Environment template (REF5)

Institution: Leeds Metropolitan University
Unit of Assessment: UoA11 – Computer Science and Informatics
a. Overview: University Overview-The Deputy Vice Chancellor (DVC), Research & Enterprise is responsible for the strategic development and leadership of research and enterprise activity across our University. The offices of University Research (URO) and University Enterprise (UEO) under the line management of the DVC, support the delivery of the Strategic Plan 2010/2015 (http://www.leedsmet.ac.uk/strategicplan/theplan.html), theme 3 and the Research Strategy. Working together we focus on, the research community, enhancing research student experience, fostering relationships with partners, companies and external organisations and promote entrepreneurship and innovation among our staff and students. Building and enhancing a research culture is at the heart of our University's Strategic Plan 2010-2015, Theme Three. The DVC is directly supported by Head of University Research Office (URO) and four faculty directors of research. This group is at the forefront of research developments, abreast of the demands internally and externally and provides the framework and scope for change and implementation of the research strategy. Our University is structured into four faculties and 18 schools, each undertaking research activity specific to their subject groups. The research environment is further enhanced and focussed through the internal establishment of three Research Institutes, each with a director and a collection of research centres which cover a very wide range subject base (http://www.leedsmet.ac.uk/research/#research-institutes-and-centres). The institutes and centres demonstrate our expertise and strengths in an array of subject areas focussing on developing research activity to provide sustainability and a platform for growth. This major investment has seen a return in the form of an increase of 57% in successful applications for external research income and a higher number of academic staff being put forward for inclusion in the Research Excellence Framework (REF). The strategic research decision making processes take place through our committee structures at University and faculty level (http://www.leedsmet.ac.uk/about/files/Academic_Board_Committees_Structure_Chart2012-13.pdf).   The University Research & Enterprise Committee and its sub-committees, The Research Degrees and the Research Ethics deal directly with research and enterprise issues. The Research Degree Sub Committee has the sole authority for decision making on any matters relating to postgraduate research students. Our current research student portfolio is over 550 students, studying full and part time on a variety of research degrees. This academic year (12/13) saw 53 postgraduate research students successfully complete their programme of study. Our University is committed to the development of its staff, and operates in compliance with the Concordat and Researcher Development Framework. Through Human Resources (HR) and the URO/UEO we enable our staff to deliver high levels of performance by promoting and providing development opportunities which are reviewed through our Performance and Development Review (PDR) process.   There are also biennial promotion calls for suitably qualified staff to the roles of Reader and Professor as part of our on-going commitment to the research vibrancy of our university. Both early career researchers and those further into their careers are offered a wide range of development and participate in a lively research culture at Faculty and School level as well as in university-level events. Continual professional development through the Enterprise Academy and the Research Academy will equip our staff and research students with the necessary skills and attributes to be able to succeed in their chosen career paths. The URO implement several competitive schemes to build research careers such as; Early Career Research Development, Research Leadership and Research Cluster Development Awards. These schemes also promote collaboration across our University and in the wider research environment Internal investment in addition to our external research income is an important contributor to increasing our internal structures, facilities and equipment, research profile, reputation and in the development of academic staff.   **School Overview-**The subject areas covered by this UoA fall within the remit of the School of Computing, Creative Technologies and Engineering, which is now in its third year of existence. The School inherited a number of research activities, and has endeavoured to support and develop those where appropriate, to focus research on a set of project areas, whilst at the same time, expanding the number of research active staff. Support and development of existing activities is through the provision of time (reflected in individuals' allocation of duties) and finance (via conference travel etc.). The merging of the New Technology Institute (formerly a separate CPD activity) with the School's Digital Research Centre (DRC)

