

**EXPLORING THE BARRIERS TO DEVELOPING NEW DATA-DRIVEN  
BUSINESS MODELS IN THE CREATIVE ARTS SECTOR**

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RESEARCH WORKSHOP REPORT  
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## **NEMODE NETWORK+**

NEMODE Network+ is an initiative under the Research Councils UK (RCUK)'s Digital Economy (DE) research programme to bring together communities to explore new economic models in the Digital Economy.

## **AAM ASSOCIATES**

AAM is an independent research agency and consultancy, which focuses on digital social innovation and the application of data to create social value.

Our extensive research into emerging models of digital innovation across the globe helps us support our clients to identify and employ best practice when designing and delivering new products, platforms and programmes for social change.

We also believe data can be a great force for good and are committed to helping organisations with social objectives capitalise on these new technologies, tools and approaches to help change the world for the better.  
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One of SU's key strategies is developing its relationship with employers offering both teaching and research services but also building engagement to transfer skills and knowledge and to create opportunities for students and graduates.

Staffordshire University has evolved into one of the country's most dynamic, progressive and forward-thinking learning institutions. 16,000 students make up the university's vibrant cultural mix from the UK and around the world.

The Creative Communities Unit is a multi-disciplinary group of university lecturers and practitioners in the Faculty of Arts and Creative Technologies at Staffordshire University. The Creative Communities Unit focuses on high quality learning opportunities in the broad area of community engagement for non-traditional HE students and on the development of external projects for the community, voluntary, public and private sectors. The Creative Communities Unit is committed to working in a participatory way with organisations and local communities, valuing diversity and recognising that learning is key to social change. For further information on the Creative Communities Unit please see: <http://www.staffs.ac.uk/ccu>

The authors wish to thank all those who gave their time to attend the workshop and to NEMODE for supporting the project.

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## EXECUTIVE SUMMARY

In February 2015 we held a discursive research workshop inviting industry professionals from the creative arts sector to interrogate and discuss the statement: Exploring the barriers to developing new data-driven business models in the creative arts sector.

The session aimed to stimulate a discussion and debate about the internal and external barriers which are stalling data-driven activity from progressing further or even starting. We also questioned how organisations and the sector as a whole could capitalise on the opportunity presented by data-driven approaches, and the level of appetite within the sector to embrace such strategic opportunities.

The workshop presentation gave a brief overview of common data disciplines and profiled the role and use of data, big data and open data within the commercial sector and public sector. The case studies presented pointed to how data is being used in the commercial sector to better understand consumer behaviour. This theme was translated into the creative arts sector in terms of visitor experience, with case studies focusing on how data had been used to gain insight about users / audiences to make more informed decisions.

Attendees reflected and responded to the presentation in small, facilitated group discussions post the presentations, going on to share their experiences and understanding of this agenda in an open forum discussion.

The session's key findings segmented

into three themes: Skills, Expertise and Understanding, Funding Landscape and Organisational Culture.

The most dominant barriers were deemed to be lack of skills and the ability to attract and hire talent in this field. It was also considered difficult to determine what systems, tools and processes to invest in. There was a concern that due to lack of understanding of the data agenda, people had a very narrow view of what constituted data itself. This lack of knowledge was considered to hinder data's potential problem-solving ability and it being used actively in decision making. This led to a discussion around the sector's understanding of the values driving business models, and how their frameworks might be better served by incorporating data collection and analysis and taking a longer-term view in terms of return on investment. It was felt the creative arts would benefit from the skills and expertise of those working in technology, and more collaboration between organisations interested in the data agenda. However, it remained unclear as to how best to structure these collaborations - with different groups advocating for more creative engagement and others suggesting it wouldn't provide the step change required.

Concerning the funding landscape there was a prevalent view that major funding bodies within the sector had been late to react and support the creative arts to embrace digital activities and data collection and analysis. A lack of subsidised risk and benchmarking was

thought to be stifling experimentation, compounded by a perceived lack of shared learning for funded projects in this area. It was felt that there had been more focus on the more commercial end of the creative sector to develop new business models for the digital economy, leaving traditional arts and culture organisations behind.

Lastly looking to organisational culture, silo working was thought to hamper coordinated data collection in its simplest form. Attendees also highlighted a disconnect in understanding the value of data linked and their physical assets and infrastructure. While there was an appetite to learn and adopt new data-driven techniques, many attendees cited a lack of bold breakthroughs in use of digital and data; digital fundraising was often used to illustrate this point. Opinion was divided when considering what would be required of the sector to encourage more experimenting with data-driven approaches, and consideration of sustainable business models. Some advocated for a radical step-change in thinking, putting insight at the heart of strategy, whilst others considered it was important to start small to ensure buy in across departments.

The workshop itself stimulated an array of potential further research opportunities. The areas that were thought to warrant further exploration were: a study and simplification of the language to describe data-driven activity and case studies from across the creative industries; dissemination of the design principles that underpin

current business models in the digital economy; training requirement and skills audit for the requirements of such models; greater consultation pre-funding design for dedicated digital and data-related funds or investment; types of beneficial cross-sector collaborative processes and platforms; and lastly, greater understanding of the conditions in which new data-driven approaches flourish would support cross-disciplinary and cross-sector learning.

# INTRODUCTION

In February 2015 we held a discursive research workshop inviting industry professionals from the creative arts sector to interrogate and discuss the statement:

Exploring the barriers to developing new data-driven business models in the creative arts sector

The workshop was structured in two parts:

1. Presenting the case for the growing importance of data-driven approaches in developing new and sustainable business models.
2. Exploring the internal and external barriers to adopting new data-driven business models in the digital economy, and also considering how the creative arts sector could begin to develop a strong case for investment and progression.

This session arose from our interest in broader new economic models that have arisen as a result of the digital economy, but also a concern that the potential of such models within the creative arts sector is being overlooked, and warrants much greater attention.

This work also takes into consideration that since the economic downturn, arts organisations have been increasingly under pressure to diversify income streams, and become more focused on utilising their infrastructure and assets to generate revenue. Many organisations have begun to experiment with new revenue generation activities,

particularly digital models such as event cinema. However, few have a particular focus on data, which we believe could have a role to play in helping organisations respond differently to challenges they face and spotting new opportunities to deliver against their respective missions.

The aim of the session was to start what we felt was a much-needed conversation; a conversation encouraging industry professionals to share and examine the existing barriers impacting the creative arts sector being able to experiment with, and take advantage of, the opportunities created by today's advances in digital technologies and data-driven approaches.

The research workshop was participatory, exploratory and facilitated. At the session attendees shared responses to the presentations, and their understanding and experience of the subject matter. Finally, attendees reflected on their discussions in a facilitated open forum discussion.

In the following pages we have outlined a series of key themes and critical barriers, which arose from the session. In response we have offered some initial recommendations as to how we might further this exchange.

We welcome responses from anybody interested in this topic, and are always open to collaborations and sharing learning, so please do get in touch.

Please note all quotes cited in the report have been anonymised under Chatham House Rules.

# TERMINOLOGY

## NEW ECONOMIC MODEL

As described by NEMODE Network+, new economic models are a reflection that the traditional sectoral view (some describe this as the vertical space, in that constellations of companies are in a vertical from creation to distribution) no longer holds. Consider for example the iPhone and later smart phones: this has affected the market for cameras, torches, games, alarm clocks, and transformed the way we access media, eroded incumbents' dominance, etc. Therefore, it has expanded from its original position into other markets and sectors across a horizontal.

This ability to combine previously separate user experiences<sup>1</sup> is being made even more interesting by the development of sensor technology and big data. The question becomes what is the boundary around the data? Current research is looking at data at the level of the individual, groups of individuals in families, groups of friends, communities, even towns and cities. These boundaries enable ecosystems to come together to provide all the services the user(s) require. Data is made available and shared within all these units of activity and there are opportunities for both incumbent players and for the emergence of new organisations and ecosystems.

