

<b>Institution: Coventry University</b>
<b>Unit of Assessment: 34</b>
<p><b>a. Context</b></p> <p>Impact is delivered in three ways across the four research groups – firstly as an outcome of consultancy or commercial projects (applied research), secondly through the continuous effect of long-term research (strategic innovation), and thirdly through research-informed public practice (performance/exhibition). The main types of impact are based on research which:</p> <ul style="list-style-type: none"> <li>• Delivers <b>Economic Benefit</b> to commercial organisations located primarily in the manufacturing sector and related consumer cultures.</li> <li>• Contributes to <b>Creating Cultural Life</b> within society by addressing audiences as both participants and consumers of the arts.</li> <li>• Informs <b>Civil Society</b> by challenging traditional media and developing new models and modes of delivery through disruptive media.</li> <li>• Contributes to the <b>Development of Public Services</b> across the health/wellbeing sector.</li> </ul> <p><b>Beneficiaries</b> include the general public, audiences for cultural and creative works, policy makers, educators, creative practitioners, museum and other curators, employees of public bodies and commercial organisations, NHS staff and patients.</p>
<p><b>b. Approach to impact</b></p> <p>The Unit has adopted five distinct approaches to impact:</p> <p><b>(1) Co-design with end-users:</b> to test and evaluate user requirements leading to enhanced product and user experience</p> <p>Early stage engagement of users in research design and design development is a characteristic of the Unit's approach (see <b>case study 34.1</b>). For example, the Hexagon Spindle Model developed by <b>Woodcock (AW3)</b> evolved directly from the needs of pupils to inform the design of learning spaces within the Building Schools for the Future Programme. The FP7 Metpex project (16 partners across the EU directed by <b>Woodcock</b>) brings together users and government organisations to represent public and private means of transport through to individual forms such as walking, bicycling and car sharing. The size and scale of the partnership reflects the need for European citizens to share views on their transport experience and on the barriers to improving access to public transport, as part of an integrated mobility framework. Co-design impact extends to <b>Gehlhaar's</b> interdisciplinary research as technical director of the British Paraorchestra, resulting in new instrument interfaces, global audiences and a major television documentary (<a href="http://tinyurl.com/pxw2pfh">http://tinyurl.com/pxw2pfh</a>).</p> <p><b>(2) Identification and deliberate targeting of hard-to-reach groups:</b> often marginalised or ignored, as the basis for applied research</p> <p>This approach is evident through <b>Moody's (LMo1)</b> EPSRC study of haptic feedback techniques to design and develop a virtual knee surgery training programme for junior surgeons, and the NIHR i4i interdisciplinary study (<b>LMo2</b>) evaluating instances of wheelchair instability (affecting 144,000 users each year in the UK). It also raises awareness and understanding of disability and general health and wellbeing. These include <b>Whatley's (SW3)</b> critical exploration of cinematic and filmic techniques that effectively erase disability and <b>Habron's</b> experimental music composition focused on raising the quality of life for people with dementia with the Manchester Camerata. The impact of this approach is perhaps most evident in <b>Shippen's (JS1,2)</b> biomechanical analysis through electrical stimulation of paraplegics' leg muscles while rowing, and the analysis of bone loading thresholds of osteoporosis sufferers. These studies have resulted in the optimisation of loading to produce forces sufficiently large to generate bone growth and bone mineral density whilst minimising any risk of further fracture or injury.</p> <p><b>(3) Development of simulation tools:</b> to improve efficiency, safety and economic benefit through early stage investment appraisal</p> <p>This approach has led to innovative use of biomechanics for kinematic analysis of human movement and the calculation of ground reaction forces in the absence of traditional forceplate techniques. For example, <b>Shippen (JS3)</b> developed software which has been requested by over 30 research institutions worldwide following a web-based seminar organised by Mathworks Inc with</p>

over 440 delegates. **Konstantopoulos (PK1)** has used simulation tools to inform policy on road safety. His work on drivers' eye movements in day, night and rain has improved automotive manufacturers understanding of cockpit design and control system displays. He has also demonstrated empirically the vulnerabilities of novice and experienced motorcycle riders over advanced trained riders. **Stedmon's (AS1)** complementary research for the Institute for Advanced Motorists (IAM) on motorcycle rider behaviour has directly resulted in a briefing to the Australian Parliament of Victoria's Official Inquiry into Motorcycle Safety.

