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Digital R&D Fund for the Arts: Evaluation

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Nesta...



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About Tom Fleming Creative Consultancy

This report has been authored by Tom Fleming Creative Consultancy (TFCC). TFCC are the leading international consultancy for the creative economy. They offer strategy and policy leadership across the creative, cultural and arts sectors. Through research, evaluation, collaboration and advocacy, they are a 'think and do' tank for the creative economy. TFCC offer technical expertise, strategic thinking and the tools to position creativity to the heart of society.

The Digital R&D Fund for the Arts is a £7 million fund that has supported collaboration between arts organisations, technology providers, and researchers. The Digital R&D Fund is a partnership between Nesta, Arts Council England and the Arts and Humanities Research Council.

For information about its projects and to learn more about digital R&D visit the website for the Digital R&D Fund for the Arts at artsdigitalrnd.org.uk or connect with us on Twitter @digitalrnd or using the hashtag #artsdigital



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1 Introduction - Setting the scene

The Digital R&D Fund for the Arts, England,¹ was a £7 million funding programme (or £8.3 million if in-kind contributions are included) supporting collaboration between arts and cultural organisations, technology providers, and researchers. The purpose of the Digital R&D Fund was:

To enable use of digital technologies in the arts sector to engage audiences with art in new ways and/or to create opportunities for new business models for arts organisations.

It was a partnership² between Arts Council England (ACE) – investment £6 million;³ the Arts and Humanities Research Council (AHRC) – investment of over £1 million; and Nesta - £1.3 million.⁴ The Fund was established in 2012, after a year-long pilot in 2011. It ran parallel to programmes that involved both Nesta and the AHRC but not ACE. These were the Digital R&D Funds in Scotland (a partnership between Nesta, AHRC and Creative Scotland) and Wales (a partnership between Nesta, AHRC and Arts Council Wales).

Grant funding was awarded to 52 collaborative projects across England to generate valuable knowledge and insights on how the arts and cultural sector – across a variety of art forms - can use technologies as part of their development. Each project had an arts, technology and academic partner. Of the 52 projects, four focused on Big Data⁵ with a budget of up to £300,000; one was a Research+⁶ project with a budget of £42,860; and the remaining 47 work across the arts and were awarded £125,000 or less. The Fund was distributed over five rounds, with all activity related to the final generation of projects completed in November 2015.

The Fund was positioned to stimulate arts organisations to collaborate in digitally enabled R&D at a time of radical change for the sector: as the investment landscape changes, with greater opportunities for diversifying income streams; and as the relationship between producers and consumers shifts, with opportunities for deeper, richer, more personalised and interactive experiences. The Fund and the research and knowledge it generated, also raises questions relating to how to fund the arts, where innovation might come from, and the types of partnership required to most effectively generate positive returns on investment. To this extent, the Fund has enabled the partners:

- To explore what happens when arts organisations, technologists and researchers are incentivised to collaborate in a structured and directional way.
- To test the capacity for arts organisations to develop R&D that is impactful for participating organisations, for the wider arts sector, and for other sectors.
- To investigate how R&D funding might stimulate new types of practice which in turn re-frame the ways investment in the arts is understood and delivered.
- To exemplify a multi-agency approach to investment and development – emphasising new ways of working in the type of ‘grand partnership’ which the Arts Council’s Chair, Peter Bazalgette heralded as vital to the lifeblood of the arts.⁷

1.1 Objectives of the Digital R&D Fund

The three partners sought, through the Digital R&D Fund, to achieve 'a step-change in the innovative use of digital technologies by the arts sector in England'.⁸ The following outcomes were agreed as priorities:

- A portfolio of inspiring case studies that enable wider, broader and deeper audience engagement with the arts and a better understanding of emerging business models.
- Strong networks and relationships between technology, research and the arts that inspire new collaborations beyond the Fund.
- A body of rich evidence, data and information that inspires and supports the capacity of the arts sector to innovate through targeted and effective dissemination of learning.
- Demonstration of a successful model for supporting digital research and development within the arts sector.
- A rigorous definition of 'Research and Development' in the arts sector that is used to inform policy development.
- New research methodologies and insights in the arts and humanities.
- R&D funding adopted by other arts funders in the UK and beyond as an accepted model for supporting innovation in the arts sector.⁹

The Fund partners also prioritised learning and knowledge development throughout the life of the Fund, with dissemination a core function. This was designed to help the wider arts and cultural sector benefit from resources, insights and processes made possible through the Fund. It is also intended to motivate arts organisations to explore, replicate or adapt models of practice or technologies developed and tested through the Fund. Dissemination activities have included:

- Learning events for funded projects arts, tech and research communities.
- Sector facing annual showcase events in 2013, 2014 and 2015.
- A programme of smaller, more targeted events such as the digital culture research briefings, and regional 'Tech Talks' focused on projects in the fourth and final year of the Fund in Liverpool, Cambridge and Plymouth.
- The Fund website (originally called 'Native' but rebranded in June 2015 to 'Making Digital Work'), featured Digital R&D Fund case studies, reports, videos, toolkits, research and events information, as well as features and case studies of digital R&D innovations in arts and cultural sectors from around the world.
- Two magazine publications and four topic guides.
- Articles and commentary in press such as regular digital R&D features in *Arts Professional* magazine, *The Guardian* Cultural Professionals network and others.
- Journal articles and conference papers by the Fund partners and individual project partners. Some research papers are still to be published.

To generate content for these dissemination activities and to establish a knowledge base to inform future investment and practice, research has been integrated across the Digital R&D programme. This has involved researchers working in different arts and humanities disciplines and the development of a range of methodologies. In addition to the research activities embedded within each collaborative project, the following additional research was commissioned to broaden understanding of digital R&D in the arts, or to support the delivery of the programme:

- A three-year longitudinal Digital Culture survey – undertaken by MTM.
- An evaluation of the application and fund management process – undertaken by The Research Base.
- Post-doctoral research by Elizabeth Lomas – to develop a definition of R&D in the arts.¹⁰
- 21Awake – supporting funded projects to capture and publicise the knowledge from their activities.

This evaluation draws on these sources as part of the available evidence base.

1.2 The evaluation scope and methodology

The aim of this evaluation, undertaken by Tom Fleming Creative Consultancy (TFCC),¹¹ is to provide an overview account of the Digital R&D Fund for the Arts programme and to give the Fund partners an independent assessment of the effectiveness of the programme in meeting its overarching purpose and objectives. It provides an aerial view of key outcomes and introduces a set of learning points and strategic questions for funding partners and the wider sector to consider.

The methodology included:

- Interviews with a sample of funding and strategic partners.
- Case study interviews with eight funded projects (eight arts/cultural; seven technologists; five research partners (see Section 5 for a sample of longer cases studies – shorter case studies are included within the body of the report).
- Participation in two events: The Digital R&D Fund for the Arts Learning Event at Nesta HQ on 11 June 2015, and the annual Digital R&D Fund for the Arts showcase event 'Making Digital Work' in Birmingham on 7 October 2015.
- Document review; including a sample of the 52 final project reports, the three Digital Culture research reports, and other programme related documentation (see Appendix 1 for list of documents reviewed).

The evaluation approach is shaped by the Digital R&D Fund Logic Model. This is an advanced version of the model designed by partners at the start of the programme. It aims to capture the core intended outcomes – greater engagement with audiences and new business models – articulated in the overall aim, as well as a broader set of targets indicated through the Fund objectives and original logic model. Our revised logic model was developed with the Fund partners and priority outcomes to explore were agreed. These included both short-term outcomes to have been achieved within the life of the programme and medium-term ones anticipated beyond the lifetime of the programme (See Figure 1).

Section 3 of this report presents the findings for each of the broad outcomes. Where there is crossover, a number of the outcomes are brought together under a single heading. The priority outcomes this evaluation explores are:

Reaching and engaging audiences

- New ways of engaging audiences – new audiences and deepening relationships (short-term outcome).
- Greater audience engagement through digital means (medium-term outcome).

New business models

- New business models – mechanisms for generating income and public good (medium-term outcome).

Collaboration to support innovation

- Greater understanding of three-way collaborations – arts, tech and researchers – in supporting innovation (short-term outcome).
- More arts/tech/research collaborations inspired (medium-term outcome).

Culture change

- Culture change within funded partner organisations: arts organisations embedding digital; tech organisations, embracing cross-sector working; researchers generating new insights and practices in cross-sector collaborations (short-term outcome).

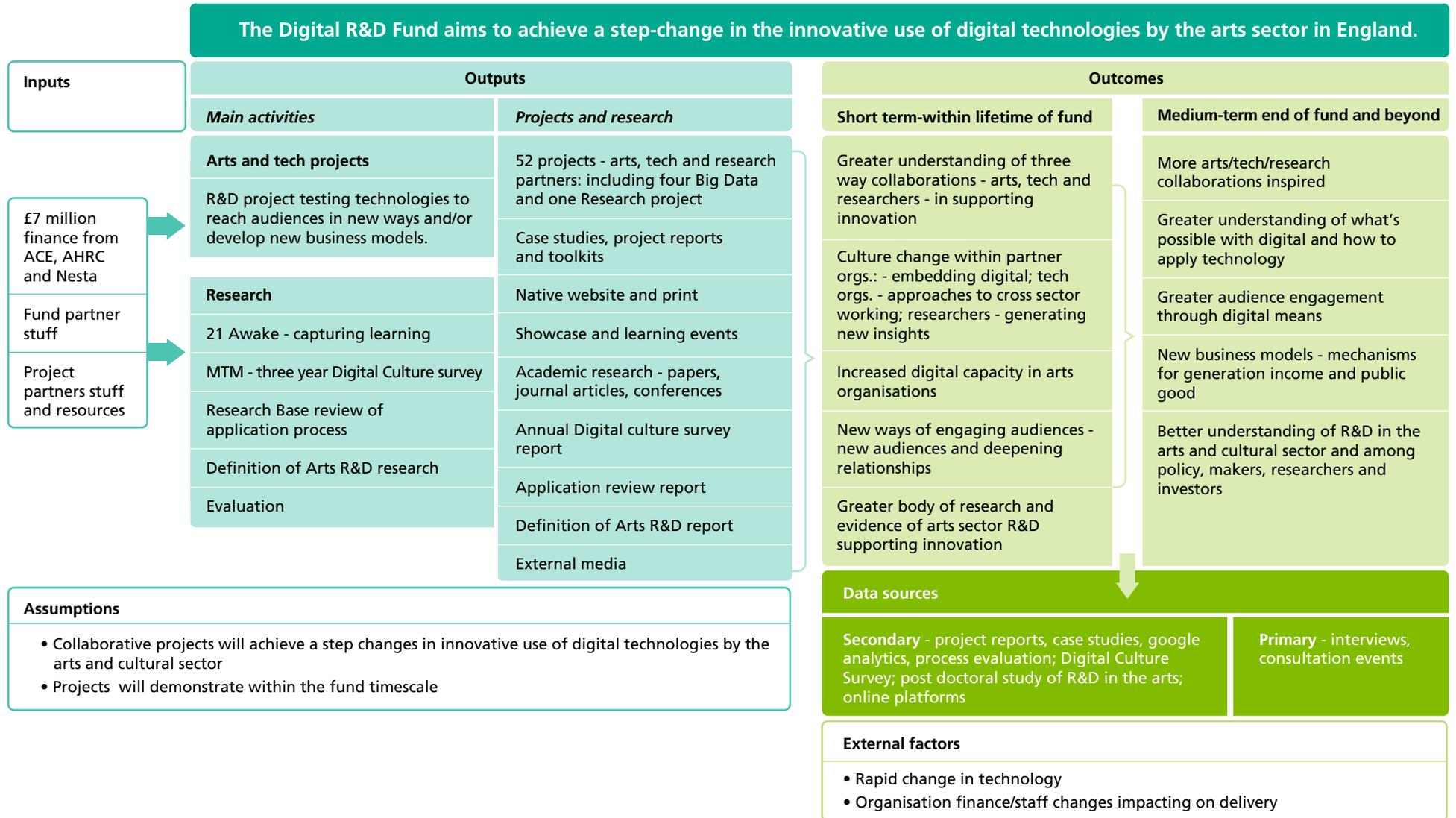
Increased digital capacity in arts and cultural organisations

- Increased digital capacity in arts organisations (short-term outcome).
- Greater understanding of what is possible with digital and how to apply technology (medium-term outcome).

Improving the knowledge base

- New body of research and evidence of arts sector R&D and digital innovation (short-term outcome).
- Better understanding of R&D in the arts and cultural sector and among policymakers, researchers and investors (medium-term outcome).

Figure 1: Revised Digital R&D Fund logic model



2 The Digital R&D Fund: process and reach

2.1 The Fund application and management process

Nesta, ACE and AHRC collectively designed and set the strategic objectives for the Digital R&D Fund. Nesta was responsible for day-to-day operational delivery and grant management processes through a small team, including a dedicated Research Manager.

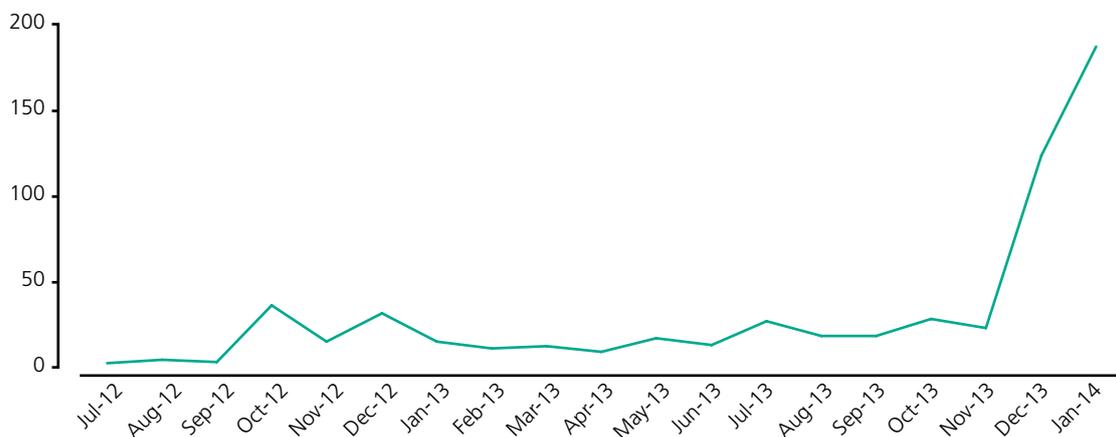
The three partners were involved equally in assessing the applications. AHRC then had less direct involvement with the projects and the project partners once the funding awards were made. However, it retained an ongoing strategic development and advisory role and continued to interact with projects to explore outcomes and consider their implications for R&D and partnership in the arts. ACE continued to have a working relationship with most of the participating arts organisations – to keep abreast of the learning process as part of their broader arts development role.

2.1.1 The application process

The Fund had a three-stage applications process, involving ‘Expressions of Interest’ (EOIs), ‘Final Applications’ and interviews.

EOIs that were successful were given a deadline to complete their final application by February 2014. Over 50 per cent of EOIs were received in the last month before the deadline on 7 January 2014.

Figure 2: Number of applications received per month during the EOI period



Source: Nesta: Analysis of Applications

Between July 2012 and January 2014 593 EOIs were received; 1,500 organisations were involved in their development; 297 EOIs were approved to proceed to full application.

2.1.2 A reflective, adaptable process

The phased applications process – the five-generation approach - and length of the Fund allowed for adjustments to be made to streamline the approach and ensure a mix of different types of projects were funded.

Priority themes were developed for the Fund, in consultation with the sector, prior to the 2011 pilot. These were:

- User generated content and social media.
- Distribution and exhibition.
- Mobile location and games.
- Education and learning.
- Data and archives.

Applicants were asked to select which of the two broad aims of the Fund - reaching and engaging audiences or new business model – their project was focused on.

