Institution: University of Bath

Unit of Assessment: B11 Computer Science and Informatics

a. Overview

The Computer Science and Informatics UoA at Bath supports a broad range of internationally leading research in the theory and applications of computing. It is a highly interdisciplinary group, comprising staff from the Departments of Computer Science (Faculty of Science), Psychology and Economics (Faculty of Humanities and Social Sciences). Our researchers collaborate extensively, with active projects involving staff from all faculties in the University, from academics on every continent, and many industrial partners. We run the Centre for Digital Entertainment, an EPSRC Doctoral Training Centre with over £10M funding to support research projects spanning the UoA's interests, in collaboration with industry partners. The UoA enjoys significant recent investment and external income: the Department of Computer Science, to which most staff of the UoA belong, is housed in a new £16M building opened in 2011. In the last few years our portfolio of funded research has grown to all-time high levels, with over £4M of newly announced awards in the last calendar year. We regularly publish the outputs of our research in top-rated conferences (SIGGRAPH, LICS, IJCAI, CHI) and journals (Journal of the ACM, ACM Transactions on Graphics).

Our core areas of interest and strength are structured in four themes:

- **Mathematical Foundations**: using mathematics to understand programs, programming languages, systems and their components, and developing systems to do mathematics
- **Intelligent Systems**: using computational learning, planning and search to improve the human design of both artefacts and broader natural and human social systems and processes.
- **Graphics and Vision**: automatic interpretation of photographs and videos and recombination with graphic elements, with applications in graphics, films, games and the entertainment and education industries.
- **Human-Computer Interaction**: theoretical, empirical and practical aspects of the design, development and evaluation of computer systems to support work and leisure activities of individuals and groups.

b. Research strategy

Our goals are to advance theoretical understanding and practical application in areas of computing ranging from the software programming level up: from the design and analysis of programming languages, through systems of software and interfaces between software and other system components, to entire systems of software, interfaces, and people. Our aims are therefore:

- to exploit our expertise in the four areas indicated above, and collaborations between those areas, to conduct rigorous research in the theory and practice of computing, leading to the advancement of knowledge, encompassing both deeper understanding and more effective application of theories and techniques in computing
- to train and develop researchers in computing to ensure the continued advancement of knowledge
- to disseminate the results of our research to stakeholders worldwide, including academia, industry and government, and to engage with them to deliver impact and develop insight.

We support our staff in achieving these aims by:

- adopting a **research-centred workload model** that makes time available for all staff to conduct research and allows for reduction of other workload for staff to pursue *all* funded projects, regardless of whether the external funding pays for investigator time
- devolving **budget to the research committee** to enable agile use of funds in the service of strategic aims: for instance our *Academic Interchange Programme* provides funds to support the development of new collaborations; department funds regularly support attendance at conferences and workshops worldwide; and we ensure that all researchers

have ready access to state of the art equipment to support their work.
- encouraging a **vibrant research environment** by funding and welcoming research visits to and from the UoA, embracing research students and postdoctoral staff as full members of the research community. Seminars and research awaydays have an explicit focus on PGR students, ECRs and their visitors.

Since RAE 2008 we have:
- expanded our profile of staff via the appointment of a new Professor in HCI (Payne), a Professor in Graphics (Wyvill), a Senior Lecturer in Spatial Cognition and HCI (Proulx), a lecturer in Computer Vision (Brown), and a Prize Fellow in Verification (Heijltjes)
- maintained a record of publication in high quality journals and the highest profile academic conferences across the scope of our research, including SIGGRAPH, LICS, IJCAI, CHI. The University's open access repository, Opus, contains over 300 papers from the staff in the UoA since 2008, with over 28,000 full-text downloads
- established the Research Bench model of accessing and delivering third-stream research: this is a full-time research-only post explicitly charged with developing a portfolio of industry-funded projects; see also our Impact statement
- specified, fitted and taken occupancy of a new building housing all academic staff, research staff, research students and laboratory facilities of the Computer Science department in a single location
- enhanced our capacity for doctoral training by the establishment of the Industrial Doctorate Centre for Digital Entertainment, run from Bath in partnership with Bournemouth and training up to 10 EngD students per year over 10 intake years: the recent renewal of the centre means it will run until 2023.
- given structure to the UoA's research leadership by the appointment of a Director of Research in Computer Science and research theme leaders in each area. These five, plus a Knowledge Transfer champion, form the research committee which meets monthly to monitor opportunities and progress, formulate strategy, and oversee the use of the research budget in the service of strategic goals.

