

Institution: Brunel University
Unit of Assessment: 34 – Art and Design
<p>a. Overview</p> <p>The Design subject area is one of five that constitute the School of Engineering & Design. The subject area of Design (‘Brunel Design’) has a well-established record of research excellence, with multidisciplinary, product and industrial related design research grounded on strong design engineering traditions. Research in Design is coordinated under the Brunel Design Research Centre (BDRC) to which all design research staff belong, and which is organised into 7 groups mapped onto the following thematic priorities (group lead):</p> <ul style="list-style-type: none"> • human wellbeing: <i>Inclusive Design:</i> Dong, Nickpour, Spinelli (UoA 19) and 2 PhD students. <i>Perception Enhancement:</i> Giacomin, Ajovalasit and 9 PhD students. • environmental sustainability: <i>Cleaner electronics:</i> Harrison, Xu*, Evans*, Fyson, Qiu and 7 PhD students. <i>Sustainable Design:</i> Ceschin, Harrison, de Vere, Bonser* and 1 PhD student. • creative industries: <i>Design Policy & Management:</i> Lam, Choi and 6 PhD students. <i>Open design & digital economy:</i> Baurley, Qin, Ceschin, S.Smith (UoA 19); 3 research assistants and 3 PhD students. <i>Digital design, advanced materials & manufacture:</i> Bonser*, Rees*, Kang, Qin, Rakowski*, Xu* and 8 PhD students.
<p>b. Research strategy</p> <p>Today, as in 2008, the Design subject area is comprised of a multi-disciplinary staff team, which has been shaped by our taught programmes, research strengths and Brunel tradition, a spectrum of expertise that spans inclusive and sustainable design, design management and CAD, to design-led electronic, mechanical, manufacturing and materials engineering. The 2008 submission focused on the Human Centred Design Institute and included 10.5FTE staff with 9 engineering design staff submitted to General Engineering. This submission includes 12 staff plus 5 Design staff* submitted to General Engineering (UoA15). Design research at Brunel is a multi-disciplinary and increasingly interdisciplinary activity driven by human need - integrating the human and the technological to combine human centred design investigation with the technological or systems dimension enabled by design thinking and processes. Thus the distinctiveness of the department is in taking an integrated approach to the subject of design. The University’s strategic aim has been to foster such an approach in design research, appointing Baurley as Head of Design in 2010 to lead a radical re-organisation under the single Brunel Design Research Centre. The Centre is aligned with current societal environmental, economic and technological imperatives. The strategic aim for research is <i>to be a leading provider of design research that addresses the major societal questions of our age - by increasing the level of research leadership in the key areas of sustainability, human wellbeing and creative industries, building a critical mass in interdisciplinary design research in those areas, and increasing the level of research income – and to build and consolidate design research to respond to these challenges in 2014-19 and beyond</i>. Staff undertake research related to the design process, and we have developed a mix of excellent scholarly and practice-related research. The ambition has been to increase the number of staff in Design and to shape a multi-disciplinary research portfolio.</p> <p>Several staff in their first appointment in the RAE2008 period (Ajovalasit, Dong, Lam [nee Ariyatam], Gustafson-Pearce) are now established, providing important continuity and maturity with new staff replacing those retiring as well as supporting growth in the Department. This includes post-doctoral appointments Nickpour, Choi and Ceschin (Milan), Senior Lecturer appointment de Vere, (Swinburne, Australia), and research leadership appointments Baurley and Bonser. These changes have enabled the strong human factors focus to be consolidated with an <i>Inclusive Design</i> group; the environmental sustainability focus to be widened to incorporate <i>Sustainable Design</i>; the creative industries focus of design management to be complemented with the introduction of <i>Open Design & the Digital Economy</i>, and <i>Digital Design, Advanced Materials & Manufacture</i>. These developments have created the conditions and critical mass to exploit a thematic structure, within a Centre, to support design research specialisms and innovation, and to encourage cross-disciplinary working. This new approach, expansion and re-organisation has resulted in a</p>

substantial increase in research income - from £238k (RAE2008) to £4.5M (REF2014).

