presentation	£88	Oct 2003 <sup>66</sup>
BAE	Meet and Greet Day	£94	Oct 2003 <sup>67</sup>
Rolls Royce	Work Experience Fair	£346	Dec 2003 <sup>68</sup>
BAE	Careers Opportunities 'Where Maths Counts' Fair	£176	Nov 2004 <sup>69</sup>

### **Institute for Medieval Studies**

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ	Conference IMC 2001	£198	Apr 2001 <sup>70</sup>

### **Library**

Source/ Sponsor/ Partner	Project	Amount	Year
BAE	Document Supply – LUCID	£21	Feb 2003 <sup>71</sup>

### **Psychology Department**

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ	Consultancy - Attribution Styles and Communication Strategies for Sub-State Asymmetric Threat	£9,100	Mar 2004 <sup>72</sup>

### **Catering**

Source/ Sponsor/ Partner	Project	Amount	Year
BAE	Catering (2 separate grants)	£653	Oct 2003 <sup>73</sup>

### **IRC Physics**

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ	Consultancy – Electrostrictive Polymers	£10,134	Jan 2002 <sup>74</sup>

### **Miscellaneous**

Source/ Sponsor/ Partner	Project	Amount	Year
BAE Systems Stirling Square	ROFMOD	£0	April 2003 - Mar 2006 <sup>75</sup>

### **Notation**

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

### **Endnotes**

<sup>1</sup> "Undergraduates – GEDT". University of Leeds. Keyworth Institute.  
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- <sup>12</sup> "Details of Grant". Engineering and Physical Science Research Council. <http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=GR/M20143/01>. 6 March 2007.
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- <sup>14</sup> Janet Jurica. Senior Assistant Registrar, University of Leeds. 22 October 2006. Sent to Fellowship of Reconciliation.
- <sup>15</sup> Janet Jurica. Senior Assistant Registrar, University of Leeds. 22 October 2006. Sent to Fellowship of Reconciliation.
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- <sup>17</sup> Janet Jurica. Senior Assistant Registrar, University of Leeds. 22 October 2006. Sent to Fellowship of Reconciliation.
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- <sup>20</sup> Janet Jurica. Senior Assistant Registrar, University of Leeds. 22 October 2006. Sent to Fellowship of Reconciliation.
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- <sup>35</sup> Janet Jurica. Senior Assistant Registrar, University of Leeds. 22 October 2006. Sent to Fellowship of Reconciliation.
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<sup>73</sup> Janet Jurica. Senior Assistant Registrar, University of Leeds. 22 October 2006. Sent to Fellowship of Reconciliation.

<sup>74</sup> Janet Jurica. Senior Assistant Registrar, University of Leeds. 22 October 2006. Sent to Fellowship of Reconciliation.

<sup>75</sup> Janet Jurica. Senior Assistant Registrar, University of Leeds. 22 October 2006. Sent to Fellowship of Reconciliation.

*"[Manufacturing Science & Engineering Research] Centre members are already collaborating with BAe Systems, QinetiQ and BOC Gases on the potential for exploiting CGDM [Cold Gas Dynamic Manufacturing] for the production of aerospace materials and components..."<sup>1</sup>*

**-University of Liverpool website**

## **University of Liverpool Military Projects 2001 - 2006**

<b>Overall Statistics</b>				
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)
38	£17,581,758	a) 17th  b) 9th	1) EPSRC  2) BAE Systems  3=) MoD, QinetiQ, Rolls Royce	1) Engineering  2) Geography

## **School of Aerospace Engineering**

Source/ Sponsor/ Partner	Project	Amount	Year
BAE Systems	Undergraduate Third Year in Industry, Industrial Placement	£?	Recent as of 2006 <sup>2</sup>
EPSRC, BAE Systems Avionics (Management) Ltd	Prospective Sky-Guides: Developing Guidelines for Pilot Vision Aids.	£292,718	May 2003 - May 2006 <sup>3</sup>

## **School of Electrical Engineering and Electronics**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, British Aerospace Plc, BAE Systems Operations Ltd, Ministry of Defence, Rolls Royce Plc and others	IMI: Fusion Welding Process Monitoring and Control (CEMWAM II)	£187,630	July 1999 - June 2002 <sup>4</sup>
BAE Systems and others	Chromatic Based Sensing Technology for Aerospace Applications, Agile Technology Unit (ATU), Centre for Intelligent Monitoring Systems Research Group	£?	Current as of June 2006 <sup>5</sup>

## **School of Engineering**

**NB** The “Laser Engineering Research Group is a Preferred Academic Partner to BAE Systems” see footnote 33

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
EPSRC, Rolls Royce Plc and others	Model Structure Determination	£148,183	Oct 1998 - July 2002 <sup>6</sup>
EPSRC, Vosper Thornycroft (UK) Ltd and others	High Speed Automated Laser Cutting System For Sheet Metal Operations	£566,105	Oct 1999 - Mar 2002 <sup>7</sup>
EPSRC, BAE Systems Plc and Rolls Royce Plc	Laser Forming of Aerospace Alloys - a Direct Fabrication Technique	£227,386	Sept 2000 - Aug 2003 <sup>8</sup>
EPSRC, BAE Systems Plc and others  Past collaborators include: • QinetiQ	Cold Gas Dynamic Manufacturing [CGDM] in the Manufacturing Science and Engineering Research Centre, Innovative Manufacturing Research Centre. Previous Projects include CGDM for the Production of Aerospace Materials	£900,163	Apr 2001 - Mar 2002 <sup>9</sup>
EPSRC, British Aerospace Plc and others	Masters Training Programme [MTP] in Engineering Applications of Lasers	£463,930	June 2001 - Mar 2004 <sup>10</sup>
EPSRC and AWE Aldermaston	Model Structure Determination VFII	£14,185	July 2001 - Oct 2001 <sup>11</sup>
EPSRC, Dstl Air Systems (Bedford), and others	Adaptive Pilot Model for Simulation Fidelity Assessment	£63,619	Sept 2001 - Aug 2003 <sup>12</sup>
EPSRC and Westland Helicopters Ltd	Inverse Methods for Vibration Suppression using Structural Modifications	£208,546	Oct 2001 - Sept 2004 <sup>13</sup>
EPSRC and BAE Systems	Innovative Manufacturing Technology Research Centre	£4,900,001	Apr 2002 - June 2003 <sup>14</sup>
EPSRC and QinetiQ  Group will involve: • Westland Helicopters	Garteur AG12; Validation Criteria for Helicopter Real Time Simulation Models	£5,507	Oct 2002 - Oct 2004 <sup>15</sup>
EPSRC  Collaborators include: • QinetiQ • Westland Helicopters • Rolls-Royce	Modal Analysis System for Structural Dynamics Research within the Dynamics and Control Research Group	£123,080	Jun 2003 - Jun 2006 <sup>16</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
<ul style="list-style-type: none"> <li>• AWE-Aldermaston</li> <li>• Ministry of Defence</li> </ul>			
EPSRC, Westland Helicopters Ltd, BAE Systems Avionics (Management) Ltd, QinetiQ	Active Control Concepts for Handling Qualities, Envelope Protection and Structural Load Alleviation	£512,365	Sept 2003 - Mar 2007 <sup>17</sup>
North West Laser Engineering Consortium (NWLEC), which includes: <ul style="list-style-type: none"> <li>• BAE Systems</li> <li>• Rolls Royce</li> </ul> Strategic alliance with: <ul style="list-style-type: none"> <li>• Manchester University</li> </ul>	The Laser Group at Liverpool. Involves a visiting Professor from British Aerospace (Sowerby Research Laboratory)	Total Project over £2,500,000	2005 <sup>18</sup>
EPSRC  FLAVIIR involves: <ul style="list-style-type: none"> <li>• BAE Systems,</li> <li>• BAE Sowerby Research Laboratories</li> <li>• MPhil/ PhD involves working at BAE Sowerby Research Laboratories.</li> </ul>	Offered: MPhil/ PhD Project and Research Studentships (FLAVIIR DTA studentships) in Smart Functional Components for Aerospace Applications as part of the FLAVIIR project with the Laser Group at University of Liverpool	£?	Jan 2005 <sup>19</sup>
EPSRC  Collaborators include: <ul style="list-style-type: none"> <li>• QinetiQ</li> <li>• Westland Helicopters</li> <li>• Rolls-Royce</li> <li>• AWE-Aldermaston</li> <li>• Ministry of Defence</li> </ul>	Linux Cluster for Structural Dynamics Research within the Dynamics and Control Research Group	£53,187	Jan 2005 - Jan 2008 <sup>20</sup>
EPSRC, BAE Systems Avionics (Management) Ltd, Dstl (Farnborough), Eurocopter France, Eurocopter Germany	Optimising Handling Qualities for Future Tilt Rotor Aircraft	£356,864	Feb 2005 - Jan 2008 <sup>21</sup>
EPSRC  Other participants include: <ul style="list-style-type: none"> <li>• QinetiQ</li> <li>• Thales</li> <li>• EADS</li> <li>• USAF</li> <li>• Lockheed-Martin</li> </ul>	International Exercises on Validation of Delta Wind Simulation	£4,023	Oct 2005 - Jan 2006 <sup>22</sup>
EPSRC and PUMA DARP	DARP: Unsteady Aerodynamics Prediction and Simulation for Airframe and Turbomachinery Applications (PUMA) DARP	£40,779	Oct 2005 - Mar 2006 <sup>23</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, EADS Astrium, EADS France, EADS Deutschland	Novel Cellular Structures for Enhanced Impact Performance	£244,214	Oct 2005 - Oct 2008 <sup>24</sup>
EPSRC, EADS Astrium, EADS France, EADS Deutschland GmbH	High Throughput Selective Laser Melting of Cellular Components	£1,083,781	Oct 2005 - Sept 2009 <sup>25</sup>
EPSRC	High Performance Computing for High Fidelity, Multi-Disciplinary Analysis of Flow in Weapon Bays including Store Release	£104,075	Nov 2005 - Oct 2009 <sup>26</sup>
EPSRC Includes participation of: <ul style="list-style-type: none"> <li>• PUMA and Rotor DARPS</li> <li>• Rolls Royce (Hydra)</li> <li>• Westland Helicopters WHL (HMB)</li> </ul>	Supercomputer Resources for the UK Applied Aerodynamics Consortium	£15,397	Dec 2005 - Aug 2007 <sup>27</sup>
European Aerospace and Defence Systems (EADS)	MSc (Eng) Studentships (3) provided as part of EADS Corporate Responsibility Programme	£?	2006 <sup>28</sup>
EPSRC, Dstl (Farnborough)	Airdyn - An Airwake Dynamometer. Developing an Instrument for Measuring the Effect of Ship Airwakes on Helicopter Operations	£457,062	Jan 2006 - Dec 2009 <sup>29</sup>
EPSRC and BAE Systems Advanced Technology Centre	Advanced Aerodynamic Modelling for Flight Dynamics Applications	£208,352	Apr 2006 - Apr 2009 <sup>30</sup>
EPSRC and Eurocopter Germany	Prediction and Assessment of Aircraft/ Rotorcraft-Pilot Coupling Phenomena	£235,430	May 2006 - May 2009 <sup>31</sup>
Funded by: EPSRC, QinetiQ, EU  Beneficiaries/ organisational links include: Ministry of Defence, United States Department of Defence, Royal Navy	Various Projects within the Flight Science and Technology Research Group	£?	Current as of May 2007 <sup>32</sup>



### **School of Physics**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
EPSRC, BAE Systems Marine Ltd and others	DTI TP: Portable Gamma-Ray Spectrometer	£274,587	Sept 2005 - Aug 2008 <sup>33</sup>
EPSRC, BAE Systems Marine Ltd and others	DISTINGUISH: Detection of Explosive Substances by Tomographic Inspection using Neutron and Gamma-Ray Spectroscopy	£169,231	Jan 2006 - Jan 2009 <sup>34</sup>

### **School of Geography**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
Ministry of Defence and Dstl	Soil Magnetic Maps For Demining Activities	£76,000	Jan 2003 - Dec 2004 <sup>35</sup>
Ministry of Defence and Dstl	Soil Magnetic Maps For Demining Activities	£142,637	Jan 2004 - Dec 2005 <sup>36</sup>
Ministry of Defence and Dstl	Soil Magnetic Maps For Demining Activities: Supplementary Contract To Carry Out Soil Testing	£2,721	November 2004 <sup>37</sup>

### **School of Computer Science**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
EPSRC  Partners include: <ul style="list-style-type: none"><li>• University of Southampton</li><li>• University of Birmingham</li><li>• BAE Systems</li></ul>	Market-Based Control of Complex Computational Systems	£1,500,000	2004 - 2009 <sup>38</sup>
EPSRC  Project partners included: <ul style="list-style-type: none"><li>• BAE Systems</li></ul>	Agent-based computing, Agentlink	£1,500,000	2005 <sup>39</sup>

### **Notation**

£? Denotes projects whose value and/or date we were unable to discover.

### **Other projects/ information of note**

<b>Project ending 2000, Department of Engineering</b>
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Source/ Sponsor/ Partner	Project	Amount	Year
BRITE EURAM Framework 4 Programme.  Project involved: • BAE Systems	Lightweight Composite Structures in Aircraft	Approx. £3,000,000	Pre-June/ July 2000 <sup>40</sup>

<b>Centre for e-Business Research</b>
<ul style="list-style-type: none"> <li>The University of Liverpool's Centre for e-Business Research, within the Innovative Manufacturing Research Centre. Past collaborators include BAE Systems and Westland Helicopters.<sup>41</sup></li> </ul>
<b>Military Education Committee</b>
<ul style="list-style-type: none"> <li>University of Liverpool has a "Military Education Committee" which describes its purpose as "[t]o act as a liaison between the University and Her Majesty's Forces in matters of military education ..., [t]o organise lectures, seminars and other events relating to matters of Service interest..., [and] [t]o consider and advise upon such matters in the field of military education as may be referred to the Committee by the Council."<sup>42</sup></li> </ul>
<b>Other miscellaneous funding</b>
<ul style="list-style-type: none"> <li>University of Liverpool is known to have received the following funding between 2001 and 2006, although the project titles for which the money was allocated, and the departments were not discovered: British Aerospace Ltd (£16,400); Rolls Royce PLC (£157,100); MoD via Faraday Foresight Initiative (£123,000); MoD via DERA (£98,000); MoD via DST Laboratory (£457,000); MoD 'Other' (£3,000); and, MoD providing student fees for three postgraduate students.<sup>43</sup></li> </ul>

## Endnotes

<sup>1</sup> "Manufacturing Science and Engineering Research Council", Research Intelligence. Issue 11, December 2001. <http://www.liv.ac.uk/researchintelligence/issue11/>. 18 December 2006.

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<sup>5</sup> "Centre for Intelligent Monitoring Systems Research Group", University of Liverpool, Department of Electrical Engineering and Electronics. <http://www.liv.ac.uk/eee/research/cims/project10.htm>. 5 January 2007.

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*"The Aerospace Project was a joint effort with Warwick Manufacturing Group and Cranfield Ecotechnology Centre. The business partners included BAE Systems, DERA, GEC/Marconi, ... Lucas, Rolls-Royce and Smith Industries."*<sup>1</sup>

**-London School of Economics website**

**London School Of Economics Military Projects 2001 - 2006**

<b>Overall Statistics</b>				
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)
3	£861,653	a) 23rd b) 26th	1) EPSRC 2) Rolls Royce	1) Information Systems

**School of Information Systems**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Dstl Air Systems (Bedford) and others	Implications of Theories Complexity for Co-Evolution of Business Process and Information Systems Development	£131,139	Oct 1998 - Oct 2001 <sup>2</sup>
EPSRC, Rolls-Royce Plc and others	Enabling the Integration of Diverse Socio-Cultural and Technical Systems within a Turbulent Social Ecosystem	£541,379	Jun 2001 - Dec 2004 <sup>3</sup>
EPSRC, Ministry of Defence, BAE Systems Operations Ltd, Smiths Industries, Rolls Royce Plc and others	IMI: The Complexities of Product Definition. Identifying the Customer Requirements (COPDICRE). LINK Scheme	£105,429	Feb 1999 - Feb 2001 <sup>4</sup>

**Other projects/ Information of note**

<b>LSE subsidiary company</b>
<ul style="list-style-type: none"> <li>One LSE subsidiary company has received funding from a military organisation named in our original Freedom of Information Request since 2001.<sup>5</sup></li> </ul>
<b>Students' fees and living expenses</b>
<ul style="list-style-type: none"> <li>Military companies have also funded seven students' fees and living expenses to the tune of £83,706 since 2001.<sup>6</sup></li> </ul>
<b>Discrepancy between our findings and LSE's</b>
<ul style="list-style-type: none"> <li>During this time period LSE claim "Most of the companies mentioned in your request have not provided any funding to the School in the time period of your request. Only</li> </ul>

five have. The total income received from these companies is £440,128” but our amounts found via Internet research come to more.<sup>7</sup>

## **Endnotes**

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*“A fly-past by a combat aircraft and a ceremony featuring top military officials marked the start of a new partnership between the Ministry of Defence (MOD) and Loughborough University. The University has been selected to take part in the Defence Technical Undergraduate Scheme (DTUS). The scheme has been set up by the MOD to support sponsored students studying for engineering and science degrees, all of whom are committed to become officers in one of the services (Army, Royal Navy, Royal Air Force, Civil Service).”<sup>1</sup>*

**-Loughborough University Website**

## **Loughborough University Military Projects 2001 - 2006**

<b>Overall Statistics</b>				
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)
126	£29,206,101	a) 2nd  b) 5th	1) Rolls Royce  2) BAE Systems  3) MoD	1) Aeronautical and Automotive Engineering  2) Electronic and Electrical Engineering  3) Manufacturing Engineering and Mechanical Engineering

## **School of Aeronautical and Automotive Engineering**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and Rolls-Royce Plc	DARP: Large Eddy Simulation of Hot Gas Ingestion Flowfields	£145,969	Jan 2000 - Dec 2002 <sup>2</sup>
EPSRC, Dstl – Joint Grant Scheme (JGS) and Rolls-Royce Plc	A CFD Coupled Acoustics Approach for the Prediction of Coaxial Jet Noise	£266,494	Jan 2000 - Mar 2003 <sup>3</sup>
Rolls Royce Plc	Isothermal Test Facility	£66,572	Sept and Oct 2001 <sup>4</sup>
Rolls Royce Plc	ANTLE Annular Perspex	£56,996	Feb and Mar 2002 <sup>5</sup>
Rolls Royce Plc	CFD for Fuel/ Air Premixing	£22,000	Feb and Mar 2002 <sup>6</sup>
Rolls Royce Plc	ANTLE Injector Flowfield Investigation	£48,696	Feb and Mar 2002 <sup>7</sup>
Rolls Royce Plc	Experimental Measurements and CFD Studies of Modified Trailing Edge Wake Flow	£51,010	Feb and Mar 2002 <sup>8</sup>
Rolls Royce	Industrial Trent	£61,500	April 2002 <sup>9</sup>
Rolls Royce	ANTLE	£108,681	July and Aug 2002 <sup>10</sup>
BAE Systems	Case Studentship	£22,500	July and Aug 2002 <sup>11</sup>



<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
Rolls Royce	PC Cluster	£18,500	July and Aug 2002 <sup>12</sup>
Rolls Royce	Trent 900 Isothermal Test Programme 2	£43,174	Oct 2002 <sup>13</sup>
Rolls Royce	ANTLE Injection Flow Field Investigation	£12,062	Oct 2002 <sup>14</sup>
BAE Systems	Equipment Award	£12,798	Oct 2002 <sup>15</sup>
Rolls Royce	OGV/ Diffuser Optimisation	£18,750	Nov and Dec 2002 <sup>16</sup>
Rolls Royce	Unstructured CFD for Combustors	£18,000	Nov and Dec 2002 <sup>17</sup>
Rolls Royce	CFD Modelling of RH211 Premix Passages	£7,140	Dec 2002 <sup>18</sup>
Rolls Royce Plc	Improved Combustion Modelling Capacity	£251,400	Awarded June 2004 <sup>19</sup>
Rolls Royce Plc	Impingement/ Effusion Cooled Gas Turbine Combustor Tile Research	£139,403	Awarded July/Aug 2006 <sup>20</sup>
Rolls Royce Plc	EFE Resonator and Passive Damper Work	£13,465	Awarded July/Aug 2006 <sup>21</sup>
Rolls Royce Plc and DTI	ATAP10 Research	£1,574,000	Awarded July/Aug/ Sept 2004 <sup>22</sup>
Rolls Royce	Readership	£301,118	Awarded Sept/Oct 2003 <sup>23</sup>
Rolls Royce	Website for Dissemination of Muscles Project	£1,334	Jan 2003 <sup>24</sup>
Rolls Royce	CFD Sprays Project for Duel Fuel	£7,252	Jan 2003 <sup>25</sup>
Rolls Royce	Pressure Survey Test & Support	£15,000	Jan 2003 <sup>26</sup>
DTI and MOD	MSTTAT DARPS	£152,900	Feb and Mar 2003 <sup>27</sup>
Rolls Royce	Pressure Drop and Heat Transfer Measurement of Dense Pedestal Cooling Tile	£21,579	Feb and Mar 2003 <sup>28</sup>
Rolls Royce	Isothermal Test Programme 2	£16,918	Feb and Mar 2003 <sup>29</sup>
Rolls Royce	PIV Measurements	£22,908	May and June 2003 <sup>30</sup>
EPSRC, British Aerospace Plc, QinetiQ Ltd and Rolls Royce Plc	DARP: Measurement and Modelling of Turbulent Under-Expanded Jets	£280,419	Aug 2003 - July 2006 <sup>31</sup>
EPSRC, BAE Systems Operations Ltd,	DARP: PUMA DARP: Unsteady CFD Prediction of Vertical Landing Craft	£181,569	Aug 2003 - Aug 2006 <sup>32</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ Ltd, Rolls Royce Plc and DTI			
Rolls Royce Plc	Fuel Injector Flow Study	£25,787	Nov 2003 <sup>33</sup>
BAE Systems	Unconventional Nozzle Research Phase 5	£37,500	Dec 2003 - Jan 2004 <sup>34</sup>
Rolls Royce Plc (Quebec, Canada)	Low Cost Duel Fuel (LCDF) External Aerodynamic Optimisation	£167,500	Dec 2003 - Jan 2004 <sup>35</sup>
EPSRC and Rolls Royce Plc	Jet Noise	£147,995	Dec 2003 - Apr 2007 <sup>36</sup>
Rolls Royce Plc	ANTLE Fuel Injector Support	£23,357	July/Aug/ Sept 2004 <sup>37</sup>
Rolls Royce Plc	Support to Low Emissions Combustor Research - Test Cell 2 (Award Increase)	£57,431	Awarded Nov/Dec 2005 <sup>38</sup>
Rolls Royce Plc	Isothermal Test Facility Design for the Trent 1000 Combustion System	£32,751	Awarded Nov/Dec 2005 <sup>39</sup>
Rolls Royce Plc	External Aerodynamics for Lean Module Injectors	£23,676	Mar and Apr 2004 <sup>40</sup>
QinetiQ Ltd	Generic FOAS Nozzle Study	£27,900	May and Jun 2004 <sup>41</sup>
Rolls Royce Plc	Acoustic Resonator Gas Ingestion	£21,176	July to Sept 2004 <sup>42</sup>
BAE Systems	Unconventional Nozzle Research - Phase 5 - Interim 2	£51,200	Oct 2004 <sup>43</sup>
Rolls Royce	Dependability Modelling of Aircraft Systems	£20,000	Awarded Oct 2004 <sup>44</sup>
Rolls Royce Plc	Duct Design and Experiments for an Intercooled Aeroengine	£9,815	Nov and Dec 2004 <sup>45</sup>
Rolls Royce Plc	Duct Design and Experiments for an Intercooled Aeroengine	£80,050	Jan 2005 <sup>46</sup>
Rolls Royce Plc	Aerodynamic Performance of the Trent 1000 Combustion System	£163,687	Mar and Apr 2005 <sup>47</sup>
BAE Systems, Wharton	Unconventional Nozzle Research - Phase 5 - Interim 3 - Rectangular Jet Plume Measurements	£34,500	Mar and Apr 2005 <sup>48</sup>
Rolls Royce, Canada	LCDF [Low Cost Duel Fuel] Annular and Acoustic Tests	£129,137	May and Jun 2005 <sup>49</sup>
Rolls Royce Plc and EPSRC	Unsteady Fluid Mechanics of Multiple Annual Swirling Shear Layers	£30,000 (Rolls Royce) £59,464 (EPSRC)	Sept and Oct 2005 <sup>50</sup>
BAE Systems	Support for EPSRC DARPs 2002	£17,425	Sept and Oct 2005 <sup>51</sup>
EPSRC and BAE Systems	A Research Proposal in Systems Engineering Addressing the Question: "Are You Prepared for NEC [Network Enabled Capacity]?"	£8,397,350	Nov 2005 – Apr 2011 <sup>52</sup>
BAE Systems	Repair and Maintenance of the	£11,500	Dec 2005 -

Source/ Sponsor/ Partner	Project	Amount	Year
	Nozzle Test Rig		Jan 2006 <sup>53</sup>
EPSRC, BAE Systems Advanced Technology Centre and Rolls Royce Plc	Proposal for HPCx Resources and Support for the LESUK_3 Consortium (2006-2008)	£61,542	Feb 2006 - Jan 2009 <sup>54</sup>
Rolls Royce Plc	Support for INTELLECT DM Project	£10,328	Mar 2006 <sup>55</sup>
Rolls Royce Plc	ATAP10 Extension to Project F – Experimental Analysis of Air-Swirl Fuel Injector and Pre-Mixers	£85,000	Mar 2006 <sup>56</sup>