**(4) Leadership of large scale international consortia involving multidisciplinary teams:** to understand and solve complex social and technological issues whilst embracing stakeholder and policy interests e.g. academia, industry and non-governmental organisations

The Unit has led large pan-European projects (see **Woodcock** above) that draw together multidisciplinary expertise to understand and solve complex social, cultural and technological problems. **Whatley** is Project Lead for a FP7 ICT-PSP-CIP, a 29-partner €4million 3-year Best Practice Network entitled Europeana Space, which focuses on the use and reuse for purposes of economic growth of Europe's digital cultural resources. Further, RICHES (Renewal, Innovation and Change: Heritage and European Society), a FP7 SSH drawing on the expertise of **Woolley**, is a 10-partner €2.4million project, also with a 3-year duration, on the impact of digital technologies on cultural heritage. These current projects demonstrate the Unit's commitment to research projects that have a significant international policy dimension through research informed policy briefings, roadmaps, foresight work, guidelines and publications. All of which are intended to shape future EU policy concerning digital culture.

**(5) Finding new ways to engage with creative and cultural practice:** novel techniques, media and technologies that facilitate and mediate between originators/artists and audiences/viewers

**Packer's** 'Reliable Witness' was the Birmingham Book Festival's first ever interactive storytelling installation (<http://www.reliablewitness.co.uk>). A commissioned immersive, interactive transmedia installation funded by ACE (£28k) and **Saxon's (GS1)** 'Light Drawings' explore the impact that tools and materials have on the artist, artwork and audience perception in real time. They each demonstrate the Unit's continuing concern with the changing nature of the relationship between the artist/writer and viewer/audience. Through public workshops and installations at the Herbert Art Gallery, **Saxon** developed camera-less film workshops for 11-16 year-old students from four Birmingham schools, part of VIVID's programme of events for the Big Draw in Birmingham. Over 1000 people saw the VIVID show. **Devane's (JD1)** work 'The Uncertain Time' (runner-up in the 2013 BP Portrait Award 2013) continues this theme. Exhibited at the National Portrait Gallery, Aberdeen Art Gallery and Wolverhampton Art Gallery (until June 2014), it invites the viewer to consider the transformative nature and vulnerability of adolescence through the medium of portraiture. The work has reached an audience of over a quarter of a million people. **Williams' (TW1)** collaboration with New York cellist Madeleine Shapiro through 'DART', illustrates the reach of the 'INTIME' experimental music research group to engage new audiences through performance, composition and technology. Exploring impactful themes as diverse as health, cultural policy, and music therapy, 'DART' has led to a series of performances by Madeleine Shapiro (including CUNY New York). Shortlisted for the British Composer Awards 2013 (Sonic Art), public interest in **William's** work has led to a commercial CD, to be released in early 2014.

This approach extends to **Nesi's (HN1)** corpus of language through the British Council International 'Learn English' website which has established a new classification system for university student writing genres (<http://tinyurl.com/nqa7855>). The Unit has extensive expertise in digitisation and user-centred approaches to the design of archives and collections. For example, **Woolley's** research contributed to a JISC project (£750k) to create a digital repository of BT's physical archive, in collaboration with the National Archive. This work has had an important impact on the UK's cultural heritage, by making the archive accessible and meaningful, with in-depth case studies, profiles and contextual documentation, available online to the public (<http://www.digitalarchives.bt.com/web/arena>).