The research strategy has thus enabled us to build on our research strengths, and to respond to challenges relating to *Human Wellbeing*. The advent of new technology brings potential design, technological, and social exclusion, not only of certain groups of people, but often the human condition; but there are new opportunities for inclusivity, e.g. social media and open design methods and tools. Brunel Design's strategic approach to addressing these challenges is via two groups, *Inclusive Design*, through mainstreaming inclusive design practice, translating user data/insights into design knowledge through engaging users and designers, and *Perception Enhancement*, through measuring and modelling human response to visual, acoustical and tactile stimuli in order to understand multisensory perception in human-product interactions, and to develop design requirements for enhanced user experience.

The *Inclusive Design* group has published 12 journal papers, 32 conference papers, 6 book chapters, and 1 special edition design magazine. The group is recognised for its research in "delivering usable data to designers and inclusive design expertise to undergrads" (editors, *Applied Ergonomics* special issue on inclusive design, 2013). The *Perception Enhancement* group has published 15 journal papers, 8 conference papers, 1 book chapter, 1 book and 2 journal special issues. Research funding totalled £826k from direct industrial sponsorship and EU.

The strategy has also enabled us to respond to challenges relating to *Environmental Sustainability*. Sustainable design recognizes that nothing exists in isolation, and thus requires designers to consider their work in relation to the wider system, designing products that will be profitable for business and enhance people's lives, while minimizing damage to the natural environment. Our approach to addressing these issues is through the work of 2 groups: *Sustainable Design*, through product-service systems and integrating socio-ethical, environmental and economic sustainability principles, and *Cleaner Electronics*, through reducing the environmental impact of consumer products, and design methods to reduce energy use through behaviour change.

The *Sustainable Design* group has published 7 journal papers, 16 conference papers, 7 book chapters and 1 book. The new EU Edulink Programme project (£120k) will provide opportunities to investigate the area of PSS design for sustainability, with a particular focus on distributed energy systems (2013-16). The *Cleaner Electronics* group has published 20 journal papers, 23 conference papers, 2 chapters, and has filed 3 patents. Key publications include The Design with Intent Method (*Applied Ergonomics*), and Predicted and In situ performance of a solar air collector (in *Energy & Buildings*). We have worked collaboratively with twelve companies, TWI and the National Physical Laboratory in the UK, and ETH Zurich and Ecole Polytechnic Lausanne in Switzerland. £745K has been received for projects. We have contributed to UK industry through training 8 doctoral students including Dr Craig, Env. Design consultant, Fosters Architects, and Dr Dowson, Design Engineer, BuroHappold.

The strategy has enabled us to respond to challenges relating to the economic sustainability of the UK, specifically the *Creative Industries*. The Creative Industries is an important part of the UK economy. There is a high level of convergence between digital technology and the creative industries, which represents new opportunities for the sector, such as on-demand manufacturing, and the opportunity for open innovation. In addition, the sector is in constant need of tools, techniques and materials, design methods, and underlying policies, to innovate in the design sector. Brunel Design's strategic approach to addressing these challenges is through three groups, *Design Policy & Management*, through measuring the impact of design activity, and proposing new business models; *Open Design & the Digital Economy*, through methods for knowledge sharing and collaboration and 'open innovation', where people outside of companies participate in the design innovation process, and the broader cultural context of mass participation through social media; and *Digital Design, Advanced Materials & Manufacture*, through exploration of new materials and manufacture can inform and enhance the design process.

The *Design Policy & Management* group has produced 9 journal and 13 international conference papers, 1 book chapter, two industrial reports for developing design strategies at corporate level, 1 set of co-design toolkits for not-for-profit organisations, 2 voiceYourview specialist devices and funding of £327k. The group has graduated 4 doctoral students, including Dr Abbott, now Head of Product Marketing, Bentley Motors and Dr Wang, design researcher at Seymourpowell. *Open*

Design and Digital Economy group has published 2 journal and 5 conference papers, 3 book chapters. It has generated £2.6M. *Digital Design, Advanced Materials and Manufacture* has published 28 journal and 31 conference papers, 1 book chapter, 3 books and 1 company report. The international reach of the group has been contributed to by several successful bids to RAEng for in- and out- bound research visits. Funding contracts have totalled £1.2M. The group has graduated 9 doctoral students, including Dr Na, who is an Interaction Designer with LG, Korea.