Two new gateways to the Fund – Big Data and Research+ - were introduced in July 2013. Big Data sought to attract larger-value applications around a theme that was under-represented through the existing funded projects. Research+ offered the opportunity for digital projects already in development and of strategic relevance to the arts and culture sector, to add on an additional level of rigorous research.

Despite the length of the Fund and the five generation rolling approach, the vast majority of applications were received in the final month of the Fund.

2.2 Reach of the Fund

The Digital Culture survey shows that overall, awareness of the Fund among the arts and cultural sector was high, particularly among larger arts organisations. However, awareness dropped slightly over time as the communications around the availability of grants reduced: 69 per cent of sector organisations said they were aware of the Fund in 2013; this dropped to 61 per cent in 2015. Engagement with the Fund through reading articles, case studies and reports also dropped. Arts Council England, Nesta and AHRC websites remained the main gateways for organisations to engage with the Fund.

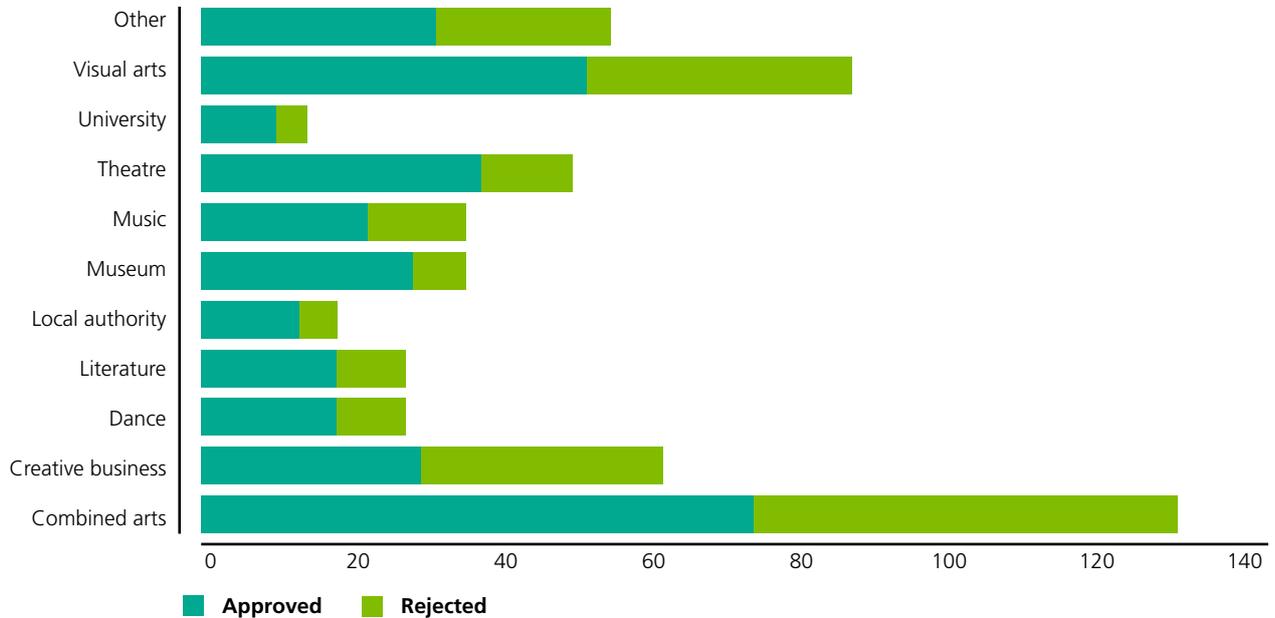
The 2015 survey found that 44 per cent of the arts and cultural sector had engaged with Fund and a further 17 per cent were aware of it.¹² Combined Arts organisations¹³ were most aware of the Fund (75 per cent), but awareness was lowest among Heritage organisations, just 41 per cent.

Over 5,800 subscribers were kept updated on Fund activities through a Digital R&D newsletter. The Fund website received over 200,000 visits, with 38 per cent of users returning more than once.

2.2.1 Fund applicants

Applications were received from all types of eligible organisations. The largest number of applications received was for Combined Arts projects – reflecting the convergence of art forms across the sector as a whole.

Figure 3: Digital R&D Fund EOIs received and success rates by organisation type

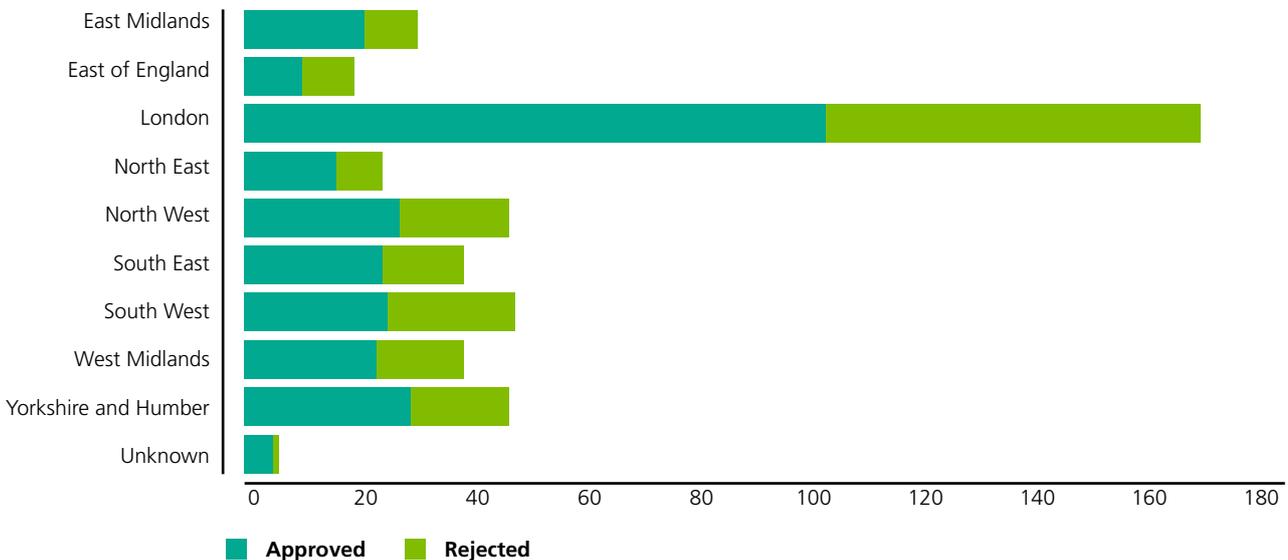


Source: Nesta: Analysis of applications to the Digital R&D Fund for the Arts

Creative businesses had the lowest approval rate (48 per cent), whilst museums had the highest approval rate at 80 per cent, followed by theatre at 76 per cent. The lack of success of applications from creative businesses may have been influenced by the programme’s requirement for the project to demonstrate public benefit.

Project applications were received from all regions of England. The largest number of applications received were for projects led by organisations from London, the lowest from projects led by organisations in the East of England.

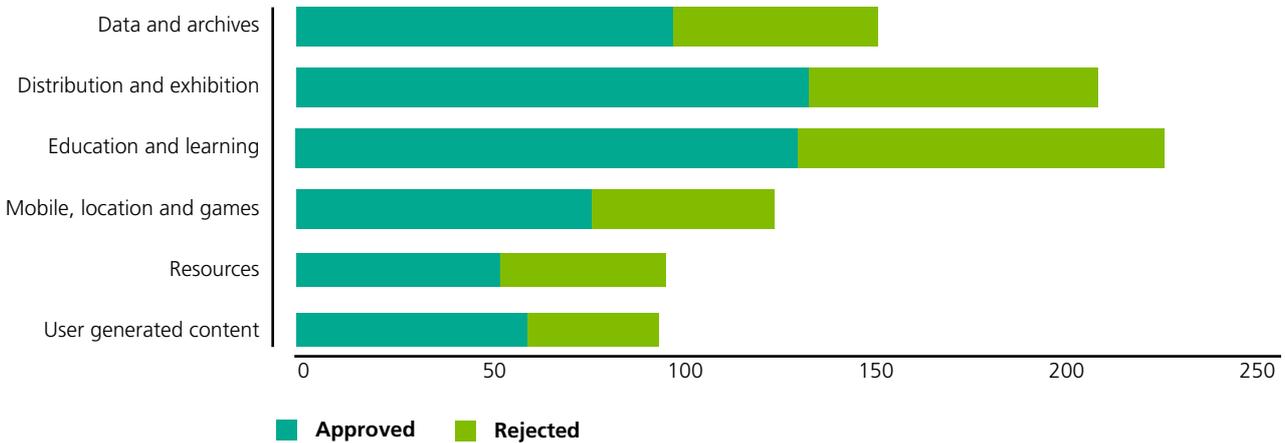
Figure 4: Region breakdown of applications



Source: Nesta: Analysis of Applications

Most EOI applications were aimed at enhancing audience reach (82 per cent), with a smaller number focusing on exploring new business models (41 per cent).¹⁴ ‘Education and learning’ and ‘distribution and exhibition’, were the two themes receiving the most applications. Fewer applications were about ‘User generated content’ and ‘Resources’.¹⁵

Figure 5: Applications by theme



Source: Nesta: Analysis of Applications from arts organisations

Financial awards by type of partner

The overall financial awards made to each type of partner (arts organisation, technology partner and research partner) shows that just under 40 per cent of funds were allocated to arts and cultural organisations, 36 per cent to technology organisations and 24 per cent to research/education organisations:

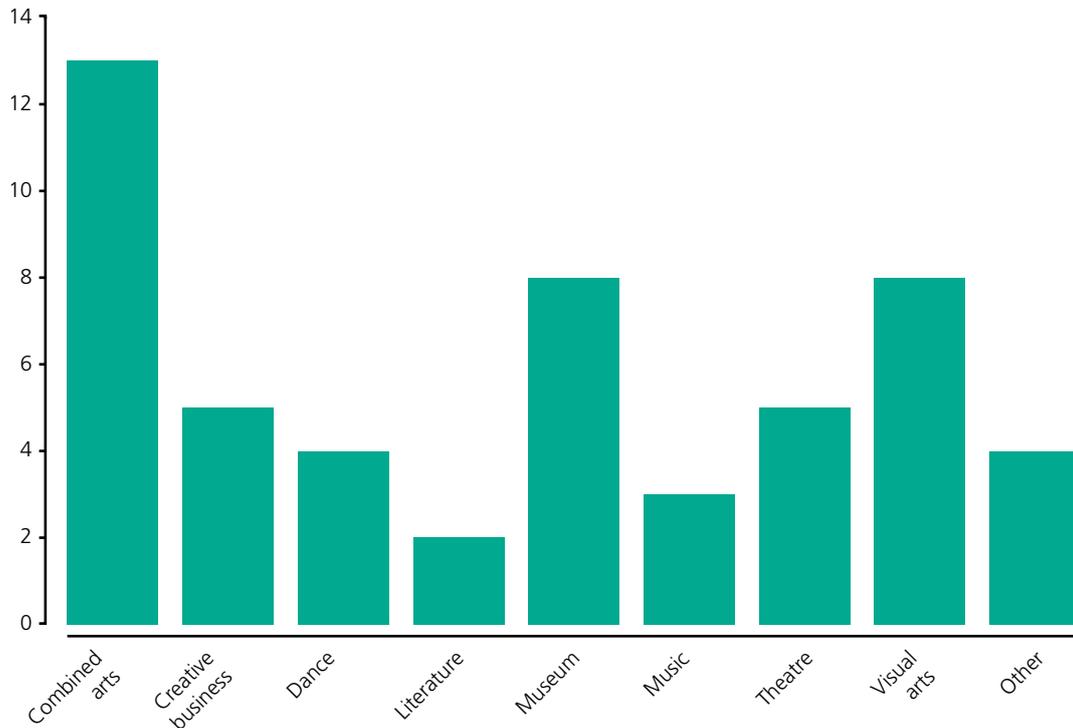
Total funding allocated	Total distributed	Arts partner	Technology partner	Research partner
Type of partner	£6,694,475	£2,638,175	£2,404,003	£1,652,223

However, in more than 40 per cent of cases, the agenda was driven by the development needs and aspirations of the arts/cultural organisation, with the technology and research partners positioned as collaborators to help solve a given ‘problem’ or explore a development ‘opportunity’. To this extent, the arts organisation operated as the primary partner in many instances; even if they were not always the primary recipient of funds.

2.2.2 Funded projects

The Funded projects more or less reflect the applicants received by art form. Combined Arts was the most popular art form (13 projects) with two literature and three music projects. Just under half the R&D funded organisations were National Portfolio Organisations¹⁶ in receipt of three-year funding from ACE.

Figure 6: 52 Funded projects by organisation type



Source: Nesta: Analysis of Applications from arts organisations¹⁷

The Fund engaged different types of education and research institutions and included multiple research specialisms and interests. This ranged from major universities (e.g. University of Manchester¹⁸) to research and consultancy agencies (e.g. Morris Hargreaves McIntyre¹⁹). Researchers included those schooled in sociology, arts and technology.

The Fund also reached different types of technology business – including technology service companies and consultancies (e.g. Bright White Ltd.²⁰), those majoring on software and product development (e.g. Pixel Innovation²¹ and Tariff Street²²), and design studios (e.g. Marshmallow Laser Feast).²³

The Fund reached all regions, with higher concentrations of projects led by organisations in London (16), the South West (eight) and the North West (seven). The North East and West Midlands had just two projects each.

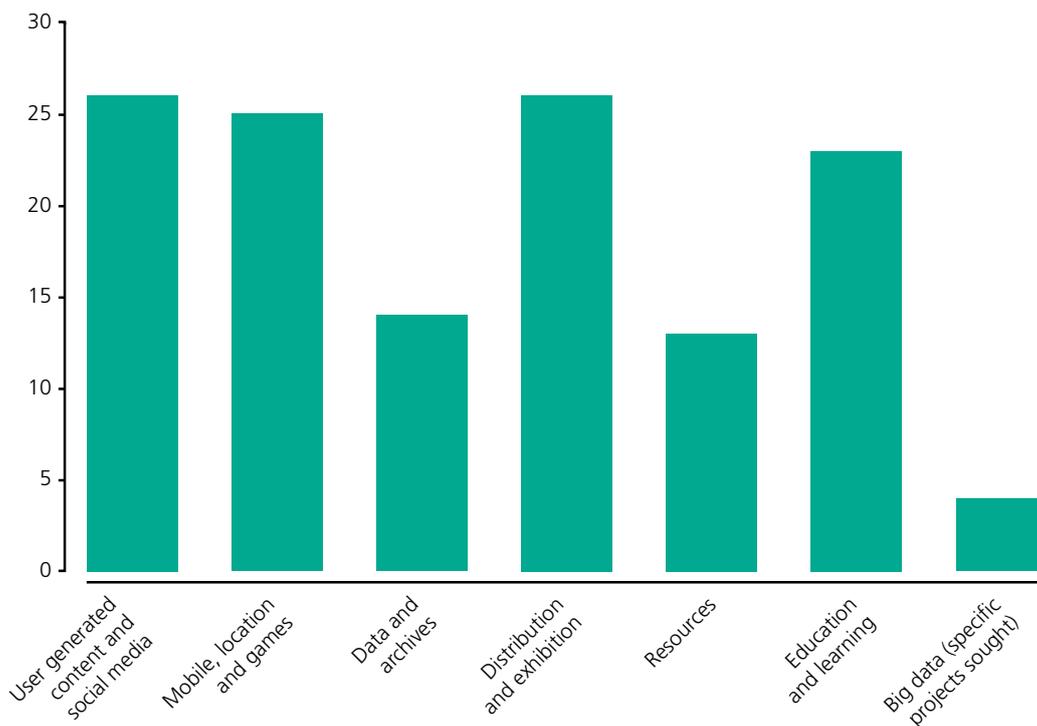
The North West received the highest level of funding after London (this is partly due to the scale of the Big Data projects funded). The West Midlands received the lowest level of funding, followed by the South East and North East.

