Institution: University of Derby

Unit of Assessment: UoA15 – General Engineering

a. Overview - This submission is based around the research undertaken in the School of Engineering and Technology (SoET), which resides in the Faculty of Arts, Design and Technology at the University of Derby. The Faculty is housed in a purpose-built site, leading to extensive opportunities for cross-fertilisation and collaboration. There are four research groups in the SoET with representation from all of these in the Unit of Assessment. In 2008/9, a review of research in the School worked to engage more staff in research. This was enabled by increased and more inclusive research group membership whilst ensuring that the research groups aligned with current and planned staff expertise in the School. The four resulting research groups are: **(1) Built Environment Research Group (BERG)**, launched in 2010. As a multidisciplinary group, BERG has a research profile that underpins teaching and the curriculum in areas of architecture, construction and civil engineering. Some of the themes include environmental/sustainable design, sustainable refurbishment of historic and traditional buildings, conservation/regeneration research, sustainable environments and communities, performance based fire risk engineering research, BIM integration and implementation, health and safety, building biology and health in buildings, theories and educational research in architecture and interdisciplinary and cross-boundary connections with arts and design. **(2) Creative Technologies Research Group (CTRG),** launched in 2010. It focuses on exploring the interface between artistic application and technology, created by the worlds of commercial music, live performance, multimedia, and sound arts. It draws together expertise in acoustics, signal processing for sound, music, video and multimedia technologies, aesthetics, aural perception and cognition, music composition applying digital techniques, surround sound and performance/live event technology and techniques. **(3) Electrical, Electronic and Software Systems Research Group (E2S2RG)**, launched in 2010, it brings together members who offer expertise within the broad and interlinked fields of electrical, electronic and software systems. Research Group members contribute their own specialist expertise, while recognising the overall integrated nature of the field. The group works in the areas of power electronics, mechatronics, embedded systems, sensors, control systems, efficient applications of electrical power, and acoustics. **(4) Mechanical/Manufacturing Engineering and Industrial Design Research Group (MMEIDRG)**, launched in 1995 with the research activities within this group focusing upon manufacturing techniques and systems, mechanical analysis by CFD and FEA, manufacturing management, mechatronics, industrial robots and intelligent systems. These activities include newly developed directions towards newest investigated technologies, such as nano-manufacturing, e-manufacturing and intelligent machines and systems. It is recognised that staff not submitted in REF 1 & 2 still play an important role in both the research environment and impact. If such staff are referenced, the number after their names indicate the research group in which they reside.

b. Research strategy - The overall aim of the University's research strategy is to create a highly research-informed learning environment in which the research process and outputs contribute widely and substantially to the success of the institution. The outcomes of research are expected to benefit the taught curriculum, the student learning experience and pedagogic practice in learning, teaching and assessment. In addition, the University will increasingly use its research expertise to benefit the University engagement with business and the wider non-academic community.
In the SoET almost all staff are active in a research group and engage with the research agenda through this mechanism. The University promotes and resources research activity that underpins curricular developments at undergraduate and postgraduate levels. The University's strategy aligns teaching and research setting out how this will be achieved. The aims of this strategy are:
(1) To increase the range, quality and quantity of research across the institution primarily for the benefit of student learning. (2) To strengthen the postgraduate research provision by enhancing the sense of postgraduate community, strengthening the programme of research training support, adopting a risk-based approach to PGR recruitment, developing a more robust annual monitoring of PGR progress and thereby improving the PGR completion rate. (3) To strengthen the research environment through a comprehensive provision in continuing professional development, increased external funding income, the embedding of the research ethics framework and the recognition of scholarship and research as an integral part of the University's Developmental Performance Review process. Research is also a fixed agenda item on all school and subject group meetings ensuring the research strategy and activities are kept at the forefront of what we do. (4) To

increase the role of research in the development of the University engagement with business in the City and County through knowledge-transfer, training services and research consultancy. (5) To improve the accessibility of the University's research through online website developments including the University of Derby Online Research Archive (UDORA) which was launched in 2011 intending to capture, store and preserve our research output and to make it available to the research community through Open Access protocols.