### **School of Electronic and Electrical Engineering**

Source/ Sponsor/ Partner	Project	Amount	Year
Ministry of Defence	Short Course – Safety Considerations and Legislation in High Voltage Experimentation	£2,500	2001/ 2002 Academic Year <sup>57</sup>
Ministry of Defence	Short Course – Pulse Power - One Week Duration	£3,000	2001/ 2002 Academic Year <sup>58</sup>
Ministry of Defence	Refurbishment of 4 BICC 50 Micro- Fahrad Capacitors	£3,581	Awarded Oct 2002 <sup>59</sup>
Dstl	Pulsed Power Research and Trials Support	£70,840	Awarded Feb/Mar 2003 <sup>60</sup>
QinetiQ	Non Explosive Canopy Opening System	£23,220	Feb and Mar 2002 <sup>61</sup>
DERA	Electromagnetic Protection	£14,693	Feb and Mar 2002 <sup>62</sup>
Cranfield University and MOD	Cranfield Study of Militarily Significant Materials	£15,000	2003 – 2004 <sup>63</sup>
Dstl	Pulsed Power Research and Trials Support	£179,362	Awarded May/June 2003 <sup>64</sup>
Dstl	An Exploding Wire Microwave Generator	£10,553	Jan 2003 <sup>65</sup>
US Air Force	Fast & Compact Flux Compression Driven Power Source	£15,400	Jan 2003 <sup>66</sup>
Dstl	Feasibility Study on Electromagnetic Protection for a Vehicle Turret	£8,400	Feb and Mar 2003 <sup>67</sup>
Ministry of Defence	Study of Chinese Pulsed Power	£5,467	Dec 2003 - Jan 2004 <sup>68</sup>
Dstl for MOD	Trials Support, Capacitor Performance Testing and Measuring Technique Investigation	£42,010	Awarded Oct 2004 <sup>69</sup>
Dstl for MOD	Electromagnetic Protection Research	£11,000	Awarded Oct 2004 <sup>70</sup>
Dstl for MOD	Research on Tesla Transformers	£19,675	Awarded Oct 2004 <sup>71</sup>
Dstl	Electro Magnetic Research	£155,766	Awarded Feb/Mar

Source/ Sponsor/ Partner	Project	Amount	Year
			2003 <sup>72</sup>
Dstl for MOD	Pulsed Power Research and Trials Support	£28,133	Feb 2004 <sup>73</sup>
Ministry of Defence	Two Day Course - Safety on High Voltage Legislation	£3,557	May 2005 <sup>74</sup>
Ministry of Defence	Five Day Course - Introduction to Pulse Power Course	£6,341	June 2005 <sup>75</sup>
Dstl	High Voltage Battery Charging of Capacitor Banks for Pulsed Discharged Applications	£22,113	Mar and Apr 2005 <sup>76</sup>
EPSRC, Rolls Royce Plc and others	SUPERGEN Highly Distributed Power Systems Consortium	£2,566,609	July 2005 - Jun 2009 <sup>77</sup>
EPSRC, Industrial CASE and BAE Systems	Integrated Modular Processing System for High Integrity, High Performance Control	£81,964	Sept and Oct 2005 <sup>78</sup>
BAE Systems	Kalman Filters for FCS Flexibility Enhancement (Award Increase)	£21,000	Sept and Oct 2005 <sup>79</sup>
Dstl for MOD	Research on Tesla Transformers	£20,828	Nov and Dec 2005 <sup>80</sup>
Dstl	Tesla Coil Based Novel Radiating System	£25,276	Dec 2005 - Jan 2006 <sup>81</sup>
Dstl and Ministry of Defence	Explosively Driven Electric Pulse Generators	£75,000	July and Aug 2006 <sup>82</sup>
Dstl and Ministry of Defence	Novel Electronic Armour Technology Study	£117,000	July and Aug 2006 <sup>83</sup>
EPSRC, BAE Systems Engineering Innovation Centre and others	Intrinsically Fault Tolerant Actuation Through High Redundancy	£312,548	Oct 2006 - Sept 2009 <sup>84</sup>
EPSRC and BAE Systems Advanced Technology Centre	Optimised Configuration of Sensing Elements for Control and Fault Tolerance	£198,588	Nov 2006 - Nov 2009 <sup>85</sup>

### **Institute of Polymer Technology and Materials**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Rolls Royce Plc and others	Networking: Grain Boundary Engineering	£48,711	Mar 2000 - Feb 2003 <sup>86</sup>
EPSRC, Ministry of Defence and Rolls Royce Plc	Rapid Processing of Continuous Fibre Reinforced Ceramic Matrix Composites	£145,441	Mar 2000 - July 2003 <sup>87</sup>
QinetiQ	Microstructural Modelling of Aluminium 7 150 welds	£30,000	Feb and Mar 2003 <sup>88</sup>
ESRPC, Dstl (Farnborough) and others	Novel Intercalated Polyurethane-Organically Modified Layered Silicate Nanocomposites	£181,051	Dec 2003 - Nov 2006 <sup>89</sup>
Rolls Royce Plc	Improved Resistance to IASCC in Austenitic Steels (Research Studentship)	£42,000	July to Aug 2004 <sup>90</sup>

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
EPSRC, Rolls Royce Plc, QinetiQ Ltd and others	SUPERGEN 2 - Conventional Power Plant Lifetime Extension Consortium	£2,106,187	July 2004 - June 200 <sup>91</sup>
Atomic Weapons Establishment Plc	Microwave Sintering of Boron Carbide (CASE Studentship)	£18,900	Oct 2004 <sup>92</sup>
EPSRC and Rolls Royce Ltd	FARADAY: Suspension-Based Fabrication of Nanostructured Materials for Engineering Applications (2 separate grants made)	£141,409	Nov 2004 <sup>93</sup>
ESPRC, Smiths Industries* and others	Toxic Metal Replacement in Aerospace Applications	£230,778	Sept 2005 - Aug 2008 <sup>94</sup>
Rolls Royce Plc and others	SUPERGEN	£30,000 (Rolls Royce and Alstom each)	Nov and Dec 2005 <sup>95</sup>

### **School of Manufacturing Engineering and Mechanical Engineering**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
ESPRC, BAE Systems Plc, Rolls Royce Plc and others	Joint Research Equipment Initiative (JREI): Vibro-Impact Processing of Materials	£50,478	May 1999 - May 2002 <sup>96</sup>
EPSRC, British Aerospace and Rolls Royce Plc	In-Situ Quantitative Flaw Detection Using Advanced Optical Inspection Techniques	£191,673	Apr 2000 - Nov 2003 <sup>97</sup>
EPSRC, Ministry of Defence and others	Failure Analysis of Polymer Composites and Adhesively Bonded Joints	£21,649	Aug 2001 - July 2004 <sup>98</sup>
Ministry of Defence	Structural Adhesive Bonding	£95,000	Awarded Nov/Dec 2002 <sup>99</sup>
EPSRC, Thales Space Technology and others	Substrates to Enable Low Cost Flip-Chip and Opto-Electronic Device Manufacture	£33,553	Mar 2002 - Feb 2003 <sup>100</sup>
QinetiQ	Nanotesting of Nanocomposites	£10,000	Nov and Dec 2002 <sup>101</sup>
EPSRC, Rolls Royce Plc and others	Study of the Interplay between Role Dynamics and Organisational Performance	£259,900	Mar 2004 - Aug 2006 <sup>102</sup>
EPSRC, Rolls Royce Plc, Smiths Industries*, BAE Systems Electronics Ltd, Raytheon Systems Limited and others	An Innovative Electronics Manufacturing Research Centre  Lists INTELLECT Project, see Grant Page 3	£5,455,930	Oct 2004 - Sept 2009 <sup>103</sup>
Rolls Royce Plc	PLM Research – Duplicate Wizard Function	£12,000	Nov and Dec 2004 <sup>104</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
BAE Systems (Operations) Ltd	SER005 Flexible Integration Architectures (Ground Work on Approaches to AV Inter-Operability)	£43,800	Awarded May/June 2005 <sup>105</sup>
Rolls Royce and others	Development and Implementation of a Decision Support System and Strategy	£133,446	Sept and Oct 2005 <sup>106</sup>
BAE Systems	SER003 Knowledge Based Strategies	£136,150	Feb 2006 <sup>107</sup>
EPSRC, GKN Automotive Ltd and others	Automotive Transmission Rattle: Root Causes to Innovative Solutions	£202,584	Aug 2006 – July 2009 <sup>108</sup>

### **School of Physics**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, QinetiQ Ltd and others	A Numerical and Experimental Investigation of 3-Dimensional Strains in Adhesively Bonded Joints	£211,840	Aug 2002 - July 2005 <sup>109</sup>

### **School of Computer Science**

Source/ Sponsor/ Partner	Project	Amount	Year
Rolls Royce	Knowledge Mapping and Management at Rolls Royce Naval Marine Support	£45,000	July to Sept 2002 <sup>110</sup>
BAE Systems	Analysis and Diagnosis of Re-Configurable Systems using Model-Based and Approximate Reasoning	£22,500	Sept and Oct 2005 <sup>111</sup>
DTI via BAE Systems	ASTREA – UAV Risk Assessment and Modelling	£67,317	July and Aug 2006 <sup>112</sup>

### **School of Human Sciences**

Source/ Sponsor/ Partner	Project	Amount	Year
Dstl for MOD	Research into Soldier Mobility and Load Carriage Contract No. RD024-0699	£426,577	Awarded Sept/Oct 2003 <sup>113</sup>
Dstl for MOD	Research into the Area of Clothing Development Contract No. RD024-0690	£208,441	Awarded Sept/Oct 2003 <sup>114</sup>
QinetiQ	Effects of Seat Unrest Angle on Human Comfort, Health and Performance	£69,800	Awarded Feb/Mar 2003 <sup>115</sup>
BAE Systems	CASE Award	£15,000	July and Aug 2003 <sup>116</sup>
Ministry of Defence	Anthropometry	£32,652	Jan 2004 <sup>117</sup>

### **School of Chemistry**

Source/ Sponsor/ Partner	Project	Amount	Year
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Source/ Sponsor/ Partner	Project	Amount	Year
Ministry of Defence	Temperature Experimentation on One Sample of Ammonium Nitrate	£364	2001/ 2002 Academic Year <sup>118</sup>
Dstl	Borohydride Fuel Cells	£23,737	Dec 2005 - Jan 2006 <sup>119</sup>

### **School of Systems Engineering**

Source/ Sponsor/ Partner	Project	Amount	Year
BAE Systems	Wither Systems Engineering in the Wider World Context?	£249,400	Oct 2002 <sup>120</sup>
BAE Systems	Human Reliability Data for Military Domains	£99,280	Awarded May/June 2003 <sup>121</sup>
Rolls Royce	Trent 900 Research and Support	£20,000	May and June 2003 <sup>122</sup>
BAE Systems	CDDP	£200,000	Dec 2003 - Jan 2004 <sup>123</sup>
BAE Systems	Emergent Threats	£77,500	July to Sept 2004 <sup>124</sup>

### **School of Design and Technology**

Source/ Sponsor/ Partner	Project	Amount	Year
Ministry of Defence	Review and Deployment Foot Anthropometry of a Sample of Military and Civilian Personnel	£12,450	Sept 2001 <sup>125</sup>
Ministry of Defence	Future Concepts in Hydration and Sleeping Systems	£39,101	July to Aug 2002 <sup>126</sup>

### **Institute of Surface Science Technology (ISST)**

Source/ Sponsor/ Partner	Project	Amount	Year
Atomic Weapons Establishment	Modification of Silicone-based Adhesives	£18,900	2002 <sup>127</sup>

### **Notation**

\*In May 2007 Smiths Group completed the sale of its aerospace business, containing the bulk of its military-related production, to General Electric.

### **Endnotes**

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*"There is strong industrial linkage with EADS, Airbus and the [Aerospace Research] Group is a preferred academic partner for BAE Systems".<sup>1</sup>*

- University of Manchester website

## University of Manchester Military Projects 2001 - 2006

<b>Overall Statistics</b>				
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)
74	£15,812,903	a) 10 <sup>th</sup> b) 10 <sup>th</sup>	1) EPSRC 2) BAE Systems 3) Rolls Royce	1) Mechanical Aerospace and Civil Engineering 2) Materials 3) Engineering and Physical Sciences

## School of Mechanical, Aerospace & Civil/Manufacturing Engineering

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, BAE Systems	Panel Damping for Aircraft Fatigue Assessment-Estimation: Sources and Model Descriptions	£169,400	1998 – 2002 <sup>2</sup>
BAE Systems	Application of Synthetic Jets to High Lift Flow Control	£28,000	2000 – 2001 <sup>3</sup>
Dstl	Vortex Ring Interactions with Bodies Using Shock	£15,400	Jan 2000 - Dec 2008 <sup>4</sup>
BAE Systems	Prediction of Non-Linear Aeroelastic Behaviour	£13,000	2001 <sup>5</sup>
BAE Systems	Review of Smart Materials	£8,000	2001 <sup>6</sup>
QinetiQ	Study into the Monitoring of the Rolls Royce Transverse Flux Motor	£87,830	2001 <sup>7</sup>
DERA, BAE Systems	A Parametric Study of Circulation Control for High Lift Applications	£47,000	2001 - 2002 <sup>8</sup>
BAE Systems	Application of Synthetic Jets for an Enhanced Control of Separated Flows	£18,000	2001 - 2003 <sup>9</sup>
BAE Systems	Fluid Mechanics of Synthetic and Pulsed Jet Actuators	£201,000	2001 - 2004 <sup>10</sup>
British Aerospace Plc	Flow Control Leading Edge Devices for High Lift	£28,000	2001 - 2005 <sup>11</sup>
QinetiQ Ltd	Non-Linear Acoustic Panel Response	£15,000	2002 <sup>12</sup>
BAE Systems	Prediction of Non-Linear Aeroelastic	£31,400	2002 <sup>13</sup>



Source/ Sponsor/ Partner	Project	Amount	Year
	Behaviour		
Department of Trade and Industry (DTI)	Travel Grant to Support PUMA DARP	£6,000	2002 <sup>14</sup>
Dstl	Demonstrator Platform for Novel Control Technology	£47,000	2002 - 2003 <sup>15</sup>
Dstl	Equipment Grant I & II	£450,000	2002 – 2004 <sup>16</sup>
Dstl	Dstl equipment grant (eq)	£350,000	2004 <sup>17</sup>
BAE Systems	Characteristics of Non-Linear Damping in Structural Acoustic Response Modelling Methods	£22,500	2002 - 2005 <sup>18</sup>
BAE Systems	Fluidic Thrust Vectoring for Low Observable Flight Vehicles	£22,500	2002 – 2005 <sup>19</sup>
QinetiQ	Novel Flow Control and the Control of UAV's	£441,000	2002 - 2005 <sup>20</sup>
EPSRC, BAE Systems, Ministry of Defence and others	PUMA DARP	£200,000	2002 - 2005 <sup>21</sup>
BAE Systems	Fluid Mechanics of Synthetic Jets	£210,000	2002 - 2005 <sup>22</sup>
Defence Systems and Technology Laboratory and MOD	Shock Tube Studies and Instability Measurements	£40,000	2002 - 2005 <sup>23</sup>
Dstl	Shock tube studies: 1	£13,800	2002 <sup>24</sup>
Dstl	Shock tube studies: 2	£14,700	2002 <sup>25</sup>
Dstl	Shock tube studies: 3	£11,000	2004 <sup>26</sup>
Dstl	Shock tube studies: 4	£15,700	2005 <sup>27</sup>
Dstl	Shock tube studies: 5	£6,500	2006 <sup>28</sup>
Rolls Royce	Alternative Approaches to the Health Monitoring of Aero Engines - EngD	£47,500	2002 - 2006 <sup>29</sup>
EPSRC and MSTTAR DARP	Modelling and Simulation of Turbulence and Transition for Aerospace	£241,000	2003 – 2006 <sup>30</sup>
MSTTAR DARP, DTI	Modelling and Simulation of Turbulence and Transition for Aerospace	£9,300	2003 - 2006 <sup>31</sup>
EPSRC, MSTTAR DARP	Flow Over Swept Wings	£241,000	2003 - 2006 <sup>32</sup>
BAE Systems	Fluidic Thrust Vectoring for Low Observable Flight Vehicles	£22,000	2003 - 2006 <sup>33</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and Dstl	DARP: Unsteady Aerodynamics Prediction and Simulation for Airframe and Turbo-Machinery Applications	£0	2003 - 2006 <sup>34</sup>
EPSRC, BAE Systems Operations Ltd and QinetiQ Ltd	Identification of Non-Linear Continuous Structures	£205,387	Apr 2003 - Mar 2006 <sup>35</sup>
EPSRC, BAE Aerospace Plc, QinetiQ Ltd and Rolls Royce Plc	DARP: Highly Swept Leading Edge Separations - Experimental Investigations	£241,038	Apr 2003 - Sept 2006 <sup>36</sup>
EPSRC, BAE Systems Operations Ltd, QinetiQ Ltd, Rolls Royce Plc and others	DARP: Unsteady Aerodynamics Prediction and Simulation for Airframe and Turbomachinery Applications (PUMA) DARP	£137,665	Apr 2003 - Sept 2006 <sup>37</sup>
EPSRC, BAE Systems	Flapless Flight Control Demonstrator	£497,000	2004 - 2008 <sup>38</sup>
EPSRC, Dstl (Farnborough) and others	NETWORK: Network for the Development of Industrial Computational Tools for the Design of Composite Components & Structures (CODECO)	£65,977	Feb 2004 - Jan 2007 <sup>39</sup>
BAE Systems	Hire of Centrifuge in Peter W Rowe Laboratory	£10,500	2005 <sup>40</sup>
Atomic Weapons Establishment (AWE)	Race & Sex Equality in the Construction Industry, Partners In Innovation (PII)	\$104,700	2001 <sup>41</sup>
EPSRC and Rolls Royce	High Temperature Measurements Using Smart Coatings	£89,000	2005 - 2009 <sup>42</sup>
Industrial members include: <ul style="list-style-type: none"> <li>BAE Systems (Sowerby Research Centre)</li> </ul> Organising committee members include: <ul style="list-style-type: none"> <li>QinetiQ</li> </ul>	UK Consortium for Photonics and Optics. University members of the Optics and Photonics committee include: <ul style="list-style-type: none"> <li>Cranfield University</li> <li>University of Durham</li> <li>Heriot-Watt University</li> <li>Imperial College, London</li> <li>King's College London</li> <li>Kingston University</li> <li>Liverpool John Moore University</li> <li>Loughborough University</li> <li>Nottingham University</li> <li>University of Oxford</li> </ul>	?	2005 onwards <sup>43</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
	<ul style="list-style-type: none"> <li>St Andrews University</li> </ul>		
EPSRC, Rolls-Royce Plc and others	A Scientific Base for Laser Net Shaping of Superalloys with Custom Distributed Properties	£424,479	Jan 2005 - Dec 2007 <sup>44</sup>
Dstl	Investigation of the Effects of Driver Length on the Development of Ring Vortices from a Shock Tube	£11,000	Feb 2005 - Mar 2005 <sup>45</sup>
EPSRC, Heriot-Watt University, University of Cambridge, Cranfield University, University of Nottingham, Rolls Royce Plc and others	Next Generation Industrial Lasers for Super-high Speed Precision Manufacturing (NEGLAP)	£581,997	Jan 2006 - Jan 2008 <sup>46</sup>
EPSRC, Rolls-Royce Plc and others	An Experimental Study of Unsteady Wake-Induced Boundary Layer Transition in Turbomachinery	£200,361	Feb 2006 - Feb 2009 <sup>47</sup>
EPSRC, BAE Systems	FLAVIIR Integrated Research Programme: A Research Project looking at technologies for future Unmanned Air Vehicles (UAVs). Participating universities include: <ul style="list-style-type: none"> <li>Cranfield University</li> <li>Imperial College of Science Technology and Medicine</li> <li>University of Leicester</li> <li>University of Liverpool</li> <li>University of Wales, Swansea</li> <li>University of Nottingham</li> <li>University of Southampton</li> <li>Warwick University</li> <li>University of York</li> </ul>	Total Project £6,200,000  Funding has been split into a 3-year research phase, followed by a 2-year demonstration phase.	Current Five Year Project as of Jan 07 <sup>48</sup>
Rolls Royce and others	Engineering Doctorate Studentships	Approx £140,000	Recent as of Jan 2002 <sup>49</sup>
DERA, BAE Systems and others	CASE studentships	Approx. £60,000	Recent as of Jan 2002 <sup>50</sup>
Rolls Royce	Engineering Doctorate Award. Online Engine Health Monitoring using Blade Tip Timing	£35,000	2005 <sup>51</sup>

### **School of Engineering and Physical Sciences**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC Collaborative Research Partners have included:	Development of a Wing Buffet Prediction Process for High Performance Combat Aircraft.	£115,589	Mar 1998 - Aug 2001 <sup>52</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
<ul style="list-style-type: none"> <li>British Aerospace</li> </ul>			
EPSRC and BAE Systems Plc	Prediction of Aircraft Aeroelastic Instabilities for Non-Linear Aerodynamics	£102,418	June 1998 - June 2001 <sup>53</sup>
EPSRC and BAE Systems Plc	Estimation of Panel Damping in Aircraft Structures	£169,506	Dec 1998 - Mar 2002 <sup>54</sup>
EPSRC, BAE Systems Plc, Ministry of Defence, Rolls Royce Plc and others	Faraday Partnership: INTERSECT: The Application of Data Fusion to a Multi Sensored Intelligent Engine	£109,674	Jan 1999 - Mar 2002 <sup>55</sup>
EPSRC, BAE Systems Operations Ltd and others	Joint Research Equipment Initiative (JREI) Laser Anemometry Systems for Process Mixing and Aerospace Studies	£91,245	May 1999 - May 2002 <sup>56</sup>

### **School of Chemical Engineering and Analytical Science**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Dstl (Fort Halstead)	Rapid In-Field Detection of Inorganic Species of Explosives Significance by Microfabricated (Lab-on-a-Chip) Multidimensional Isotachophoresis.	£176,688	Apr 2005 - Mar 2007 <sup>57</sup>

### **School of Electrical and Electronic Engineering**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and Rolls Royce Plc	Basic Technologies: The Development of Terahertz Technology for Physical, Biological, and Medical Imaging and Spectroscopy	£627,865	Oct 2002 - Jan 2007 <sup>58</sup>
EPSRC Project involves: <ul style="list-style-type: none"> <li>BAE Systems Plc</li> <li>University of Sheffield</li> <li>University of Wales, Aberystwyth</li> <li>Bristol University</li> <li>University of Oxford</li> <li>University of Cambridge</li> <li>University of Dundee</li> </ul>	REVERB (Reverse Engineering the Vertebrate Brain)	£1.9 million	2005 - 2010 <sup>59</sup>
EPSRC, Rolls-Royce Plc and others	Advanced Marine Electric Propulsion Systems (AMEPS)	£163,173	Jan 2005 - Dec 2007 <sup>60</sup>
EPSRC,	Real-Time Modelling for Condition	£126,382	Oct 2005 -

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ Ltd, Rolls Royce Plc and others	Monitoring and Performance Optimisation of Gas Turbine Engines		Sept 2008 <sup>61</sup>

**School of Materials/Materials Engineering/Manchester Materials Science  
Centre/Materials Science & Metallurgy**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and British Aerospace Plc	Surface Strain Mapping as a Tool for the Study of Materials Behaviour Across a Range of Scales	£200,008	Jan 1999 - Mar 2002 <sup>62</sup>
EPSRC, Ministry of Defence, British Aerospace Plc, BAE Systems Operations Ltd, Rolls Royce Plc and others	IMI: Cost Effective Manufacture: Welding Aerospace Materials (CEMWAM II)	£248,630	Apr 1999 - Mar 2002 <sup>63</sup>
EPSRC, Rolls Royce Plc	Metallurgical and Internal Stress Development During Inertia Welding	£338,937	Oct 1999 - Sept 2002 <sup>64</sup>
EPSRC, Rolls Royce Plc and others	Joint Research Equipment Initiative (JREI) Fracture Research Facilities at the Manchester Materials Science Centre	£50,000	May 2000 - May 2001 <sup>65</sup>
EPSRC and Los Alamos National Laboratory	Measurement and Modelling of Intergranular Strains in Two Phase and Low Symmetry Polycrystalline Materials	£140,239	June 2001 - Dec 2004 <sup>66</sup>
EPSRC, Rolls Royce Plc and others	An Engineering Body Scanner for 3D Stress and Damage Measurement and Co-visualisation.	£597,776	Oct 2001 - Sept 2004 <sup>67</sup>
EPSRC, Rolls Royce Plc and others	A Novel Technique for Fabrication of Ceramic Coatings	£279,314	Oct 2001 - Sept 2005 <sup>68</sup>
EPSRC, QinetiQ Ltd and Rolls Royce Plc	Micromechanics of TI/ SIC Fibre Composites	£189,017	July 2002 - June 2005 <sup>69</sup>
BAE Systems	PhD Project: Hybrid Friction Stir Welding	£?	2004 <sup>70</sup>
BAE Systems	Control of Residual Stresses in Welding Al-Aerospace Alloys by Mechanical and Thermal Tensioning; - EngD	£?	2004 <sup>71</sup>
Cranfield University, QinetiQ and others	DEFUSE - Development of Fusion Welding Methods for Wing Primary Structures	£158,000	Apr 2004 <sup>72</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Loughborough University, Rolls Royce Plc and others	FARADAY: Suspension-Based Fabrication Of Nanostructured Materials for Engineering Applications	£100,128	Nov 2004 - Jan 2007 <sup>73</sup>
EPSRC, BAE Systems and others	New Portfolio Partnership: Light Alloys for Environmentally Sustainable Transport	£5,983,207	Apr 2005 - Mar 2010 <sup>74</sup>
EPSRC and Rolls Royce Plc	A 3D Journey Through a Jet Engine	£19,600	Nov 2005 - Apr 2006 <sup>75</sup>

### **Other projects of note**

Project starting 2007, School of Mechanical Aerospace and Civil Engineering			
Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Rolls Royce Plc and others	Coupling between Strain Induced Damage, the Degradation of Thermal Properties and Stress- Strain Response of Ceramic Matrix Composites	£288,575	Jan 2007 - Dec 2009 <sup>76</sup>

### **Notation**

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

### **Endnotes**

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*“Projects are often in collaboration with the programme's industrial advisers, which include...BAE Systems and Dstl.”<sup>1</sup>*

- Newcastle University website

## Newcastle University 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)
55	£9,129,147	a) 14th  b) 13th	1) EPSRC  2) BAE Systems  3) QinetiQ	1) Marine Science Technology 2) Electrical, Electronic and Computer Engineering 3=) Computer Science 3=) Engineering Design Centre