(http://www.leedsmet.ac.uk/research/northern-technology-institute-digital-research-centre.htm) has allowed us to identify a number of focal points for research activity: those relevant to this UoA are in the areas of Virtual Systems; Intelligent Systems; Mobile / Ubiquitous Computing, Converging Technologies, Networking; Green IT; Assistive Technologies and Software Engineering: the DRC also includes groups who fall outside UoA11. We have taken steps to expand the number of "research active" staff in two ways: by placing greater emphasis on research in the appointment of new staff, in line with the University's research strategy; and by actively encouraging existing staff to commence, or to revive, their research interests.

b. Research strategy: Working within the University's strategic plan, our research and enterprise activities complement each other through our focus on research which concentrates on practical, problem solving activities. Our research activities is closely aligned to our academic provision, in most cases research groups support and deliver a cognate post graduate course. Equally, our "enterprise" (consultancy, professional development and knowledge transfer) aligns with the research we carry out. Our overall strategy is to support a limited number of collaborative research groups within the UoA. We believe that this allows us to provide a greater impact than would be the case for a number of individual workers, and also means that more established researchers can support and develop less experienced colleagues. In addition, such a strategy provides us with a pool of supervisory teams who can undertake the supervision of research students in their specialisms, which in turn leads to further strengthening of these collaborations.

In supporting **research students**, we again make use of our research groups: incoming applications are first reviewed by the School's research leader to determine viability and to identify a potential supervisory team. If appropriate, the team is them supported to make initial contact with the potential student, and a more complete research proposal forms the basis of an offer of a place. In 2012/13, a Faculty initiative created 5 fees-only bursaries for the School: these were allocated against specific projects which were selected on their ability to support the development of our specific research groups. We recognise that research areas often have a finite lifespan: whether due to staff changes or changes in the external environment, and new interests emerge, hence review of groups is an important element of the strategy. New proposals are expected to be supported by a clear identification of the themes and direction; to allow active involvement from a number of colleagues; and to align with teaching and enterprise activities. We are currently supporting 5 academic colleagues to pursue PhD study, and have requests from a further 5 to commence their studies, all within the topics covered by this UoA. We have increased the number of academic colleagues involved in the supervision of PhD students, and have supported their engagement with the University's research supervision training programme.

c. People, including:
i.   Staffing strategy and staff development
Staffing Strategy: The School of Computing, Creative Technologies and Engineering has adhered to the University policy of seeking to appoint and retain academic staff with PhDs or research active staff with excellent research outputs. Consequently, since 2011, more than 50% of newly appointed staff members have excellent publication track records (note: this is evidence of the impact of the staffing element of our Research Strategy). In more detail, our strategy encompasses the following areas:

In **staffing**, we have emphasised the importance of research in our selection procedures: our three most recent appointments have all either joined us as established researchers, or joined with recently completed PhDs which align with our research themes.

In **staff development**, research performance and aspirations are a central part of our annual Performance Development Review (PDR) cycle: addressing research outputs (papers, grants, external collaborations); research development (personal research activity, support for working within research teams, PhD supervision); support to establish research profiles (PhD enrolment). By alignment of PDR with allocation of duties, research activity is supported through the provision of a time allocation, over and above the contractual "research and scholarly activity" allocation. The four professors in the School each have a "mentoring group" of colleagues, some research active; some with potential to be so; some early career; others more established members of staff. A Faculty research seminar programme is in place, and we encourage research active staff and students to present their work at these sessions.

Our strategy to increase our research **income** also encourages **collaboration**, both within and outside the School: the production of viable grant applications is one of the PDR criteria, and we

also align with University support mechanisms to identify opportunities and submit applications. **Funding** to attend events, including presentation of conference papers, is accessed by making request, justifying the activity in terms of its expected deliverables. Each request is judged on its merit, requests below £300 are approved by the Head of School (HoS), and requests above that amount are approved by a Faculty Development Panel, but require prior HoS support.

All support (time allocation; funding; research studentships etc.) are reviewed within the PDR cycle: we reserve the right to withdraw support, or not to provide further support, should there be little or no evidence of appropriate activity or development. These factors are elaborated below.