Table 1: Digital R&D funding by region

Region	Amount of funding distributed by region (£)	Average amount distributed per project (£)	Total amount (without big data projects) (£)	Average amount per project (without big data)	Percentage of total amount by region	Percentage of total amount by region (without big data)
East Midlands	597,399	119,479.80	597,399	119,479.80	9%	11%
East	472,711	118,177.75	472,711	118,177.75	7%	8%
London	2,119,734	132,483.38	1,819,749	121,316.60	32%	32%
North East	296,890	148,445	112,565	112,565	4%	2%
North West	1,149,549	164,221	602,428	120,485.60	17%	11%
South East	284,724	94,908	284,724	94,908	4%	5%
South West	953,003	119,125	953,003	119,125	14%	17%
West Midlands	225,362	112,681	225,362	112,681	3%	4%
Yorkshire	595,103	119,021	595,103	119,021	9%	11%
Totals	£6,694,475	128,740	£5,663,044	£115,306.64	100%	100%

There was an even spread of funded projects across four main themes - user generated content and social media; distribution and exhibition; mobile location and games; education and learning. There were fewer projects within the themes of data and archive and resources.

Figure 7: Digital R&D funded projects by theme



Source: Nesta: Analysis of Applications from arts organisations

3 Main outcomes of the Digital R&D Fund

The Digital R&D fund was a strategic policy intervention to explore the role of R&D in the arts. It was a demonstrator and disruptor in a context of technological and social change, including movement from arts subsidy towards investment. It proved agile and adaptable – improving as it developed and targeting different types of activity to diversify the portfolio of projects funded and broaden the knowledge base.

The Fund has, overall, delivered significant positive impact for participating arts and cultural organisations. For technology and research partners, it may take longer to have a substantive influence, but it certainly mobilised multiple different types of learning and development process, helped to shape different research and product development methodologies, and thus will certainly influence the approach to collaborative practice in the future. It has also played an important role in stimulating learning and mobilising debate on effective mechanisms to effect positive digital change in the arts – especially in relation to reaching and engaging audiences. It has:

- Opened up a sector-wide conversation (particularly for funding partners and larger arts organisations) on the role of R&D in the arts, and on risk, collaboration and innovation.
Enabled new ways of working in the arts, particularly towards reaching and engaging audiences and in collaboration for innovation.
- Enabled the development of different research methodologies and brokered synergies between academic partners and those in the arts and technology sectors which will influence their approach to collaborative problem-solving as well as their understanding of the benefits and challenges of cross-sector working.
- Generated new knowledge and some transferable practices.
- Helped accelerate the development of activities which otherwise would not have happened - bringing some to a position where scale-up/next-stage investment is possible.
- Improved understanding of where innovation and growth might arise.

These findings are explored in more detail in the following sections. They raise a set of strategic development questions for arts investment, especially with regard to maximising the potential for innovation in the arts and the role of the arts as part of a wider innovation ecosystem.

3.1 Reaching and engaging audiences

The Fund has had most impact for audience development. It has enabled new ways of working which have opened up richer, more diverse, interactive and personalised relationships with audiences. Put simply, each of the 52 projects focused to some extent on audience reach and engagement – whether this be how to improve the quality of existing relationships (e.g. exploring ways to communicate or interpret programming and to share experiences via social media); reaching new audiences in new ways (e.g. utilising Apps or exploring digital distribution and presentation tools); improving access and engagement (with bespoke digital solutions for different disabilities); or better understanding, connecting to and engaging with audiences (e.g. via Big Data activities).

The extent to which the Fund mobilised new and radical approaches is less clear, with each participating arts organisation building from different levels of digital capacity and literacy. In other words, what might be radical for one organisation might not be for another; plus what might be radical in the arts might not be in another sector. However, overall, the Fund has made a significant difference to how digital is understood and what it can do to enhance reach and engagement. It has also helped to give structure and focus to digital activities – such as with the **1831 Riot @ Nottingham Castle** project²⁴ which primarily engaged audiences in a deeper relationship with the museum and helped to enhance their experience and understanding of the history of the city; and as a secondary outcome led to a coordinated digital strategy for the city council's cultural portfolio and leveraged commitment to a research post.²⁵

3.1.1 Building digital literacy to reach and engage

Through a process of 'learning through doing', the Fund introduced a more open, collaborative and audience-driven approach to organisational, content and product development. The interviews with the project partners show that organisations have started to understand the motivation and needs of their audiences better through the focus on research and new types of engagement. For example, research by Nottingham Trent University tracking audiences using the **1831 Riot @ Nottingham Castle** AR app identified that their 'linger time' at any one object was just more than a minute, regardless of length of content, so content needed to be reduced. Focus groups with participants on the same project identified that audiences were interested in personal stories and hearing about events from different perspectives. Similarly, user insights provided by Queen Mary University London on the **Clapping Music** app,²⁶ and the ongoing research, is providing intelligence around audience motivation.

As might be expected, the Digital R&D funded organisations tend to be significantly ahead of the sector as a whole in terms of digital exhibitions and use of interactive technology: 51 per cent of funded organisations are producing standalone digital exhibits or works of art in 2015, compared to 22 per cent of other organisations in the arts and cultural sector. Thirty-one per cent of Fund Participants are producing virtual reality or augmented reality experiences compared to just 8 per cent of other organisations.²⁷

However, while the funded organisations are making more use of advanced technology to exhibit and distribute their work than the wider sector, there has been a reduction in this type of activity. Production of digital experiences designed to be used at the same time as the exhibition of artwork has fallen among R&D funded organisations from 59 per cent in 2013 to 44 per cent in 2015. Adapting or re-staging work for digital consumption has also dropped from 36 per cent to 20 per cent²⁸. But this does not necessarily signal a withdrawal from digital solutions to production and presentation. Rather, it can be linked to a clearer sense of purpose, with digital technology being prioritised for reaching and engaging audiences as part of the wider experience (e.g. before and after a show), not as an unnecessary complement to or substitute for live experiences.

The R&D project is leading to new commissions to engage audiences in new ways. For example, Abandon Normal Devices, an R&D funded organisation that has tech at its heart, leveraged the fund to build new types of relationship with different sectors:

Another event coming up as a result of the project is in partnership with Curious Minds, who are funding an expansion of the school's element of the toolkit website. This expansion involves working with primary school children and drones. Much like the sandpit with teenagers from the R&D project, the children will get to experience working with camera-enabled drones to create their own films. As well as expanding the projects knowledge into a new age group, the workshop will also move into working in the forest to create artworks that the children will explore with the drones.”

The result of this more focused and directional digital approach to creation, exhibition and distribution by funded arts and cultural organisations has a greater impact on reach and engagement. Funded arts organisations report much higher rates of positive impact of digital technology on their relationship with audiences, than the sector as a whole: 64 per cent of funded organisations said digital technology has had a major impact on reaching a bigger audience in 2015²⁹ compared to 53 per cent amongst other organisations. For example, Miracle Theatre company is reaching new audiences through live streaming productions and different forms of ‘encore’ digital distribution (they also developed a feature film) and **Netpark** is introducing new audiences to digital artworks and soundscapes through the world’s first digital art park.

3.1.2 Connecting with ‘harder to reach’ audiences

Increasing reach and engagement was a main focus for over three-quarters of the Funded projects. The Fund has enabled some progressive activities in reach and access for disabled and other ‘hard to reach’ audiences. For example:

- **Flatland: Exploring Haptics in Cultural Spaces**.³⁰ A project to allow blind and partially sighted people to engage with an artistic installation based on the 1884 satirical novella, *Flatland*. With two million people in the UK experiencing serious sight loss, this project showed that it is possible to create an immersive theatrical experience using technology that provides an equality of experience for visually impaired and sighted audience members. Extant, the UK’s only performing arts company of visually impaired people, working alongside technology company, Haunted Pliers and research partners the Open University, explored a range of technologies to create an immersive pitch-black theatrical installation. By swapping visual cues for multi-sensory ones, the drama was experienced through the whole body.
- Circus Starr, working alongside Therapy Box and Glyndwr University, developed **Show And Tell**,³¹ an interactive ‘Social Story’ app designed specifically for autistic children, their parents and carers. The research found that an engaging preparatory visual story, delivered via an app, had a measurable positive impact on encouraging an autistic child to attend an arts event. Respondents felt that using the app beforehand helped prepare their child ‘well’ or ‘very well’ for the experience of going to the circus.

These examples show that a collaborative approach to R&D can not only enhance reach and engagement (e.g. greater reach for diverse audiences), it can also generate new, personalised and exclusive experiences which provide equality of experience for those who have traditionally faced difficulties in accessing and engaging with arts and culture.

3.1.3 Data collection and management

The Fund has introduced new ways of working with and learning from data collection and management – e.g. in big data and open data. This was identified by the Funding partners at around the mid-point of the Fund as an under-developed area, with few proposals seeking to explore how digital could transform approaches to data collection and management, or introduce opportunities for big data partnerships across the arts. This prompted a dedicated funding call for Big Data projects, incentivised by larger awards (up to £300,000) available for applications in this field. Four projects were given Big Data awards, including Unusual Suspects and Culture Counts:

- **Unusual Suspects**³² saw ten organisations³³ from the Newcastle and Gateshead Cultural Venues network create a 'Data commonwealth Agreement' to fully share audience information.³⁴ Data has been mapped against research partner Morris Hargreaves McIntyre's 'Culture Segments' audience segmentation model. This provided insights on current audiences and informed strategies and experiments to collaboratively grow audiences and tempt them to try new art forms and access new venues. These included The Insider, a new 'invite list' giving people offers and details of the latest events and happenings at the nine partner venues. This has led to a new level of partnership working in the region, heightened awareness of the value of data sharing and introduced new collective knowledge on audiences.
- **Culture Counts - Quality Metrics Data**³⁵ Built on insights from an ACE-funded pilot project to test a digital surveying approach and online platform that enables arts and culture organisations to better understand the quality and impact of their work. By gathering real-time data from arts sector peers and the public; and combining it with traditional data on attendances, funding, and box office, it aimed to deliver comprehensive value analysis and reporting on a continuous basis to underpin more effective data-driven decision-making. This project has at least enabled a more sophisticated approach to measuring quality and excellence.³⁶

3.1.4 Raising/rising expectations

The Digital R&D Fund was undoubtedly impactful on audience reach and engagement. The perception from strategic consultees (including funders and most funded arts organisations) is that it increased confidence and capacity in some organisations and opened up new relationships with technology and research partners to widen horizons and co-create opportunities. This is particularly the case for funded organisations, but also to a lesser degree perhaps the organisations that collaborated on submitting an unsuccessful application.

The Fund benefited from a strong communication and learning programme – with events, resources, reports, the Fund website and social media generating a positive and aspirational landscape for organisations looking to 'go digital'. However, a perhaps inevitable outcome of this progressive messaging is that expectations were raised to an extent that, for some, they could not reasonably be met. Findings from the Digital Culture survey suggest that funded organisations had high expectations of what the Fund would enable them to deliver. Audience development outcomes fell considerably below original expectations:

- 73 per cent thought their project would help them engage more extensively with their existing audience; only 33 per cent reported a major positive impact in this area.
- 68 per cent thought that they would be able to reach a bigger audience but only 33 per cent reported this effect.
- 54 per cent thought their project would help them reach a more diverse audience, only 24 per cent reported this as an impact.
- 45 per cent thought they would achieve greater reach to international audiences; only 19 per cent saw this as a major impact.³⁷

These figures do not contradict a core finding of this evaluation, that the Fund has been most impactful on audience reach and engagement. They also point to the very real challenge of converting digital potential into clear results. As we explain in the following sections, collaboration is difficult, innovation does not come easily, and change is rarely painless.

3.2 New business models

Compared to its objective in reaching and engaging audiences, the Fund was not as impactful on transforming existing or developing new business models. It tended to enhance existing approaches and, to some degree, to improve confidence and know-how on how to monetise existing assets/content. These are issues of amplification rather than disruption. It is though, too early to assess longer-term impact.

The Digital Culture survey shows, overall, a decline in R&D funded organisations seeing digital as important for business models: 77 per cent in 2013, 66 per cent in 2015. For other organisations, however, the importance increased from 33 per cent to 44 per cent.³⁸ This could be because funded organisations have developed a level of digital literacy and capacity where they are more measured in their appreciation of how digital technology can affect their business model – especially given that most projects focused instead on audience reach and engagement. It could also be because few funded organisations made any headway in generating new business models or significantly enhancing their existing ones.

Although the commercialisation of content or other assets was not a stated expectation of the Programme, 21 projects have requested permission to commercialise but none envisage making a profit of 25 per cent of the value of their grant within three years of the grant agreement. Eighteen projects had no intention to commercialise products or content from their R&D project, so no consent was required. For the final 20 projects, 15 felt it was too soon to tell whether they would be commercialising the project's outcomes or not. Four thought the tech partner was highly likely to commercialise the intellectual property (IP).

A common reflection for arts organisations was their lack of readiness to commercialise. This was linked to under-developed commercial awareness and related skills and to a lack of understanding on how to commercialise IP. It was also linked to the extent to which projects were deemed ready for commercialisation – i.e. at the required level of development. Some projects were described as poised for commercialisation but requiring an additional process of development to bring them to market.

The management of IP varied across the projects. In some projects, an IP agreement was developed at the outset between all partners e.g. for **TILO**³⁹ developed by MeYouAndUs, Pixel Inspiration, Amaze and Lancaster University. Others split IP, with creative content IP retained by the arts partner, tech IP by the tech partner and research IP by the academic partner. It is clear though that levels of IP literacy were not developed as intensively for arts organisations as with digital literacy, which resulted in asymmetries between the partners and slowed down opportunities for commercialisation. Universities, which have IP, technology transfer and research support offices which offer advice and support for commercialisation, might have more effectively introduced this resource into the process. This is also a consideration for future collaboration.

The greatest commercial opportunities were generated for technology partners. Paid for R&D allowed them freedom to test new technology and approaches that most commercial projects don't allow. Several tech partners have gone on to win new business using the new skills and experience gained from the R&D project. Some expressed frustration that commercial considerations were not more to the fore at an earlier stage in the process – e.g. a priority characteristic in short-listing. Others suggested, as did their arts partner, that mediated IP advice and support could have enhanced the development of more commercial business models and accelerated the development of scalable propositions.

A small number of arts and cultural organisations took their technology solutions to a stage where additional investment could assist the generation of new business models – e.g. new distribution models, leverage of big data, replicable models which can reach new markets. Examples include:

- MeYouAndUs intend to commercialise the **TILO**, display system developed with their tech partners Pixel Inspiration and Amaze. They propose setting up a not-for-profit organisation with one of their tech partners, to take TILO forward, develop it and sell it to arts organisations. The digital screens used in the public spaces of cultural venues, combine live feeds and sensors to display engaging, interactive and personalised content.
- Sing London are looking to develop an agreement with their tech partner Antenna to license the **Talking Statues**⁴⁰ brand name in return for a 10 per cent commission on sales. They do not intend using the IPR created by the R&D project - they will be creating custom solutions for new clients.

- The Cheltenham Festivals are not planning to be involved in the commercialisation of the **Qualia app.**,⁴¹ but the technology partner and the research partner are planning to continue to find investment and develop the product.

As one arts organisation comment in the Digital Culture survey 2015 shows, the Digital R&D Fund supported the development and testing of new products and applications that are ready for next-stage investment:

We would need robust investment to move the prototype on to a fully functioning version and to develop the platform and business model to support it. We have been unsuccessful with one funding application but will make space in 2016 to peruse this with more focus.”

