Institution: University of Brighton		
Unit of Assessment: D34 Communication, Cultural and Media studies, Library and Information Management		
Title of case study: Transforming the digital economy by leveraging the value of data		
Period when the underpinning research was undertaken: 2013 – 2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	**Role(s) (e.g. job title):**	**Period(s) employed by submitting HEI:**
Karen Cham	Professor in Digital Transformation Design	2016 – to date
Jonathan Sapsed	Principal Research Fellow (2006 – 2016)	1999 – 2016
Gillian Youngs	Professor of Digital Economy	2012 – 2016
Period when the claimed impact occurred: 2014 – 2020		
Is this case study continued from a case study submitted in 2014? N		

1. Summary of the impact

University of Brighton (UoB) research through the Fuse cluster of collaborative research projects, including its innovation ecosystem generator *FuseBox24*, provided evidence that contributed to leveraging public investment of over GBP28,000,000 to support innovation and growth in the Creative, Digital and IT (CDIT) sector in the Sussex region. Joint research programmes at UoB with business partner Wired Sussex have supported 150 micro, SME and larger companies to develop and deliver new products, services and experiences, resulting in 43 new business collaborations. Access to the only business-led 5G testbed and 5G Accelerator programme resulted in first to market advantages for 20 businesses enabling each to develop and showcase new products and services to a proof-of-concept phase. This research has become integral to the 5G roll-out and the UK's strategic development of the digital and immersive economy.

2. Underpinning research

The *Brighton Fuse* project (2011 – 2015), led by Sapsed at the UoB, and funded by the AHRC, provided empirical evidence of arts and humanities as drivers of innovation and economic growth in the Creative, Digital and IT (CDIT) sector. In collaboration with Wired Sussex, the University of Sussex, and the National Centre for Universities and Business (NCUB), the research mapped Brighton's cluster of CDIT businesses. The first *Fuse* report, based on a survey of 500 businesses, evidenced that 65% of the Brighton sector was fused or 'superfused', in that they combine creative, digital and business skills, overcoming traditional barriers between creative arts and ICT. The project found that one in three business owners who started a creative digital business had a background in the arts and humanities [reference 3.1]. This combination of skills evidenced growth figures almost three times as fast as businesses based on specialist skills in only one area, and ten times faster than the British economy overall. The research findings called for recognition of 'fusing' and 'superfusing' of creativity and technology as a new type of competitive 'edge' for business linked to innovation in management and production. The research associated this 'edge' with frequent and directed networking, a collaborative approach to working, a diffusion of expertise and an emphasis on creativity and innovation in business activities [3.1].

The follow-on *FuseBox24*, led by Professor Gillian Youngs and Wired Sussex (2014), was designed as a collaborative action research project supporting innovators and early-stage start-ups through a radical experimental 24-week programme. This was a people-centred programme based at the FuseBox, an incubator space in Brighton established by Wired Sussex as a result of the *Fuse* research. The research element led by Youngs, built upon and developed the *Fuse* research to explore how businesses with arts, humanities and design skills drive innovation and business creation by deploying collaborative flexible frameworks for innovation. The focus of this exploratory research was the conditions required to accelerate innovation in this sector. The findings showed that i) CDIT innovators traded in ideas and content based on an ethos of open

research and collaborative practices, ii) as micro businesses or sole traders they needed shared spaces to collaborate, and iii) they needed support, capability and new tools to maximise innovation. Overall, the findings showed that arts, humanities and design approaches and skills are effective in meeting these needs. *FuseBox24* piloted a research-innovation model that drew iteratively on participant feedback, and testing a 'toolbox' of techniques that combined creative arts, technology and business approaches to innovation in a new fused way [3.2].

