

A person is shown from the chest up, wearing a black VR headset. They are holding the sides of the headset with both hands. The background is a blurred image of a museum or gallery with blue lighting. Overlaid on the image are several blue circular and semi-circular shapes. The text "Connected journeys: Holistic audience measurement in the age of digital" is written in white, bold, sans-serif font across the upper left portion of the image.

Connected journeys: Holistic audience measurement in the age of digital

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Introduction

“Museums trying to show a model of the world have become a model of the world themselves, which makes them a good model to examine its changes”

Virgil Widrich, 2018

The relevance of the work and contributions of the NEMO Working Group Digital Transformation is closely linked to the impact of globalisation and technological progress in the museal field. This relationship has been described as a conflicting love-hate dynamic between the digital sphere and museums, or as the paradox of the commercialisation of digital innovation juxtaposed with traditional museum practices.

This apparent contradiction is increasingly being resolved. As permanent institutions, museums research, collect, interpret and convey the tangible and intangible cultural and natural heritage of humanity, preserving it for future generations. The foundation and unique characteristic of museums still remain in their collections. Nevertheless, the inevitable digital influx, both institutionally and functionally, has opened up many opportunities. The Covid-19 pandemic has accelerated the process of creating a rich digital museum landscape that offers many alternative access points to museum content and provides opportunities for interaction, inspiration, knowledge transfer and research.

With their content and offerings, museums respond to a changing society that is becoming more dynamic, complex, diverse, connected and digital. Through their work, museums create a reliable basis for engaging with socially relevant questions and serve as forums for societal discourse. They are expanding their offerings and activities into the digital realm and are

navigating profound and rapid developments in cyberspace, the emergence of new types – born-digital heritage – and the rapid advancement of AI and digital technologies.

How can museums address these growing challenges while also leveraging the expanding opportunities? How can they adequately preserve, research and communicate tangible and intangible cultural and natural heritage in the digital age? And how can this work be reflected upon, measured and evaluated? What do success metrics look like, and how can museums respond to the perspectives and needs of visitors and the public? An increasingly important role is played, above all, by the perspectives and needs of visitors and audiences. This includes the involvement of society in museum and collection work, opportunities for participation, the exchange of needs and interests, and a conscious consideration of the visitor's perspective – a long-term but necessary process. One way to approach this effort is through visitor research/studies. Observe, listen, measure and learn: these methods are open to all museums.

The question of how approaches to visitor studies can be shaped in the digital age was addressed in a report by the Working Group Digital Transformation in collaboration with the Italian cultural management consultancy BAM! Strategie Culturali. Published in 2023, “Audience Measurement in the digital era” presents a theoretical framework and a wide range of issues and topics relevant to audience measurement – topics such as data management, data-driven strategies, online-offline engagement, metrics, Key Performance Indicators (KPIs) and behavioural analysis.

In this paper, we focus initially on one of those dimensions, namely the integrated online-offline audience measurement approach. We also list eight sparkling cases of museums from different EU countries that are implementing and using an integrated measurement approach in order to evaluate projects undertaken and better understand their audiences. This includes understanding what drives individuals to engage online and how an online presence can (or does not) interfere with in-person visits. To inspire further innovation in the museum sector, our paper contains information about new types of audience segmentations, KPIs and specific data categories, along with contact details for project leaders and researchers to facilitate networking and sharing of experience. Also included is an extensive literature overview for those interested in further reading related to audience measurement research.

The aim of the Working Group Digital Transformation has always been to support our members in fully leveraging the potential of digital advancements while sharing and addressing the challenges that these new practices bring.

The goal of this publication is to inspire museum professionals and representatives of the museum sector to explore an integrated approach to online-offline audience measurement.

Finally, we would like to express our sincere appreciation and warmest thanks to all those involved in the preparation of this paper.

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Background and methodology of this report

A recent study conducted by NEMO showed that, during the pandemic, 93 per cent of responding museums increased or started online services, more than 75 per cent increased or started social media and 53 per cent increased or started creating video content.¹ However, this did not necessarily translate into digital audience measurement (DAM), as almost 40 per cent responded that they either did not track or did not know their online visitor numbers.² In its 2023 report “Audience Measurement in the digital era”, NEMO highlighted five museum-specific challenges within DAM:

- 1. Substantial aspects: uncovering digital audience motivations, needs, decision-making and expectations.** This includes understanding the drivers, needs and motivations of digital visitors, how online visits can translate into physical visits, and the importance of catering to the distinct needs of various audiences, such as students and researchers, whose visits may be entirely digital.
- 2. Strategy: implementing a comprehensive approach.** This includes understanding how to think about the digital and physical aspects of a museum as a more holistic ecosystem. This will enable it to address different audience behaviours and get more value from currently underutilised digital offerings so as to attract new and diverse audiences.

3. Digital audiences: how to count them and how to make them count? This includes understanding how to quantify digital audiences in a consistent manner across the sector, how to define what a digital audience is, and how to determine if and how digital and physical visits complement each other.

4. Data and metrics: is it possible to set standards? This includes the challenges of developing standardised practices across the sector that are meaningful, comparable and go beyond the simple ability to count visitors.

5. Tools and methodologies: the need for consistencies. This includes the lack of consistent benchmarking across tools such as Customer Relationship Manager (CRM), as well as the challenge of combining insights from online and offline audiences.³

While these five challenges are all significant and worth investigation, this paper focuses on addressing the challenges surrounding areas 1, 2 and 3 of the above. It will explore how to implement a comprehensive approach that measures digital and physical museums more holistically. It is further intended to inspire museums to implement their own DAM methods into ongoing measurement practices in the future.

This paper also aims to investigate how museums approach DAM (and how they have approached it in the past), highlight present-day examples of museum audience measurement, and define opportunities for the future of DAM in European museums.

This paper has three main objectives:

1. To bring a deeper understanding of the needs, motivations, decision-making processes and expectations of digital audiences.
2. To lay out a systematic approach to measuring digital and physical audiences that museums and cultural institutions can use to develop their own meaningful research practices.
3. To provide more detailed methodological information from good practice examples of museums in different EU countries that implement and use the joint measurement of digital and physical audiences in meaningful ways.

This paper was developed in three phases in order to examine the foundation of DAM in the European museum context, and to lay out the value in measuring digital audiences while exploring the challenges faced in DAM.

The first phase included a literature review, focusing on studies conducted within a European context.

The second phase comprised a series of interviews to find eight examples from the field that examine the current DAM practices in European museums. The examples cover a range of different museum sizes, different regions in the EU and different approaches to DAM. This was achieved by interviewing practitioners within EU museums, so as to better understand the pros, cons and challenges their institutions face, as well as those within a wider EU context.

The third phase was to provide a workable roadmap for museums of all sizes to help them to plan and integrate DAM into their operational and knowledge practices.

Understanding the landscape of digital audience measurement in museums

One of the obvious and key reasons museums exist is to provide public access to cultural heritage. It is just as crucial that they offer diverse and inclusive access and respond to the needs of visitors. Audience measurement practices continue to reflect the importance of tracking onsite visitor numbers as a key reporting metric today.

It seems equally obvious, and common sense, that visitors have a variety of motivations for visiting a museum. These include the desire to learn something new, curiosity about what a museum has to offer, to see pre-identified exhibits or a wish to be entertained.⁴ These motivations have an effect on visitor behaviour and must be taken into account in order to deliver meaningful access to cultural heritage. Many museums have developed ways to monitor the motivations behind onsite visits through qualitative data collection methodologies. But when exploring these motivations, it is important to realise that in an age where digital audiences have growing expectations, visitors increasingly expect their needs to be met by both physical and online spaces – to the point where museums may actually be losing visits because not enough attention is paid to their digital properties and the visitor journey that spans both online and offline spaces.

It has therefore become imperative for professionals and researchers to develop research and evaluation methods that consider the visitor experience as a unified whole, rather than think about visitor experiences as distinct digital and physical visits.

Digital audience measurement (DAM) is not a unique proposition for museums. In fact, across

corporations, charities and almost every type of organisation, digital audiences have played a crucial role in their product development, commerce and marketing practices. Consequently, the motivations and behaviours of digital audiences have been topics of research for decades, and a great deal of knowledge about digital audiences and how to measure them can be applied to arts and cultural organisations. These range from works creating models for e-retailers to provide effective online experiences for customers, to detailed analysis of behavioural changes the Covid-19 pandemic has had on online consumer behaviour in EU countries. Covid-19 brought a swift spotlight to the value of digital platforms, as museum doors were closed (sometimes for the first time in decades) and visitor engagement was limited to pre-existing online platforms. In her newly published article, Polina Nikolaou, a researcher at the Bank of Cyprus Cultural Foundation, writes:

*Museums responded quickly to the dire situation brought by the pandemic by using different digital media and formats (such as websites and social media) – and not groundbreaking technologies – to deliver their services and reach their audiences. [...] Through the creation of this new digital content, museums also experimented with “hybrid” approaches by blending digital and physical experiences of their collections, events, and tours in the form of downloadable activities, calling for audiences to be creative at home and on behind-the-scenes tours.*⁵

The above-mentioned NEMO study showed that while 93 per cent of the museums who responded had increased or started online services, 75 per cent had increased or started social

media, and 53 per cent had increased or begun to create video content during the pandemic,⁶ this did not necessarily translate into digital audience measurement, given that almost 40 per cent said they either did not track or did not know their online visitor numbers.⁷ Chiara Zuanni, an Associate Professor in Digital Humanities (with a focus on museology), at the University of Graz, Austria, has pointed out that this continues to be a main challenge for museums to address in the future, as the gathering of digital audience information is critical in developing successful solutions to digital engagement.⁸

Furthermore, the digital transformations that took place at museums during Covid-19 drew attention to the discrepancies in digital maturity and resilience across the museum sector. Nikolaou elaborates on this in her article:

*Museums with prior digital infrastructure and strategy were in a more advantageous position to deal with the effects of the pandemic than less digitally mature museums. This brought to the fore persisting problems in the digital transformation of museums, including the ‘digital divide’ in terms of inequality and access to digital infrastructure among visitors and museums alike, differences in revenue streams and in digital capacity, as well as the need for museums to adapt to the new paradigm of digital-only visits. As Ross Parry and Vince Dziekan argue,⁹ this was the moment that showed “how critical the integration of ‘digital’ is to the future of the museum”.*¹⁰

While Covid-19 was the catalyst for many digital transformation projects within the museum sector, it also increased the divide between

museums with established digital adoption models and those earlier on the adoption scale. With key changes in audience behaviour and the increased digital expectations of visitors as a result of the digitisation of museums during lockdowns, it has become more critical than ever for museums to understand and cater to digital audience behaviour, needs and motivations: This will help museums to stay relevant for their visitors, while prioritising any digital spending wisely and effectively.



The benefits of measuring digital audiences

As digital practices continue to become more mainstream, visitor behaviour and expectations continue to shift, causing digital means and opportunities to become more and more critical to the museum's practices. And while for many museums this can feel like an unnecessary strain on already limited resources, there are many opportunities that focused planning and development for digital audiences can provide. Beyond understanding the wider visitor journey across online and onsite spaces, there are also significant opportunities for museums in understanding and measuring digital audiences.

In their 2022 paper "Data-driven arts and cultural organizations: opportunity or chimera?", Massimiliano Nuccio and Enrico Bertacchini investigate the pace of adoption of data-driven innovation in arts and cultural organisations. They highlight ways that digital audience data can affect different areas of innovation within the cultural sector, such as the use of AI to develop machine-generated cultural products and services. They further elaborate on a model initially created by Hasan Bakhshi and David Throsby (2012) to emphasise the benefit to arts and cultural organisations (ACOs) of measuring digital audiences. This model breaks it down into three categories where data analytics and digital audience data can be relevant to ACOs:

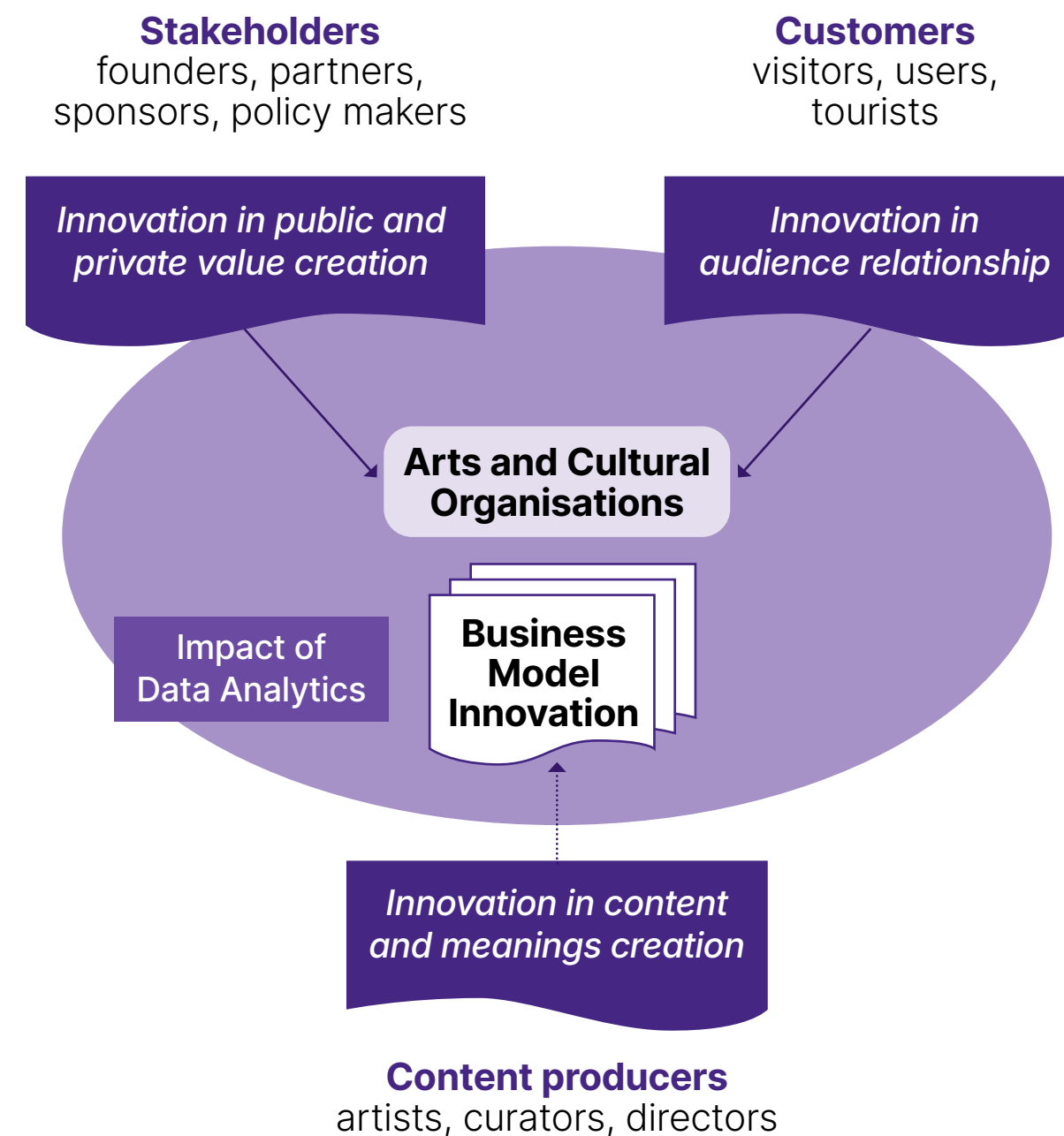


Figure 1: The effects of data analytics innovation on arts and cultural organisations management and operations.

Source: Personal elaboration on Bakhshi and Throsby (2012).

In the model developed by Nuccio and Bertacchini in 2021, they articulate that digital innovation can:

1. help to produce benefits in audience outreach by enhancing the relationship with customers
2. develop new forms of value creation for the organisation and its stakeholders.

They state that digital innovation and corresponding data analytics allow arts and cultural institutions "to design new business models and shift away from the traditional but insufficient sources of revenues based on ticketing and donations, which has often been proved not financially viable for many museums and theatres".¹¹ They highlight the flexibility and creativity available through digital means to help revolutionise not just the visitor experience, but also the business models within museums themselves. Careful study of visitor behaviour to develop new business models, as well as measurement and monitoring of newly implemented business models, will help museums to create and optimise new revenue streams in an efficient and iterative way.