Our **vision** for the UoA is to build on, consolidate and complement our existing research strengths to establish a coherent team of world-class researchers, able to collaborate internally and externally to deliver research throughout our scope. This implies increased collaboration and communication *within* the UoA, for instance tying our fundamental theories of programming to models of collaboration between people and software, and joining the dots between the Intelligent Systems group and our research in Computer Vision, etc.; and the *export* of this whole-scope theory and application to interdisciplinary projects, both across departments and outside the university. A concrete aim is to develop capability in the area of Machine Learning, to complement and interact with our Computer Vision and Intelligent Systems researchers.

c. People, including:

i. Staffing strategy and staff development

We encourage, enable and expect excellent research from all our staff. To this end we:
- appoint only staff who have, or can be expected to develop, a profile of 4* and 3* research outputs and significant engagement with the research community
- enable and recognize research activity in our workload model: all staff are allocated dedicated research and grant-preparation time; additional research time is protected for staff holding grants and for staff in the first years of their academic career.
- offer close support and mentoring for all staff, particularly new staff and ECRs, via the research group leaders and Director of Research; for established staff, we offer support in meeting the expectations of the University, making promotion attainable: in this REF period six of our staff have been promoted, one to Senior Lecturer (De Vos), three to Reader (Bryson, Guglielmi, Hall) and two to Professor (O'Neill, Stanton Fraser).
- monitor and develop staff research plans and support needs via the Staff Development Performance Review system, which applies to academic and research staff alike
- hold annual staff awaydays to engage all staff with the development and implementation of research strategy

- engage with the staff development opportunities offered by the Researcher Development Unit within the Staff Development Unit; and make leadership opportunities available, including the research theme leaders who are all at Reader level
- support all staff who have opportunities for extended collaborations outside the UoA, both via the formal University sabbatical leave scheme and otherwise. For instance, Davenport, H. Johnson and Padget have taken sabbatical leave via the University scheme and McCusker has leave awarded for 2014; Guglielmi was granted two years' leave from the University to work as Research Director at INRIA Nancy-Grand Est, France, leading the project Démosthène, from 2008-2010; Bryson spent two years working at the Konrad Lorenz Institute for Evolution and Cognition Research (2007-2009; McCusker spent March 2012 as a visiting professor at LIPN, University Paris 13, funded by LIPN; Guglielmi spent July 2012 as a visiting professor at PPS, Université Paris 7, funded by PPS; P. Johnson had a two year 50% secondment to the Defence Science Technology Laboratory which now continues on a 20% basis.

Support for Early Career Researchers; Implementation of the Concordat
Newly appointed academics are assigned a mentor, usually a senior member of academic staff, to provide support in all aspects of work, especially teaching and the development and implementation of a personal research strategy. During the probationary period of three years, new staff take the Bath Course on Enhancing Academic Practice which includes units on management of research. (Davenport is on the University steering committee for this programme.) The University's Research Development and Support Office (RDSO) offers dedicated support for the preparation of First Grant bids; all eligible staff are expected to make such bids and to make full use of the support of their mentor, the research committee who provide internal peer review, and the RDSO. A recent University innovation in our support for ECRs is the creation of *Prize Fellowship* posts, of which one (Heijltjes) is a member of our UoA. Prize Fellowships are permanent academic positions beginning with a two-year period of pure research and a full support programme for career development. The programme includes monthly half-day support meetings on topics such as writing grant proposals, professional networking, and strategically planning a research career. Financial support is offered for travel and equipment, over and above budgets. In Spring 2013 the entire cohort of Prize Fellows ran a showcase event to promote their research across the University; Heijltjes was one of its two lead organizers.