In 2015 the *Fuse* research and the *FuseBox24* model underpinned the award of one of only three regional Innovate UK funded Catapult centres. Digital Catapult Centre Brighton (DCCB), is led by the Coast to Capital Local Economic Partnership (LEP) with Professor Karen Cham from the UoB and Wired Sussex as co-delivery partners. The DCCB was housed at FuseBox and the proposal was underpinned by Youngs' conceptual framework of an 'Internet of Place', a human-centred perspective on the Internet of Things [3.3]. The Internet of Place concept integrates the novel capacities of 5G to accelerate the release of value from real time location-based data. The focus of the DCCB was to drive local innovation by linking universities and businesses and building pre-commercial R&D findings into market opportunities. This was in line with, and a driver for, wider policy initiatives relating to the growth of the digital economy. The innovation facilities provided as part of DCCB included high performance data analytics at UoB, with support from a Local Growth Fund, as a 'satellite DCCB' incubator, an immersive Lab VR/AR facility and the 5G testbed (the first in the UK available to SMEs) at Fusebox. These solutions leverage the capabilities of 5G connectivity, and alongside the Catapult's 5G Accelerator and UoB's innovation programmes [3.10, 3.11], support small businesses at early and scaleup stages to develop Internet of Place products and services. Thus, research and technology transfer, including creative arts and humanities skills, expanded the capacity of SMEs to innovate and develop as a joint force, and thus drive growth in the CDIT economy.

Since 2018 the *Digital Research & Innovation Value Accelerator* (*DRIVA*), a European Regional Development Fund project led by Cham, has extended the reach of the Fusebox model through a digital transformation of the innovation ecosystem's value mechanics [3.5]. The DRIVA project applied Cham's complexity and design practice-based research to extend the innovation eco-system and FuseBox collaborative principles into the virtual sphere. This transformed the 'Internet of Place' concept into digital reality in the context of the Coast to Capital LEP strategic 'Gatwick 360' plan that placed Gatwick Airport at the heart of an innovation eco-system. Cham led the design and build of a live data feed out of Gatwick Airport alongside an online *DRIVA* platform, which accelerated the knowledge exchange relationships Youngs' and Sapsed's research found were needed to drive CDIT innovation. The system also harvested data on the profiles of the participants and their activity to provide greater quantitative insights into the earlier qualitative model [3.4]. Designed as a hypernetwork, the *DRIVA* platform harnessed the power of digital connectivity to enable simultaneous stakeholder engagement on individual business, collaborative partnerships and ecosystem levels [3.5]. The DRIVA system accelerated and extended the impact and reach of the FuseBox model, including by integrating gamification as a behavioural nudge [3.6].

3. References to the research

[3.1] Sapsed, J., Nightingale, P., (2013). Brighton Fuse Final Report http://www.brightonfuse.com/wp-content/uploads/2013/10/The-Brighton-Fuse-Final-Report.pdf [Quality validation: Project report as a result of AHRC funding].
[3.2] Youngs, G., Byford J., (2015). FuseBox24: Project Findings www.fusebox24.co.uk/wp-content/uploads/2015/01/FuseBox24_web.pdf [Quality validation: Project report as a result of AHRC funding].
[3.3] Youngs, G., (2016). Internet of Place, Innovation in the data-rich experiential economy https://www.brighton.ac.uk/_pdf/resp/internetofplacefeb2016.pdf [Quality validation: outcome of a major regional catapult programme].
[3.4] Cham, K. L., (2019). www.drivaartsdriva.com digital design and build of FuseBox KE model for Internet of Place. [Quality validation: Outcome of a major funded programme].
[3.5] Cham, K. L., (2017). 'Consumer as Producer; Value Mechanics in Digital Transformation Design, Process, Practice and Outcomes in *Cultural Policy, Innovation and the Creative Economy, Creative Collaborations in Arts and Humanities Research'*, Shiach, M., Virani, T.

(Eds.) Palgrave McMillan ISBN 978-1-349-95112-3 [Quality validation: Chapter in a peer-reviewed edited collection with a leading publisher].
[3.6] Cham, K., and Webley, S. (2017). Designing for the play instinct: gamification, collective voodoo and mumbo jumbo. In Dymek, M., and Zackariasson, P., (Eds.). *The business of gamification: a critical analysis.* Routledge Advances in Management and Business Studies. UK: Routledge. pp. 182-207. ISBN 9781138340145. [Quality validation: Chapter in a peer-reviewed edited collection with leading publisher].