### School of Marine Science and Technology

Source/ Sponsor/ Partner	Project	Amount	Year
BAE Systems, Rolls Royce and European Union GROWTH Programme	VR Ships – ROPAX 2000. Partners include: <ul style="list-style-type: none"> <li>University of Strathclyde, Design and Manufacture and Engineering Management, CAD [Computer Aided Design] Centre and Department of Naval Architecture and Marine Engineering</li> <li>BAE Systems (Operations) Ltd</li> <li>British Maritime Technology Ltd</li> <li>Napier University and</li> <li>Rolls Royce Hydrodynamic Research Centre</li> </ul>	£?	Aug 2000 - July 2005 <sup>2</sup>
BAE Systems	Survivability, Durability and Performance of Composite Structures	£141,560	Jan 2001 <sup>3</sup>
Project Partners include: <ul style="list-style-type: none"> <li>BAE Systems Marines Ltd</li> <li>University of Glasgow and</li> <li>University of Strathclyde's Ship Stability Research Centre within Department of</li> </ul>	Fast Ships Applications For Pod drives (FASTPOD)	4,000,000 Department share: €604,000 (approx £410,000)	2002 - 2005 <sup>4</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
Naval Architecture and Marine Engineering			
Ministry of Defence	Study into High Speed Propulsion Enabling Technology	£85,000	Jan 2003 - Apr 2004 <sup>5</sup>
Ministry of Defence	Motion Control of Triton Trimaran	£45,000	Sept 2003 - Jan 2004 <sup>6</sup>
QinetiQ	Marine Structure Analysis	£30,497	June 2004 <sup>7</sup>
Supported through an EPSRC Collaborative Training Account.  "Links in with the Rolls Royce Early Engineering Professional Development Scheme, delivered by Rolls Royce Plc."	Msc Marine Technology. Masters training Package in Marine Technology in collaboration with Rolls Royce. Part of the Marine Technology Education Consortium, a collaboration between: <ul style="list-style-type: none"> <li>University of Glasgow</li> <li>Heriot-Watt University</li> <li>University of Strathclyde</li> <li>University of Southampton</li> <li>University of Newcastle and</li> <li>University College London</li> </ul>	£?	Current as of Sept 2005 <sup>8</sup>
Programme Supported through a EPSRC Collaborative Training Account.  Past Industrial Partners include: <ul style="list-style-type: none"> <li>British Aerospace SEMA</li> </ul>	MRes (Masters in Research) in Marine Technology in the Marine Environment	£?	Current as of Sept 2005 <sup>9</sup>
RINA and BAE	Student of the Year, Naval Architect Award for Best Project Presentation	£250	2005/ 2006 <sup>10</sup>
EPSRC, BAE Systems and others	Predicting and Managing Weld Induced Distortion of Thin-Walled Steel Structures	£223,569	Mar 2006 - Nov 2009 <sup>11</sup>
Royal Navy	Bursaries for Young Officers on Naval Architecture Marine Engineering Degrees	£?	Current as of August 2006 <sup>12</sup>

### **School of Natural Sciences**

Source/ Sponsor/ Partner	Project	Amount	Year
BAE Systems	DNA-Modified Surfaces	£208,423	Aug 2002 <sup>13</sup>

### **School of Clinical Medical Sciences**

Source/ Sponsor/ Partner	Project	Amount	Year
Dstl	Targeting of a Candidate Plague	£?	Current as of

Source/ Sponsor/ Partner	Project	Amount	Year
	Vaccine Antigen for Delivery to Induce an Optimum Immune Response. Extramural Research Contract		Jan 2006 <sup>14</sup>

### **School of Electrical, Electronic and Computer Engineering**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, DERA - Malvern, British Aerospace (Sowerby Research Centre) and others	Inertial Sensors	£?	Feb 1999 - Feb 2001 <sup>15</sup>
EPSRC, Dstl Air Systems (Bedford), BAE Systems Plc and others	Optical Testing of Integrated Microelectromechanical Systems (IMEMS) for Production	£261,610	Feb 1999 - Oct 2002 <sup>16</sup>
Defence Research Agency (DRA)	Component Analysis	£?	Oct 2000 - Sept 2002 <sup>17</sup>
QinetiQ	Statistical Blind Source Separation	£?	Oct 2001 - Oct 2003 <sup>18</sup>
EPSRC, Rolls Royce Plc and others	Engineering Doctorate Centre: Power Electronics, Drives and Machines	£367,154	Oct 2001 - Dec 2003 <sup>19</sup>
EPSRC, Rolls Royce Plc, QinetiQ (Malvern) and others	Advancing Silicon Carbide Electronics Technology (ASCENT)	£715,384	Sept 2003 - May 2007 <sup>20</sup>
EPSRC, Rolls Royce Plc and others	Power Electronics, Drives and Machines	£430,178	Oct to Dec 2003 <sup>21</sup>
EPSRC Project Partners: • Ministry of Defence and • University of Lancaster Communications Department	Space-Time Diversity Coding Combined with Equalisation for MIMO Wireless Channels.	£200,000 (£64,379 from EPSRC)	Sept 2004 - Aug 2005 <sup>22</sup>
EPSRC, QinetiQ (Malvern) and others	Integration of Microelectromechanical Systems (MEMS) with Electronics in Silicon Carbide for Harsh Environments	£295,677	Jan 2005 - Jan 2008 <sup>23</sup>
EPSRC and MBDA UK Ltd	Next Generation of Interconnection Technology for Multiprocessor SoC	£293,570	Aug 2005 - July 2008 <sup>24</sup>

## **School of Mechanics, Materials and Manufacturing Engineering**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
EPSRC and Dstl Air Systems (Bedford)	Multi-Axis Gyroscopes	£218,113	April 1999 - Mar 2002 <sup>25</sup>
GKN, Westland and others	Mechanical and Materials Engineering (MEng Honors) Modules developed in consultation with Industrial Companies	£?	Current as of 2004 <sup>26</sup>
UK Army	Sponsorship for Formula Student Competition, to build a Formula One Car for Mechanical Engineering Students	£?	April 2005 <sup>27</sup>

## **School of Computing Science\***

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
BAE Systems as part of Defence Aerospace Research Partnership on High Integrity Real-Time Systems, established Oct 2002. Other partners of DARP include: <ul style="list-style-type: none"> <li>Rolls Royce Plc and</li> <li>QinetiQ</li> </ul>	British Aerospace Dependable Computing Systems Centre (DCSC), within the Centre for Software Reliability. Work concentrating on the Accurate Representation, Analysis and Tracing of System Requirements. Involves University of York	£?	Feb 1991 - Dec 2007 <sup>28</sup>
EPSRC and Matra BAE Systems. Project Partner: <ul style="list-style-type: none"> <li>King's College London's Department of Electrical Engineering</li> </ul>	Asynchronous Communication Mechanisms For Real-Time Systems (COMFORT)	£162,952	May 1998 - Nov 2001 <sup>29</sup>
QinetiQ, DERA, Malvern, European Union Framework V and European Community, Information Society Technology Programme	Dependable "System of Systems" (DSoS), within Dependability Research Group and Software Reliability Research Centre	£?	April 2000 - Mar 2003 <sup>30</sup>
EPSRC and Dstl	Interdisciplinary Research Collaboration in Dependability of Computer-Based Systems (DIRC) as part of the IRC. Involves: <ul style="list-style-type: none"> <li>University of York</li> <li>University of Edinburgh and</li> <li>City University</li> </ul>	EPSRC £7,331,719  Dstl £270,000	July 2000 - Mar 2007 <sup>31</sup>
Project Partners include: <ul style="list-style-type: none"> <li>Matra BAe Dynamics (UK)</li> </ul>	Exploiting Formality Within an Architectural Design Method,	£?	Jan 2001 <sup>32</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
Ltd, Filton, Bristol.	within the Centre for Software Reliability.		
QinetiQ	Web Service Study	£43,000	Oct 2003 <sup>33</sup>
Involves: • QinetiQ and others	Malicious and Accidental Fault Tolerance In Internet Applications (MAFTIA)	£?	Current as of Jan 2004 <sup>34</sup>
European Union, Information Society Technologies Programme.  Industrial Interest Group Participants include: • AWE Aldermaston, UK and • QinetiQ, UK Associate Group Members include: • University of York Other participants include: • VT Engine Controls Ltd, UK and • University of Southampton	Rigorous Open Development Environment for Complex Systems (RODIN)	Total cost: £4,397,850  EC contribution £3,171,000 (approx. £2,100,000)	Sept 2004 - Aug 2007 <sup>35</sup>
BAE Systems	Alert Propagation	£20,000	April 2005 <sup>36</sup>

### **School of Chemical Engineering and Advanced Materials**

Source/ Sponsor/ Partner	Project	Amount	Year
Defence Science Technology Laboratory	Fuel Cell Development (5 separate grants)	£488,114	June 2002 - Jan 2005 <sup>37</sup>
EPSRC, Rolls Royce Plc and others	Fuel Cells - Powering a Greener Future	£2,082,524	Sept 2005 - Aug 2009 <sup>38</sup>

### **School of Neurology, Neurobiology and Psychiatry**

Source/ Sponsor/ Partner	Project	Amount	Year
Defence Science Technology Laboratory	Gulf War Syndrome	£60,235	Dec 2002 <sup>39</sup>

### **Institute for Nanoscale Science and Technology**

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ	Microfabricated Substrates	£9,489	Mar 2004 <sup>40</sup>

### **Engineering Design Centre - EDC**

Source/ Sponsor/ Partner	Project	Amount	Year
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Source/ Sponsor/ Partner	Project	Amount	Year
BAE Systems and DERA	European Co-Operative for the Long Term in Defence [EUCLID]: Survivability, Durability and Performance of Naval Composite Structures	£?	Recent as of April 2007 <sup>41</sup>
Rolls Royce and others	The Time Dimension and Through Life Costs in the Design, Manufacture and Operation of Large MTO [Made-to-Order] Products	£?	Recent as of April 2007 <sup>42</sup>
Rolls Royce and others	The Role of Design in the Business Process of New MTO [Made-to-Order] Products	£?	Recent as of April 2007 <sup>43</sup>
BAE Systems and others	Increasing Robustness and Decreasing Risk Throughout the Design Process	£?	Recent as of April 2007 <sup>44</sup>
Rolls Royce Industrial Controls and BAE Systems	Generic Specification for Engineering Systems	£?	Recent as of April 2007 <sup>45</sup>
BAE Systems	The Use and Re-Use of Emerging Design Knowledge in the Assessment of Design Margins	£?	Recent as of April 2007 <sup>46</sup>
Rolls Royce	Optimisation of Steam Turbine Design	£?	Recent as of April 2007 <sup>47</sup>
BAE Systems	Integrated Modelling Environment (IME)	£?	Current as of April 2007 <sup>48</sup>
Thales UK Plc	MSc in Major Project Management and Associated Research Network. Project Partners: <ul style="list-style-type: none"> <li>University of Durham and</li> <li>University of Warwick</li> </ul>	£?	Current as of April 2007 <sup>49</sup>

### **School of Mechanical and Systems Engineering**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and Vosper Thorneycroft	Fire Resistance of Loaded Composite Structures	£267,363	2002 - 2004 <sup>50</sup>
EPSRC and QinetiQ (Malvern)	The Application of Parametric Excitation as a Drive Mechanism for a Vibrating Ring Gyroscope	£123,536	Sept 2004 - Sept 2007 <sup>51</sup>
EPSRC, QinetiQ (Malvern) and others	Development of a "Dynamic Micro Analysis Raman Spectroscopy" (DyMARS) System for Characterisation of	£114,992	Aug 2005 - Jan 2008 <sup>52</sup>



Source/ Sponsor/ Partner	Project	Amount	Year
	MEMs and NEMs		

### **School of Civil Engineering and Geosciences**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, QinetiQ and others	EPITOMIZ: Elasto-Plastic Geometrically Nonlinear Structural Optimization	£136,615	Sept 2000 - Mar 2004 <sup>53</sup>
EPSRC and BAE Systems Avionics Group	CREDO - Composites Reliability from Engineering Design Optimization I. Stochastic Analysis	£223,179	May 2006 - May 2009 <sup>54</sup>
EPSRC, Boeing, Thales Research Ltd and others	Pervasive Mobile Environmental Sensor Grids	£861,163	Oct 2006 - Sept 2009 <sup>55</sup>

### **Miscellaneous/ Cross Department**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC (received via King's College London) and MBDA (joint funded project)	Computational Heterogeneously Timed Networks, COHERENT. Collaborative Project between Departments of Computing Science and School of Electrical and Electronic Engineering at Newcastle, and Department of Electronic Engineering at KCL. Industrial Links with Matra BAE Systems. Matra BAE Dynamics (UK) Ltd.	Total Funding approx. £340,000, including £244,104 via EPSRC	July 2001 - Nov 2004 <sup>56</sup>

### **Other Projects/ Information of Note**

Project starting 2007, School of Electrical, Electronic and Computer Engineering			
Source/Sponsor/Partner	Project	Amount	Year
EPSRC, QinetiQ Ltd, Rolls Royce Plc and others	Eddy Current Sensor Arrays for Stress and Damage Mapping	£285,822	Mar 2007 - Feb 2010 <sup>57</sup>

Projects ending 2000 and 1998, Department of Computer Science			
Source/Sponsor/Partner	Project	Amount	Year
EPSRC and BAE	Traceability for Dependable Avionic Systems	£?	March 2000 <sup>58</sup>
EPSRC CASE Award,	Hollingwood	£?	Sept 1998

British Aerospace Ltd			59
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<b>Development Council</b>
<ul style="list-style-type: none"> <li>“Two years ago, the University set up a Development Council, bringing together alumni and friends of the University with experience of business, under the chairmanship of Sir Terence Harrison, the former Chief Executive of Rolls Royce.”<sup>60</sup></li> </ul>
<b>Computer Science*</b>
<ul style="list-style-type: none"> <li>The University of Newcastle’s Computer Science Department is part of BAE System’s Systems Integration Consortium with the Universities of York and Loughborough. Established in 1999, the consortium is part of the Network of Excellence in Distributed and Dependable Computing Systems.<sup>61</sup></li> </ul>

## **Notation**

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

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*"Working with a range of global leading industry partners such as Rolls-Royce, BAE Systems and Smiths Aerospace, Nottingham's expertise in this field is truly unrivalled."*<sup>1</sup>

- University of Nottingham Website

## University of Nottingham 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)
46	£29,133,566	a) 15th =  b) 6th	1) EPSRC  2=) Rolls Royce  2=) BAE Systems  3) QinetiQ	1) Mechanical Materials, Manufacturing Engineering and Management 2) Electrical and Electronic Engineering 3) Mathematical Sciences

## Institute of Engineering, Surveying & Space Geodesy

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and Thales Geosolutions Group Ltd	Characterising GPS Ionospheric Scintillation and Possible Effects for Northern Europe GPS Users	£15,467	Feb 2003 - Oct 2003 <sup>2</sup>
EPSRC, BAE Systems Electronics Ltd, EADS ASTRIUM, QinetiQ Ltd and Thales Research Ltd  Academic partners include: • CAA Institute of Satellite Navigation at the University of Leeds. • Department of Civil and Environmental Engineering at University College London	Seamless Positioning in All Conditions and Environments - "SPACE"	£157,956	May 2004 - Sept 2007 <sup>3</sup>

## School of Electrical and Electronic Engineering

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and Rolls Royce Plc	Adaptive Laser Ultrasound With Programmable Optical Field Distributions	£201,608	Jul 1999 - Nov 2002 <sup>4</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, QinetiQ (Malvern) and others	Tapered Structures for Optoelectronics, in collaboration with the George Green Institute	£118,860	Sept 1999 - Feb 2003 <sup>5</sup>
EPSRC and Rolls-Royce Plc	Particle Shape Measurement Using Fluctuations in Scattered Gaussian Light	£235,531	Mar 2000 - Mar 2003 <sup>6</sup>
EPSRC, Ministry of Defence and others	Development of Macromodels for Large Scale Electromagnetic Simulation in the Time-Domain	£149,570	Jan 2001 - Jan 2004 <sup>7</sup>
EPSRC and BAE Systems Plc	Multi-Scale Modelling and Simulation in Electromagnetics, in collaboration with the George Green Institute.	£206,738	Oct 2002 - Oct 2005 <sup>8</sup>
EPSRC and Rolls Royce Plc	Advanced Ultrasonic Techniques For Highly Scattering Ordered and Semi-Ordered Materials	£176,239	Jan 2005 - Jan 2008 <sup>9</sup>
EPSRC and Rolls Royce Plc	Cheap Optical Transducers (CHOTs)	£305,913	Mar 2006 - Mar 2009 <sup>10</sup>
EPSRC and Smiths Aerospace University Technology Strategic Partnership Centre* (SA UTSP)	Full Proposal for a Smiths University Strategic Partnership in Advanced Electrical Power and Actuation Systems. In collaboration with Warwick University	£1,369,117	Mar 2006 - Feb 2011 <sup>11</sup>
EPSRC, Dstl, QinetiQ (FLC Division) and others	Advanced Ultrasonic NDE of Composite Airframe Components: Physics, Modelling and Technology	£338,866	Aug 2006 - July 2009 <sup>12</sup>
EPSRC, Smiths Aerospace* and others	Wide Speed Range Sensorless AC Motor Drives, including Operation at Zero-Frequency, without using Test Signals	£333,304	Oct 2006 - Sept 2009 <sup>13</sup>

### **School of Mechanical, Materials, Manufacturing Engineering & Management**

Source/ Sponsor/ Partner	Project	Amount	Year
Rolls Royce Plc	Rolls Royce Plc University Technology Centre (UTC) in Mechanical Transmission Systems	Initially £1,000,000+ over 5 years	July 1997 onwards <sup>14</sup>
EPSRC, BAE Systems-Ifs Ltd, Loughborough University and others	East Midlands Faraday Partnership - Products Comprising Interdependent Mechanical & Electrical Parts-Prime	£51,349	Oct 1997 - Oct 2001 <sup>15</sup>
EPSRC and Rolls Royce Plc	Joint Research Equipment Initiative (JREI): Dynamics of Oil/ Air Mixture & Liquid Films in the HP-IP Bearing Chamber of an Aero-Engine	£64,625	May 1998 - May 2001 <sup>16</sup>
EPSRC and Rolls Royce Plc	Fatigue of Splined Joint Couplings	£152,081	June 1998 - Aug 2001 <sup>17</sup>



Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Matra BAE Dynamics (UK) Ltd, British Aerospace Plc, BAE Systems Operations Ltd and others	IMI: Jigless Aerospace Manufacture (JAM)	£582,450	June 1998 - Sept 2001 <sup>18</sup>
EPSRC, Imperial College, London and BAE Systems Sowerby Research Centre	Pilot Study for Active Control of Turbulent Boundary Layers using Micro-Sensors and Actuators	£179,575	July 1998 - Dec 2001 <sup>19</sup>
EPSRC and Rolls Royce Plc	A Miniature Laser Anemometer that Measures Velocity, Particle Size and Concentration In Multi-Phase Flows	£256,362	May 1999 - June 2002 <sup>20</sup>
EPSRC, ASTRIUM and others	Thin Film Piezoelectric Actuation for Microengineered Microwave Components: Design & Modelling	£90,131	Sept 2000 - Feb 2003 <sup>21</sup>
EPSRC and Dowty Propellers (Smiths Aerospace Gloucester Ltd)	The Effects of Manufacturing on the Design & Performance of Textile Composites (MANTEX)	£264,883	Aug 2000 - Sept 2001 <sup>22</sup>
EPSRC, BAE Systems Plc and others	IMI Towards World Class Performance in Planning Scheduling and Control: Progress Chasers to Responsive Teams	£269,402	Sept 2000 - Sept 2001 <sup>23</sup>
Rolls Royce Plc	Rolls Royce Plc University Technology Centre (UTC) in Manufacturing Technology	£300,000 p.a.	Sept 2000 onwards <sup>24</sup>
EPSRC, University of Warwick, University of Leeds, Newcastle University, University of Cambridge, GKN Westland Aerospace (IoW), Ministry of Defence, British Aerospace and others	NETWORK: Manufacture and Forming of Thermoplastic Matrix Composites	£62,703	Nov 2000 - Nov 2003 <sup>25</sup>
EPSRC, Vosper Thornycroft (UK) Ltd and others	Low Investment Manufacturing of Large Transportation Structures	£309,749	Jan 2001 - Sept 2001 <sup>26</sup>
EPSRC, Rolls Royce Plc and others	Adaptive Planning for Machining of Complex Low-Rigidity Components	£309,450	July 2001 - Sept 2001 <sup>27</sup>
EPSRC, Dowty Propellers (Smiths Aerospace Gloucester Ltd) and others	Design and Processing of Multi-Layer Structures for Liquid Composite Moulding (Multi-Comp)	£357,998	Oct 2001- April 2005 <sup>28</sup>
EPSRC and Vosper Thornycroft (UK) Ltd	Innovative Manufacturing Research Centre	£6,150,001	Oct 2001 - Sept 2006 <sup>29</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
			<sup>29</sup>
EPSRC, Ministry of Defence and others	Enhancing the Hydrogen Storage Capacity of Carbon Nanofibres	£234,520	Dec 2001 - Nov 2004 <sup>30</sup>
EPSRC, QinetiQ Ltd and others	Flightdeck and Air Traffic Control Collaboration Evaluation (FACE)	£267,735	Nov 2002 - Jan 2005 <sup>31</sup>
EPSRC and Rolls Royce Plc	High Load Capacity Magnetic Bearings	£289,383	Jan 2003 - Dec 2005 <sup>32</sup>
EPSRC, QinetiQ Ltd and others	Design Optimisation of Textile Composite Structures (DotComp)	£224,294	Sept 2003 - Oct 2006 <sup>33</sup>
EPSRC, BAE Systems Advanced Technology Centre and others	Active Control of Turbulent Flow Separation by Surface Plasma	£188,838	Jan 2006 - Dec 2008 <sup>34</sup>
EPSRC, Rolls-Royce Plc, Dowty Propellers (Smiths Aerospace Gloucester Ltd*) and others	NSF: Fatigue, Damping and Impact Properties of Textile Composites	£167,863	May 2006 - Apr 2009 <sup>35</sup>
EPSRC, Rolls Royce, BAE Systems, GKN and QinetiQ  NB Members from Rolls Royce and BAE Systems sit on the NIMRC's Industrial Advisory Board.	Nottingham's Innovative Manufacturing Research Centre  NIMRC has collaborative research projects with Warwick, Bath, Cranfield and Loughborough IMRCs	EPSRC funding: £6,150,000 Industrial funding: £3,000,000  EPSRC funding: £9,896,801	2001 - 2006     Oct 2006 - Sept 2011 <sup>36</sup>

### **School of Mathematical Sciences**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and QinetiQ (Malvern)	Application of Emission Polarization from Random Surfaces	£170,916	Apr 2002 - Mar 2005 <sup>37</sup>
EPSRC, BAE Systems Plc and others	Faraday Fast Track Proposal: Electromagnetic Compatability in Complex Electrical Systems	£98,696	Sept 2002 - Feb 2005 <sup>38</sup>
EPSRC and QinetiQ (Malvern)	Discrete Stochastic Processes in Complex Systems	£209,592	Oct 2005 - Sept 2008 <sup>39</sup>

### **School of Physics and Astronomy**

Source/ Sponsor/ Partner	Project	Amount	Year
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Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, QinetiQ (Malvern) and others	Basic Technology: Nanorobotics - Technologies for Simultaneous Multidimensional Imaging & Manipulation of Nanoobjects	£254,379	Nov 2004 - Oct 2008 <sup>40</sup>
EPSRC, QinetiQ (Malvern) and others	Supramolecular Self-Assembly of 1-10nm Templates for Biofunctional Surfaces, Quantum Information Processing and Nanoelectronics	£3,458,241	July 2006 - June 2010 <sup>41</sup>

### **School of the Built Environment**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, BAE Systems Avionics Ltd and others	Boiling and Condensation in Microchannels	£172,281	Nov 2005 - Nov 2008 <sup>42</sup>

### **Innovative Manufacturing Research Centre**

Source/ Sponsor/ Partner	Project	Amount	Year
BAE Systems and others	PROCHART: Generic Principles for PSC Systems Design	£?	Current as of Jan 2007 <sup>43</sup>

### **Centre for Geospatial Science**

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ	Director for Space at QinetiQ appointed Chair in Geospatial Science	£?	Apr 2005 onwards <sup>44</sup>
QinetiQ Ltd	Offered: PhD Studentship: Integration of Geospatial and Real-Time Positioning Data for Predictive Location Analysis	Full Tuition Fees plus £12,300 to £15,000 p.a. maintenance	Sept 2006 - Sept 2009 (Available until filled) <sup>45</sup>

### **The George Green Institute**

Source/ Sponsor/ Partner	Project	Amount	Year
NATO and others	Postdoctoral Fellowship: Investigation of Electromagnetic Field in a System of Transparent Cylinders with Time-Varying Media	£?	Aug 2004 - July 2005 <sup>46</sup>
EPSRC and BAE Systems	Integrated Programme of Research in Aeronautical Engineering	£200,000	Sept 2004 - Sept 2007 <sup>47</sup>

### **Notation**

\* In May 2007 Smiths Group completed the sale of its aerospace business, containing the bulk of

its military-related production, to General Electric.  
£? Denotes projects whose value we were unable to discover.