Research staff are expected to engage with all aspects of academic life, including having membership of departmental committees, assisting with supervision of research students and undergraduate projects, showcasing research at university open days, playing a role in the development of research grant applications, and giving informal graduate courses. Development opportunities and training courses, are made available by the University's Researcher Development Unit.

The University's code of practice for the employment of research staff provides guidance on implementation of the Concordat; its local implementation is the responsibility of each department's Research Staff Coordinator (in the CS department, this role is taken by the Director of Research). Research staff are represented at University level via a Research Staff Working Group. The University's commitment to the development of research staff has been recognised by the award of the "HR Excellence in Research" badge from the European Commission.

Research Fellowships O'Neill held a Royal Society Industrial Research Fellowship with Vodafone, 2008-2012, and Cosker now holds one with Double Negative, 2012-2016. Cosker previously held a RAEng/EPSRC Research Fellowship, 2007- 2012. Joanna Bryson held a Hans Przibram Fellowship until 2009.

International recruitment: academic staff. In the REF period four new academic staff appointments in the CS department were from overseas: Liang Wang was recruited from the University of Melbourne, Australia, and has since left us to take up a post at the Institute of Automation, Chinese Academy of Sciences, Beijing, China. Matthew Brown was recruited from EPFL, Lausanne, Switzerland; Brian Wyvill from Victoria, Canada; and Willem Heijltjes from Paris,

France. We make use of video-conferencing facilities to enable overseas candidates to participate in the recruitment process. Our current staff include seven from overseas: Belgium, Germany, Italy, the Netherlands, Russia and the USA.

International recruitment: research staff Min Jiang, Chuan Li, Yi-Zhe Song, Hongping Cai (all from China), Dalia Khader (Jordan), Joao Duro (Portugal), Pierre Clairambault and Etienne Duchesne (France). Khader has gone on to a further postdoctoral post in Luxembourg; Song to a lectureship at Queen Mary, University of London; and Clairambault to the CNRS at ENS-Lyon.

Visiting scholars In addition to numerous informal visits from researchers around the world, we have conferred formal "visiting academic" status on visiting scholars from overseas institutions: e.g. Prof. Norman Foo (U. New South Wales, Australia), Prof. Frank Van Reeth (Hasselt, Belgium); Prof Sung-Hee Woo (Chungju National University, South Korea); Dr Paola Bruscoli (TU Dresden, Germany); Dr William Lowe (Mannheim, Germany); Prof. Scott McCallum (Macquarie). Bruscoli is now a Research Fellow at Bath. Of the others, all but Woo have ongoing visiting status.

Equalities and Diversity Our Equalities coordinator actively promotes awareness of equality and diversity issues. Gender equality is a particular issue in the discipline of computer science, which is very male-dominated, and we make efforts to address this. Six of our academic staff (three Senior Lecturers, two Readers and one Professor) are women, three of whom were promoted in the REF period (Bryson, De Vos, Stanton Fraser). Female staff hold senior research leadership roles: Stanton Fraser is Associate Dean for Research in the Faculty of Humanities and Social Sciences, and from August 2013 H. Johnson is our Director of Research.

In April 2012 we hosted the BCSWomen Lovelace colloquium, promoting women in computer science at the undergraduate and masters level; we have had the highest representation of any University at the three most recent Lovelace events. We have provided dedicated facilities for a research student who is registered blind, including private research space to enable comfortable use of screen-reading software. Our current research student and postdoctoral community is multicultural, including students from Thailand, China, Nigeria, Iraq, Yemen, Brazil as well as Europe and the USA.

ii. Research students

A distinguishing feature of our doctoral training provision is the *Centre for Digital Entertainment,* a £6 million EPSRC Doctoral Training Centre run by the UoA in collaboration with Bournemouth University. This supports up to 10 EngD students per year, pursuing research projects in collaboration with diverse industrial partners including household names such as Aardman Animation, Electronic Arts, Disney, and the National Trust. The CDE's work is made visible via the centre's blog (http://centredigitalentertainmentblog.wordpress.com). The CDE, recently renewed to run until 2023, complements and extends our more traditional programme of PhD training.