Rather than transformation to new business models, there is some evidence that the R&D Fund supported the generation of increased revenue or the potential to grow income. Thirty-one per cent of R&D funded organisations cite the creation of formal/informal education resources as being a positive impact of digital technology, up from 16 per cent pre-project stage and compared to a 2015 average of 19 per cent for other organisations in the arts and cultural sector. Digital's positive impact on product sales is also up to 22 per cent for funded organisations from 14 per cent pre-project and compared to a 2015 average of 10 per cent.⁴²

The distribution of content in new and different ways does not necessarily disrupt existing business models and cultural and commercial concerns may not converge. However, a main finding of this evaluation is that the Fund did not have a significant impact on the generation of new business models and that this could be read as a missed opportunity. A more dedicated and applied approach to the generation of new business models and to commercialisation more generally, might have been more impactful. An approach that identified projects with greater commercial potential, delivered accelerator support and connected R&D to potential next stage investment, might have generated a different portfolio of projects and brought a cohort of R&D collaborations closer to market sooner and with a stronger offer. But it is also clear that for many arts organisations, digital is primarily a means to improve the existing offer and that commercialisation, even as a means toward sustainability, is not yet a central concern. A lack of capacity and resources are preventing some of the funded arts organisations taking what they have learnt and developed to the next stage:

It has had a huge impact on our organisation, skills, profile and business model, but we are now somewhat held back on pushing digital to the next level by lack of funds. We want to try things out in the ‘real world’ but do not have the funds to do this at our own risk, as we are still unsure if the potential revenue would cover the resources invested.”

Arts organisation comment from Digital Culture Survey 2015.

3.3 Collaboration supporting innovation

The Digital R&D Fund stimulated hundreds of new three-way collaborations, not just through the funded projects but through the application stage. Collaboration was central to the ethos and messaging of the Fund and requisite for success in the application process. The Fund particularly enabled projects where there was an existing relationship between two partners – however nascent – as a way of leveraging social and technical capital that was already proving beneficial. However, for most funded projects, three-way collaborations were new, with two-way collaborations (e.g. between arts organisations and technology partners) more likely to be established.⁴³

Fifty-one per cent of R&D funded organisations reported digital technology is having a major impact on collaborating with other organisations on artistic projects, compared to just 23 per cent of other organisations.⁴⁴

It (the Fund) places us at the vanguard of digital innovation within the fields of self-publishing and audio content, reaching new audiences and helping us broker vital partnerships with other organisations (in terms of research, tech development, and other literature/spoken word organisations who've supplied content to the platform)."

Funded Arts organisation comment in Digital Culture survey 2015

Participation in collaborative activities also helped open up the day-to-day development practice of arts organisations and, to a lesser extent, technology and research partners. For example, some funded arts organisations pointed to a new appetite for working collaboratively with other organisations and with other sectors. Funded R&D projects are also more likely to share their digital experiences, as would be expected with this being a condition of the Fund: 84 per cent of R&D funded arts organisations report actively seeking to share experience with external peers, up from 67 per cent before the start of their projects. This compares to 32 per cent of other organisations in the arts and cultural sector who actively share their experiences with peers.

The Fund increased the likelihood that arts organisations will collaborate in the future. Sixty-seven per cent of R&D funded arts organisations say they are more likely to work with technology partners in the future, 53 per cent more likely to work with research partners in the future. Experiences have opened up new understanding on how the different partners operate and what value they can add to each organisation:

It has not changed how likely we are to partner with technology partners, but has probably made us more confident in being very specific and prescriptive in the specialist skills they can provide."

Arts organisation comment in Digital Culture survey 2015.

However, even the most productive, gratifying and enjoyable collaborations have seldom been free of difficulty. The Fund brought together, sometimes quite rapidly, multiple different cultures, skill-sets, values and languages. This introduces multiple opportunities for cross-sector exchange which in turn can generate innovation; but it can also introduce cross-purposes and asymmetries. For some projects, it took time to establish a common language and shared understanding. The unexpected scope of the work was a challenge for many. In some projects where a considerable additional investment of time was required, it was often the arts partner that had to find that time as the commercial partners weren't being 'resourced' for extra hours. In retrospect, a number of the projects felt that having a single project manager to co-ordinate the activity and communication would have been helpful. On [Project Daedalus](#),⁴⁵ employing a Creative Producer and Research Assistant enabled much more effective collaboration and boosted the project's productivity.⁴⁶

A recurrent challenge was that some of the research partners were restrained by the relatively slow timescales of institutional working (certainly compared to the arts and commercial partners):

The asymmetric sizes of the organisations (a small arts org and a large university department) does inevitably mean that our project is a lower priority for them than it is for us. Universities also have cumbersome bureaucratic procedures that aren't conducive to making the fast decisions needed to design, build and launch a project in nine months. This isn't a criticism of specific personnel, just an inevitable problem with organisations of that size."

Arts organisation.

Yet the research partners played a vital role in testing and problematising the approach to R&D, in the ways knowledge is tracked, developed and presented, and in some cases of providing a 'critical friend' service. Amongst several fresh and to an extent disruptive methodologies, the user testing insights that the academic partners brought to a number of the projects were crucial to the success of the outcomes. The tech partners, in particular, valued this additional intelligence and rigour. The success of the three-way relationships varied project by project, with the role of the academic partner feeling less clear and therefore, more problematic for some projects.

Funded organisations from all three sectors also stressed that it was the relationship between the individuals from each organisation that was important, rather than the three-way organisational partnership – arts/tech/ research - as such. For the most part, if people got on, the project flourished. Where they did not, the project suffered. Some projects developed their own review and mediation processes to reduce the negative effects of different personalities and/or strategic and organisational priorities. For example, by involving other colleagues from their organisations, they were able to widen ownership and engagement and neutralise some of the more challenging aspects of small teams working intensively together. Clarity about the roles and responsibilities of different partners was essential.

One structural issue occasionally stood in the way of genuinely equal collaboration, with all the shared purpose and reward this entails: that each project required a lead (i.e. applicant) partner. For most projects, this applicant partner was able to separate process issues on contracting with concept and content issues on collaborative R&D. However, in some cases, the applicant partner operated more as a client than an equal collaborator, which in turn affected the quality of the relationship and its outcomes. In other cases, the technology partner operated as a service provider as per a normal commercial relationship, rather than as an R&D partner exploring a proposition with equal risk and reward.

The Fund, through the projects, introduced learning on the challenges of collaborative R&D. For example, of the need to:

- Establish clarity and shared purpose in the early stages of project development.
- Managing change – as energy, attention, capacity and commitment change over time.
- Negotiate contractor/client relationships, with the attendant issues of ownership, risk and reward.
- Understand and accept cultural and professional difference.
- Establish a balance between learning and doing, exploration and reflection, process and product.

Notwithstanding the challenges of collaborative practice, the Fund generated and mobilised a diverse and largely productive set of collaboratively-informed R&D activities. These were mostly applied (problem/opportunity focused) and were clearly formulated.

Outcomes included:

- Co-creation of a shared vision and identity for the project(s) – based on learning together.
- Productive exploration of specific project briefs based on exchange of ideas and approaches, translation of language, and mediation of individual and collective aims and objectives.
- Reduction of sectoral asymmetries – toward mutual understanding and respect;
- Some evidence of collaborative risk-taking – at inception and as the relationships matured.

- Some evidence of collaborative market-making – e.g. appreciation of opportunities for future work.
- Sustained relationships beyond the life of Digital R&D fund – e.g. for Nottingham’s Riot 1831 and TILO. For the former, a researcher has been recruited to embed research into future organisational development. This signals collaboration-driven culture change (see Section 3.4 below) in the way research is valued and positioned.
- A longer-term commitment to embedding research into partnership working.

Some of these outcomes are illustrated in our case studies in Section 5.

3.3.1 A ‘grand partnership’?

The Digital R&D Fund clearly demonstrated the strategic value of multi-agency partnership. Like the collaborations the Fund invested in, the Funding partnership was based on a recognition that innovation comes through cross-over, convergence and collaboration. The partnership has demonstrated what can be achieved by working together. It has also signaled new opportunities going forward. This is explored in Section 4 of this report. It is clear overall that by working together, the Fund delivered more than would have been possible through a single-funder proposition. It demonstrated the value of a coordinated strategic intervention in an area of shared opportunity:

- Its collective resources made the Funding amount bigger and thus more significant (although ACE was considerably the largest investor). It also brought together a rich mix of organisational expertise and capacity – across the collective workforce of the organisations.
- This in turn generated shared profile and reach – leveraging the brands and audiences of each partner. This helped to increase the quality of applications to the Fund and to broaden and diversify the audience for the learning generated by it.
- It was a reasonably open, explorative and flexible partnership – allowing for the structured negotiation of strategic priorities to enable a range of outcomes. The co-design of the logic model exemplifies this, as does the agility to respond to perceived gaps or to target emergent opportunities – such as for Big Data.

But as with the project collaborations, this multi-agency approach also demonstrated the challenges of partnership. For example:

- Brand association proved challenging, with the Fund becoming erroneously but habitually identified as the ‘Nesta Digital R&D Fund’. This was due to Nesta’s role as the programme manager. For ACE, the lead funding partner, greater brand association (i.e. shared reward as well as risk) was expected. For the AHRC, which invested a sizable proportion of its knowledge-exchange funding allocation, clearer profiling would have been welcomed, as would a stronger emphasis on the knowledge exchange and research outcomes from the programme.
- Ownership and internal knowledge exchange across and within funding partners was not as extensive as anticipated. For example, knowledge of the Fund, appreciation of the outcomes it was delivering and the learning points it was generating (for the arts and for R&D and innovation more generally), could have been more widespread. Clearly the Fund helped illuminate some critical agendas for the arts – e.g. approaches to audience development, production, innovation and business models. This is certainly informing ACE strategic thinking. But the extent to which the knowledge generated by the Fund is shaping strategic thinking or practice across, for example, ACE artforms is not yet clear. As part of a wider ongoing review of impact and outcomes across its investments, AHRC is conducting its own research into the impact and knowledge gained by academics involved. The longer timelines for academic research and publication mean it can be harder to identify the short-term impact, but AHRC will continue to capture impact on funded projects and utilise knowledge generated for internal development and in some instances for publication (e.g. in their Annual Impact Report).
- It is also unclear how the Fund sits alongside other funds – e.g. ACE’s Grants for the Arts – for example, or the extent to which learning from the Fund (e.g. in terms of the types of activity that it enabled) might be applied to other funds and future funding (e.g. where other funds could possibly take on some of the objectives of the R&D Fund).

3.4 Culture change

The Digital R&D Fund influenced genuine culture change for some participants – in terms of openness to new collaboration, commitment to digital solutions for organisational challenges and opportunities, and an appreciation of the value of risk and, potentially, also of the opportunity to learn from failure.

The Digital Culture Survey suggests that R&D activity in the arts sector as a whole is decreasing, possibly as a result of diminishing public funding. R&D funded organisations by contrast appear to have embedded R&D behaviours: in 2015, 91 per cent reported taking risks with digital technology, up from 63 per cent in 2013 and compared to just 23 per cent of the sector as a whole.⁴⁷

It allowed us to create an app that delivers our content to digital consumers only. This has forced the non-digital in our organisation to reassess both digital creation methods and digital markets.”

Arts organisation comment in Digital Culture survey 2015.

Receiving the grant was a major boost to team confidence, seeming to validate and encourage our way of thinking. The ticketing system has created better conversations in-house and improved our routine dialogues with visiting artists and companies. As well as enhancing our ticketing platform, the systems, tech and sales flow upgrades required to run the project, have streamlined the organisation, allowing us to progress with our business strategy.”

Arts organisation comment in Digital Culture survey 2015.

Different types of culture change were stimulated by participation in the Fund. For example, the Fund prompted a review of existing working practices and helped legitimise the development of new ones. This includes relatively prosaic elements such as office management systems, the use of iPads rather than traditional paper and pen, or greater use of digital conferencing and remote working. It also includes more transformational activities:

The Digital R&D (Fund) has substantially helped the organisation to develop a new entrepreneurial research and development based strand. We are now more connected to (the) coder and developer community than we were before. We have created a new artistic team that operates in a new format, for the organisation. We have created a whole new explorative teaching unit, working with movement, technology, coding and science.”

Arts organisation comment in Digital Culture survey 2015.

However, few R&D funded arts organisations have managed to use digital technology to develop new revenue streams or enhance profitability, whether through the R&D Funded project or other uses of digital technology. Most Digital Culture survey respondents, when asked what specifically has contributed to increased revenue and profitability, spoke quite generally about raised profile rather than activities actually enabling change. Some comments from arts organisations that were exceptions rather than the rule include:

Digital marketing has seen box office sales grow...20 per cent year on year for three years despite a reduced marketing budget”, “distributing our work in cinemas through streaming”, or “online sales of Art Pass is core revenue stream.”

Certainly, the Fund improved confidence in terms of the innovation in audience development and reach. It also successfully demonstrated the cultural and technological opportunities available in this space. It has encouraged organisations to look at and learn from what others are doing with examples of project partners being open to more risk taking to explore new innovations:

The management now look outside more, at what other museums and galleries are doing. In (the) cultural sector you tend to get so involved in delivery that (you) don't take time to look outside.... We are also now more comfortable with the unknown. Before we would have an idea, agree it, then go out to a tech partner to commission. Now we get them in earlier to explore what is possible."

Nottingham Museums and Galleries.

The Fund was thought less impactful for the wider arts and cultural sector, and its influence on technology and creative businesses (outside of those participating in funded projects) has likely been even less pronounced. Questions of transferability, replicability and resources are key here. While arts organisations who applied to the Fund but didn't receive funding seem more aware of the potential digital technology and collaborative approaches R&D might have for their organisational development, it is less clear whether they have or could effectively explore this potential. For organisations which did not apply for the Fund – i.e. the rest of the arts sector – culture change is less pronounced.

The Fund has to some degree, increased awareness from technology and creative businesses of the innovation and growth potential of the arts and cultural sector, but it has not significantly improved the sector's position as a priority market or source of R&D. Interviews for this evaluation made it clear that the collaboration would not have been possible without the Fund for either the arts or tech partners. The lack of commercial return on investment for such early stage R&D would not be attractive to tech partners, in particular, without some incentive – i.e. funding.

For academic researchers of different disciplines, the Fund facilitated some culture change in terms of methodology and language, with participation in a live collaborative activity requiring a balance of academic depth and practical knowledge exchange. It also generated an appetite in some researchers for further collaboration in cross-sector activities. This is in part because the Fund helped reduce the critical distance between 'researcher' and 'researched' and introduced the new learning generated through the live exchange of knowledge and the development of new types of practice. It also required the researchers to develop new, sharper, perhaps more accessible, ways of summarising research findings to benefit collaborators and a wider readership.

There was clearly a range of different experiences. Some academics, such as Franke Bernhard from University of Brighton, the research partner for [Netpark](#), had previous experience of working with non-research partners on tech projects and collaborated on all aspects. Others, such as the [Riot 1831](#) research partner, Roma Patel from Nottingham Trent University, were familiar working with arts partners, but the experience of working with a tech partner was new and required the understanding of the new language. The short research timescales within the R&D projects required the academics to adjust their approaches to data collection and analysis.

3.5 Increased digital capacity in arts and cultural organisations

(The R&D project) has been brilliant. It engaged almost all of our staff in a variety of ways - many were involved in the management of the project, engaging with digital in new ways, and several took part as 'audience', which developed their own critical thinking. We have not examined the benefits of Respond (the online platform developed) as a workforce development tool, but its impact is unarguable."

Arts organisation.