In terms of research strategy, the SoET has concentrated on improving in the areas of:

(1) *Maximising the role and visibility of the research groups.* The SoET have increased both the number of, and membership of the research groups. Four groups exist where there were once two, and membership of research groups has increased significantly with more experienced members of research groups mentoring new or less established researchers in their research careers, often using internal funding opportunities to help kick-start this process. Visibility has been improved by increased publications and conference presentations coupled with symposium and conference events organised and hosted at the University, or jointly organised and held elsewhere. For example, CTRG has held four 'Sounds in Space' events covering both the engineering and creative elements of 3D audio, which have contributed to larger collaborative events with both E2S2RG and the Art and Design research groups during the assessment period. These events, which first ran as part of an EPSRC funded SpACE-Net project in 2008, have involved research staff and students in the SoET alongside talks and involvement from industry and academics from BBC R&D, Funktion One, Stelarc, University of York, University of Birmingham, Sound and Space Group LIMSI-CNRS France, Phaedrus Systems, Intelligent Energy, Mitsubishi Electric Europe, Balfour Beatty, Bombardier and Jaguar Landrover. These wider, University funded, yearly events have been hosted at the University since 2011 and have been well received by presenters and participants alike, attracting a larger external audience and with greater potential impact and networking occurring than the one-off invited speaker events that had gone before. A recent collaboration with Bannari Amman Institute of Technology involving all research groups was the setting up and organising of an International Convention on Innovations in Engineering and Technology for Sustainable Development; this was hosted in India where over 200 papers were presented and published (3-5 September, 2012).

(2) *Increasing internal and external funding.* The University operates a Research for Learning and Teaching Fund with a value of around £225,000 (in 2012/13) and around £200,000 per year in the submission period, via competitive application, assessment and consideration. This is intended to give all staff, but particularly less experienced staff, experience in crafting applications with formative feedback provided by both Faculty and University panels. Established researchers are encouraged to partner newer staff in this process. Recipients of grants also need to respond to progress reviews [audits] after the funding period is over evaluating the outcomes and deliverables highlighted in the original proposal. Faculty research funds (including RAE funding) have also been strategically provided to help grow and focus research in the SoET using the same system. Since 2009, researchers in the four research groups in the SoET have been awarded a total of £167,450 to help fund internal research projects and the dissemination of research in the school. Many of the published outputs, impact examples and outputs submitted by the UoA have been part-funded using this mechanism which has provided good value for money and impetus to stimulate and encourage research leading to external bid applications.

(3) *Expanding Business and Industry links*. The SoET is involved in a number of strategy boards such as its own Industrial Advisory Committee which has representation from all research groups and from Industry, such as Severn Trent, Signalling Solutions, Derbyshire Rail Forum, Rolls Royce, Catalis, Glenair, JCB, Davis Derby, Network Rail, Miller Construction and Toyota. This is used to help shape the role and involvement of the School within industry, and is one of the boards heavily involved in the development of the Institute for Innovation in Sustainable Engineering (IISE) (see below). The SoET has good links with industry with much of the research undertaken already having industry relevance and focus with the latest projects including involvement in development of the motorbike used for the UK Motorcycle land speed record, for example (http://tinyurl.com/FoxLandSpeed) and work to create training apparatus for fire-fighters in order to prepare them for extracting people from vehicles (http://tinyurl.com/BBCFireDerby and http://tinyurl.com/ITVDerbyFire). A major development for the SoET in achieving and supporting the research strategy is the creation of the Institute for Innovation in Sustainable Engineering (IISE), which will open in April 2014. The University has made an initial investment of over £2