PGR Recruitment is pursued through a variety of channels: publicizing opportunities via academic mailing lists, publicity to current UG and Masters students etc.; advertisements in national press (Times, Guardian) and on findaphd.com and professionaldoctorate.com; the FindAPhD recruitment fair; networking via other Doctoral Training Centres; for our professional doctorates, advertisements in industry press (EDGE magazine, Develop magazine) and via industrial partners.

Training and support mechanisms

The training needs of all PGR students are assessed annually by supervisors. Students can take advantage of a wide range of opportunities offered by the University's PGSkills programme. We provide financial support for students to attend additional training, networking and research events including summer schools, workshops and conferences: our policy is that all students are entitled to attend at least one such event in each year of their studies, and students without their own grants are supported through the departmental budgets. Engagement with training is monitored via the annual progress monitoring reports as well as at the formal progression stages: see below.

All PGR students have a team of more than one supervisor and regular contact with the PGR

Director of Studies. Support is also available from the Graduate School and from the Student Services division of the University. Students make use of the University's two academic writing coaches (initially Royal Literary Fund Fellows, now University-funded) who offer one-on-one writing coaching sessions.

We fund and run "PGR Awaydays" as a further training opportunity. These were run as two-day residential off-site events at Exeter in 2008 and Cardiff in 2010, and in 2013 our students ran and hosted the IEEE UK&Rep.of Ireland Student Branch Congress with sponsorship from the Computer Science department. The 2008 event was a mini-conference, with students running a Programme Committee, organizing refereeing of submissions and assembling the academic programme. http://www.cs.bath.ac.uk/awayday08/index.html. The 2010 event was a team-building exercise for students to explain and motivate their research to the PGR population. Academic staff also attended these events, at the invitation of the students. Students in the Centre for Digital Entertainment also benefit from the two-day CDE Conferences, held at Bath in 2011 and 2013.

We view our PGR students as full members of our research community. The weekly plenary seminar is entitled the "PGR Seminar" to encourage participation. All students are expected to present their work regularly at this session, to a whole-UoA audience, to engender appreciation for the concerns of the whole spectrum of computer science. The PGR seminar also hosts talks by staff and visiting speakers, the programme being put together by the student body. These opportunities enable our students to begin contributing to the academic community: PhD student David Wilson will act as Doctoral Programme Chair for CICM 2014.

We have an MoU with the National Informatics Institute, Tokyo, Japan, making available internships of 3 – 6 months in Tokyo for our PGR students. Bath funds the travel costs and the NII pays expenses while students are in Japan. At least one student per year has been successful in applying for such an internship (Brain; Phisanbut; Mills; Kelly; Bibu; Duan; Huang; Chiravirakul).

Progress monitoring For full time PGR students, regular progress reports are produced by supervisor and student, and scrutinized by the PGR Director of Studies and the Faculty Graduate School. Progress reports are produced at 6 months, 12 months, 24 months and 30 months, with six-monthly reporting thereafter until completion. In the second year of study, full time PGR students must undergo a formal assessment for progression, involving a written report, oral presentation and a viva voce examination by two independent assessors. Students who have difficulty at this stage are proactively supported in developing and delivering a research and study plan, overseen by the Director of Studies and the Graduate School. Arrangements for part-time students are similar, with longer timeframes to reflect their part-time status.

d. Income, infrastructure and facilities

As of May 2011 the Computer Science department occupies a £16M new building which houses the academics, research staff and students and includes two dedicated research labs for Human-Computer interaction and the Media Technology Research Centre, located immediately adjacent to the research staff and students. The Media Technology lab supports state of the art computer vision research, with professional quality tripod mounted video cameras with synchronization circuitry, RGB-NIR camera and NIR inks to benchmark visual tracking via invisible markings, professional lighting and back-screens. The HCI lab provides a dedicated, controlled environment for conducting usability studies and capturing high-quality recordings of user behaviour for the study of novel interaction methods.