Staff Development: Scholarly research in Computer Science and Informatics is now an accepted, expected and planned activity. Our progress over recent years has resulted to a large degree from organic development, carefully nurturing the core of staff entered for REF 2014 (note: this is the first submission for the UoA). Renewal has been achieved through two ways:

- encouraging staff members to pursue a PhD degree with fully paid fees (to date, 5 staff members are registered to read a PhD degree)
- incorporating PhD supervision and research training activity in staff workload models. Currently, all staff members have been given research time allocation (an equivalent of 10% of their notional allocation) and can negotiate additional hours annually for research and scholarly activities against agreed targets. Succession planning has been further enhanced by encouraging every academic staff member to publish at least a research paper per year and this is set as a target in their PDR (Personal Development Review) statement. As a result of this, approximately 60%of the school staff members have published at least one research paper and the total number of publications (since 2008) is approximately 240 (with more than 80% of the publications with at least 2* rating). Allocation has also been made for international/national conference participation. We have deployed a variety of other mechanisms to enrich the research environment, including the: appointment of a research officer who is now pursuing a PhD degree in the school (Sam Dixon) and promotion to research fellow (Dr. Pip Trevorrow) who contribute significantly to projects through "fieldwork" and co-authoring. The school also conducts an annual census of research output and activity, and has a mentoring system for 'apprentice' PhD supervisors. As a result of this scheme, we now have 16 supervisors within the school, an increase of more than 100% new supervisors in the supervision pool. At the faculty level, we have monthly lunch-hour research seminars which provides a platform for sharing research knowledge and skills as well as encouraging cross-disciplinary research collaboration across the various schools (this is evident through the increase in the number of submitted cross-disciplinary proposals).

Research students: Considerable progress in this regard has been achieved through: an energetic, proactive approach to attract students. To date, our school has 70 PhD students (30 FT, 39 PT, and 1 distance learner and this is approximately 300% increase since the year 2008); the good reputation of the area and the associated growing research standings of staff; collaboration, since 2005, with Danube University Krems, Austria; the increased visibility of the University

Also, a healthy number of research students has been attracted by, and benefited from, the increase in the number of academic staff members that have enrolled into the PhD programme and from our share of the 25 fees only bursary PhD studentship scheme offered by the faculty (5 places to each school). Retention of research students has been good. This is due to not only the subject expertise and commitment of supervisors but also the formal arrangements and systems (including electronic collaboration) in place for supporting and monitoring students. Having enrolled, students are required to produce a rigorous research proposal and undergo a confirmation of registration 'viva' before achieving registration. Further monitoring occurs at an annual progress board. As a result of these measures, a healthy number of research degree completions have been secured. Since 2008, the school recorded 26 PhD completions (note: this is 100% increase on the five years to that date).

d. Income, infrastructure and facilities

Income: The external research funding income the School of Computing, Creative Technologies, and Engineering received since 2008 is more than £1.7 million which has surpassed the target in our plan. We have trebled the number of long-term collaborative projects. The school's total enterprise and research income for the year 2011/2012 alone is £854,433. We have been increasingly mindful of the need to channel our research through quality media, notably international refereed journals and high-grade conferences. The school aims to expand its research funding base by encouraging more staff members to seek funding from a variety of

sources (particularly European Commission funding) and doubling the total research income in the next two years. Funding awards to the UoA are:

1) **EPSRC funding** D-Scent: Raising Challenges to Deception Attempts Using Data Scent Trails (Guest) £163,629; Ideas Factory: Global View (Guest) £70,000; Deployable Sensors for Concealed Gun Detection at Standoff Distances (Guest) £130,413.

2) **EU funding**: Tempus Greenco (Pattinson, Kor) €63,000; Erasmus PerCOMM (Pattinson, Kor) €20,000; EU LLP LdV MOSE: An Innovative Training Model for Social Enterprises Professionals/Qualifications (Kor) € 60K; EU e-Infranet Measurement and management toolkit €10K (Pattinson) and project leader for development of educational programme (EISTER) – total funding €80K (€50K from e-Infranet partners, rest from individual participants); EU LLP Erasmus AUTHEW: Autism in Higher Education: Widening Access (Fabri) €75,791.