## DIGITAL ECONOMY

As described by NEMODE Network+, this horizontal movement has been accentuated by the digital economy. As Normann predicted in 2000, the digital economy

is liberating us from the constraints of:

1. Time, when things can be done
2. Place, where things can be done
3. Actor, who can do what
4. Constellation, with whom it can be done

Technology enables organisations to bundle existing activities and assets and link them in new combinations with other organisations' technology and assets free from the constraints of time, place, etc.

## NEW ECONOMIC MODELS IN THE DIGITAL ECONOMY

As described by NEMODE Network+, digitisation is changing the way businesses compete - Ng argues that this is the coming together of social media, devices, connectivity and the widget in the 'new oil' and that all of this happens in a context that provides the potential for New Economic Model in the Digital Economy.

## DATA-DRIVEN

Data-driven means that progress in an activity is compelled by data, rather than by intuition or personal experience. Scientists often call this evidence-based decision making.

## BUSINESS MODEL

A business model is usually defined as how organisations create and capture

1. Reference: Majchrzak, A., and Markus, M. L. 2013. "Technology Affordances and Constraints Theory (of MIS)," in Encyclopedia of Management Theory, E. H. Kessler (ed.), Thousand Oaks, CA: Sage

value, and a plan for the successful operation of a business, identifying sources of revenue, the intended customer base, products, and details of financing (Teece and Baden-Fuller).

As described in the presentation given on the day, business models were considered in this context to assume a broader value system, which encompassed a value-driven model with three pillars: creative, public and commercial. This session took into consideration that arts and cultural organisations are predominantly driven, first and foremost, by their creative mission.

## **CREATIVE ARTS SECTOR**

The event largely focused on the following subdivisions within the creative arts sector: performing arts, heritage, music, literature, craft.

## CONTEXT TO RESEARCH WORKSHOP

As outlined, we engaged industry experts and practitioners to investigate the statement:

Exploring the barriers to developing new data-driven business models in the creative arts sector

The session aimed to stimulate a discussion and debate about the internal and external barriers which are stalling data-driven activity from progressing further or even starting. We also questioned how organisations and the sector as a whole could capitalise on the opportunity presented by data-driven approaches, and the level of appetite within the sector to embrace such strategic opportunities.

Recognising that attendees had different levels of interest and experience concerning the data agenda we encouraged individuals to share their perspective and most pertinent experiences and questions relating to this agenda in an open forum discussion.

## PRESENTATIONS

The presentations given on the day are available to watch online:

Mary Jane Edwards, Co-Founder and Director - AAM Associates.

Guest Speaker: Ezra Konvitz, Co-Founder - ArtStack, the platform and online gallery for all the visual arts.

The slide deck from the presentations can also be viewed online.

A short overview of the session, including participants' comments, can also be viewed online.

The workshop presentation offered a starting point for thinking differently about how arts and cultural organisations might consider implementing data-driven approaches. It highlighted examples of the role data has played and could play in the future - looking particularly at the customer, audiences and donors, in order to drive new thinking on business models and the development of new products and services.

Given that the term data-driven business models has not yet been rigorously defined in scholarly literature, we offered a brief overview of common data disciplines. The role and use of data, big data and open data within the commercial sector and public sector was profiled, accounting for the rise in approaches to data analytics and data science, that have been made possible by the convergence of mobile technology, social sharing and cloud computing.

The case studies presented during the workshop pointed to how data is being used in the commercial sector to better understand consumer behaviour, a theme which easily translates into the creative arts sector in terms of visitor experience.

In this context case studies were focused on how data can give you the power to find out more about your users

to give you the insight and information to make more informed decisions. This type of approach was also shown to support organisations to better: target marketing; personalise donor messages based on their previous visits and purchase history; and inform from educational perspectives. Examples ranged from the Dallas Museum of Art abolishing paid-for membership in favour of explicit data collection from its visitors, to Wireless Festival utilising unprecedented crowd control data for health and safety purposes.

Most of the examples that highlighted data collection and analysis within the realm of visitor experience showed data's main efficiency through user / customer intelligence and to a certain extent influencing consumer spending. Thus, the latter half of the session dealt with more sophisticated models, which put artistic output at the centre of data-driven approaches, using digital technology tools and software to act as a platform for engagement. Notable examples in this field are the Cooper Hewitt Museum's digital pen and Artsy's Art Genome Project.

Lastly the session dealt with emerging trends, which align to the principles of data and insight-driven approaches, such as digital marketing, freemium payment models and crowd funding. We also discussed variants to such approaches when individuals and companies don't have physical assets or access to secondary income sources or data collection points.

Links to the example case studies and references can be found in the Appendix.

**“WHAT LOTS OF PEOPLE DON’T UNDERSTAND IS THAT EVEN WITHIN OUR BIGGEST INSTITUTIONS, ‘HEAD OF DIGITAL’ ROLES ARE OFTEN HELD BY CURATORS, EDUCATORS, ETC., WHICH IS FINE TO A CERTAIN EXTENT, BUT HAVING A TECHNOLOGIST IN POST MAKES A HUGE DIFFERENCE.”**

## **KEY THEMES AND CRITICAL BARRIERS**

The responses detailed below were generated in the small, facilitated group discussions post the presentations.

### **SKILLS, EXPERTISE & UNDERSTANDING**

#### **SKILL SETS**

One of the most prevalent discussions concerned skills and expertise. It was acknowledged that whilst many organisations view digital as essential to their marketing, archiving and operational activities and collaborate regularly with digital experts - designers, curators, and producers - this had not translated into a keen interest in, or use of, data.

Those present at the workshop who have worked in digital disciplines and advocated for data-driven approaches for some time sensed a growing appetite and enthusiasm, but agreed lack of skills is still the most significant barrier across the sector. It was evident that there is a perceived gap in staff skills for digital approaches first and foremost.

“Many of us grapple with not having digital skills in-house, having to outsource development, updates for websites, etc, becoming extremely costly over time.”

Similarly this group stressed the difficulty in attracting the right talent, given that salaries aren’t competitive for highly skilled data scientists or analysts.

“Data analysts are expensive, and they don’t always have the right mix of skills; how do we square our needs?”

It was also stressed that there are still very different ‘visions’ of what digital is, and what digital could mean for organisations within Arts and Culture.

“Digital is not always seen as an enabler.”

“What lots of people don’t understand is that even within our biggest institutions, ‘Head of Digital’ roles are often held by curators, educators, etc., which is fine to a certain extent, but having a technologist in post makes a huge difference.”

“A lot of people in the Arts would still consider themselves to be digital natives, but there are many internal hurdles to get over before we could use data to help improve a given issue.”

Staff prioritisation was cited as an issue, and lack of affordable, or free, training available to skilling staff more generally.

“The money vs. skills, vs. capacity issue is a significant problem for smaller venues. I think we can all agree a lack of expertise... but I don’t think there’s much out there to develop engagement and use of big data, for example.”

“There’s hardly any accessible training available in this type of work.”

It was understood that even basic data collection principles and tools are under-utilised, and across departments there is a different understanding of analytics and what is required to track data effectively.

Furthermore, understanding how to translate data into useable metrics, and what key metrics to use for each department and why, was often confused and not part of overarching organisational strategy.

“There’s a gap in turning insight into strategy. The skills to learn from data and put findings in action aren’t always there. Quite often we don’t have the capacity to test anything, or it’s not a requirement / prerequisite of the funding. So many of us would love to build that capacity.”

The lack of skills and ability to attract and hire talent in this field dominated the open session, but was inextricably linked in most cases to organisational culture and the systems and tools required to support data collection, analysis and insight-driven decision making.

## **SYSTEMS AND TOOLS**

Those not working directly with, or engaged in, digital within their organisation suggested that there are a number of primary challenges to overcome when thinking about making an initial

investment, be that monetary or staff time. In the first instance, there was a sense of being overwhelmed by choice:

“How do we keep up with everything? There’s seemingly so much choice of software, platform, product, service, etc. Everything changes so quickly, there isn’t any one place to go for advice.”