The new building has a dedicated Computer Science network, firewalled from the University network, offering Gigabit-to-the-desktop connectivity plus a 5Gb connection to the JANET network, and hosting a 3TB fileserver with dedicated off-site backup and a departmental web server. The central university computing service provides an additional 1TB of secure, fully backed-up storage per research project, with further storage available on request. Our computing infrastructure is maintained by two full time staff wholly dedicated to the support of specialised services. Standard computing equipment is renewed on a three-year cycle for all staff and research students. Specialised research equipment needs are monitored and assessed by the research committee.

We also make use of the University's HPC Cluster, whose 800 cores offer performance of 8.96TFLOPS. The university has recently committed to a £1M upgrade of this facility; Davenport is on the HPC management team.

The University library has increased its budget for Computer Science titles from £56k in 2007/8 to £71k in 2012/13. Specific additions in this time include Springer e-books, with the full archive of Lecture Notes in Computer Science; over 11,000 titles have been added to our collection in this period, not including single-title acquisitions made on demand.

Research funding portfolio

The development of an increased and diverse research funding portfolio has been a top priority and the main responsibility of the research group leaders in this period. After lower than hoped income and spend in the early part of the assessment period, we established our current research leadership structure and generated a focus of activity on funding capture, with considerable success: 2011/12 saw the highest ever level of awards secured with new awards totalling over £2.5M, and a further £4M in 2012/13. The current total portfolio of around £4.5M (plus the £10M Industrial Doctoral Training Centre in Digital Entertainment, recently renewed to run until 2023) comprises funding from UK research councils (EPSRC and AHRC), industry, government and alumni. There are significant awards in all research groups throughout our scope. For instance:

- In HCI and Intelligent Systems, *Energy literacy through an intelligent home energy advisor (ENLITEN*) is a £1.5M EPSRC project engaging with multiple collaborators (see below);
- In Graphics and Vision, *Acquiring complete and editable outdoor models from video and images* is a £1.6M EPSRC project linking with the corresponding group at UCL;
- In Mathematical Foundations, *Efficient and Natural Proof Systems* is a £550k EPSRC project in logic and proof theory.

Both the UoA and the University recognise a desire to increase our portfolio of funding from the EU, and are increasing the support available for staff developing bids: the University's Research Development and Support Office has recently increased its dedicated EU support to 1.4 FTE staff, and we regularly funds research visits to potential collaborators as well as attendance at UKRO events for information gathering and networking

e. Collaboration or contribution to the discipline or research base

Support for research collaborations: we maintain a specific fund for pump-priming research collaborations, the *Academic Interchange Programme,* in addition to the University's International Strategic Fund for Research. Both have a very lightweight and responsive application process, and requests can be approved within days. Funds have been used for research visits to and from Bath, nationally and internationally: examples include Davenport's trip to Finland to build an EU consortium, Bryson's to EPFL, Lausanne, to develop links in robotics, Padget's to New Zealand for a research sandpit, which led to an extended visit to Otago during his sabbatical year, and Vorobjov hosting research visitors from Purdue (US) to develop their collaborative work. We are currently developing research links with ICMC at the University of Sao Paolo, Sao Carlos, with funding from both institutions: Payne visited in Autumn 2013 to explore connections between his expertise in cognitive science and Ferreira (USP)'s visualisation work; and Bryson's team are planning a workshop on AI held in Sao Paolo. These activities form part of the University's strategic vision to develop significant international partnerships at institutional level.

Support for and exemplars of collaborations and interdisciplinary research

The subject is inherently interdisciplinary, with members of the UoA having backgrounds in mathematics, engineering, and psychology. Collaboration with other disciplines at Bath is encouraged and commonplace: every research group in the UoA is represented in our current collaborative portfolio of funded research, and there are collaborations with researchers every Faculty and School in the university as well as a diverse range of industrial and academic partners.

