

Digital technologies as shaping the visitor experience

A qualitative research on museum experts' views

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ABSTRACT

In the context of the digital revolution, the use of digital technologies within the cultural field is increasing rapidly. Museums have opened their doors to visitors after a closure due to the global pandemic, all while emerging technologies such as AI and Machine Learning are gaining prominence across sectors, including museums. At the same time, ICOM's museum definition has also undergone a transformation, with a renewed definition in 2022 highlighting the importance of visitor experiences in museums. To gain a better understanding of the use of digital technologies and museum experiences during this transitional phase, this thesis aimed to generate new knowledge on how museum professionals view the use of digital technologies in their exhibitions as facilitators of audience-centric experiences. Ideally, the purpose was to include countries that have incorporated digital technologies into their exhibitions. Thus, this thesis conducted in-depth interviews with museum professionals from the countries of Finland and the Netherlands. To further guide the research, this thesis proposed the following research question: *How do museum experts perceive the role of digital technologies in supporting museums with delivering audience-centric visitor experience?*

Based on the empirical data generated through the in-depth interviews, the thesis conducted a thematic analysis, resulting in significant findings in the ways museum professionals view digital technologies. While the adoption of audience centrism is not a linear shift, the experts highlighted several ways technologies support visitor experiences. The Netherlands and Finland had overlap in the expert views, however, some discrepancies were also found. Experts from both countries are interested in ways to facilitate active participation, virtual museum spaces and personalised experiences. The Dutch experts were more receptive towards allowing the visitor to hold more power within the exhibitions, mainly by increasing autonomy in the creation of their museum experiences. Meanwhile, the Finnish experts emphasised the opportunities digital technologies have for more diverse storytelling strategies. From the interviews with Dutch experts, the collection and use of visitor data also surfaced, which has been concluded as one of the areas for further research. Considering the research question, it was found that museum experts in Finland and the Netherlands have diverse expectations for digital technologies. This means that positive outlooks on the use of technologies have been expressed, with many case examples, however, it was also emphasised that digital technologies should always be incorporated with a specific purpose in mind.

KEYWORDS: Museums, audience centrism, digital technologies, museum exhibitions, in-depth interviews

Preface

With concluding this chapter of writing a master's thesis, it is worth reflecting on the insights learned about museum exhibitions and the nuances digital technologies bring to exhibition design. Importantly, I want to acknowledge the interviewees who took part in this research and shared their thoughts and expertise with me. Without their contribution, this research would not have been possible.

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1. Introduction

In August 2022, the Extraordinary General Assembly of International Council of Museums (ICOM) approved a new museum definition which highlights the changing role of museums, particularly the themes of inclusivity, community participation and sustainability (International Council of Museums, 2022). To illustrate, the new definition emphasises the changing visitor experience, including that museums offer “... varied experiences for education, enjoyment, reflection and knowledge sharing...” (International Council of Museums, n.d, n/a). The previous definition was published in 2007, suggesting that the idea of what constitutes a museum is constantly changing, which can partially be alluded to the rise of digital technologies (Camps-Ortueta et al., 2021). Consequently, the traditional boundaries of the museum and the curated visitor experience are shifting towards more audience-centric cultural experiences (Camps-Ortueta et al., 2021; Nielsen, 2017).

1.1 Societal relevance

Throughout the 2000s and 2010s, technological transformations have continued to grow in prevalence in the broader society, also reflected in the cultural sector, where museums are continuing to adopt them as a way to ensure their relevance (Camps-Ortueta et al., 2021; Giannini & Bowen, 2022). The advances digital technologies will have in the museum sector are brought by the connectedness of museums in the broader digital landscape, which has once again been predicted to transform by the fourth digital revolution, involving technologies such as AI and machine learning (Giannini & Bowen, 2022).

In past years, museums have been going through a modernisation process, which sustains new ways of exhibiting collections and engaging visitors (Camps-Ortueta et al., 2021). While digital technologies are fast becoming a key instrument in the delivery of museum exhibition experiences, many museums have not formulated wider policies surrounding them (Shehade & Stylianou-Lambert, 2020; Marini & Agostino, 2022). Therefore, focusing on two regions, the Netherlands and Finland, may reveal international differences in how digital technologies have infiltrated to the digital strategies within the museum sector. Moreover, examining museum professionals’ perceptions and attitudes (Ross, 2004), this research attempts to bridge the gap between both the institutional motivations for adopting digital technologies and what visitors may expect from museums in the future. Thereby, on a wider societal level, these subjective insights may help understand how ICOM’s recent museum definition manifests in the current day.

