Impact case study (REF3b)

Institution: University of Dundee

Unit of Assessment: 34: Art and Design: History, Practice and Theory

Title of case study: Making the Digital Economy Physical

1. Summary of the impact (indicative maximum 100 words)
Research at the University of Dundee providing original insights and new directions in the way that internet technologies and data can be embedded in the real world through being given physical forms has lead to impacts that include:

- Contribution to changes in the global organization (Mozilla), its perspective of the internet;
- Changes in the way Open NASA approaches open data;
- Contribution to the V&A's approach to the exhibition of digital work exhibition development at the V&A;
- Product development within a UK Design Industry SME.

2. Underpinning research (indicative maximum 500 words)

The research was undertaken under the leadership of Dr Jon Rogers through the Product Research Studio, the research team consists of:

> Michael Shorter Research Assistant (Funded through RCUK Digital Economy, BESPOKE, 2009-2011)
> Tom Metcalfe Research Assistant (Funded through EPSRC, Interactive Newsprint, 2011-2013)

This research team developed a series of strategic research partnerships using a 'designer-maker' model to establish a research field based on making the digital physical. This community of researchers developed an understanding of how to integrate technology into individuals' lives in a meaningful way [REF1][REF2]. Making the digital physical enables real world engagement with the silent world of data and digital information, building upon open frameworks, to support public knowledge and understanding as well as creating the opportunity for commercial exploitation of IP.

Specific research undertaken in Dundee (April 2009-September 2011)[REF7], centred on exploring the development and application of the new method of using citizen journalists to undertake 'Insight Journalism' using it as a transformative tool for integrating digital technology and knowhow into communities. In 2011, this led to Marshall, J. and Rogers, J [REF3] describing how Physical Apps are constructed to enable a visual representation connecting the internet to the physical world. This exposed that access to tailor made physical objects significantly enhances engagement with the digital economy.

In 2012, Rogers described [REF4] that connecting paper to the internet provides, for the first-time, a step-change in the way metrics are generated for distribution and access to news content. This core insight arose from an EPSRC Research 'In The Wild Project' (£450,000, July 2011-April 2013) Interactive Newsprint [REF9]. The research at Dundee focussed on the integration of printed electronics and the design of bespoke demonstrators of the world's first paper-based applications that connect to the internet. The core of this activity took place between 2011 and 2013 [REF5][REF6].

3. References to the research

Publications
[REF1] Rogers, J., Thomas, P., Shorter, T. and Caccavale, E. (2010) *Apple Karts*, 14th to 16th May, Curated by Stefeno Mitri , 'Il Compasso di Latta', held at the Triennale Design Museum, Milan, Italy

[REF2] Marshall, J., Rogers, J., Blum-Ross, A., Mills, J., Egglestone, P., Frohlich, D., and Taylor, N. (2011), *Insight Journalism For Community Engagement*, 64 page large format (Berliner) catalogue to support Bespoke showcase a V&A (Rogers and Marshall (2011))

[REF3] Marshall, J. and Rogers, J (2011) *Bespoke A Community Centred Approach To Design*, Victoria and Albert Museum as part of London Design Festival, 15.09.11 to 23.09.11, curated by Irini Papadimitriou for Digital Weekend.

[REF4] Rogers, J. (2012), Interactive Newsprint LEP, 4 Cromwell Place, Curated by Jane Withers, for Brompton Design District as part of, London Design Festival, 15.09.12 to 21.09.12

[REF5] Taylor, N., Marshall, J., Blum-Ross, A., Mills, J., Rogers, J., Egglestone, P., Frohlich, D.M., Wright, P. and Olivier, P. (2012). Viewpoint: Empowering Communities with Situated Voting Devices. In *Proc. CHI 2012*, ACM, 1361–1370 (Rogers REF2014 Output 2)

[REF6] Dixon, D., Rogers, J. and Egglestone, P. (2013), *Between Worlds:* Report For Nesta, online http://www.nesta.org.uk/library/documents/Academic_report_Punchdrunk.pdf Accessed 29th April 2013.