Pump-priming

Interdisciplinary research has been supported through initiatives such as the *Bath Interactive Ideas Factory* (EPSRC Bridging the Gaps project run by P. Johnson to October 2009) which set up

networking events and pump-priming grants specifically for internal collaborations. Work stemming from this includes Padget's Leverhulme-funded project with Kim (Mech. Eng.) which underpinned the large *ENLITEN* project: see below. Stanton Fraser and P. Willis are on the management committee of the £5M AHRC project *REACT Knowledge Exchange Hub for the Creative Economy*. This is a collaboration with UWE, Bristol, Exeter and Cardiff with the Pervasive Media Studio, Jan 2012-Jan 2016. The University ran three internal "sandpit" events in 2011 and 2012 pump-prime collaborative research, on Sport and Technology, Sustainability and Water, and Cyber Identity; members of the UoA were active in all three and won funds for exploratory projects.

Interdisciplinary projects

Three significant EPSRC-funded projects support collaboration with colleagues in Architecture, Electrical and Mechanical Engineering as well as industry partners. *Energy literacy through an intelligent home energy advisor (ENLITEN*) (Brown, O'Neill, Padget) is a project in conjunction with Building Research Establishment, Buro Happold Ltd, Exeter City Council, Low Carbon South West, Navetas Energy Management, ScienceScope and Wessex Water Services Ltd. *eViz - Energy Visualisation for Carbon Reduction* (H. Johnson, P.Johnson) is another £1.5M EPSRC project in collaboration with Plymouth Psychology, Newcastle Architecture, Birmingham Electrical Engineering, plus industrial partners C3 Resources Ltd, Carbon Action Network, Cornwall Development Company, Energy Saving Trust Ltd, Plymouth City Council, Regen SW, Schneider Electric Ltd UK,Tekla and The Eden Project. *The Language of Collaborative Manufacture* (P. Johnson, Payne, Watts)*,* a £1.9M EPSRC project draws together our UoA with Mechanical Engineering and industry partners Airbus, Arup Group Ltd, CIMPA SAS, Delcam, Dyson, FBM Babcock Marine, Jaguar-Land Rover, NaCTeM, Shapespace and Volvo Aero.

Members of the unit have been shortlisted for and attended RCUK sandpits including Global Uncertainities and Digital Personhood resulting in large interdisciplinary EPSRC grants on these topics: Stanton Fraser is PI on the £1.8 million (£380,000 to Bath) EPSRC project *SID: An Exploration of Super-Identity,* a collaboration with University of Southampton, Oxford, Leicester, Kent, Dundee and the Pacific Northwest National Laboratory, US. Oct 2011-Oct 2014.

Padget and De Vos have been engaged in two EU FP7 projects: *ALIVE* addressed the engineering of distributed software systems based on the adaptation of coordination mechanisms often seen in human societies to service-oriented architectures. Partners included Catalunya, Utrecht, Aberdeen, and industrial partners included Thales and Calico Jack. *Perpetuate* developed European Guidelines for the evaluation and mitigation of seismic risk to cultural heritage assets, with partners including the Italian National Agency for New Technologies and the Environment.

Bryson's work promotes Artificial Intelligence techniques in biology and the social sciences; she has co-edited and contributed to a book (Anil K. Seth, Tony J. Prescott, Joanna J. Bryson (eds.), *Modelling Natural Action Selection*, Cambridge University Press, 2012) collecting research on this theme. Bryson and Hall work with colleagues in Mechanical Engineering and EPFL, Lausanne, on robot control and cognitive robotics. H. Johnson has ongoing collaboration with researchers in Psychology on participatory design for and with children with autistic spectrum disorder.

Industrial collaborations

O'Neill was academic coordinator for Mobile VCE's User Interactions Programme. This was an industrial/academic collaboration, funded partly by EPSRC and partly by the not-for-profit company Mobile VCE, with many academic and industrial partners including the Universities of Bristol and Glasgow and the LSE, and Toshiba, Vodafone, the BBC, Orange and Thales.

