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ARTS DATA IMPACT



## CultureHive Case Studies: Arts Data Impact

### Background and Project Partners

The Arts Data Impact (ADI) project was a collaborative project between The Audience Agency, three arts organisations, University of Ulster and Magic Lantern. ADI addressed how data-driven insight can best support arts organisations and have an impact on organisational change. This was delivered via consultancy and the employment of two data scientists-in-residence who developed software tool prototypes for the arts partners. The main objectives of the project were to:

- Test data driven decision making in arts organisations
- Generate insight into new business and organisational models as a result of data driven decision making
- Facilitate a step change in the sector towards a more open and transparent sharing of data for the benefit of the entire sector

**Arts partners:** The Barbican, National Theatre, English National Opera and The Audience Agency were uniquely placed to initiate this project, poised at a point of major CRM development, and able to contribute thinking and experimentation, as well as large and robust data-sets. The arts partners hosted the Data Scientist in Residence for six months, test drove proto-types and played a leadership role in the sector.

**Technology Partner:** Magic Lantern Productions provided the technical strategy and worked with digital agency We Heart Digital to develop and build the tools for the arts partners in collaboration with the Data Scientists in Residence. Led by Anthony Lilley, author of Counting What Counts, it is a long-established and leading digital media company.

**Research Partner:** Professor Paul Moore was the Principal Investigator for the ADI project. Co-author of Counting What Counts, he is Head of the Schools of Arts and Computing at the University of Ulster and recognised as a leading exponent of ethnographic methodologies in the arts space. His research is focused on both the creative industries and the ways in which theory and practice can be brought together in training and education.

**Outcome:** The project has resulted in prototype tools that contextualise how data can be used to enhance business decisions. The tools provide intuitive push button reports that deliver



insights about each organisations' data. It was not a long or arduous process to gain something real from using the tools. The idea was not to replace people's decisions with data but to support decisions within a data informed culture. The project's success has been less on what those decisions actually were but on the narrative around those decisions, i.e. how the data has been used internally to develop understanding, tell stories and drive cultural change. While the tools represent the technical success of the project it is each organisation's story about their experiences on the project, with the Data Scientists and their responding internal shifts in behaviour around data that is the real success.

## The Audience Agency

The Audience Agency is the national agency supporting audience strategy, bringing insight to transform the relationship between cultural organisations and audiences. The Audience Agency supports cultural organisations through the creation and application of intelligence and know-how to have a greater impact on communities or wider society. The arts consortium for the ADI project was led by The Audience Agency which has a legacy of data collaboration through a number of past projects to understand individual and collective markets e.g. Snapshot London and Audience Finder. Audience Finder is their national big data and benchmarking programme that enables comprehensive collection and aggregation of data; and sharing of insight and analysis across the sector.

### Why did TAA want to be involved in the ADI project?

Audience Finder has grown in volume with increasing velocity and different variety of sources - predominantly box office metrics, survey data and web analytics. Part of the opportunity with ADI was to look more broadly at what else could be developed and improve the speed at which data could be collected and analysed to optimise value for the agency and the sector. The ADI project has very much been a response to *Counting What Counts*<sup>1</sup>, it was also an opportunity to make better use of data and explore what a data 3.0 approach might look like for them.

### What role does data play in TAA?

The Audience Agency has developed a strong reputation for creating meaningful metrics and insight among extensive networks of cultural organisations, with an emphasis on the applied and practical and relies on a collaborative model developed over a ten-year period. The role of insight in the day to day consultancy has become increasingly important as the organisation

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<sup>1</sup> *Counting What Counts* (A Lilly and Prof P Moore), published by Nesta February 2013

levers more actionable insight from its growing data resources. However, there has been a need to speed up this process as the resource has grown - relying on human interaction with the data at a basic level to produce analysis is increasingly timely and less cost effective. A “big data” or automated approach to this problem was at the heart of the role of The Audience Agency’s participation in the project.

### What was TAA’s perception of data? How has it changed?

The Audience Agency has generally data-savvy staff across the board. There are however areas that can be improved in relation to knowledge of emerging techniques in the fields of machine learning, large-scale data aggregation and linked data, predictive modelling and the opportunities associated with open data. The project has provided an opportunity for staff to learn more about these areas. The challenges of enabling more confident data driven decision-making the cultural sector was also a key concern.

### What kinds of data does TAA have?

The Audience Agency has large data resources of its own as well as access to other data resources such as Taking Part<sup>2</sup> data, Experian’s Hitwise<sup>3</sup> analytics platform, TGI<sup>4</sup> data, UK Census information, PAF<sup>5</sup> and more. Audience Finder aggregates data collected by arts organisations in England and Wales from a standardised quantitative survey framework (including demographic, attitudinal and motivational metrics) and box offices (transactional and customer data from bookings).

The Audience Finder box office data warehouse offers sectoral insight on several levels. It allows organisations to see their bookers’ arts attendance across different venues and is well suited for analysis of general patterns of arts engagement. Secondly, it looks at the success of different productions and performances and cross-references this with characteristics of these performances. Thirdly audience members’ booking behaviour can be analysed for marketing purposes. Finally, Audience Finder offers information about volume of attendances to events across the country and characteristics of those attenders.