million to set up the Institute to provide a focus for the next step in the development of the site for our Engineering programmes; it will further provide a strong signal of alignment between the University of Derby and the City of Derby. In particular the IISE will invest into an area of strength, which aligns with the City's ambition to be a premier centre for advanced manufacturing and will support the on-going engagement with industrial partners at all levels, as well as providing a resource for bid activities with regional and national agencies. It aims to enhance and encourage the development of focused industry engaged research and knowledge transfer whilst providing strong links with existing University of Derby Corporate (UDC) and other external activity, and provide sufficient flexibility to ensure that the Institute is able to fit in with Regional Growth Fund developments (see Infinity Park below). The IISE will provide a focus for development of programmes which can incorporate applied research. The director of the IISE is already in post (Professor Richard Hall) with the equipment installation and facilities build nearing completion. A Board representing industry, the professions and regional public service sectors will advise the IISE with a focus on areas of economic activity in Derby and the surrounding region which align to research and consultancy expertise in the University, the taught curriculum and PhD study; these include advanced manufacturing strategy and systems, sustainable design and innovation in products and manufacturing processes for industry and the built environment, control and instrumentation for products and processes, embedded systems for optimisation of size and cost of products and to increase the reliability and performance of processes and sustainable rail transport infrastructure. The IISE is a major development for the SoET and will enable the schools research, consultancy and impact to grow and mature.

The IISE also links to a larger £45 million Regional Growth Fund project in Derby which includes Infinity Park, a new manufacturing focussed innovation and technology park adjacent to Rolls-Royce HQ. The first building will be the Innovation Hub (£6.2 million RGF) which is a collaborative venture involving The University of Derby, Cranfield University and Aston University with an aim to provide businesses with easy access to the latest academic research and development encompassing the joint Engineering Supply Chain Solutions project http://www.engineeringscs.co.uk/), 4700m^2 floor space, around 30 tenants, meeting and training rooms and a programme of innovation support services, including an expert team, plus network of service providers aimed at SME and mid capacity clients with OEM input. This venture, partnered with the equipment and facilities at the new IISE will ensure the University of Derby's future research will be strongly aligned with the needs of engineering regionally, nationally and globally.

c. People, including:

i. **Staffing strategy and staff development -** The development of a more prominent research culture within the University has meant that there has been increased internal support to develop new researchers. Staff new to research are encouraged to attend and participate in the research seminar programmes as a means of developing ideas and presenting drafts intended for publication and future conferences, gaining informed feedback from colleagues. New staff are also encouraged to become part of postgraduate supervisory teams giving them the chance to work alongside more experienced colleagues as part of the team, or acting as a mentor under the established University Mentoring Scheme. The University provides two primary forms of support for research supervisors: (i) a guide for supervisors designed to complement the PGR regulations, which incorporates significant guidance for users; and (ii) a series of ten staff development seminars for research supervisors. These include topics such as intellectual property rights, ethics, the student registration process, the supervisor - student relationship and the examination of theses. There are now also faculty specific training courses on offer both for potential and existing supervisors, allowing staff to keep up to date with changes in processes as well as developing the new generation of supervisors, and exchanging best practice ideas. Once this course has been completed staff are added to a register of potential supervisors. The development of IISE will allow all research active members of staff to have dedicated days each week at the centre away from their main teaching roles. It will also offer dedicated space for the postgraduate research allowing them to interact and develop a strong community that is supported by working alongside academic researchers at all points in their careers alongside dedicated equipment.

A new Master of Practice in Research programme will run from Autumn 2013 in order to provide professional support for staff who aim to build their research skills. The programme is suitable for those taking up research for the first time as well as those returning to research after a break and can be taken in its entirety, or modules picked up individually for emerging researchers who want

to complement their existing skill sets.
The University holds an annual research conference, which offers chances to network, keep up to date with changes and developments within research as well as hear external experts speak. This is also replicated at faculty level and the growth of research groups can be seen through the influence and support of this day. This is also when research groups and centres hold their AGMs developing and setting out plans for the next year with these internal events complementing and helping prepare for the external facing symposia that have run in July for the last three years.
The School also benefits from a number of visiting professors with expertise clearly aligned to engineering education, business linkage and industrial expertise. Derek Latham is a visiting professor and honorary Doctor of Professional Practice. Derek Latham is an architect, town planner, landscape architect and conservation architect. He has led Latham Architects for over 30 years and was amongst the top ten award-winning architects for the decade during the 1990s. The Royal Academy of Engineering has sponsored the Faculty for the appointment of Professor Dennis McKeag from Queens University Belfast, as a Visiting Professor in Innovation for a four year period starting in October 2012. His cross-faculty expertise (across all of Arts, Design and Technology) has made this appointment particularly relevant. Neil Andrew, General Manager of Balfour Beatty Rail Technologies, is an entrepreneurial research and development engineer who has an impressive career in the power generation and rail industry in the UK in the innovative development and realisation of products and processes and Professor Peter Goodhew, who has a distinguished career with principal achievements in the field of influencing new pedagogy in engineering education. Equality and diversity is strictly monitored through the university policies which can be found at http://www.derby.ac.uk/hr/diversity