While an understanding of digital audiences can lead to more creative and effective business models for museums, understanding and planning for digital audiences as part of the wider ecosystem can provide unique opportunities in audience reach and impact. In a paper published in 2022, Lorenz Pöllmann outlines three key opportunities where museums can create greater impact when planning and developing for digital audiences:

1. expanding potential onsite audiences and engaging with audiences who could not otherwise engage with a museum (potentially worldwide reach)
2. reducing access barriers through individualisation, where digital technologies enable online visitors to personalise their experience in a way that is accessible to them
3. providing greater potential for interaction between the museum and audiences, as well as shifting from passive to more active engagement through participatory practices and user-generated content.¹²

Through digital audience research, museums can better understand exactly who their potential audiences are and where their potential reach lies – and thus imagine ways to engage with these audiences in more meaningful ways. One such example, based on knowing where digital audiences live, could be to determine what languages are most relevant when it comes to creating content.

As Pöllmann points out, digital technologies can also create many opportunities to provide a more accessible and inclusionary experience (both online and onsite). DAM is one way to identify access needs for current and potential audiences, or to test new inclusionary products, content or experiences. For example, understanding onsite access needs for large archaeological sites would enable potential onsite visitors to plan their visits in advance in order to access seating when they need it. Digital audience research could help to identify how to develop the digital content

necessary to support these access requirements. This process would make digital content meaningful and successful (if designed and tested in advance) and would cater to the widest possible audience.

Finally, with online platforms providing greater potential for interaction between audiences and museums, DAM can play a large role in identifying and developing ways for active engagement with digital audiences. Examples of this could include social media engagement (such as comments and direct conversations with digital audiences inspired by museum-generated content), forums and critical conversations or responses to museum artefacts or programmes via owned or associated web platforms. Understanding how audiences engage with other museums and organisations digitally, and also identifying ways a museum can engage with audiences more actively via digital platforms, can help to develop a strategy that results in meaningful impact and extended reach with current and potential audiences.

What we begin to see is that the measurement of online and onsite audiences together can play a role not just in gaining a better understanding of a museum's full audience reach and visitor behaviour, but also in starting to shift the way museums plan and deliver their programming, education and development practices, so as to create wider reach and greater impact in general.

The Covid-19 era – in which many museums closed their doors for extended periods of time and moved to digital-only models – and the subsequent reopening and return to “normalcy” proved that digital activities were not a threat to onsite audience engagement. In fact, it has since become clear how each type of visit (whether onsite or online) can lead to different – and often complementary – experiences. The ability not only to plan for and deliver both online and onsite experiences, but also to measure them holistically can help to uncover the greater impact these combined activities are able to create.

Defining digital audiences

To measure digital audiences holistically, we must first clarify who a digital visitor is and what the relationship is with onsite visits. It's important to recognise that digital and online visitors should not

be addressed only as separate entities. Online visits can be – but are not exclusively – linked to onsite visits. Within this context, a digital audience framework for a museum may look something like this:

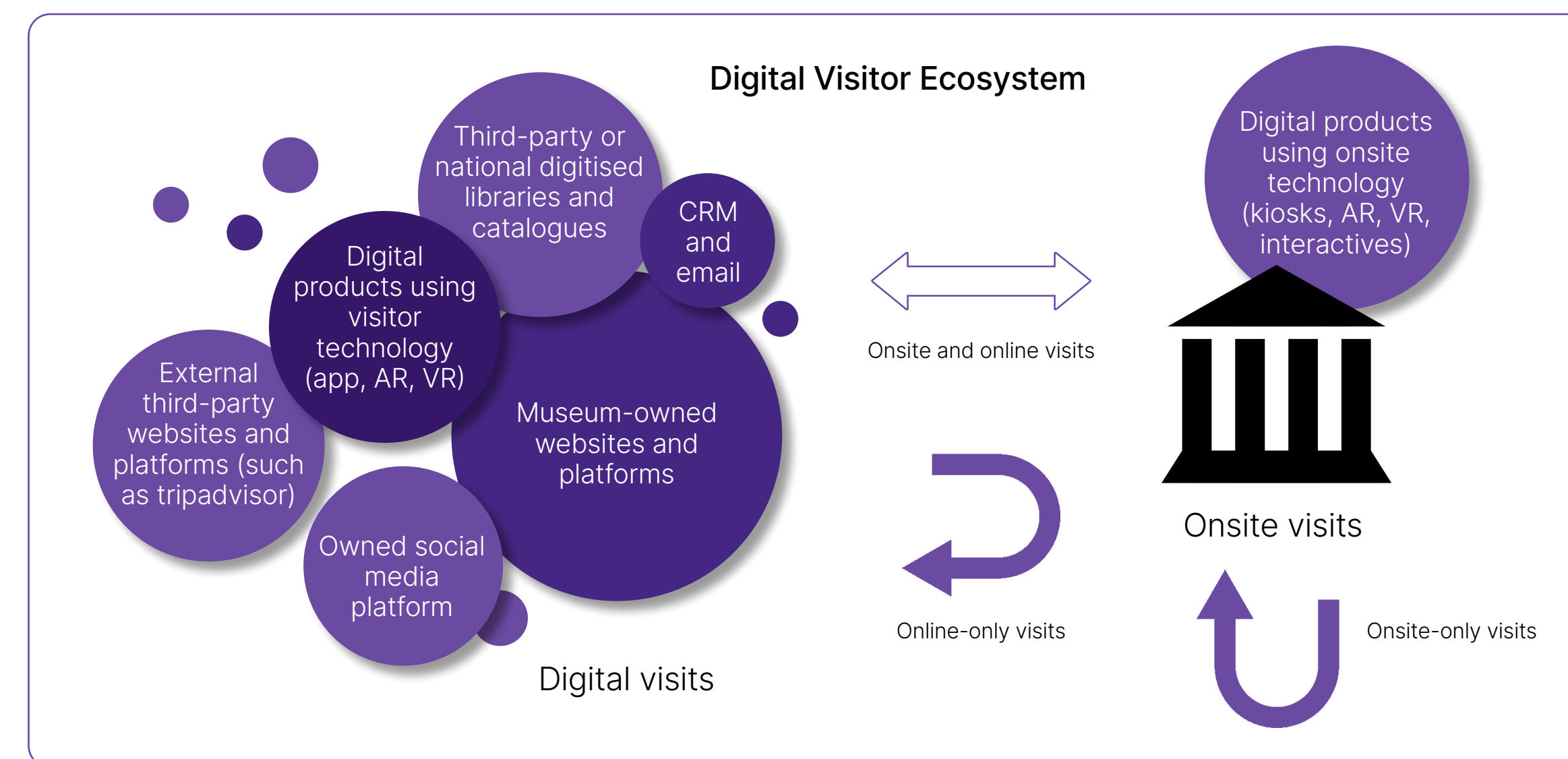


Figure 2: Digital Visitor Ecosystem

Source: Personal elaboration on Bakhshi and Throsby (2012).

Digital audiences can include people visiting a website or an owned web-based platform, those following or engaging with owned social media platforms, or those interacting with

digital products such as apps, augmented reality (AR) or virtual reality (VR) platforms, or other digital products available outside the physical museum.

Digital audiences may also include:

- people who visit only digital platforms (online-only visitors)
- people who visit both online and onsite properties
- and finally, people who perhaps visit only physical sites but interact with digital products and online content while there (such as kiosks, AR, VR or interactive technologies).

An important distinction is to be made here between visitors and visits.

- A visit is a single visit to a digital platform or physical site. This can be a visit to an owned website or to a physical museum location. A single visit may often include interacting or visiting multiple platforms, but the current data collection technologies often make it difficult to measure a visit across multiple platforms. That is why museums often prefer to count audiences by measuring visits individually by platform.
- A visitor can make many visits across many different platforms (online or onsite), and the visits can vary. Understanding the full visitor experience across all owned and non-owned platforms can be difficult. A visitor may, for example, visit a museum-owned website, a nationally digitised collection on a third-party national website, and an onsite museum. This is where visitor journey mapping can be important. Visitor journey mapping – a deliverable that is usually the outcome of a research study –

articulates a typical journey a visitor may take across both digital and physical spaces. Visitor journey mapping exercises often also highlight needs and opportunities to make the overall visitor experience more cohesive, and easier for visitors to do what they wish to do.

Another model that investigates how to break down and measure audiences was proposed in 2014 by Pille Runnel, Krista Lepik and Pille Pruulmann-Vengerfeldt of the Estonian National Museum. In an article published as part of a wider collection of studies called **Democratising the Museum**, they identified the following five key stages of engagement people can have with museums. Their model sets out from a place of engagement and participation:

1. **Public** – everyone out there with the potential of becoming, being interested in or connected with the museum
2. **Audiences** – those with some online or offline connection to the museum, in the sphere of receiving messages from the museum
3. **Visitors** – those who actually come to the museum, whether onsite or online
4. **Users** – people whose engagement with the museum goes beyond visiting and viewing. This presupposes either the use of the museum's resources or taking part in its activities
5. **Participants** – people who by invitation or through their own agenda contribute to the museum by changing the power relations in some way.¹³

Within this model, access to the museum, whether onsite or online, is conflated, and it is the level of engagement that differentiates the different types. They further elaborate on the relevance of this notion by stating that “the concept of ‘visitors’ is in many ways problematic, as it traditionally denotes the people who enter the museum to pay it a visit. However, today, it is becoming harder and harder to distinguish when a visit starts or ends as a lot of prior engagement with the museum takes place in online spaces and often the visiting experience itself is carried across the museum doors to the digital realm, either as a single visit to the museum’s web page or to form some kind of more permanent relationship with the museum.”¹⁴

In this way, Runnel, Lepik and Pruulmann-Vengerfeldt make clear that one cannot accurately understand an onsite visitor without recognising that an onsite visitor’s experience often takes place online as well. They show that a “visit” may last days or weeks as audiences look for information about a museum before they visit, go onsite to visit, and possibly engage digitally with the museum after an onsite visit to learn more, plan a repeat visit or even share information with others. Today, creating digital visitor journeys are a common part of DAM.

One good example comes from the Museo Nacional Thyssen-Bornemisza in Spain, which completed a visitor journey mapping exercise in 2019 as part of a larger strategic exercise at the museum. Elena Villaespesa and Ana Álvarez point out that “Digital innovation was considered an opportunity for strategic positioning and for content-generation, and required an action plan

to renew the online presence of the museum in accordance with the overall strategy, including websites, apps and other digital devices. A digital plan was launched in 2014 to bring a digital transformation to the organisation. The websites of the museum, education program, online shop, and ticketing were redesigned with a user-oriented and responsive vision. Other action lines were developed, such as a program of apps and digital publications, digital advertising, business intelligence and reporting, and the foundations of a Customer Relationship Manager (CRM) system.”¹⁵

Using existing visitor segments developed in 2017, the staff chose four segments and two scenarios (visiting the permanent collection and visiting a temporary exhibition) for which to develop visitor journey maps. They focused on mapping the needs, touchpoints, expectations and actions before, during and after a visit – and included activities in each stage, such as finding information about the location of the museum, buying tickets, figuring out what to see, looking at the art, going to the store and to the cafe, or sharing photos taken on social media.

Throughout the journey, they identified pain points that the museum could improve and also opportunities for it to provide more relevant information or added value services. As a result of this process, Villaespesa and Álvarez conclude that “the digital products and services offered during the visit cover the goals of various departments at the same time, and therefore, decisions need to be made to shed light on how these are the best options to serve the visitor. As an example that has been highly studied, the website is used in all stages of the visit (Marty 2007) to fulfil a range of visitor needs, from purchasing a ticket to finding more information about an artwork. The digital offer in museums continues to increase multiple functions: learning, marketing, publishing, curatorial, etc. Digital transformation is taking place in museums (Pryor 2016; Stack 2013), becoming a catalyst for change and visitor-centred focus.”¹⁶

And finally, as visitor behaviours and expectations continue to shift, so, too, must a museum’s dedication to the research and measurement re-

quired to understand the different behaviours and motivations more holistically, in order to remain relevant, show impact and measure success for the organisation. Susan Anderson, an Associate Professor of Museum Studies at George Washington University (US), maps out the importance of looking at audiences holistically and meaningfully in “Visitor and audience research in museums” from *The Routledge Handbook of Museums, Media and Communication* (2019). She stresses that looking at simple visitor figures or followers in isolation can no longer be used as the only metrics for museum success.

*Mere numbers through the door, or clicks on a social media post, can fail to paint a full or accurate picture of an institution’s impact, so research that can speak to the institution’s influence has become increasingly sought after. As such, the museum’s audience and its conceptualization have irrevocably become linked to questions of impact and success. Mapping and measuring the audience – with traditional as well as innovative qualitative and quantitative methods – matters, because it acts to justify the museum’s ongoing existence and why it needs support and funding. It has also become seen as a crucial factor in reconceptualising the institution as a participatory and democratic institution that positively impacts its community.*¹⁷

The model of the Digital Visitor Ecosystem provided earlier in this paper illustrates the value in using levels of engagement as a model (such as the one provided by Runnel, Lepik and Pruulmann-Vengerfeldt) rather than simply measuring audiences by the platform on which they have engaged with the museum. Engagement

models that identify and understand visits across both onsite and online spaces can ultimately help museums to better prioritise and make data-driven decisions regarding the development of onsite and online experiences in order to create more meaningful impact and increase revenue opportunities.

Ultimately, digital visitors matter both on their own – as a community of potential audiences – and as part of the larger audience ecosystem, where a museum’s impact and success can be measured across both onsite and online museum experiences.

How museums currently measure online and onsite audiences holistically

As this paper has already established, museums face the unique challenge of assessing distinct types of visits that are not necessarily transactional but can still be considered successful if measured by factors such as engagement, impact and educational goals. To evaluate and measure these factors, it is important that museums be able to understand the holistic ecosystem across digital and analogue visits.

There is often a strong history of onsite audience measurement beyond simply counting museum visitors. Museums are often able to understand onsite audience behaviours and motivations to varying degrees through regular audience measurement and monitoring. This has historically been measured via qualitative methodologies, with museum professionals relying solely on interviews and observations to better understand the motivations and behaviours of their visitors.

In volume 2 of the annual strategic briefing *Future Art Ecosystems* – conducted with more than 50 practitioners and organisations across art, film, gaming, technology and wider cultural

industries – the authors argue that the historical methodological approach has hindered the inclusion of digital audiences as part of museum thinking, but also point out that it need not be costly and difficult to change. The authors write that audience measurement tools and processes “can and should be engaged positively and actively as productive organisational tools” and that “updating this kind of approach does not entail a technocratic turn – decentralised practices may, in part, be the most productive and apposite for developing new cultural metrics for the 21st century.”¹⁸ One such example is from the Museo della Ceramica di Savona in Italy, which built an audience measurement process into its strategy from the ground up. You can read more about this in the example from the field entitled, “An Audience-Led Approach for Small Museums”. It supports the view that creative methodologies and decentralised practices can make DAM possible even with a small staff or limited resources.

One of the key ways museums have been able to measure digital and analogue visits holistically is by bringing DAM into the planning process. By developing a measurement strategy in the

planning phases, staff can make sure data collection processes are in place, and that measurement is meaningful and reflects the performance and impact of the experience. One example could be the Limburgs Museum in the Netherlands, which embeds the engagement models of Contributory, Collaborative, Co-Creative and Hosted, as defined by Nina Simon in her book *The Participatory Museum*, within its planning process to make sure that its programmes are user-centric and impactful. This engagement model spans digital and onsite experiences and helps the team to develop plans to measure their audiences holistically.¹⁹ You can read more about how the Limburgs Museum is building DAM into its planning processes in the example from the field entitled “Measurement across the Digital Ecosystem”.

While this paper has established that it is important to think about audiences holistically across online and onsite experiences, it is also important to recognise that the way digital audiences can be measured differs significantly from the methods traditionally practised for onsite audience measurement. Given the nature of digital products, one of the benefits of DAM is that much more quantitative data is available than ever before, such as analytics and usage data. The accessibility of quantitative digital audience data means that museum professionals can find out more about their digital visitors with much less time and effort invested than is often required for onsite visitors. This does not replace the value that museums have historically obtained through qualitative methodologies. Instead, it means that museums can begin to better understand audience motivations and behaviours through a combined analytical and methodological approach. How museums can explore quantitative data will be explored in depth later in this paper.