## **Endnotes**

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*"Oxford has entered into a strategic partnership with QinetiQ, a leading defence security and technology company, which will see the University and the company working together to identify areas of technological common interest. The partnership will allow QinetiQ to access the science and technology expertise of Oxford, and maintain an active involvement in its latest research innovations. The focus will be on the Maths and Physical Sciences Division."*<sup>1</sup>

**-University of Oxford website**

## University of Oxford Military Projects 2001 - 2006

<b>Overall Statistics</b>				
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)
124	£19,222,724	a) 3rd  b) 8th	1) Rolls Royce  2) Qinetiq  3) EPSRC	1) Engineering Science 2) Materials 3) Computing Laboratory

## School of Engineering Science

Source/ Sponsor/ Partner	Project	Amount	Year
Rolls Royce	Condition Monitoring of Jet Engines: Vibration Analysis (Quince)	£?	1996 – Aug 2003 <sup>2</sup>
Rolls Royce	Condition Monitoring of Jet Engines: Multi-Sensor Fusion (Quick)	£?	1997 – Aug 2003 <sup>3</sup>
EPSRC and Dstl	Scramjet Intake	£?	1998 Onwards <sup>4</sup>
EPSRC and Rolls Royce	Joint Research Equipment Initiative [JREI]: Enhancement of Fretting Fatigue Test Facilities	£48,230	Feb 1998 - Jan 2001 <sup>5</sup>
EPSRC, Rolls Royce Plc and others	New Design Methods for Fatigue-Creep and Plastic Collapse. Involves: • University of Leicester • University of Swansea	£131,415	Oct 1999 - Sept 2002 <sup>6</sup>
British Aerospace	N/A	£45,000	Apr 1999 - Aug 2002 <sup>7</sup>
Rolls Royce	N/A (2 separate grants)	£22,000	Dec 1999 - Nov 2003 <sup>8</sup>
Rolls Royce	N/A (2 separate grants)	£1,128,887	Jan 2000 - Dec 2003 <sup>9</sup>
EPSRC and	Enhanced Life Prediction for Three-	£215,966	Nov 2000 -

Source/ Sponsor/ Partner	Project	Amount	Year
Rolls Royce Plc	Dimensional Fatigue Cracks		Mar 2004 <sup>10</sup>
DTI, Rolls Royce, QinetiQ, University of Cambridge, Imperial College London, University of Sheffield	Aspects of Aeroengine's Lightweight Fan Systems Design Involving Birdstrike	£?	2001 – 2004 <sup>11</sup>
Rolls Royce	N/A	£21,964	Jan - Dec 2001 <sup>12</sup>
Rolls Royce	N/A	£118,119	Mar 2001 - Sept 2004 <sup>13</sup>
Rolls Royce	N/A	£34,966	Apr 2001 - Mar 2004 <sup>14</sup>
Rolls Royce	N/A	£13,479	June 2001 - May 2002 <sup>15</sup>
Rolls Royce	N/A	£89,942	June 2001 - May 2004 <sup>16</sup>
Rolls Royce	N/A	£623,000	Aug 2001 - Jan 2005 <sup>17</sup>
Rolls Royce	N/A	£314,004	Oct 2001 - Sept 2005 <sup>18</sup>
British Aerospace	N/A	£20,498	Dec 2001 - Apr 2002 <sup>19</sup>
EPSRC, Rolls Royce  University collaborators include:  <ul style="list-style-type: none"> <li>• University of York</li> <li>• University of Leeds</li> <li>• University of Sheffield</li> </ul>	Distributed Engine Diagnostics (E- Science Project) as part of Distributed Aircraft Maintenance Environment (DAME) Project	Overall grant: £3,096,172  (Weblink shows York University grant)	Jan 2002 - Sept 2005  2002 - Aug 2003 <sup>20</sup>
QinetiQ	N/A	£36,924	Jan - June 2002 <sup>21</sup>
Rolls Royce	N/A	£108,001	Feb 2002 - Jan 2005 <sup>22</sup>
QinetiQ	N/A	£18,024	Mar to Aug 2002 <sup>23</sup>
QinetiQ	N/A	£54,570	Aug 2002 - Dec 2004 <sup>24</sup>
Rolls Royce	N/A	£60,000	Sept 2002 - Aug 2004 <sup>25</sup>
Rolls Royce	N/A	£50,000	Oct 2002 - Mar 2004 <sup>26</sup>
Rolls Royce	N/A	£76,524	Nov 2002 - Aug 2004 <sup>27</sup>



Source/ Sponsor/ Partner	Project	Amount	Year
Rolls Royce	N/A	£189,999	Apr 2003 - Dec 2004 <sup>28</sup>
Rolls Royce	N/A	£127,850	Apr 2003 - Mar 2005 <sup>29</sup>
Rolls Royce	N/A	£419,998	Apr 2003 - Mar 2007 <sup>30</sup>
EPSRC, British Aerospace Plc, QinetiQ (Malvern) and Rolls Royce Plc	DARP: Data Fusion DARP: ARGUS II	£433,200	Apr 2003 - Mar 2008 <sup>31</sup>
Rolls Royce	N/A	£29,989	May 2003 - Apr 2005 <sup>32</sup>
Rolls Royce	N/A	£31,977	May 2003 - May 2005 <sup>33</sup>
QinetiQ	N/A	£12,000	Oct 2003 - Sept 2006 <sup>34</sup>
QinetiQ	N/A	£5,000	Nov 2003 - April 2004 <sup>35</sup>
EPSRC, QinetiQ (Malvern) and others	Dual Mode Nematic Liquid Crystal Displays (DMLCD) as part of Faraday Scheme	£229,771	Dec 2003 - Jan 2006 <sup>36</sup>
EPSRC, QinetiQ Ltd, Rolls Royce Plc and others	Reliable Measurement of Residual Stress in Large Engineering Components	£143,309	Oct 2004 - Sept 2007 <sup>37</sup>
Rolls Royce	N/A (2 separate grants)	£129,007	Jan - Dec 2004 <sup>38</sup>
Rolls Royce	N/A	£153,120	Apr 2004 - Mar 2007 <sup>39</sup>
Rolls Royce	N/A	£5,000	June 2004 - Dec 2005 <sup>40</sup>
QinetiQ	N/A	£30,000	Jul - Dec 2004 <sup>41</sup>
Rolls Royce	N/A	£20,001	Sept 2004 - Aug 2009 <sup>42</sup>
Rolls Royce	N/A	£6,000	Oct 2004 - June 2005 <sup>43</sup>
Rolls Royce	N/A	£70,200	Dec 2004 - Nov 2006 <sup>44</sup>
Rolls Royce	N/A	£20,000	Feb 2005 - Jan 2010 <sup>45</sup>
British Aerospace	N/A (3 separate grants)	£596,410	Mar 2005 - Feb 2008 <sup>46</sup>
Rolls Royce	N/A	£171,883	Mar 2005 -

Source/ Sponsor/ Partner	Project	Amount	Year
			Feb 2008 <sup>47</sup>
Rolls Royce	N/A	£17,997	Apr 2005 - Mar 2007 <sup>48</sup>
Rolls Royce	N/A	£110,002	July 2005 - June 2010 <sup>49</sup>
Royal Academy of Engineering and BAE Systems	Professorship of Service and Support Engineering	£?	Oct 2005 for an initial 5 year period <sup>50</sup>
Rolls Royce	N/A	£30,000	Nov 2005 - Oct 2009 <sup>51</sup>
EPSRC and Rolls Royce Plc	Microplasticity and Fatigue Crack Initiation	£383,520	Nov 2005 - Mar 2010 <sup>52</sup>

### **School of Materials**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Rolls Royce Plc and others	Processing, Microstructure and Property Aspects of Spray Formed Nickel Alloys	£312,836	Apr 1998 - Mar 2001 <sup>53</sup>
EPSRC, DERA Fareham and Rolls Royce Plc	Processing, Properties and Engineering Design Aspects of TI Metal Matrix Composites	£262,896	Nov 1998 - July 2002 <sup>54</sup>
Rolls Royce	N/A	£100,618	May 2000 - May 2002 <sup>55</sup>
EPSRC and Joint Infrastructure Fund  In collaboration with: <ul style="list-style-type: none"> <li>• Cranfield University</li> <li>• University of Southampton</li> <li>• Imperial College London</li> <li>• British Aerospace Military</li> <li>• DERA</li> <li>• GKN Westland Helicopters Ltd</li> </ul>	Spray Formed Al Alloys	£?	Research in progress 2000 - 2001 <sup>56</sup>
QinetiQ	N/A	£7,500	Oct 2000 - Sept 2003 <sup>57</sup>
QinetiQ	N/A	£75,000	Apr 2002 - Feb 2006 <sup>58</sup>
QinetiQ	N/A	£13,000	June 2002 - Mar 2003 <sup>59</sup>
EPSRC, DERA, BAE Systems	Faraday: The Science and Exploitation of Spraycast Aluminium Airframe Alloys. Project involves a	£404,821	June 2002 - Feb 2007 <sup>60</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
and others	DERA Fellow based jointly at Farnborough and Oxford, a Project Studentship at Imperial College London, and a Project Studentship at University of Southampton under the DARP Programme		
Rolls Royce	N/A	£21,000	Oct 2002 - Sept 2005 <sup>61</sup>
Ministry of Defence (MoD)	N/A	£23,736	Dec 2002 - Dec 2005 <sup>62</sup>
EPSRC, QinetiQ Ltd, Rolls Royce Plc and others	Modelling, Microstructure and Properties of Nickel Superalloys Processed by Centrifugal Spray Deposition	£160,212	April 2003 - April 2006 <sup>63</sup>
Defence Science Technology Institute (Dstl)	N/A	£148,453	Apr 2003 - Mar 2006 <sup>64</sup>
Rolls Royce	N/A	£167,938	Aug 2003 - July 2005 <sup>65</sup>
Rolls Royce	N/A	£62,496	Sept 2003 - Sept 2006 <sup>66</sup>
EPSRC, QinetiQ Ltd and Rolls Royce Plc	DARP: Advanced Aerospace Materials - Electrical	£106,610	Sept 2003 - Mar 2007 <sup>67</sup>
DARPA, Dstl, QinetiQ and Rolls Royce	Sponsorship  This is a general reference to grants from industry to the dept.	£?	2004/ 2005 Financial Year <sup>68</sup>
Rolls Royce	N/A	£8,856	July - Dec 2004 <sup>69</sup>
EPSRC, Smiths Industries* and others	Toxic Metal Replacement in Aerospace Applications. Collaborative Project with: <ul style="list-style-type: none"> <li>University of Loughborough's Institute of Polymer Technology and Materials Engineering (IPTME)</li> </ul>	£166,246	Oct 2005 - Mar 2009 <sup>70</sup>
Dstl	Experimental and theoretical electron energy loss studies of carbon nanostructures	£?	Current as of May 2007 <sup>71</sup>
EPSRC, QinetiQ Ltd, Rolls Royce Plc and others	Alloys By Design - A Materials Modelling Approach	£402,250	Oct 2006 - Mar 2010 <sup>72</sup>
Rolls Royce	Dynamical Ising Model Simulations of Phase Separation	£?	Current as of Dec 2006 <sup>73</sup>
DARPA	MBE Growth of Spintronic Materials	£?	Current as of

Source/ Sponsor/ Partner	Project	Amount	Year
			Dec 2006 <sup>74</sup>
Innovative electronics Manufacturing Research Centre (IeMRC) and MoD/Dstl	Novel High Energy Density High Reliability Capacitors. Involves Collaboration with: <ul style="list-style-type: none"> <li>University of Nottingham</li> </ul>	£?	Current as of Dec 2006 <sup>75</sup>
EPSRC/ Smiths* Strategic Partnership Involves: <ul style="list-style-type: none"> <li>University of Bristol</li> </ul>	Smart Composites	£?	Current Five Year Project as of Dec 2006 <sup>76</sup>
Ministry of Defence	Atomic Scale Studies of Solute Transport Along Grain Boundaries. In collaboration with: <ul style="list-style-type: none"> <li>University of Manchester</li> <li>University of Birmingham and others</li> </ul>	£?	Current as of Dec 2006 <sup>77</sup>

### **School of Clinical Medicine**

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ	N/A	£45,000	Aug 2001 - Mar 2002 <sup>78</sup>

### **Said Business School**

Source/ Sponsor/ Partner	Project	Amount	Year
BAE Systems and others	Executive Education Programmes	£?	Current as of 2005 <sup>79</sup>

### **School of Physics**

Source/ Sponsor/ Partner	Project	Amount	Year
Defence Science Technology Laboratory	N/A	£10,000	June 2003 - May 2004 <sup>80</sup>
Defence Science Technology Laboratory	N/A	£30,000	Dec 2003 - Apr 2004 <sup>81</sup>

### **Department of Statistics**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and BAE Systems	Reinforcement Learning in Games, CASE Research Studentship (00317214)	£?	Aug 2003 <sup>82</sup>

**School of Mathematics, Oxford Centre for Industrial Applied Mathematics and Mathematical Institute**

Source/ Sponsor/ Partner	Project	Amount	Year
British Aerospace	N/A	£47,985	Oct 1998 - Sept 2001 <sup>83</sup>
British Aerospace	N/A	£27,200	Nov 2001 - Oct 2004 <sup>84</sup>
EPSRC and QinetiQ Ltd	Faraday Fast Track Proposal: Mathematical and Computational Modelling of Shaped Charge Mechanics	£92,367	Jan 2003 - Sept 2005 <sup>85</sup>
Faraday Partnership for Industrial Mathematics and EPSRC CASE Award	Submarine Coating Acoustic Properties. Project Staff includes a Postgraduate Faraday Associate. Project carried out by Oxford centre for Industrial Applied Mathematics (OCIAM).	£?	Oct 2003 - 2006 <sup>86</sup>
Defence Science Technology Laboratory	N/A	£19,200	Oct 2004 - Sept 2007 <sup>87</sup>

**School of Physiology**

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ	N/A	£19,999	July 2001 - Jan 2002 <sup>88</sup>

**School of Earth Science**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and AWE Plc	DPhil Project "Study of Medium Sized Intraplate Earthquakes Using Broadband Data"	£?	Oct 2003 Onwards <sup>89</sup>

**School of Zoology**

Source/ Sponsor/ Partner	Project	Amount	Year
Defence Science Technology Laboratory	N/A	£127,495	July 2001 - Apr 2002 <sup>90</sup>
QinetiQ	N/A	£31,500	July - Dec 2003 <sup>91</sup>

**Department for Continuing Education**

Source/ Sponsor/ Partner	Project	Amount	Year
BAE Systems, Dstl, QinetiQ, Thales	Electronics & Telecoms Programme	£?	Recent as of May 2007 <sup>92</sup>

**Computing Laboratory**

Source/ Sponsor/ Partner	Project	Amount	Year
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Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ, AWE, Rolls Royce and BAE Systems	Institute for Computational Fluid Dynamics	£?	1983 - Present <sup>93</sup>
Rolls Royce	University Technology Centre (UTC) in Computational Fluid Dynamics	£?	1992 Onwards <sup>94</sup>
EPSRC, BAE Systems Plc and Rolls Royce Plc	Adjoint CFD Algorithms for Aeronautical Design	£104,245	June 1998 - May 2001 <sup>95</sup>
Rolls Royce	N/A	£469, 019	Apr 2001 - Mar 2004 <sup>96</sup>
Industrial partners include: <ul style="list-style-type: none"> <li>BAE Systems Plc, Rolls Royce Plc</li> </ul> <p>Academic partners include:</p> <ul style="list-style-type: none"> <li>University of Manchester's Department of Ontology</li> <li>University of Southampton's Departments of GRID Technology, Design Optimisation, and Knowledge Management</li> </ul>	Grid Enabled Optimisation & Design Search for Engineering (GEODISE)	£2,872,450 Awarded to University of Southampton  £? Awarded to University of Oxford	Nov 2001 - April 2005 <sup>97</sup>
QinetiQ	N/A	£124,833	Apr 2002 - Mar 2004 <sup>98</sup>
QinetiQ	N/A	£60,537	Nov 2002 - Apr 2004 <sup>99</sup>
Thales Underwater Systems and others	MSc in Mathematical Modelling and Scientific Computing. Companies provided topics for Student Dissertations which were jointly supervised by company and university representatives	£?	2003 - 2004 <sup>100</sup>
QinetiQ	N/A	£45,000	Oct 2003 - Sept 2006 <sup>101</sup>
Defence Science Technology Laboratory	N/A	£10,000	Apr - Nov 2004 <sup>102</sup>
Rolls Royce	N/A (2 separate grants)	£436,330	Jan 2005 - Dec 2007 <sup>103</sup>
QinetiQ	N/A	£16,000	May 2005 - May 2006 <sup>104</sup>

### **School of Chemistry**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
Defence Science Technology Laboratory	N/A	£5,000	Nov 2001 - May 2002 <sup>105</sup>
Defence Science Technology Laboratory	N/A	£15,000	Oct 2002 - Oct 2006 <sup>106</sup>
Defence Science Technology Laboratory	N/A	£15,000	Oct 2003 - Sept 2006 <sup>107</sup>
Defence Science Technology Laboratory	N/A	£15,000	Jan - Mar 2005 <sup>108</sup>

### **Miscellaneous**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
Atomic Weapon Research Establishment Defence Research Agency American Office of Naval Research BAE Systems (Operations) Ltd DARPA Rolls Royce	University of Oxford Annual Review 00/01	£30,773 £466,815 £71,667 £51,289 £85,850 £1,085,112	2000 – 2001 <sup>109</sup>
Defence Research Agency Dstl BAE Systems (Operations) Ltd QinetiQ Ltd Rolls Royce United States Army US Office of Naval Research	University of Oxford Annual Review 01/02	£95,904 £88,251 £19,490 £255,702 £1,042,011 £67,241 £29,170	2001 – 2002 <sup>110</sup>
Ministry of Defence (MoD)	Donation: Public International Law (2 separate grants)	£800	Jan 2001 <sup>111</sup>
Ministry of Defence (MoD)	Donation: Public International Law	£4,000	Feb 2001 <sup>112</sup>
Ministry of Defence (MoD)	Donation: Public International Law	£200	Mar 2001 <sup>113</sup>
Boeing	Donation: Bodleian Library	£35	July 2001 <sup>114</sup>
Boeing	Donation: Unrestricted	£35	July 2001 <sup>115</sup>
Defence Research Agency Dstl MOD QinetiQ Ltd Rolls Royce United States Army US Office of Naval Research	University of Oxford Annual Review 02/03	£36,405 £61,680 £19,467 £243,288 £931,971 £213,534 £45,749	2002 – 2003 <sup>116</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
Boeing	Donation: Unrestricted	£79	Aug 2002 <sup>117</sup>
Dstl American Office of Naval Research QinetiQ Rolls Royce Naval Marine Rolls Royce United States Air Force United States Army	University of Oxford Annual Review 03/04	£95,933 £91,755  £225,072 £131,082 £683,971 £60,398 £297,844	2003 – 2004 <sup>118</sup>
Ministry of Defence (MoD)	Donation: Public International Law (2 separate grants)	£3,700	Mar 2003 <sup>119</sup>
MOD QinetiQ Ltd Rolls Royce Naval Marine Rolls Royce United States Air Force United States Army US Department of Defence US Naval Research Laboratory	University of Oxford Annual Review 04/05	£161,290 £101,201 £181,980 £747,498 £117,152 £339,860 £142,095 £81,451	2004 – 2005 <sup>120</sup>
EPSRC and MOD under Joint Grant Scheme (JGS)	Quantum Information Processing – Information Research Collaboration (QIP-IRC). 2 Grants Awarded. One to the University to Oxford, one to the University of Bristol.  Academic members of the project include: <ul style="list-style-type: none"> <li>University of Bristol</li> <li>University of Cambridge</li> <li>University of Hertfordshire</li> <li>Imperial College London</li> <li>University of Sheffield</li> <li>University College London</li> <li>University of York</li> <li>University of Leeds</li> </ul> <ul style="list-style-type: none"> <li>Non-Academic members include: QinetiQ</li> </ul>	Approx. £10,000,000	April 2004 - 2009 <sup>121</sup>
Rolls Royce	Donation: Roy Jenkins Memorial Scholarship	£5,000	May 2004 <sup>122</sup>
QinetiQ Ltd	Strategic Partnership with Oxford University	£?	Nov 2005 <sup>123</sup>
Rolls Royce and QinetiQ	Oxford University Engineering Society	£?	Current as of Jan 2006 <sup>124</sup>
Industrial Advisory Board members include: An executive scientist from	Complex Agent-Based Dynamic Networks (CABDyN).	N/A	Current as of May 2007 <sup>125</sup>



Source/ Sponsor/ Partner	Project	Amount	Year
BAE Systems Advanced Technology Centre	Cross-departmental project.		

### **Other projects of note**

<b>Project ending 1999, School of Mechanical Engineering NB Other investigators listed as researchers from Oxford University</b>			
Source/ Sponsor/ Partner	Project	Amount	Year
EPRSC, QinetiQ (Malvern) and Rolls Royce Plc	Surface Engineering - Measurement of Residual Stress by Crack Compliance Techniques	£257,314	1996 -1999 <sup>126</sup>

<b>Project ending 2000, School of Engineering Science</b>			
Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and Rolls Royce Plc	Fast Crack Growth in Aircraft and Aeroengine Structures	£142,992	Feb 1997 - Jan 2000 <sup>127</sup>

<b>Project starting 2007, School of Engineering Science</b>			
Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and Rolls Royce Plc	Contact Evolution Based Fretting Fatigue Prediction	£334,063	Mar 2007 - Feb 2010 <sup>128</sup>

### **Notation**

\* In May 2007 Smiths Group completed the sale of its aerospace business, containing the bulk of its military-related production, to General Electric.  
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### **Endnotes**

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*"The School of Aeronautical Engineering...works closely with industry, notably Bombardier, Thales...and BAE Systems, enabling its students to benefit from a culture of enterprise and innovation."*<sup>1</sup>

- Queen's University Belfast website

**Queen's University Belfast Military Projects 2001 - 2006**

**Overall Statistics**

<b>Total no. of projects</b>	<b>Minimum amount received from Projects</b>	<b>Ranking by: a) no. of projects b) amount (£)</b>	<b>Top 3 funders (by no. of projects)</b>	<b>Top 3 departments (by no. of projects)</b>
37	£2,058,946	a) 18th  b) 22nd	1=) BAE Systems 1=) Rolls Royce  2=) QinetiQ 2=) EPSRC	1) Electrical and Electronic Engineering  2) Mechanical and Aerospace Engineering  3) Civil Engineering

**School of Civil Engineering**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
EPSRC, Dstl (Fort Halstead) and others	Isotope Profiling of Drugs: A Tool to Disrupt Organised Crime, Detect Serious Crime and Reduce Volume Crime	£113,590	March 2006 – Feb 2009 <sup>2</sup>
Rolls Royce, EADS and others	Optimisation of Turbine Forging Process: Using Finite Element Analysis	£?	Current as of Dec 2006 <sup>3</sup>
EADS and others	Integrating CAE and Virtual Reality in the ViSiCADE Project	£?	Current as of Dec 2006 <sup>4</sup>

**School of Computer Science**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
QinetiQ	Grid Security Test Bed	£29,530	Mar 2004 – Dec 2004 <sup>5</sup>

**School of Electrical and Electronic Engineering**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
Astrium UK	Low Loss MM-Wave Frequency Select Surfaces within Photonic Structures Research	£?	March 2001 – Current <sup>6</sup>
QinetiQ	High Level Design Methodologies for the	£67,670	Oct 2001 – Sept 2004 <sup>7</sup>



	Implementation of High Performance Heterogeneous Architectures (Studentship)		
QinetiQ	Design Methodologies for Next Generation Digital Signal Processing Systems (CAST Studentship)	£16,800	Oct 2002 – Sept 2005 <sup>8</sup>
QinetiQ	Senior Fellow in the Advances Signal Processing Group visiting Professor to Electrical Engineering	£?	2004 <sup>9</sup>
Rolls Royce	PhD Grant: Wavelets for Stress Engineering Data Analysis, Research Opportunities	£?	2004 – 2007 <sup>10</sup>
Belfast e-Science Centre and QinetiQ Plc	GridMIL: Exploring the Potential Application of Grid Technology in the Military Domain	Pilot Funding of £20,000	May 2004 <sup>11</sup>
BAE Systems	High Performance Architectures for Multi Channel Sensors (CASE Studentship)	£8,500	Oct 2004 – Sept 2005 <sup>12</sup>
BAE Systems Land Systems, Weapons and Vehicles	Offered: Industrial Placements for Electrical Engineer (1), Mechanical Engineers (3), Systems Engineer (1) and Software Engineer	£13,250 to £15,000 each	Summer 2006 for 12 months <sup>13</sup>
BAE Systems	Offered: Project Management Engineering (Submarines) – Industrial Placement	£13,520 to £15,600 pa.	Summer 2006 for 12 months <sup>14</sup>
BAE Systems, QinetiQ, Space and Naval Warfare Systems Command and others	Northern Ireland Semiconductor Research Centre	£?	Current as of Dec 2006 <sup>15</sup>
Thales and others	Millimetre-Wave MMIC (Microwave Monolithic Integrated Circuits) Mixer Design, High Frequency Electronics Group	£?	Current as of Dec 2006 <sup>16</sup>
EADS Astrium Space UK, EPSRC and others	Sub-MM Wave and THz Quasi-optical Filter Technology, High Frequency Electronics Circuits, the Institute of Electronics, Communications and Information Technology (ECIT)	£?	Current as of Dec 2006 <sup>17</sup>
EPSRC, EADS Astrium Space UK and others	Liquid Crystals Phase Shifters, High Frequency Electronics Circuits, ECIT	£?	Current of Dec 2006 <sup>18</sup>
EPSRC, and QinetiQ (Portsmouth)	MIMO Radar	£?	Current as of Dec 2006 <sup>19</sup>
US Air Force, and European Office of	Conformable Antenna Elements for Advanced Wearable	£?	Current as of Dec 2006 <sup>20</sup>



Aerospace Research and Development (EOARD)	Communications Under Hostile Channel Conditions		
BAE Systems, QinetiQ and others	Programmable Systems Research, The Institute of Electronics, Communications and Information Technology	£?	Current as of Dec 2006 <sup>21</sup>
EADS Astrium and others	PhD Studentship in Ultra Low Loss Frequency Selective Surface (FSS) Filters within High Frequency Electronics	£?	Current as of Jan 2007 <sup>22</sup>

### **School of Management and Economics**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
Thales	BSc Finance Placement at Thales Avionics, Paris	£?	2004 - 2005 <sup>23</sup>

### **School of Mathematics and Physics**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
EPSRC and Dstl	Energetic Protons & Ions from High Intensity Laser Plasma Interactions	(EPSRC) £216,569 (Dstl) Approx. £700,000	July 2005 – June 2008 <sup>24</sup>

### **School of Mechanical and Aerospace Engineering**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
Rolls Royce and others	Manufacture and Modelling of Fabricated Structural Components	£180,000	2000 - 2003 <sup>25</sup>
Thales Air Defence Ltd	Hire of Equipment and use of Facilities	£2,600	2002 <sup>26</sup>
Rolls Royce Plc	Design for Fabrication Tools using Appropriate Process Modelling (CAST Studentship)	£24,000	Jan 2002 – Dec 2004 <sup>27</sup>
Thales Air Defence Ltd and others	Active Flow Control for High Speed Projectiles. CASE Studentship included as part of this programme	£50,000 £24,000 of which was for CASE Student	2004 - 2007 <sup>28</sup>
EPSRC and BAE Systems	Network Enabled Capability	£350,000	2005 – 2010 <sup>29</sup>
Rolls Royce Plc	3D DieShape Optimisation for Net Shape Forging of Aero Engine Compressor Blades	£14,000	Feb 2005 – Jan 2007 <sup>30</sup>
BAE Systems, Boeing, Thales and others	Conference organised by the Centre for Excellence for Integrated Aircraft Technology: 1 <sup>st</sup> International Conference on	£?	August 2005 <sup>31</sup>