1.2 Academic relevance

The discourse surrounding digital technologies in museums, as both operational and exhibition tools, has been discussed by scholars such as Anderson (1999) already for more than two decades. While there is an extensive amount of previous scholarly work focusing on the rise of digital technologies in museums, much of them focuses on either perceived visitor experiences or case-study research examining how emerging technologies have been applied. Yet, there is much less information about how museums perceive the rise of digital technologies. Arguably, with the changes brought by digitalisation, it is now a necessity for museums to incorporate new forms of services and technology (Levä, 2013). Thus, from an economic standpoint, museums are expected to make use of audience centrism to succeed in the future (Levä, 2013). Concurrently, some scholars argue against holding the standards of the economic marketplace for museums (Janes, 2010). Whether digital technologies reinforce the commercialisation of the museum (Levä, 2013) or help improve museums as socially responsible entities (Janes, 2010), conducting expert interviews can help resolve the confusion surrounding the topic of adopting digital technologies into museum exhibitions.

1.3 Research question

To research the institutional perspective on how digital technologies support the delivery of audience-centric experiences, the following question is presented: How do museum experts perceive the role of digital technologies in supporting museums with delivering audience-centric visitor experience? Composing the analysis into three parts, the research will be further guided by the following sub-questions:

1. How do museum experts perceive the role of digital technologies within museum exhibition spaces in supporting audience-centric visitor experience?
2. How do the perceptions of digital technologies supporting museums with delivering audience-centric experiences vary between Dutch and Finnish museum experts?

2. Theoretical Framework

2.1 Museums in transition

Throughout history, museums have undergone shifts in both their ways of exhibiting and their relationship with their visitors. Considering the changes brought by developing technologies in the 1900s, The New Museology of the 1980s or the increasing popularity of participation at the beginning of the 2000s (Derda, 2023), the museum visitor experience has been in a steady transition. Since its foundation in the mid-1900s, it has been a central part of ICOM's mission to provide a standard museum definition (Soares, 2020), that in effect was not rarely influencing public policies across the world. However, the museum definition provided by ICOM can be considered "a work in progress" (p. 21): as museums are constantly developing, the organisation also expects the definition to be continuously renewed (Soares, 2020). Entering the digital era, ICOM's 2022 definition underlines the participatory and varied experiences museums can be considered to foster. While audience centrism is a key strategy in other businesses, it can still be considered a new concept for museums, which is much influenced by the increasing prevalence of digital technologies. (Agostino & Arnaboldi, 2021).

Prior to the introduction of digital technologies into exhibition spaces, museums followed what Russo and Watkins (2005) refer to as the modernist museum model. Within the modernist programme, museums, along with institutions such as libraries and art galleries, exhibition design was driven by an institutional agenda (Russo & Watkins, 2005). Museums were striving to present their exhibitions within specific frameworks, in most cases were scientific: exhibitions focused on presenting the facts to the audiences, while leaving minimal room for interpretation (Russo & Watkins, 2005). Similarly, Derda (2023) notes that this approach can also be referred to as structured enquiry, which characterises more impersonal, exclusive, and non-inspirational ways of exhibiting. Today, the curatorial-oriented approach is reaching a turning point within museums. Arguably, museums and cultural institutions are deviating from curatorial authority to a more visitor-centred approach, which means that the visitor transforms from passive observing towards active participation (Derda, 2023; Marini & Agostino, 2022). However, as the role of the visitor in the museum is shifting, so is the role of the curator. As noted by Hogarth (2017), traditionally, curatorial work can be considered to reinforce hierarchical structures: from this perspective, the visitor is the recipient while the curator specialised expert.

Shifting towards what the authors describe as post-institution, new media became the catalyst for museums for the active participation of the visitors (Russo & Watkins, 2005). According to a definition provided by tom Dieck et al. (2018), active participation encompasses a situation when the audience members personally affect the event. On the contrary, passive participation refers

to situations where the audience do not directly influence the event in question (tom Dieck et al., 2018). Moreover, stemming from broader cultural changes in the 20th century, museums and cultural institutions developed into what are now referred to as “digital social museums” (Más & Monfort, 2021, p. 21). This suggests that museum experiences are to a large extent built upon social interactions, which are now largely managed through digital technologies (Coffee, 2007; Más & Monfort, 2021). For this thesis, the concept of the digital social museum can help understand the ways of managing the museum exhibition, particularly highlighting themes such as the visitors as unique individuals, curator as ‘a community manager’, personalised visitor experiences and mapping the visitor experiences through digital technologies (Más & Monfort, 2021).