3) **Other UK funding:** EnergyWise assessment for Cisco £25,000; JANET UK To develop low energy portable wireless LAN £11,500; JISC (Greening ICT Programme): Energy Use of Thin Client Technologies £50,000; Heat and Light by Timetable £40, 000; Metering Data Centre Efficiency £50,000; Higher Education Academy: Sustainable Learning Objects £3,200; HEIF Mobile Technology Showcase £40,000 (all Pattinson); Yorkshire Forward (Innovation Voucher) Data Recovery (Ramachandran) £3,000;KTP: Development of Innovative Software Products Designed to Aid in the Application of Building Information Modelling (Dixon) £79,000; KTP: R & D leading to a software solution to support electronic design engineers' understanding of design requirements as part of their design process (Dixon) £57,609.

Infrastructure: In this environmental statement, research infrastructure encompasses assets, facilities (note this will be further discussed in the next sub-section) and services which support researchers to undertake excellent research. The enhanced research management/ administrative structure at both the University (Research and Enterprise Committee with the University Research Office), Faculty and School (the Research and Enterprise Working Group and School Research leader) levels provide excellent support to develop our research and enterprise community across the school (as well as Faculty), increase the number of research-active staff, facilitate the research of existing research-active staff and postgraduate students, promote and support bids and applications for external funding. An investment in our research infrastructure has allowed us to devote resources to more research activities, thus resulting in a healthy increase in research income (see above) and increased publications (see Section C). To facilitate further growth in research activity the Faculty has successfully established the following institutes: the NTI-DRC (discussed in Section c); the Leeds Sustainability Institute which integrates centres within the Faculty and setting up a programme of research through five clusters: People & Places; Infrastructure; Buildings and Environment; Business Practice; Energy; ICT (note: members of this cluster are also members of the NTI-DRC).

Facilities: Our University has invested in enhanced and quality assured IT research environment for increased research management and productivity. Symplectic is employed as a research management system which collates research activities across the University for easy maintenance and enhanced visibility in the World Wide Web. The Leeds Met Repository (Open Search) facilitates easy access to research active staff and students' publications while the "Find an Expert" facility helps researchers across and beyond the university to locate Leeds Met experts for collaborative research work. Leeds Met has subscribed and is promoting the use of the PIVOT database for identification of funding opportunities and also access to about 2 million profiles of scholars and researchers from around the world. The Leeds Met Library provides 24/7 library access to support research, teaching and learning and has more than 0.5 million journals and books (both e-copy and hardcopy). The state-of-the-art research facilities in our university are essential for the delivery of quality research and training programmes to support the university's strategic research priorities. Our technical facilities contain virtual reality systems for immersive 3D graphics, rendition and visualisation, and computer/specialist laboratories for developing software systems and technologies. (i) Nine dedicated computing labs running Oracle and Oracle Apex, with 24/7 access; (ii) Dual boot PC labs running Linux Red Hat and Window; (iii) Two cell phone towers connected to the Leeds Met mobile network; (iv) Two isolated network labs featuring an imaging system to create and configure your own operating system; a range of networking systems; and forensic analysis software; (v) Electronics Engineering Lab with network-on-chip and system-on-chip simulators to facilitate the investigation of energy consumption at the chip level; (vi) Private cloud to provide services across the two campuses and also be used as a platform for the

investigation of cloud-related research activities (e.g. QoS, SLAs, Architecture, green programming model and energy consumption in various components of the cloud)

e. Collaboration or contribution to the discipline or research base

Collaboration: Successful Funding: As a result of collaborative efforts with other faculties/departments, universities and/or organisations, our School has successfully secured funding from national funding agencies (HEA, EPSRC, KTP, JISC, etc…) and, EU funding agencies (Erasmus, LLP –LdV, TEMPUS). Collaborations relevant to the UoA are in the table below:

Research Area	Project	UoA Members	Collaborator/s
Green IT	HEA: Developing Learning Objects for Sustainability	Pattinson	Hull U.
	JANET (UK): Low Energy Portable Wireless Network	Pattinson	JANET (UK)
	EU Erasmus: PERCOMM	Pattinson, Kor	U. of Lorraine (France), Luleå U. of Tech.(Sweden), Lappeenranta U. of Tech. (Finland), 7 other Universities and 8 multinational companies
	EU Tempus: GREENCO	Pattinson, Kor	U. of Newcastle Upon Tyne, Institute of Information Science & Tech. (Italy), Zilina U. (Slovakia) ,U. of Ioannina (Greece)
	JISC Projects in Section d3)	Pattinson	University Estates and JISC
	EnergyWise	Pattinson	Cisco and Brunel U.
	PhD Project: Decision Modelling for Energy Efficiency	Pattinson, Kor	NHS Leeds
Intelligent Systems	EPSRC: D-Scent: Raising Challenges to Deception Attempts Using Data Scent Trails	Guest	Lancaster U, St. Andrews U., Nottingham U.
	EPSRC: Global View	Guest	Oxford U, Glasgow U, Durham U.
	EPSRC: Deployable Sensors for Concealed Gun Detection at Standoff Distances	Guest	Manchester Met U, Met Police
	Expert System for Diagnosis and Operations	Kor	Drax Power Station
Assistive Technologies and Software Engineering	KTPs	Dixon	Space Ltd (Europe), Farnell
	Mobile App to support patients in therapy	Dixon	NHS Trust
	EU Erasmus: Autism in Higher Education: Widening Access	Fabri	The Foundation of European Initiatives, UK; Kekus puisto Vocational College, Finland; Association of Parents and People with Autism in Burgos; Spain Technical U. Eindhoven, Netherlands; The Academy of Humanities & Economics in Lodz, Poland

Academic and Research Collaboration: Our School has forged a close academic and research collaboration with other universities via co-authoring of research papers, PhD co-supervision, cross fertilisation of ideas, and organisation of seminars/workshops/conferences. Collaboration on co-authoring has resulted in research papers on the following topics: neural networks and network management (Pattinson and London Met U); software engineering (Ramachandran, and Manchester Met U); neural network and image processing (Guest and Manchester Met U); Cloud Computing (Ramachandran and U of Derby); mechanisms for qualitative spatial reasoning (Kor and U of Leeds).

We have undertaken PhD co-supervision in collaboration with Danube U Krems, Austria, since 2005. In seminars/workshops/conferences: co-organising a parallel paper session (entitled "Designing Experiences for Facilitating Positive Behaviour Change") at HCI International 2013 (Fabri and U of Southern California, USA); co-chairing the Work-in-Progress paper category at the international BCS-HCI 2013 conference, Brunel U, London (Fabri); Green Computing Seminar (Pattinson, Kor, and U of Leeds); Advisory committee on Enterprise Information Systems Research Centre (Ramachandran and Thiagarajar College of Engineering, India).

Contribution to the Discipline or Research Base

- **Green IT:** Prof. Pattinson, as the Head of School, has been a pivotal driving force behind the vibrant research environment within the school. As a result of this, our School has actively conducted and published high quality applied and theoretical research work. Pattinson has been an active researcher investigating the performance of computer network software, as well as

performance and efficiency of network management systems. He has built a network management training simulator, which allowed trainee network managers to experience the situations likely to be faced by network managers in a controlled environment. This expertise in monitoring, measuring and managing systems is now being transferred to the area of sustainable (or "green") computing. There are two broad areas under this heading: 1) the exploration of the sustainability, efficiency and environmentally acceptable manufacture, operation and disposal of IT systems; 2) the use of IT systems to allow other aspects of human activity to be carried out in a less environmentally damaging way. The first area includes the efficiency of individual hardware and software units and of the combinations of these units into data centres and networks. The second includes the development and use of IT to manage other systems in a manner which minimises their overall environmental impact.