ii. Research students - The number of research students has grown throughout the reporting period, starting initially from a very modest number. Recruitment is through a combination of attraction through reputation (of both the SoET as a whole and clusters of research and researchers) and progression from Undergraduate and Masters courses. There are currently **11** post graduate research students in the UoA, with the number of post-graduate taught students growing from 0 in 2007-8 to 93 in 2012-13 across 8 programmes which include Masters level courses in Control and Instrumentation, Mechanical and Manufacturing Engineering, Sustainable Design and Innovation, Sustainable Architecture and Healthy Buildings, Civil Engineering and Construction, Construction Project Management and Professional Engineering.
The University of Derby has a strong commitment to assuring the quality of its postgraduate research provision which is overseen by the University Research and Research Degrees Committee and a Faculty Research and Research Degrees Committee in each faculty. The latter monitors student progress, admissions, and related research matters. The University provides a core series of research training support seminars (RTS) for postgraduates attended by all on-campus students and made available electronically to those unable to attend. These 14 seminars encompass key research skills and aspects of importance such as the relationship with the supervisors, the registration process, organising the research, thesis writing, presenting talks and intellectual property rights and many more. An experienced researcher or member of the academic support staff gives each seminar. In addition to this series the University also provides two full-day teacher training workshops for PGR students who take on teaching duties either as a graduate teaching assistant or a very limited voluntary basis as a research student. Since 2001, the University has introduced a comprehensive postgraduate database, which is used to monitor progress of PGR students, and alongside this produced a survey of the assessment experience of PGR students; this was reported to the University Research and Research Degrees Committee. It also introduced a formal checklist for PGR students who are submitting their theses. This is expected to prevent oversights at the time of submission. Postgraduate students are provided with accommodation and computing facilities to help with their studies.
Since 2009 current postgraduate students have organised and participated in a University-wide conference, New Horizons, which has given students new to presenting papers a chance to practice this important skill in a supportive environment. It has also enabled a stronger sense of community to develop between students in different faculties. For the last two years members of this unit have been involved in the organisation of this event working directly with the University's Head of Research Professor Paul Bridges. A number of students from this Unit have been involved in presenting at this conference on a yearly basis, and have also had an opportunity to present at the main faculty research day, whilst Ikedi, Shrud and Poyi have presented papers in

collaboration with their supervisors at external conferences.