“How do we make sure we’re working with the right partners, suppliers, etc.?”

“In many cases we have insufficient technology for, say, ticketing, or even just insufficient processes for collecting that information - let alone aggregating data across multiple platforms.”

Some individuals suggested it was difficult to make the case for investment in new systems which would support better data capture due to conflicting reporting requirements:

“If we’re not required, or even incentivised to collect such data, how can I easily make the case to senior staff?”

“Senior staff within departments don’t have a handle on this. It’s often quite difficult to raise our heads above the parapet, as it were, and have a voice on the subject about why data collection of X and Y is important.”

Others working directly in the digital sector went on to stress that much could be done to improve the lack of coordination and standardisation among existing data collection efforts.

**“IN MANY CASES WE HAVE INSUFFICIENT TECHNOLOGY FOR, SAY, TICKETING, OR EVEN JUST INSUFFICIENT PROCESSES FOR COLLECTING THAT INFORMATION – LET ALONE AGGREGATING DATA ACROSS MULTIPLE PLATFORMS.”**

“Since different departments have different systems for data collection, not many of us have the skills to aggregate these sets and make sense of them. We’re starting to invest in new CRM systems and ticketing systems, but at the moment nothing talks to each other; it’s just loads of random spreadsheets, no one knows what to do with.”

“Publishing data in the same formats is critical, especially if collaboration is going to be important to move this agenda forward.”

These issues were considered critical as having the potential to hamper collaboration efforts in the future, within the sector or with external actors.

## PERCEPTIONS OF DATA

Several of the initial group discussions covered how data is often viewed in quite a narrow context.

“How do we get people to think about data being other sources than in spreadsheets? It’s so much more than numbers in Excel.”

“We have these potentially amazing new technological tools, to track and monitor our audiences and users. How can we get more design thinking into the sector in order to understand that data can be so many things?”

Whilst it was acknowledged that existing historical data was easier to work with,

# “HOW DO WE GET PEOPLE TO THINK ABOUT DATA BEING OTHER SOURCES THAN IN SPREADSHEETS? IT’S SO MUCH MORE THAN NUMBERS IN EXCEL.”

many started to weigh up the value of mining previous work and historical outputs.

“We’ve been thinking about how we extract historical data and questioning whether it is salient or not? How do we know now what is meaningful or not? It’s not an easy process to go through 15 years of work....”

There was also an assumption that for those who have already worked with historical data, largely around archives, the design or management of such an asset does not factor in monitoring how it will go on to be used.

“When you think about how people are dealing with archives, people just put content up and it stops there. No one really thinks about its application afterwards or really monitors it.” Many went on to say that they didn’t feel they were aware of, or fully

utilising, external data sets. It wasn’t immediately obvious how external data sets might play into existing work, or streams of activity.

“We use data to evaluate our work but I don’t think we’re fully utilising access to, for example, open data sets to inform public engagement work or outreach enough. We could learn so much from council level data, ONS data, but we’re not currently.”

“I don’t know why companies equate their size with their ability to engage with data internal or otherwise. Most people think open and big data are out of their reach.”

There was a reticence in the room around engagement with external data sets. It was acknowledged that the growth in open public data sets is a relatively new occurrence and that most of these sets sit unused. Many of the organisations that collect and release such data aren’t yet fulfilling a ‘bridging role’, i.e. bringing key stakeholders to that data and supporting them to use it - with the exception of some open challenge formats, such as the Open Data Institute’s open challenges.

## UNDERSTANDING THE PROBLEM

There was much discussion and focus on the benefits of data usage and investment when one has a clear objective, or more precisely, a problem to solve or pertinent business question to answer.

**“GIVEN THAT WE DON’T HAVE A STRONG SKILL SETS IN DATA SCIENCE OR ANALYSIS, IT’S SO IMPORTANT THAT YOU KNOW WHAT YOU’RE LOOKING FOR. WE’RE NOT, IN THE FIRST INSTANCE GOING TO BE AGGREGATING LARGE DATA SETS AND CREATING ALGORITHMS TO JUST ‘FISH’ FOR INTELLIGENCE. WE’LL HAVE OBJECTIVES, AND CAN COLLECT THE RIGHT DATA AND ASK THE RIGHT QUESTIONS TO HELP US REACH THAT OBJECTIVE.”**

“Given that we don’t have strong skill sets in data science or analysis, it’s so important that you know what you’re looking for. We’re not, in the first instance going to be aggregating large data sets and creating algorithms to just ‘fish’ for intelligence. We’ll have objectives, and can collect the right data and ask the right questions to help us reach that objective.”

Asking the right questions of data was considered critical if it is to be used confidently as a decision-making tool. It was acknowledged that data-driven approaches can only to a certain extent act as a guide, pointing you in the right direction, showing you more precisely where to look to solve a particular problem or issue, or learn more about a particular user group / audience segment, for example.

### **RETURN ON INVESTMENT (ROI)**

There was a frustration in the room around how to approach the issue of ROI calculations when considering investment decisions in digital and / or data products, services or tools:

“I think it’s prohibitive to say it cost us £7 to raise £5 in this context when thinking about fundraising, for example. If we took a longer-term view, perhaps we’d have better outcomes across the board / for the sector as a whole.”

“From a marketing perspective the tendency to think about data collection in terms of how it contributes to top-line revenue generation isn’t the right

place to start...the data is really only valuable to you in an insight context.”

It was apparent that several attendees felt that the hoped-for return within organisations in new systems or approach is always too soon. Short-term thinking around ROI calculations was considered to skew the potential for proper strategic thinking.

“Some very basic incorrect assumptions may be killing all activity in this space, like not taking a long-term view in terms of ROI. We need to understand the big shift in digital engagement of our audiences and get our heads around the potential long-term investment in user experience, as opposed to looking for more immediate and demonstrable returns.”

It was felt by many that in relation to investment decisions for data capture and analytics, and even big data aggregation, a longer-term view would be beneficial. This approach was thought to require a more subtle understanding of business models and digital engagement.

### **UNDERSTANDING OF BUSINESS MODELS**

It was clear that during discussions, much of the conversation had been driven by how data-driven approaches might support the development of specific products and services, but little attention was initially paid to business models themselves.

“I think lots of smaller organisations

# “FROM A MARKETING PERSPECTIVE THE TENDENCY TO THINK ABOUT DATA COLLECTION IN TERMS OF HOW IT CONTRIBUTES TO TOP-LINE REVENUE GENERATION ISN'T THE RIGHT PLACE TO START...THE DATA IS REALLY ONLY VALUABLE TO YOU, IN AN INSIGHT CONTEXT.”

probably don't have long-term business plans. The conversation is usually more around sustainability planning, which is often only a 3-to 6-to 9-month window. We're a medium-sized entity and we struggle to look past 12 months at a time, which makes weaving new thinking or new approaches quite difficult.”

Business models are notoriously an unclear entity for a lot of people working in the creative arts, which are also often predetermined by funders' requirements. It was questioned how this

cycle could be broken and how the sector could advocate for more training in business planning.

“We have very different business models. As outlined, they are driven by artistic endeavour, by creativity and different value systems and principles to that of revenue generation. We don't have enough open conversations like this. It's not in the open how people actually make things work. More conversations would help, more transparency within publicly funded institutions especially.”

Viewing business model frameworks as 'only revenue- / cash-driven' was challenged in the room. It was raised in response that usually in a commercial setting, once a bottom line is established, business funding or social investment could actually provide far more flexibility; flexible in that:

“Investors often aren't alarmed if you change tack, as long as you are doing so to learn from experience and redouble efforts to get the right business outcome. This is distant from more traditional sector funding where you have to set out your plan and stick to it.”

It was also noted that grant makers and funding bodies should be more knowledgeable about business model development in an arts context, viewing them not as a static entity, but something which can morph and vary over time to ensure value is delivered to users / stakeholders, etc.