Key research grants
[3.7] Jonathan Sapsed [PI], AHRC, 2011 – 2013, Brighton Fuse, UoB funding: GBP247,850.
[3.8] Jonathan Sapsed [PI], AHRC (AH/L504026/1), 2014 – 2015, Brighton Fuse2. Total funding: GBP217,766, UoB allocation: GBP97,908.
[3.9] Gillian Youngs [PI], AHRC (AH/L504014/1), 2014 – 2015, Brighton Fuse, FuseBox24, GBP78,798.
[3.10] Karen Cham [PI], LGF, 2017, Digital Catapult Centre Brighton, Satellite Data Innovation Lab, 2017, UoB funding: GBP150,000.
[3.11] Karen Cham [PI], ERDF, 2018 – 2021, Digital Research & Innovation Value Accelerator (DRIVA), UoB funding: GBP500,000.

4. Details of Impact

4.1 Securing investment for growth and innovation in the regional digital economy

The *Fuse* research firmly established the role of creative arts and humanities as well as business as drivers of innovation in the digital economy and evidenced superfused individuals and clusters as crucial to the growth of the UK economy. The follow-on research in the FuseBox represented 'a physical manifestation of the Brighton Fuse findings' and is a new space providing a hub in Brighton for digital innovators. The FuseBox was established by Wired Sussex, business partner in the research, and is designed to enable interactions and to support innovators to utilise knowledge and practices from the arts meshed with new technologies [Source 5.1]. The *FuseBox24* residency programme, which provides a platform for creative technologists to develop their innovations is based on the interdisciplinary model developed through the *FuseBox24* research and commercialised by Wired Sussex. Since 2013 the FuseBox has hosted more than thirty resident companies [5.1, 5.2].

The *Fuse* research findings provided evidence to support the Greater Brighton City Deal flagship proposal to develop Brighton as a Tech City South [5.3]. The City Deal laid out an ambition to unlock more than GBP170,000,000 of investment in Greater Brighton to create 8,500 jobs and grow its technology businesses. To enable this the City Deal highlights the region's success stories, with the *Brighton Fuse* project findings central to this case. Directly evolving from the 'new model for superfused business' the 2014 City Deal created a hub for Brighton's creative-tech cluster through a GBP24,530,000 renovation and expansion of New England House, Brighton, providing additional workspace and support for the FuseBox business incubation programme [5.3]. In December 2014, the Coast to Capital (C2C) LEP drew on data and challenges in the Fuse report to identify the CDIT sector as one of the strongest competitive advantages of the area. Under the strategic priority 'Growth is Digital' C2C's business case details GBP4,350,000 in funding from multiple sources to establish the Digital Catapult Centre Brighton (DCCB), underpinned by Youngs' Internet of Place framework, to invest in 5G research and establish two VR/AR labs at New England House and UoB [5.3, 5.4].

From 2015 the DCCB, co-led by and co-located at the UoB and Wired Sussex/FuseBox, operated across the C2C region, covering 12 Local Authorities along the Brighton-Gatwick-Croydon corridor. DCCB supported innovators to unlock value from proprietary data leading to 33 new business collaborations, 27 new products, and 25 new jobs in its initial three years of operation [5.4]. The *Fuse* findings and the activities of the DCCB supported the development of the first and only community based 5G testbed open for commercial use, which was established within the FuseBox in 2017. Since then the 5G accelerator programme has hosted 20 companies providing first to market advantage through supported product development and testing, enabling each of them to develop and showcase new products and services to a proof-of-concept phase [5.2]. DCCB's satellite Data Research and Innovation Lab, a high-performance data analytics suite that enables the fast processing of 'big data', opened in 2019. The Lab

extends the FuseBox model through a digital first platform which provides virtual access and support for businesses to utilise 'big data' for new business growth. In addition, research insights and the virtualisation of the FuseBox model via the DRIVA platform extended the reach significantly to over ten times the numbers of the previous research programmes, with 1,448 participants as at 31st Dec 2020. Use was also extended to global corporations including Vodafone, IBM, Tesco and Booking.com with international impact across Europe, Asia and the US [5.5].