How to measure digital audiences

As this paper has now established, understanding digital and physical audiences holistically is crucial to building meaningful and impactful visitor experiences. But what does measuring digital audiences look like, and what are the considerations when approaching it? First of all, it is vital to consider the comprehensive digital ecosystem when devising a

strategy for digital audience measurement (DAM). However, distinct approaches are often necessary for an analysis of website audiences, social media audiences, and users of digital products. This next section of the paper breaks down the key considerations and provides examples of how museums measure these various categories.

Measuring website visitors

With free tools such as Google Analytics (and free training), measuring websites has become relatively accessible at a basic level. Many museums already report on metrics such as total visitors, new versus repeat visits and dwell times as part of their regular reporting practices. There is also the consensus that digital audiences have certain tasks they wish to accomplish on a museum website, namely: planning a visit, purchasing a ticket of admission (if relevant) and finding out more information about the collection. And while museum websites do sometimes drive sales (such as tickets for admission or online gift shops), it is important to note that museum websites require a much more nuanced understanding of the motivations of their digital visitors.

Organisations such as Tate (United Kingdom) have studied what really attracts website visitors and found a variety of motivations. A research

study published in 2015 by John Stack, former Head of Digital Transformation at Tate (UK), and Elena Villaespesa, previously a Digital Analyst and Research Fellow at Tate (UK), used a combination of quantitative methods (such as Google Analytics, heatmaps and online surveys) to investigate digital audience motivations as part of their larger website redesign project. To make audience-driven strategic decisions about the design of the digital audience journey, they created a segmentation model that captured the various behaviours and motivations of their digital audiences. According to Stack and Villaespesa:

Our research showed that motivation was a key variable that influenced the needs, expectations, and behaviour of users, and we found a varied range of motivations in visiting Tate's website. While most of the users come for intellectual purposes, this actually encompasses a range of learning and research objectives,

*educational levels, and habits. The second largest group of visits are those related to visit planning – users checking what's on and practical information such as opening times, location, or building facilities. In a lower percentage of visit modes, we can find visitors seeking inspiration or looking for a more aesthetic and emotional experience – browsing through images and other art visual content. Other motivations to visit the website include users searching for art news or looking for organisational information about Tate.*²⁰

Furthermore, they found that approximately half of the visits to the website were related to an in-person gallery visit, with 38 per cent planning their visit in advance, 1 per cent using the website to enhance their visit while onsite and 8 per cent following up on information after their visit.²¹ The full segmentation model from this research

Measuring social media audiences

When thinking about whom to include in defining digital audiences, there is a lack of consensus across the sector on the relevance and importance of social media audiences as part of the larger digital ecosystem. A study conducted

is currently published on this Tate website: https://www.tate.org.uk/documents/965/tate_collectives_audience_research_report.pdf.

While their study uses a variety of research methodologies and detailed analysis, it allowed them not only to design for real visitor journeys, but also to develop an ongoing measurement system that required only analytics to understand how audience behaviours fit into wider research. This initial piece of research paved the way for a more efficient and easier ongoing measurement and monitoring system that they could continue to use for years. This approach can be effective across museums of all sizes, as demonstrated by the example from the field entitled “An Audience-Led Approach for Small Museums”, where a team of four at the Museo della Ceramica di Savona in Italy implemented a similar segmentation and then subsequently built audience monitoring from it.

by Alberto Romolini, Silvia Fissi and Elena Gori of the University of Florence in 2020 looked at social media engagement within museums in Italy. They found that while there are many studies that show the importance of social media in providing inter-

activity, creative interaction and accessibility, little has been published on the current use of social media in museums as a tool for engagement.²²

The authors of the study analysed the social media habits of the “top 30 Italian museums” based on visitor numbers and found that 28 of the 30 were active on social media (across a variety of platforms), with total follower numbers averaging around 50,000 for Facebook – much higher than the international average for museums globally.²³ And while museums benefitted from the rapid expansion in the use of social media, which raised the popularity of these institutions, the study found that there was still low activity from the museums themselves, leaving visitors with one-way conversations and lower engagement overall.²⁴ The missed opportunity by museums – whether driven by a shortage of resources or a lack of social media audience measurement and audience-driven decision-making – meant that many museums have been left with missed opportunities for a more holistic visitor journey that could drive increased engagement, impact and revenue.

There are many examples across the sector showing museums that have used social media well, resulting in increased engagement and reach for their platforms.

Elina Vikmane explores examples of this in her 2023 doctoral degree, “Advancing Cybermuseology: Diffusion of Digital Innovation in Latvia’s Museum Sector”. She describes how one museum began to use social media as citizen science, asking digital audiences to provide information on local collections or locations. The museum found

the resulting increase in engagement so significant that it decided to promote the collection as a place where people “can come to the collection and get information about [their] own houses”. In her dissertation, Vikmane also investigates the success of some museums that use social media platforms as a marketing tool or to promote events within local communities.

This raises important questions about the value of including social media audiences as part of the wider measurement of digital audiences. The value a museum derives from social media audiences depends on its engagement strategy and how it uses the platforms. While a highly engaged audience can add significant value to a museum’s overall visitor base, an audience that is passive and unengaged may not be a meaningful addition to the museum’s digital audience numbers.

Measuring digital products

Digital product measurement has often been an avenue that facilitates digital audience research for an organisation. While many evaluations have been made of specific digital products – such as the study of holographic showcases conducted by Pagano A. et al.(2021)²⁵ and the study by V. Cesário et al. (2019) of digital tours within the Natural History Museum in Funchal, Portugal²⁶ – there are fewer studies that

look at the holistic ecosystem in which the digital product exists. One such example is a study about Spotlight Heritage Timișoara in Romania, which looked at the effectiveness and usability of a multi-platform, digital storytelling project. The project included a website, a mobile app and augmented reality (AR) available on visitors’ own devices, and interactive touch tables onsite at the National Museum of Banat, as seen below:

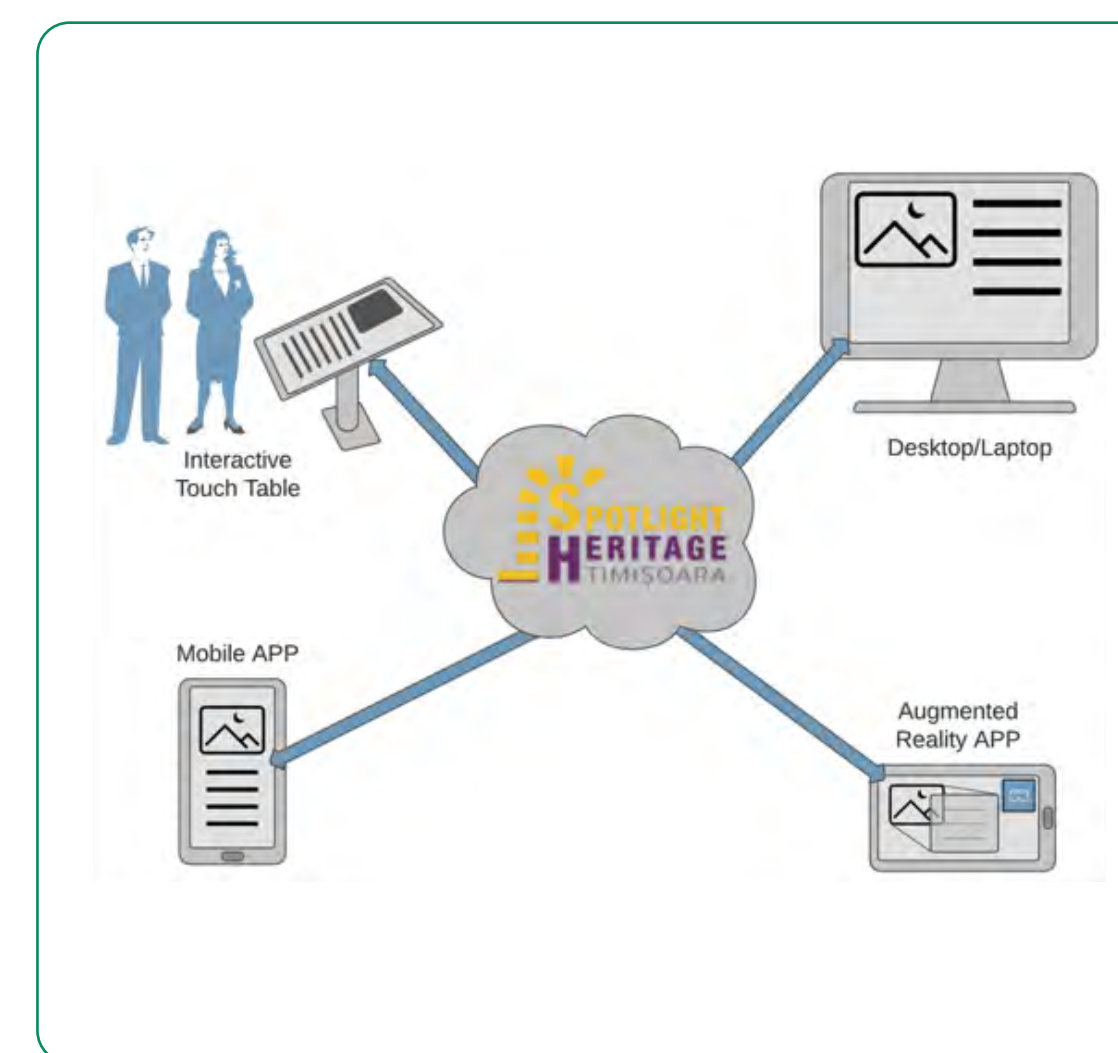


Figure 4: Multi-platform architecture of Spotlight Heritage Timișoara.²⁷

The project used a mixed methodological approach for the multi-platform evaluation, which included semi-structured interviews, observations, usability think-aloud protocols, usability scales, a survey, net promoter scores and product reaction cards.²⁸ This approach made it possible to evaluate each product separately, but also to look at the journey audiences took across platforms. According to the study, users felt that the difference across platforms was small, and found the experience of switching between platforms to be seamless and unitary.²⁹ Overall, this multi-method approach helped to capture the effectiveness of the holistic visitor journey and gain an understanding of how all the individual elements performed both separately and as a cohesive experience. This type of methodological approach can enable museums to show compounded impact across the multifaceted offerings that museums provide for visit experiences.

**Using qualitative
and quantitative
methodologies to
understand holistic
audience experiences**

When measuring digital audiences, we have two types of research methodologies available. Quantitative research methodologies help us to easily define *what* digital audiences are doing, while qualitative research methodologies help uncover *why* digital audiences do what they do. Used in conjunction, these methodologies can successfully help museum practitioners to understand their online and onsite audiences holistically. Susan Anderson, an Associate Professor of Museum Studies at George Washington University, emphasises why there is value in using both types of research methodologies: “It is important to consider that although digital technologies can provide insight into the actions people take whilst visiting the museum or using its online resources, they cannot necessarily provide insight into motivation, feelings or learning whilst there. Traditional mechanisms for audience research such as interviews and surveys remain important, even as new technologies [such as web analytics] offer opportunities for new insights (Jensen & Sørensen, 2013).”³⁰

This shows the importance of thinking about mixed methodological approaches when understanding digital audiences. Furthermore, mixed qualitative and quantitative methods can often provide data more creatively and flexibly, with potentially smaller data sets building on one another to form a more cohesive picture of audiences’ behaviours and motivations. This combined approach also means that data can be collected more regularly, leading to better measurement and monitoring practices, without having to spend lots of time and resources on larger-scale, one-off research studies. Additionally, while using multiple methods for data collection may sound counterintuitive to smaller organisations or teams with fewer resources,

using creative approaches more regularly can often be a more efficient and cost-effective method and help to solve issues around having only smaller audiences or resources with which to conduct research.

But how do quantitative and qualitative methods work together? Let’s take the example of understanding *who* onsite or online audiences are. To start to understand the type of person who is visiting and what their behaviours are, we have access to quantitative data such as demographics and web pages visited through website analytics, as well as potentially Customer Relationship Management (CRM) data such as ticket sales. However, one aspect of audience measurement that has typically been the responsibility of more qualitative research methodologies is understanding *who* is visiting digital or physical sites. In looking at both the quantitative and qualitative data, we can start to paint a more detailed picture of who our online or onsite audiences are.

However, the question of who is visiting is a complex one, and the collection of digital analytics data around demographics is highly regulated through policies such as General Data Protection Regulation GDPR. As the question of who is visiting has historically been a key audience measurement, it is important to think about both the relevance of demographic data in contemporary digital audience measurement practices and the legal and ethical collection of demographic and other personally identifiable information in conjunction with quantifiable behavioural data.

There are many different audience questions that can be answered via audience measurement

strategies – from understanding what their motivations are, to how well they are able to complete the tasks they are hoping to carry out, to what they’ve learned, to how satisfied they are, and what impact they’ve experienced through their interactions with the museum. There are equally numerous ways to collect the type of information needed to answer those questions. It is important for museums to think about what metrics will best help them to make audience-led decisions within their organisation and to develop a measurement strategy around the ability to collect the data necessary within the resources available to the organisation. Creating a data collection strategy (as discussed later in this paper) is one way to start to answer these questions for the organisation.

The previous NEMO report, “Audience Measurement in the digital era”, which this current paper aims to build on,³¹ proposed dividing audience measurement into three different categories:

- **Measurement:** a specific action of data acquisition that involves the determination and description of a phenomenon or phenomena
- **Monitoring:** an ongoing process that involves the continuous and systematic observation of a phenomenon or phenomena
- **Research/Study:** the creation of new knowledge and/or the use of existing knowledge in a new and creative way to generate new concepts, methodologies and understandings

So, which qualitative and quantitative methodologies can be used to support which types of dig-

ital audience measurement? While there are many possibilities, this paper hopes to provide a starting point for museums to investigate how they can incorporate digital audience measurement into their practices. Please note that the different methodologies listed in the table below are not exclusive to these types of research and can be used in various ways. They are simply indicative of the types of methodologies most frequently used in these types of measurement.

	Research / Study	Measurement	Monitoring
Typical qualitative research methods used during these phases	Interviews Focus groups Observations Card sorting Participatory design Co-creation Diary studies Surveys (open text boxes and qualitative responses)	Usability testing Interviews Focus groups Participatory design Surveys (open text boxes and qualitative responses)	Surveys (open text boxes and qualitative responses)
Typical quantitative research methods	Surveys (closed questions and scales) Website analytics Social media analytics Digital product usage data CRM data Task analysis	Surveys (closed questions and scales) Multivariate testing Website analytics Social media analytics Digital product usage data Task analysis CRM data	Surveys (closed questions and scales) Website analytics Social media analytics Digital product usage data CRM data
Typical outputs	Digital audience segmentation Visitor journey mapping Digital audience strategy Digital ecosystem mapping Concept testing	Usability studies User requirements gathering Iterative testing Insights that answer specific questions	Ongoing KPI/ metrics reporting Monitoring dashboards

This table is not an exhaustive list of methodologies. It serves instead to inspire creative data collection opportunities to better understand onsite and online audiences separately and holistically. In the next section, we aim to provide

examples of these three key areas of digital audience measurement, in order to demonstrate how some of these methodologies may be used within the museum to gain more insight into its audiences.

Area 1: Monitoring of digital audiences

Digital audience monitoring is defined as an ongoing process that involves the continual and systematic observation of a phenomenon or phenomena. This often includes ongoing monitoring of identified metrics or Key Performance Indicators (KPIs) for weekly, monthly, quarterly or yearly performance. Another common example of digital audience monitoring is the gathering and reporting of annual or quarterly statistics to government bodies or museum associations.

audiences. Changes up or down in certain metrics can act as a starting point for further investigation into what has worked or is not working as well. Furthermore, monitoring is often passive and doable with little effort – as many social media tools are already available, and tools such as Google Analytics have become ever easier to set up over time.

Another area of use would be outside museums, for example to study changes in the museum sector for the purpose of scientific research or even distribution of funds.

What are the benefits of digital audience monitoring?