The Digital R&D Fund has, overall, influenced the development of digital capacity across participating arts and cultural organisations. However, the impact for individual organisations varied significantly. Overall, it:

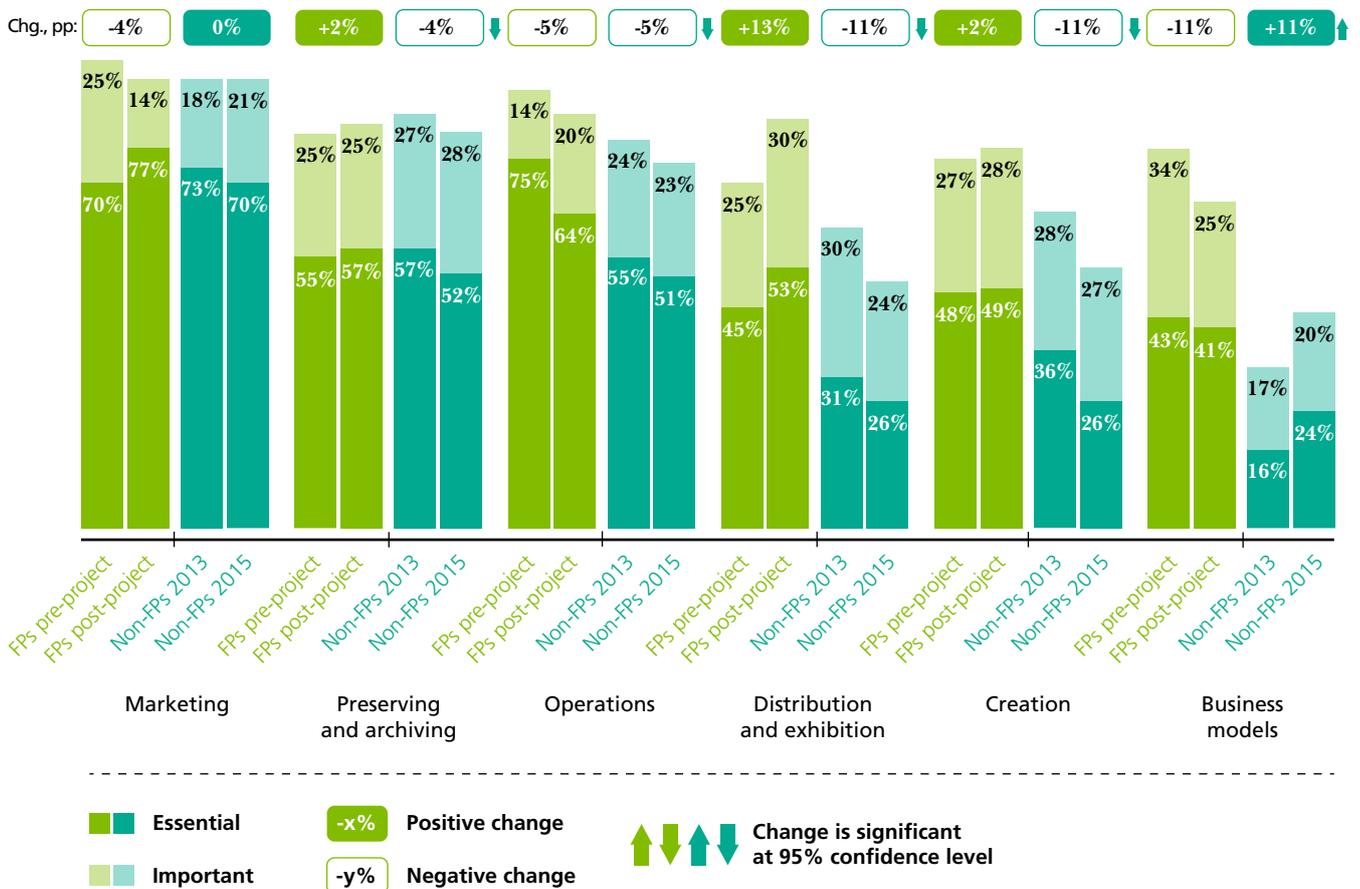
- Improved understanding of what can be achieved through digital technology and how such technology can enhance core objectives. For organisations such as the Nottingham Museums and Galleries and the National Holocaust Centre and Museum it opened up a whole range of possibilities for new projects that can deliver ambitions and goals in new ways.
- Increased confidence on how to articulate goals with technology and (to a lesser extent) academic partners. The experience of working on the projects as collaborators has given organisations confidence to commission and/or collaborate on future digital projects. MeYouandUs comment: *"As a small organisation the Fund was a catalyst in developing our skills and thinking around how we develop and has given us the confidence to consider larger digital collaborations"*.
- Addressed some specific skills gaps – from the use of social media to digital distribution systems. For Comma Press it *"enhanced in-house skills and experience, particularly in relation to iterative design and user testing"*.
- Assisted the integration of digital opportunities across the organisation – connecting core business considerations. Several organisations described how digital responsibilities have become part of a holistic agenda which works across all departments rather than simply as a 'technology issue'.
- Opened up new value chains, fomenting an emergent community of collaborators where technology, research and arts organisations connect and co-create new knowledge and experiences. This is particularly pronounced for projects that developed new products or platforms that are transferable to other sectors – such as [TILO](#)⁴⁸ – a hybrid display system for cultural venues co-developed by media artists MeYouandUs with technology partners Pixel and Amaze, cultural venues Phoenix and FACT and research partner Lancaster University.

The Digital R&D Fund also demonstrated challenges – of collaboration, of nurturing innovation, and of embedding R&D in the arts. It:

- Highlighted skills and capacity deficits and the challenge of maximising the potential of technological and cultural change. Several funded organisations noted that while the process helped to address some skills gaps, it also exposed them to new ones as the complexity of their work increased. A small number of arts organisations did not develop sufficient in-house digital skills to take the projects forward and don't have the resources to buy in the skills necessary to maximise digital opportunities.
- Illuminated skills and attitudinal disparities within and between sectors (and within organisations) – notably the agility and entrepreneurship of technology partners in contrast to the arts and research partners which work to different sets of values and approaches.
- Introduced examples of the opportunity to balance cultural and commercial value and of the role of R&D in this process. Certainly most funded arts organisations said the R&D work undertaken would not have been possible without the Fund – it is not something they could have self-financed, other public funding sources are not available and commercial investment is yet to even tentatively explore the potential of collaborative digital R&D in the arts.

The Fund seems to have attracted the most digitally committed arts organisations and/or nurtured digital appetite within a cohort of already inquisitive actors. As Figure 8 below shows, R&D Funded arts and cultural organisations see digital technology as more important than the wider arts and cultural sector, especially in areas not necessarily central to core arts focus, such as distribution, creation and business models. This suggests a positive impact for the Fund in that it has strengthened existing commitment and increased commitment to digital capacity-building as part of organisational development. However, it is less clear the extent to which funded organisations were already strongly committed and it raises questions regarding the influence of the 52 case study projects on changing perceptions and behaviour across the arts.

Figure 8: Proportion of FPs that saw digital as important, compared with non-FPs (ordered by difference in 'distance travelled')



Source: Digital Culture Survey 2015

There is growing appreciation amongst R&D- funded organisations of the role of digital for distribution and exhibition – 70 per cent reported it as being important pre-fund, 83 per cent post-fund. By contrast the reported importance among the wider arts and cultural sector of digital for distribution has fallen – 61 per cent in 2013 and 50 per cent in 2015⁴⁹ (which again brings into question the influence of the Fund on wider behaviour).

Other specific digital capacity outcomes described by interviewed arts and cultural organisations and their partners include:

- Improved understanding of the role of digital technology in supporting the delivery of core organisational goals – from enhancing communication and improving reach to a positive influence on artistic innovation.
- Greater capacity to identify digital solutions to organisational development issues – from data management to distribution. This includes greater awareness of effective approaches to digital development – such as how to troubleshoot to reduce the impact of unforeseen technical issues, or how to avoid them through early user testing and a more rigorous user-centred research to test key assumptions.
- Increased capacity for a range of digitally enabled activities across the organisation – beyond individual members of staff, where digital is mainstreamed to enhance overall performance.
- Pronounced development of digital capacity in audience engagement activities – such as via social media, the use of apps to increase levels of interaction via gaming tools, and a growth in platforms to stimulate feedback loops and multiple narratives with audiences.
- Extended capacity for some to target, connect with and engage harder-to-reach audiences such as those with a disability.
- Enhanced awareness of the opportunities enabled through collaboration with technology businesses – with greater appetite to build capacity through both contracting in expertise and collaborating for mutual benefit.
- A cultural shift for some academic researchers – e.g. in terms of how they collaborate with arts and technology partners, approaches to project management and more flexible timelines, and ways of developing and exchanging knowledge (e.g. as an ongoing process).

However, it is too soon to establish whether improved capacity will affect medium to long-term development outcomes, or whether the Fund enabled a short-term uplift in an applied and project specific environment. A challenge going forward will be to increase capacity (and the appetite for increased capacity) in 'normal business' beyond the exceptional circumstances of a well-resourced R&D programme. As one arts organisation explained:

It's been a massive opportunity for us, and a good one. It's been complex to navigate and has been a significant investment of time and effort for us as a small organisation. I don't think the arts sector - small or large - is really geared up to the digital world, and while great projects emerge, they are hard for many organisations to justify or they can't find the resources to implement. And no one, really, has found a way to monetise this way of working."

3.6 Improving the knowledge base

The Fund has generated a significant body of case studies – a portfolio of next and best practice for digital R&D in the arts. This has been intelligently and creatively disseminated across the arts and cultural sector, with a range of tools and platforms, events and publications. As a consequence, the Fund has undoubtedly increased the profile of digital R&D in the arts, increased awareness of the ways such R&D can enhance core activities and introduce new ones, and increased uptake in digital development opportunities, including those founded on collaboration. It has also provoked a new process of collaborative R&D and increased an appreciation of the commercial potential this delivers.

However, issues of transferability and replicability persist at a time when many arts organisations are struggling to bridge gaps left by reduced public sector investment (e.g. from local authorities) or to increase revenue via a blend of income and investment sources. The Fund provided an exceptional opportunity for funded organisations and their collaborators, but it has proved difficult to influence the practice of arts organisations operating in ‘normal business’ circumstances.

There are indications that digital resources produced by the Fund have been well-used and provide useful information on the funded projects and on the wider digital development context:

- The Twitter account @digitalrnd has close to 4,000 followers and is a rich source of news, views, advice and ideas on digital R&D and innovation across the arts and wider creative and tech sectors.
- Digital R&D blogs by the Funding partners, which targeted specific development themes, allowed a depth of interaction unavailable through normal downloadable materials.
- Between 2013 and 2015, the R&D Fund website received over 90,000 visits (with nearly 35,000 returning visits) and over 216,000 page views. As at [date] the Digital Toolkit⁵⁰ had received almost 1,600 downloads (with activity peaking after R&D events). The Toolkit provides resources, tips and articles for arts and culture practitioners wishing to test ideas, improve existing digital products and services or develop new ones. The second most popular download was *Native Magazine* with nearly 400 downloads. The Business Models Guide is the most popular theme guide with close to 350 downloads. The theme guide with the least downloads is Accessibility, with nearly 170 downloads.
- The website and other materials are clearly signposted on the websites of funding partners and via their individual social media and news-generating activities.

Sixty-one per cent of the 2015 Digital Culture Survey respondents are aware of the Fund - of these, 49 per cent read about the Fund on ACE, AHRC or Nesta websites. However, overall engagement with the Fund and its resources decreased in 2015. The Digital Culture survey shows of those aware of the Fund:

- 21 per cent visited the website in 2015, down from 29 per cent in 2014.
- 29 per cent read case studies or R&D reports compared to 34 per cent in 2014.

There was a slight increase in attendance at events and use of toolkits and how to guides, both up 1 per cent from 2014. In 2015, 16 per cent of the sector attended an event that featured the Fund and its projects, 13 per cent used toolkits or how to guides.⁵¹

The Fund’s events programme was well attended. It was effectively promoted online and the content of events (e.g. presentations and learning materials) were clearly presented and in some cases available after the event (much of it downloadable or available to stream live).

Events included:

- **Collaborative Workshops:** Held in September and October 2013 and open to any organisation interested in applying to the Fund. They were designed to help organisations develop their projects further and meet other organisations and academic researchers interested in participating in the Fund.

- **Learning events:** Led by 21 Awake, the learning events served as both, induction sessions for newly funded projects and an opportunity for all projects to network, present their projects and discuss the main learning points. The events involved project presentations, small group discussions, and themed workshops such as 'Key Learning Themes', 'Making Sectoral Change' and 'Writing the Final Report'.
- **Annual showcases:** 320 people attended the final annual event 'Making Digital Work', in Birmingham in October 2015. The full-day event involved presentations by funded projects, keynote speeches from digital innovators and stakeholders of the Fund, masterclasses run by project partners, and breakout sessions around the themes of Business Models, Mobile, Accessibility, Data and the Digital Toolkit.
- **Tech Talks:** In the final months of the Fund, November and December 2015, three 'tech talks' were held across the country in the North (Liverpool), South/South East (Cambridge) and South West (Plymouth), aimed at practitioners, companies and researchers working in the field of digital. They were designed to share the learning from the Digital R&D Fund across the ACE areas. Each of the events featured funded projects reflecting the themes 'Digital Art in Public Spaces', 'Digital By, With and For Children and Young People' or 'Serious Play'.

The arts, technology and research partners interviewed felt the learning events and annual showcases were valuable networking opportunities, a chance to meet and discuss the challenges and successes of digital R&D. However, some felt a more focused themed approach would have been useful, something picked up through the final annual showcase and the Tech Talks.

In addition to an extensive programme of dissemination platforms, products (such as videos) and events, to which significant resources were allocated (an extra £185,000 in the final year of the Fund), the individual project partners also shared the learning from their projects through presentations at conferences, visits to and visits from other organisations, and the media coverage this has generated. For example:

- Nottingham Museums and Galleries and Nottingham Trent University presented the [1831 Riot @ Nottingham Castle](#)⁵² to other museums at a seminar day hosted at the Castle Museum in September 2014 and at the Digital Economy conference at Imperial College in December 2014. The Heritage Lottery Fund has been directing heritage sites and museums interested in augmented reality to Nottingham Museums and they hosted a number of visits to the exhibition by museum curators.
- **Culture Counts: Quality Metrics**⁵³ partners presented the project at the Data Power conference⁵⁴ in Sheffield; 2015 Policy Week in Manchester,⁵⁵ the AIMAC conference⁵⁶ in Marseille, France; at a major British Museum conference What's Data Got To Do With Me? and at an Arts Marketing Association event in Birmingham. Academic partners at the University of Manchester are submitting journal articles, including to the *International Journal of Arts Management*.
- Learning and experience from [Project Daedalus](#)⁵⁷ was shared at a Drones network event at arts partner AND's annual festival. The partners also participated at the Drone expo at Manchester Science Festival 2015 and academic partner, University of Salford, has established a Drones Research Network, which consists of over 30 academics across six universities internationally.
- More academic articles and papers are planned but the timelines for publication go beyond the lifetime of the Fund.

It is not clear what the audience response was to these materials (and for some academic research it is too soon to say), and thus whether investment in such dissemination materials was a good use of money. It is, though, clear that overall the Digital R&D fund provided a significant platform and community for presenting the funded projects, sharing learning, provoking discussion and commenting on development trends and opportunities. It:

- Balanced depth with diversity – with academic interventions and blogs providing a rich source of new knowledge. However, the level of engagement from academics varied considerably. In addition, it has not been possible to quantify the extent to which audiences/readers engaged with such materials beyond participants in the Fund.
- Generated a strong network of experimental collaborators and should be understood as part of a wider process of cross-sector practice and exchange.

- Delivered a level of disruption to the wider arts, technology and research sectors (particularly the former), with the portfolio of case studies and lexicon of digital tools reaching across different strategic agendas, programmes and networks.
- Contributed to particular knowledge advancements across the arts – such as to the value of collaboration; practical approaches to communication, engagement and interaction; and for approaches to growing, diversifying and co-creating with audiences.
- Contributed to new ways of working across arts and humanities research, with improved awareness of collaborative practice and R&D as a research activity. However, there is some way to go to build widespread awareness and effect change in the universities research sector.