Three of the four tools developed through ADI use Audience Finder, a large data warehouse storing information on bookings, performances and audience members of arts organisations across the England & Wales developed by The Audience Agency. Bookers are de-duplicated

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<sup>2</sup> Annual cultural participation survey conducted by DCMS

<sup>3</sup> A web analytics platform licensed by TAA

<sup>4</sup> A commercially produced consumer survey dataset

<sup>5</sup> UK postcode and address data

across organisations and tagged using Audience Spectrum - a population profiling tool which identifies the differences between attendance, participation and engagement as well as behaviours, attitudes and preferences at arts, museums and heritage organisations.

TAA also holds a huge bank of what we might now call “This Data” - our knowledge of how cultural organisations tend to interact with research data and evidence.

### **What kinds of questions were TAA interested in exploring as part of the ADI project?**

The ADI project would augment Audience Finder by enabling data-driven decision making around programming and marketing. The majority of data analysis currently done by TAA is descriptive and this predictive tool would enable their research and consultancy to reach the next step.

A tool showing what type of audience various types of performances bring in and predicting audiences of a particular performance, based on its characteristics. It will make use of the TAA data store on performances that happened across various organisations. This way organisations could benefit from information sharing via TAA, without any sensitive information being revealed. The software was developed with the following question in mind: *How can success of a performance be predicted?*

### **How did these relate to their overall strategic/business goals?**

The project was not just about what the agency might use the tool for with Audience Finder clients but how it would help them understand their work internally which was a key driver. Sector needs and deeper ethnographic understanding?

### **What was it like having a Data Scientist in Residence embedded at the organisation?**

The data scientists brought new and complementary skills into the agency, the success of which has resulted in an offer for the data scientists to stay on after their initial contract. The project has strengthened their working relationships internally and with arts partners and they look forward to being able to spread that insight more widely across the sector. Having a data scientist led to a decision to retain a DSIR on a pilot basis to test the theory that many organisations could benefit from timely interventions.

### **What kind of impact did their presence have on their way of working/organisational culture?**

The success of the outcomes is a tribute to quality of the team, partners and hard work undertaken which has inspired all who have been involved, this in itself is an important

outcome. Given the dual role that the agency undertook in driving and managing the project but also being part of the experiment, has also been of real benefit to them.

### What did TAA learn about its data and the way that it could be used?

The prototype tool makes it easier to understand what kind of audience a performance of any given type is likely to bring in and could be used in marketing and programming decision making. The tool is designed to allow smaller organisations, who may not have a large enough database to do similar analysis themselves, benefitting from the Audience Finder dataset. It also can be useful for organisations wishing to plan a performance different to their existing programme and reports are aggregate enough to protect each of the organisations' data from being revealed.

The predictive analytics tool has three elements to it which can provide a quick overview of the characteristics of an audience in one page views. *Performance Predictor* is a tool showing what type of audience various types of performances bring in and predicting audiences of a particular performance, based on its characteristics. It makes use of Audience Finder, which stores information on performances that happened across various organisations. Organisations using Performance Predictor can, therefore, benefit from information sharing via Audience Finder, without any sensitive information being revealed.

Another element is aimed at helping organisations plan future performances. It allows the user to define a set off characteristics of a planned performance, then searches through the performances stored in Audience Finder and finds those which are most similar in terms of the specified characteristics. The prediction uses information on audiences of other performances available in Audience Finder and ideally is specific to geographical cluster and compared with the baseline audience for a particular organisation/venue.

This has inadvertently created the basis for a new tool Tour Tracker as it is built from a performance level, it will be able to easily provide tour reporting (aggregates of performances at specific venues) for touring companies.

### Did the process undertaken change how data is viewed in the organisation?

The process definitely changed product development processes. Whereas product development had been a small but time consuming area of the agency's work, the ADI project showed how a truly agile approach could increase the speed, efficiency and quality of outputs. It is also helped to flatten the organisational structure by deepening understanding of and access to the data which is strengthening collaborative relationships across the team and the organisation has restructured and modified its organisational strategy as a result.

### **What is the longer-term impact of the Data Scientist and of the ADI project more generally?**

The tool will help The Audience Agency work with organisations in the sector to push the boundaries around what they are willing to programme from the type of work to location of delivery. It will help make that type of transition less risky by providing organisations with a sense of what type of audience they could expect, the distribution of that audience and other characteristics from booking lead time to ticket price based on the programmed algorithm.

### **What can other arts organisations learn from their experience?**

The most relevant and wide-reaching learnings are around culture, process and innovation. Investing time and money in R&D is worth the effort and risk. Starting a conversation with a broad base around solutions to common work problems is one of the most effective ways of building effective working relationships and of embedding data in the day-to-day. Innovation and culture change are processes, the careful management of these is key to successful outcomes.

There is huge value in investing, temporarily in a data scientist. A relatively short intervention can be hugely valuable, particularly for diagnostics of intra-organisational challenges which often hold back data and other digital development.

### **What words of wisdom would you offer other arts organisations who are wanting to make better decisions with their data?**

Use your experience and knowledge, bring it to bear on the information at hand. Good interpretation is as much about the understanding of the context and background as it is about the analysis of the data.