Monitoring digital audiences enables museums to determine if their programmes, events or activities (online or onsite) have had an impact on digital

Metrics are often single numbers collected directly through an analytics tool or data collection technique (rather than created by a formula). They frequently require little interpretation and should be used to monitor the performance of something over time.

Typical metrics may include (but are not limited to):

- Website visits
- First-time/repeat visits on the website
- Website or page dwell time
- Number of social media followers/subscribers
- Impressions/reach on social posts
- Likes/comments/shares on social media posts
- Ticket sales
- Number of app downloads
- Attendance numbers
- Number of digital products
- Number of users of a digital product
- Number of seen (clicks) or downloaded digitised museum objects

KPIs are often formulas that use metrics to understand how well the museum is meeting its goals and targets.

KPIs may include (but are not limited to):

- Engagement rate on social media
- Uptake of a digital product while visiting onsite
- Number of visitors who participated in a learning event (digital or in-person)
- Visitor satisfaction
- Engagement or attendance of specific target audiences

Regularly monitored metrics and KPIs should be used to make decisions on how well a product or platform is performing, and should be examined regularly for opportunities to iterate on the product or approach.

Considerations

Digital audience monitoring is only as useful as the metrics and KPIs originally set by the museum, along with the museum's use of the collected data to make decisions. Collecting data just for the sake of it but without any data interrogation can negatively impact the staff, by making them feel that they are doing useless work, or create missed opportunities for the organisation to correct its course if something goes wrong. Metrics and KPIs should be chosen with consideration and – in order to be effective – be clear in the way that each number can impact a decision within the museum.

Example case studies included in this report:

1. **Perspective: An audience monitoring dashboard for the whole museum** (UK) – How to build trust, buy-in and use of digital audience data within an organisation
2. **An audience-led approach for small museums** (Italy) – An ongoing monitoring system built into strategic decision-making in a small team

Area 2: Measurement of digital audiences

Digital audience measurement (DAM) is defined as a specific action of data acquisition that involves the determination and description of a phenomenon or phenomena. This includes smaller, one-off projects of data gathering with the intention of answering a specific question or finding a specific insight.

Some reasons why a museum might want to do a DAM project:

- to investigate a change in a metric discovered during monitoring, so as to understand why a key metric or KPI has gone up or down
- to evaluate an event, product or exhibition that has a limited time frame
- to iterate on a product (such as an audio guide or website), in order to make small changes that increase user-friendliness, revenue potential or overall satisfaction with the product
- to understand the impact a recent change has made to a product
- to support the development of a new product, strategy or plan.

Overall, these projects are often light-touch and focused, and can be done without dedicated research staff if the tools and processes are in place to support it within the organisation.

The benefits of DAM

Projects to measure digital audiences often focus on answering a specific question, making them generally actionable and meaningful to the organisation. Furthermore, light-touch and focused projects can often be undertaken with limited resources, staff or time. There are many digital tools and software available to support DAM, with a wide variety of methodologies to enable potentially creative and flexible solutions.

Example case studies included in this report:

1. **Measurement across the digital ecosystem** (Netherlands) – Putting long-term audience measurement goals into practice across online and onsite museums and programmes, to build a holistic picture of digital audiences

2. **Creative approaches to audience measurement for small teams** (Netherlands) – Measuring audiences experiencing hybrid online and onsite formats
3. **Developing museum-wide research tools at Klassik Stiftung Weimar** (Germany) – Using a mixed methodological approach (including k:evatool, their purpose-built evaluation tool) to survey digital and analogue audiences together across digital and analogue products and services.

Considerations

Digital audience measurement is something that can be done with relatively few resources and small amounts of time, if the tools and processes are in place to do so. For example, having approved and integrated survey tools within the museum (such as the example from the field at Klassik Stiftung Weimar) means staff can run their own quick surveys related to their own products and programming without relying on specialists to do research for them. And while it is certainly possible to measure digital audiences as one-off projects, having these types of methodological tools available to the organisation are critical in implementing and democratising a DAM strategy that is easy and effective – even with small teams.

Area 3: Conducting a deep-dive research study on digital audiences

A digital audience research study is defined as the creation of new knowledge and/or the use of existing knowledge in a new and creative way to generate new concepts, methodologies and understandings. Research studies are often a piece of work that is done as a unique project, or refreshed only every few years. They often take a mixed-methodological approach, combining both qualitative and quantitative methodologies in order to understand both the *what* and the *why* of the particular focus of the project. Organisations may aim to do one or two large deep-dive research studies a year, but their outputs are often far-reaching and actionable.

Examples of digital audience research studies can include:

- creating a digital audience segmentation
- digital visitor journey mapping
- research to develop a new digital product, programme, event or exhibition

- deep dive on digital audience needs and motivations to inform marketing, communications, digital or audience strategies
- development of digital user requirements or stories to inform product development
- large-scale usability testing on digital products or websites.

What are the benefits of digital audience research studies?

A concentrated piece of research can go a long way and remain relevant for years across a variety of departments, projects and programmes. Digital audience research studies can help to unite an organisation around a particular audience, leading to easier and more aligned data-driven decision-making across the organisation. And while these digital audience research projects can sometimes be more involved, their outputs are

often impactful, meaningful and relevant in a way that smaller studies cannot deliver. Having deep and meaningful insights into digital audiences can be very successful in developing products capable of bringing in additional revenue or increase overall impact and learning outcomes for both online and onsite audiences.

Example case studies included in this report:

- 1. Developing combined online and onsite**
Segmentation at the Neanderthal Museum (Germany)
- 2. Developing audience-centric digital products** (Belgium) – A medium-size museum with a lack of digital strategy doing audience research to develop user-centric digital products
- 3. Digital first: Developing an audio-guide-led museum** (Romania) – A small team developing a digital-product-led experience.

Considerations

Large research studies often need to be developed and conducted by research professionals or those with specific skill sets in digital audience research. This can sometimes make them costly or take longer periods of time to accomplish, and they need to be planned in advance. Research studies that could be useful in large development projects should be incorporated into the planning phases as early as possible – otherwise little time is left to accomplish projects effectively and meaningfully.

Smaller museums and organisations can still conduct large research studies, especially if the project itself becomes a collaboration with other museums or data collecting organisations. There is a lot of opportunity for overlapping insights to be relevant and significant, and collaborations can decrease the need for specialised skill sets within particular organisations and also reduce the overall cost of these types of projects.



Creating a digital audience data collection and measurement strategy

One of the best ways to begin implementing digital audience measurement (DAM) is to identify and create a data collection strategy for the organisation. Such strategies help to prioritise the data required for a one-off project and the data needed for ongoing measurement and monitoring. Furthermore, data collection strategies help to design the process for capturing and analysing data, create ownership for audience measurement, deliver a clear timeline to set up needed processes, democratise access and encourage audience data-driven decision-making within the organisation.

Data collection strategies can be as simple or complicated as the available expertise and resources allow. But deciding and documenting a process for audience data collection is still an important step in any size team. From sophisticated dashboards to simple monthly emails with three key pieces of data, having a data collection DAM strategy ensures that the organisation is utilising the skills, resources and knowledge of the team in the best way possible.

One key moment for identifying and designing a data collection strategy may be during a larger digital transformation project. Projects of this kind have become increasingly prevalent in the museum sector over the last decade.³² As museums work on digitising their collections, complying with data regulations and digitising staff processes, more focus is being placed on technical and staff infrastructure. This is also a pivotal moment for organisations to incorporate thinking about DAM. Connecting it to digital transformation projects allows an organisation to set itself up for long-term audience measurement, data-driven decision-making and audience-led product development.

And while it is not imperative for a museum to undergo a digital transformation to set up DAM, it is a key moment in time that can lead to a well-integrated audience measurement strategy.

A recent study assessed the level of digital transformation in cultural institutions in Italy, identifying five dimensions that reflect digital readiness within an organisation:

1. **Strategy and investment:** the ability of the organisation to pursue a long-term digital strategy while investing its resources in digital transformation projects
2. **Process:** the extent to which internal processes are digitised
3. **Technology:** the use of digital technologies, data analysis practices and the presence of a Wi-Fi connection available to the visitor
4. **Customer:** the ability of the organisation to engage with the customer through the use of digital channels of interaction before and after a purchase happens
5. **People:** the presence of the appropriate digital skills and capabilities of the staff.³³

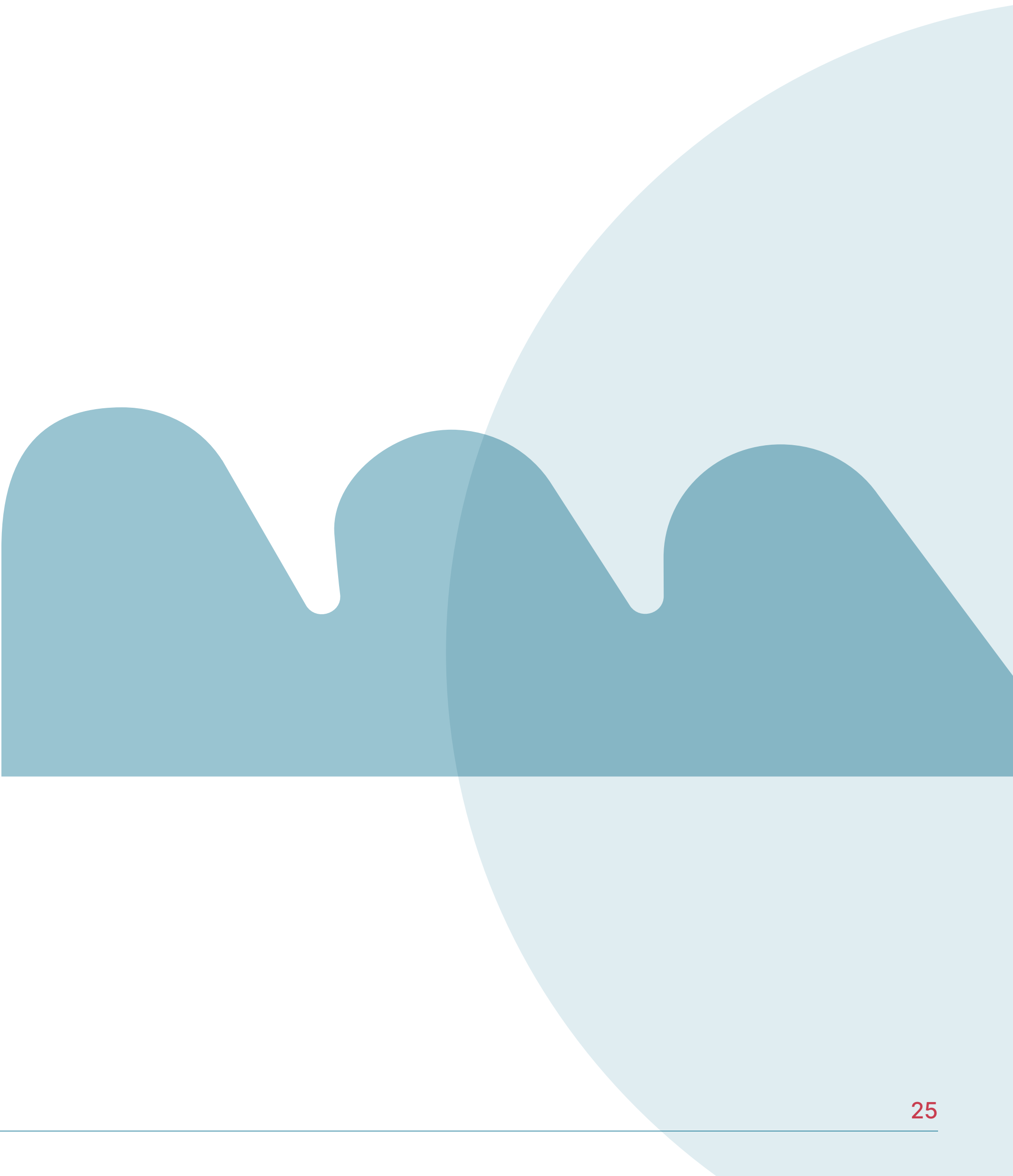
This model can also provide a clear way to determine the best data collection strategy for the organisation. Building on this model, this paper aims to lay out the main DAM considerations for each aspect of a digital transformation project:

Dimensions of digital readiness	DAM considerations
Strategy and investment	Digital ecosystem data collection strategy that brings together data across all digital properties (website, social, digital products, CRM, ticketing and sales data, onsite digital interactives, etc.) as well as analogue audience data
Process	Dashboards and passive data collection and cleaning practices that give staff access to necessary audience data
Technology	Data analytics tools (such as Google Analytics, social analytics), digital product usage data, CRM systems, data warehouses or repositories, front end data visualisation tools
Customer	Visitor journey mapping that identifies key touchpoints and interventions between the museum and the visitor across all digital platforms and physical spaces
People	Skills in qualitative or quantitative research methods, as well as staff with technical skills to implement data collection, data cleaning and storage, and data visualisation

With DAM being a key consideration across all facets of digital transformation within museums, it is important that digital audience data collection and measurement strategies be implemented concurrently across other digital transformation strategies. When developing a data collection and measurement strategy, there are a few key questions this strategy should answer:

Strategy and investment	What is the digital strategy for your organisation? What data do you need to know about your audiences to implement/measure the effectiveness of your digital strategy?
Process	What audience data do you need to make decisions for your organisation? What audience data do you need to report internally and externally?
Technology	How does onsite audience data and digital audience data collection and measurement currently compare? What audience data do you currently have access to? What audience data could you easily have access to? What audience data requires specialised knowledge or skill to collect?
Customer	What does the digital ecosystem look like for the visitor? How does it move across digital platforms and physical spaces? What do you need to know about your audience as a one-off (i.e., segmentation or audience deep dive)? What do you need to know about your audience on an ongoing basis (i.e., monitoring or iterative development)?
People	Where does the responsibility of data collection and management sit within the organisation? How does this change based on the size of the organisation?.

Answering the above questions will provide any organisation with the basis for a data collection strategy for digital audience measurement.



Sparkling cases from European museums

Perspective: An audience monitoring dashboard for the whole museum

The National Gallery

- London, UK
- 2,600 paintings dating from the mid-13th century to 1900
- 245 FTE staff

For more information:

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Audience measurement category

Digital Audience Monitoring

Key achievement

The integration of onsite and online audience data into daily decision-making practices across the organisation

Project overview

In 2019, with the support of the Analytics Engines, the National Gallery built a dashboard called Perspective to monitor both onsite and online audiences in as near real time as possible. The dashboard was developed to be accessible to all staff members and incorporated a variety of manual and automated data sources.

Overview of research methodology

Perspective was originally developed after it was realised that because of silos in the organisation, there was no easy and centralised way to understand who was coming to the museum and what

they were doing. Furthermore, little was known about digital audiences, and with some major website redevelopment projects in the strategy, the organisation wanted to better understand how the online platforms could support both online and onsite audiences.

The National Gallery hired Analytics Engines, an agency specialising in developing data dashboards, to help them design and build a custom dashboard that incorporated multiple audience data sources. The Data & Insight team then designed a dashboard based on data that was most widely requested and used by the organisation – such as onsite daily visits overall and by exhibition, daily website visits, and social media followers by platform – with the goal of keeping them as simple and easy to read as possible. Choosing to include only the highest-level and broadest data meant that the dashboard remained relevant for the largest number of staff and helped all staff members to develop data literacy, enabling decisions to be made with the same (non-siloed) data.

To make the dashboard as meaningful and actionable as possible, the Data & Insight team ran a series of stakeholder workshops with various relevant teams in order to understand how data was collected and to co-create data visualisations that would be accessible at a glance for the wider organisation. This was then passed to Analytics Engines, who worked to build a data warehouse for existing data, bringing various audience data sources (such as people counters, survey data, CRM, website analytics, social media analytics and manual attendance numbers) into one place.

Each dashboard view was then rolled out slowly across a series of workshops and trainings available to the entire organisation, the intention being to help staff to learn to read the data and find the data that was relevant and meaningful for their work.