2.2 Museums and digital technologies

Much of the scholarly literature that has been written on museums and digital technologies supports the view that digital technologies have to a large extent transformed the museum experience. Already over 20 years ago, Anderson (1999) pointed to some of the ways new media and digital technologies impact museum practices and thereby the museum experience. Specifically, the author stated that the adoption of digital technologies can help museums “harness their collective potential” (Anderson, 1999, p. 160) and thus better fulfil their responsibilities as servers of communities and broader society (International Council of Museums, 2022). Anderson’s (1999) work is complemented by Más and Monfort’s (2021) research, in which they argue that digital technologies can improve museums’ activities, referring to the museological responsibilities, as well as the relationship between museums and their visitors, which can now be characterised as more interactive and participatory experiences (Más & Monfort, 2021).

In the contemporary context, museums utilise digital technologies to the extent to which their physical and digital presence is often considered equally important (Wyman et al., 2011). The core strengths and values of museums, namely the aspects of collection, content and storytelling, can now materialise anywhere without being tied to a physical space (Wyman et al., 2011). For example, the idea of a “museum without walls”, illustrates how the use of digital and mobile technologies has given rise to the idea of virtual museums (Arvanitis, 2010).

2.3 Museums in Finland and the Netherlands

2.3.1 Museum sector in Finland

The following sections will provide an overview of the museum sectors in Finland and the Netherlands, providing the premises for the comparative analysis of these two countries. According to The Finnish Heritage Agency, which is a governing organisation for the museum sector operating under the Finnish Ministry of Education and Culture, there are over 300 museums, including both professional and non-professional museums (The Finnish Heritage Agency, n.d.). In Finland, there are both professional museums and non-professional museums, which often managed by non-profit organisations and are often only open to visitors seasonally (The Finnish Heritage Agency, n.d). Many of these are local history museums that are only open during the summer months. While there are local museums throughout different regions in Finland, known local museums include sites such as Ainola (The home of Aino and Jean Sibelius) and Lepikon torppa (The birthplace of a former Finnish president Urho Kekkonen).

In Finland, the use of digital technologies is commonly associated with pedagogical objectives. While digital technologies have continued to gain more prominence in scholarly and industry discussions, they are often approached from the perspective of digital games and gamification. For example, the role of digital games in museums was further examined by Naskali et al. (2013), who mapped out an overview of how digital gaming has been employed in museum exhibitions. From a strategic perspective, museums have reportedly employed digital games as promotional tools, to attract audiences that do not usually visit the museum (Naskali et al., 2013).

Since then, the collaboration between museums and the game industry has continued through projects such the Stories to Games, which is an initiative by the Finnish Museum Association (FMA). According to the project's report, audiences' expectations for digital technologies have increased, meaning that museums should ensure that they appeal to both experienced and new visitors (Kinanen, 2019). In fact, the Finnish public broadcaster Yle reported that museum visitors are no longer as interested in reading long descriptions at the exhibition (Parkkinen, 2016). Today, digital games and extended reality have gained such prominence in industry practices, that museums and cultural heritage institutions are expected to adopt these technologies: digital technologies are used to not only reach new audiences but also to find alternative storytelling strategies (Kinanen, 2019). In particular, the national visitor survey conducted by FMA revealed that tactile and sensory experiences, more information, as well as virtual and digital technologies are particularly expected among younger museum audiences (Holm & Tyynilä, 2021). As suggested by Levä (2023), the museum can be considered now to be taking their next phase in using digital technologies within museum exhibitions. Instead of replacing physical exhibitions into a virtual format, museums want to utilise the strengths of digital technologies in their exhibitions (Levä, 2023).

2.3.2 Museum sector in the Netherlands

Examining the Dutch museum sector, Statistics Netherlands (2022) reported 629 museums in the Netherlands in 2021. Over the years, the number of museums in the Netherlands has steadily increased, at around 4.7% rate since 2015 (Statistics Netherlands, 2022). In terms of funding, Dutch museums are primarily state-funded (Statistics Netherlands, 2022), however, just under half also receive municipal subsidies (Dutch Museum Association, 2022). This also varies across the provinces, as in certain regions in the Netherlands, the museums may also primarily receive private funding (Dutch Museum Association, 2022).