	Innovation and Integration in Aerospace Sciences		
EPSRC and Rolls Royce Plc	3D Die Shape Optimisation for Net-Shape Forging of Aeroengine Compressor Blades	£238,917	Aug 2005 – Jul 2008 <sup>32</sup>
Rolls Royce Plc	Offered: 3D Die Shape Optimisation for Net-Shape Forging of Aeroengine Compressor Blades PhD Studentship	£?	Oct 2005 – Oct 2008 <sup>33</sup>
Rolls Royce	BEng and MEng Mechanical Engineering Student Work Placements Available	£?	2006 <sup>34</sup>
Thales Air Defence Ltd	Offered: Guidance Of Supersonic/ Hypersonic Projectiles using Pin-Based Actuators PhD Studentship	£?	Oct 2006 – Oct 2009 <sup>35</sup>
Rolls Royce Plc	Simplified Welding Simulations for Aero-engine Components	£?	Current as of Dec 2006 <sup>36</sup>
EADS and others	Model Simplification for Meshing	£?	Current as of Dec 2006 <sup>37</sup>
EPSRC, BAE Systems and others	Offered: Systems Engineering Doctorate (EngD). Participating universities include: <ul style="list-style-type: none"> <li>• Loughborough,</li> <li>• Bath,</li> <li>• Leicester, and</li> <li>• Strathclyde</li> </ul>	£4,500,000	Current as of Dec 2006 <sup>38</sup>

#### Other projects/ information of note

<b>Projects with unspecified dates/ departments</b>			
<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
Belfast e-Science Centre and BAE Systems	Grids and the Aerospace Industry	£?	? <sup>39</sup>
Belfast e-Science Centre's potential involvement with Industry & Grid Technologies, Rolls Royce and others	IEC Projects: Integrated Products and Services (IPAS) and BROADEN – Following on from E-science project DAME	£2,500,000 and £3,980,000 (subject to contract)	? <sup>40</sup>

<b>Project starting 2007, School of Electrical and Electronic Engineering</b>			
<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Date</b>
BAE Systems Submarines	Offered: Industrial Placement for Electrical and Electronic Engineering Students at BAE Systems Submarines. Salary based whether	£15,400 or £16,500	July 2007 - July 2008 <sup>41</sup>

	candidates have completed two or three years at university		
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<b>Queens University Belfast's' Chief Executive's Club</b>
<ul style="list-style-type: none"> <li>Queens University Belfast's' Chief Executive's Club "strives to strengthen links between the University and the wider business community at events where views may be freely expressed and areas of mutual interest discussed." Boasting of 150 members and arranging a placement programme entitled Lecturers into Industry, the group has previously arranged placements at organisations such as Rolls Royce, among others.<sup>42</sup></li> </ul>
<b>Industry Fellowships</b>
<ul style="list-style-type: none"> <li>Offered on Queens University Belfast's website for the 2006 applications. "The scheme aims to enhance knowledge transfer in science and technology between those in industry and those in academia. It provides opportunities for an academic scientist to work on a collaborative project with industry, or someone employed in industry to work on a collaborative project with a university department or not-for-profit research organisation. It is anticipated that fellows will establish personal and corporate links between the two sectors in the UK as a foundation for their long-term future development." Placements offered for up to two years full time or four years half time. Associated of the scheme include Rolls Royce<sup>43</sup>. A variation of this is the Northern Ireland Interchange Partner Group, which the Ministry of Defence and QUB participate in.<sup>44</sup></li> </ul>
<b>Engineering, Science and IT Fairs</b>
<ul style="list-style-type: none"> <li>Engineering, Science and IT Fairs; Work Experience Fairs and the Science and Engineering Careers Symposium. In 2006 organisations listed as attending the Engineering, Science and IT Fair included Bombardier Aerospace, QinetiQ and Thales.<sup>45</sup></li> </ul>
<b>Work experience placements</b>
<ul style="list-style-type: none"> <li>Many organisations are listed as potentially offering work experience placements, summer work, sandwich year work placements and graduate jobs on QUB's careers service website including BAE Systems, Rolls Royce and Thales. These organisations tend to have an open application process for any university students studying in the UK.</li> </ul>
<b>Ulster Gift Fund Scholarship</b>
<ul style="list-style-type: none"> <li>The Ulster Gift Fund Scholarship is available for undergraduate and postgraduate students who themselves, or their parents have served in HM forces.<sup>46</sup></li> </ul>

## **Notation**

? Denotes projects whose value and/ or date we were unable to discover.

## **Endnotes**

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*“Sheffield is collaborating with Cambridge and Southampton universities in the BAE Systems/ Rolls-Royce University Technology Partnership. The aim of the partnership is to provide BAE Systems and Rolls-Royce with world-class research to support improvements to their design processes.”<sup>1</sup>*

- University of Sheffield website

## Sheffield University 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)
79	£41,886,131	a) 9th  b) 4th	1) Rolls Royce  2) EPSRC  3) BAE Systems	1) Mechanical Engineering  2) Electronic and Electrical Engineering  3) Automatic and Control Systems Engineering

### Management School

Source/ Sponsor/ Partner	Project	Amount	Year
BAE Systems	Payment of 2 Student's Tuition Fees	£?	2001 <sup>2</sup>
BAE Systems	Payment of 1 Student's Tuition Fees	£?	2003 - 2005 inclusive <sup>3</sup>

### School of Smart Structural Design

Source/ Sponsor/ Partner	Project	Amount	Year
Partners and Companies involved include: Smiths Industries* EADS Deutschland GmbH Thales Avionics S.A. BAE SYSTEMS (Operations) Ltd. Eurocopter SAS Israel Aircraft Industries Ltd (IAI) University of Bristol Trinity College London and University of Central	Technologies and Techniques for New Maintenance Concepts (TATEM)	An Approx. Total of €42,000,000	Mar 2004 - 2008 <sup>4</sup>

Lancashire			
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### **School of Mechanical Engineering**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
Rolls Royce	Materials Damping Technology University Technology Partnership	£?	1998 - present <sup>5</sup>
EPSRC, Ministry of Defence and Rolls Royce Plc	Functional Damping Coatings	£311,937	Jan 1999 - Dec 2001 <sup>6</sup>
Rolls Royce	Payment of 1 Student's Tuition Fees	£?	2001 and 2002 <sup>7</sup>
BAE Systems	Funding for Research Fellowship	£63,000	Jan 2001 - Dec 2002 <sup>8</sup>
Rolls Royce Plc	Material Selection for Filled OGV	£4,422	Feb 2001 - April 2001 <sup>9</sup>
Rolls Royce Plc	Materials Damping University Technology Centre	£448,700	April 2001 - Mar 2006 <sup>10</sup>
Rolls Royce Plc	Fuel Assembly Damping Studies	£15,412	June 2001 - Oct 2001 <sup>11</sup>
Rolls Royce Plc	Fuel Assembly Damping Studies - Phase 3	£20,000	Feb 2002 - June 2002 <sup>12</sup>
Rolls Royce Plc	Damping Measurements System for Hard Coatings Research	£12,491	Feb 2002 - Jan 2003 <sup>13</sup>
Rolls Royce Plc	Fans Damping Studies	£12,908	Oct 2002 - Oct 2003 <sup>14</sup>
Rolls Royce Plc	High Temperature Viscoelastic Filler	£12,829	Nov 2002 - Oct 2003 <sup>15</sup>
Rolls Royce Plc	Impact Resistance of Hard Damping Coatings	£2,000	Nov 2002 - Oct 2003 <sup>16</sup>
Rolls Royce Plc	Ageing Tests	£3,594	Nov 2002 - Jun 2004 <sup>17</sup>
Rolls Royce Plc	Characterisation of Viscoelastic Tapes	£7,200	Nov 2002 - Jun 2004 <sup>18</sup>
Rolls Royce Plc	Hard Coatings - Application of An Aerofoil and 'Cooling' Trials	£6,400	Dec 2002 - Oct 2003 <sup>19</sup>
Rolls Royce Plc	Aerospace Manufacturing Research Centre (AMRC) – Industrial Collaboration	£400,000	Jan 2003 - Sept 2006 <sup>20</sup>
EPSRC and QinetiQ (Malvern)	Multi-Domain Microstructure Design of Smart Coupled Mechanical and EM Solids	£106,298	May 2003 - July 2005 <sup>21</sup>
EPSRC, Dowty Propellers (Smiths Group) and BAE Systems Plc	Scaling Effects in Notched Composites	£221,171	July 2003 - Sept 2006 <sup>22</sup>
Rolls Royce Plc	Design Review of Large Radius Wind Turbine Generator	£4,475	Sept 2003 - Oct 2003 <sup>23</sup>
EPSRC, BAE Systems Operations Ltd and QinetiQ Ltd	Identification of Non-Linear Continuous Structures	£55,209	Sept 2003 - Aug 2006 <sup>24</sup>
EPSRC and	New Methods for Chatter	£133,484	June 2004 -



Boeing Integrated Defence Systems	Avoidance: Prediction Methodologies		June 2007 <sup>25</sup>
Rolls Royce Plc	Polymer Impregnation and Impact Resistance of Hard Coatings	£3,595	Sept 2004 - July 2005 <sup>26</sup>
Rolls Royce Plc	Materials Damping University Technology Centre (UTC)	£529,235	Jan 2006 - Dec 2007 <sup>27</sup>
EPSRC, Rolls Royce Plc and Boeing Integrated Defence Systems	Process Damping in Milling: Theory, Experiment, and Practical Solutions	£284,744	Mar 2006 - Mar 2010 <sup>28</sup>
Rolls Royce Plc	AFTSTU Installation	£13,771	May 2006 - July 2006 <sup>29</sup>

### **School of Nursing**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
Rolls Royce	Payment of 1 Student's Tuition Fees	£?	2002 and 2003 <sup>30</sup>

### **School of Probability and Statistics**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
QinetiQ	Payment of 1 Student's Tuition Fees	£?	2005 <sup>31</sup>
EPSRC, Rolls Royce Plc and others	Managing Uncertainty in Complex Models: a Step Change in Understanding how Models Perform	£2,167,671	June 2006 - May 2010 <sup>32</sup>

### **School of Education**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
Ministry of Defence (MoD)	Payment of 1 Student's Tuition Fees	£?	2001 <sup>33</sup>

### **School of Engineering Materials**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
EPSRC, Rolls Royce Plc and others	Plasma Deposition of Constrained Layer Damping Treatments	£200,395	Feb 1999 - July 2001 <sup>34</sup>
EPSRC and Ministry of Defence	Rare Earth Iron Boron Thin Film Magnets	£22,827	Dec 2000 - Aug 2003 <sup>35</sup>
BAE Systems Plc	Electroactive Polymer Composites and their Use in Smart Microwave Absorbers	£11,928	Oct 2001 - Apr 2003 <sup>36</sup>
QinetiQ and Farnborough (DERA)	Materials by Design: Prediction of Properties from Molecular Level	£180,000	Jan 2005 - Sept 2006 <sup>37</sup>
EPSRC, QinetiQ (Malvern) and others	Basic Technology: Nanorobotics - Technologies for Simultaneous Multidimensional Imaging & Manipulation of Nanoobjects	£1,847,850	Jan 2005 - Dec 2008 <sup>38</sup>

### **School of Molecular Biology and Biotechnology**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
Defence Science and Technology Laboratory	Glycoprotein Purification	£57,995	Sept 2002 – Feb 2003 <sup>39</sup>

### **School of Automatic Control and Systems Engineering**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
Rolls Royce Plc	Control Systems Engineering University Technology Centre	£1,155,060	2000 – 2004 <sup>40</sup>
Rolls Royce	Multivariable Control of Gas Turbine Engines (ANTLE)	£48,000	2000 - 2004 <sup>41</sup>
Rolls Royce	Support of EPSRC CASE students	£44,000	2000 - 2004 <sup>42</sup>
Rolls Royce Plc	Control and Systems Engineering University Technology Centre, established in 1993	£513,355	Oct 2002 - Sept 2004 <sup>43</sup>
Rolls Royce	Control and Systems Engineering University Technology Centre	£764,430	Oct 2004 - Dec 2007 <sup>44</sup>
Consortium of UK Industry, Government and Regional Bodies.	ASTRAEA Programme - Intelligent Agent Engine Management for UAVs	£167,000  Part of a £32,000,000 project led by BAE Systems	2006 – 2007 <sup>45</sup>

### **School of Psychology**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
QinetiQ	ISB Early Detection of Dyslexia Project	£55,000	Oct 2002 - Nov 2004 <sup>46</sup>
EPSRC under the Novel Computation Initiative and BAE Systems Plc	Integrated Computation for Autonomous Agents: A Novel Approach based on the Vertebrate Brain: Reverb: Reverse Engineering the Invertebrate Brain. Partners of the project include: <ul style="list-style-type: none"> <li>• University of Manchester</li> <li>• University of Bristol</li> <li>• University of Cambridge</li> <li>• University of Wales, Aberystwyth</li> <li>• University of Oxford and</li> <li>• University of Dundee</li> </ul> Project is part of the Adaptive Behaviour Research Group.	£1,893,234	April 2005 - April 2010 <sup>47</sup>

### **Institute of Work Psychology**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
Economic and Social Research Council,	Economic and Social Research Council, Centre for Organisation	Contributions 2003-2006;	2001 - 2006 <sup>48</sup>

EPSRC, Rolls-Royce and BAE Systems	and Innovation, established October 1996. Linked to the University of Sheffield's Management School and co-funded projects involve Sheffield's Engineering Department and School of Health and related research.	EPSRC, NHS, Rolls Royce, BAE Systems funding: £1,040,000 (NB of which industry funded £436,301)  Sheffield University funding: £1,630,000  ESRC funding: £1,250,000	
BAE Systems Plc and Rolls Royce Plc	Design University Technology Partnership - Human Factors and Innovation. Collaborators include: <ul style="list-style-type: none"> <li>University of Cambridge and</li> <li>University of Southampton</li> </ul>	£?	1998 - 2006 initially <sup>49</sup>

### **School of Physics and Astronomy**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Dstl – Joint Grant Scheme (JGS) and others	UK Condensed Matter Physics Experiments with the FOM Free Electron Laser (FELIX). Involves other universities, including: <ul style="list-style-type: none"> <li>Heriot-Watt University</li> </ul>	£386,514	Oct 1998 - Mar 2002 <sup>50</sup>
Ministry of Defence (MoD)	Disclosure of Chemical Warfare Agents Using Photoluminescent Molecular Materials	£85,596	Nov 2002 - Sept 2004 <sup>51</sup>
Defence Science and Technology Laboratory	Feasibility Study of Position - Sensitive Detector for use in X-Ray or Neutron Back Scatter Imaging	£17,372	June 2003 - May 2004 <sup>52</sup>
EPSRC and QinetiQ (Malvern)	Quantum Cryptography using Quantum Dot Single Photon Emitters	£223,638	Oct 2004 - Mar 2008 <sup>53</sup>

### **Advanced Manufacturing Research Centre (AMRC)**

Source/ Sponsor/ Partner	Project	Amount	Year
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Department for Trade and Industry (DTI), European Regional Development Fund, The Boeing Company, Rolls Royce and Smiths Group	Advanced Manufacturing Research Centre. Brings together Engineering Research with International Engineering Companies.	£18,000,000 Flagship Partnership Project	Current as of 2004 <sup>54</sup>
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### **School of Civil and Structural Evaluation**

Source/ Sponsor/ Partner	Project	Amount	Year
Defence Science Technology Laboratory	Special Equipment Evaluation	£26,081	Dec 2002 - Dec 2003 <sup>55</sup>

### **School of Chemistry**

Source/ Sponsor/ Partner	Project	Amount	Year
Defence Science Technology Laboratory	Fundamental Studies of Water and Chemical Permeation in Polymer Blends	£66,032	Jan 2003 - May 2006 <sup>56</sup>
Defence Science Technology Laboratory	Extension to Project: "Fundamental Studies of Water and Chemical Permeation in Polymer Blends"	£16,508	Jan 2003 - May 2006 <sup>57</sup>
EPSRC, Defence Science Technology Laboratory – Joint Grant Scheme (JGS) and QinetiQ Ltd	New Energetic Binders and Other Novel Materials	£186,092	Dec 2003 - Nov 2006 <sup>58</sup>

### **Aerospace Engineering**

Aerospace Engineering with a Year in North America (MEng/ AEAm) describes how... *"We work closely with key players in the aerospace industry, including Airbus UK, BAE Systems, Boeing and Rolls-Royce, to ensure that you graduate as a front-runner in the jobs market."* <sup>59</sup>

### **School of Electronic and Electrical Engineering**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, DERA Malvern, Boeing Integrated Defence Systems and others	Focused Ion Beam Machining and Deposition Applications to Functional and Structural Materials Research	£326,365	Nov 2001 - July 2005 <sup>60</sup>
EPSRC Close Interactions will be maintained with leading UK companies in the field including: • DERA (Malvern) and • Marconi	Support for the EPSRC Central Facility for III-V Materials at Sheffield.	£6,475,939	July 2002 – June 2006 <sup>61</sup>

Ministry of Defence (MoD)	GaN Heteristructural Field Effective Transistors for High Power Applications	£84,324	Apr 2003 - Mar 2006 <sup>62</sup>
Rolls Royce Plc	TAPETherM Power Electronic Demonstrator Phase 1	£19,915	Sept 2003 –Feb 2005 <sup>63</sup>
Ministry of Defence	High Sensitivity Avalanche Photodiodes for Imaging and Range Finding	£100,000	Oct 2003 – Sept 2006 <sup>64</sup>
Rolls Royce Plc	UTC in Advanced Electrical Machines and Drives	£73,426	Jan 2004 – Dec 2004 <sup>65</sup>
BAE Systems Plc	Avalanche Photodiodes	£91,000	Apr 2004 – Mar 2005 <sup>66</sup>
Ministry of Defence (MoD)	GaN-Based Heterostructure Field Effect Transistors (HFETs) for High Power Operation	£83,968	Apr 2004 – Mar 2005 <sup>67</sup>
BAE Systems Plc	Infrared Quantum Dot Intersubband Photodetectors	£94,560	Apr 2004 – Mar 2006 <sup>68</sup>
Rolls Royce Plc	Rolls Royce University Technology Centre in Advanced Electrical Machines and Drives	£141,253	Jan 2005 – Dec 2005 <sup>69</sup>
QinetiQ and Farnborough (DERA)	Smart Electromagnetic Structures	£200,000	Mar 2005 – Nov 2006 <sup>70</sup>
Rolls Royce Plc	SUAVE Project	£40,000	April 2005 – Aug 2005 <sup>71</sup>
BAE Systems Avionics Ltd	Infrared Quantum Dot Intersubband Photodetectors	£82,880	April 2005 –Mar 2006 <sup>72</sup>
British Aerospace Defence Ltd	GaN-Based Heterostructure Field Effect Transistors (HFETs) for High Power Operation	£83,972	April 2005 – Mar 2006 <sup>73</sup>
Rolls Royce Plc	TAPETherM Power Electronic Converter Phase 2	£21,547	June 2005 – May 2006 <sup>74</sup>
Ministry of Defence (MoD)	Novel Low Voltage InAs Avalanche Photodiodes for Affordable 2D IR Detectors	£14,980	Oct 2005 – Mar 2006 <sup>75</sup>
Rolls Royce Plc	Development of Test Facility	£25,000	Dec 2005 – Mar 2006 <sup>76</sup>
Rolls Royce Plc	SUAVE	£56,820	April 2006 –Dec 2006 <sup>77</sup>
EPSRC, BAE Systems and others	Simulation of Electromagnetic Field Exposure in Resonant Environments	£351,627	May 2006 – April 2010 <sup>78</sup>
EPSRC Project receiving academic expertise from: <ul style="list-style-type: none"> <li>University of Leeds</li> <li>University of Cambridge</li> <li>Heriot-Watt University and</li> <li>University of St. Andrews</li> </ul> The project is also	Nano- and Micro-scale Integration of Glass-on-Semiconductor for Photonic Components Engineering	£419,102	Aug 2006 – July 2010 <sup>79</sup>

supported by industrial partners which includes: • QinetiQ			
EPSRC and BAE Systems	Emergent Behaviour in Organisations	£?	Current as of 2007 <sup>80</sup>

### **Miscellaneous**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
BAE Systems	Honorary Degree (Deng) to the Chairman of BAE Systems	£?	Jan 2002 <sup>81</sup>

### **Other projects of note**

<b>Project ending 2000, School of Physics and Astronomy</b>			
<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Year</b>
EPSRC, QinetiQ (Malvern) and others	Intersub-Band Infra Red Quantum Well Lasers	£181,072	June 1997 - Oct 2000 <sup>82</sup>

### **Notation**

\* In May 2007 Smiths Group completed the sale of its aerospace business, containing the bulk of its military-related production, to General Electric.

£? Denotes projects whose value and/or date we were unable to discover.

### **Endnotes**

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*“The University of Southampton has signed a multi-million pound research agreement with BAE Systems and one of its joint venture companies AMS Limited, marking the start of an important new strategic partnership”<sup>1</sup>*

- University of Southampton website

## University of Southampton 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)
119	£43,251,201	a) 4th  b) 2nd	1) EPSRC  2) BAE Systems  3) QinetiQ	1) Electronics and Computer Science 2) Engineering Sciences 3) Optoelectronics Research Centre

### School of Electronics and Computer Science

Source/ Sponsor/ Partner	Project	Amount	Year
Dstl	Modelling of EA systems	£60,000	Since Jan 1996 <sup>2</sup>
Dstl	Electromagnetic Modelling in Pulsed Power Circuits	£153,400	Since Jan 1996 <sup>3</sup>
Dstl	Theoretical Study of Eddy Currents	£55,000	Since Jan 1996 <sup>4</sup>
Dstl	Modelling of EA Circuits and Conceptual Studies	£39,000	Since Jan 1996 <sup>5</sup>
BAE Systems	Automated Design of Electrical Machines	£52,000	Since Jan 1996 <sup>6</sup>
DERA	The Investigation of Pulsed Power Circuits	£80,631	Since Jan 1996 <sup>7</sup>
DERA	Team-Oriented Problem Solving in a Battlefield Simulation	£?	Dec 1999 - Mar 2001 <sup>8</sup>
EPSRC and Rolls Royce Plc	IMI: DARP: Knowledge Capture, Sharing and Reuse in the Design Process (KCSR). Part of LINK Scheme and involves: <ul style="list-style-type: none"> <li>University of Cambridge's Engineering Design Centre and</li> <li>University of Sheffield's Institute of Work Psychology</li> </ul>	£167,534	Mar 2000 - Feb 2003 <sup>9</sup>
EPSRC, DERA	RICES: Reasoning About Information Consistency Across	£104,583	April 2000 - June 2001

Source/ Sponsor/ Partner	Project	Amount	Year
and others	Enterprise Solutions		<sup>10</sup>
EU Project partners include: • QinetiQ	Methodologies and Technologies for Industrial Strength Systems Engineering (MATISSE)	£?	April 2000 - Oct 2002 <sup>11</sup>
EPSRC, DERA, Boeing, Rolls Royce Plc, University of Edinburgh, Open University and others	Interdisciplinary Research Collaboration in Advanced Knowledge Technologies - AKT	£7,534,918	Oct 2000 - June 2007 <sup>12</sup>
Defence Advanced Research Projects Agency (DARPA)	Automatic Gait Recognition. Partners include: • Massachusetts Institute of Technology (MIT)	£?	Nov 2000 - Dec 2002 <sup>13</sup>
EPSRC, DERA Malvern and others	Photonic Crystal Circuits and Devices (PCCADS)	£490,752	Nov 2000 - April 2004 <sup>14</sup>
EPSRC, Dstl and others	Micromachined Ultrasonic Filter with Thick-Filmed Piezoelectric Drive for Microfluidic Applications	£249,092	May 2001 - Nov 2004 <sup>15</sup>
EPSRC and Dstl	Magnitude: Mobile Agents Negotiating for Itinerant Users in the Distributed Enterprise	£183,868	July 2001 - Oct 2004 <sup>16</sup>
EPSRC, DERA Fareham and others	RICES: Reasoning About Information Consistency Across Enterprise Solutions	£467,354	July 2001 - Jan 2005 <sup>17</sup>
EPSRC, BAE Systems Advanced Technology Centre, Rolls Royce Plc and others	Grid Enabled Optimisation and Design Search for Engineering (GEODISE)	£2,872,450	Nov 2001 - April 2005 <sup>18</sup>
DTI  Collaboration involves: • QinetiQ Distributed Technology Group	Trusted Software Agents and Services (TSAS) Project	£?	Jan 2003 - Dec 2004 <sup>19</sup>
EPSRC, British Aerospace Plc, QinetiQ (Malvern), Rolls Royce Plc and Ministry of Defence	DARP: Data Fusion DARP: ARGUS II. Southampton's Academic Partner for the project is:  • University of Oxford	£436,234	April 2003 - Mar 2008 <sup>20</sup>
General Dynamics	Defence Technology Centre (DTC) - Biometric Data Fusion for Secure Environments	£?	Sept 2003 - Sept 2006 <sup>21</sup>
Defence Technology Centre	Defence Technology Centre (DTC) -	£?	Oct 2003 - ..