- **Cloud Computing:** Dr. Chang has developed and evaluated frameworks for the cloud computing environment (e.g. Cloud Computing Business Framework (CCBF), and Cloud Computing Adoption Framework (CCAF)) for Cloud design, deployment, migration and services. As part of CCAF, he has conducted a detailed case study on Cloud Bioinformatics which is designed and deployed based on Storage Area Network (SAN) technologies. Ramachandran has developed and evaluated best practice guidelines for Cloud Computing, SOA, SaaS, and Business as a Service paradigm. He has explored ways to apply software engineering principles in the development of secured software systems.

- **Avatar Based Innovative Training for EU Strategic Decision Makers:** Prof. Dastbaz's expertise is in the design and development of digital media systems. His main research work over the recent years has been focused on the use of emerging technologies in developing intelligent based learning and training and the development for strategic decision makers dealing with national emergencies in Europe. The 3.9M euro FP7 PANDORA project proposed by Dastbaz used emerging technologies to develop innovative VR training packages for strategic decision makers ("Gold Commanders") dealing with national emergencies. Over the last five years, Dastbaz has led or has been involved with research funded projects: (>5m euros worth of projects).

- **Knowledge Representation and Reasoning in Geographical Information System**s: Dr Kor has been conducting novel research relating to knowledge representation and reasoning in geographical information systems. She has developed the *Horizontal and Vertical Constraints Model* and an *Expressive Hybrid Model* for the reasoning of cardinal direction relations between regions. This entails formalising definitions for the following: atomic binary cardinal relations, whole and part cardinal relations, weak and expressive relations. She also introduces a formula which could compute the composition of cardinal direction relations for whole or part regions. Composition tables are used as part of the inference engine in the reasoning systems.

- **Effective User Interfaces and Artefacts to Foster Human Computer Interactions:** Dr Fabri's work focuses on effective user interfaces and artefacts to foster human computer interactions. He has actively conducted research on the representation and conveyance of emotions through facial expressions via avatars within a virtual environment followed by building an argument for the importance of an avatar in collaborative virtual environments based on psychological and sociological aspects of computer assisted collaborative work. Subsequently, this argument is then developed into a into a case for a hybrid avatar/agent model ("presence-in-absence model") which potentially facilitates the continuous representation of all users within the environment, even though the users themselves may not be directly active in the environment. Guest has been actively involved in security-related research. She has conducted high level research involving signal processing for identifying concealed weapons or explosives without having to search them (funded by EPSRC - EP/D079195/1), automatic marking of short free text answers (part funded by HEA). She has invented solutions for non-linear image registration, 3D surface matching, finding robust correspondences on 2 and 3D images, a method for parsing sentences for languages with varying degrees of word order flexibility, a new framework for semantics, and a new method for identifying keywords in text.

- **Functionality-Based Application Confinement (FBAC):** Dr Schreuders is active in computer security research that provides more usable application restrictions. He developed a novel security model called Functionality-Based Application Confinement (FBAC). This model provides application-oriented access control, based on flexible policy abstractions which represent the functionalities an application performs. The implementation is known as FBAC-LSM and is a Linux Security Module and associated tools. FBAC-LSM is available as free open source software.

- **Mobile Application Developments for Patients Therapy:** Dr Dixon has extensively applied software engineering tools/techniques/principles for software development across a range of architectures and platforms. Currently, he is collaborating with the NHS Trust to produce a mobile application that can be used with patients in therapy. This impacts both the ability of clinicians to better support their patients, while also allowing patients to record and monitor their own progress on a more regular basis.