What it looks like today

Perspective has now grown to include views for onsite visitor numbers, exhibition attendance,

“It’s about making sure the data quality in Perspective is top of the line.”

website audience data, social media audience data, press tracking, rolling survey responses from onsite visitors, and workshop and learning attendance. These data visualisations are used to report across the organisation – from weekly reporting to board-level reports. Staff trust their dashboard to show the correct audience data figures and feel confident reporting them internally and externally to government bodies and press. Democratising access to onsite and online audience data has also meant that the Data & Insight team have had to deal with fewer small data requests, as staff become more confident in reading basic data themselves. This has freed up time that the team can now devote to more in-depth measurement and research projects, enabling them to deliver richer audience insights to the organisation.

Challenges

The biggest challenges have been to maintain existing data connections (with tools like social media analytics and Google Analytics), as major updates on 3rd-party analytics platforms have meant interruptions in data connections and APIs, requiring further development time to repair. The dashboards also need a front-end redesign from time to time. The National Gallery recently redid their segmentation as a larger research project, with the result that the Data & Insight team had to begin to completely rebuild the dashboards to reflect that new segmentation.

Next steps/opportunities

"Can you overlay the visitor and digital data? Right now, we don't have an answer to that. One of the things we are looking at is consumer journey models of how digital feeds into them as a starting point. This is still a big question mark at the moment, but understanding the impact that it has as a starting point in the journey is key."

The Data & Insight team are continuing to develop new and existing dashboards to meet the needs of the various teams within the organisation to a greater degree. As teams have become more familiar with using the dashboards, they have

been able to better articulate and define their own data needs, feeding into the development process themselves. Their next dashboards will start to investigate how to visualise the visitor journey across both onsite and online spaces more completely. The next step for Perspective is to introduce a training module into the onboarding process for new employees, so that every new employee can be given logins and basic training from day one.

Key takeaways

- Larger investment in data collection and monitoring systems at the beginning can lead to more efficient audience monitoring over time.
- Developing dashboards that democratise access to audience data can help to drive organisational change towards implementing more data-driven decision-making across the entire organisation.
- Keeping data simple and easy to understand helps to create a "single source of truth", which builds trust in the data among staff.

Children from London and the south of England at the National Gallery with the Keeper of Paintings app, which they helped to create. The children from left to right: Suri Koh-Cork, Holly Koh-Cork, Marnie Thompson, Charlie Monger, Edwin Lawson.

Photo: © Malcolm Park



An audience-led approach for small museums

Museo della Ceramica di Savona

- ▶ Savona, Italy
- ▶ Artworks from 1500 to the present day
- ▶ Owned by the Fondazione Museo della Ceramica di Savona, a private non-profit foundation
- ▶ 9 FTE + 3 part-time staff across four museums

For more information:

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Curator – Head of Flow Analysis
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Audience measurement category

Research Study, Digital Audience Monitoring

Key achievement

Using audience data to make key onsite and online programming decisions that increased onsite visitation by 500 per cent within one year

Project overview

“When we started working in the museum two years ago, the entire staff changed. So, it was really important to better understand how the museum was working. We began to imagine how the museum should evolve in the next 10 years. We started with workshops and focus groups internally with BAM! in order to understand our audience and map how closely they are related to our museum. We felt it was important to develop different strategies to reach different publics. So, we created a list of things we have/offer (map of resources), and our first step was to match the different publics to our different resources.”

Working with BAM! Strategie Culturali, the team at the Museo della Ceramica di Savona developed a segmentation based on their existing audiences

in order to understand their existing and potential audiences for onsite visitation and engagement. They divided their regular, occasional and potential audiences into seven clusters:

1. Educational (people who attend educational programmes: families, schools, teachers, children, adults)
2. Friends of the museum (volunteers, community created with previous projects dedicated to the development of audiences [Museum Senior: www.museosenior.it], people who are keen and regular visitors to the museum, potential ambassadors)
3. Savona residents (people living in the municipality of Savona, further segmented by interests and age)
4. Tourists (who land in Savona on a cruise, who visit Savona for the sea, who travel on the Ligurian Riviera, who own a second home on the Riviera)
5. World of ceramics (artists, artisans, designers, world of contemporary art, fashion, architecture)
6. Companies (those that operate on our territory)
7. Teenagers (who attend high school and in particular those who live in the historic centre next to the museum)

This new segmentation helped the museum to develop a data collection system that enabled staff to collect data, segment all their onsite vis-

itors and start looking at how their online platforms serviced their audiences. This new data collection system was then used to build quarterly reporting in order to gain an understanding of how well they were achieving their strategic goals through their exhibition and learning programming.

Overview of research methodology

Using all the audience data the museum collects across onsite and online visitors, their agency partner BAM! Strategie Culturali helped them to produce quarterly reports that enable the team to better evaluate their strategic goals and plan for upcoming exhibitions and workshops. The quarterly reports combine information, including:

- Total number of open days and onsite visitors, averages, maximums and minimums over time and comparatively year after year
- Ticketing information, including location, types of tickets, workshops or exhibitions visited, demographics. This information is collected via their ticketing systems and through key survey questions asked at point of sale.
- Digital users, including number of users, time spent on site, demographics, website usage (compared with other local museums). This information is collected via Google Analytics, social analytics and press analytics.

Looking at this information holistically, team members are able to set data-driven strategic goals, and then track how successfully they were able to target and engage with specific audiences.

“For us, one of the main goals was to reach people who live in Savona.”

What it looks like today

“Even though the museum is 10 years old, people from Savona weren’t aware that there was a five-storey museum in a mediaeval building in the centre of city, with fresco painting from the 15th century. So, our main goal was to help local people become aware of the museum. I think it is not so common to be audience-focused when you are a small museum. But we tried to do everything on a good level. At the beginning (2nd quarter of 2022), we were able to confirm that local people made up only 11 per cent of our audience. By the 1st quarter of 2023, this had increased to 71 per cent. Audience measurement enabled us to verify that monitoring the public was useful and to understand how our activities can have an impact.”

The team have gone on to use digital audience insights to try extending their reach internationally, running a digital campaign in France based on the insight that many of their onsite international visitors were from France. And while they did not see the conversion from the digital public that they expected, it enabled them to expand their digital awareness and learn new ways to engage with digital audiences.

Challenges

One of the biggest challenges for audience measurement is staff time. The team at Museo della Ceramica di Savona have the expertise required for more in-depth digital audience measurement, but often struggle to find time to explore the data further among their other duties.

Next steps/opportunities

“We are therefore here at a new moment of change, and we are starting to work on implementing a monitoring system in 2025 that, taking into account the specificities of the four museums, will be able to provide uniform information on visitors and enable strategies to be set up for the entire area.”

The team plan to extend their monitoring system across the other three local museums they are responsible for, in order to start developing insights across the local museum ecosystem. They hope to help the flow of audiences across the different sites and to build awareness of online and onsite spaces.

Key takeaways

- Top-down, audience-data-driven decision-making can result in significant attendance and engagement uplifts.
- Small teams can still collect, monitor and measure audience data efficiently if streamlined data-collection processes are in place.



Museo della Ceramica di Savona staff working with BAM! Strategie Culturali on the development of the new segmentation

Creative approaches to audience measurement for small teams

IMPAKT (Centre for Media Culture)

- Utrecht, Netherlands
- IMPAKT Festival, a five-day multimedia event that includes exhibitions, film screenings, lectures, panels, performances, presentations and artist talks at locations in Utrecht and online at Planet IMPAKT
- 10 FTE staff

For more information:

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Audience measurement category

Digital Audience Measurement

Key achievement

Experimenting with WhatsApp to deliver content and collect feedback in a way that felt easy for audiences participating in hybrid events

Project overview

"Our events take place in physical space but also have an online element. The goal is to diminish the boundary between the online and offline experience. It started before Covid but became a much more pressing and current need during the pandemic."

IMPAKT began their experimentation with creative methodologies through the DOORS project in 2022, where they focused on developing their hybrid onsite and online events. During the project, they experimented with how they could best engage with their audiences digitally around the events. From delivering important visit information at the right time in their journey to getting audi-

ences to provide feedback, they looked at alternative methods beyond the standard processes museums often use.

Overview of research methodology

"Nowadays, it's so common to get surveys that people don't fill them out. If you really need audience feedback, you have to find engaging ways for them to give you feedback. An interesting thing

"One conclusion was if you just ask for feedback through a newsletter, people won't do it."

we did during the research was to start using WhatsApp to approach our visitors. That helped to get more engagement with the event overall. It began playfully but people didn't really like that – they didn't want a funny chat with an anonymous organisation. But for vague things, sending a WhatsApp message helped to prepare audiences and lowered the bar of engagement. Even if it wasn't the funniest or most interesting, it was a functional addition. So, we began to think about what more we could get out of those interactions. We tried to do research in informal ways."

They began by doing a workshop with the entire team around their audiences, working to understand who their audiences are now and whom they connected with as target groups. The team chose two main target groups and adapted the personas to help them to focus on the specific

target groups they wanted to develop programming for in the future. Having the entire team involved gave them a good understanding of whom they were targeting and why, and also gave them a shared sense of purpose as they developed strategic programming.

They then used what they knew about their target audiences to develop ways of engaging with them around the hybrid events – mainly via WhatsApp. They experimented with tone of voice and content to understand how this platform might work best when it came to providing information and collecting feedback, iterating their approach throughout the process as they tracked what worked well and what worked less well.

What it looks like today

Today, they are working with an organisation called Ask Your Audience to expand their audience research by designing and delivering surveys for specific events. They have also recently implemented a new CRM system and are currently working on ways to adapt it to help them to better segment their audiences by visitation, language, and learning how people found out about IMPAKT.

Challenges

"One of our biggest challenges is sample size. Most events attract 50 to 80 visitors, and because they are one-off events, it's hard to get a large sample size to really determine what works and what doesn't. And if you do get any feedback, it's difficult to know how to apply it to another event."

One of the main challenges IMPAKT struggle with when conducting audience measurement is that with smaller events with a low total number of participants, getting feedback from a large enough sample size is often difficult. It is even harder to collect qualitative or meaningful feedback immediately after an online event – as audiences often walk away from or close down their computers as soon as the event ends, leaving no time for the mingling that usually happens as audiences get ready to leave an in-person event (and where data collection is easiest). These challenges necessitate creative methodologies to get audiences to reflect on the event and provide feedback in their own time online.

A further challenge is the lack of staff time to actually do the research during the hybrid events. With everyone focusing on delivering the events, they often struggle to dedicate additional time to capturing data immediately afterwards.

Next steps/opportunities

The plan is to develop a standardised survey that can be modified to work for specific events but enable staff to start building their data across many events and create an overarching process they can tap into for each event. This will involve spending time to develop a concrete focus on what they want to get out of the feedback across the program, rather than just for specific events.

“The main reason we wanted to adapt our CRM was to be able to get more detailed profiles of who our audiences are – to learn whether they have visited before, how they found out about us, what events they have been to.”

Key takeaways

- Getting creative with methodologies can help to accomplish audience measurement in a meaningful way with limited budgets and staff time.
- Finding ways to make your survey or research stand out will help to increase sample sizes and engagement with your audience research.



The IMPAKT Hybrid Wine and Art Tasting Event <https://impakt.nl/events/2023/event/impakt-hybrid-wine-and-art-tasting-event/>

For more information on this approach, go to their toolkit:

https://impakt.nl/?post_type=residencies&p=43587&preview=true

Developing combined online and onsite segmentation at the Neanderthal Museum

The Neanderthal Museum

- Mettmann, Germany
- 160,000 visitors per year
- 26 FTE Staff

For more information:

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Data Scientist
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Audience measurement category

Digital Audience Research Study: Online and Onsite Audience Segmentation

Key achievement

“The analysis of the website was essential to understanding the motives of our digital users. All the knowledge acquired by tracking users site per site and click per click enabled us to find potentials to optimise the user journey. Moreover, these experiences and those we gained through the survey and the segmentation have directly influenced the coming relaunch of the museum’s new website.”

Project overview

Since 2021, the museum has been exploring the question: *What is it our visitors come for?* And since many different digital offers had been produced for their visitors and digital audiences, the museum

also wanted an answer to the questions: *Do our visitors and/or non-visitors care at all about the digital services and contents we created? Will they care about the digital content after the pandemic?*

To gain a better understanding of what motivates audiences to visit them onsite and online, the museum designed a research study, led by a survey, that asked online, onsite and non-visitors about their motives (if any) for visiting. The goal was to segment their audience depending on their motivation to visit the Neanderthal Museum onsite or online.

Overview of research methodology

“Since there has never been any segmentation whatsoever, neither for the analogue nor the digital audience of the Neanderthal Museum, we tried to combine the research and ask people about their motives for visiting the museum and the museum website. (The website also holds all the relevant information on the other attractions in the valley.)”

Having reviewed different approaches to audience segmentations in the cultural sector, the team analysed the data which had already been gathered on their website and via tracking software and recreated user journeys on the website. This enabled them to form the first archetypes of their visitor segments. After the website analysis, they organised three consecutive workshops with different departments of the Neanderthal Museum. The goal was to define “prototype segments” that could represent the motives of current and potential visitors. While the first and second workshops focused on creating and refining the different segments, the third was planned with the

board of directors to determine which segments seemed to be the most relevant for the museum.

After the workshops, the team launched the online and onsite survey. The online survey was available on our website but was also distributed through various other channels (such as Facebook, Instagram and newsletters). The onsite surveys were conducted on six days in April: two days in the museum, two days in front of the museum (next to the playground, where a lot of hikers and cyclists pass) and two days at a public place in Düsseldorf. Simultaneously, the online survey was available throughout April. The survey collected detailed information on motivations, helping the team to build out the information about the eight different segments they had created. They then used the data to refine and combine segments to create more meaningful and actionable segments the museum could use.

Outcomes of the project

A total of 2,112 responses from visitors from around the world made this one of the museum’s largest audience research projects. The dataset gained through the survey enabled the museum to run an in-depth analysis, contributing to a variety of projects, such as relaunching the museum’s website.

Challenges

One of the key challenges the team faced was to fit in all their objectives and goals for the research within the limited funding they had received for the project – which funded a part-time researcher for six months. In that time, they had to finish the

data collection, analysis and evaluation. The project plan was therefore tightly organised, and the questionnaire was not as elaborate as the team originally wanted it to be.

Next steps/opportunities

The museum plans to expand on this research with a joint project with various other museums across Europe and is currently applying for funding opportunities to make this become a reality.

Key takeaways

- If you are getting funding to do a major audience research project, think about integrating digital and onsite visitor information to develop a more holistic research study.
- Finding external funding to support large audience research projects (or to temporarily hire research specialists) can create reliable audience insights that will support museum practice and strategy for years to come.

For more information, see the following reports:

Digital Audience Analysis – Audience Segmentation Based on Motivation: https://neanderthal.de/documents/8/2023_DOORs_Springer_Digital_Audience_Analysis.pdf

Sparkle Report Part II | DOORS – Digital Incubator for Museums: <https://zenodo.org/records/8398711>



NEANDERTHAL MUSEUM, Mettmann, © Neanderthal Museum

Developing museum-wide research tools at Klassik Stiftung Weimar

Klassik Stiftung Weimar

- Weimar, Germany
- 27 historic homes, castles, museums and parks
- 384 FTE Staff

For more information:

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Digital Transformation

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Audience measurement category

Digital Audience Measurement

Key achievement

Democratising audience feedback practices through an easy-to-use survey tool that teams across the organisation can use

Project overview

In 2019, Ulrike Lorenz took office as president of the Klassik Stiftung Weimar, bringing in a new strategy that was audience-driven and developing cross-departmental working patterns within the foundation. Now, each project started by the museum must have at least one audience goal or outcome. Then, the indicators and instruments required to determine if the audience goal has been reached are discussed and implemented, with time given to reflect on whether the project is going in the right direction by monitoring the developed indicators. This means that different teams are at work across the organisation, towards

the same audience goals within projects and have ways to track their progress and targets.

As part of this strategy, Klassik Stiftung Weimar came up with the k:evatool, an open-source survey tool developed in collaboration with an agency. This tool allows the organisation to design, deliver and analyse surveys across their onsite and online platforms.

