ABSTRACT
This paper reflects on the innovative research methods of the Digital Economy funded TOTeM (Tales of Things and electronic Memory) project and its engagement with two primary sectors: high street charity retail, and museums. The interdisciplinary three-year project is concerned with the study of applications of personal and social memories in the emerging culture of the Internet of Things. In 2010 TOTeM launched its public tagging service 'Tales of Things' which is based on the use of two-dimensional barcodes (QR Codes) and RFID (Radio Frequency Identification) technology to enable the capturing and sharing of stories and memories and linking of them to any object via read and writable tags. Since the launch of the web platform in 2010 (www.talesofthings.com) and its accompanying Android and iPhone applications, the technology has found a home through the disruption of two distinct sectors. The first was developed through a series of iterations with the UK based charity Oxfam in which Tales of Things technology was deployed in shops across the UK that used the ‘write back’ feature to allow donors of goods to leave stories on donated items. The second was across a series of museums including the National Museums of Scotland, Anstruther Fisheries Museum and the UCL Grant Museum in which the technology was used to explore methods of user engagement and the transmission of knowledge between the source, the curator and the museum visitor. This paper will briefly describe the interventions into the two sectors in order to identify implications of the research for the UK Digital Economy.

Keywords
Internet of Things, Oxfam, Museums, Digital Humanities, Technology.

1. INTRODUCTION
The use of traditional barcodes in retail environments is long established and forms an integral part of stock control and payment processes. More recently the deployment of RFID tags is beginning to supersede the ‘dumb’ barcode for stock inventory - RFID offering the potential to write as well as read data. The deployment of smart tags in this manner loosely falls under the umbrella of the ‘Internet of Things’ – a term attributed to the Auto-ID research group at MIT in 1999 denoting the idea that in future every object will have an online presence. The specific reference to 'things' refers to the concept that every new object manufactured will part of this extended Internet, because they will have been tagged and indexed by the manufacturer during production [1]. It is also envisaged that consumers will have the ability to 'read' the tags through the use of mobile 'readers' and use the information connected to the object, to inform their purchase, use and disposal of an object. The Tales of Things and Electronic Memory (TOTeM) project – a multidisciplinary collaboration between five UK academic institutions – was set up to explore a disruption within this technical and cultural context: develop a system that allows somebody to 'write back' to a thing [2]. The primary focus of what might be written back to a thing for TOTeM were object memories in scenarios where everyday objects are viewed and exchanged [3].

2. OXFAM: DISRUPTING THE ECONOMICS OF SECOND HAND RETAIL
One area of particular interest to the team was the second-hand retail market, typified by traditional charity retail outlets, car boot sales and online market places such as
eBay. We wanted to investigate how shopping experiences are mediated when provenance information about an object are provided via a digital object memory that is accessible via QR Codes and RFID tags. A series of three interventions, leading toward a regional roll-out, began with the RememberMe arts project at the Whitworth Park branch of Oxfam, Manchester during The Future Everything festival in 2010. For the first of two weeks a research associate asked people that dropped things off to tell a brief story about the object into a microphone, these audio tracks were then associated with Tales of Things Q and RFID tags. One week later the donated items and their tags were placed amongst stock items on the Oxfam shop shelves and tags allowed shoppers to listen to the stories through loud speakers or more discretely through their smart phone [4]. Whilst doing the quarterly accounts the regional manager to the North West found a 52% spike in sales. Intrigued by this, the team were invited by Oxfam UK to develop a similar experience for the high profile Oxfam Curiosity Shop that appeared in Selfridges, Oxford Street, London in January 2011 and sold items donated from celebrities. The annual event generates hundreds of thousands of pounds simply due to the celebrity related provenance of each item. Previously tagged with luggage labels indicating the famous donor, TOTeM technology allowed Oxfam to attach QR codes and in special cases RFID tags, which launched video stories from the celebrities on to large LCD panels. Gaining wide press attention, the Curiosity Shop intervention galvanised the belief that personal stories transformed the value of a second hand item. The third iteration was to develop an Oxfam product that was powered by TOTeM technology but was tailored for high street use in their 650 high street shops. Launched under the Oxfam brand as 'Shelflife', the TOTeM team worked with Oxfam user experience and web designers to develop a free iPhone app and an extension to the www.oxfam.org.uk website. For twelve weeks from February 2012 ten shops in the Manchester area carried out a full pilot with Shelflife branded tags, points of sale literature, posters and shop manager / volunteer support.

3. MUSEUMS: DISRUPTING CURATORIAL / PUBLIC CULTURES
An equally rich arena in which material artefacts are a primary currency is that of museums. A museum’s collection represents its focus and expertise, and the way that it articulates the connections between the artefacts that constitute its collection characterises its identity. Consequently, and in every sense of the term, a museum is the sum of its parts. Aware of the importance of ‘things’ in the museum context, the TOTeM team established projects with three museums across the UK to explore different potentials for our technology. The National Museums Scotland, whose flagship museum is based in the centre of Edinburgh, were keen to disrupt the traditional power relationship between curator and public that has historically only flowed one way: read only with the curator as author to public as reader. TOTeM were invited to tag over 80 objects in the permanent exhibition: Scotland, a Changing Nation. A series of workshops and events also explored how the ‘write-back’ feature of the technology allowed the memories of audiences that described how they remembered using, playing and sharing objects become part of the patina of an object within the museum’s collection. The Anstruther Fisheries Museum became the focus of a project that drew connections between the fishing community in North East Scotland and the experiences of a native community in and around Trout Lake in the Northwest Territories, Canada. Using TOTeM technology, artefacts became conduits through which personal memories could be exchanged and differences between cultures explored. The reading and writing capacity of the tagging platform provided a framework for communication and learning between both very disparate communities. The Grant Museum at UCL is renowned for experimenting with models of public engagement and through a close relationship with the Digital Humanities Centre developed an innovative disruption to their object collection: let the artefacts in the museum ask the visitors questions. Powered by underlying TOTeM technology the iPad application QRator was developed to provoke visitor engagement through asking questions. Fracturing the ‘fourth wall’ that remains in place between the audience and so many artefacts that remain behind glass, QRator opened up a conversation between visitor and object / curator in such a way that it began to suggest a context in which objects may gain a form of agency [5].

4. CONCLUSION
The simple disruption of allowing people to leave a story on a personal object can be identified as part of the paradigm of social media but one that extends both the discipline and the public experience to include material artefacts. Writing back to the Internet to inform social networking is a characteristic of what has been described as Web 2.0, the extension of this principle to encompass physical objects through the development of TOTeM technology and its interventions into two sectors in which materials ‘things’ constitute economic and cultural currency, has presented a critical disruption of what has been described as the next network paradigm: The Internet of Things. Coined as a descriptor for the type of framework that will emerge for tracking physical items, the Internet of Things has quickly become a moniker to describe an emerging social, cultural and technical system that is far beyond a logistical platform that is controlled by the producers of material goods. Projects such as TOTeM that invert the power to write on to things and who can generate tags has offered a series of interventions that demonstrate how disruptive innovation can challenge concepts of value and exchange within economic and cultural domains.
5. FIGURES

Figure 1. Scanning a tagged item with the Oxfam Shelflife iPhone app at the Oxfam Emporium, Manchester.

Figure 2. QRator software installed on to iPads at the Grant Museum, UCL.

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7. REFERENCES