Research Grants awarded in collaboration:
[REF7] Rogers Co-I, Bespoke, RCUK Digital Economy award, £1.1m (EPSRC Ref: EP/H007296/1) 2009-2011. Professor David Frohlich (P.I. University of Surrey); Jon Rogers (C.I.); Paul Egglestone, (C.I. University of Central Lancaster); Justin Marshall, (C.I., Falmouth University); Professor Patrick Olivier (C.I. University of Newcastle).

[REF8] Rogers, J. Co-I, TOTeM, RCUK Digital Economy award, £1.4m (EPSRC Ref: EP/H007318/1) 2009-2012

[REF9] Rogers, R. Co-I, Interactive Newspaper, EPSRC Research In The Wild award, £400K (EP/I032142/1) 2011-2013. Paul Egglestone, (P.I. University of Central Lancaster); Professor David Frohlich (C.I. University of Surrey)

[REF10] Rogers, J. Co-I, Liminal Ethnography and Insight Journalism, 2011-2012 Nesta/AHRC, Co-I Digital R&D for Cultural Arts award, £40k

[REF11] Rogers, J. PI Make Some More Noise, Nesta/AHRC Digital R&D for Cultural Arts award, £105K. 2013-2014

Industry funded PhDs:
Rogers, J. (PI) and Speed, C. *Are We Nearly There Yet? ,* Microsoft Research and Dorothy Hodgkin Postgraduate Award*,* £90,000, 2010-2013
Rogers, J. (PI), *PaperApps,* EPSRC Doctoral Training Award with Novalia Ltd., £65,000, 2011-2014
Rogers, J. (PI), *Community Objects,* NCR (industry PhD)*,* £22,000, 2008-2013 (Part time PhD)

4. Details of the impact

1. Changing how Mozilla think about the Internet: [1][1a][1b]

Rogers' research has impacted on the Mozilla Foundation in the development of a new core strategy to include physically made things as well as software. This created a change in audience reach and depth, evidenced through "*Making The Web Physical"* at the Mozilla Festival 2013. A further impact has been the re-connecting of Mozilla Japan, leading to new projects and an alignment in international programmes. Rogers' RCUK funded Bespoke and Interactive Newsprint projects led to Mozilla Foundation contacting Rogers in 2011. Rogers delivered workshops, hack-events and exhibitions with Mozilla Foundation, from May 2011, including their largest public facing event, the *Mozilla Festival*, with 1,000 participants from over 40 countries. Period of Impact: 2011-2013

"*Outcomes of this include a core strategy to convene people who physically make things to people*

who code things. And in the case of our open news program, we are looking closer at news beyond the screen and revisiting the role of paper and physical objects. Dr. Rogers' collaboration with our partner organization, Mozilla Japan, helped rekindle our own relationship with our colleagues, by discovering new projects we can work on together and helping to align our programs." Global Community Strategist, Mozilla Foundation.

2. Changing the way NASA approaches open data: [2][2a][2b][2c]

Rogers contributed to the Open NASA programme building a new form of collaboration, the '*Space Apps Challenge'*, which lead to 9,000 people worldwide in over 80 countries, and the International Space Station, collaboratively working on open challenges. Rogers presented with NASA at the *'South By South West Festival'*, Austin, USA, to an audience of 30,621 from 57 countries. Drawn from *Physical App* research on the Bespoke project, Rogers set a series of challenges calling for this worldwide community to build physical responses to open data. This resulted in a large-scale transformation of the way Open NASA approached innovation. Transforming a community centred on screen-based data interactions with scientists and engineers, to a community that included artists, designers and craft practitioners. Rogers' work has lead to a shift in the culture of collaboration and provided leadership in new directions for NASA's Open Data collaborations.
Period of Impact: 2012-2013

"*Rogers directly challenged 9,000 developers, designers and entrepreneurs worldwide to build physical applications using open data with the purpose of improving life on Earth and in space. These challenges were based on his research in making the internet and data physical and resulted not only in the development of 125 valuable applications but also in shifting the way the team I lead at NASA approaches open innovation."* Center Operations Directorate, National Aeronautics and Space Administration**.**