A key part of our **strategy for the next 5 years** is to consolidate and build the enduring research centre themes through internal (BIAS, Business School, Institute for the Environment) and external academic and industry membership, through collaborative research and KE activity, and collaborative funding bids, and in so doing raise the profile of design research at Brunel nationally and internationally. Our themes are aligned with projected **UK and EU funding priorities**: the *Cleaner Electronics* will continue to work under the EPSRC Challenge theme of energy efficiency; the *Digital Design* group will be aligned with the EPSRC Manufacturing the Future theme. The *Design Policy & Management* group will continue to engage with the RCUK Connected Communities programme. We will also build on our **EU linkages** (e.g. DESIS) to increase our portfolio of EU-funded projects, and align our research with the **Horizon2020** priorities of 'Creative Europe'.

We will develop further linkages with **industry, public and the third sector**, and enhance the transfer of new design knowledge (design strategies, methods and tools) to practitioners in a manner that encourages its use in practice, and to maximise the impact of our work. We will place an increasing emphasis on **industry & end-user facing research**: the ERDF 'Co-Innovate' project (2012-15) is seeding new initiatives with Design research driven by industry/SME needs, in the regional economy. Since 2012, Designplus has extended its remit to facilitating KE in research through its industry facing activities. Perception Enhancement plans to expand by a strategic research collaboration agreement with JaguarLandRover, UK and Fiat in Italy. The *Inclusive Design* group will strengthen links with UK industry and third sector organisations (e.g. British Standards Group) through research collaboration, consultancy and KT partnership.

Innovation is a key enabler of economic growth (OECD), and a central government priority. Our themes are also aligned with the TSB's innovation programmes: Energy (carbon abatement & fuel cells/Cleaner Electronics), Built Environment (low impact building, Perception Enhancement), Food (productivity/Open Design & Digital Economy), Sustainability (Sustainable Design) and Healthcare (assisted living/Inclusive Design). We will strengthen linkages with **national & international HEIs**: the *Sustainable Design* group will reinforce its international profile and is currently developing a strategic alliance with Delft University, Politecnico di Milano and Aalto University for design for sustainability research. *Inclusive Design* will establish international partnerships with IHCD, USA (policy), IAUD, Japan (industry) and the Delta Centre in Norway (strategy).

c. People, including:

i. Staffing strategy and staff development

The staff development strategy has focused on developing and mentoring staff to ensure they reach their full potential, to develop research leaders, and to ensure leaders maintain their performance – in order to raise and maintain the quality of research. Through two Reader appointments since 2010 (Baurley from Central St Martins, and Bonser from Reading), it has been possible to increase the level of research leadership and the level of one-to-one mentoring for new and more junior lecturers, e.g. **Ajvalasit** has shown great promise since 2010 when Baurley took an active role in mentoring him, specifically encouraging him to think about applying his expertise and methods to other research areas by broadening his networks outside of his immediate research area. This has resulted in his securing a major EU funding award, involving a large consortium, which he was instrumental in instigating. The strategy is also about developing future research leaders, and identifying those who have a natural inclination to recognise and create opportunities and galvanise others to work together towards a common goal, and to build the confidence of those who do not have such a natural inclination. Design has 1 Professor and 2 Readers, who provide research leadership, and are principally responsible for the strategy to develop staff. For example, through her involvement in the HCDCI and being mentored by **Harrison, Dong** established the 'Inclusive Design' research group, and is undoubtedly a research leader in

the making. Readers & Professors also have line management responsibility, and identify development needs and actions for staff, especially for staff on probation (who are assigned a staff mentor upon joining). The University was awarded the EC's 'HR Excellence in Research' badging in 2011 in recognition of its commitment to the recommendations of the *Concordat to Support the Career Development of Researchers*. The University has a Concordat Action Plan and a Concordat Working Group (next review 2013).