Given that investment and development of digital products is not widespread it

was still considered quite a big leap in terms of skills to develop business models which are supported by digital products.

“In most cases it is too soon to say that any of this type of activity will generate new, or enhance existing, revenue streams. It's easy to see the strategic opportunities presented by having better insights into users / audiences - but I think we're really far away from being able to monetise any of these efforts in their own right.”

“There is a tension between wanting to experiment with new approaches and to move very quickly towards new business models...No one is saying the sector will be able to monetise data-related activity, but I think this relates to how quickly someone will want to integrate it into their business model before it has been fully tested.”

The research workshop also highlighted that whilst many thought there was potentially great value in the strategic use of data, only a few individuals seemed close to understanding what that value might be, or how it might impact directly on revenue streams and / or business model generation.

Several people took the view that those who are engaging with data collection, analytics and big data are initially focusing on data sets that can be aggregated in interesting ways, without necessarily being clear on how this might lead to solutions to the question of value, beyond user experience or consumer insight. Similar questions were asked across all groups in the session:

“What is data’s value?”

“How do we monetise it?”

The need to ascertain the values driving the business model was evident, as this will determine from whom and how data is derived.

## “WHAT IS DATA’S VALUE?” “HOW DO WE MONETISE IT?”

### CREATIVE ENGAGEMENT

Many attendees were interested in how data could be used as a tool for creative engagement. Similar to the point stressing the importance of understanding that data can be collected from a number of different sources and approaches, individuals questioned:

“How can we find ways to use the data which sometimes emerges from the creative process?”

“How could big data be used as a form of user engagement, or collaborative decision making?”

“Gaming often uses data as an extension of the creative experience to help users focus on specific topic. How could that type of approach be transferred?”

Following on from these points it was often raised that more artists and creatives should be involved in using data.

“Artists have already shown that they can add value to things such as data visualisation. What could be done to support them to work on data projects that, for example, showcased the impact of social programmes or helped think about new ways to structure an organisation?”

## “GETTING MORE ARTISTS INVOLVED IS ONLY ONE PART OF THE PUZZLE. SURELY MORE CAN BE DONE TO HELP US ADOPT BETTER PRACTICES FOR BUSINESS PURPOSES, TOO?”

“Getting more artists involved is only one part of the puzzle. Surely more can be done to help us adopt better practices for business purposes, too?”

A few felt more engagement with data by artists would help stimulate interest and support for data-driven approaches, whilst others thought this wouldn’t provide the step change required in

linking data collection, analysis and insight-driven approaches to business-focused decision making.

### PRIVACY

Given the time constraints of the day, we intentionally set aside a debate around privacy, but it is evidently a topic which cannot be ignored. The ethical- / value-driven stewardship of personal data is of increasing importance to consumers / audiences. There is a move towards people wanting to understand that they own their own data and should have a say how it is used.

“I think there’s an instinctual reaction in the arts that data collection equals something bad. It’s all about trust, and building in the right frameworks in terms of being transparent about what we’re collecting and why. We need to be better stewards for this type of activity.”

Aligned to the skills and expertise debate, there was an assumption in the room that more could be done to educate those working directly with audience or customer data bases, of the changing nature of privacy agreements and data collection legislation.

### CROSS-SECTOR WORKING

During the session attendees discussed the benefits of looking to emerging practice in the commercial sector for insight and learning. However, we

acknowledged the different scale and resources available for what is being achieved in other sectors, especially commercial activity. Many questioned:

“How and who do we partner with, and for what purposes?”

Different partnerships are obviously required for different analysis purposes, but the process for how people decide upon and find the right partners was considered a barrier. For example, there isn't a great range of preferred providers for data collection and analysis in the arts.

Those who were unclear on how you would find the right 'data' partner were also uncertain about how to find partners who had a good understanding of the needs and requirements for the arts and what values drive any given organisation and the sector as a whole.

## REAL COLLABORATION

There was great interest in the potential for organisations to share data and an interest in how it might add value beyond an organisation but for a given geography or region.

“Once you understand that your own data is worth nothing, you understand the value of pooling data with others.” However, in the open session there was a tension in the room regarding audience data sharing with some stating:

“ONCE YOU UNDERSTAND THAT YOUR OWN DATA IS WORTH NOTHING, YOU UNDERSTAND THE VALUE OF POOLING DATA WITH OTHERS.”

“We work so hard to get our audiences and users data bases, people are very reluctant to share that information.”

“Collaboration can be hard. Anything is when it isn't funded and you have the 'day job' to do / tickets to sell / funders' outcomes and outputs to meet and record.”

“Sometimes there can be such misuse of data sharing that it puts us off.”

Conversely others suggested:

“It is such a myth that we are fighting for each other's audiences. In most cases the data tells us that we are barely scratching the surface. For example, London isn't close to engaging as many young people who are interested in the arts in their activity. It's mad to think there are competing forces for audiences, even in a city like ours.”

There were also counterpoints about what

currently constitutes collaboration in the sector. With particular reference to pan-European projects, it was said:

“Some of the 'collaboration' projects we were involved in were nothing more than a big collection of logos aligned to something, and a dizzying array of emails that never seemed to go anywhere. Therefore, do people actually know why they are collaborating? And are 'forced' collaborations [forced by funders, that is] actually more trouble than they're worth, and really nothing more than a funded distraction?”

Individuals went on to say:

“I agree that there is not enough stewardship of consortia funds. These are almost the norm now, but the time lags for set-up and negotiation are huge. We talk about new economic models and pace of the digital economy, but we can't even start projects on time with more than four actors!”

While the line 'we must all must work together better' is oft-heard at any sector workshop, in this instance there was a strong awareness that collaboration was critical, given the skills shortage and perceiving the sector as far behind the curve on the data agenda.

One attendee went onto reference the need to look at how Smart Cities initiatives are dealing with, and approaching, data and the digital economy. It was felt by some that actors within arts and culture should be a bigger part of those conversations and play a more active role.

It was evident that whilst organisations, companies and individuals do work hard to develop and build their own databases, nearly all in the room were minded to focus on the promise of what they would be gaining in collaboration (more, diverse data) rather than focus on what they are giving up.

In the open discussion there was also some ambiguity in conversation as to whether people were talking about collaborating to discuss / explore / decide what to do with data, or to collaborate around the data itself.

## FUNDING LANDSCAPE

### LACK OF LEADERSHIP

When discussing the extent to which major funding bodies were leading on progressing the data agenda, responses suggested that they have been late to react and support the sector to fully grasp this agenda.

“The people who fund us have never said, ‘Right this is what we’re going to do.’ No one is leading.”

“It’s messy...and in some case it feels like a few of the ‘usual suspect’ agencies are in charge.”

“Most are very ‘hands off’ when it comes to this subject.”

“We’d love a funder to come out and take this subject by the scruff of its neck!”

**“OF COURSE, MANY OF US FEEL AS THOUGH MORE COULD HAVE BEEN DONE DECADES AGO TO MAKE SURE ARTS AND CULTURAL ORGANISATIONS WEREN’T LEFT BEHIND ON DIGITAL AND, NOW, DATA. BUT THIS DIDN’T HAPPEN. IT IS TOO LATE. I DON’T THINK WE CAN COUNT ON ANY FUNDING BODY TAKING A LEAD. IT’S GOT TO COME FROM THE SECTOR ITSELF.”**

“Of course, many of us feel as though more could have been done decades ago to make sure arts and cultural organisations weren’t left behind on digital and, now, data. But this didn’t happen. It is too late. I don’t think we can count on any funding body taking a lead. It’s got to come from the sector itself.”

Several attendees went on to say that even funds that have a dedicated digital or data strand are often very outcomes-focused, and that the funding landscape for experimentation, even for new methods for audience data collection, weren’t readily available.