However, for the duration of the Fund, the management of knowledge and the clear dissemination of learning has proved a constant challenge. At the very least the Fund has made it clear that digital must be considered as part of the mix if arts organisations are to survive and thrive. However, it has proved challenging to disaggregate 52 different projects and present a clear set of themes, tools and practical and relatable recommendations for the wider arts sector. The Fund has generated learning that is illustrative and indicative rather than systematic and compelling. There are two main challenges here:

- Firstly, that replicability and transferability are difficult to communicate given the additional funding and support provided to the 52 Digital R&D projects. That this funding also enabled collaboration with technology businesses which might otherwise be financially out of reach, also provides a barrier to transferability.
- Secondly, the format of academic research materials does not appeal to many arts organisations looking for easily accessible information and working on a ‘just in time’ approach to knowledge development (i.e. where they are only likely to request or access knowledge when they feel it is needed). Much of the research and learning materials were structured and designed for enhanced accessibility and a wider readership in mind, but though an undoubted asset of the programme (i.e. a huge and diverse knowledge base), time-poor arts organisations did not benefit as much as they might from the materials available.

A major strength of the R&D Fund has been the development of a rich and diverse portfolio of case studies, complemented by a wider knowledge development and learning programme for which digital tools and events have played an important role. The Fund has undoubtedly set some agendas, changed some perceptions, influenced some debate and mobilised some new types of activity. It has also worked in some cases to ‘mainstream’ and integrate digital agendas into wider discussions on sustainability, excellence and innovation across the arts. The question remains though as to whether it has reached enough arts organisations and made a difference to the ways they conduct their business and engage other sectors in shaping their future.

The challenge going forward will be to ensure the quality of conversation continues to improve, that digital is recognised as an enabler rather than the solution, and that real progression is made from utilising digital to enhance existing practice to exploring new terrain where digital enables the adoption of business models that can be truly transformative.

4 Conclusions and questions

The Digital R&D Fund for the Arts in England played a major role in supporting capacity-building and awareness-raising for the role of digital in sector development and of collaborative R&D for excellence, innovation, sustainability and growth. It was particularly impactful for projects that explored opportunities to enhance reach and engagement with existing and new audiences. Yet it struggled to convert innovation in such activities with the development of new business models that could help arts organisations diversify their income streams by monetising content and other assets which have been historically under-leveraged.

The Fund had a very significant influence on the 52 funded arts organisations and incentivised a programme of collaboration that lifted capacity, improved confidence, and enabled the pursuit of activities and tools which would not have been possible in 'normal business'. It was also progressively disruptive in generating learning across the arts and, more so, in changing the terms of reference for a wider discussion on excellence, innovation, reach, sustainability and growth. This is where the Fund delivered greatest value: as a strategic policy intervention to explore the role of R&D in the arts. It was a demonstrator and disruptor in a context of technological and social change. It also proved agile and adaptable – improving as it developed and targeting different types of activity to diversify the portfolio and broaden the knowledge base.

The Digital R&D Fund incentivised arts and cultural organisations, working with technology and research partners, to:

- Be more open, collaborative and interdisciplinary; mobilised by multiple interactions with audiences.
- Be agile and creative: co-creating agendas and experiences with audiences and partnerships and exploring opportunities to generate revenue through existing and new relationships.
- Be critical and challenging: with artistic excellence at the core, demanding that creative talent work harder and differently to more effectively explore new processes and deliver new experiences and products.

The Digital R&D Fund did much to lift digital capacity, literacy and, most evidently, confidence across the arts and cultural sector in England. Through brokered collaboration, information, training, R&D activities and events, it delivered multiple positive outcomes to artists, creative businesses, arts and cultural organisations; plus to technology and research partners. It increased, enhanced and accelerated innovation and introduced new ways of working, including different approaches to research and knowledge development. It enabled deeper and more diverse relationships with audiences, inspired the co-creation of rich and fresh content, and led to some, albeit too few, emerging new business models which will in turn lift the productivity and sustainability of the sector. Overall, it enabled the arts and cultural sector to more effectively integrate and mainstream digital as a means for excellence, innovation and growth; mobilising a new community of digitally hungry, collaborative creatives. The most compelling outcomes of the Fund include:

- A wider sector conversation on the role of R&D in the arts, on risk, collaboration and innovation. The portfolio of 52 projects, the community that has been fostered, and the dissemination of learning materials, all helped reshape the strategic narrative on arts investment, raising awareness of how R&D is key to the vitality of the sector and that with a more targeted approach to brokerage and investment, arts organisations can contribute as productive and equal partners to the wider creative and knowledge economy.
- The development of new ways of working in the arts, particularly toward reaching and engaging audiences and the role of collaboration for innovation. For example, Sheffield Doc/Fest was able to develop new ways of engaging audiences through an online, immersive game investigating what is needed to turn public places into spaces for interactive digital art works;⁵⁸ Knowle West Media Centre⁵⁹ in Bristol was supported to diversify its approach to community engagement via a data toolkit produced by a group of young people that explores how live and open data can be used as the basis of community-based creative projects; and Unlimited Theatre generated a new approach to content development and distribution through a digital publishing platform which takes play scripts and applies techniques of digital storytelling, live theatre and co-design to create new reading experiences.⁶⁰
- It generated new knowledge through a range of research methodologies and via cross-sector exchange. This introduced a level of transferable practice, with research partners increasingly open to different ways of communicating and exchanging knowledge. For example, Metal, their technology partner Calvium and research partner University of Brighton combined their complementary skills and practice to develop **NetPark**,⁶¹ which claims to be the first digital art park; and the **Riot 1831**⁶² project in Nottingham, which improved knowledge of the art sector for the technology partner and opened up the arts partner to the opportunities of collaborating across boundaries with HEIs and technology partners to co-create something fresh, distinctive and in the context of Nottingham's cultural offer, scalable.
- It helped accelerate the development of activities which otherwise would not have happened and it brought some to a position where scale-up/next-stage investment are possible. MeYouandUs would not have been in the position to develop **TILO**⁶³ to the quality of finish achieved and at such pace without the Fund.
- It generated some new understanding of where innovation and growth might arise – with a cohort of projects offering real growth potential and well positioned for next-stage investment – either through public funds or via commercial sources. This is where there is so much to learn and thus where there is most scope for development and future investment. Some arts organisations, in collaboration with tech partners and research/higher education partners, can position themselves as digitally-enabled, creative hubs which connect creativity and business, art and society - to prototype and showcase ideas, products and services, and to offer scalable commercial business models of their own. The opportunity exists for arts organisations to play a more vigorous and visible role in commissioning across boundaries between otherwise unconnected activities; in externalising and commercialising their knowledge; and in operating as enabling platforms for creatives and technologists to collaborate.
- It embedded different processes of digitally enabled experimentation and boundary-crossing practice. The Fund affirmed the importance of R&D – for the arts; and the role of the arts for the wider creative and knowledge economy. It highlighted the importance of process as a means to embed innovation and develop new and better ways of reaching and engaging audiences as well as generating and disseminating knowledge.

The Digital R&D Fund operated as a large-scale demonstrator to explore how targeted investment impacts on collaboration, innovation, development and growth for the arts and cultural sector. In doing so it opened up a conversation on how the education and research sector can more effectively collaborate and exchange – e.g. to co-created briefs and to a shorter than usual timescale. It was situated as part of a wider process of strategic exploration – at a time of 'grand partnerships', austerity and rapid technological change. At the very least, it helped stimulate new thinking and practice in this context. It also opened up new conversations on how best to maximise the R&D potential of the arts and cultural sector – as a dynamic contributor to the wider creative and knowledge economy.

By doing so, it enriched the knowledge base of strategic partners and raises some vital questions for policymakers. For example:

- **How to incentivise radical and sustainable change in business models across the arts and where might this innovation come from?**

The Fund stimulated organisations to take some solid first steps on this journey, but it is unclear whether or how they could be supported to travel faster to explore new business models rather than focusing on improving their existing ones. It is also unclear whether the projects supported through the Fund were the most adventurous, radical, agile and innovative; or whether the blend of partners for each project enabled the distinctive skillsets of each to most effectively contribute to the process.

- **How to marry audience development outcomes (i.e. amplifying existing deliverables) with commercial outcomes (e.g. new audiences reached in new ways)?**

The Fund was most impactful for organisations seeking to enrich, enhance and extend reach and quality of audience engagement. One conclusion here is that digital capacity is growing in this key area of audience reach. However, with reduced public investment set to continue and with arts organisations across the country nurturing some incredible yet under-leveraged assets, two very different push and pull factors are shaping an investment landscape which will require arts organisations to marry their cultural and their commercial agendas much more cohesively than currently.

- **How to expand and diversify collaborative digital R&D activities across the arts in ways that generate value to the wider society and economy?**

The Fund raised awareness of the value that can be generated when arts organisations embark on R&D activities in a dedicated and directional manner. It also assisted in increasing awareness of the merits of risk and the opportunity to learn from failure across the arts and thus how risk-taking arts organisations can enhance the creative process for technology business. Yet without dedicated investment, incentivised collaboration and a co-ordinated programme such as that delivered by the Fund, R&D might not come so easily and risk may not be so readily embraced.

- **How to convert increased awareness to increased practice in digital R&D activities and how to blend academic research with 'just in time' knowledge needs of organisations and businesses?**

As this evaluation makes clear, the Fund developed a rich portfolio of case studies, some of which will flourish into the future. It made some progress in advancing knowledge and sharing learning. Yet it fell short of changing practice across funded organisations and into wider networks across the arts, technology and research sectors (although for the latter, this may take longer). It is also unlikely to significantly influence changes of practice across the technology and research/education sectors, except for those directly involved in the Programme. The opportunity exists to build from the Fund and support the research community to develop effective collaborative mechanisms with the arts; and for mobilising a community of active arts partners across the technology sector – both working to affect radical change in the arts but also to benefit commercially or otherwise from a still very under-tapped resource of creative talent and arts audiences.

- **How to build an accessible and practical knowledge base with regard to the range of methodological approaches undertaken by academic and research partners?**

This is still very much an emergent body of work which, with effective dissemination and explanation, could open up new ways of working for different academic disciplines – e.g. in terms of how they work with arts organisations and technology partners; or more broadly in the ways they co-create briefs and generate knowledge collaboratively. In addition, published materials from the Fund will be of value in shaping future R&D activities and investment programmes.

- **How to pick the scalable propositions for next stage investment?**

The Fund operated as a proof of concept exercise for multiple investable propositions. It has, through smartly brokered investment, assisted in developing a programme of activities, products and services that offer undoubted artistic value plus significant commercial potential. A small number of projects show potential for real development and growth which could be game-changing for the arts organisations concerned. A Fund that had actively sought more focused commercial propositions at an earlier stage in the collaboration process, might have generated much more 'deal flow' and in turn demonstrated how R&D in the arts can also lead to new scalable business models.

This final point is critical for future investment considerations in the arts. The Digital R&D Fund changed the terms of engagement and shifted the 'arts funding' conversation to one that does not seek to decouple excellence and growth, or inclusion and commercialisation. The challenge going forward for funders and funded alike is to nurture a landscape that encourages collaboration, risk-taking and R&D, internally within the arts and cultural sector, and crossing over to other disciplines. With the pace of technological change accelerating, the role of the arts in contributing to innovation, growth and competitiveness, while also delivering social and cultural value, is set to remain in the spotlight.

5 Case studies

Riot 1831 @ Nottingham Castle: Mobile augmented reality (AR) app

Arts partner: Adrian Davies, Exhibition Design Manager/Project Lead, Nottingham City Museums & Galleries.

Tech partner: Emma Hutson, Consultant Digital Producer and Andrew Whitney Hot Knife Digital Media.

Research partner: Roma Patel, Research Lead/Project Lead Support, Nottingham Trent University (School of Art and Design).

The project

Riot 1831@ Nottingham Castle is an augmented reality (AR) permanent exhibition and application presenting accounts of real people who witnessed or were involved in the attack on Nottingham Castle during the cities 1831 National Reform Bill Riots. AR and

storytelling opened up new possibilities for presenting the history of the riots in new and engaging ways, from the perspectives of different people involved. The mobile AR application used advanced object tracking technology to superimpose 3D real-time computer environments and animated first person 'performances' onto the museum objects. This allowed visitors to simultaneously interact with the museum objects and experience the events that took place on the night of the riots through the voices of the people present.

The exhibition opened with a 'soft launch' in May 2014 with a full launch to the public in July 2014.

www.riot1831.org

Outcomes

Audience development

Augmented Reality is engaging audiences in a deeper relationship with the museum and enhancing their experience and understanding of the history of the city. Research during the Riot 1831 project found: 77 per cent of visitors found the AR engaging; 70 per cent felt the app helped them to understand the historical relevance of the object they were looking at; 79 per cent felt the stories helped them understand the history better and 85 per cent agreed the interactive elements helped them remember the experience.

Culture change and increased digital capacity

The project has resulted in a number of profound changes to the way Nottingham City Museums and Galleries work. On a very practical level, senior staff now have iPads and use images and video, much more

in meetings to present ideas. The 1831 Riot project has been a catalyst for developing a digital media strategy for the wider service, which includes the training of staff in digital media and the development of a new, more engaging website. The learning from the project is also informing the major redevelopment of Nottingham Castle funded by the Heritage Lottery Fund (HLF). They will be looking at the thousand-year history of Nottingham through 11 key moments using stories of people to explore the history from different perspectives. The individual story approach was trialled through the 1831 project.

Another significant culture change is that Nottingham Museum and Galleries now carry out more external research on what others are doing to inform their own development. They generally take a more open approach to exhibition development, with less of a fixed idea about what the outcome will be at the start. The R&D project has made them less risk averse.

Collaboration

The collaboration was positive for all partners, however, there was a process of learning a common language. Adrian from the Museum and Roma from Nottingham Trent University both had a background in performing arts so had a common language. It became apparent that Hot Knife did not fully understand the terms Adrian and Roma were using and that they, in turn, hadn't fully understood the 3D of AR and were thinking of 2D film.

The openness of the partners to learn from and understand each other meant the partnership succeeded but the project was not without challenges. The scale and scope of the work was unexpected and much of the extra work fell to Adrian at the Museum.

Despite the challenges, Hot Knife has been commissioned by other members of the Museums and

Galleries team, since Riot 1831 to work on an app and trail of the Nottingham Caves. They are now in discussions about extending this to a trail across the city.

Sharing learning

Roma and Adrian have presented their experience of the project at conferences including a Museums Association conference in 2014. HLF has been directing heritage sites and museums interested in AR to Adrian, who has hosted a number of visits to the exhibition from museum curators.

The project has given Adrian the confidence to talk about what doesn't work as well as what works. The challenges and failures are as important as the successes in personal learning and in sharing the learning with others. The arts and cultural sector traditionally don't talk about what doesn't work.



Interact

Arts Partner: The National Holocaust Centre and Museum, NHC.

Technology Partner: Bright White Ltd.

Research Partner: University of Huddersfield: Professor Minhua Eunice Ma (Research Partner).

The project

Interact is a R&D project that aims to preserve the powerful and engaging experience of listening to, and interacting with, a Holocaust survivor: allowing future generations of museum visitors vivid access to these unique stories.

Interact demonstrates how technology can be integrated and applied to a pre-recorded testimony given by a Holocaust survivor to enable future visitors to ask questions and receive answers from that filmed individual. This recreates the experience of interacting with a Holocaust survivor, providing a new and inspiring way to engage with primary testimony.