Overview of research methodology

The k:evatool was originally developed during the Covid-19 pandemic in order to reach and survey digital audiences. This was done in collaboration with an agency as part of the funded program Labor digital: Vermittlungsformate in und außerhalb der Museen (Digital laboratory: communication formats in and outside museums). The tool itself was also developed through iterative audience research. In the development process, the central concern was to make the surveys more entertaining and varied and to adapt the evaluation tool to the diverse offers of the museum. The tool was designed to integrate into the museum's existing applications – from digital products and kiosks to the website – in a simple way. The k:evatool makes it possible to carry out small, short surveys on a wide range of offers without a great deal of effort and to evaluate them quickly, thus integrating evaluation processes into day-to-day business. This survey-building tool also allows for a variety of creative survey question formats, in the hope that more varied and entertaining surveys will help to increase participation and engagement in audience feedback.

The k:evatool is available on open-source platforms and can be integrated into any museum's workflow.

What it looks like today

Today, the survey tool is used for both online and onsite audiences. Members of staff across the organisation can use the k:evatool to design, run and analyse their own surveys. It is just one tool in a larger suite of qualitative and quantitative methodologies and tools the team use to design and execute audience research projects for digital and onsite audiences.

Challenges

One of the challenges is to start connecting the disparate data sources they are now able to collect, in order to create a more holistic picture of audiences across the organisation's portfolio and online properties. As their data collection practices become more sophisticated, new challenges arise in effectively utilising the data to develop more meaningful insights across the various data sources.

Next steps / opportunities

One of the original challenges of the project came from the need for cultural change within the organisation. The audience-data-led approach was rolled out slowly over a series of pilot projects, introducing staff to new ways of working. Since then, the team have been able to implement more larger-scale, in-depth projects that include analytics, surveys and qualitative methods in the first step with showing how to use all the data

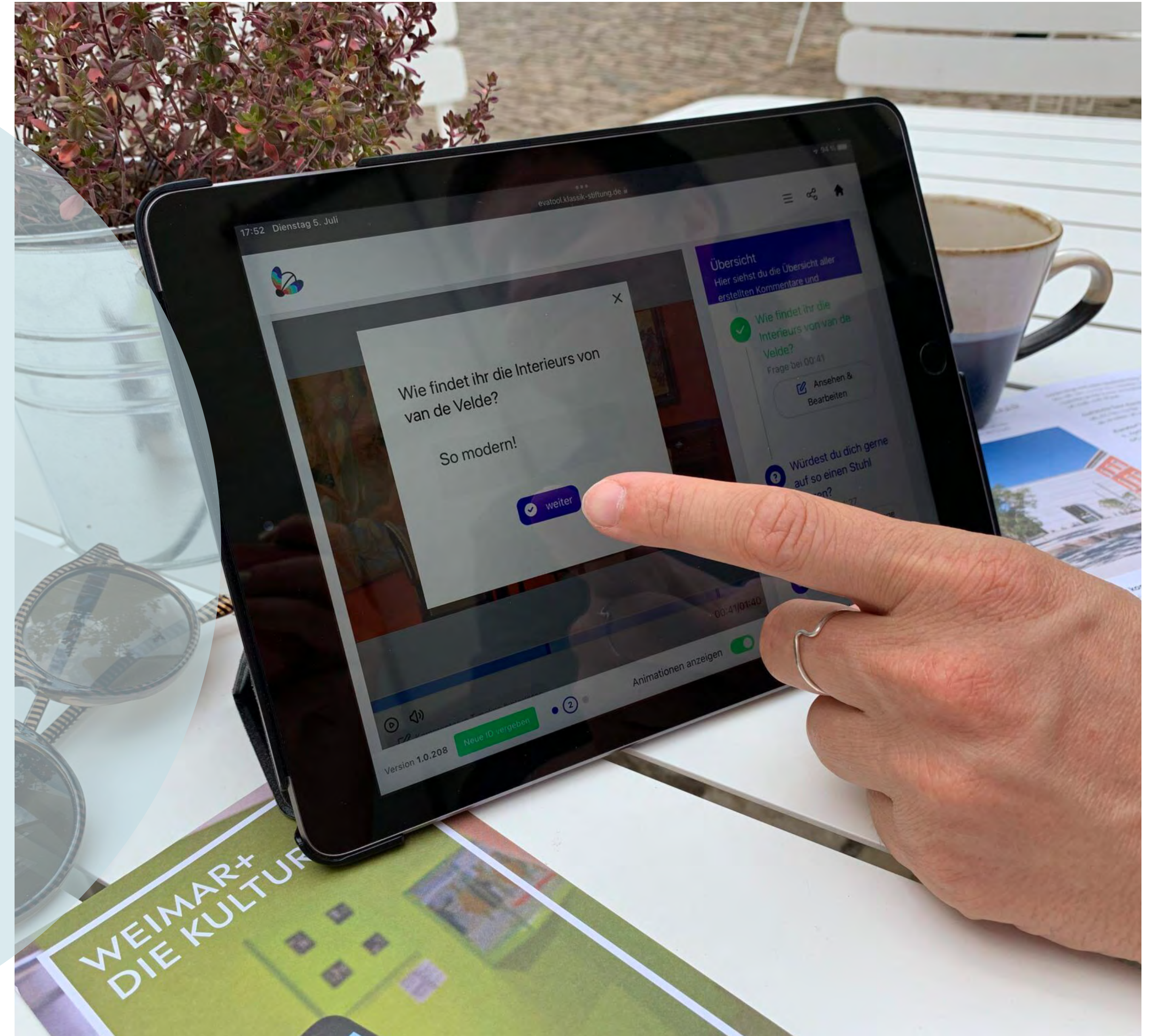
combined and how to effectively scale evaluation within the organisation. The team's ability to carry out these larger projects is due in part to the fact that other staff members are able to design, develop and analyse simple surveys on their own, leaving the team more time to devote themselves to in-depth analysis.

Key takeaways

Democratising audience research across the organisation helps to integrate audience-led decision-making and also spreads out the time required to design and execute research among more staff, meaning that less time is required overall per team member.

Reliable audience research tools can go a long way in helping staff to feel more confident about their own abilities to develop and execute monitoring, measurement and research practices.

For more information on the k:evatool or access to the open-source code, go to:
https://github.com/museum4punkt0/k_evatool



museum4punkt0: "k:evatool" of the Klassik Stiftung Weimar, photo: Nicolas Dittgen, Klassik Stiftung Weimar, CC BY 4.0

Developing audience-centric digital products

The Royal Museum of Mariemont

- Mariemont, Belgium
- Part of the French-speaking government of Belgium
- 45 hectares, including palace ruins, museum and research library

For more information:

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Audience measurement category

Digital Audience Research Study

Key achievement

"The visitor experience prototype – called 'Doors to the Past: Objects Reveal Their Stories' – is an application developed with a local digital provider. They have created a really good and fun visitor experience with a lot of potential for what can be done over time [to enhance the existing collection with digital content]."

Project overview

The project came about as a way to develop a pilot initiative that would digitally create interest in the museum's permanent collections among local and national communities. The Mariemont had previously generated 3D scans of emblematic objects in its collection, and wanted to do something original with these images to reach new audiences and attract them to the museum.

Overview of research methodology

In order to develop the idea, they created a citizen collective and held Ecosystem Consultations, a

series of six four-hour workshops with people from the local community interested in thinking about how to revitalise the museum and its collections. The 30 participants recruited from a variety of sources included six young locals, other local people from the neighbourhood, existing audiences and members of the Friends of the Museum association. In these workshops, they were asked to explore questions such as: What would draw people to the museum? What would be their ideal museum? What digital experiences would they want to see? And how would they like to be communicated with in the future? The workshops resulted in a series of propositions the museum explored for feasibility of implementation. Similar workshops were also held with staff and key stakeholders, asking them to deliberate on how digital could help them with storytelling and audience development in their capacities as curators of collections and exhibitions.

The workshops were held in conjunction with the development of the application, using 3D scans made in the gallery. This application focused on five to six key objects each across three different sections, where visitors could scan an image on a display case and answer questions related to the object. When the visitors had finished, the last scan activated a film explaining the life of that particular object. The film was based on archival information and photographs about how the object was created and how it reached the museum.

Throughout the project, the idea was to develop this initiative into a wider digital transition strategy. The team were concerned that all the momentum they had generated through this digital project would end when the pilot project itself came to an end. The project was therefore developed in a way

that would keep the team thinking about how to ensure that the digital transition continued beyond the pilot. In this way, internal reflection was built in as part of the project itself, making sure there would be time for audience and stakeholder workshops as a way to transition into a longer-term strategy.

Challenges

One of the challenges the museum faces is to make certain that the digital transformation work is carried through into future projects. Without clear ownership for digital transformation in the museum, digital products and digital audience measurement will continue to be project- and funding-based, rather than integrated into daily life and long-term strategy at the museum.

"These topics are on people's minds but are still fragile and not necessarily presented as priorities. There's a fear of imposing them as priorities and an expectation that momentum is better coming from the grassroots as initiatives that the leadership could subsequently support."

Next steps / opportunities

Out of the final audience and stakeholder workshops, 40 propositions were developed and ranked on four axes:

- Attractiveness of museum (what makes me want to come), Quality of information
- Physical/remote access – how to get there or access remotely
- Actual experience in the museum.

Impact on the community

These propositions were presented to the director, who decided which propositions the museum would take forward. One of the proposals was to build a permanent citizen committee, whose members would, to some extent, accompany the museum during an upcoming period of major architectural renovation.

The museum also plans to continue their audience research work and is currently carrying out a quantitative study on audiences using the domain visitors (but not necessarily the museum's) as a study of "non-visitors" in a mutually beneficial

collaboration with a public research organisation of Belgium's French community. The research will dive deeper into who the visitors of the domain are, what interests them, what they do in their free time, what culture means to them, what they know about the museum and what their digital interests are.

Key takeaways

- Collaborations with external experts can really help to develop digital and audience measurement practices in the museum without having to commit to additional full-time staff.
- There are cost-effective ways to work with local and national partners to develop insight across shared audiences that can still be meaningful and useful to a museum.
- Without digital and audience champions within the museum, it can be a struggle to maintain momentum for digital projects.



The application Les Portes du Passé. Andy Simon. © Mariemont 2023



Word cloud – What makes me come to Mariemont. © Mariemont 2023

Digital first: Developing an audio-guide-led museum

Muzeon

- Cluj-Napoca, Romania
- Opened in 2020
- Audio-guide-led, with supporting artefacts in a physical museum space
- 3.5 FTE Staff

For more information:

Flavia Craioveanu

Founder, Curator, General Director

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Audience measurement category

Research Study/ Digital Audience Monitoring

Key achievement

"We managed to develop the web application into a product. This way, more museums will be using it, more visitors will be using it, and we can continue to improve it. Having other museums and more visitors using it will enable us to keep up with trends and offer a better experience in general."

Project overview

Muzeon is a private museum launched in 2020. It is storytelling-led – with three personal narratives told through an audio guide. The physical museum space is used to house artefacts that support the stories.

After testing the web application for two years, it became clear through audience behaviours and feedback that things could be improved, and that the experience the visitors had while using the audio guide could be enhanced. In 2022, they worked with the DOORS project to extend the audio guide from three languages (Romanian, Hungarian and English) to six (by adding German,

French and Hebrew), and to develop accessible features for the hearing and visually impaired. Furthermore, they implemented a content management system that enabled non-technical users to edit and create content, replacing their original system, which required coding skills to make changes. This new system also enabled all staff members to edit and create for the audio guide.

They have now created a subscription model for other museums to customise and use the web application.

Overview of research methodology

Before starting to develop the audio guide application, the team did research around what the market had to offer. They tested different applications, focusing on what features were necessary and what made the application easy to use for audiences. They then designed their own web application based on the findings from web applications already available on the market.

"We always focused on ease of use – which is why it's a web application. By simply scanning a QR code, the web application opens on your phone."

Once the web application had been developed, they implemented a monitoring system to track how visitors used the audio guide and what their preferences were (through analytics), and also to monitor the rating of the system and the impact of the visit on visitors (via feedback surveys within the application itself). Through this monitoring system, they have been able to make key changes to the audio guide and overall experience.

"For example, the audio guide named Paul was hardly listened to in the beginning. We were able to measure this, and when we saw that people were showing little interest in his narration, we decided to change the voice reading the story on Paul's audio guide. After the change, the metrics showed that all three audio guides were now equal."

Using analytics to monitor initial visitor behaviour with regard to listening preferences, the team noticed that visitors were significantly less interested in Paul's audio guide story. The feedback collected by the team about why Paul was less favoured ultimately led to the decision to replace the voice actor for Paul – his voice turned out to be the main reason for the low level of interest. The team has observed that visitor listening behaviour has become much more equal across all three audio guide narrations since the voice switch.

Challenges

Now that the audio guide has an established way to collect analytics data and survey feedback, the team have begun to rethink how to further develop their data collection processes. They want to establish a more

in-depth understanding of their audiences, but will need to redesign some of the ways they collect data in order to start building a more holistic understanding of their audiences. Their iterative approach to developing the product has also required them to continually evolve their data collection practices.

Having a small team has not necessarily been a challenge to the project. It has allowed them to be iterative and flexible when it comes to constantly improving the audio guide. *"We are a very small team. Sometimes it can be easier if fewer people are involved. Making and implementing decisions, for example, can be easier if there isn't a bigger team you have to coordinate things with."*

Next steps/opportunities

"We want to continually improve the web application ... we will never consider it to be done. We plan to work closely with other museums to find better ways of using and further developing it."

The museum has started exploring ways to package the audio guide web application and provide it to other museums (nationally and internationally) as a subscription service. It has been working with a local national museum to develop additional features identified through audience and other museum stakeholder feedback. They plan to continue developing the web application, to make it increasingly versatile and user-friendly across a variety of scenarios.

Key takeaways

- Small teams can have the added advantage of being able to make decisions quickly and work iteratively and flexibly so as to create better audience experiences faster.
- Developing digital first experiences can give museums an added advantage when trying to create effective and enjoyable experiences for audiences.



Measurement across the digital ecosystem

Limburgs Museum

- Venlo, The Netherlands
- Regional heritage collection of audio-visual, archaeological and cultural artefacts
- 83,000 objects in the collection
- 60,000 visitors a year

For more information:

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Director
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Audience measurement category

Digital Audience Measurement: Digital Ecosystem Measurement

Key achievement

The ability of each program to start delivering on multiple goals, building overall impact over time

Project overview

The Limburgs Museum launched an online museum in March 2023. It was created as a storytelling platform, with the ability to capture and tell local stories in a variety of contexts. It was designed with a focus on being participatory in various ways and the project has seven main goals:

1. Operating a digital museum
2. Developing proof of concepts, with established KPIs for regular monitoring
3. Automation where possible
4. Creating a collection ecosystem via linked data
5. Accommodating co-creators
6. Capturing and sharing local dialects via audio and text
7. Working with older people to capture

memories through objects in the collection

These goals were chosen via the personas they developed for both onsite and online museum experiences. The online museum project focused on the personas that also represented new audiences.

Overview of research methodology

Initially, personas were developed that spanned both online and onsite audiences, as well as existing and potential audiences. These initial personas drove the development of the initial goals of the digital museum. Since implementing the strategy, the museum has shifted to a measurement and monitoring model. The marketing and content teams discuss the performance of metrics and KPIs every week, with the goal of implementing changes where required. Furthermore, the company that developed the online museum also measures key metrics regularly and reports these to the museum.

The teams also implement specific measurement projects as they develop and roll out new initiatives. One example was their initial setup of the co-creator program, which was designed to reach new and younger audiences through local content creators they could relate to. At first, they tried a system where content creators would be paired with curators, but found that the content creators felt intimidated. They then conducted research with the content creators to better understand how to facilitate them and connect their content to the museum’s social media. The museum consequently changed the program, giving the keys

“You start to build the synergy of a participatory museum strategy online and onsite, and this integrated approach is now enjoying the synergic benefits.”

fully to the content creators and allowing them to post on the museum channel as if it were their own platform. They have since experienced a significant change in overall session duration, with much of that driven specifically by co-creator content.

The teams currently run specific audience measurement research related to the online museum, in addition to the overall weekly monitoring, to understand how all the different projects are delivering on the key goals running across the program more generally. This way, all the research – even smaller projects and regular monitoring – build on each other, creating a more holistic picture of the success and impact of the online museum.

Challenges

“The biggest challenge is to keep track of what the main goals are and not get distracted by the possibilities.”

The focus is on choosing projects that will help to deliver on the needs of their key personas, and

turning down potential opportunities that won't deliver on at least one (if not more) of the key goals of the strategy.