The University and School staffing policies are designed to promote world-leading research and support a vibrant academic environment. All lecturers and senior lecturers in Design are appraised annually by a member of the professoriate. Readers and Professors agree their targets for the coming year with the Head of Department, and are assigned line management of staff according to their expertise. Newly appointed lecturers are assigned a mentor, and are provided with additional conference and equipment funding. Each member of staff has an annual allowance (£500) for conference attendance. New staff receive priority in the allocation of School-funded (DTA allowance) research studentships (**Ajovalasit**). Scholarships are available through open competition, e.g. Dong won a Thomas Grey award. They are also actively encouraged to apply for support under the EPSRC's first grant scheme, e.g. **Dong** received her first grant award in 2008 'Facilitating wider uptake of inclusive design', which was a significant milestone in her trajectory.

The University's promotion process, which is criteria based and overseen by Senate, actively rewards research excellence and, since 2008, three members of Design staff have been promoted to Senior Lecturer (Qin 2008, Dong 2010, Kang 2011). Lam (2005) & Nickpour (2010) were appointed as lecturers upon completion of their PhDs at Brunel. As part of the promotions process, the University organises workshops, led by the University's Equality Champion, to support women intending to apply for promotion. The overall promotion process is subjected to an annual Equality Impact Assessment, which is used to drive improvements in the equity of the process.

Training & development opportunities - Staff are supported through a programme of personal and professional development through the Graduate School (GS) - the *Researcher Development Programme* is specific to research staff and doctoral students. Research staff also access opportunities through staff development. Brunel GS also collaborates with other London Universities (including UCL & KCL) to provide a broader context for researcher development.

Workshops for PhD supervisors are also provided by the GS in collaboration with Staff Development. BRIEF (Brunel Research Initiative and Enterprise Fund) awards are targeted at scholars at the beginning of their research careers, providing funding for up to a year for high-quality research that may lead to an external grant application. **Choi** received a BRIEF award in 2011 (*Design Policy for innovative manufacturing industry in the UK*, £12k), which resulted in one journal and one conference paper, and an ESRC research bid, and was selected by the University to be put forward for the Leverhulme Leadership Fellowship scheme.

50% of the Design staff submitted are female and 50% of staff have non-British/European backgrounds (Middle East, SEAsia, China). Equality & diversity are supported through various mechanisms including workload adjustments, flexible working arrangements for staff with childcare needs, central support for maternity leave (**Dong, Lam**). In recognition of its efforts to promote the equal opportunity of women in science-related subjects, the University achieved an Athena SWAN Bronze Award in 2012. The University also offers a research leave scheme to support staff returning from maternity/paternity/adoption leave to recommence their research. The University offers KT Leave and Secondment schemes to facilitate knowledge exchange with non-academic communities. Given the thematic priorities (above), the Department is well placed to contribute to the understanding of potential users – industrial partners or their future customers.

ii. Research students

Research students are an integral part of the departmental community in that they are attached to relevant groups in the BDRC, as well as the School and wider University, from which they receive collegiate support. PhD students attend regular research seminars run by the BDRC, HCDI, BIAS and the Collaborative Research Networks. These include invited/guest speakers from UK (e.g. Brighton, OU, Lancaster) and overseas (e.g. TU Delft, China, South Korea). Events run by the 'Design Society' (set up by UG students) are open to PhD students. The Society fosters a community in Design amongst UG, PG and PhD students. The Society runs a 'tech event' series,

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which features talks by prominent design innovators, e.g. Feb 2013 Trevor Baylis and rAndom International were featured. The School's ResCON is an annual research student conference, which has grown substantially over the years. It gives all Design research students an opportunity to practice their presentation skills, and gives supervisors an opportunity to see how their students present their work in front of a critical audience. Prizes are offered for the best abstracts, posters and presentations. The conference committee includes both staff members and PhD students. In preparation, research talks, writing exercises, and rehearsals are held to help students build confidence in academic communication. The conference features oral and poster presentations, and a keynote speech on design research. These include Prof Lloyd, OU (2012) and Prof Wallace, Cambridge (2013). In addition, research students give short presentations alongside academic staff as part of the BDRC seminar series. They are also invited to attend the Design 'Critical Context' series and MA Design Futures/ Rich Design workshops and PG modules.