Our school has exploited the use of a diverse range of mechanisms to contribute to the development of the Computer Science and Informatics research or discipline. They are through:

(i) **Over the last 5 years, the UoA has published 31 refereed journal articles and 55 refereed conference papers.**

(ii) **invited talks or online video debates on Green IT**

Pattinson - Green ICT Seminar organised by IET, http://conferences.theiet.org/green-ict/speakers/colin-pattinson/index.cfm;

UK Green IT Presentation at BCS West Yorkshire Branch and Nottingham & Derby Branch, http://www.bcs.org/content/conWebDoc/36821 & http://nottmderby.bcs.org/event-24 ;

 SustenIT Greening Science Computing, 26th May 2011 University of Bristol

"Green skills for the green economy" organised by BCS Green IT Specialist Group
http://www.bcs.org/content/conWebDoc/43817

(iii) **Co-Editor of Prestigious International Conference Proceedings and Keynote Speaker**

Dastbaz – Co-editor for the following: Proceedings of IEEE Information Visualisation Conference (Co-Editor) IV09 and IV10 (http://www.informatik.uni-trier.de/~ley/db/conf/iv/iv2010.html); Proceedings of IEEE's VIZ 2009

(http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5230737), Visualisation in Built and Rural Environments - BioMedical Visualization – Geometric Modeling and Imaging; Proceedings of IEEE's Visualisation conference,VIZ 2008

(http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4568656) and Keynote (afternoon plenary) EU's Security Conference (organised by Ministry of French Ministry of Defence – Paris – Pandora: A New approach in Training for National Emergencies.

(iv) **Committee/Advisory Membership** :

(a)**Pattinson** - BCS Green IT SG Committee Member promoting awareness of Green ICT and Greening by ICT http://www.bcs.org/category/10548; Advisory member of the EU-funded 'e-Infranet' project which has effects on EU Green Initiatives, and policies; http://e-infranet.eu/wp-content/uploads/2011/09/D-Proceedings-of-Green-ICT-Brainstorming-Workshop-Bristol-26-27-May-2011_FINAL.pdf ;

(b). **Kor** – journal, conference and technical committee membership, including Technical Committee Member for Cyberlaws 2010-2013 & CloudCom 2010-2012 (http://www.iaria.org/conferences2013/ComCYBERLAWS13.html, http://grid.chu.edu.tw/cloudcom2012/program_ommittee.html; ICT-EurAsia 2013 (http://www.ifs.tuwien.ac.at/ict-eurasia/members);DEXA 2012-2013 http://www.dexa.org/egovis%26edem2013); Editorial Advisory Board Member for Int. J. on Advances in Intelligent Systems & Int. J. on Advances in Security, http://www.iariajournals.org/security/ and http://www.iariajournals.org/intelligent_systems/

(c). **Ramachandran** - Confenis 2012 http://www.confenis2012.be/committees/program-committee , ICSEA 2013 http://www.iaria.org/conferences2013/ComICSEA13.html ,ICIW 2013 & ICAdC 2012 http://www.iaria.org/conferences2013/ComICIW13.html , http://icadc.msrit.edu/committee.php ; Int. J. of Secure Software Engineering, http://www.igi-global.com/journal/international-journal-secure-software-engineering/1159 ; Int. J. on Advances in Software http://www.iariajournals.org/software/ ;

(d). **Fabri -** HCI 2013 http://hci2013.bcs.org/committee.html; Co-organiser of Parallel Session on Designing for Positive Behaviour Change at HCI 2013, http://www.hcii2013.org/thursday;

(e). **Guest** - RaeL-Revista Electrónica de Lingüística Aplicada

(v) **Review: Note that committee members of conferences and journals are also reviewers.**

(a). Kor – High quality Automated Software Engineering J., J.Computer Sciences and Applications (http://www.sciepub.com/journal/JCSA/Reviewers);(b).**Guest** – IEEE Journals, BCS-AI conference;

(c). **Fabri** - End-of-Award Evaluator for ESRC Funded Project need evidence,Journal of Integrated Computer-Aided Engineering; Int. J. of Gerontechnology -Technology for the Ageing Society.