Interact is NHC's first technological project. It stemmed from an ambition to create an innovative way to preserve direct contact with the Holocaust survivors, contact that current visitors to the museum have through discussion with elderly survivors. It started with a research trip to the US-based specialists USC Shoah Foundation and the Institute of Creative Technologies (ICT). The trip inspired NHC to move forward with their ambition, having gained this valuable insight into the possibilities the technology offered. The visit also began a relationship that would see Interact become a major contributor to wider research and work in the field of interactive technology using Embodied Conversational Agents.

NHC issued a tender with the aim of identifying a technical partner that could help replicate, as much as possible, the current live experience of conversation with survivors in the future, but based on captured testimony. Bright White Ltd was selected and the collaborative process began. Bright White introduced Professor Ma as the research partner. They co-designed the application for the R&D Fund, Bright White also introduced representatives from Glasgow's Digital Design Studio (DDS), with whom they had worked on the award-winning Bannockburn digital exhibition.

www.nationalholocaustcentre.net/News/interactive-testimony-project

The R&D Project - 'the essential start':

Interact has attracted attention and support from other national institutions and foundations. The R&D project was specifically used for the digital software development, whilst other funding from the HLF, the Pears Foundation and the Association for Jewish Refugees, has been (and will be) allocated to the filming and installation of the project.

Whilst the additional funding has been essential to develop the overall project, the R&D funding was central to supporting the software development and also the research that informed the development. The research studied the most powerful way to match questions to answers, ensuring that the structure of recorded data is arranged to be meaningful, robust and future-proofed technically. All the three partners agreed that they couldn't have delivered such an exciting product without this funding.

Outcomes

Collaboration: Formalising a strong Partnership Agreement

This partnership was an example of real cross-sector collaboration. All three partners have been equally active in shaping and developing the project, which has helped them to complement and also widen each other's expertise. And, in addition to bringing academic rigour to this project, the research partner also acted as a 'consultant' helping in the theoretical and processing part of the project.

The three partners have decided to formalise their collaboration into a Partnership Agreement that will deal with any future enquiries related to the outcomes

of Interact, making sure that the efforts of all three partners are reflected and any future benefits equally shared.

Culture Change: Three way partnerships and continuing collaboration

Considering that it was the first time NHC had worked on a technology project, it was crucial for the other two partners to effectively communicate the high complexity and technicalities of the project across the team. Bright White came with some prior experience of ensuring there is a common vocabulary with cultural partners, and the team was very proactive in explaining and clarifying language to the NHC. A heavy investment of time was needed by NHC, to learn and understand the language and application

of the technology, which was essential in decision-making and addressing problems. The short timeline of the project was a big challenge.

Audience engagement:

The R&D project is an essential part of NHC's overall Interact project. Whilst the final product is not yet finished and installed, conversations with survivors are central to way audiences engage with the history and experiences the National Holocaust Centre and Museum presents. The project has created the software and process that will enable the stories of Holocaust survivors to be captured, giving future audiences the opportunity to interact with the past survivors through the filmed stories and augmented reality. There has already been a significant interest from Holocaust survivors wishing to share their stories so they can be captured for future generations in the UK and across the world.

New Business Models and revenue streams: raising confidence and ambition

The three partners are continuing to work together on the development of a full set of ten interactive testimonies, using the technology developed. NHC has already raised sufficient funds to film those testimonies and this process will be taken forward in 2015-2016. NHC's Director mentioned the 'Nesta Approval Stamp' as giving additional credibility to the project, helping to secure additional funding (highlighting a point about brand association for the R&D fund). The partners have ambitions to develop an interactive panel of virtual Holocaust survivors and use the testimonies at other charitable/cultural organisations in the UK.

The partners are also receiving considerable external interest. Most of the discussions are at a very early stage and remain confidential, but they have already been approached by a major broadcaster in the UK to develop a similar project about an astronaut. They have also been in touch with the Bomber Command Centre in Lincolnshire.

This project has also had direct impact on the individual partners: Professor Minua Eunice Ma received additional funding for a new project about a virtual boy called Leo, where she will be applying the new knowledge developed in Interact.

The global response: Sharing learning and early conversations for new potential projects

The project Interact will be officially launched in December 2015, with an upcoming installation expected in January 2016. To aid other organisations, they have developed the Interact Guide which outlines the key approaches. The approach and technology of this R&D project can be applied in a variety of contexts, from simple and therefore very cost-effective (e.g. 2D, limited question-sets), to more complex and substantial applications (3D, large installations with hundreds/thousands of answers possible).

The 'user guide' provides arts organisations with the information they require to be able to 'immortalise' any person (artist or otherwise) and/or make the living present in multiple places at once. It describes a framework, methods, costs and resources required to apply this approach in other situations.

In December 2015, Professor Ma, with colleagues Sarah Coward and Chris Walker, presented Interact: A Mixed Reality Virtual Survivor for Holocaust Testimonies at the Being Human conference in Melbourne, Australia.

There is so much potential to digital creativity. The one thing that really struck me through this digital learning process is about why there are not more organisations who have much bigger resources doing something exciting."



Project Daedalus

Arts Partner: Abandon Normal Devices, AND.

Technology Partner: Marshmallow Laser Feast, MLF.

Academic Partner: University of Salford.

The project

Project Daedalus tested the creative and technological possibilities of using camera-enabled unmanned aerial vehicles (UAVs), or drones, in an arts context through a series of external labs, sandpits and internal research. The project looked at the emerging field of 'drone cinema'. This research was an exciting opportunity to repurpose drones for creative control, creating

multi-user experiences and new outdoor audience environments.

An open source digital toolkit has been developed as a major outcome of the project, in order to enable other organisations to understand how drones can revolutionise audience engagement. The toolkit was launched at an event in Somerset House, London, in July 2015. The event involved an exhibition of drone images from the toolkit, 360° footage on VR headsets and mini drones. Over 150 guests from the arts, culture and technology sectors attended.

www.andfestival.org.uk/projectdaedalus

Outcomes

Collaboration

AND had worked with both partners before, but this three-way collaboration was something completely new for them. At the beginning, it was hard to define roles and responsibilities between the tech and academic partners. The employment of a Creative Producer and Research Assistant introduced a coordinating role that facilitated more effective collaboration, taking this role away from any single partner. This was felt to streamline the processes and boost productivity as less time was spent by the individual partners navigating roles and communication.

A fast-paced technology: Budget and timeline challenges

For AND, having a one-year research project was new and time to develop deeper relationships with the two partner organisations was welcome. However, the one-year timeline introduced some unexpected challenges. In the time since the initial application to the R&D fund and being awarded the grant, there had been an explosion of drone technology with ongoing developments moving quickly. This meant a constant pressure for the partners not to submit redundant research findings in the toolkit. Also, the more they researched, the more they discovered – this was a challenge in terms of focusing on a specific research area, and they realised that there were new subjects that would be valuable for arts organisations and artists to engage with. Also, the legal constraints of drones use in public spaces has somewhat restricted the potential for application in outdoor arts.

Audience engagement

Overall the project has demonstrated that drones have the capacity to create new and different audience experiences. The research also gave insight into new ways of engaging with disadvantaged groups and into various findings about the way that teenagers, adults and artists engaged with drones. For instance, one of the workshops proved that groups with learning disabilities found using the VR very exciting and relished the opportunity to explore environments they would otherwise not have, or perhaps not dared gain access to. The workshops also proved that teenage girls thoroughly enjoyed working the drones, but as audience members, they were more interested in the content of the narrative than the novelty of the way it was made.

Sharing learning

During the project, the partners organised various events and labs with arts organisations and schools, such as the Royal College of Art, Somerset House, The Shed and Venture Arts. The project directly enabled new partnerships and connections, and various arts organisations were introduced to the drone technology. For example, as a result of attending a sandpit at Florence Mine, a cultural site in Northern England, are now considering using drones as a way for audiences to remotely explore their site, which is not safe for the general public to explore.

The partners discovered that arts organisations were most interested in using drone technology to augment performances, but that they needed intense assistance in the practicalities of putting on a drone based arts event.

After a successful project with the publication of the toolkit online, the partners are continuing to work together in several capacities, particularly through the AND Festival 2015. This includes a Drone Network event at the AND Festival, led by the research team from Project Daedalus. MLF has also been commissioned as part of the festival to create a work entitled *In the Eyes of the Animal*, which uses the learning from Project Daedalus around 360° film content shot from a drone and streamed into VR headsets.

But the project has also stimulated new areas of research and development for the partners:

- A new partnership with Curious Minds to develop a 'schools drone curriculum toolkit'. The AND team will be taking drones to work with school children creating films and land art that can be explored by the air in the process.
- The University of Salford has invested specifically into a Drones Research Network, which consists of over 30 academics across six schools internationally.
- The partners also participated at the Drone expo within Manchester Science Festival 2015.
- MLF are developing two potential 'products' which they can apply to various projects and beyond.



Quality Metrics/Culture Counts

Lead Arts Partner: Home (Lead Partner).

Technology Partner: Pracsys Intelligence Agency.

Research partner: University of Manchester.

Consortium: The Royal Exchange Theatre, Contact, The Manchester Museum, Manchester Art Gallery, Halle Concerts Society, Manchester International Festival, Imperial War Museum North, Whitworth Art Gallery, Manchester Jazz Festival, Chinese Arts Centre, Octagon Theatre Bolton, Oldham Coliseum Theatre, and Manchester Literature Festival.

The project

Quality Metrics is one of the Big Data funded projects. It was launched originally in Western Australia and is the first system in the world to draw together, in the context of the arts, comprehensive public value metrics within an electronically automated data collection platform.

Building on the insights from a recently completed UK pilot, this project tested a new set of metrics and an online opinion-based data collection platform, including triangulation of large-scale data, to help arts and culture organisations across Manchester better understand the quality and impact of their work. By gathering real-time intrinsic impact data from artists, peers and the public; and combining it with traditional instrumental data on attendances, funding, and box office, it aims to deliver comprehensive value analysis

and reporting on a continuous basis that can be used for more effective data-driven decision-making, (DDD).

The partnership structure

This project builds on a project initiated in 2010 by the Department of Culture and the Arts in Western Australia, which commissioned the current Technology Partner, to work with arts and cultural organisations to develop a metrics system that could capture the quality of cultural experiences. John Knell (a cultural consultant) got in touch with Manchester Cornerhouse (now HOME) to develop the same project in the UK. Eventually, Quality Metrics was funded by ACE, to develop the first piece of research and built a consortium with arts organisations to test the metrics and software.

The R&D Fund grant funded the implementation of the pilot research to develop a workable model. With more organisations added to the consortium, they aimed at testing and refining the quality metrics at 60 test events.

The partners also recruited the research partner the University of Manchester, with Dr Abigail Gilmore leading. She had worked previously with Manchester Museum and many of the organisations of the consortium. In comparison to other projects, her research role was more external and entailed delivering all of the academic evaluation and research outputs on the project.

Outcomes

Collaboration

The core partners, having worked together before, thought the pilot project was invaluable. It facilitated the joint working and the contract negotiations, and also widened the partners' flexibility to face unforeseen challenges and opportunities, such as delays in the software build and bringing new members to the consortium.

However, the large scale of the consortium added complexity to the project. Overall, additional management capacity in the form of a part-time project manager would have been useful.

For the research partner, it was hard to get and coordinate all the required primary research simultaneously from all the consortium members.

Looking back, they would have designed a more flexible research strategy to enable this to happen.

Also, the tech partners had an overall unexpected delay of four months in the software development, due to the decision to do a necessary rebuild of the underlying code base. This had a wider effect on the cultural organisations and their testing schedule.

Culture change

The project had an obvious organisational impact on all the involved consortium organisations, as they needed to be trained in the Quality Metrics software. The partners usually trained at least one 'expert user' in each organisation, to manage the data collection for the test events and also to ensure the organisations are able to continue using the software in the future. Considering the large size of the consortium, and the lack of digital skills in many of the consortium

organisations, these training sessions required more time and resources than expected, but finally all the organisations learned to use the platform and to collect the data independently. The R&D Fund also financed the production of a range of training and support materials (e.g. user manuals; a training video and deck; dashboard help and support pages) that can support the ongoing use of the software, the metrics and the Culture Counts Dashboard by participating organisations.

Audience development

Equally important, the internally held workshops and meetings between the partners and the consortium organisations have stimulated new discussions on 'quality' and how to measure quality across the arts cultural sector. In addition to the core quality metrics, the R&D Fund helped to develop more and better participatory experience metrics. The consortium organisations have already applied the results from using Culture Counts at events. The intelligence gathered is impacting on decision making and influencing programming and project designs to engage wider audiences.

Example: Royal Opera House, *Swan Lake*: By using the standardised quality metrics, the ROH was able to explore whether live and screened performances offer a different kind of audience experience. The results show that audience members who saw *Swan Lake* in the cinema tended to give slightly higher ratings than those who saw the live theatre performance.

Sharing learning

The Consortium members will continue working with the technology partner on the self-testing, evaluation and refinement of the Quality Metrics Interface. The three partners have also been very active in sharing the outcomes and the project nationally and internationally:

- Partners have spoken at the 2015 Policy Week in Manchester.
- Partners have spoken at the Data Power conference in Sheffield in mid-June, and at the AIMAC conference in Marseille, France, at the end of June 2015.
- Culture Counts presented at a major British Museum conference entitled What's Data Got To Do With Me?
- They also presented at the Arts Marketing Association event in Birmingham in July 2015.
- The Research Partner team has launched a research site <http://www.culturemetricsresearch.com>. They are also finalising and submitting journal articles, including one to the *International Journal of Arts Management*.
- The Consortium members are committed to exploring further opportunities to work together on applied research, and exploring funding to support the ongoing analysis of the data and the wider implications of this kind of approach across the arts.
- Culture Counts partners presented the key note speech at The Level Summit in Brighton on 6 October 2015 (<http://www.thelevelsummit.com/>), a major entertainment industry event that brings together and explores the essential business trends and market dynamics of live entertainment venues.

As a final and very significant validation of the outcomes of the R&D project, ACE has now commissioned the roll out of the project to 150 arts organisations.



Clapping Music

Arts Partner: London Sinfonietta.

Technology Partner: Touchpress.

Research Partner: Queen Mary University, London.

The project

Many cultural organisations have a digital department. But too often, this only involves the creation and maintenance of a website. Our ambitions are different – it's about how to make use of digital technology creatively, interactively and productively”

Based on the music of Steve Reich, this project developed an iOS app to research new ways to engage a far wider public, including school children, in the music of a contemporary composer, and to develop musical skills through participatory, interactive experiences. Reich's *Clapping Music* has been made into a progressively difficult, compelling

game – greater accuracy and speed lead to a higher score, with the highest scorers invited to participate in performance events with the London Sinfonietta. The ideas and technologies developed in the app could potentially be applied to the music of other composers, or to other art forms, to turn a specialist subject into a public participatory journey of discovery.

It was an ambition of Andrew Burke, Chief Executive of London Sinfonietta, since being a student to develop an interactive way to perform Steve Reich's *Clapping Music*. When the R&D fund was launched Andrew approached Touchpress, an award-winning company recognised in the orchestra sector with experience in music apps. The research partnership with Marcus Pearce, lecturer in Sound and Music Processing at Queen Mary University of London, developed following Marcus's response to a Twitter call for expressions of interest in the project.

I can't see how the Clapping Music app would have happened. The amount of funding we received was impossible to get from elsewhere.”

Outcomes

Exceeding the targets: a growing and engaged audience

Clapping Music has generated an incredible audience response. Launched at the end of August, by October, the target of 20,000 downloads had been exceeded by almost four times, with 75,000 apps downloaded. Schools and other educational institutions had just started their academic year; and the partners still expected a second strong wave of downloads. But not only was the audience reach well beyond what was expected; it was the audience's long-lasting engagement that was really surprising: users were returning, improving their skills and interacting. As Barbara Palczynski from London Sinfonietta said, “*Twitter exploded*”. There was even a common hashtag for the ‘28k’ challenge. The pop-up survey designed by QMLU was completed by 5,000 users - the aim initially was to get 300 responses – showing the app reached a much wider audience than initially anticipated. The app has also been widely discussed in the press and across social media.