Since 2008 the average PhD student population has been 28, of whom 30% of whom are self-funded and 70% funded through various channels including Horizon Digital Economy Research Institute, 'Science without Borders' (Ministry for Science & Technology, Brazil), National Physical Laboratory, EPSRC, TWI, JaguarLandRover, EPSRC/BuroHappold, EPSRC Dorothy Hodgkin Postgraduate Award, Ormsby Trust, Thomas Grey Scholarship, Beijing East Culture & Art Company Ltd, Embassy of Saudi Arabia, Egyptian government and the Taiwan government. Since 2008 14 new PhD and MPhil students joined Brunel, and there have been 30 PhD completions.

School arrangements to support research students include a dedicated Research Office, with a manager and 3 administrative staff, supporting all research students from enrolment, the organisation of training sessions and seminars, to conference attendance. The School offers twice a year, a 2-day induction to all new students. We also offer a range of training courses on specific software or equipment, as requested by students. We have recently developed, in collaboration with the GS, a more comprehensive training programme to include Research Methodologies, Project Management, and other specific skills such as Statistics. The School also encourages all research students to attend international conferences and provides a funding allocation for all 2nd and 3rd year students to present a paper. First year PhD students are invited to attend the design research methods module (MA Design). The Graduate School acts as a central hub for research students, providing advice and support, weekly coffee mornings, on-request inductions as well as a range of facilities that can be accessed 24/7. PGR training and support by the GS include: a programme of personal and professional skills development through the GS's *Researcher Development Programme*; and workshops and seminars for skills development, as recommended by the Researcher Development Framework. GS provision for research students is designed to provide researchers with the opportunity to learn and develop in inter-disciplinary groups outside of their specific domains. Research students also attend events organised regionally through the GS's collaborations with other universities in London (e.g. UCL, KCL) and through the Vitae London Hub.

Vice-Chancellor's Travel Prizes to support conference attendance are competitively awarded each year, up to a maximum of 32 awards of £500 each. Three Design students have been awarded this prize since 2008. To help students to prepare for their future careers, links with industry, NGOs, or academic institutions are maintained, e.g., a *Digital Design/Advanced Manufacture* student worked on the project 'Testing and Evaluation of an Ergokinetic Split-Seat Office Chair', contracted by Ergokinetic Concepts Ltd., USA; and a *Cleaner Electronics* student, whose PhD was in collaboration with BuroHappold, UK, is now an employee of the company. The annual Made in Brunel show (www.madeinbrunel.com) provides a showcase for graduated PhD students, as well as staff research projects, which attracts a large industrial audience.

d. Income, infrastructure and facilities

The Design RAE2008 submission indicated a total research income of £238k. In contrast, the current submission includes total research income of more than **£2M** with awards secured totalling **£4.5M**. The significant increase in competitive peer-reviewed **awards from Research Councils** UK, EU and government, overseas and charitable foundations including NESTA during this period is a result of our research strategy, and has led to a growth in staff activity, esteem, and building of multi-disciplinary partnerships to carry out high quality research:

Design & Human Wellbeing - The *Inclusive Design* group has been successful in a number of

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research council grants, including an EPSRC project, £242k, facilitating the uptake of inclusive design, (2008-11, Dong, PI) and an RCUK public engagement grant (**Nickpour**, PI). The Group supports interdisciplinary research e.g., NESTA "DataMIX" with 6 disciplines from 5 universities, (**Dong** PI, 2009-11); and facilitates knowledge exchange (e.g. KTP project with AgeUK, **Dong** Co-I, 2011-14). Most research projects carried out by the *Perception Enhancement Group* focus on automobiles e.g. the 2007-9 "Effect of Fuel Content on the Human Perception of Engine Idle Irregularity" (**Giacomin** - £80k, Shell Research); and 2012-15 "Naturalness Framework for Person-Automobile Dialogue" (**Giacomin** - £81k, JaguarLandRover).

Design & Urban Environmental Sustainability - The *Sustainable Design* group has recently been awarded EU funding for the project *LeNSES, Learning Network on Sustainable Energy Systems* (2013-16) in African contexts (Ceschin). The *Cleaner Electronics* group has been funded by the EPSRC, TSB, EU and industrial organisations including consulting engineers BuroHappold, RPS EcoScope, TWI, and the National Physical Laboratory. The EPSRC has funded projects on behaviour change and energy use in buildings, (EMPOWER), gun crime, (DNA Receptors and Nanotags on Cartridges) and work on the design of 3D miniaturised products, and co-funded seven doctoral projects. **Harrison** has also been a co-investigator with the EPSRC Innovative Manufacturing Research Centre based at Loughborough.