Approaches to impact are also supported in the following ways:

- **Tracking the resulting impact:** is increasingly embedded in the Unit approach. It is routine to analyse visitor figures, obtain press/media coverage, use Google analytics and Brandwatch to track social media activity. For example, recording visitor numbers to the Lanchester Gallery;

## Impact template (REF3a)

monitoring visits to the online BT Digital Archive website and Siobhan Davies RePlay resource.

- **Support to enable staff to achieve impact:** includes encouraging researchers to engage in innovative commercial projects which require academic research aligned with practice. Examples include spinning-out companies (e.g. automotive production assembly through Microcab Ltd) and seconding staff to support the re ESRC-DFID Poverty Alleviation Call 2011, 'Broadcast Media, ICT-generated Public Opinion and Political Accountability in Africa' (Mudhai).
- **Supporting engagement in collaborative networks:** with major international non-academic institutions. For example, **Woolley** is advisor to the Nordic Network for Research on Communicative Product Design, [www.norcode.no](http://www.norcode.no). The sharing of good practice from AHRC Knowledge Exchange Hubs with companies is supported by **Roworth-Stokes'** role on the Oversight Development Group and as 'critical friend' of the Creative Exchange, Lancaster, [www.thecreativeexchange.org](http://www.thecreativeexchange.org).

### c. Strategy and plans

The Unit's strategy and targeted approach has been supported by the University's HEIF5-funded Business Development group. As one of the UK's most successful university-industry liaison departments (Coventry is one of only 23 English HEIs receive maximum HEIF5 funding), it interacts each year with over 9000 SMEs and over 500 larger national and multinational enterprises, many of which are in sectors of direct relevance to the Unit. To build upon our successful approach to impact, as described in section b, the Unit will:

- Identify new opportunities for collaboration and generate impact by disseminating research to a wider audience. To this end, all researchers will be offered media training, and where appropriate will be given editorial support to prepare publications for professional and practitioner-focussed publications. The Unit will increase the range of research disseminated via social media with the help of its social media editor.
- Build stronger links with practitioner networks, using a) the University's Business Development group to support the Unit in engaging with networks in industry, particularly in user-centred design, transport and mobility, and b) use senior academics to mentor and support mid- and early-career researchers to build links in performance, media and learning, and visual arts

To ensure a more efficient identification of impact, the Unit will fully implement the University's JISC-funded programme 'Embedding Research in Coventry' (ERIC). ERIC is a rigorous methodology and set of tools for defining, collecting, evaluating and recording impact. This will enable researchers to identify systematically the potential and actual impacts of their research.

### d. Relationship to case studies

#### Case Studies that exemplify the approach to achieving impact:

- **Siobhan Davies RePlay** (exemplifies b.5) focuses on the development of the UK's first digital dance archive and illustrates the Unit's record of widely published archival content within globally accessible and innovative online formats. The project's impact has been characterised by close engagement with artists, publishers and cultural organisations.
- **Microcab** (exemplifies b.1, b.3 and b.4) demonstrates the longevity of design-driven, core research initiated over a decade ago with periodic vehicular outputs (including fully-fledged, manufactured and tested road vehicles). Microcab continues to demonstrate impact e.g. EU funded SWARM project for a European 'Hydrogen Superhighway' 2013.
- **Health Design** (exemplifies b.1 and b.2) demonstrates a model that grew to address important societal needs, thereby impacting a wide range of recipients, in this case hospitals, patients, medical resource producers, the disabled and the elderly. This culminated in the creation of the Health Design and Technology Institute (2009), as a primary impact enabler in fusing interdisciplinary research with business engagement.
- **Impact of Open Access** (exemplifies b.5) explores the research on publishing and business models associated with the exploitation of academic research. A significant dimension of the impact has been its influence on the methods, ideas and ethics of the publishing profession and the public policy debate. It also demonstrates impact associated with pedagogy, with original newly accessible forms of mass-communication, and how underpinning scholarly research can be disseminated digitally at both content and systems level.