d. Income, infrastructure and facilities - The UoA has achieved a modest amount of external funding since 2008, with the establishment of the three new research groups marking a clear step change in the success rate of the UoA as a whole. **Ceranic** has led a team who achieved £60,000 of ERDF funding for the collaborative Retro-Tek project (Transforming Empty Homes through Sustainable Solutions) in 2011. Another research project for the built environment team run by **Ceranic** is the Smart-Pod project (S-sustainable M-modular A-autonomous R-reusable T-transportable modular building system), a collaboration between University of Derby, De Montfort University, EKV Design and T4 Sustainability Ltd which was externally funded to a total of £108,125 and highly commended as a Lord Stafford Awards finalist. In addition a £5000 Innovation Voucher has led on to a 3 year, £135,000 KTP being approved for a project with Lathams Architects looking at Sustainable Refurbishment and Repurposing of Historic and other Traditional Buildings (this is currently on hold due to financial constraints of the company involved, however, a resubmission of the KTP proposal for a fast track approval, with a different company as a KTP host, but with Latham's still on the board is underway). Examples of **Ceranic's** smaller grants have included £3500 Business2Business grant funding for the real time interactive architectural visualisation environment. **Bousbaine**, in collaboration with the Faculty of Business, Computing and Law, was awarded £3840 from a Collaborative Research and Development grant from the Healthcare and Bioscience iNet, which is funded by the East Midlands Development Agency (EMDA) and the European Regional Development Fund to create a suitable video game controller and games in order to help educate children with cystic fibrosis to engage with Mucus Clearance Physiotherapy. **Wilmshurst (3)** led a team which was awarded £119,650 for a three year KTP Programme with Davis Derby Ltd to design, develop and implement advanced vehicle mounted systems to achieve improved pedestrian safety around vehicles working in logistics and warehousing industry and in a quarrying and mining environment (Sept. 2009). **Wu's** work in Intelligent Systems has brought in £5000 in 2008, £11675 in 2009 and £11900 in 2011 via collaborative Transport iNet grants. These grants have been in collaboration with Loughborough University and worked on areas such as Driver Behaviour Systems in order to improve road safety and reduce accidents by the creation of driver warning systems using RFID and intelligent valve design in central heating systems which can be used to save energy with the valves powered by a heat-electrical converter. **Okoroh** was awarded £3850 for a Strategic Environmental Assessment Project to research how to develop a prototype using Knowledge Based System shell with Merebrook Construction and £4400 in order to develop a framework for environmental monitoring system. European mobility funding of €22k for LEONARDO B.E.S.T. Self Build Processes Project was attained in 2011 by **Tracada**, as well as Dance, Architecture and Spatiality (DAS) project, a successful bid for Erasmus European funding. Another European collaborative project is Grundtvig project with Giovanni Michelucci Foundation as a coordinator. The title of the research is Justice 12 and concentrates on the housing and related issues of Travellers/Roma/Gypsy communities in Europe, from which University of Derby will receive €65k. In terms of future plans, there are a number of external bids submitted or in preparation and the remit of the IISE is to help focus current bid writing efforts and encourage new collaborations with both academic and non-academic users of research. SureScreen Diagnostics Ltd, Derby and Dr Shafik (Project Principal Investigator) have submitted a TSB R & D Driving Innovation Programme for £560,000 (Design and Development of an integrated 6D multifunction wireless ad-hoc TeleHealth remote monitoring system using semantic data base and cloud computing solution) and several other bids are under preparation for EC Horizon 2020, for example.

The facilities across the School are shared between researchers, post-graduate students, and under-graduate students and include: A computer integrated manufacturing area which comprises the Rapid Manufacturing facility, incorporating the three-axis Fanuk Control milling Machine and the Powder Rapid Prototype Machine using starch, silica and refractory compounds, which has the facility to print from Computer Generated Drawings. The machining facility incorporates a small tool room, Lathes, Drilling Machines, Surface Grinder and Bridgeport Milling Machines all with Digital Read Out and Gear Cutting, Hobbing and Electro Discharge Machining. There is a Tesa Co-ordinate measuring machine and a XYZ CNC 4-Axis Milling Centre. The woodshop supports Concept Modelling and Design and comprises various types of sanding machine, circular saws, planers and wood lathes. The materials laboratory contains microscopy preparation and examination facilities with digital camera capture and surface analysis software, also macro real

time AVI image capture, plus tensile and compressive testing machines, as well as Vickers automatic hardness testing machine. The Concept Modelling Area supports the manufacture of hard and soft models for design concept purposes and incorporates a spray booth for final finishing. The prototype area supports the fine design in sheet metals of the concept modelling area with supporting equipment being guillotines, folders, rollers, and manual metal forming machines. Also contained within this area is a high-speed drilling machine for circuit boards, plus developer and etching facilities for PCB projects. The motorsports facility contains a variety of race prepared vehicles and motorcycles. Testing facilities comprise of a rolling road with computer supported links and an engine test cell incorporating a Land and Sea docking dynamometer of 800 HP with associated hard and software. Our Embedded systems comprises development systems based on Derbot AGV (in-house design), ARM mbed, Microchip and ARM development tools with advanced digital storage oscilloscopes, extensive Analog Devices, and Freescale DSP equipment and LJ Power Electronics experimental systems used for advanced and power electronics. Industrial electronics has access to an Ultrasonic Work Station test rig (piezoelectric ultrasonic driver, signal analyser, signal power generator and digital multi-meter), ZigBee wireless protocol development kits, integrated with temperature, illumination and humidity sensors and programmable robotic units. The 3D audio lab comprises of a permanent 30 loudspeaker with-height system accessible via a 64-channel soundcard. This acoustically treated room is used for algorithmic and hardware/software testing and development alongside creative music and video work. Planned equipment in the IISE will substantially add to this: Additive Layer Manufacturing for metallic prototyping using powder technology, including Titanium 64; 3D printers for prototype production; High spec CNC machines: including 5 axis CNC, 3+1 axis CNC, mill tap, and CNC lathe with live tooling; 3D virtual reality cave, with headset and gloves, for Architecture, Advanced Design & Manufacturing; Coordinate measuring system, with 3D scanning system for reverse engineering; Latest solid state bonding facility, and Super Plastic Forming, to manufacture micro-fluidic and lightweight materials; high performance computing with parallel processing capability and render farm; embedded sensors lab with optical fibre, low energy sensors, artificial intelligence and a Rail and building tech labs.