Creative Industries - The *Design Policy and Management* group secured 8 funded research projects and an industrial collaboration: *voiceYourview* (RCUK DE - **Lam** Co-I, £43k); Digital Home Appliance Innovation Research & Design (Samsung Europe - **Lam** PI, £38k); Strategic Model & Future Concepts for Convergence and Cross Mobile IT (Samsung – **Lam** PI); Design Strategy and Concepts for Future Design (LG Design Europe, **Lam/Choi** £38k); Design policy for innovative manufacturing industry in the UK (BRIEF - **Choi** PI). Several projects are funded under the AHRC-led Connected Communities programme (**Lam**): *Securing value of co-design for community-based organisations* (PI, £34k); *Unearthing hidden assets through community-led co-design & co-production* (PI); *Scaling up co-design research and practices*.

Open Design & Digital Economy work is primarily RCUK Digital Economy (DE) funded: *Digital Sensoria* (Baurley PI, £800k); *Digital Tools for Cultural Production* (Baurley PI, £300k); Baurley was Co-I on AHRC *Community Web 2.0*; and is PI on EPSRC Prototyping Open Innovation Models for ICT-enabled Manufacturing in Food & Packaging (£1.3M). Brunel Design is also a spoke (£187k) on Nottingham University's Horizon DE hub, with work on open design and citizen science. The *Digital Design, Advanced Materials & Manufacture* group has secured grant funding (as PI), including Royal Academy of Engineering Global Research Award: *Life-like virtual human for product design and environment design* (**Kang**, £26k); EU Marie Curie Industry-Academia Partnerships (£36k Gustafson-Pearce).

Research-led knowledge transfer projects also confirms our strong end-user and industry relationships (Jaguar, Shell, Samsung), as well as SMEs in the regional economy, and also in patented and product-based designs for manufacture, e.g. in healthcare (*Design Bugs Out*); £40k, RCUK DE, *Co-production of Products & Value Co-creation* (**Dong**); £480k, TSB/ESRC, *Engage with the AgeUK*, KTP (**Dong**); £250k, AHRC *Stories of User Appropriation* (**Baurley**, PI); £99k, JISC *Creative Open Innovation Network for Expertise in Design* (**Baurley**); £500k, ERDF *Co-Innovate* design-led innovation for SMEs (**Green, Baurley**).

Brunel Library holds a total of around 10,000 items relating to art & design: 9,310 books, 82 journals, and 431 e-journals. The University has created a repository of research outputs, BURA, which is now the twelfth largest of all UK universities, and a research archive, BRAD, which is a database of all staff research outputs. The University has established an Open Access mandate with additional measures put in place in line with Research Council requirements. An Open Access Publishing Fund has also been established to support the dissemination of research outputs.

Brunel Design Research Centre runs a seminar series. The groups run 'sandpit' events with their partners, and other areas of the University, to develop funding proposals, e.g., Baurley/Lam ran a *Brand Jam* event as part of Baurley's work with Horizon; Ceschin leads Brunel's collaboration with the DESIS network (Design for Social Innovation for Sustainability).

The University has provided a structure to support and encourage interdisciplinary collaboration with 5 Collaborative Research Networks; **Nickpour** is Design director and **Dong** a member of the

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Brunel Institute for Ageing Studies (BIAS). The [Human Centred Design Institute](#) is multidisciplinary involving more than 20 academics from Arts, Business, Engineering & Design and Information Systems, and maintains a blog, social network group, and seminar series.