Source/ Sponsor/ Partner	Project	Amount	Year
on Data and Information Fusion (DTC – DIF)  Partners of DTC-DIF include: <ul style="list-style-type: none"> <li>University of Bristol</li> <li>University of Cambridge</li> <li>University of Cardiff</li> <li>Cranfield University</li> <li>Demontfort University</li> <li>Imperial College London</li> <li>QinetiQ</li> <li>University of Surrey and</li> <li>University of Lancashire</li> </ul>	Agent-Based Control of Decentralised Systems		Sept 2006 <sup>22</sup>
EPSRC, QinetiQ (Malvern), BAE Systems Avionics (Management) Ltd and others	OMII: Open Middleware Infrastructure Institute	£6,500,000	Jan 2004 - June 2007 <sup>23</sup>
BAE Systems and others	Dynamic Service Composition	£?	Oct 2004 - Oct 2007 <sup>24</sup>
EPSRC, BAE Systems and others	Market Based Control of Complex Computational Systems	£688,578	Feb 2005 - Feb 2010 <sup>25</sup>
EPSRC and MBDA UK Ltd	Next Generation of Interconnection Technology For Multiprocessor SoC	£260,473	Mar 2005 - Feb 2008 <sup>26</sup>
EPSRC, BAE Systems and AMS Ltd	Decentralised Data and Information Systems	£5,469,161	Oct 2005 - Sept 2010 <sup>27</sup>
European Commission (026764)  Partners include: <ul style="list-style-type: none"> <li>Newcastle Upon Tyne University</li> <li>QinetiQ and</li> <li>City University, London</li> </ul>	RESIST: Resilience for Survivability in IST	£?	Jan 2006 - Dec 2008 <sup>28</sup>
General Dynamics	Adaptive Hyper and Multi Spectral Data Fusion for Target Detection and Tracking	£?	Current as of May 2007 <sup>29</sup>
Defence Evaluation and Research Agency  DTI  Project Partners include: <ul style="list-style-type: none"> <li>Rolls Royce Plc</li> <li>University of Sheffield</li> <li>University of Cambridge</li> </ul>	?  IPAS: Integrated Products and Services	-£4,261^  £?	2005 - 2006 Financial Year <sup>30</sup>  Oct 2005 - Sept 2007 <sup>31</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
<ul style="list-style-type: none"> <li>University of Aberdeen and</li> <li>University of Southampton</li> </ul>			

### **Optoelectronics Research Centre**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Naval Research Laboratories and others	Integrated Microsphere Planar Lightwave Circuits	£642,561	Dec 2004 - May 2009 <sup>32</sup>
AWE Management Ltd	?	£9,226	2005 - 2006 Financial Year <sup>33</sup>
BAE Systems Operations Ltd	?	£148, 023	2005 - 2006 Financial Year <sup>34</sup>
Boeing	?	£4,151^	2005 - 2006 Financial Year <sup>35</sup>
QinetiQ	?	£104,747	2005 - 2006 Financial Year <sup>36</sup>
United States Air Force	?	£123,859	2005 - 2006 Financial Year <sup>37</sup>

### **School of Engineering Sciences**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and Vosper Thornycroft (UK) Ltd	Joint Research Equipment Initiative (JREI): Accelerated Ageing Facility for the Study of the Long-Term Performance of Structural Materials	£85,000	Feb 1998 - Jan 2001 <sup>38</sup>
EPSRC and British Aerospace Plc	Computational Aerodynamics Using DNS	£189,706	Jan 1999 - Dec 2001 <sup>39</sup>
EPSRC, BAE Systems Plc and Rolls Royce Plc	Joint Research Equipment Initiative [JERI]: DARP: British Aerospace - Rolls Royce University Technology Partnership In Design. Based in the Computational Engineering and Design Group (CEDG). Other aims of the UTC are based at: <ul style="list-style-type: none"> <li>University of Cambridge's Engineering Design Centre and</li> <li>University of Sheffield's Institute for Work Psychology</li> </ul>	£62,363	Mar 1999 - Feb 2002 <sup>40</sup>
EPSRC,	Use of Pre-Formed Composites for	£106,214	July 1999 -

Source/ Sponsor/ Partner	Project	Amount	Year
Vosper Thornycroft (UK) Ltd and others	Cost-Effective Fast Marine Craft Construction		Dec 2001 <sup>41</sup>
EPSRC, British Aerospace, Rolls Royce Plc and others	DARP: Flexible Engineering Design Methods using Knowledge Based CAD Systems and Evolutionary Search Methods	£299,670	Oct 1999 - Sept 2002 <sup>42</sup>
EPSRC and BAE Systems Plc	DARP: Shock Boundary Layer Interaction: Direct Simulation and Experiment	£146,872	Dec 1999 - Dec 2002 <sup>43</sup>
EPSRC, Ministry of Defence and others	Development of Electrochemical Techniques to Monitor Stainless Steel Components in Flowing Corrosive Media	£122,730	Feb 2000 - Jan 2002 <sup>44</sup>
EPSRC, Westland Helicopters Ltd, QinetiQ Ltd and others	DARP: Innovation of Age-Forming Through Development of New Damage Tolerant Alloys	£384,487	Aug 2000 - July 2004 <sup>45</sup>
EPSRC, Ministry of Defence and others	Novel Integrated Modelling Approach For Strength Predictions of 2Xxx Alloys	£63,118	Jun 2001 - Jun 2003 <sup>46</sup>
EPSRC and Dstl (Farnborough)	Understanding the Fluid Dynamics of Rotor Wake Breakdown in Low Speed Flight	£131,843	Jan 2003 - Mar 2006 <sup>47</sup>
EPSRC and EADS Astrium	Constrained Control Methods for Autonomous Satellite Formation Flying Systems	£157,771	June 2003 - Oct 2006 <sup>48</sup>
EPSRC, British Aerospace Plc, QinetiQ Ltd and Rolls Royce Plc	DARP: HPCx Resources for MSTAR DARP Research Response 4: Blade and Cavity Noise	£0	Nov 2003 - April 2007 <sup>49</sup>
EPSRC, Society of British Aerospace Companies, BAE Systems and others	Future Flight - Greener by Design	£121,264	Aug 2004 - Dec 2005 <sup>50</sup>
EPSRC, VT Group (Halmatic Ltd) and others	Design of High-Performance Marine Craft from a Human Factors Perspective	£578,916	Mar 2005 - Feb 2008 <sup>51</sup>
EPSRC, EADS Astrium and others	Equipment for Satellite Formation Flying Control System Verification	£80,214	June 2005 - May 2006 <sup>52</sup>
EPSRC, AWE Aldermaston and others	Application of Thermoelastic Stress Analysis as a Design Tool for the Assessment of Complex Composite Components	£123,251	May 2006 - May 2009 <sup>53</sup>
EPSRC,	Development of a Quality	£144,456	July 2006 -

Source/ Sponsor/ Partner	Project	Amount	Year
GKN Westland Aerospace (IoW) and others	Assessment Tool for Electron Beam Textured Surfaces (DTI bid called 'ASTIA')		July 2009 <sup>54</sup>
EPSRC, QinetiQ Ltd and others	MEMS Components Formed From Nanostructural Metals	£93,891	Aug 2006 - July 2009 <sup>55</sup>
EPSRC, Dstl and others	Ultrasonic Manipulation and Transport of DNA Molecules in Evanescent Light Fields	£338,236	Aug 2006 - Aug 2009 <sup>56</sup>
Boeing	?	£4,403	2005 - 2006 Financial Year <sup>57</sup>
Defence Evaluation and Research Agency	?	£24,009	2005 - 2006 Financial Year <sup>58</sup>
QinetiQ	?	£12,385	2005 - 2006 Financial Year <sup>59</sup>
Rolls Royce Plc	?	£248,204	2005 - 2006 Financial Year <sup>60</sup>
United States Navy	?	-£2,625 <sup>^</sup>	2005 - 2006 Financial Year <sup>61</sup>

### **School of Chemistry**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and AWE Plc	An Experimental Investigation of Laser Generated Cavitation and its Effects on Surface Coatings	£78,840	Jan 2003 - June 2006 <sup>62</sup>
Defence Evaluation and Research Agency	?	£14,546	2005 - 2006 Financial Year <sup>63</sup>
Ministry of Defence	?	-£425 <sup>^</sup>	2005 - 2006 Financial Year <sup>64</sup>
QinetiQ	?	£12,419	2005 - 2006 Financial Year <sup>65</sup>

### **Institute of Sound and Vibration Research**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and DERA (Bingley)	Rapid Assessment of Bubble Population in Shallow Water for	£109,499	July 1999 - July 2002 <sup>66</sup>



Source/ Sponsor/ Partner	Project	Amount	Year
	Enhancement of High-Frequency Sonar Operation		
EPSRC, Dstl – Joint Grant Scheme (JGS)	The Prediction of Acoustic Loads on Aircraft Structures for Acoustic Fatigue Assessment	£240,157	April 2000 - Oct 2003 <sup>67</sup>
QinetiQ	?	£9,423	2005 -2006 Financial Year <sup>68</sup>
Rolls Royce Plc	?	£126,918	2005 - 2006 Financial Year <sup>69</sup>

### **School of Civil Engineering and the Environment**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, QinetiQ (Malvern) and others	Innovation in Design, Construction and Operation of Building for People (IDCOP)	£1,733,507	July 2004 - Feb 2009 <sup>70</sup>
EPSRC, University College, London, Swedish Defence Research Establishment and others	PLATFORM: Processes, Mechanics and Management of Residual Wastes	£461,149	Nov 2004 - Oct 2009 <sup>71</sup>
EPSRC, Boeing, Thales and others	Pervasive Mobile Environmental Sensor Grids	£321,463	Oct 2006 - Sept 2009 <sup>72</sup>

### **School of Mechanical Engineering**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Ministry of Defence and others	Networking: Tribo-Corrosion Network (TRICORR-NET)	£62,160	Feb 2001 - Feb 2003 <sup>73</sup>

### **Department of Maths**

Source/ Sponsor/ Partner	Project	Amount	Year
Ministry of Defence	?	£18,859	2005 - 2006 Financial Year <sup>74</sup>

### **National Oceanography Centre, Southampton**

Source/ Sponsor/ Partner	Project	Amount	Year
Defence Evaluation and	?	£375	2005 - 2006 --

Source/ Sponsor/ Partner	Project	Amount	Year
Research Agency			Financial Year <sup>75</sup>
Ministry of Defence	?	£67,025	2005 - 2006 Financial Year <sup>76</sup>
United States Navy	?	£543	2005 - 2006 Financial Year <sup>77</sup>

### **School of Social Sciences**

Source/ Sponsor/ Partner	Project	Amount	Year
Ministry of Defence	?	£45,848	2005 - 2006 Financial Year <sup>78</sup>

### **School of Ocean and Earth Science**

Source/ Sponsor/ Partner	Project	Amount	Year
Ministry of Defence	?	£11,254	2005 - 2006 Financial Year <sup>79</sup>
United States Navy	?	£2,825	2005 - 2006 Financial Year <sup>80</sup>

### **School of Physics**

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ	?	£15,657	2005 - 2006 Financial Year <sup>81</sup>
United States Air Force	?	£2,287	2005 - 2006 Financial Year <sup>82</sup>

### **Miscellaneous**

Source/ Sponsor/ Partner	Project	Amount	Year
AWE	Income from Sponsored Research	£194,000	2000 – 2001 Financial Year <sup>83</sup>
BAE Systems (Operations) Ltd	Income from Sponsored Research	£164,000	2000 – 2001 Financial Year <sup>84</sup>
Defence Evaluation Research Agency	Income from Sponsored Research	£853,000	2000 – 2001 Financial Year <sup>85</sup>
Marconi Space and Defence	Income from Sponsored Research	£46,000	2000 – 2001 Financial Year <sup>86</sup>
Ministry of Defence (Liverpool)	Income from Sponsored Research	£356,000	2000 – 2001 Financial Year <sup>87</sup>
Rolls Royce Plc	Income from Sponsored Research	£508,000	2000 – 2001 Financial Year <sup>88</sup>
United States Navy	Income from Sponsored	£194,000	2000 – 2001 --

Source/ Sponsor/ Partner	Project	Amount	Year
	Research		Financial Year <sup>89</sup>
BAE Systems	Income from Sponsored Research	£137,000	2001 – 2002 Financial Year <sup>90</sup>
Matra Marconi Space UK	Income from Sponsored Research	£40,000	2001 – 2002 Financial Year <sup>91</sup>
Ministry of Defence	Income from Sponsored Research	£206,000	2001 – 2002 Financial Year <sup>92</sup>
QinetiQ Plc	Income from Sponsored Research	£979,000	2001 – 2002 Financial Year <sup>93</sup>
Rolls Royce Plc	Income from Sponsored Research	£493,000	2001 - 2002 Financial Year <sup>94</sup>
United States Air Force	Income from Sponsored Research	£227,000	2001 - 2002 Financial Year <sup>95</sup>
United States Navy	Income from Sponsored Research	£140,000	2001 - 2002 Financial Year <sup>96</sup>
BAE Systems	2002 BAE Systems Chairman's Award for Innovation in Flight Simulation	£?	2002 <sup>97</sup>
BAE Systems	Income from Sponsored Research	£89,000	2002 - 2003 Financial Year <sup>98</sup>
Boeing	Income from Sponsored Research	£73,000	2002 - 2003 Financial Year <sup>99</sup>
Ministry of Defence	Income from Sponsored Research	£238,000	2002 - 2003 Financial Year <sup>100</sup>
QinetiQ Plc	Income from Sponsored Research	£392,000	2002 - 2003 Financial Year <sup>101</sup>
Rolls Royce Plc	Income from Sponsored Research	£516,000	2002 - 2003 Financial Year <sup>102</sup>
United States Air Force	Income from Sponsored Research	£295,000	2002 - 2003 Financial Year <sup>103</sup>
United States Navy	Income from Sponsored Research	£28,000	2002 - 2003 Financial Year <sup>104</sup>
BAE Systems	Income from Sponsored Research	£121,000	2003 - 2004 Financial Year <sup>105</sup>
Boeing	Income from Sponsored Research	£44,000	2003 - 2004 Financial Year <sup>106</sup>
QinetiQ Plc	Income from Sponsored Research	£469,000	2003 - 2004 Financial Year <sup>107</sup>
Rolls Royce Plc	Income from Sponsored Research	£553,000	2003 - 2004 Financial Year <sup>108</sup>
Smiths Aerospace Electronic Systems	Income from Sponsored Research	£21,000	2003 - 2004 Financial Year <sup>109</sup>
United States Air Force	Income from Sponsored	£140,000	2003 - 2004

Source/ Sponsor/ Partner	Project	Amount	Year
	Research		Financial Year <sup>110</sup>
BAE Systems	Income from Sponsored Research	£309,000	2004 - 2005 Financial Year <sup>111</sup>
QinetiQ Plc	Income from Sponsored Research	£247,000	2004 - 2005 Financial Year <sup>112</sup>
Rolls Royce Plc	Income from Sponsored Research	£390,000	2004 - 2005 Financial Year <sup>113</sup>
United States Air Force	Income from Sponsored Research	£126,000	2004 - 2005 Financial Year <sup>114</sup>
BAE Systems	Income from Sponsored Research	£413,000	2005 - 2006 Financial Year <sup>115</sup>
Boeing	Income from Sponsored Research	£24,000	2005 - 2006 Financial Year <sup>116</sup>
Hunting-BRAE Ltd	Income from Sponsored Research	£41,000	2005 - 2006 Financial Year <sup>117</sup>
QinetiQ Group Plc	Income from Sponsored Research	£229,000	2005 - 2006 Financial Year <sup>118</sup>
Rolls Royce Plc	Income from Sponsored Research	£185,000	2005 - 2006 Financial Year <sup>119</sup>
United States Air Force	Income from Sponsored Research	£24,000	2005 - 2006 Financial Year <sup>120</sup>

### **Other Projects of Note**

Project ending 2000, School of Ship Science			
Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Ministry of Defence and others	Damage Detection and Characterisation in Fibre Reinforced Plastics Using IR Emissions	£58,988	Jan to Dec 2000 <sup>121</sup>

### **Notation**

^ Projects with ‘-£’ showed this notation in the original data source. They have not been included in the monetary total for the university.

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

### **Endnotes**

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- University of Swansea website

## University of Swansea 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)
33	£4,571,020	a) 19th  b) 18th	1) Rolls Royce  2) EPSRC  3) BAE Systems	1) Engineering 2) Materials Engineering 3) Civil Engineering

### School of Materials Engineering

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, Ministry of Defence, British Aerospace Plc, BAE Systems Operations Ltd, Rolls Royce Plc and others	IMI: Design Tool for Welded Structures (CEMWAM II). Project under LINK Scheme	£283,499	Sept 1999 - Sept 2002 <sup>2</sup>
EPSRC, Rolls Royce Plc and others	Computer Aided Optimisation of Texture Microstructure and Mechanical Properties in Advanced Titanium Alloys	£191,734	Oct 1999 - Sept 2002 <sup>3</sup>
EPSRC, Rolls Royce Plc and others	New Design Methods for Fatigue-Creep and Plastic Collapse	£96,565	Mar 2000 - Feb 2002 <sup>4</sup>
EPSRC and Rolls Royce Plc	Characterisation of Ceramic-Fibre-Reinforced CMC's Under Fatigue Loading	£61,014	Oct 2000 – April 2002 <sup>5</sup>
EPSRC, QinetiQ Ltd, Dstl (Farnborough) and Rolls Royce Plc	High Temperature Fatigue/ Creep/ Environment Interactions at Notches in Titanium and Nickel Disc Alloys	£290,211	Jan 2003 - Dec 2005 <sup>6</sup>
EPSRC, QinetiQ Ltd and Rolls Royce Plc	DARP: Advanced Aerospace Materials - Electrical	£145,152	April 2003 - Mar 2006 <sup>7</sup>
EPSRC, QinetiQ (Malvern)	Direct Potentiometric Imaging of Latent and Partially Developed	£211,526	May 2004 - April 2007 <sup>8</sup>

Source/ Sponsor/ Partner	Project	Amount	Dates
and others	Fingerprints using the Scanning Kelvin Probe		
EPSRC, Qinetiq Ltd and Rolls Royce Plc	DARP: Advanced Aerospace Materials - Next Generation Single Crystal and Lifting Methodologies	£52,185	Nov 2005 - Dec 2006 <sup>9</sup>
Dstl	PhD Opportunity in CFD, Heat Transfer and Experimental Validation	£?	Current as of May 2007 <sup>10</sup>
Rolls Royce Plc, QinetiQ, Dstl, BAE and others	Intermetallic Materials Processing in Relation to Earth and Space Solidification (IMPRESS) Project. Within the Materials Centre of Excellence, and a Flagship Project	Total budget €40,000,000	Current as of May 2007 <sup>11</sup>

### **School of Engineering**

Source/ Sponsor/ Partner	Project	Amount	Dates
Rolls Royce	Research Activities at Interdisciplinary Research Centre (IRC). (Multiple grants made)	£285,190	June 2001 <sup>12</sup>
British Aerospace	CEM Solver: Research into a New Procedure for the Computational Simulation of Electromagnetic Problems (CGV853)	£60,000	Sept 2002 <sup>13</sup>
Defence Science and Technology Laboratory	PHARO Contract: Finite Element Modelling of Radiative Heat Transfer, Heat Transfer Effects in Aircraft Structures (EGV036)	£126,932	Dec 2002 <sup>14</sup>
British Aerospace	Computational Electromagnetics	£50,000	Jan 2003 <sup>15</sup>
British Aerospace	SICAS: Characterise the Formation of Corrosion Pits in a Commercial Aluminium Alloy and Assess Influence on Subsequent Mechanical Properties. (IDV512).	£68,153	Mar 2003 <sup>16</sup>
Rolls Royce	DARP Engine	£73,038	Apr 2003 <sup>17</sup>
EPSRC  The Project will support future work carried out by • QinetiQ and • Rolls Royce	Aerodynamics and Aeroacoustics of Co-Flowing Jets	£344,212	Aug 2004 - Aug 2007 <sup>18</sup>
Ministry of Defence	Research Study for UKHO. (EGR104)	£58,400	Dec 2004 <sup>19</sup>
Rolls Royce	High Temperature Properties	£35,000	May 2005 <sup>20</sup>

Source/ Sponsor/ Partner	Project	Amount	Dates
Rolls Royce	Metal Matrix Composites	£67,500	Aug 2005 <sup>21</sup>
Rolls Royce	Titanium: Mechanical Characterisation of Various Commercial Forms of the Titanium Alloy Ti6-4, Focusing on Fatigue Response at Several Temperatures. (EGV146).	£420,117	Aug 2005 <sup>22</sup>
Rolls Royce	Powder Joining	£20,000	Oct 2005 <sup>23</sup>
Rolls Royce	Cold Dwell Assessment	£72,304	Oct 2005 <sup>24</sup>
Rolls Royce	Rolls Royce University Technology Centre in Partnership with: <ul style="list-style-type: none"> <li>University of Birmingham and</li> <li>University of Cambridge</li> </ul> <p>“Students work closely with Rolls-Royce engineers and even, in the case of the EngD programme, are based in the Company.”</p>	£?	Current as of May 2007 <sup>25</sup>
NASA, Boeing and Rolls Royce Aero Engines	Prediction of Massively Separated Flows and the Complex Vortex Structures that Arise, as part of the Computational Fluid Dynamics Research at University of Swansea	£?	Current as of May 2007 <sup>26</sup>
EPSRC and BAE Systems	FLAVIIR Project: Technologies for Future Unmanned Air Vehicles. Integrated Research Programme in Aeronautical Engineering. Collaborative project involving: <ul style="list-style-type: none"> <li>Cranfield University</li> <li>Imperial College of Science Technology and Medicine</li> <li>University of Leicester</li> <li>University of Liverpool</li> <li>University of Manchester</li> <li>University of Nottingham</li> <li>University of Southampton</li> <li>University of Warwick and</li> <li>University of York</li> </ul>	Total of £6,200,000 Split into a 3 Year Research Phase, followed by a 2 year demonstration phase	Current 5-year research programme as of May 2007 <sup>27</sup>
Rolls Royce Plc and BAE Systems	Materials Research Centre - Power and Aerospace Materials	£?	Current as of May 2007 <sup>28</sup>

### **School of Civil Engineering**

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC,	A Discrete Element Approach to	£426,774	Feb 1998 - ..

Source/ Sponsor/ Partner	Project	Amount	Dates
Westland Helicopters Ltd, Rolls Royce Plc and others	the Predictive Modelling of Shot Penning Processes		Feb 2001 <sup>29</sup>
EPSRC, Matra Bae Dynamics (UK) Ltd and others	Advanced Injection Moulding Technologies for Plastics: Computer Simulation with Experimental Validation	£322,085	June 1999 - Dec 2002 <sup>30</sup>
EPSRC and BAE Systems Plc	Adaptive Finite Element Procedures for Electromagnetic Scattering Simulations	£88,015	Oct 1999 - Sept 2002 <sup>31</sup>
EPSRC and BAE Systems Plc	Development of Special Finite Elements for Electro-Magnetic Wave Scattering of very short Waves	£209,952	April 2002 - Aug 2005 <sup>32</sup>

### **School of Mechanical Engineering**

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC and Rolls-Royce Plc	Learning Cause and Effect Relationships from Example - the Finite Element Way	£159,944	June 2002 - Dec 2005 <sup>33</sup>
EPSRC, GKN Sankey Ltd and others	Squeeze Forming Process Simulation by the Finite Element Method	£351,518	Oct 2002 - Sept 2005 <sup>34</sup>

### **Other projects/ information of note**

<b>Climate and Land-Surface Systems Interaction Centre</b>
<ul style="list-style-type: none"> <li>The University of Swansea, Wales hosts the Climate and Land-Surface Systems Interaction Centre (CLASSIC) with actively works with EADS Astrium and BAE Systems in many of its projects. The collaborative centre is funded under the Earth Observation Centres of Excellence Programme. Centre contributors include: <ul style="list-style-type: none"> <li>- University of Exeter</li> <li>- University of Durham and</li> <li>- University of Leicester. <sup>35</sup></li> </ul> </li> </ul>

### **Notation**

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

### **Endnotes**

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*“The MSc in Systems Engineering Management is a joint development between BAE SYSTEMS and University College London to produce a programme which combines academic rigour and practical experience in the Aerospace and Defence Industry.”<sup>1</sup>*

- University College London website

## University College London 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)
117	£5,284,072	a) 5th  b) 16th	1) QinetiQ  2) BAE Systems  3) EPSRC	1) Electronic and Electrical Engineering 2) Mechanical Engineering 3) Mathematics

### School of Civil and Environmental Engineering

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Thales Geosolutions Group Ltd and others	Robust Methods for Monitoring and Understanding People in Public Spaces (REASON)	£257,585	Nov 2005 - Oct 2008 <sup>2</sup>

### School of Computer Science

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Rolls Royce Plc and others	MTP: MSc in Intelligent Systems	£565,778	June 2001 - Dec 2003 <sup>3</sup>
BAE Systems	Adaptive Robotics	£?	2002 <sup>4</sup>
BAE Systems	EngD Studentship: Evolutionary Robotics Using Smart Materials	£13,901	2003 - 2004 <sup>5</sup>
BAE Systems	EngD Studentship: Evolutionary Robotics Using Smart Materials	£5,081	2004 - 2005 <sup>6</sup>
EPSRC, QinetiQ (Malvern) and others	UBIVAL: Fundamental Approaches to Validation of Ubiquitous Computing Applications and Infrastructures	£571,339	Oct 2006 - Mar 2010 <sup>7</sup>