Next steps / opportunities

The next step is to start a more systematic monitoring of which audiences they have reached. Work is underway on developing meaningful KPIs specifically for the online museum, where they can measure the reach among both the online and physical museums. The aim is to develop more sophisticated measurement and monitoring systems that will help the museum to understand how well its goals regarding impact for the audience have been reached.

Key takeaways

- Building a strategy from a key piece of audience research (such as personas) can drive monitoring and measurement systems in the museum, making it easier to understand how well a strategy has been implemented among chosen audiences.
- Attaching each project (no matter how small) to the overarching goals enables museums to measure their success and impact more holistically, without the need for large studies.



Discover the stories of our province © Limburgs Museums

Connnected journeys – The guide

Connected journeys: Holistic audience measurement in the age of digital – The guide

Introduction: How to use this guide

This guide is intended to help you to design and implement meaningful digital audience measurement (DAM) with your museum or organisation. To maximise the benefits of DAM, consider carefully when it should be brought into a project or discussion.

When to implement Digital Audience Measurement (DAM)

You want to know more about your digital audiences, but when is the right time to start incorporating research into your planning and development? The right time is often sooner than you think!

DAM should be discussed throughout the life cycle of any project. Whenever a goal or outcome is being considered, it's important to think about how to measure that goal or outcome. This can be achieved by developing goals that are SMART – Specific, Measurable, Achievable, Relevant and Time-based.

Make sure that DAM is brought into the conversation at the right time.

- Have a data collection strategy for the museum or organisation. With the development of a DAM ecosystem, every requirement will start to feed into a larger understanding of audiences holistically, enabling staff across departments to better understand when and how to collect data.
- Create a culture of looking at past research. Think of past audience research as part of the larger ecosystem of audience measurement, so that historical data and reporting continue to be useful. Thinking about how past projects may be related to current projects will help to bridge the silos that tend to form in “one-off” projects or research.

- It's never too early to discuss DAM. During the early planning phases, have team members responsible for research in the room if possible. They can often point out research opportunities to support the development of a new product, or implement data collection requirements to make sure that data is correctly collected from day one.

How to implement DAM

1. Purpose, objectives and key questions

What is the purpose of this project?

What types of audience are you trying to measure? (web, social, digital product, joint onsite and online audiences, etc.)

What outcomes do you want to achieve from this research project?

What are the key questions you want an answer to?

What decisions within your organisation will be helped by collecting data about your target audiences? What data will you need to provide in order to support those decisions?

3. The right methodologies for your project

Use your key questions from Step 1 to answer these questions:

1. What data do you already have that answers your questions? What format is it in/what needs to be done to put it into a useful format?
2. What data do you still need to collect in order to answer your question?

Once you have a clear understanding of what you still need to collect, there are two main categories of research methods to choose from:

Do you need to understand what audiences are doing?

Methods that provide **breadth** of data:

- Online surveys
- Task analysis
- CRM/Ticketing data
- Web and social media analytics

Methods that provide **context**:

- Web and social media analytics
- Digital product usage data

Do you need to understand why audiences are doing what they're doing?

Methods that provide **depth** of data:

- Interviews
- Usability testing
- Focus groups
- Surveys

Methods that provide **context**:

- Participant observation
- Intercept testing

4. Recruiting participants / Collecting data

Having chosen the best research method for your project, think about whom you want to speak to and how to recruit their help for your project – often the most difficult task, and one of the most critical things to get right.

Which audience are you trying to understand? Who do you want to participate in your research?

It could be your entire audience, a subset of people, or people who currently don't engage with you.

Finding existing audiences

A lot of the analytics on your existing audiences can be found without reaching out to them directly. However, if you need to speak to them via surveys, interviews or other qualitative methodologies, you can reach out to them using methods you already have access to. It's a cheap and easy way to recruit for your research, and you know they are already engaged with your organisation. You may find them in:

- Your email list
- Your social media channels
 - A pop-up on your website
 - Intercepts at your physical location (if applicable)

Finding potential audiences

Maybe you don't have a large current audience, email list or website traffic, or you want to speak to people who haven't yet visited / engaged with your organisation but could be motivated to do so. If you're doing a quantitative study, public data may already be available (e.g. in census data, insights or research reports published via government or academic institutions). If not, you can find potential audiences through:

- Partnerships with other local organisations
- Recruitment agencies
- Intercepts in public
- Social media groups/Paid advertising
- Online forums or panels

2. Type of project (monitor / measure / study)

Choose the path that best matches the answers to these questions:

Do you need to monitor something over time to see if something has changed – such as any impact that changes have had on engagement / visitation / behaviours?

If so...

Digital audience monitoring

Do you need to regularly report data consistently to your organisation or an external organisation?

You need a: Monitoring report or dashboard
A monitoring report or dashboard would use website or social analytics, visit tracking or surveys to regularly monitor key metrics.

You need: Visitor journey mapping

This helps to identify needs/opportunities in a visitor's journey across digital and physical experiences, opportunities for new products or offers, and places where marketing new offers would be most valuable.

Do you need to understand why a specific thing is happening? Or do you need data to answer a specific question or to decide on a particular solution?

If so...

Digital audience measurement

Are you building a new digital product or offer?

Do you want to identify potential new products or offers?

Do you know your target audience?

yes

no

You need: Digital audience segmentation / personas

Personas or segmentation can define current or potential audiences in order to understand who the key audiences are for each platform or experience.

Are you redesigning or building a new website?

Do you already know what the digital product or offer is?

Do you know your target audience?

yes

no

You need: Usability testing, iterative testing or formative evaluation

Methodologies (e.g. task analysis) help to determine whether website users can accomplish their intended tasks. Usability testing helps to identify problems in content, design or experience so that the website is optimised prior to launch.

Do you need to better understand your digital audiences more broadly so that you can make strategic decisions for the future of your organisation?

If so...

Digital audience research study

Is your organisation thinking of developing an audience strategy?

You need a: DAM ecosystem overview
Audience strategies should look at past audience research and insights, identify knowledge gaps before undertaking any additional research, and include data collection strategies to allow the strategy to be monitored and adjusted as required.

You need: Digital audience behaviours and motivations deep dive

Identifying the main tasks users want to accomplish on your website is key to designing an easy-to-use platform. To do this, monitoring website analytics to track typical behaviours and conducting interviews to understand behaviours/motivations can be quite useful.

Conclusions from this publication

Audience measurement has long been integral to the arts and culture sector, with many museums and galleries employing established evaluation techniques to grasp audience engagement and visitation patterns. While exit surveys and intercept interviews have been mainstays for evaluating onsite experiences, the proliferation and accessibility of data – such as ticketing, sales, membership and attendance data – have enabled museums to integrate more data-driven decision-making into visitor experience strategies.

As museums increasingly explore digital interventions and the convergence of digital and physical experiences, it becomes imperative for professionals and researchers to develop research and evaluation methods that consider the experience as a unified whole, rather than distinct digital and physical entities. Bridging the gap between methodologies that assess purely digital or onsite experiences is essential to comprehensively understand the visitor journey across digital and onsite interactions. Furthermore, as digital audience measurement tools have become more accessible and more prevalent, organisations no longer need specific skill sets to deliver all types of research, which could effectively democratise research across the organisation.

However, given the abundance of audience data accessible to museum practitioners, it is important to consider the legal and ethical implications of data collection. This is especially

necessary as organisations start to implement AI in their operational practices and machine learning processes start gaining the ability to find and create insights from data. It is therefore crucial for researchers and museum staff to consider the rationale behind collecting data in digital interventions, identify the necessary data for comprehending behaviours and motivations, and utilise both digital and traditional qualitative and quantitative research methods to convey a more comprehensive and meaningful narrative about impact and success measures that go beyond visit counts.

As we look to the future of digital audience measurement, it is easy to see an opportunity where a better understanding of digital audiences can lead to more creative museums being able to use both their physical and digital platforms to provide engaging and meaningful experiences. Blurring the lines between onsite and online experiences and thinking about these audiences as one will only help to develop strategies that create significant impact and learning opportunities. Audience-led design and development can lead to true innovation in storytelling, interpretation, learning and even revenue generation for the museums of the future. Understanding audience needs across both digital and physical spaces through audience measurement practices will not only decrease the cost and resource risks of developing new audience experiences that museums know their audiences will love, but will also help to drive innovation within the museum space, pushing the boundaries of what is possible when it comes to delivering impactful and educational visitor experiences.

Volume 2 of *Future Art Ecosystems* – a research-based report involving more than 50 practitioners and organisations across art, film, gaming, technology and wider cultural industries – lays out a shift in thinking necessary within museums for the 21st century: that of the museum as platform rather than museum as simply four walls.

A shift in organisational thinking away from the restrictive binary of physical-digital requires a holistic approach whereby all of the organisation's functions beyond presenting works of art to the public come under one lens. Depending on the organisation, these may extend to commissioning, collecting, preserving, documenting and financialising art. These processes involve a number of internal and external stakeholders. Understanding the institution as a platform that brings together multiple stakeholder groups in order to facilitate the various processes related to the experience of art offers an organisation-specific touchstone for crafting strategies and prioritising investments.³⁴

This shows that digital has the potential to be more than just ancillary to an onsite museum experience, and that regarding digital audience measurement as not secondary but as a core aspect of audience measurement can start to move the entire organisation in a meaningful direction for the 21st century.

Looking to the future: Lessons learned

While digital audience measurement is nothing new for museums, its implementation varies widely across the sector. Museums are often at different stages of digital maturity,³⁵ which has resulted in a lack of consistency in the integration of digital audiences within the larger visitor research context. Additionally, access to digital analytics often necessitates specialised skills not readily available within organisations.³⁶ The challenge for the sector is to find unity and meaning within the definition of a digital audience while taking into account strategies and available skills. The publication has provided suggestions and examples for this, namely:

1. Thinking about physical and digital audiences holistically

The definition of digital audiences must be considered holistically in order to incorporate audience needs both onsite and online. Museums, national organisations and funding bodies need to think about audiences holistically across physical and digital spaces. This way, digital audience measurement will support museums in capturing and communicating the impact and relevance of museums today.

2. Changing the way the digital project is conceived and funded

The fragmented nature of many digital projects, which are often conceived and funded independently of each other, contributes to an inconsistent and unsustainable approach and leads to a lack of data integration into the broader audience measurement ecosystem. In order to achieve sustainable and effective

change, the way in which many digital projects are conceived and funded must change. Funders must find ways to support museums to develop more integrated digital audience strategies, allowing for long-term value of digital projects within holistic digital ecosystems and unified digital audience measurement.³⁷

3. The importance of trained personnel, external advice and the right equipment

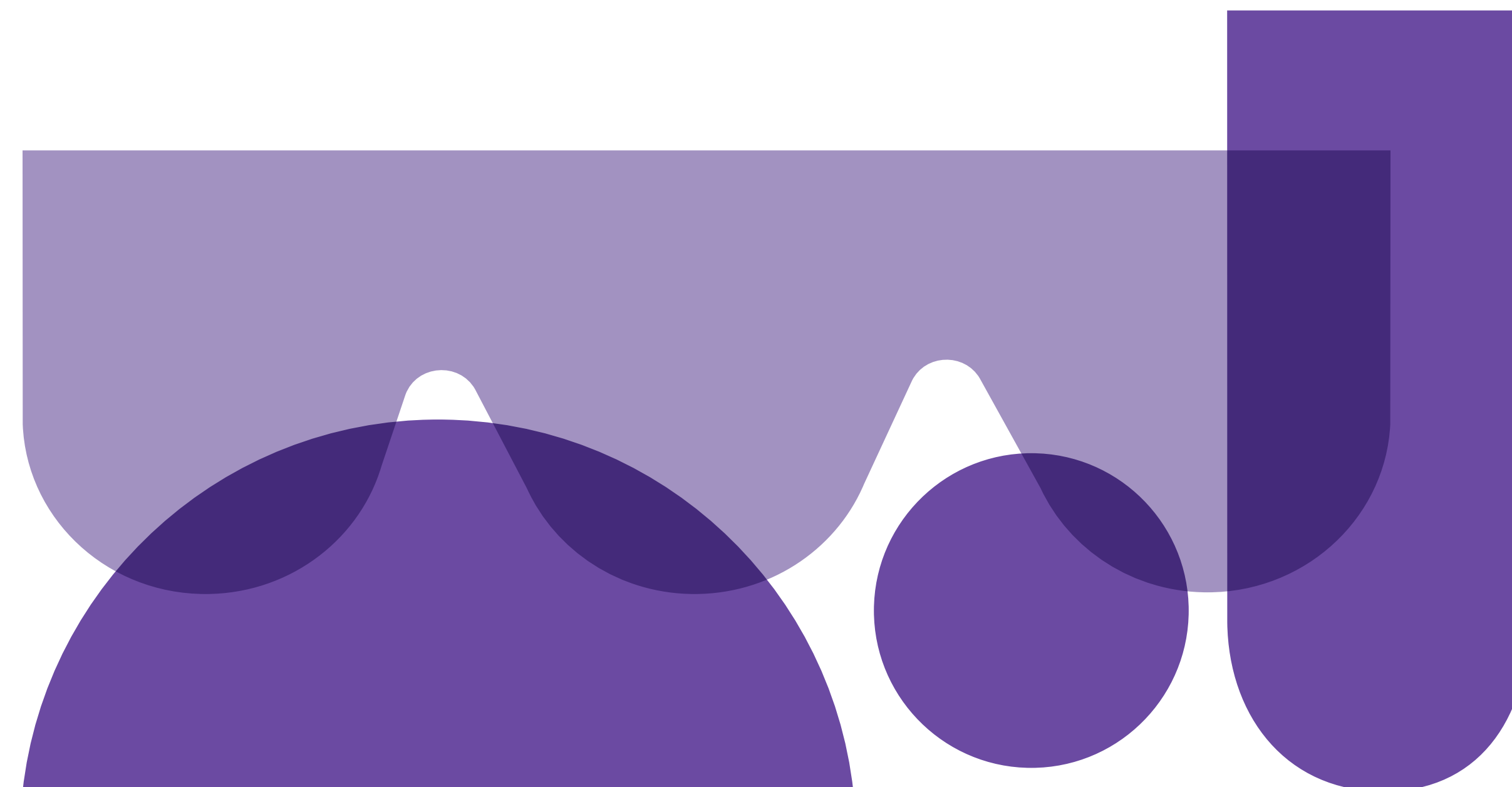
Advances in technology around data collection and management offer more diverse and potentially cheaper possibilities to implement such strategies. While this reduces the cost of accessing data-driven technologies, the abundance and velocity of data poses new challenges for museums and requires new skills and strategies for digital knowledge management. This requires trained personnel, external advice and appropriate equipment in museums.

4. The importance of data protection

Legal requirements pose challenges for museums in the field of digital audience measurement. Museums must be aware of and comply with the General Data Protection Regulation (GDPR). This regulation states that museums, like other organisations, have a duty to collect only useful data and avoid storing extraneous information. This requires an intentional data strategy and should be driven by senior leaders in the museum to gain organisation-wide alignment and adoption.³⁸

5. Data protection in the wake of AI

New developments in the field of AI, some of which are closely linked to digital data collection, must be considered carefully, as they can raise ethical concerns, particularly regarding data protection, copyright, and energy consumption. New regulations such as the EU AI Act³⁹ will undoubtedly continue to play a large role in the way digital audience data is collected, managed and interpreted moving forward.