e. Collaboration or contribution to the discipline or research base - Research in the SoET is often collaborative with researchers from other institutions or industrial partners involved during or after the research. An exemplar is **Ceranic's** work on the Retro-Tek collaborative project which is looking at transforming empty homes into sustainable solutions. The project has been developed from an alternative view on tackling climate change as well as developing a solution to modern social inadequacies such as fuel poverty, empty homes and housing shortages. It aims to provide empty property owners with a viable option to realise the potential of their assets with a minimal financial outlay, whilst bringing empty homes back into use, integrating sustainable technologies and materials and offering them for use by those in 'housing need'. The research phase of the project is completed and the Retro-Tek Community Interest Company (CIC) is proposed to be formed with the support of Derby City Council and the OSCAR community group (Osmaston area of Derby City), a high priority area in terms of its regeneration and development needs. The proposal is based upon a successful research project funded by ERDF through the Sustainable Construction iNet, set to deliver a novel design and procurement framework for the sustainable refurbishment of empty homes. Other highlights include work on the design of a motorbike for the team attempting the world land speed record, which will be ridden by double world superbike champion, James Toseland, and aiming to achieve a speed of at least 400mph with a team led by former GP and TT sidecar racer Alex Macfadzean, an engine development and dyno specialist. **Tracada** is collaborating with the Giovanni Michelucci Foundation with respect to a project around Best practices in European Self-build Training (B.E.S.T.). **Wu** leads on-going collaborations with Loughborough University on Transport iNet projects and University of Surrey on the current Quadcopter research. **Ceranic** leads the Smart-Pod collaborative project between the SoET, De Montfort University, EKV Design and T4 Sustainability Ltd with two SmartPOD prototypes proposed to be built at the Oakland Manor, University of Derby Buxton site. Another example of contribution to the discipline and its research base is the Award of Centre of Excellence by the Chartered Institute of Architectural Technologists (CIAT) to the SoET, one of only four in the UK, largely due to its research staff and promotion of the research and postgraduate scholarly activity. "The Panel agreed that the range of research activities at the University is to be commended". Contributions include: **Bousbaine** reviewed IET, IEEE papers, Marie Curie and EPSRC grants and