Culture shocks: Three-way partnerships and continuing collaboration

The collaborative experience has been a steep learning curve for all the partners. London Sinfonietta had never developed a digital project of this kind before, Touchpress had never developed a game app, and QMUL were used to focusing more on other research areas, such as the perception of music rather than the educational impact on users.

Blending different working cultures - commercial, research and cultural organisation - was a challenge at the beginning. Having clearly defined roles and responsibilities from the inception of the project was important and a project manager who brokered the communications and made sure every task was delegated to the appropriate partner, was essential.

Shifts in deadlines were accommodated by London Sinfonietta and Touchpress, as they didn't impact on overall delivery but delays did impact on the research process for QMUL. They were aiming to gather more data from schools, which were on summer break by the time the app launched.

Despite the challenges, the collaboration has given the partners confidence to work on similar innovative projects in the future, and Touchpress and London Sinfonietta have already started discussions on developing a new project together.

The three partners are also continuing the collaboration on the Clapping app. QMUL will continue to receive data from Touchpress for finalising its research.

New business models and revenue streams: gradually revealing its full commercial potential

The success of Clapping Music has generated interest from around the world. The conversations have potential to develop into new projects and collaborations, but it's still too early to see whether this will lead to new projects and potential new revenue streams.

One of the first questions for this project was whether to charge for the app or make it free. It was a straightforward and unanimous decision not to charge for the app, but partners are still considering the option to commercialise the app in the future.

The global response: Sharing learning and early conversations for new potential projects

Music organisations from across the world have been interested to learn more about the project with a view to potentially developing similar projects. London Sinfonietta was invited to present the project to the Association of British Orchestras and share how the approach could be applied to other pieces of music. They are in conversations with a Japan-based organisation to develop something similar and have had several meetings with the Department for Education to explore how this app could be developed for schools.

Thanks to the extensive press, Touchpress, already a leader in the field of music app development, has gained worldwide exposure and is receiving lots of interest from new potential clients. This R&D project has also made them explore new opportunities. They were already specialist in developing music-based apps but they are now confident they will be moving into a new area and developing more music-related game apps. For QMUL, the vast amount of data received and the very short research timeline encouraged them to continue the research with a focus on the impact of the app on school children. They are also in process of applying for more funding.



Appendix 1: Selected bibliography

Review of Digital R&D Fund for the Arts website: <http://artsdigitalrnd.org.uk/>

Review of Native Magazine, the journal of the Digital R&D Fund for the Arts: <http://artsdigitalrnd.org.uk/wp-content/uploads/2015/06/Making-Digital-Work-DigitalRNDFundMagazine2015.pdf>

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Appendix 2:

Introducing the partners

As a partnership-driven programme, the Digital R&D Fund has been developed to deliver a set of outcomes that complement shared and individual institutional priorities. The extent to which this has proved productive and/or challenging is reflected on in Section 3 of this report. The Digital R&D Fund should also be understood as a strategic intervention at a time of genuine review and reform in the positioning of the arts in society, e.g. in terms of its role in economic development, innovation and competitiveness; and in the ways the arts are funded and incentivised to deliver value – e.g. in how they can adopt more diverse income streams that reduce the proportion of public investment and open up opportunities for growth via different sources.

This landscape is changing fast, with each of the funding partners playing an active leadership role in exploring new approaches to investment, collaboration and learning. The findings of this evaluation will form part of a wider policy conversation on arts funding and on how to leverage the potential of the arts to deliver R&D that resonates across wider social and economic spheres.

Arts Council England's⁶⁴ core strategy, Great Art and Culture for Everyone, has five core aims:

- Excellence is thriving and celebrated in the arts, museums and libraries.
- Everyone has the opportunity to experience art and be inspired by the arts, museums and libraries.
- The arts, museums and libraries are resilient and environmentally sustainable.
- The leadership and workforce in the arts, museums and libraries are diverse and appropriately skilled.
- Every child and young person has the opportunity to experience the richness of the arts, museums and libraries.

The strategy identifies the 'dizzying potential of digital technology in transforming the way we make, distribute, receive and exchange art'.

Arts Council England is committed to accelerating that transformation across the arts and culture sector. Between 2015-2018, it will invest around £30 million of strategic funding on digital initiatives that complements and supports the work of arts organisations.

Arts and Humanities Research Council⁶⁵ is a national funding agency supporting arts and humanities research and study in the UK. It is incorporated by Royal Charter. AHRC funds research in a wide range of subjects: ancient history, modern dance, archaeology, digital content, philosophy, English literature, design, the creative and performing arts, and much more. Each year the AHRC invests approximately £98 million in research and postgraduate training in collaboration with a number of partners. The Digital R&D Fund is one such partnership supporting the AHRC aim to enable the exchange of knowledge to deliver civic, cultural and economic benefits. The ARHC's Royal Charter highlights as its core objectives:

- The promotion and support of high-quality basic, strategic and applied research and related postgraduate training in the arts and humanities.
- The advancement of knowledge and understanding of the arts and humanities.
- The promotion and support of the exploitation of research outcomes and research relating to cultural aspects of the different parts of the United Kingdom and the provision of trained personnel in order to contribute to economic effectiveness, the effectiveness of public services and policy and the quality of life and creative output of the United Kingdom.

Nesta⁶⁶ exists to mobilise ideas and imagination for the common good and boost the UK's capacity to innovate. Nesta's ambitions are:

- To help promising ideas achieve the greatest possible impact.
- To design policies that can improve the environment for innovation.
- To better understand how innovation can flourish.
- To develop new tools to turn ideas into impact.

Nesta works in partnership to achieve its objectives, avoiding duplication and maximising opportunity, expertise and resources to deliver innovation and change.

One of Nesta's priorities is a focus on digital arts and media, in particular developing tools and technologies to better meet needs, generate revenue or rethink art forms.

Appendix 3:

List of grant recipients and funding awarded

Project Name	Arts Partner (Lead Organisation)	Research partner	Technology partner	Grant Awarded
Project Daedalus	Abandon Normal Devices	University of Salford	Mashmallow Laser Feast	£124,929
Digital Hat	Albow	Digital Cultures Research Centre, UWE	Calvium	£125,000
Aggregated Museum Tickets Feasibility Project	Art Fund	Saïd Business School, University of Oxford	Online Solutions	£124,981
BadgeLAB	ArtForms	Sheffield Hallam University	DigitalME	£124,972
65+ Digital Memberships	artsdepot	DigiLab, London College of Communication, University of the Arts	Ingelby	£117,600
Insight	Black Radley Culture Limited	Bath Spa University	The Ryan O'Neill Partnership	£124,646
The Hidden Museum	Bristol Museums, Galleries and Archives	University of Bristol	Aardman Animations	£123,824
Sonic Pi Live	Cambridge Junction	University of Cambridge	The Raspberry Pi Foundation	£124,663
Qualia	Cheltenham Festivals	University of Warwick	i-DAT	£125,000
Show and Tell	Circus Starr	Glyndwr University	Therapy Box Limited	£124,735

MacGuffin	Comma Press	Manchester Metropolitan University	fffunction	£124,811
Better than Life	Coney	Department of Computing, Goldsmiths	Showcaster	£125,000
The Unusual Suspects	Dance City	Morris Hargreaves & McIntyre	Tariff Street Limited	£184,325
FormsXtended	Dance Digital	University of Bedfordshire	Moviestorm Ltd	£122,640
The Artellite Project	Degree Art	Kingston University	Snowflake Digital	£108,022
CultureLabel	Dulwich Picture Gallery	University of Salford and Cambridge Judge Business School	CultureLabel	£125,000
Flatland	EXTANT	Open University	Haunted Pliers	£125,000
We are Colony	Film London	Edge Hill University	We are Colony	£124,993
Neo-Ticketing	Firestation Arts & Culture	Royal Holloway University of London	Monad Software	£122,877
360 Degrees - A New Angle on Access	Freewheeling	SERIO Plymouth University	Eye Mirror	£124,999
ArtsAPI	Future Everything	University of Dundee	Swirrl	£299,341
Culture Counts	HOME	University of Manchester	Pracsys and Intelligence Agency	£300,000
SoundLab	Heart & Soul	Goldsmiths - University of London	Public Domain Corporation	£119,938
Studio of Objects	Hijack	Kingston University	Touch Press	£125,000
Putting Art on the Map	Imperial War Museums	University of Edinburgh	Historypin	£125,000
Curating Activism	Knowle West Media Centre	England Research Centre,UWE	IBM	£125,000
Leicester Castle tells its story	Leicester City Council - Arts & Museums	School of Museum Studies, University of Leicester	Locly	£124,727
Research+	Lightbox	-	-	£42,858
Live @ LICA	Live at LICA with the Peter Scott Gallery	Imagination Lancaster (Lancaster University)	m-ventions	£96,840

Steve Reich Clapping Music	London Sinfonietta	Queen Mary College	Touchpress	£123,635
NetPark	Metal Culture Ltd	University of Brighton	Calvium	£118,598
Tilo	MeYouandUs	Institute of Organisational & Consumer Psychology, Lancaster University	Pixel Inspiration and Amaze	£78,893
The Story Engine	Ministry of Stories	London Knowledge Lab, Institute of Education	The Workshop	£125,000
Live & Digital	Miracle Theatre Company	Falmouth University	Golant Media Ventures	£85,900
Ten Most Wanted	Museum of Design in Plastics	Interactive Technologies Research Group, University of Brighton	Adaptive Technologies	£119,460
RIOT 1831 @ Nottingham Castle	Nottingham City Museums and Art Galleries (NCMG)	Nottingham Trent University (NTU) with input from University of Nottingham (UoN)	Hot Knife Digital Media	£125,000
Connect:Resound	NYMAZ	University of Hull	UCanPlay	£112,705
Electricomics	Orphans of the Storm	Institute of Education, University College London	Ocasta Labs Limited	£118,989
Dance Tag	Pavilion Dance South West	Digital Cultures Research Centre, University of the West of England	Mobile Pie	£123,820
Hybrid app	Royal Opera House	Department of Digital Humanities, King's College London	POP	£125,000
Album-app	Script	Angela Ruskin University	Agency Mobile	£119,291
I'd Hide You	Sheffield Doc/Fest	Institute of Cultural Capital and C3Ri at Sheffield Hallam University	EE (Everything Everywhere)	£125,000
Talking Statues	Sing London	School of Museum Studies, University of Leicester	Antenna International	£103,000

Pop-up-Play	Spark Arts	De Montfort University	LJW Digital Creatives	£103,651
CaptionCue	StageText	Roehampton University	Screen Subtitling Systems	£124,940
CultureQuest	The Fitzwilliam Museum	CRASSH, University of Cambridge	Deep Visuals	£104,450
Interact	The National Holocaust Centre and Museum	Digital Design Studio, Glasgow School of Art	Bright White	£124,730
Audience Discovery Project	Town Hall Symphony Hall Birmingham	Birmingham Centre for Media & Cultural Research	1UPDesign	£100,716
Past Paths	Tyne & Wear Archives & Museums	Culture Lab, Newcastle University	Microsoft Research	£112,565
The Noise	Unlimited Theatre	University of Dundee	Storythings	£107,426
Respond	Yorkshire Dance	School of Performance & Cultural Industries, University of Leeds	Breakfast Creatives	£125,000

Endnotes

1. www.artsdigitalrnd.org.uk/
2. Appendix 2 introduces the partners.
3. ACE and AHRC contributions funded the Digital R&D awards to applicants while the NESTA contribution was toward management costs - including research, dissemination and programme management.
4. Including in-kind contributions.
5. Big Data was a strand of the Fund introduced to attract larger-value applications for collaborations to explore the use of big data.
6. Research+ was a strand of the fund introduced to give the opportunity for digital projects already in development and of strategic relevance to the arts overall to add on an additional level of rigorous research.
7. Sir Peter Bazalgette's inaugural lecture as Chair, Arts Council England, at the RSA, 20 March 2013
8. Co-operation and Funding Agreement between Arts Council England, AHRC and Nesta.
9. These are a combination of outputs and outcomes and have been included in the revised Digital R&D Fund logic developed as the starting point for this evaluation.
10. The postdoctoral research was a stand-alone piece of work and any comment on this is beyond the scope of this evaluation.
11. www.tfconsultancy.co.uk
12. MTM Digital Culture Survey (2015) 'How the Digital R&D Fund has impacted the arts and cultural sector.' In 2015, 948 arts and cultural organisations responded to the survey; in 2013, 891 responded.
13. Combined arts encompasses a range of organisations that work across multiple artforms to achieve their aims, including festivals, carnival, arts centres and presenting centres, rural touring circuits, and agencies (www.artscouncil.org.uk).
14. In the early stages, projects could select both of the main priorities enhancing audience reach and new business models, hence the figures adding up to more than 100 per cent.
15. Again, in the early stages applicants could select multiple themes.
16. National Portfolio Organisations are those organisations funded by ACE on a three-year contracted basis. They "represent some of the best arts practice in the world, and they play a vital role in helping us meet our mission of great art and culture for everyone" (www.artscouncil.org.uk).
17. 'Other' refers to arts organisations which major one more than one art form or do not fit within ACE art form definitions.
18. Academic Partner for Culture Counts.
19. Research partner for the Unusual Suspects project.
20. Technology partner for Interact.
21. Technology partner to TILO.
22. Technology partner for Unusual Suspects.
23. Technology partners for Project Daedalus (see case study in Section 5).
24. www.riot1831.org
25. See case study in Section 5.
26. See case study in Section 5.
27. Ibid.
28. Ibid.
29. Ibid.
30. www.flatland.org.uk
31. www.showandtell.circus-starr.org.uk
32. <http://commonwealthcrm.wordpress.com/tag/dance-city/>
33. Tyneside Cinema, TWAM, Theatre Royal, Seven Stories, Sage Gateshead, Northern Stage, Live Theatre, Centre for Life, Dance City, and BALTIC.
34. Research partner: Morris Hargreaves McIntyre; technology partner: Tarrif Street.
35. <http://culturecounts.cc>
36. See case study in Section 5.
37. MTM (2015) 'Digital Culture 2015: How the Digital R&D Fund has impacted the arts and cultural sector.' London: MTM.
38. MTM (2015) 'Digital Culture 2015: How the Digital R&D Fund has impacted the arts and cultural sector.' London: MTM.
39. www.meyouandus.co.uk/porfolio/tilo/
40. www.talkingstatues.co.uk
41. www.qualia.org.uk
42. MTM (2015) 'Digital Culture 2015: How the Digital R&D Fund has impacted the arts and cultural sector.' London: MTM.
43. This is one reason applications increased toward the end of the programme – by which time some three-way partnerships had matured.
44. MTM (2015) 'Digital Culture 2015: How the Digital R&D Fund has impacted the arts and cultural sector.' London: MTM.
45. <http://www.andfestival.org.uk/projectdaedalus/>
46. See case study in Section 5.
47. MTM (2015) 'Digital Culture 2015: How the Digital R&D Fund has impacted the arts and cultural sector.' London: MTM.
48. www.meyouandus.co.uk/porfolio/tilo/
49. MTM (2015) 'Digital Culture 2015: How the Digital R&D Fund has impacted the arts and cultural sector.' London: MTM.
50. A suite of downloadable resources, tips and articles aimed at arts and culture organisations who wish to improve existing digital products and services or develop new ones: "the toolkit takes you through the why, who, what and how of digital product development".
51. MTM (2015) 'Digital Culture 2015: How the Digital R&D Fund has impacted the arts and cultural sector.' London: MTM.
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Nesta, 1 Plough Place, London EC4A 1DE

information@nesta.org.uk

 [@nesta_uk](https://twitter.com/nesta_uk)

 www.facebook.com/nesta.uk

www.nesta.org.uk

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