References

6. **Agostino, Deborah, and Chiara Costantini.** “A measurement framework for assessing the digital transformation of cultural institutions: the Italian case”. *Meditari Accountancy Research*, vol. 30, no. 4 (2022): 1141–68.
7. **Anderson, Susan.** “Visitor and audience research in museums”. *The Routledge Handbook of Museums, Media and Communication*, 2019, edited by Kirsten Drotner, Vince Dziekan, Ross Parry and Kim Christian Schrøder, 1st edn. Abingdon, Oxon: Routledge.
8. **Bakhshi, Hasan, and David Throsby.** “New technologies in cultural institutions: Theory, evidence and policy implications”. *International Journal of Cultural Policy*, vol. 18, no. 2 (2012): 205–22; <https://doi.org/10.1080/10286632.2011.587878>
9. **Camarero, Carmen, María-José Garrido and Rebecca San José.** “What works in Facebook content versus relational communication: A study of their effectiveness in the context of museums”. *International Journal of Human-Computer Interaction*, vol. 34, no. 12 (2018): 1119–34; <https://doi.org/10.1080/10447318.2017.1418475>
10. **Capriotti, Paul, Carmen Carretón and Antonio Castillo.** “Testing the level of interactivity of institutional websites: From museums 1.0 to museums 2.0”. *International Journal of Information Management*, vol. 36, no. 1 (2016): 97–104.
11. **Capriotti, Paul, and José-Carlos Losada-Díaz.** “Facebook as a dialogic communication tool at the most visited museums of the world”. *El Profesional de la Información*, vol. 27, no. 3 (2018): 642–50.
12. **Catalani, Martino, and Federico Borreani.** “Audience Measurement in the digital era”, NEMO Working Group Digital Transformation and BAM! Strategie Culturali (2023).
13. **Cerquetti, Mara.** “More is better! Current issues and challenges for museum audience development: A literature review”. *ENCATC Journal of Cultural Management & Policy*, vol. 6, no. 1 (2016): 30–95.
14. **Cesário, Vanessa, António Coelho and Valentina Nisi.** “‘This Is Nice but That Is Childish’: Teenagers Evaluate Museum-Based Digital Experiences Developed by Cultural Heritage Professionals”. Extended abstracts of the Annual Symposium on Computer-Human Interaction in Play Companion, 2019, pp. 159–69.
15. **Cotter, Katherine N., Anna Fekete and Paul J. Silvia.** “Why do people visit art museums? Examining visitor motivations and visit outcomes”. *Empirical Studies of the Arts*, vol. 40, no. 2 (2022): 275–95; <https://doi.org/10.1177/02762374211011740>
16. **Dewalska-Opitek, Anna, Katarzyna Bilińska-Reformat and Marek Cierpiat-Wolan.** “The Application of the Soft Modeling Method to Evaluate Changes in Customer Behavior towards e-Commerce in the Time of the Global COVID-19 Pandemic”. *Risks*, vol. 10, no. 3 (2022): 62; <https://doi.org/10.3390/risks10030062>
17. **Falk, John H.** “An identity-centered approach to understanding museum learning”. *Curator: The Museum Journal*, vol. 49, no. 2 (2006): 151–66; <https://doi.org/10.1111/j.2151-6952.2006.tb00209.x>
18. **Falk, John H.** “Viewing art museum visitors through the lens of identity”. *Visual Arts Research*, vol. 34, no. 2 (2008): 25–34.
19. **Giannini, Tula, and Jonathan P. Bowen.** “Museums and Digital Culture: From Reality to Digitality in the Age of COVID-19”. *Heritage*, vol. 5, no. 1 (2022): 192–214.
20. **Landi, Barbara, and Anna Maria Marras.** “Musei e digitale. L’impatto della pandemia tra criticità e opportunità”. *Next Generation Culture. Tecnologie digitali e linguaggi immersivi per nuovi pubblici della cultura*, Rapporto Civita, 2021, pp. 23–49.
21. **Larkin, Jamie, Andrea Ballatore and Ekaterina Mityurova.** “Museums, COVID-19 and the pivot to social media”. *Curator*, vol. 66, no. 4 (2023): 629–46.
22. **Mason, Marco.** “The Contribution of Design Thinking to Museum Digital Transformation in Post-Pandemic Times”. *Multimodal Technologies and Interaction*, vol. 6, no. 9 (2022): 79.
23. **Morse, Christopher, Blandine Landau, Carine Lallemand, Lars Wieneke and Vincent Koenig.** “From #MuseumAtHome to #AtHomeAtTheMuseum: Digital Museums and Dialogical Engagement Beyond the COVID-19 Pandemic”. *ACM Journal on Computing and Cultural Heritage*, vol. 15, no. 2 (2022): 1–29.

24. **Murphy, Oonagh.** “Power, Data and Control”. *AI in Museums*, 2023; <https://doi.org/10.1515/9783839467107-008>
25. **Network of European Museum Organisations – Nemo** ((ed.). “Follow-up survey on the Impact of the COVID-19 pandemic on museums in Europe. Final Report”, 2021; https://www.ne-mo.org/fileadmin/Dateien/public/NEMO_documents/NEMO_COVID19_FollowUpReport_11.1.2021.pdf
26. **Nikolaou, Polina.** “Museums and the Post-Digital: Revisiting Challenges in the Digital Transformation of Museums. *Heritage*, vol. 7, no. 3 (2024): 1784–1800.
27. **Nuccio, Massimiliano, and Enrico Bertacchini.** “Data-driven arts and cultural organizations: opportunity or chimera?” *European Planning Studies*, vol. 30, no. 9 (2022): 1638–55; <https://doi.org/10.1080/09654313.2021.1916443>
28. **Pagano, Alfonsina, Eva Pietroni, Daniele Ferdani and Enzo d’Annibale.** “User eXperience (UX) Evaluation for MR Cultural Applications: The CEMEC Holographic Showcases in European Museums”. *Applied System Innovation*, vol. 4, no. 4 (2021): 92; <https://doi.org/10.3390/asi4040092>
29. **Parry, Ross and Vince Dziekan.** “Critical Digital: Museums and their Postdigital Circumstance”. *Art, Museums and Digital Cultures – Rethinking Change*, edited by Helena Barranha and Joana Simões Henriques, Lisbon: Universidade NOVA de Lisboa, 2021, pp. 16–26.
30. **Price, Kati, and Dafydd James.** “Structuring for Digital Success: A Global Survey of How Museums and Other Cultural Organizations Resource, Fund, and Structure Their Digital Teams and Activity”. *MW18: Museums and the Web 2018*; <https://mw18.mwconf.org/paper/structuring-for-digital-success-a-global-survey-of-how-museums-and-other-cultural-organisations-resource-fund-and-structure-their-digital-teams-and-activity/>
31. **Romolini, Alberto, Silvia Fissi and Elena Gori.** “Visitors engagement and social media in museums: Evidence from Italy”. *International Journal of Digital Culture and Electronic Tourism*, vol. 3, no. 1 (2020): 36–53.
32. **Rose, Susan, Moira Clark, Phillip Samouel and Neil Hair.** “Online Customer Experience in e-Retailing: An empirical model of Antecedents and Outcomes”. *Journal of Retailing*, vol. 88, no. 2 (2012): 308–22; <https://doi.org/10.1016/j.jretai.2012.03.001>
33. **Runnel, Pille, and Pille Pruulmann-Vengerfeldt** (eds.). *Democratising the Museum. Reflections on Participating Technologies*. Berlin: Peter Lang Verlag, 2014; <https://doi.org/10.3726/978-3-653-03972-6>
34. **Simon, Nina.** *The Participatory Museum*. Santa Cruz: Museum 2.0, 2010.
35. **Suzić, Bojana, Miroslav Karliček and Václav Strítěský.** “Social Media Engagement of Berlin and Prague Museums”. *The Journal of Arts Management, Law, and Society*, vol. 46, no. 2 (2016): 73–87.
36. **Suzić, Bojana, Miroslav Karliček and Václav Strítěský.** “Adoption of Social Media for Public Relations by Museums”. *Central European Business Review*, vol. 5, no. 2 (2016): 5–16.
37. **Vert, Silviu, Diana Andone, Andrei Ternauciuc, Vlad Mihaescu, Oana Rotaru, Muguras Mocofan, Ciprian Orhei and Radu Vasii.** “User Evaluation of a Multi-Platform Digital Storytelling Concept for Cultural Heritage”. *MDPI Mathematics*, vol. 9, no. 21 (2021): 2678; <https://doi.org/10.3390/math9212678>
38. **Vikmane, Elina.** “Advancing Cybermuseumology: Diffusion of Digital Innovation in Latvia’s Museum Sector”, doctoral degree (PhD), 2023; 10.13140/RG.2.2.28165.32487
39. **Villaespesa, Elena, and Ana Álvarez.** “Visitor journey mapping at the Museo Nacional Thyssen-Bornemisza: bringing cross-departmental collaboration to build a holistic and integrated visitor experience”, *Museum Management and Curatorship*, vol. 35, no. 2 (2019): 125–42; <https://doi.org/10.1080/09647775.2019.1638821>
40. **Villaespesa, Elena, and John Stack.** “Finding the motivation behind a click: Definition and implementation of a website audience segmentation”. Annual conference of Museums and the Web, Chicago, USA, April 2015; <https://mw2015.museumsandtheweb.com/paper/finding-the-motivation-behind-a-click-definition-and-implementation-of-a-website-audience-segmentation/>
41. **Zuanni, Chiara.** “Museum connections during the COVID-19 pandemic”. *Archeostorie. Journal of Public Archaeology* (AJPA), vol. 4 (2022): 63–72.

Further reading

NEMO Working Group Digital Transformation and BAM! Strategie Culturali (2023): “Audience Measurement in the digital era”

This report was developed by the NEMO Working Group Digital Transformation in conjunction with BAM! Strategie Culturali and formed the basis of our paper. The report was published in 2023 and can be found [here](#)

Endnotes

- 1 Follow-up survey on the impact of the Covid-19 pandemic on museums in Europe, 2021, p. 4.
- 2 Ibid., p. 5.
- 3 Martino Catalani and Federico Borreani, “Audience Measurement in the digital era”, 2023. See the Further Reading section of this paper for a link to the text.
- 4 Cotter K. N. et. al.
- 5 Polina Nikolaou, “Museums and the Post-Digital: Revisiting Challenges in the Digital Transformation of Museums”, *Heritage*, vol. 7, no. 3 (2024): 1787-88.
- 6 Follow-up survey (see note 1).
- 7 Ibid., p. 5
- 8 Chiara Zuanni, “Museum connections during the COVID-19 pandemic”, *Archeostorie. Journal of Public Archaeology* (AJPA), vol. 4 (2022): 70.
- 9 Ross Parry and Vince Dziekan, “Critical Digital: Museums and their Postdigital Circumstance”, in H. Barranha and J. S. Henriques (eds.), *Art, Museums and Digital Cultures – Rethinking Change* (2021), p. 16. Dziekan is a Senior Academic and Practitioner-Researcher at Monash Art Design & Architecture (MADA), Monash University, Australia. Parry is Professor of Museum Studies at the University of Leicester, United Kingdom.
- 10 Nicolaou, “Museums and the Post-Digital” (see note 5): 1788.
- 11 M. Nuccio and E. Bertacchini, “Data-driven arts and cultural organizations: opportunity or chimera?”, *European Planning Studies*, vol. 30, no. 9 (2022): p. 1643.
- 12 “Digital Audience as an Element of a Digital Strategy of Cultural Institutions”, 2022, pp. 6–7. Pöllmann is Professor for Media and Event Management at Media University in Berlin.
- 13 Pille Runnel, Krista Lepik and Pille Pruulmann-Vengerfeldt, “Visitors, Users, Audiences: Conceptualising People in the Museum”, in Pille Runnel and Pille Pruulmann-Vengerfeldt (eds.), *Democratising the Museum. Reflections on Participatory Technologies*, 2014, p. 223.
- 14 Ibid.
- 15 Elena Villaespesa and Ana Álvarez, “Visitor journey mapping at the Museo Nacional Thyssen-Bornemisza: bringing cross-departmental collaboration to build a holistic and integrated visitor experience”, *Museum Management and Curatorship*, vol. 35, no. 2 (2019): 130.
- 16 Ibid., p. 139.
- 17 Susan Anderson, “Visitor and audience research in museums”, in Kirsten Drotner, Vince Dziekan, Ross Parry and Kim Christian Schrøder (eds.), *The Routledge Handbook of Museums, Media and Communication*, 2019, p. 92.
- 18 *Future Art Ecosystems*. Vol. 2. *Art x Metaverse*, 2021, p. 111; https://futureartecosystems.org/FAE2_ArtxMetaverse_digital.pdf
- 19 Nina Simon, *The Participatory Museum*, 2010, chapters 6 to 9; <https://participatorymuseum.org/read/> Simon’s engagement models have played a pivotal role globally in the development of user-centric practices in museums. Her model includes four categories: Contributing to Museums: where users provide limited and specified objects, actions or ideas to an institutionally controlled process; Collaborating with Visitors: where users are invited to serve as active partners in the creation of institutional projects that are originated and ultimately controlled by the organisation; Co-Creating with Visitors: where community members work together with institutional staff members from the beginning to define the project’s goals and process based on community interests; Hosting Participants: where users appropriate institutional content or resources for their own uses.

- 20 Elena Villaespesa and John Stack, “Finding the motivation behind a click: Definition and implementation of a website audience segmentation”, presented at the annual conference of Museums and the Web, in Chicago, April 2015.
- 21 *ibid.*
- 22 Alberto Romolini et al., “Visitors’ engagement and social media in museums: evidence from Italy”, *International Journal of Digital Culture and Electronic Tourism*, vol. 3, no. 1 (2020): 39.
- 23 *Ibid.*, p. 48.
- 24 *Ibid.*, p. 49.
- 25 A. Pagano, E. Pietroni, D. Ferdani and E. d’Annibale, “User eXperience (UX) Evaluation for MR Cultural Applications: The CEMEC Holographic Showcases in European Museums”. *Applied System Innovation*, vol. 4, no. 4 (2021): 92; <https://doi.org/10.3390/asi4040092>.
- 26 V. Cesário, A. Coelho and V. Nisi, “‘This Is Nice but That Is Childish’: Teenagers Evaluate Museum-Based Digital Experiences Developed by Cultural Heritage Professionals”, research article presented at the conference Chi Play ’19, Barcelona, 2019.
- 27 S. Vert, D. Andone, A. Ternauciuc, V. Mihaescu, O. Rotaru, M. Mocofan, C. Orhei and R. Vasiu, “User Evaluation of a Multi-Platform Digital Storytelling Concept for Cultural Heritage”, *MDPI Mathematics*, vol. 9, no. 21 (2021): 2; <https://doi.org/10.3390/math9212678>
- 28 *Ibid.*, pp. 10–11.
- 29 *Ibid.*, p. 20.
- 30 Susan Anderson, “Visitor and audience research in museums”, in Kirsten Drotner, Vince Dziekan, Ross Parry and Kim Christian Schrøder (eds.), *The Routledge Handbook of Museums, Media and Communication*, 2019, p. 91.
- 31 Martino Catalani and Federico Borreani, “Audience Measurement in the digital era, 2023. See the Further Reading section at the end of this paper for a link to this paper.
- 32 D. Agostino and C. Costantini, “A measurement framework for assessing the digital transformation of cultural institutions: the Italian case”, *Meditari Accountancy Research*, vol. 30, no. 4 (2022): 1141–68, here p. 1144; DOI: [10.1108/MEDAR-02-2021-1207](https://doi.org/10.1108/MEDAR-02-2021-1207).
- 33 *Ibid.*, p. 1149.
- 34 *Future Art Ecosystems* (see note 19), pp. 38–39.
- 35 K. Price and D. James, “Structuring for Digital Success: A Global Survey of How Museums and Other Cultural Organizations Resource, Fund, and Structure Their Digital Teams and Activity”, *MW18: Museums and the Web 2018*; <https://mw18.mwconf.org/paper/structuring-for-digital-success-a-global-survey-of-how-museums-and-other-cultural-organisations-resource-fund-and-structure-their-digital-teams-and-activity/>
- 36 Nuccio and Bertacchini (see note 12), p. 1641.
- 37 Established digital data collection strategies – championed by senior leaders – are necessary for continual monitoring and evaluation of the wider digital audience ecosystem. New initiatives, such as the Art Fund (UK) report on the digital impact of museums, highlight ways in which funders can better consider these challenges and support museums to develop more integrated digital audience strategies into their practice.
- 38 This report provides the framework to create data collection strategies within an organisation, as they are often an important first step in developing a shared understanding across an organisation about how to measure audiences effectively and meaningfully. Furthermore, tools such as the Data Ethics Canvas, developed by the Open Data Institute (<https://www.theodi.org/article/the-data-ethics-canvas-2021>) can be used as a framework to support museum professionals as they navigate the broader ethical context of digital data collection and management.
- 39 <https://www.europarl.europa.eu/topics/en/article/20230601STO93804/eu-ai-act-first-regulation-on-artificial-intelligence>

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