As well as providing desk/office space/facilities for staff and students, Brunel Design has a dedicated research studio, electronics and materials laboratories, model making workshops and a dedicated RP suite. Specialist facilities include a 3D motion capture system, body and object scanners, and virtual reality design capability. A suite of perception enhancement facilities include a static driving simulator and 3 semi-anechoic test cells.

e. Collaboration or contribution to the discipline or research base

Our approach to collaborative partnerships is focussed on building networks of complementary expertise in order to realise our strategy of taking an integrated approach to design research. The Open Design group has established partnerships with computer science departments such as Horizon Digital Economy Research Institute, UCLIC, and Heriot Watt, as well as with engineering departments, such as Imperial (**Baurley**); the Perception Enhancement group has partnerships with UCL, Regents College, Warwick University, TU Delft, ECAM Lyon, Politecnico di Milano, Politecnico di Torino, L'Università degli Studi dell'Aquila and UKM Malaysia (**Giacomin, Ajovalasit, Ceschin**); and the Cleaner Electronics group has partnerships with EPFL Zurich, Loughborough, Southampton, Surrey, Cranfield, Warwick (**Harrison**). Membership of academic networks include DESIS, Milan (**Ceschin**).

Staff serve on several funding body/expert panels: RCUK Digital Economy, TSB Creative Industries & SMART (**Baurley**); EPSRC Advanced Fellowship and Manufacturing the Future Fellowship panels (**Harrison**); **Dong** is a Council member of the Design Research Society, coordinating the Inclusive Design Special Interest Group; Ministry of Education/Greek government (**Harrison**); **Harrison** is executive member of EPSRC Innovative Electronics Manufacturing Research Centre; Mechanical Engineering and Engineering Systems, FCT-Portugal (**Qin**). DCLG Behavioural Research Network (**Giacomin**). Staff are involved in various research and professional networks: Institute of Ergonomics & Human Factors (**Ajovalasit**); UK Ergonomics Society (**Giacomin**); Design in the Digital World (**Baurley/Lam**); Design Research Society (**Dong**); Digital Economy Research Networks+ (**Baurley**); IEEE Computer Society (**Qin**); Institute of Ergonomics (**Giacomin**); Korea Institute of Design Management (**Choi**).

Staff are on editorial boards of numerous Journals: *Journal of Design Management* (**Choi**); *Ergonomics* and *Int. Journal of Vehicle Noise & Vibration*, *Ergonomics in Design*, *Ergonomics* (**Giacomin**); *Cambridge Workshop on Universal Access & Assistive Technologies* (**Dong**); *ISRN Computer Graphics*, and *Int. Journal of Organizational & Collective Intelligence* (**Qin**); **Dong** is scientific committee member of the INCLUDE biannual conference. They also referee for these and a wide range of journals. Staff are in demand as externals examining PhDs at: Brighton, Heriot Watt, Kolding, Denmark (**Baurley**); Cambridge, Loughborough, Nottingham, Sheffield Hallam, Tongji, China (**Dong**); Portsmouth (**Harrison**); Turin (**Giacomin**); Bournemouth, UEL (**Kang**); Bournemouth, Asian Institute of Technology, Thailand, Southwest Jiaotong University, China (**Qin**). Staff have also been guest editors for special editions of *International Journal of Vehicle Noise & Vibration* (**Giacomin/Ajovalasit**); *Journal of Automobile Engineering* (**Giacomin/Ajovalasit**); *Advances in Conceptual Design Theories, HE in Engineering & Design*, *Int. Journal of Mechanical Engineering Education* (**Qin**); *Journal of Cleaner Production* (**Ceschin**).

Staff have active research partnerships with industry and NGOs: Samsung Design Europe and LG (**Lam, Choi**); Marks & Spencer, Leatherhead, Campden (**Baurley**); Shell Research Ltd (**Giacomin/Ajovalasit**); BuroHappold (**Harrison**); JaguarLandRover (**Giacomin**); REEP, Renewable Energy and Energy Efficiency Partnership; ENERGIA - Africa international network on gender and sustainable energy (**Ceschin**). Staff hold visiting Professorships/Chairs: **Qin** is visiting professor at Southwest Jiaotong University (SWJTU), China. Staff have delivered key note lectures: 2010 Visual Information Communication - International Symposium, Beijing (**Qin**); *Create value through sustainable product-service*, Bergamo/Italy (**Ceschin**); UD2012 (**Dong**); The Design Council, Lancaster and De Montfort Universities in the UK and the Ministry of Knowledge Economy (MOCIE), Korea Institute for Design Promotion (KIDP) and Korea Advanced Institute of Science and Technology (KAIST) in South Korea (**Choi**).