3. Developing the V&A's approach to the exhibition of digital work by showcasing collaborative making as well as finished product: [3]

Rogers' work with the V&A started with the exhibition of the *Bespoke* project in September 2011. Collaborating with the curator Irini Papadimitriou, a number of events were developed under the banners of *Digital Futures* and *Digital Weekend*, which attracted over 16,000 visitors to the world's first *Climate Change and Fashion Hackathon* in 2013. This has directly led to the Met Office and the V&A working collaboratively on future research and thinking that explores the cultural relevance of climate change. This is the first time since the two institutions were formed in the 1900s that these institutions have worked together.
Period of Impact: 2011-2013.

"Rogers' work with the V&A started with the showcase of the Bespoke project in September 2011. After this successful event, we started our collaboration and a number of events were developed under the banners of Digital Futures and Digital Design Weekend, which attracted over 16,000 visitors to the world's first Climate Change and Fashion Hackathon in 2013. The events explored digital media and scientific knowledge at the interface between art, science and design. This has directly lead to the Met Office and the V&A working collaboratively on future research and thinking that explores the cultural relevance of climate change. This is the first time since the two institutions were formed in the 1900s that these institutions have worked together." Digital Programmes Manager, Victoria and Albert Museum.

4. Product development within an SME, Uniform: [4][4a][4b][4c]
Rogers research influenced the UK design agency, Uniform to develop new products related to making the digital economy physical. The company developed printed electronics for new forms of printed communication resulting in Uniform being nominated for the Design Museum's *Design Of The Year 2013 Award* for the work on Postcard Player. This increased their commercial reach by attracting new clients.
Period of impact: 2011-2013.

"Rogers' research exploring the viability of printed electronics for new forms of printed communication underpinned the development of Uniform's Listening Post and Postcard Player prototypes which have been exhibited in: The Victoria and Albert Museum, London; SXSW, Austin Texas; Future Everything, Manchester; and the London Design Festival. Notably, the Postcard Player was nominated for the Design Museum's Design Of The Year 2013 Award, a peer reviewed award recognising the world's best design. As a result of projects completed to date the company has won and retained a number of key accounts, including Bacardi, The FA and Glen Dimplex and garnered international press attention and critical acclaim from journals such as Wired, Creative Review, The Wall Street Journal and The BBC.", Creative Director, Uniform.

5. Sources to corroborate the impact

ORGANIZATION CASE STUDY:
How Mozilla (a non-profit organization that promotes openness, innovation and participation on the internet) perceives the internet

[1] Factual Statement: Global Events Strategist, Mozilla Foundation

[1a] http://connecting.pearson.com/ideas/web-to-real-world

[1b] http://mozillafestival.org/

INTERNATIONAL
Changing the way NASA approach open data

[2] Factual Statement: Center Operations Directorate, National Aeronautics and Space Administration, Johnson Space Center.

[2a] http://open.nasa.gov/blog/2013/03/06/turning-space-data-into-physical-apps

[2b] http://open.nasa.gov/blog/2013/01/28/space-meetup-at-sxsw/

[2c] http://schedule.sxsw.com/2013/events/event_IAP5183

AN INTERNATIONAL MUSEUM
Transforming V&A's digital strategy.

[3] Factual statement: Digital Programmes Manager, Victoria and Albert Museum.

[3a] http://www.vam.ac.uk/whatson/event/2565/digital-design-weekend-3870/

UK DESIGN INDUSTRY
How the design agency Uniform shifted towards the digital economy.

[4] Factual Statement: Futures Director & Founder, Uniform

[4a] Rogers, J., Thomas, P., Shorter, S. and Metcalfe, S., (2012), Fieldguide: An occasional collective and sometimes journal for people interested in design, technology and society and the intersections where they overlap, online http://findplaymake.com

[4b] http://www.digitalartsonline.co.uk/features/hacking-maker/how-uniform-created-device-that-plays-music-printed-on-postcards/

[4c] http://schedule.sxsw.com/2012/events/event_IAP11099