### LACK OF SUBSIDISED RISK

A lack of investment resource was also named as a critical barrier to being able to invest in the necessary systems and tools to support digital transformations and data-driven techniques.

“As an organisation that is experimenting with data-driven approaches, it’s very difficult to think boldly about such work when there just aren’t the funding streams for such activity... One grant has enabled us to get this far, and we’re doing as much with it as we can. Right now, there is no one to make this case to.”

“There is a great lack of subsidised risk for this type of activity.”

The experimental, and potentially loss-making, nature of this type of initial

work was considered hard to sell to the wider organisation or board of directors and funders. One group broached the subject of data often being largely synonymous with outcomes in the sector.

## “HOW DO WE JUSTIFY COLLECTING OR REPORTING ANYTHING ELSE, WHEN WE ARE BEHOLDEN TO CERTAIN FUNDING CRITERIA?”

“How do we justify collecting or reporting anything else, when we are beholden to certain funding criteria?”

“In most cases even funding for ‘innovation’ has quite restrictive outcomes; they want to know what the innovation is, and how it is measured within a 6-9-month period.”

The constraints of solely outcomes-focused funding were felt to deter progress in this space. It was also felt that there is a disproportionate interest from private sector actors or investors in arts-related research and development. This was raised in conjunction with a conversation about a small growth in investment in innovation for digital arts incubators, whereby the

focus is on digital art products, but not sector- or industry-wide platforms and services. Similarly, it was suggested that there is also an issue between efforts to analyse data, when organisations are yet to actually collect it.

“There are organisations that are funded to help organisations make sense of their audience data, but none of that makes sense when most don’t know even how to collect it!”

Many suggested more ‘early action’ was required, to support new funded projects, and initiatives, to build in capacity for data collection at a very basic level. The view that it is difficult to rethink or remodel tools for data collection and analysis once it is already in existence was countered by individuals with tech startup experience, who said it is common in their line of work to have to revisit such infrastructure halfway through when business priorities shift, for example.

## SHARING LEARNING AND CONSULTATION

A few people highlighted that the learning from funded digital and data projects in the sector is not always shared, with helpful roadmaps or open source software not being utilised properly.

“Learning that is only on blogs doesn’t mean it is inclusive.”

“We’re a bit ‘safer’ than others in that

we’ve accounted for lots of experiments around data collection in our three-year funding agreement. We do our best to share learning and most importantly to share where things go wrong. We get frustrated that learning, specifically within the academic community, is very rarely shared.”

“There is some brilliant open source software out there, for example, mobile ticketing software - but it is never a requirement of the fund that supported the development of such work to ensure it is disseminated outside a small group of organisations, or adopted widely.”

This discussion was followed by a conversation about consultation experiences within the sector.

“Not enough energy is put into developing the right fora for proper strategic thinking and proper provocation about where this agenda is, what might be most important, what the challenges and opportunities might be - before decent funding programmes are developed, plugged in and set off on a course that can’t deviate for months or years!”

Arts and cultural organisations will continue to be affected by further budget cuts from local authorities and central government and many felt strongly about this point, given that there wasn’t a great deal being done to understand the most pressing needs of the sector.

**“NOT ENOUGH ENERGY IS PUT INTO DEVELOPING THE RIGHT FORA FOR PROPER STRATEGIC THINKING AND PROVOCATION ABOUT WHERE THIS AGENDA IS, WHAT MIGHT BE MOST IMPORTANT, WHAT THE CHALLENGES AND OPPORTUNITIES MIGHT BE – BEFORE DECENT FUNDING PROGRAMMES ARE DEVELOPED, PLUGGED IN AND SET OFF ON A COURSE THAT CAN’T DEVIATE FOR MONTHS OR YEARS!”**

## **CREATIVE INDUSTRIES**

Many referenced the difference between data usage between the more commercial end of the creative industries versus arts and culture. With the rise in social investment and alternative sources of financing such as crowd funding, many acknowledged that more commercial companies within the games, TV and film industries had been supported to gain a better understanding of their own and industry data.

“Games companies are mining their products for data usage, and using it to hone development. This community also use information, data and statistics far more effectively in a business context, too. We don’t have that level of rigour.”

This support was considered to be imperative for companies to begin to think about building new models in the digital economy, which would enable them to take on debt finance and / or dramatically diversify their income streams with alternative financing options. It was also raised that most people hadn’t been incentivised or encouraged to collect data or carry out comprehensive longitudinal studies of activities, especially relating to public / societal impact, and were thus at a disadvantage now - without historical and robust information and data - to present to different funding bodies or institutional investors.

## **BENCHMARKING**

It was evident that much of the group felt that they had poor access to comparable benchmarking data within arts and culture.

“There are no benchmarks for data. You could have an audience number of 500, which might look good on paper, but what if you knew the benchmark was 50,000?!”

Several people cited this as a barrier to developing sustainable business models, and that not enough academic studies or otherwise were funded to help companies benchmark programme activity and impact, but also management, and income generation strands of work.

In many instances, attendees had utilised data for evaluation processes, and to evidence social programmes.

“On a simple level, we use audience / user data collected to show that funding targets were achieved, e.g. x number of 16-25-year-olds were reached, to inform new funding bids.”

Yet, several attendees cited that data could be a much more powerful tool in terms of using it to standardise monitoring and reporting frameworks to compare the impact of individual programmes or streams of work against the organisation as a whole. Many people felt their organisations were unable to compare the impact of specific programmes of work accurately or provide a simple picture of the impact of the organisation as a whole. It became evident that there is a distinct lack of understanding of best practice for

data-driven approaches, especially around standards and metrics for impact measurement.

## ORGANISATIONAL CULTURE

### SILO WORKING

It was acknowledged that across many organisations there is not an inherent culture of data collection and analysis. Data is often not considered useful to develop insights and improve outputs, or inform broader decision-making processes.

Data gathering is seen as being manual and labour-intensive. It is difficult for organisations to provide basic information and it appears to be collected manually from scratch every time, which is time-consuming for everyone involved.

This was largely considered as a result of silo working and lack of internal leadership. Several people suggested different departments and teams use their own systems for data collection and / or analysis:

“The marketing department doesn’t always understand why the digital team want access to their data. And then staff don’t trust each department’s data!”

“Every team has a different way of logging and processing information from an array of different data sources.”

“Each department has a mistrust of each other’s data requests, with Marketing

thinking, ‘Why does digital want that?’ and Digital teams asking, ‘Why does Marketing need this?’ We’re not always aligned to one vision or strategy where data is concerned.”

Many acknowledged that it was problematic to share data and teams tend to have only access to their systems, which in turn makes sharing data difficult, and the data itself of limited value.

“We’re often working at cross purposes, with some teams really striving for digital infrastructure investment, and others not appreciating its significance at all.”

**“I THINK ORGANISATIONS HAVE A BIAS TOWARDS USING DIGITAL AND DATA FOR CONTENT AND DISTRIBUTION ACTIVITIES RATHER THAN BROADER ENGAGEMENT WITH THE AUDIENCES AND MARKETS THEY REACH.”**

“I think organisations have a bias towards using digital and data for content and distribution activities rather than broader engagement with the audiences and markets they reach.”

It was thought that silos have developed as a result of different departments and teams working in the same building but not working towards a shared goal. This was not solely a cultural issue, but also a symptom of each activity operating from different systems with varying metrics for data, collection, information gathering systems and monitoring and evaluation processes.

### UTILISING ASSETS AND INFRASTRUCTURE

Many arts and cultural organisations have invaluable assets and infrastructure, such as well-known and prestigious buildings and other physical assets such as gardens, cafés and many other facilities and venues onsite, which are not always directly related to cultural visits. Of course, with such assets comes access to secondary income sources and revenue generation and an array of digital engagement points, for example, free wifi.

Nevertheless, it was felt that most organisations aren’t capitalising on the potential digital and subsequent data touch points available to them by virtue of their physical assets or otherwise.