Knowledge transfer projects and Bath's Knowledge Transfer Account support our collaborations with industry partners. A KTP with Altran UK delivered software verification tools using Answer Set Programming; this was coordinated by De Vos, with former research student Brain as KT postdoc. Stanton Fraser managed a KTA-funded project running workshops for teachers so that they can adopt our expertise in mobile sensors for science teaching, in collaboration with ScienceScope.

Bath has been selected as one of six university partners in the BBC User Experience Research Partnership, a long-term collaboration project between BBC R&D and leading universities in the fields of User Experience and Human Computer Interaction research.

Influence of interactions with research users on research and strategy

Interactions with research users, through collaborative projects, the Research Bench activity (see Impact statement), and the Industrial Doctorate Centres, both influence and are influenced by our research agenda: there is both "application pull" and "research push." EngD students in the industrial doctorate centres must work on research projects of interest to their host companies, with academic supervision from us – this generates application pull. Knowledge transfer activities allow us to embed our research knowledge with users, but also require some tailoring of research findings: both push and pull. Specific examples include:

- The work of Cosker on facial tracking, of Hall on developing models of trees, water and smoke from video, and of Bryson on game character AI: these research projects are directly influenced by the needs of animators, artists and developers in the visual effects and digital games industries.
- Johnson's work on the design of software tools for capturing and representing life stories tailored previous work to address the needs of users in the MoD and NHS.
- De Vos's KTP with Altran Praxis generated considerable new applied research on software correctness and verification using answer-set programming.

Community leadership

Members of the UoA are active in launching and leading activities to the benefit of the scientific community beyond Bath. We have been involved in ***founding and running*** collaborative activities:

- Cosker is Founder and Co-Chair of the ACM Symposium on Facial Analysis and Animation (FAA) and of the BMVA/AVA Symposium on Biological and Computer Vision, and Co-Founder and Steering committee member for the EPSRC Vision and Language network.
- McCusker and Power founded and continue to run the Wessex Theory Seminar, a quarterly meeting of researchers in theoretical computer science from a growing collection of universities (around a dozen) from England and Wales.
- Vorobjov was principal organizer of an ICMS (Edinburgh) workshop on Effective Real Analytic Geometry, May 2008
- Davenport led the creation of the EPSRC-funded High Performance Computing Short Course consortium, which delivers HPC training to researchers throughout the UK.

We have hosted (or will host) and organised established international conferences:

- 2008 European Workshop on Multi-agent Systems (De Vos, Padget)
- 28th Conference on the Mathematical Foundations of Programming Semantics 2012 (Power, McCusker)
- 2013 British Colloquium for Theoretical Computer Science (Davenport, McCusker)
- 2013 Conferences on Intelligent Computer Mathematics (Davenport)
- Eurographics UK - Theory and Practice of Computer Graphics 2013 (Cosker)
- 2015 International Symposium on Symbolic and Algebraic Computation (Davenport)

Other exemplars of leadership, contribution and esteem

Peer review college Bryson, Hall, P. Johnson, McCusker, O'Neill, Padget, Payne, Stanton Fraser and Willis are current members of the EPSRC peer review college; McCusker and Stanton Fraser have chaired EPSRC panels. Proulx and Stanton Fraser are on the ESRC review college. Davenport is **vice-president elect (academy) of the BCS**; Proulx has been elected **Fellow of the American Psychological Association**.
Invited/Keynote lectures including Cosker (3), Davenport (2), De Vos, Guglielmi (3), McCusker (2), Proulx (7), Power (2), Vorobjov
International visiting positions including Bryson (2), Davenport (3), Guglielmi, H. Johnson, McCusker (2), O'Neill, Proulx, Vorobjov
Editorships of International Journals including Bryson (3), Hall (2), H. Johnson, P. Johnson, McCusker, Payne (3), Proulx (2)
Conference Programme Committee Chairing including Brown, Cosker (4), Davenport (2), De Vos, Hall, H. Johnson, McCusker, Payne (5), Power, Stanton-Fraser
Prizes: Proulx: American Psychological Society New Investigator awards, 2008, 2009 and Showcase Award 2011; Heijltjes: Kleene Award at LICS 2011.