Dutch museums can be considered early adopters of digital technology in their exhibitions. For instance, in 2012, the national museum of the Netherlands (Rijksmuseum) digitally opened its entire collection to the public as the first museum in the world (Rijksmuseum, 2021). The same year, the museum also released an AR application, which Vermeeren et al. (2018) describe as elevating visitor engagement and active participation. As noted in the report by the Dutch Museum Association (2010), the constant changes and development in society also impact the museum sector in the Netherlands. As predicted in the report, the boundaries between knowledge managers and users would be shifting towards “new forms of co-makership” (Dutch Museum Association, 2010, p. 12), or to what Vermeeren et al. (2018) refer to as increased visitor agency and creative intention of the audiences. Much of this change is prompted by the digital revolution, which then translates to digital and virtual exhibition productions (Dutch Museum Association, 2010).

In the context of assessing the impact Dutch museums experienced during the Covid-19 pandemic, Tissen (2021) found that digitised collections and interactive digital technologies have shifted the museum experience towards more individualistic ways of engaging. For example, collections are transformed into digital formats, local participation over global audiences is strived for and audiences’ museum experiences continue shifting from passive towards active and personalised interactions (Tissen, 2021). Collecting empirical data on the views of museum professionals can provide new insights into not only how the museums experienced the digital transformation during the pandemic, but also the ways they are moving forward.

2.4 Conceptual Framework

The research utilises the conceptual tools that operate two levels, namely:

- (1) Regarding exhibitions as a product, this study makes use of the Entertainment Architecture Framework (‘Entarch’), which offers an institutional perspective into understanding how different factors elements contribute to a coherent product (Konzal, 2012). In relation to museums, the coherent final product would refer to the museum exhibition offered to the visitors.
- (2) To further complement the framework, the notions of the Uses and Gratifications Theory

(‘U>’) will be employed to expand the study to a consumer level. What Vishwanath et al., (2018) point out, the U> theory takes an audience-centric approach, focusing on how media (and technologies) gratify individuals. The theory is also regarded as effective for understanding why certain media are integrated in institutions (Katz et al., 1973).

To apply these frameworks for better understanding how museum professionals perceive digital technologies to promote audience-centric visitor experiences, the premise of audience centrism will also be explained. This is important, as the concept helps the operationalisation of the conceptual frameworks. For example, certain visitor gratifications can be better understood in the context of museum exhibitions.

2.4.1 Audience centrism

As discussed in the previous section, museums need to be seen as institutions undergoing continuous changes. Consequently, visitors’ experiences are also shifting: instead of strictly presenting curatorially mediated exhibitions, museums are working towards audience-centric ways of working. In prior scholarly discussion, it has been noted that museum innovations, such as the adoption of an audience-centric approach to museums, if not fully prompted, is at the minimum amplified by digital technologies (Cerquetti, 2016).

As audience-centric, also commonly referred to as visitor-centric, approaches may vary depending on the sector, it is necessary to be explicit about what is meant by it within the context of museum exhibitions. According to Samis and Michaelson (2016), audience-centrism entails that the collections and visitor experiences are placed in equal importance. This approach highlights the shift from museums strictly focusing on subject expertise towards museums caring about the visitor experiences and forms of engaging with the exhibition (Samis & Michaelson, 2016). This definition is close to that of Cerquetti (2016), who defines a visitor-centric approach to encompass museums’ strategic efforts to deliver experiences for their specific audiences, rather than the museum solely focusing on their collections. From this perspective, attention is paid to the ways in which museums are relevant and valuable to the visitors, a strategy that Simon (2010) refers to as personalised entry points. At the same time, Cerquetti (2016) also highlights that through audience-centrism, museums are identifying the needs, interests, and perspectives of their audiences, such as aspects of learning, enjoyment and sociality. As Simon (2010) reminds us, the next step in audience-centrism is to respond to the visitor’s different interests. Consequently, the visitor experience is transforming from passive observation towards active participation, which can be characterised through the modes of co-creation and co-production (Marini & Agostino, 2022; Derda, 2023), which are related to the

interactive encounter between the museum and the visitor, through which the visitors contribute value to the cultural experience (Marini & Agostino, 2022). As noted by Marini and Agostino (2022), digital technologies can be considered “enablers of value co-creation” (p. 601) within museum exhibitions, which will be elaborated further in the next sections of the theoretical framework.