“A few more case studies we discussed show visitor attractions in the United States using incredible sophisticated

software and data management to aggregate data sources and provide managers with real-time information. I don't think even our biggest institutions are anywhere near that level. We're not always thinking about how we can better the overall experience for an audience member coming to our venue, we tend to think the product or programme is critical, and don't always take a great interest in the impact of areas of secondary income. This is made even more difficult if you don't run your own bars / cafés, etc."

This conversation was inextricably linked to a dialogue about how organisations make the most of their customer databases. In contrast to many other traditional social sector charities (who predominantly fundraise from, rather than sell products to, the public), many arts organisations already have a customer base - people willing to pay for tickets, pay entrance fees, dine in their cafés and restaurants and purchase associated event- and facility-related products. These transactions provide increasing quantities of digital information about user behaviour and customer preferences.

"The reminder in the presentations that 'your data is only valuable to you' made me think that we haven't even understood what is valuable full stop. We're not close to looking at big data, I don't think many have done basic data mining. But it's clear how it could be used, in some cases, as a platform to drive new thinking and engagement."

**“THE REMINDER IN THE PRESENTATIONS THAT ‘YOUR DATA IS ONLY VALUABLE TO YOU’ MADE ME THINK THAT WE HAVEN’T EVEN UNDERSTOOD WHAT IS VALUABLE FULL STOP. WE’RE NOT CLOSE TO LOOKING AT BIG DATA, I DON’T THINK MANY HAVE DONE BASIC DATA MINING. BUT IT’S CLEAR HOW IT COULD BE USED, IN SOME CASES, AS A PLATFORM TO DRIVE NEW THINKING AND ENGAGEMENT.”**

"We need to be better at connecting our mission to metrics."

Several people highlighted the disconnect between understanding the value of data in terms of insight driven decision making that was still aligned to an organisational mission. People also voiced that this may be due to a lack of role models within the sector who advocate for and promote the successful use of data to drive areas of decision-making.

## **DIGITAL FUNDRAISING**

It is well documented that greater data capture can support digital fundraising activities, again largely due to having increased insight into, in this case, donor behavior. However, during the workshop many said there was still reluctance culturally, in the sector, to view people with whom they engage as audiences, customers and donors.

Requests for charitable donations are often not considered as part of the customer user journey, especially when engaging digitally.

Alongside the skills barriers cited, it was considered that there is a lack of internal expertise or co-ordination on how digital means, and subsequently data capture and analysis, can be used to turn customers into donors amongst established arts organisations. Many were frustrated with the amount of focus on new crowd funding platforms, suggesting that they weren't the 'sole answer' to the digital giving problem.

In discussion we offered a few examples of how traditional social sector charities had started to use digital channels (mobile payments, text giving, etc.) to promote low value / high volume donations. Again, these approaches often utilise data analytics to ensure they have a rounded understanding of their potential donor, their giving history, motivations for giving, etc.

One participant relayed that conversations around diversifying income streams by trying new fundraising campaigns, processes or systems are often stopped in their tracks by cultural barriers.

“Good ideas get killed by needing an answer to every single question. There’s always going to be unknowns when trying something new.”

“New approaches and models get diluted so quickly. Most of what is happening is only occurring on the margins. There have been no bold commitments or break-throughs like we saw in the presentations.”

This lack of pace and appetite for change was echoed in many attendees’ experiences of trying to advocate for the adoption of new approaches, especially around engagement models for fundraising.

**“NEW APPROACHES AND MODELS GET DILUTED SO QUICKLY. MOST OF WHAT IS HAPPENING IS ONLY OCCURRING ON THE MARGINS. THERE HAVE BEEN NO BOLD COMMITMENTS OR BREAK-THROUGHS LIKE WE SAW IN THE PRESENTATIONS.”**

### **A STEP CHANGE**

Opinion was divided when considering what would be required of the sector to encourage more experimenting with data-driven approaches, and consideration of sustainable business models.

“Why isn’t there a greater sense of urgency around up-skilling the sector? You see this happening in the more commercial end of the creative sector, but arts and culture are being left behind.”

A few examples offered from outside the sector indicated how companies

had conducted bold restructures in order to put ‘insight’ at the heart of strategy and operations. This type of transformation was considered too bold in the first instance, but the conversation quickly moved towards a realisation that perhaps interest and investment in this agenda has been:

“Too little, too late!”

Attendees went on to input:

**“I APPRECIATE INTERNALLY IT FEELS LIKE ONE HAS TO START SMALL TO ENSURE BUY-IN. BUT IT IS TOO LATE TO BE TINKERING AROUND THE EDGES.”**

“I appreciate internally it feels like one has to start small to ensure buy-in. But it is too late to be tinkering around the edges.”

“There are a few organisations who support the Arts who suggest that we’re not competing, and can’t compete with big brands, big entertainment companies and multinationals for consumer attention. I think that’s barking! Of course we are, and it’s only going to

get more competitive with the rise in mobile tech. We have to acknowledge that we are far behind, and have been for years.”

Attendees were ambitious in their desire to overcome the deficit in leadership and investment barriers highlighted earlier. They were equally keen to promote the importance of discussion and dialogue across sector bodies to ensure a rounded picture of the current state of affairs and obstacles to adopting the principles outlined during the workshop.

## **CONCLUDING REMARKS**

Inevitably, given the title of the research workshop, much of the key summaries can be read as overly negative. However, despite the recognition that there were numerous barriers to overcome, it was felt that none of them were insurmountable. There was a great deal of energy in the room to collectively explore possible solutions to those barriers.

Attendees were also reminded that it is important not to be too despondent about the lack of stories on use of data within arts and culture - while there are interesting examples of useful, even transformative, insights being derived from data in other more commercial sectors, even there they can be few and far between.

The workshop itself stimulated an array of potential further research opportunities, and we have emphasised a few key areas of interest, which we feel

warrant further exploration and could accelerate progress on this agenda.

## **BACK TO BASICS**

Even the language used to describe and articulate data-driven activity can be a barrier for some. More could be done to simplify and illuminate where new data-driven approaches could add value to developing sustainable business models. Given that the sector is so diverse, and that during the session we largely focused on publicly funded arts and cultural institutions, it would be worthwhile to expand the research to include the more commercial creative industries - for comparison purposes and potential cross overs in approach.

## **BEST PRACTICE**

The question on everyone’s lips was - the how? How do you collect data, turn that data into insight, use that insight to make more informed decisions, which eventually leads to effective implementation? A series of ‘best practice’ case studies, or step-by-step guides, could encourage greater expectation. These should detail how cultural barriers were overcome alongside breakdowns of the technical requirements for data-driven activity.

## **BUSINESS MODELS**

Similar to making the language around data more accessible to a community unfamiliar with it, it is clear that it

would be beneficial to have a greater understanding of the current use of business modeling within arts and culture institutions. Many attendees understood that the term was used to describe short-term product or programme planning. A more robust comprehension of the business models currently adopted in the sector could underpin the future design of critical support packages, which map out new models emerging in the digital economy.

## **FUNDING SCHEME DESIGN**

Whilst it is not always possible for consultation periods to precede new funding streams or initiatives, it was suggested that more consultation pre-funding scheme design was imperative by attendees. There are existing communities who take an active interest in this agenda; it would be advantageous to scope out how to build on these platforms to encourage more conversations to support funders to better meet the needs of their beneficiaries.

## **SKILLS**

A skills audit within the sector could help address critical blind spots and shortages in relation to appropriate digital and data skills sets and training requirements. Existing initiatives like, for example, the Arts Council England’s Creative Employment Programme could be used to actively to drive new, much-needed skills into the sector.

## **COLLABORATION**

Looking beyond the industry was a popular discussion topic. Numerous attendees said that they'd welcome more collaboration with proven technology leaders in order to advance their thinking and seek out new technological insights and opportunities. It would be beneficial to investigate what types of collaborative processes and platform thinking might support companies and organisations to cooperate.

clarity on how such work and business model development might lead to solutions to the question of data's value.