### School of Electronic and Electrical Engineering

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Dstl - Joint Grant Scheme (JGS) and others	New Approaches to Doping Thin Film Diamond for the Formation of High Performance Electronic Devices	£147,260	Dec 1998 - Nov 2001 <sup>8</sup>
EPSRC, Thales Underwater Systems Ltd and DERA (Bingley)	High Resolution Spotlight and Squint Mode Synthetic Aperture Sonar	£132,372	Aug 1999 - July 2002 <sup>9</sup>
Thales Defence Ltd	Amplification of Quantum Well Saturable Absorbers in Optical Communications - ED	£2,415	2001 <sup>10</sup>
Thales Defence Ltd	Innovative Radar Research Related to Counterstealth	£2,748	2001 <sup>11</sup>
Dstl	Angle Deception from Antenna Arrays	£6,207	2001 - 2002 <sup>12</sup>
Dstl	Double-Sided, Circular Orbit, Short- Range SAR	£2,898	2001 - 2002 <sup>13</sup>
QinetiQ Ltd	Eng D Studentship (2 separate grants of £2,000)	£4,000	2001 - 2002 <sup>14</sup>
Thales Defence Ltd	Innovative Radar Research Related To Counterstealth	£21,222	2001 - 2002 <sup>15</sup>
Thales Defence Ltd	Studentship	£6,000	2001 - 2002 <sup>16</sup>
EPSRC, DERA Malvern and others	Future Technologies for the Electrical Isolation of III-V Semiconductor Devices	£89,931	Feb 2001 - Jan 2004 <sup>17</sup>
EPSRC and Dstl (Fort Halstead)	Development of Tools for the Design of Reliable Non-Linear Communications Circuitry	£350,610	Sept 2001 - June 2005 <sup>18</sup>
Dstl	Angle Deception from Antenna Arrays	£5,793	2002 - 2003 <sup>19</sup>
Dstl	Double-Sided, Circular Orbit, Short- Range SAR	£9,102	2002 - 2003 <sup>20</sup>
QinetiQ	S/Ship Radar Target Recognition	£2,000	2002 - 2003 <sup>21</sup>
QinetiQ	S/Ship Synthetic Aperture Radar Images	£2,000	2002 - 2003 <sup>22</sup>
QinetiQ	S/Ship Geo-Location and Image Processing Techniques	£2,000	2002 - 2003 <sup>23</sup>
QinetiQ	Clutter Characterisation Case	-£6,926 <sup>^</sup>	2002 - 2003 <sup>24</sup>
QinetiQ	Studentship Employee Student Eng Doctorate (2 separate grants of £2,000)	£4,000	2002 - 2003 <sup>25</sup>
QinetiQ Ltd	Tracking Optimisation for Multi- Function Radar	£37,267	2002 - 2003 <sup>26</sup>
QinetiQ Ltd	Eng D Studentship	£4,000	2002 - 2003 <sup>27</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
	(2 separate grants of £2,000)		
QinetiQ Ltd	Application of Synthetic Aperture Techniques to Towed Arrays	£151	2002 - 2003 <sup>28</sup>
Thales Defence Ltd	Innovative Radar Research Related to Counterstealth	£8,941	2002 - 2003 <sup>29</sup>
Thales Defence Ltd	Studentship	£2,488	2002 - 2003 <sup>30</sup>
BAE Systems Avionics Limited	Multi Perspective Target Detection, Location and Classification	£31,825	2003 - 2004 <sup>31</sup>
BAE Systems Avionics Limited	Fundamental Performance Limitations of Radar Networks	£29,267	2003 - 2004 <sup>32</sup>
BAE Systems Avionics Limited	The Properties and Utilities of Precursor Waveforms	£20,000	2003 - 2004 <sup>33</sup>
QinetiQ	S/Ship: Radar Target Recognition	£2,000	2003 - 2004 <sup>34</sup>
QinetiQ	S/SHIP Synthetic Aperture Radar Images	£2,000	2003 - 2004 <sup>35</sup>
QinetiQ	S/SHIP Geo-Location and Image Processing Techniques	£2,000	2003 - 2004 <sup>36</sup>
QinetiQ	Studentship Employee Student Eng Doctorate (2 separate grants of £2,000)	£4,000	2003 - 2004 <sup>37</sup>
QinetiQ Ltd	Tracking Optimisation for Multi-Function Radar	£11,295	2003 - 2004 <sup>38</sup>
QinetiQ Ltd	Eng D Studentship	£4,560	2003 - 2004 <sup>39</sup>
QinetiQ Ltd	Application of Synthetic Aperture Techniques to Towed Arrays	£1,349	2003 - 2004 <sup>40</sup>
Thales Defence Ltd	Innovative Radar Research Related to Counterstealth	£20,841	2003 - 2004 <sup>41</sup>
Thales Defence Ltd	Studentship	£4,712	2003 - 2004 <sup>42</sup>
BAE Systems Avionics Limited	Multi Perspective Target Detection, Location and Classification	£27,120	2004 - 2005 <sup>43</sup>
BAE Systems Avionics Limited	Fundamental Performance Limitations of Radar Networks	£26,875	2004 - 2005 <sup>44</sup>
QinetiQ	S/Ship - Bistatic SAR	£5,884	2004 - 2005 <sup>45</sup>
QinetiQ	S/Ship - Object Discrimination	£2,519	2004 - 2005 <sup>46</sup>
QinetiQ	Clutter Characterisation Case	£?	2004 - 2005 <sup>47</sup>
QinetiQ	Future Options for Weapon Loading Radar	£?	2004 - 2005 <sup>48</sup>
QinetiQ Ltd	Passive SAS Study	£10,348	2004 - 2005 <sup>49</sup>
Thales Defence Ltd	Amplification of Quantum Well Saturable Absorbers in Optical Communications - ED	£?	2004 - 2005 <sup>50</sup>
Thales Defence Ltd	Innovative Radar Research	£28,642	2004 - 2005 <sup>51</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
	Related To Counterstealth		
EPSRC, Rolls Royce Plc and others	Diamond: A Semiconductor for Power Devices for High Temperature Aerospace Applications	£357,779	Sept 2005 - Jan 2009 <sup>52</sup>
EPSRC and Industrial Sponsor based in Sussex	Electromagnetic Remote Sensing Defence Technology Centre- Radar Signal Processing Research	£?	Proposed research project as of Nov 2006 <sup>53</sup>
EPSRC and Selex (Edinburgh)	Electromagnetic Scanning Radar	£?	Proposed research project as of Nov 2006 <sup>54</sup>

### **School of Geomatic Engineering**

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ Ltd	ALFIE2-Automatic Extraction of 3-D and Areal Features from Geospatial Data	£29,444	2001 - 2002 <sup>55</sup>
QinetiQ Ltd	ALFIE2-Automatic Extraction of 3-D and Areal Features from Geospatial Data	£32,615	2002 - 2003 <sup>56</sup>
QinetiQ Ltd	ALFIE2-Automatic Extraction of 3-D and Areal Features from Geospatial Data	£26,120	2003 - 2004 <sup>57</sup>
QinetiQ Ltd	ALFIE2-Automatic Extraction of 3-D and Areal Features from Geospatial Data	£7,698	2004 - 2005 <sup>58</sup>
EPSRC, BAE Systems Electronics Ltd, EADS Astrium, QinetiQ Ltd, Thales Research Ltd and others	Seamless Positioning in All Conditions and Environments - "SPACE". Project under Faraday Scheme: Previously Pinpoint Faraday, Currently under Location and Timings Knowledge Transfer Network. Involves: <ul style="list-style-type: none"> <li>University of Leeds' CAA Institute of Satellite Navigation</li> <li>Imperial College London's Department of Civil and Environmental Engineering</li> <li>University of Nottingham's Institute of Engineering</li> </ul>	£169,912	Sept 2004 - Sept 2007 <sup>59</sup>

### **School of Mathematics**

Source/ Sponsor/ Partner	Project	Amount	Year
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Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ Ltd	Rotors in Take-Off Landing and Enclosed Spaces	£3,000	2001 - 2002 <sup>60</sup>
QinetiQ Ltd	Studentship Rotors in Take-Off Landing and Enclosed Spaces	£3,850	2002 - 2003 <sup>61</sup>
EPSRC and QinetiQ Ltd	Faraday Fast Track Proposal: Droplet Impact on Water Layers	£103,456	Oct 2002 - Sept 2004 <sup>62</sup>
QinetiQ Ltd	Studentship Rotors in Take-Off Landing and Enclosed Spaces	£3,000	2003 - 2004 <sup>63</sup>
QinetiQ Ltd	Studentship Rotors in Take-Off Landing and Enclosed Spaces	£3,350	2004 - 2005 <sup>64</sup>
EPSRC, QinetiQ Ltd and GKN/ ATS	Air and Surface Effects on Water Droplet Impact/ Mathematics-for-Business-Call	£257,779	Oct 2006 - Sept 2009 <sup>65</sup>

### **School of Space and Climate Physics**

Source/ Sponsor/ Partner	Project	Amount	Year
Ministry Of Defence	STRV Experimental ION Probes	-£9,295 <sup>^</sup>	2001 - 2002 <sup>66</sup>
EADS Astrium Limited	50MK Adiabatic Demagnetisation Cooler	£222,372	2003 - 2004 <sup>67</sup>
EADS Astrium Limited	50MK Adiabatic Demagnetisation Cooler	£74,043	2004 - 2005 <sup>68</sup>

### **School of Physics and Astronomy**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC Project includes collaboration with: <ul style="list-style-type: none"> <li>Ministry of Defence's Dstl</li> </ul>	From Optical Surfaces to Prosthetic Joint Lifetime	£124,599	July 2003 - Nov 2005 <sup>69</sup>

### **School of Anthropology**

Source/ Sponsor/ Partner	Project	Amount	Year
Ministry of Defence	Moulding of Gulf War Syndrome	£7,500	2001 - 2002 <sup>70</sup>
Ministry of Defence	Moulding of Gulf War Syndrome	£7,500	2002 - 2003 <sup>71</sup>
Ministry of Defence	Moulding of Gulf War Syndrome	£7,500	2003 - 2004 <sup>72</sup>

### **School of Chemistry**

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ	DERA CASE Studentship	£1,620	2002 - 2003 <sup>73</sup>
QinetiQ	Chemistry of Sulphur Mustard	£?	2004 - 2005 <sup>74</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
	Analogues (Agreement No 2047/003/CBD)		
QinetiQ	DERA Case Studentship	£?	2004 - 2005 <sup>75</sup>

### **School of Geography**

Source/ Sponsor/ Partner	Project	Amount	Year
BAE Systems	SAR and Hyperspectral Interpretation of Vegetated Areas. Involves Collaboration with: <ul style="list-style-type: none"> <li>• BAE Systems and</li> <li>• University of Wales, Swansea.</li> </ul> (2 separate grants made under SHIVA – BNSC Newton-2 Programme)	UCL Awarded £40,000 of the £150,000 total	2003 - 2004 <sup>76</sup>
NERC and BAE Systems	SAR and Hyperspectral Crop Monitoring using 3D Dynamic Vegetation Models and Numerical Solutions to Radiative Transport	£200,000	2003 - 2006 <sup>77</sup>

### **School of Mechanical Engineering**

Source/ Sponsor/ Partner	Project	Amount	Year
DERA and QinetiQ	Trimaran Design - The Trimaran Demonstrator	£?	2000 - 2002 <sup>78</sup>
EPSRC and Rolls Royce Plc	Modelling of Ultrasonic Wave Propagation and Scattering in Composites for Non-Destructive Evaluation	£202,901	2000 – 2003 <sup>79</sup>
BAE Systems Marine Ltd	GEC Marine Research Unit	£99,698	2001 <sup>80</sup>
Defence Procurement Agency	Development and Implementation of Framework for Capturing and Map...	£5,018	2001 <sup>81</sup>
Ministry of Defence	Contract NSM13C/3008 - Flank Array Compressibility Study	£325	2001 <sup>82</sup>
Ministry of Defence	Enabling Arrangement - Further Development and Re-Definement	£3,043	2001 <sup>83</sup>
Ministry of Defence	Development of Techniques for Capturing and Mapping Technologies	£10,770	2001 <sup>84</sup>
BAE Systems	Extended Integrated Air Defence (EIAD)	£25,000	2001 – 2002 <sup>85</sup>
BAE Systems Marine Ltd	GEC Marine Research Unit	£1,892	2001 - 2002 <sup>86</sup>
Defence Procurement Agency	Development and Implementation of Framework for Capturing and Map...	£26,097	2001 – 2002 <sup>87</sup>
Defence Procurement	Demo Of SURFCON System	£8,500	2001 – 2002 <sup>88</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
Agency			
Dstl	Ultrasound Propagation and Scattering in NCF Composites	£9,836	2001 – 2002 <sup>89</sup>
Ministry of Defence	Contract NSM13C/3008 - Flank Array Compressibility Study	£1,800	2001 - 2002 <sup>90</sup>
Ministry of Defence	Enabling Arrangement - Further Development and Re-Definement	£25,016	2001 - 2002 <sup>91</sup>
Ministry of Defence	Development of Techniques for Capturing and Mapping Technologies	£9,136	2001 - 2002 <sup>92</sup>
Defence Procurement Agency	Demo Of SURFCON System	£29,695	2002 - 2003 <sup>93</sup>
BAE Systems	RCB 2002 Design Process Study. Work Item: NA511/340	£9,600	2002 - 2003 <sup>94</sup>
BAE Systems	Extended Integrated Air Defence (EIAD)	£3,210	2002 - 2003 <sup>95</sup>
BAE Systems Marine Ltd	GEC Marine Research Unit	£32,870	2002 - 2003 <sup>96</sup>
Ministry of Defence	Enabling Arrangement - Further Development and Re-Definement	£?	2002 - 2003 <sup>97</sup>
QinetiQ	Investigation of Effectiveness of Roll Damping Devices	£42,332	2002 - 2003 <sup>98</sup>
BAE Systems	RCB Design Process Study Programme: Support Phase III	£4,200	2003 - 2004 <sup>99</sup>
BAE Systems	Phase OA Design Process	£4,400	2003 - 2004 <sup>100</sup>
Ministry of Defence	Enabling Arrangement - Further Development and Re-Definement	£5,400	2003 - 2004 <sup>101</sup>
QinetiQ	Investigation of Effectiveness of Roll Damping Devices	£23,617	2003 - 2004 <sup>102</sup>
BAE Systems Marine Ltd	GEC Marine Research Unit	£?	2004 - 2005 <sup>103</sup>
Ministry of Defence	Contract NSM13C/3008 - Flank Array Compressibility Study	£?	2004 – 2005 <sup>104</sup>
Ministry of Defence	Enabling Arrangement - Further Development and Re-Definement	£22,037	2004 - 2005 <sup>105</sup>
QinetiQ	Equipment Models for Marine Electric Propulsion System	£?	2004 - 2005 <sup>106</sup>
QinetiQ	Investigation of Effectiveness of Roll Damping Devices	£4,128	2004 - 2005 <sup>107</sup>
EPSRC and Defence Procurement Agency	Guidance on the Design of Ships for Enhanced Escape and Operation	£236,972	2004 - 2007 <sup>108</sup>
EPSRC and	Advanced Ultrasonic Techniques for	£214,787	2005 – 2008

Source/ Sponsor/ Partner	Project	Amount	Year
Rolls Royce Plc	Highly Scattering Ordered and Semi-Ordered Materials		<sup>109</sup>
BAE Systems	MSC in Systems Engineering Management. Developed Jointly Between BAE and UCL.	£?	Current as of May 2007 <sup>110</sup>
DERA	An Investigation into the Factors Influencing Frequency and Voltage Selection in Future Warships	£?	Recently completed as of 2006 <sup>111</sup>
MoD	Modelling of Submarine Dynamic Behaviour	£?	Recent as of 2006 <sup>112</sup>

### **Institute of Orthopaedics**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC Project includes collaboration with: <ul style="list-style-type: none"> <li>Ministry of Defence's Dstl</li> </ul>	From Optical Surfaces to Prosthetic Joint Lifetime.	£43,367	Aug 2003 - July 2005 <sup>113</sup>

### **Mullard Space Science Laboratory (MSSL)**

Source/ Sponsor/ Partner	Project	Amount	Year
QinetiQ	Short Course: Systems Engineering	£?	Since 2001 <sup>114</sup>
Smiths Aerospace	Short Course: Systems Thinking and Management	£?	Since 2001 <sup>115</sup>
EADS Astrium	Short Course: Systems Engineering	£?	Since 2001 <sup>116</sup>

### **Miscellaneous**

Source/ Sponsor/ Partner	Project	Amount	Year
Dstl – Ministry of Defence	Bubble Disease in Cetaceans, within the Centre for Ecology and Evolution	£2,962	2004 <sup>117</sup>
Current members include: <ul style="list-style-type: none"> <li>Dstl</li> <li>DARPA</li> <li>NATO and</li> <li>Defence Research and Development Canada (DRDC)</li> </ul>	The International Collaboration Board (ICB)	£?	Current as of May 2007 <sup>118</sup>

### **Other projects/ information of note**



<b>Submarine design for the MoD</b>
<ul style="list-style-type: none"> <li>“The concept design of submarines is a complex process. To assist in developing new designs the UK MOD developed SUBCON which allows the naval architect to explore the potential solution, uncovering requirements that drive the design”.<sup>119</sup></li> </ul>
<b>Trimaran ship design for the MoD</b>
<ul style="list-style-type: none"> <li>“The ocean racing yacht designer Nigel Irens designed the "Ilan Voyager" trimaran power boat which captured the Round Britain record in 1990. When he asked the Professor of Naval Architecture at UCL Doug Pattison if the concept could be developed for high speed ferries, Doug also got an MSc team to design the first trimaran frigate. This was so successful that it led to many further trimaran designs and specific ship research contracted from the UK MoD, eventually leading to RV Triton, the first ocean going trimaran ship and potential applications for fast ferries, cruise ships, naval combatants and even aircraft carriers.”<sup>120</sup></li> </ul>
<b>Atlantic Centre sponsored by the U.S. Office of Naval Research</b>
<ul style="list-style-type: none"> <li>“UCL is part of the Atlantic Centre for the Innovative Design and Control of Small Ships (ACCeSS), formed as part of the U.S. National Naval Responsibility for Naval Engineering and sponsored by the U.S. Office of Naval Research to examine the challenges faced by modern naval ship designers and provide solutions.”<sup>121</sup></li> </ul>

## **Notation**

^ Projects with ‘-£’ showed this notation in the original data source. They have not been included in the monetary total for the university.

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

## **Endnotes**

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*“WMG (Warwick Manufacturing Group) works across a broad range of industrial sectors...It has long-term relationships with many of Britain's most successful companies, from Land Rover to BAE Systems, from AstraZeneca to Rolls-Royce.”<sup>1</sup>*

**-University of Warwick website**

## University of Warwick 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)
46	£1,796,917	a) 15th=  b) 23rd	1) BAE Systems  2) EPSRC  3) Rolls Royce	1) Engineering  2=) Business School  2=) Physics

### School of Engineering

Source/ Sponsor/ Partner	Project	Amount	Dates
British Aerospace Systems	Company-Commissioned Business Management Teaching Programmes (NB All Delegates were Company Employees)	£?	Since 2001 <sup>2</sup>
EPSRC, BAE Systems Plc, Ministry of Defence, Rolls Royce Plc and others	Faraday Partnership: INTERSECT: the Application of Data Fusion to a Multi Sensored Intelligent Engine	£162,669	Dec 1998 - Sept 2001 <sup>3</sup>
EPSRC, Matra BAE Dynamics (UK) Ltd, BAE Systems Plc and others	IMI: Effective Contractual and Other Legal Obligations in Strategic Alliances in the Aero Industry (ECLOS). Within the LINK Scheme.	£181,326	Sept 1999 - Aug 2001 <sup>4</sup>
DERA	Computational and Experimental Study of the Hydrodynamics of Compliant Walls in Marine Environments	£ 52,710	Sept 1999 - Sept 2002 <sup>5</sup>
EPSRC and DERA (Malvern)	Micromachined Silicon Ultrasonic Transducer Arrays	£144,944	Nov 2000 - Oct 2003 <sup>6</sup>
Defence Logistics Organisation	Teaching Programmes for Company Employees. Total of 63 courses. Modules titles:	£?	2001 - 2005 <sup>7</sup>



Source/ Sponsor/ Partner	Project	Amount	Dates
	<ul style="list-style-type: none"> <li>• Business and Operations Design</li> <li>• Business Strategy and Change Management</li> <li>• DLO/ ALD Foundation</li> <li>• Financial Analysis and Decision Making</li> <li>• Leading Change and Improving Personal Performance</li> <li>• Lean Supply Chain Management</li> <li>• Programme and Projects Management and</li> <li>• Supply Chain Relationships</li> </ul>		
US Navy, San Diego	The Application of Suprathreshold Stochastic Resonance to Sonar Arrays	\$60,000	May 2001 to 2003 <sup>8</sup>
GKN Engage	PhD in Engineering Business Management (Part-time). Grant covers fees for sponsored student	£1,740	Oct 2001 and Oct 2002 <sup>9</sup>
EPSRC, QinetiQ and others	Joint Research Equipment Initiative (JREI): An Optical Diagnostic for Making Turbulence Measurements in High Speed Airflows	£47,220	Jan 2002 - Jan 2004 <sup>10</sup>
QinetiQ (Farnborough)	Extension to Computational and Experimental Study of the Hydrodynamics of Compliant Walls in Marine Environments	£14,120	Apr 2002 - Sept 2003 <sup>11</sup>
Smiths Aerospace	Teaching Programmes for Company Employees. Total of 42 courses. Modules run include: <ul style="list-style-type: none"> <li>• Business Financial Management</li> <li>• Change Management and People (Parts 1 and 2)</li> <li>• Customer Relationship Management (Coaches and launch)</li> <li>• Programme Management</li> <li>• Systems Engineering (Parts 1 and 2)</li> </ul>	£?	2003 - 2006 <sup>12</sup>
EPSRC and BAE Systems	AEROMEMSII Project	£?	2003 - 2007 (expected) <sup>13</sup>
EPSRC, Rolls Royce Plc (Project Partner) and others	Force Follows Form - Study of Natural Structures: Concepts, Analysis and Applications	£142,535	Apr 2004 - Mar 2007 <sup>14</sup>

Source/ Sponsor/ Partner	Project	Amount	Dates
EPSRC, Rolls Royce and QinetiQ	Aerodynamics and Aero-acoustics of Co-flowing Aero-engine Propulsive Jets as part of an EU collaborative programme on Coaxial Jet Noise Prediction Methods (CoJeN) which has involved a secondment to the Boeing Noise Group	£344,211	Oct 2004 - Oct 2007 <sup>15</sup>
EPSRC and QinetiQ	Deterministic Theoretical Model for Sub-layer Streaks in Turbulent Wall Layers and its Application to Flow Control	£5,830	Jul 2005 - Dec 2006 <sup>16</sup>
EPSRC and QinetiQ	Reduction of Skin-Friction by Use of Compliant Walls	£?	Current as of Jan 2007 <sup>17</sup>
Large EC-supported consortium lead by BAE Systems	Flow Control by Means of Pulsed Jets	£?	Current as of Jan 2007 <sup>18</sup>
Rolls Royce  EPSRC  Project partners include: • Smiths Industries, • Rolls-Royce plc, • Matra BAe Dynamics (UK) Ltd (Bristol) and • BAE Systems	Rolls-Royce Manufacturing Engineering Awards  Warwick/ EPSRC Innovative Manufacturing Research Centre*	£200  £5,450,000	Current as of May 2007 <sup>19</sup>  Oct 2001 - Sept 2006 <sup>20</sup>

### **School of Electrical and Electronic Engineering**

Source/ Sponsor/ Partner	Project	Amount	Dates
Defence Evaluation and Research Agency (DERA)	Embedded Micromachined Ultrasonic Sensor	£78,725	Jan 1998 – Dec 2002 <sup>21</sup>
Defence Research Agency	Ultrasonic Measurements in Liquids and Flow	£14,312	Sept 2003 – Dec 2003 <sup>22</sup>
QinetiQ	Micromachined Transducers Research within the Ultrasonics Group	£?	Recent as of Feb 2007 <sup>23</sup>

### **School of Civil and Mechanical Engineering**

Source/ Sponsor/ Partner	Project	Amount	Dates
Defence Evaluation and Research Agency (DERA)	Joint Research Equipment Initiative	£8,531	Jan 2002 - Jan 2006 <sup>24</sup>

### **Warwick Manufacturing Group**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
British Aerospace	URA (Ultra Reliable Aircraft)	£65,802	July 1998 - Mar 2001 <sup>25</sup>
British Aerospace	Flex Tool Project	£74,236	Nov 1998 - Mar 2002 <sup>26</sup>
British Aerospace	Laminating Tooling - Feasibility	£9,500	Oct 2000 - Sept 2001 <sup>27</sup>

### **School of Mathematics**

<b>Source/ Sponsor /Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
British Aerospace	Numerical Modelling of Wind Tunnel Experiments	£503	June 1998 - Mar 2003 <sup>28</sup>

### **School of Physics**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
Defence Research Agency	ISON, High Mobility Silicon Germanium for PMOS (Positive Channel Metal Oxide Semiconductor)	£1,400	Oct 1998 - Sept 2001 <sup>29</sup>
Defence Evaluation and Research Agency (DERA)	Surface Structure Ferroelectric Thin Films	£147,147	Apr 2000 - Sept 2003 <sup>30</sup>
Defence Evaluation and Research Agency (DERA)	Investigation of InSb-SiO <sub>2</sub> Interfaces	£21,829	Nov 2000 - Feb 2001 <sup>31</sup>
EPSRC, Naval Research Laboratories (Project Partner), University of Bristol and others	Electrically Active Defects and Carrier Trapping in Semiconducting Diamond	£141,769	Sept 2004 - Apr 2008 <sup>32</sup>
EPSRC, Rolls-Royce Plc (Project Partner) and others	Combined Remote Thermography and Non-Contact Ultrasonic Inspection Using Pulsed Laser Excitation	£51,115	May 2005 - Apr 2006 <sup>33</sup>

### **School of Psychology**

<b>Source/ Sponsor/ Partner</b>	<b>Project</b>	<b>Amount</b>	<b>Dates</b>
Defence Evaluation and Research Agency (DERA), BBSRC CASE (Biotechnology and Biological Sciences Research Council), Co-operative Awards in Science and Engineering Award.	An Electrophysiological Study of the Brain Processes Underlying the Effects of Mood on Task Performance	£4,200	Oct 1999 - Sept 2002 <sup>34</sup>

**School of Law (Seconded to School of Engineering)**

Source/ Sponsor/ Partner	Project	Amount	Date
Ministry of Defence, BAE Systems, MBDA Missile Systems, Defence Logistics Organisation and Smiths Industries	Long Term In Service Support (LOTISS)	£?	Oct 2002 onwards <sup>35</sup>

**Warwick Business School**

Source/ Sponsor/ Partner	Project	Amount	Dates
Defence Science and Technology Laboratory (Dstl)	MSc in Management Science and Operation Research. Grant covering tuition fees	£4,260	Dec 2002 <sup>36</sup>
Defence Science and Technology Laboratory (Dstl)	MSc in Management Science and Operation Research. Grant covering tuition fees for 2 students	£8,740	Sept 2003 <sup>37</sup>
BAE Systems	PhD in Supply Chain in Management. Grant covers one years tuition fees	£3,010	Oct 2004 - Oct 2005 <sup>38</sup>
Defence Storage and Distribution Agency	Postgraduate Diploma in Public Finance and Leadership. Grant covering fees	£15,000	Apr 2005 <sup>39</sup>
Defence Science and Technology Laboratory (Dstl)	MSc in Management Science and Operation Research. Grant covering tuition fees	£4,750	Sept 2005 <sup>40</sup>

**Warwick Medical School**

Source/ Sponsor/ Partner	Project	Amount	Dates
BAE Systems	Occupational Health. (Part-Time Short Course). Grant covering tuition fees	£2,050	Nov 2003 <sup>41</sup>
Rolls Royce Plc	Occupational Health. (Part Time Short Course). Grant covering tuition fees	£2,255	Apr 2005 <sup>42</sup>

**Innovative Manufacturing Research Centre (WIMRC)**

Source/ Sponsor /Partner	Project	Amount	Dates
Rolls-Royce, QinetiQ and others	Intelligent Optical Instrumentation in Combustion (Tomography)	QinetiQ £10,000 Rolls Royce £?	Oct 2001 Onwards <sup>43</sup>

Source/ Sponsor /Partner	Project	Amount	Dates
Over 40 SBAC UK LAI member companies including: <ul style="list-style-type: none"> <li>Rolls Royce,</li> <li>BAE Systems,</li> <li>Westland Helicopters,</li> <li>Smiths Aerospace and</li> <li>Messier-Dowty (Smiths Group)</li> </ul> As well as a number of Small/ Medium Enterprises	Key Research Challenges in Lean Aerospace (UK Lean Aerospace Initiative)  NB Industry quotation of an aerospace industry saving of between £60 and 240 million per annum (figures from Society of British Aerospace)	£?	Feb 2002 Onwards <sup>44</sup>
Alvis Vickers Ltd (now BAE Systems Land Systems), Rolls Royce (joined on March 2005) and others	Knowledge Application Methodology for Knowledge Based Product Development Automation (KAM)	£?	Jan 2003 Onwards <sup>45</sup>
BAE Systems (Industrial), University of Cranfield, University of Leicester, University of Liverpool, University of Nottingham, University of Southampton, University of Manchester, University of Wales Swansea, University of York and Imperial College, London	Flapless Aerial Vehicle Integrated Interdisciplinary Research Programme (FLAVIIR)	£?	June 2004 Onwards <sup>46</sup>

### **Miscellaneous**

Source/ Sponsor/ Partner	Project	Amount	Dates
Rolls Royce	Commissioned Research Projects. Information withheld under commercial confidentiality agreement.	£?	Since 2001 <sup>47</sup>
Defence Science and Technology Laboratory (Dstl)	Commissioned Research Projects. Information withheld under commercial confidentiality agreement.	£?	Since 2001 <sup>48</sup>

### **Other Projects/ Information of Note**

Projects ending 2000, School of Engineering			
Source/ Sponsor/ Partner	Project	Amount	Dates
British Aerospace Plc and others	IMI: Composite Forming Tooling by Thermal Spraying (Spray & Mould)	£345,395	Aug 1997 - Aug 2000 <sup>49</sup>

Office of Naval Research (ONR visiting Fellowship)	Suprathreshold Stochastic Resonance	\$1,135	Jan 2000 <sup>50</sup>
Defence Evaluation and Research Agency (DERA)	Rapid Air-Couples Testing of Composites	£9,299	Jan 2000 - Sept 2000 <sup>51</sup>

## **Notation**

\* This project has not been counted in the overall data for the report as it was discovered after our deadline for data collection had passed. See “Innovative Manufacturing Research Centre (WIMRC)” for related projects.