2.4.2 Uses and Gratification Theory

Given the wide range of digital technologies that museums employ, visitor experiences should also be considered from the perspective of Uses and Gratification Theory (U>). The U> can be useful for identifying and characterising the type of gratifications the museums want to evoke their visitors, which on the other hand can help understand the underlying motivations for using certain type of technologies. Moreover, U> can be considered a supporting framework for studying audience-centrism, as it can provide detailed illustrations on the feelings and experiences provided for the visitor.

Stemming from the field of media and communication studies, U> has been used to research the question of why people use particular media (Rauschnabel, 2018). The theory carries certain assumptions, including audiences to behave in a goal-oriented manner and that their media selection and consumption fulfils certain social and psychological needs (Rauschnabel, 2018; Katz et al., 1973; Vishwanath et al., 2018). In the past, U> focused on more traditional forms of mass media, such as radio, television, newspapers, books, and film (Katz et al., 1973) however scholars have since expanded the theory to examine newer forms of media, including social media (Whiting & Williams, 2013). Noted by Rauschnabel (2018), the use of U> has also expanded researchers to study innovative services, devices, and technologies, for example, AR and VR technologies. U> encompasses the way in which individuals seek a type of media that fulfils their specific needs, leading to a state of gratification (Whiting & Williams, 2013). Importantly, different types of media satisfy different needs (Katz et al., 1973): for example, VR technologies may evoke feelings of sensual gratification through immersive experiences, while audio guides may on the other hand hold a more utilitarian role in educating the visitor.

From the U> perspective, there are specific types of gratifications that the museums are aiming to address through the use of digital technologies, social interaction, information seeking, and entertainment are listed as examples of gratification themes (Palmgreen & Rayburn, 1979; Whiting & Williams, 2013). According to Katz et al., (1973), U> particularly allows questions in relation to how different media gratify and influence audiences, but also why they are integrated into institutions. Thus, applying this framework to the conceptual framework can give further insight into

what gratification themes the museums are mostly aiming to fulfil.

In his study, Rauschnabel, provides an overview of each set of needs and gratifications, focusing on the value creation emerging technologies provide both externally and internally, which stands for both businesses and broader society (Rauschnabel, 2018). From the perspective of external value creation, technologies in museum exhibitions can increase value for the visitors – which will be the primary focus of this study. At the same time, there is also possibility that certain technologies in the exhibitions may have been adopted for the museum to improve on their efficiency and ways of working – these would refer to the internal value creation. This research will explore the notion of whether audience-centrism is enhanced through digital technologies, referring to the external value creation, or whether the value provided remains on the internal level.

2.4.3 Entertainment Architecture Framework

Considering the continuous changes within the museum sector, this research calls for a theoretical approach that regards the co-creative infrastructure that museum exhibitions are shifting towards. For this reason, this study will make use of the Entertainment Architecture Framework ('Entarch'). As proposed by Konzal (2012), this conceptual framework is particularly useful for exploring people's perspectives that follow the emergence of new developments in a given field.

While the initial research focus was on changes in the film industry, it is also noted that this conceptual framework can be applied in other sectors (Konzal, 2012). As museums are much concerned with reaching their audiences, as other forms of entertainment products and services (Konzal, 2012), Entarch offers a useful lens for analysis. Specifically, in the context of museums, the notion of entertainment blends in together the aspects of enjoyment and knowledge (Agostino & Arnaboldi, 2021). In other words, the preservation of cultural heritage and passing of knowledge has taken new forms in museums: now the entertainment of the users is increasingly being embedded to museums' strategies – although often implicitly (Agostino & Arnaboldi, 2021). In their research, Agostino and Arnaboldi (2021) highlighted that entertainment can function as a practical tool for museums in the process of educating the public. For Addis (2005), this phenomenon can also be referred to as 'edutainment experience'. Specifically, what the concept refers to is type of content that is simultaneously entertaining as well as educational, enriched by the use of digital technologies (Addis, 2005).

The Entertainment Architecture Framework consists of four conceptual elements: story, play, dance, and glue. When combined, the four elements represent the emerging entertainment form.

Story. The first element of Entarch, *stories*, are arguably one of the prominent strategies for audience engagement. In general, museums' communication efforts focus on identifying complex contexts (Nielsen, 2017), which then need to be dissected for the visitors. As explained by Nielsen

(2017), stories allow the recipients to construct meaning, understanding and feelings.