## **CULTURE CHANGE**

Risk has evidently begun to accumulate in terms of slow adoption of the trends that underpin some of the new business models emerging as a result of the growth of the digital economy. Concurrent with much of our work, change or early adoption of new processes and approaches, especially concerning digital tech trends are often reliant on an organisation's culture and management style. Thus, aligned to earlier points, a greater understanding of the conditions in which new data-driven approaches flourish would support cross-disciplinary and cross-sector learning.

This short recommendation list is by no means comprehensive, and we will continue to review the workshop findings and consult with industry experts to ensure these insights are shared.

While a number of complex conditions were cited as barriers to engagement with data-driven techniques we share attendees' eagerness to gain further

## BIOGRAPHIES

### MARY JANE EDWARDS

Mary Jane's career has focused on cultural regeneration, creative producing, social policy and social investment. Mary Jane was part of the team that redeveloped a disused railway arch under Waterloo station into The Old Vic Tunnels. She has conceived and coordinated award-winning, large-scale volunteering and employment support schemes for young unemployed adults in the creative industries. Mary Jane went on to co-lead action research supported by the Big Lottery Fund into how social investment products could tackle unemployment and support charities and social enterprises to access Government Welfare to Work schemes. Mary Jane has since consulted in a range of sectors on innovation ecosystems and social financial products. Continuing her exploration of social finance, philanthropy and funding strategies Mary Jane worked for a Canary Wharf startup creating a new global platform for non-monetary trade. In 2013 she co-founded AAM, an independent research agency and consultancy, which focuses on digital social innovation and the application of data to create social value.

Mary Jane also co-runs Shrinking Space, a science and art public engagement platform.

Her studies and training have included periods at: Rose Bruford College of Music and Drama, The Grotowski Institute in Poland, L'Institute del Teatre in Barcelona, and The Radnotti Theatre in Budapest. Mary Jane is also a fellow of the RSA.

### JANET HETHERINGTON

Janet Hetherington lectures on the Creative Communities programme and is the lead tutor award leader for the MA in Community and Participatory Arts, and a Senior Researcher in the Faculty. This includes delivery of the Artist Professional Development Programme: Developing Arts for Health, which provides accredited training for artists working in a health context. Janet is also Director of Creative CIC, supporting the network for arts and health in the region, in which she established the Article 31 Children's Consultancy Network establishing opportunities for participatory decision making in cultural and arts institutions and her current research is concerned with cultural commissioning within the public sector.

Janet is a member of Staffordshire University's Institute for Applied Creative Thinking (I-ACT). I-ACT aims to improve business performance and help communities and third sector organisations to have a clear voice, purpose and presence in today's busy world by providing creative thinking,

academic research, innovative services and enterprise activities.

# APPENDICES

## APPENDIX 1

Links from presentation

Presentation available on Slideshare:  
[http://www.slideshare.net/AAM\\_Associates/exploring-the-barriers-to-developing-datadriven-business-models-in-the-creative-arts-sector](http://www.slideshare.net/AAM_Associates/exploring-the-barriers-to-developing-datadriven-business-models-in-the-creative-arts-sector)

IBM Infographic: <http://www.ibmdatahub.com/infographic/four-vs-big-data>

Open Data: <http://data.gov.uk>

Starbucks Payment App: <http://tinyurl.com/ptvmuzr>

Macy's Beacon App: <http://www.washingtonpost.com/news/business/wp/2014/09/25/is-the-new-technology-at-macys-our-first-glimpse-of-the-future-of-retail/>

Shazam: <http://www.forbes.com/sites/katherynthayer/2014/12/10/shazam-and-spotify-put-data-on-the-playlist/?ss=data-companies>

Jawbone: <http://mobihealthnews.com/39890/report-fitbit-expected-to-ipo-in-2015-jawbone-experiments-with-brands/>

Optimizely: <https://www.optimizely.com>

DMA Free Membership: <https://www.dma.org/visit/dma-friends>

DMA Personalised Profile: <http://vimeo.com/61111779>

DMA Engagement: <https://uncrated.wordpress.com/2013/10/21/permanent-waves-and-lipstick-craves/>

The Louvre Beacon Case Study: <http://senseable.mit.edu/louvre/>

The Science Museum Fundraising Desk: <http://www.effectivedesign.org.uk/winners/2014/events-visitor-attractions/science-museum-fundraiser-desk>

Crowd Connected, Wireless Festival: [http://www.surrey-research-park.com/files/SRP%20News%20Winter%202014-2015%20email.pdf?utm\\_content=buffer15a09&utm\\_medium=social&utm\\_source=twitter.com&utm\\_campaign=buffer](http://www.surrey-research-park.com/files/SRP%20News%20Winter%202014-2015%20email.pdf?utm_content=buffer15a09&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer)

Cooper Hewitt: <https://www.cooperhewitt.org/new-experience/>

Aaron Straup Cope quote: <http://www.theatlantic.com/technology/archive/2015/01/how-to-build-the-museum-of-the-future/384646/>

Artsy Art Genome Project: <https://www.artsy.net/theartgenomeproject>

Crowd Funding: <https://www.patreon.com>, <http://tocyn.launchrock.com>, <http://www.artfund.org/get-involved/art-happens>

The Curve: <http://www.thecurveonline.com>

We Are Public: <http://wearepublic.nl/en/>

Plymouth App, Artory: <http://www.theguardian.com/culture-professionals-network/2015/feb/06/artory-culture-plymouth-app-story>

I'm @ app: <http://www.im-at-app.com>

I'm @ app Liverpool Pilot: <http://www.theguardian.com/culture-professionals-network/2014/dec/12/how-we-made-im-at-app-liverpool-culture>

## APPENDIX 2

Additional context articles to presentation

Nurturing Engagement: How Technology and Business Model Alignment can Transform Visitor Participation in the Museum: <http://mw2013.museumsandtheweb.com/paper/nurturing-engagement/>

Seeing the Forest and the Trees: How Engagement Analytics Can Help Museums Connect to Audiences at Scale: <http://mw2014.museumsandtheweb.com/paper/seeing-the-forest-and-the-trees-how-engagement-analytics-can-help-museums-connect-to-audiences-at-scale/>

Optimizely, Statistics for the Internet Age: <http://blog.optimizely.com/2015/01/20/statistics-for-the-internet-age-the-story-behind-optimizelys-new-stats-engine/>

Pay What You Can Trial, Stockton ARC: <http://www.thestage.co.uk/news/2015/01/six-month-pay-decide-trial-launched-stockton-arc/>

Event Cinema: <http://www.eventcinemaassociation.org/industry-news--2014-08-11-19m-event-cinema.html>

Kew Gardens Discovery App: <https://>

jonpaullittle.wordpress.com

How to build the museum of the future, The Atlantic: <http://www.theatlantic.com/technology/archive/2015/01/how-to-build-the-museum-of-the-future/384646/>

When the Art is watching you, WSJ: <http://www.wsj.com/articles/when-the-art-is-watching-you-1418338759>

Artsy Galleries, Fortune: <http://fortune.com/2015/01/22/artsy-galleries/>

Cultural Data Project, US: <http://www.culturaldata.org>

How Point Defiance Zoo Aquarium uses data analytics to predict attendance, Wired: <http://www.wired.com/2014/04/point-defiance-zoo-aquarium-uses-data-analytics-predict-attendance/>

History Colorado Center is using IBM Big Data analytics: <http://www-03.ibm.com/press/us/en/pressrelease/41254.wss>

Counting What Counts, Nesta report: [http://www.nesta.org.uk/sites/default/files/counting\\_what\\_counts.pdf](http://www.nesta.org.uk/sites/default/files/counting_what_counts.pdf)

Making sense of numbers: a journey of spreading the analytics culture at The Tate: [http://www.museumsandtheweb.com/mw2012/papers/making\\_sense\\_of\\_numbers\\_a\\_journey\\_of\\_spreading.html](http://www.museumsandtheweb.com/mw2012/papers/making_sense_of_numbers_a_journey_of_spreading.html)