4.2 Creating jobs, new products and enhanced business strategy in the CDIT sector

Data compiled by the University of Sussex on the creative sector in the C2C area show that the region generated an increase in turnover of 33% in the five years up to 2018, with over 14,000 firms in the region and the creative industries generating GBP1,550,000,000 for the local economy [5.6]. With an increase of 2,500 CDIT companies and 16% in salaried employees, the creative sector contributes approximately 5.1% of the C2C LEP's Gross Value Added - substantially higher than the national average of 3.6% [5.6]. These reports situate the Fuse and DCCB CDIT research as '*influential studies*' which '*fed the national image of Brighton as a major UK cluster*' [5.6]. The National Digital Catapult Engagement and Impact report confirms that the DCCB, working both regionally with local innovators, and as part of the broader national network, is enabling innovators to bring products and services to market, unlocking value from proprietary data to drive innovation [5.4]. Cumulative data from the DCCB, FuseBox/Wired Sussex and the *DRIVA* programme has been used by 150 businesses and innovators to develop and deliver new products, services and experiences, as well as in 43 new business collaborations. These include such fast-growing businesses as MakeAmplifyl, Fracture, Naurt and Mativision [5.2]. For the MakerClub FuseBox24:

'had nothing less than a monumental impact on our business. Upon entering the programme, we were offered business advice and challenged on our business model in a number of ways, and we continue to think in terms of lean canvas and iterative development. One of our core tenets at MakerClub is that electronics and programming should be taught in conjunction with creativity and craft, a belief taken directly from the Fuse ethos. Without help from those directly involved in FuseBox24 as well as the network we have met as a result, I am sure we would not have been successful winning over £100k worth of grants during the last year.' [5.7].

Mativision, a 360-degree video and immersive content company, engaged in the DCCB programme to increase brand awareness and expand into new sectors. The specialist 5G support provided by DCCB has influenced product design, helped Mativision position its solutions for the future, generated new business leads and built its brand awareness in new and existing markets [5.8, 5.9]. Additionally, CDO Partners, were a start up when they began a *FuseBox24* residency at the DCCB, and with support for lean canvas work on their business model they were able to refine and adapt it and to gain referral business of over GBP50,000 in 12 months in an entirely new sector. As a result, they were able to hire additional staff and build their capability to test out their service model, train their team and build a portfolio. By helping with analytics for FuseBox events like Talent 2017, CDO Partners increased awareness of their business through digital marketing fully supported by the Centre. In 2018/19 they had expanded to 7 staff and 400k turnover [5.10]. As the Founder and Director of CDO Partners LTD confirmed: '*the Digital Catapult Centre provided us with a huge range of support, services and advice that we could not have found anywhere else and without it we wouldn't be where we are now*' [5.10].

4.3 Shaping regional and national strategy for the CDIT sector / digital economy

The CDIT sector is recognised in the C2C 2018 - 2030 Strategic Economic Plan as a *'world-renowned creative and digital tech cluster*' [5.11] and in the Economic Strategy for Brighton and Hove 2018 - 2023 [5.12] as a '*rapidly growing sector*'. The DCCB and 5G testbed, that build on UoB research, are described as '*world class assets*' and a basis from which to build local and regional capacity and strength. C2C's strategic priority 'Pioneer Innovation in Core Strengths' commits to '*Support the growth of immersive technologies and of 5G connectivity through the expansion of the Digital Catapult Centre Brighton'* [5.11]. In addition, the Brighton and Hove strategy cites the Catapult and 5G as part of the City's track record underpinning its new approach of '*embracing innovation and disruption*' [5.11]. In a testimonial the Programme Manager for Strategy and Policy at the C2C has confirmed that '*the University of Brighton's*

research has helped to harness and support a complex diverse regional economy within the innovation CDIT ecosystem. This has helped to lay the foundation for ensuring the business sustainability of this key sector for Coast to Capital' [5.11].