acted as an external independent assessor for a readership application from the University of Glamorgan. **Bousbaine** externally examined a PhD at UWIC in September 2010. **Hill** member of Institute of Acoustics Electroacoustics Group Committee. **Hill** Reviewer for Journal of Audio Engineering Society (AES) and conference papers. **Hill** reviewer for IEEE Transactions on Audio, Speech and Language Processing. **Hill** invited talks at University of Southampton (2010) and British section of the AES (2011). **Shafik** Session Chair: American Association of Engineers ICMR2012 International Mechanical Engineering Congress and Exposition, USA (2012); International Conference on Mechatronics and Computational Mechanics, UAE (2012); IMECE2013, International Mechanical Engineering Congress & Exposition, ASME, USA (2013). **Shafik** Editor-in-Chief International Journal of Robotics and Mechatronics (http://tinyurl.com/IJRMder). **Shafik** reviewer for IMECH UK, IEEE, IET UK, ASME USA and Royal Society, TSB, EPSRC and EC (FP6 & 7) grant applications. **Oraifige** assistant editor and reviewer for Int. Journal of Engineering Simulation (http://www.intjes.co.uk). **Wiggins (2)** Invited speaker at Institute of Acoustics' Reproduced Sound 2012 (Nov, 2012), COMPASS (Centre for Composition and Associated Studies), University of Birmingham (Feb, 2012) and 15th International Conference on Digital Audio Effects Conference (DAFx-12), University of York (Sept, 2012). **Wiggins** reviewer for Applied Acoustics, Elsevier (June 2012 & Jan 2013). **Wiggins** External examiner for 3 PhDs at University of Salford (2013), University College Dublin (2013), and Queen Mary, University of London (2013). **Hall** Visiting Professor at the Katholieke University of Leuven, Belgium. **Hall** Chief Editor of International Journal of Engineering Simulation. **Hall** reviewer for Journal of Materials, Design and Applications; Journal of Fatigue & Fracture of Engineering Materials & Structures; International Journal of Mechanical Sciences and the International Journal of Machine Tools & Manufacture. **Kharaz** externally examined 5 PhDs at Glamorgan, Leeds, Hertfordshire, Manchester Met and Brunel universities. **Kharaz** reviewer for Institute of Physics Journals and Kybernetes, the Int. Journal of Cybernetics, Systems and Management Sciences. **Tracada** member of East Midlands Philosophy and History of Architecture Research Network (with University of Nottingham, Nottingham Trent and Lincoln Universities) **Tracada** Editor in Chief of the Journal of Biourbanism (http://journalofbiourbanism.org/) and head of Biourbanism UK. **Tracada** AHRC project reviewer for Research Grants (Standard) Scheme. **Tracada** Guest Editor and Peer reviewer in The International Journal of Architectonic, Spatial, and Environmental Design of Common Ground Publishing. **Tracada** Guest Editor in the International Journal of Social Sciences, Common Ground Publishing. **Okoroh** Guest editor The American Society of Civil Engineers (ASCE) Journal of Performance of Constructed Facilities. **Okoroh** Guest editor Journal of Facilities. **Okoroh** Peer reviewer for Journal of Building Research and Information; Journal of Facilities; Journal of Construction Management and Economics; Journal of Financial Management of Property and Construction; Engineering, Construction and Architectural Management Journal (ECAM); Construction Innovation: Information, Process and Management Journal. **Okoroh** PhD examiner for 7 PhDs (2 at Glasgow Caledonian, Loughborough University of Technology, University of Portsmouth, University of Salford, 2 at Universiti Teknologi MARA, Malaysia, Napier University, Deakin University, Austrailia). **Okoroh** Invited Conference Keynote Speaker - 2nd International workshop on renewable energy for sustainable development in Africa, Abuja, Nigeria, 2010. **Okoroh** The Royal Institution of Chartered Surveyors (RICS), Faculty prize for Best Paper on Sustainability. **Okoroh** Commendation on British Institute of Facilities Management (BIFM), Best paper on FM Innovation. **Okoroh** Scientific committee member of Association of Researchers in Construction Management (ARCOM). **Ceranic** Referee for International Journal of Architectural Science, International Journal of Architectural Engineering and Design Management and Computers and Structures. **Ceranic** Member of MCIAT Examinership Panel. **Ceranic** Member of B 555 Committee (responsible for revisions to BS 1192 Part 5). **Ceranic** Panel Chair for International Conference ECO Architecture 2008. **Ceranic** Member of International Scientific Committee for ECO Architecture 2012. **Ceranic** Member of International Scientific Committee for Sustainability in Energy and Buildings 2012. **Ceranic** Member of International Scientific Committee for Detailed Design 2012. **Ceranic** Member of International Programme Committee and invited Session Chair for Sustainability in Energy in Buildings (SEB'14) International Conference. **Yiling** Reviewer for: Philosophical Transactions of the Royal Society, Annals of Biomedical Engineering, Physical Biology International Journal of Heat and Mass Transfer. **Yiling** Invited speaker Bioeng2011, London, 2011 and EPSRC Numerical modelling in life science workshop, London, 2010. **Yiling** PhD examiner for 2 students, King's College London and University of Durham.