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

## **Endnotes**

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<sup>29</sup> C. E. Charlton. University Secretary, University of Warwick. 11 May 2006. Sent to Fellowship of Reconciliation.

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<sup>32</sup> "Details of Grant". Engineering and Physical Sciences Research Council.  
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<sup>36</sup> C. E. Charlton. University Secretary, University of Warwick. 11 May 2006. Sent to Fellowship of Reconciliation.

<sup>37</sup> C. E. Charlton. University Secretary, University of Warwick. 11 May 2006. Sent to Fellowship of Reconciliation.

<sup>38</sup> C. E. Charlton. University Secretary, University of Warwick. 11 May 2006. Sent to Fellowship of Reconciliation.

<sup>39</sup> C. E. Charlton. University Secretary, University of Warwick. 11 May 2006. Sent to Fellowship of Reconciliation.

<sup>40</sup> C. E. Charlton. University Secretary, University of Warwick. 11 May 2006. Sent to Fellowship of Reconciliation.

<sup>41</sup> C. E. Charlton. University Secretary, University of Warwick. 11 May 2006. Sent to Fellowship of Reconciliation.

<sup>42</sup> C. E. Charlton. University Secretary, University of Warwick. 11 May 2006. Sent to Fellowship of Reconciliation.

<sup>43</sup> "Intelligent Optical Instrumentation in Combustion (Tomography)". University of Warwick.

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<sup>45</sup> "Knowledge Application Methodology for Knowledge based Product Development Automation (KAM)". University of Warwick. [http://www2.warwick.ac.uk/fac/sci/wimrc/p1/phase\\_1\\_projects/reswm9017/](http://www2.warwick.ac.uk/fac/sci/wimrc/p1/phase_1_projects/reswm9017/). 8 January 2007.

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*"The (Computer Science) Department's excellent relations with industry have led to its designation as a University Technology Centre by Rolls Royce and as a Centre of Excellence by BAE Systems. Furthermore, a Dependable Computing Systems Centre was established in 1991 at York and Newcastle to provide BAE Systems with both improved understanding of key dependability concepts and improved methods for achieving and assessing dependability."*<sup>1</sup>

**- University of York Website**

## University of York 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)
59	£7,764,687	a) 13th=  b) 14th	1) BAE Systems  2) QinetiQ  3) EPSRC	1=) Computer Science  1=) Electronics

### School of Chemistry

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and MoD	A Unified, One-Pot Route to C-Glycosides: Optimisation and Application	£175,312	Jan 2004 - July 2007 <sup>2</sup>

### School of Computer Science

Source/ Sponsor/ Partner	Project	Amount	Year
British Aerospace/ BAE Systems	Dependable Computing Systems Centre (DCSC), collaborative with: • University of Newcastle	£?	1991 - Present <sup>3</sup>
Rolls Royce Plc	Systems and Software Engineering University Technology Centre (UTC)	£?	Oct 1993 - Present <sup>4</sup>
EPSRC and QinetiQ (Malvern)	Terrain Analysis with Radar Imagery	£214,356	April 1998 - Sept 2001 <sup>5</sup>
EPSRC and QinetiQ (Malvern)	Relational Models for Recognition and Learning	£154,167	Dec 1998 - May 2002 <sup>6</sup>
EPSRC and DERA Malvern	Spectral Retrieval from Large Structural Data-Bases	£205,982	May 2001 - Oct 2004 <sup>7</sup>
EPSRC, BAE Systems Plc and Rolls Royce Plc	Models and Techniques for Integrated System Safety Engineering (MATISSE)	£435,390	Jan 2002 - Dec 2004 <sup>8</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Rolls Royce Plc and others	Distributed Aircraft Maintenance Environment: DAME	£3,096,172	Jan 2002 - Sept 2005 <sup>9</sup>
EPSRC, British Aerospace Plc, QinetiQ (Malvern) and Rolls Royce Plc	DARPS: DARPS 2002 Initiative - High Integrity Real-Time Systems (HIRTS). DARPS Research will be carried out collaboratively with: <ul style="list-style-type: none"> <li>• BAE Systems</li> <li>• Rolls Royce Plc and</li> <li>• QinetiQ</li> </ul>	£1,090,078	Oct 2002 - Sept 2006 <sup>10</sup>
BAE Systems, Messier-Dowty (Smiths Group) and others	SLATS: Safer Landing, Approach and Taxi Systems for Civil Aircraft	£166,000	Mar 2003 - Sept 2005 <sup>11</sup>
EPSRC funded  Part of the Novel Computational Research Cluster, which involves: <ul style="list-style-type: none"> <li>• BAE Systems</li> <li>• QinetiQ</li> <li>• University of Birmingham</li> <li>• University of Edinburgh</li> <li>• Imperial College, London</li> <li>• University of Kent</li> <li>• University of Manchester</li> <li>• University of Sunderland</li> <li>• University College London</li> <li>• UMIST and</li> <li>• University of the West of England, Bristol</li> </ul>	What Emerges when <i>In Vivo</i> meets <i>In Silico</i> (EIVIS)	£?	July - Dec 2003 <sup>12</sup>
QinetiQ and others	Facial Attribute Recognition (FAR)	£175,000 total	Aug 2003 - July 2005 <sup>13</sup>
EPSRC funded  Involves: <ul style="list-style-type: none"> <li>• University of Kent</li> <li>• University of Aberystwyth</li> <li>• Napier University</li> <li>• University of Nottingham</li> <li>• University College London and</li> <li>• BAE Systems</li> </ul>	Network for Artificial Immune Systems (ARTIST)	£?	Nov 2003 - Dec 2006 <sup>14</sup>
EPSRC, BAE Systems,	Real-Time Systems Research Group	£?	Mar 2004 Onwards <sup>15</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
DERA, Rolls Royce Aeroengines and others			
BAE Systems	Industry Sponsored Prize: Outstanding Performance in Exams. Awarded to a 2 <sup>nd</sup> Year Student	£150	2006 <sup>16</sup>
QinetiQ	Industry Sponsored Prize: Outstanding Performance in Exams (excluding Project). Awarded to a Final Year Student	£150	2006 <sup>17</sup>
EPSRC and BAE Systems	Hierarchical System Management for Integrated Modular Systems	£78,600	2006 - 2010 <sup>18</sup>
Current Members include: <ul style="list-style-type: none"> <li>• University of Birmingham</li> <li>• University of Edinburgh</li> <li>• University of Kent</li> <li>• University of Manchester</li> <li>• University of the West of England, Bristol</li> <li>• University of Sunderland</li> <li>• University College London</li> <li>• UMIST and</li> <li>• BAE Systems Sowerby</li> </ul>	Openness, Diversity, Interaction, Structure, Scale: A Bio-Inspired Approach to Computation (ODISSIAC)	£?	Current as of May 2007 <sup>19</sup>

### **School of Electronics**

Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC, Matra BAE Dynamics (UK) Ltd, DERA and others	Improved Definition and Measurement of Electromagnetic Shielding Effectiveness	£140,417	Aug 1999 - July 2002 <sup>20</sup>
QinetiQ	PhD Funding (3 years) of Electronics Students	£?  3 Graduates	2001 Onwards <sup>21</sup>
BAE Systems	PhD Funding (3 years) of Electronics Students	£?  1 Graduate	2001 Onwards <sup>22</sup>
RAF	MSc Degree Funding (1 year) of Electronics Student	£?  1 Graduate	2001 Onwards <sup>23</sup>
DERA	Industrial Placements for Undergraduate Students	£?  7 Students	Jan 2001 to Jun 2001 <sup>24</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
GKN Westland	Industrial Placements for Undergraduate Students	£? 2 Students	Jan 2001 to Jun 2001 <sup>25</sup>
QinetiQ	Industrial Placements for Undergraduate Students	£? 3 Students	Jan 2002 to Jun 2002 <sup>26</sup>
Augusta Westland Helicopters	Industrial Placement for Undergraduate Student	£? 1 Student	Jan 2002 to Jun 2002 <sup>27</sup>
QinetiQ	Industrial Placements for Undergraduate Students	£? 5 Students	Jan 2003 to Jun 2003 <sup>28</sup>
Augusta Westland Helicopters	Industrial Placements for Undergraduate Students	£? 4 Students	Jan 2003 to Jun 2003 <sup>29</sup>
QinetiQ	Industrial Placements for Undergraduate Students	£? 4 Students	Jan 2004 to Jun 2004 <sup>30</sup>
Augusta Westland Helicopters	Industrial Placements for Undergraduate Students	£? 3 Students	Jan 2004 to Jun 2004 <sup>31</sup>
QinetiQ Ltd	PhD Topic: Interactive Multiuser Detection	£?	Sept 2004 <sup>32</sup>
QinetiQ	Industrial Placements for Undergraduate Students	£? 4 Students	Jan 2005 to Jun 2005 <sup>33</sup>
Augusta Westland Helicopters	Industrial Placement for Undergraduate Student	£? 1 Student	Jan 2005 to Jun 2005 <sup>34</sup>
QinetiQ	Industrial Placement for Undergraduate Student	£? 1 Student	Jan 2006 to Jun 2006 <sup>35</sup>
EPSRC, BAE Systems	<p>Integrated Aerospace Research (FLAVIIR). Four Fully Funded PhD Scholarships at:</p> <ul style="list-style-type: none"> <li>University of York in Wireless Communication, Networks and EMC</li> <li>University of Nottingham</li> <li>University of Liverpool and</li> <li>University of Manchester</li> </ul> <p>Other Universities involved in the Project:</p> <ul style="list-style-type: none"> <li>Cranfield University</li> <li>Imperial College of Science Technology and Medicine</li> <li>University of Leicester</li> </ul>	£6,200,000 for total project. Split into a 3 Year Research Phase followed by a 2 Year Demonstration Phase	Current 5 year Project as of May 2007 <sup>36</sup>

Source/ Sponsor/ Partner	Project	Amount	Year
	<ul style="list-style-type: none"> <li>University of Southampton</li> <li>University of Wales, Swansea and</li> <li>University of Warwick</li> </ul>		

### **Miscellaneous funding received by the Computer Science and Electronics departments**

Source/ Sponsor/ Partner	Project	Amount	Year
British Aerospace	N/A	£?	2001 <sup>37</sup>
Westland Helicopters	?	£8,907	2001 <sup>38</sup>
BAE Systems	?	£280,595	2001 <sup>39</sup>
British Aerospace	N/A	£?	2002 <sup>40</sup>
Westland Helicopters	?	£5,155	2002 <sup>41</sup>
BAE Systems	?	£226,370	2002 <sup>42</sup>
BAE Systems	?	£226,839	2003 <sup>43</sup>
Rolls-Royce	?	£101,877	2003 <sup>44</sup>
Westland Helicopters	?	£8,178	2003 <sup>45</sup>
British Aerospace	N/A	£?	2003 <sup>46</sup>
BAE Systems	?	£344,090	2004 <sup>47</sup>
Smiths Aerospace Electronic Systems	System Safety Assessment Course	£5,310	2004 <sup>48</sup>
Rolls-Royce	?	£217,595	2004 <sup>49</sup>
Atomic Weapons Establishment Plc	Project related to 'Multi-FGPA Visualisation'.	£103	2004 <sup>50</sup>
QinetiQ	Consultancy to Adaptive Agents Agile team	£5,000	2004 <sup>51</sup>
British Aerospace	N/A	£?	2004 <sup>52</sup>
AMS Ltd	?	£24,600	2004 <sup>53</sup>
MoD	Practical Form Specification Phase 3, Part 2	£12,550	2004 <sup>54</sup>
BAE Systems	?	£176,114	2005 <sup>55</sup>
EADS	?	£231	2005 <sup>56</sup>
Rolls Royce	?	£147,565	2005 <sup>57</sup>
QinetiQ	Industrial Award	£407	2005 <sup>58</sup>
AMS Ltd	?	£3,811	2005 <sup>59</sup>
MoD	Practical Form Specification Phase 3, Part 2	£37,616	2005 <sup>60</sup>

### **Other Projects of Note**

<b>Projects starting 2007, School of Computer Science</b>			
Source/ Sponsor/ Partner	Project	Amount	Year
EPSRC and QinetiQ	Programming from Control Laws. Project part of a ongoing collaboration with QinetiQ through a Royal Society Industry Fellowship.	£318,472	Jan 2007 - Sept 2010 <sup>61</sup>
EPSRC, Defence Communications Service Agency (MoD) and others	System-Smart Intrusion Detection	£228,258	Feb 2007 - July 2009 <sup>62</sup>

EPSRC, QinetiQ (Malvern) and others	Interdisciplinary Design and Evaluation of Dependability (INDEED)	£388,072	Feb 2007 - Jan 2011 <sup>63</sup>
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## **Notation**

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

## **Endnotes**

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<sup>3</sup> "High-Integrity Systems Engineering: Research". University of York, School of Computer Science. <http://www.cs.york.ac.uk/hise/research.php>. 11 May 2007. And; "Dependable Computer Systems Centre (DCSC)". University of York, School of Computer Science, High Integrity Systems Engineering. <http://www.cs.york.ac.uk/hise/dcsc.php>. 11 May 2007.

<sup>4</sup> "Systems Software Engineering University Technology Centre". University of York, School of Computer Science. <http://www.cs.york.ac.uk/hise/utc.php>. 11 May 2007.

<sup>5</sup> "Details of Grant". Engineering and Physical Sciences Research Council. <http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=GR/L84063/01>. 11 May 2007.

<sup>6</sup> "Details of Grant". Engineering and Physical Sciences Research Council. <http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=GR/M28613/01>. 11 May 2007.

<sup>7</sup> "Details of Grant". Engineering and Physical Sciences Research Council. <http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=GR/N33348/01>. 11 May 2007.

<sup>8</sup> "Details of Grant". Engineering and Physical Sciences Research Council. <http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=GR/R70590/01>. 11 May 2007.

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<sup>11</sup> "Grants Held in the ACA Group". University of York, School of Computer Science. <http://www.cs.york.ac.uk/arch/NeuralNetworks/grants.html>. 11 May 2007.

<sup>12</sup> "Non-Standard Computation Group: Research Projects and Grants". University of York, School of Computer Science. <http://www.cs.york.ac.uk/nature/group/pastproj.htm>. 11 May 2007.

<sup>13</sup> "Grants Held in the ACA Group". University of York, School of Computer Science. <http://www.cs.york.ac.uk/arch/NeuralNetworks/grants.html>. 11 May 2007.

<sup>14</sup> "Non-Standard Computation Group: Research Projects and Grants". University of York, School of Computer Science. <http://www.cs.york.ac.uk/nature/group/pastproj.htm>. 11 May 2007.

<sup>15</sup> "Real-Time Systems Research Group". University of York, School of Computer Science. <http://www.cs.york.ac.uk/flyers/rtf.pdf>. 11 May 2007.

<sup>16</sup> "Students' Taught Course Handbook: Sponsored Prizes". University of York, School of Computer Science. <http://www.cs.york.ac.uk/hdbk/handbook2006.pdf>. 11 May 2007, p. 81 (91).

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<sup>17</sup> "Students' Taught Course Handbook: Sponsored Prizes". University of York, School of Computer Science. <http://www.cs.york.ac.uk/hdbk/handbook2006.pdf>. 11 May 2007, p. 81 (91).

<sup>18</sup> "Career Summary: Current Grants". University of York, School of Computer Science. <http://www-users.cs.york.ac.uk/~ijb/>. 11 May 2007.

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<sup>20</sup> "Details of Grant". Engineering and Physical Sciences Research Council. <http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=GR/M05782/01>. 11 May 2007.

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<sup>22</sup> Charles Fonge. University Records manager and Archivist, University of York. 23 March 2006. Sent to Fellowship of Reconciliation.

<sup>23</sup> Charles Fonge. University Records manager and Archivist, University of York. 23 March 2006. Sent to Fellowship of Reconciliation.

<sup>24</sup> Charles Fonge. University Records manager and Archivist, University of York. 23 March 2006. Sent to Fellowship of Reconciliation.

<sup>25</sup> Charles Fonge. University Records manager and Archivist, University of York. 23 March 2006. Sent to Fellowship of Reconciliation.

<sup>26</sup> Charles Fonge. University Records manager and Archivist, University of York. 23 March 2006. Sent to Fellowship of Reconciliation.

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<sup>28</sup> Charles Fonge. University Records manager and Archivist, University of York. 23 March 2006. Sent to Fellowship of Reconciliation.

<sup>29</sup> Charles Fonge. University Records manager and Archivist, University of York. 23 March 2006. Sent to Fellowship of Reconciliation.

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<sup>31</sup> Charles Fonge. University Records manager and Archivist, University of York. 23 March 2006. Sent to Fellowship of Reconciliation.

<sup>32</sup> "Iterative Multi-User Detection". University of York, Department of Electronics. [http://www.yorkcomms.com/theses/shen\\_thesis.pdf](http://www.yorkcomms.com/theses/shen_thesis.pdf). 11 May 2007.

<sup>33</sup> Charles Fonge. University Records manager and Archivist, University of York. 23 March 2006. Sent to Fellowship of Reconciliation.

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<sup>36</sup> "Exciting Opportunities to work on New Flight Technologies". University of York, Department of Electronics. [http://www.emc.york.ac.uk/vacancy/wireless\\_publicity\\_jfd.pdf](http://www.emc.york.ac.uk/vacancy/wireless_publicity_jfd.pdf). 11 May 2007. And; "FLAVIIR: Innovation Through Partnership". FLAVIIR Innovation Through Partnership. <http://www.flaviir.com/home.htm>. 11 May 2007.

<sup>37</sup> Charles Fonge. University Records manager and Archivist, University of York. 24 May 2006. Sent to Fellowship of Reconciliation.

- [illegible]



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<sup>61</sup> "Details of Grant". Engineering and Physical Sciences Research Council.  
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<sup>62</sup> "Details of Grant". Engineering and Physical Sciences Research Council.  
<http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=EP/E028128/1>. 11 May 2007.

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<http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=EP/E001580/1>. 11 May 2007.

## Notes and comments on university data

Please refer to these notes whilst viewing your university's military projects.

Datasheet key:

### Table 1 Overall Statistics

#### Military Projects 2001 - 2006

1.	2.	3.	4.	5.
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)
37	£2,058,946	a) 18th  b) 22nd	1=) BAE Systems 1=) Rolls Royce  2=) QinetiQ 2=) EPSRC	1) Electrical and Electronic Engineering  2) Mechanical and Aerospace Engineering  3) Civil Engineering

1. This figure refers to the total number of military projects conducted at the university between 2001 and 2006 discovered through our research.

2. This figure refers to the minimum amount of money received by the university for military projects which were in existence between 2001 and 2006. This figure should be treated as a minimum and as an estimate for several reasons. Firstly, we identified over 300 military projects that began in 2000 or before, so it is likely that monies for such projects will have been received before 2001. Similarly, we found nearly 100 military projects that began in 2006. Of these projects, many will have continued into 2007 and beyond, raising the possibility that money will have been received by universities for such projects after 2006.

Secondly, the date attributed to the project in its original source may not relate to when the money was received by the university. Thirdly, because our research was limited by time, resources and the availability of information, we were not able to i) discover all military projects at all of the 26 universities covered in the report ii) identify values for many military projects iii) always determine the funds received by each university conducting projects as part of a consortium.

It should also be noted that because we used different sources for our research, several universities' data relies on sources which specify a department for a project as well as sources which do not. There is therefore the possibility that two sources containing different information refer to the same project and that both projects from both sources have been included so that a single project has been counted more than once. However, this will be a rare occurrence and not significantly impact on the university's overall data. For more information regarding inconsistencies and problems with the data, please see Section 3.2 of the report, where the University of Bristol's data is analysed and discussed. This section also helps to explain why not all of the amounts for the projects listed in the data have been counted in the total amount received by the university.

3. This figure refers to the ranking of each university out of the 26 universities covered by this report by the number of projects and the total value of projects conducted at the university between 2001 and 2006 that we discovered. "=" has been used here to denote where two universities conducted the same number of military projects.

4. This figure refers to the organisations which were the three largest (by number) sources/ sponsors/ partners of military projects at the university between 2001 and 2006. "=" has been used to denote organisations which were involved in the same number of military projects.

5. This figure refers to the three departments conducting the largest number of military projects at the university between 2001 and 2006. This figure does not include projects listed as 'miscellaneous' or 'other'. "=" has been used here to denote departments which conducted the same number of military projects.

**Table 2 Departmental Statistics**

1.	2.	3.	4.
Source/ Sponsor/ Partner	Project	Amount	Date
EPSRC, Dstl (Fort Halstead) and others	Isotope Profiling of Drugs: A Tool to Disrupt Organised Crime, Detect Serious Crime and Reduce Volume Crime	£113,590	March 2006 - Feb 2009 <sup>i</sup>

1. The organisations included in this column are either; i) a public military body e.g. the Ministry of Defence ii) a private military company in the Top 100 companies in the world according to revenue from military sales e.g. BAE Systems iii) a non-military organisation sponsoring a military project e.g. the Engineering and Physical Sciences Research Council (EPSRC). The term 'and others,' refers to public or private bodies not included in the definitions listed above. Where another university was involved in a project, they have also been included and their role indicated accordingly. Please also note that the names

used for the same organisation may vary e.g. BAE/ BAE Systems/ British Aerospace due to variations in the source text.

2. When available from a source, the titles included here were mostly either i) received in an FoI response ii) taken from an abstract on the EPSRC website iii) taken from an abstract/ copied/ edited from an entry on a university website.

3. The amounts referred to here mainly denote a figure which was the total received for the project according to the project's source. It is important to note that it was, more often than not, impossible, in the case of projects with more than one source/ sponsor/ partner, to tell from the source how much each organisation involved in the project contributed. We were therefore not able to present figures, for example, delineating the separate contributions of public organisations e.g. EPSRC and private industry e.g. Rolls Royce to a project in which both were involved.

Furthermore, in many cases we were unable to identify a value for a project from the source and have thus indicated this with '£?'. Where we were not able to find a value for a major, large-scale project at a university, we have, in some cases, given an indication of project values for similar projects at other universities. For those entries with a value, the most consistent and accessible were those received from FoI requests and projects listed on the EPSRC website.

4. The dates referred to here vary in their form and thus their meaning. For example, some dates refer to a specific timeframe i.e. March 2006 - Feb 2009, during which time the project in question took place. Others refer to a financial year i.e. when monies for the project were received or state 'Current as of (e.g. Jan 2007)'. In the latter case, whilst we are confident that the project was in existence between 2001 and 2006, we have not been able to definitively identify a timeframe for the project and have thus indicated when we last knew it to be active e.g. January 2007.

#### **Other projects/ information of note**

Whilst gathering data we collected information on projects which were outside our timeframe of inquiry i.e. projects ending in 2000 or before/ starting in 2007 or after. Though we have not counted these projects in the final data for universities, we have included them in separate tables as they are still pertinent to the aims of the report. Similarly, we have included information which, for example, did not constitute a project in itself or which indicated that a university department had conducted or was conducting work with a military organisation e.g. by describing a relationship between a military company and a university.

#### **Endnotes**

We have striven to present endnotes which are as accurate, full and up-to-date as possible, giving dates indicating when data was received, or, in the case of weblinks, last accessed. However, due to the ever-changing nature of the Internet, several links may fail to provide the requisite information relevant to the project indicated. We have also tried to indicate where webpages are no longer available online. If you come across a weblink which is either faulty, has missing data, or indicates a broken webpage and you wish to view the original source material, please contact us and we will endeavour to provide it for you from our records.

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<sup>i</sup> "Details of Grant". Engineering and Physical Sciences Research Council.  
<http://gow.epsrc.ac.uk/ViewGrant.aspx?GrantRef=EP/D040345/1>. 4 December 2006.