As part of the UK Government's Digital Strategy, the DCCB has informed the design of the national 5G testbed. The UK Government's National 5G strategy (2017) commits to working with testbeds and trials to develop, test and iterate solutions with industry users [5.13]. The Brighton 5G Testbed was highlighted as one of fourteen regional projects that '*are helping to build the case for 5G networks as well as helping to build expertise and commitment to the digital economy amongst local areas and industry*' [5.14]. To support this work, Cham, as a member of the UK5G working group for LEPs and SMEs, has advised other LEPs and informed DCMS policy on the roll-out and adoption of 5G in the UK through UK5G [5.13, 5.14] At the launch of the 5G testbed in Brighton Dr Jeremy Silver, CEO, Digital Catapult, said: **'***This is a major step forward in the wider roll out of this advanced technology, helping take the technology out of university labs and into the market. 5G represents more than just faster internet on the move, it […] offers new companies the opportunity to control their own networks, and enables operators to manage computing at the edge as a new business model for the future*.' [5.14]. Through the DCCB Brighton Dome & Brighton Festival are delivering a programme of work that will integrate 5G technology into the Brighton Dome, a well-established 1,700-seater, 30,000 annual visitor concert hall so that it becomes one of the first large-scale performance, arts and cultural venues in the UK to be equipped with 5G technology [5.14].

5. Sources to corroborate the impact

[5.1] Findings from the Fuse research https://www.youtube.com/watch?v=GgFl_R_sANw and the Fusebox https://www.thefuseboxbrighton.com/en/page/fbo This includes businesses in FuseBox24 and all those funded through DCCB https://thefuseboxbrighton.com/en/page/fbr [Accessed on 18th January 2021].
[5.2] Testimonial from the Managing Director, Wired Sussex, on the Fuse research through to Fusebox/ Fusebox 24 and residencies including the outcomes of the joint programmes with UoB. This is supported by a report on detailed supplementary evidence including webpages.
[5.3] A portfolio of evidence on the Greater Brighton City Deal flagship proposal and NCUB press. PDF available.
[5.4] A collection of programme and project reports from which aims, numbers and outcomes are aggregated. This includes the Digital Catapult engagement and impact report 'Accelerating the early adoption of advanced digital technologies across the UK (2019). PDF available.
[5.5] A project report on DRIVA data and new businesses. PDF available.
[5.6] Combined reports on full sector data complemented by 'Growth is Digital. Coast to Capital business case'. PDF available.
[5.7] Testimonial available from the MakerClub on the impact on their business.
[5.8] Fusebox24 video including individual business testimony https://youtu.be/Vw61JBQKz6M [Accessed on 18th January 2021].
[5.9] Digital Catapult Success stories. Scaling 360 video and immersive content: https://www.digicatapult.org.uk/for-startups/success-stories/mativision [Accessed on 18th January 2021].
[5.10] Testimonial from CDO Partners confirming the impact on their business.
[5.11] Coast to Capital Strategic Economic Plans 2014-2018, 2018-2030. Pgs 7 and 9 of the plan details the contribution of the research to the overall strategic vision. Supported by a testimonial from the Programme Manager for Strategy and Policy at the C2C LEP.
[5.12] Brighton and Hove City Council's economic strategies 2013-2018, 2018-2023. This confirms the growth in the sector and the projects' position as assets within that context.
[5.13] Department for Culture, Media and Sport. (March 2017). Next Generation Mobile Technologies: A 5G Strategy for the UK. p23 of the strategy highlights the research. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/597421/07.03.17_5G_strategy_-_for_publication.pdf [Accessed on 18th January 2021]. Supported by additional reports that cite the research and impact of the 5G roll-out.
[5.14] 5G Brighton testbed launches alongside immersive technology showcase: https://www.digicatapult.org.uk/news-and-insights/press/5g-brighton-testbed-launches [Accessed on 18th January 2021].