Netflix using Big Data to promote House of Cards, NY Times: <http://www.nytimes.com/2013/02/25/business/media/for-house-of-cards-using-big-data-to-guarantee-its-popularity.html?pagewanted=all&r=1&>

Guggenheim Museum CIO balances beacons,

beauty, WSJ: <http://blogs.wsj.com/cio/2014/09/24/guggenheim-museum-cio-balances-beacons-beauty/>

Using spatial data to advance programming missions: [http://static1.squarespace.com/static/51d98be2e4b05a25fc200cbc/t/53567708e4b08b5970d59fd2/1398175496485/GracielaKahn\\_UsingSpatialData\\_Final.pdf](http://static1.squarespace.com/static/51d98be2e4b05a25fc200cbc/t/53567708e4b08b5970d59fd2/1398175496485/GracielaKahn_UsingSpatialData_Final.pdf)

Using bigger data to create value in Arts and Culture sector, Nesta blog: <http://www.nesta.org.uk/blog/art-analytics-using-bigger-data-create-value-arts-and-cultural-sector>

LACMA iOS app: <https://www.urbaninsight.com/blog/gimbal-ios-drupal>

Floodwatch, OCR (internet privacy): <https://floodwatch.o-c-r.org/>

Painting by numbers creative environmental data, Guardian: [http://www.theguardian.com/culture-professionals-network/2015/jan/29/paint-by-numbers-creative-environmental-data?CMP=new\\_1194](http://www.theguardian.com/culture-professionals-network/2015/jan/29/paint-by-numbers-creative-environmental-data?CMP=new_1194)

Humble Bundle: <https://www.humblebundle.com>

Nesta Digital Culture 2014 report: <http://artsdigitalrnd.org.uk/features/digitalculture2014/>

## APPENDIX 3

Recommended books & reports (corporate and social context)

Big Data: A Revolution That Will Transform How We Live, Work and Think by Viktor Mayer-Schönberger and Kenneth Cukier  
[http://www.amazon.co.uk/Big-Data-Revolution-Transform-Think-ebook/dp/B00BCK1A5Q/ref=la\\_B00C47ZFSY\\_1\\_1?s=books&ie=UTF8&qid=1409650720&sr=1-1](http://www.amazon.co.uk/Big-Data-Revolution-Transform-Think-ebook/dp/B00BCK1A5Q/ref=la_B00C47ZFSY_1_1?s=books&ie=UTF8&qid=1409650720&sr=1-1)

The Big Data Driven Business by Russell Glass and Sean Callahan  
<http://www.amazon.co.uk/The-Big-Data-Driven-Business-Competitors/dp/1118889800>

Age of Context by Robert Scoble & Shel Israel  
<http://www.amazon.co.uk/Age-Context-Mobile-Sensors-Privacy/dp/1492348430>

Growth Hacker Marketing by Ryan Holiday  
<http://www.amazon.co.uk/Growth-Hacker-Marketing-Primer-Advertising/dp/1591847389>

Big Data: Using Smart Big Data, Analytics and Metrics to Make Better Decisions and Improve Performance by Bernard Marr  
[http://www.amazon.co.uk/Big-Data-Analytics-Decisions-Performance/dp/1118965833/ref=sr\\_1\\_8?s=books&ie=UTF8&qid=1423315905&sr=1-8&keywords=data+marketing](http://www.amazon.co.uk/Big-Data-Analytics-Decisions-Performance/dp/1118965833/ref=sr_1_8?s=books&ie=UTF8&qid=1423315905&sr=1-8&keywords=data+marketing)

Big Data in Big Companies by the International Institute for Analytics  
<http://www.sas.com/resources/asset/Big-Data-in-Big-Companies.pdf>

Data Driven Business Models, NEMODE report by Cambridge University  
<http://www.nemode.ac.uk/wp-content/>

uploads/2014/09/nemode\_business\_models\_for\_bigdata\_2014\_oxford.pdf

Next Generation Evaluation report by The Foundation Strategy Group  
[http://www.fsg.org/Portals/0/Uploads/Documents/PDF/Next\\_Generation\\_Evaluation.pdf](http://www.fsg.org/Portals/0/Uploads/Documents/PDF/Next_Generation_Evaluation.pdf)

Open Data and Charities report by Nominet Trust  
[http://www.nominettrust.org.uk/sites/default/files/Open Data and Charities.pdf](http://www.nominettrust.org.uk/sites/default/files/Open%20Data%20and%20Charities.pdf)

Data Informed Non-profits, NTEN report  
[http://www.nten.org/sites/default/files/nonprofit\\_toolkit\\_final.pdf](http://www.nten.org/sites/default/files/nonprofit_toolkit_final.pdf)

Data blog, The World Bank  
<http://blogs.worldbank.org/opendata/>

Corporate Data Innovation Challenges and Opportunities by Patrick Launay  
[http://nem-summit.eu/files/2013/11/2013-NEM-Summit\\_Corporate-data-innovation-challenges-opportunities.pdf](http://nem-summit.eu/files/2013/11/2013-NEM-Summit_Corporate-data-innovation-challenges-opportunities.pdf)

Lean Analytics by Alistair Croll & Benjamin Yoskowitz  
[http://www.amazon.co.uk/Lean-Analytics-Better-Startup-OReilly/dp/1449335675/ref=sr\\_1\\_1?ie=UTF8&qid=1423314223&sr=8-1&keywords=lean+analytics](http://www.amazon.co.uk/Lean-Analytics-Better-Startup-OReilly/dp/1449335675/ref=sr_1_1?ie=UTF8&qid=1423314223&sr=8-1&keywords=lean+analytics)

## APPENDIX 4

Resources cited during research workshop

Google Analytics Academy  
<http://www.google.com/intl/en/analytics/learn/>

Collections Trust, Digital benchmarks  
<http://www.collectionstrust.org.uk/digital/digital-benchmarks-for-the-culture-sector>

Culture Hack Data Toolkit  
<http://culturehack.org.uk/2014/01/30/announcing-new-culture-hack-data-and-the-culture-hack-toolkit/>

KWMC data tool kit  
<http://kwmc.org.uk/datatoolkitlaunch/>

Kissmetrics  
<https://www.kissmetrics.com>

User Testing  
<http://www.usertesting.com>

Unbounce  
<http://unbounce.com>

Import.io  
<https://import.io>

Mixpanel  
<https://mixpanel.com>

Optimizely  
<https://www.optimizely.com>

Datawrapper  
<https://datawrapper.de>

Open Refine  
<http://openrefine.org>

## APPENDIX 5

Related projects / companies cited during research workshop

Europeana Professional  
<http://pro.europeana.eu>

ODI, Heritage & Culture Challenge  
<http://www.nesta.org.uk/heritage-culture-open-data-challenge>

Creative Data Club, Sound and Music  
<http://www.soundandmusic.org/creativedata>

Kealy Cozens's blog, Creative Project Leader (Data) at Sound and Music  
<https://medium.com/@kealy>

Audience Agency  
<http://www.theaudienceagency.org/event/using-and-managing-data-in-fundraising/>

Purple Seven  
<http://www.purpleseven.co.uk>, <http://www.im-at-app.com>  
<http://www.starcourt.com/#/theteam>

Magic Lantern, Arts Data Impact  
<http://www.magiclantern.co.uk/project/arts-data-impact/>

Nesta, RnD fund data projects  
<http://www.nesta.org.uk/news/digital-rd-fund-arts-answer-big-questions-about-big-data>

We Are Culture 24, Let's Get Real action research  
<http://weareculture24.org.uk>

Data Culture Hack  
<http://data.culturehack.org.uk>

Happenstance project  
<http://happenstanceproject.com>

We welcome comments, and are always open to collaborations on this subject. If this topic is of interest to you, please do get in touch with:

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