As an extension to traditional ways of narrating, digital storytelling can be considered a natural progression towards audience-centrism. Through digital technologies, museums can enable extended storytelling opportunities which can improve the education and entertainment objectives of the digital social museum (Más & Monfort, 2021). Moreover, Dal Falco and Vassos (2017) point out that through innovative forms of storytelling, the visitors' knowledge and information sharing can be enhanced. Ideally, museums leverage digital technologies to highlight content and the visitor experience: the goal is for the technology to go rather unnoticed while the elements of storytelling are put forward (Wyman et al., 2011). The shift from the authorial display of curation has also impacted the way in which museums approach storytelling (Wyman et al., 2011). Instead of communication moving one-way, museums are increasingly facilitating conversation and interactivity among their visitors to create personalised narratives (Wyman et al., 2011).

Play. With the element of *play*, Konzal (2012) refers to playful interaction between the consumer and the overall Entertainment Architecture. With this, the author argues that without the element of interaction, the consumer does not fully experience the Entarch.

In the museum setting, there has been a rise with particularly the 'visitor-to-technology-to-exhibition content' interaction. According to Trunfio et al. (2022), by stimulating the interaction between the visitor and the content, museums are aiming to increase the visitor satisfaction. The authors also note that fostering visitor satisfaction is important to museums to encourage behavioural intentions such as loyalty and revisiting (Trunfio et al., 2022). As highlighted by Derda (2023), the key to rich interaction is to focus less on the displayed object and rather on the museums' communication with their visitors.

Dance. Within the Entarch framework, *dance* is a figurative term for sociality and collectiveness. To Konzal (2012), this element highlights the connection between both the creator of the exhibition and the audiences, as well as the connection between the audience members. In this regard, this element points out the one-to-many and one-to-one types of interactions. The connection of one-to-many in particular underlines the authoritative nature of exhibitions: as Konzal (2012) writes, the so-called "Entertainment Architect" (p. 128) is the one in the leading the process.

Glue. Referred to as *glue*, the final element of Entarch conceptualises the interconnectivity between different aspects of the overall entertainment experience (Konzal, 2012). With museums utilising a multitude of technologies, tools and platforms, the practitioners must pay attention to the thematic links between them. For Konzal (2012), this means that the users can move across media without getting lost: in fact, through the strategies of continuity, they will still perceive one aspect to contribute to the overarching museum experience.

3. Methodology

3.1 Qualitative Research Approach & Thematic Analysis

This thesis approaches the topic of digital technologies in museums from the perspective of qualitative research. The qualitative approach is adopted as it makes use of qualitative data, which according to Guest et al. (2014) refers to a range of nonnumerical data such as text and images. Considering the type of empirical data that was generated during the data collection process, namely the interview transcripts, the qualitative methodology offers an effective way to interpret the perceptions and attitudes of museum professionals. Specifically, in-depth interviews as a data collection strategy and thematic analysis as a data analysis technique will be proposed.

This thesis will make use of thematic analysis, which is an analytic method for identifying repeated patterns, also referred to as themes, within given data (Braun & Clarke, 2006). The type of thematic analysis to be used will be an inductive analysis. As explained by Braun and Clarke (2006), inductive coding is not primarily driven by theory or other pre-existing coding frames. The benefit of this approach is the notion of flexibility. In practice, this can give room for unanticipated themes or answers to be also considered within the analysis, without forcing them to a pre-determined coding frame (Nowell et al., 2017). Another advantage of thematic analysis is that it allows comparison between participants (Nowell et al., 2017). This is particularly useful, as each of the in-depth interviews have been conducted at different museums, which may have varying views on the adoption and use of digital technologies.

3.2 In-depth interviews

One of the common methodologies for assessing the topic of digital technologies within museums is the in-depth interviews. According to Johnson (2011), in-depth interviews are useful when looking to understand a phenomenon from a deeper knowledge and perspective. Therefore, approaching the topic from an institutional perspective, this methodology provides a means of exploring the views of museum experts. Research focus being on museums, in-depth interviews will be employed to seek occupational knowledge (Johnson, 2011), that help understand the institutional and organisational views and motivations for adopting digital technologies and ways they can facilitate audience-centrism. In addition, Johnson (2011) points out that in-depth interviews can also reveal multiple perspectives on the phenomenon, which is particularly useful when interviewing museums in two different countries. Following previous empirical research surrounding the topic of

digital technologies in museum spaces, an in-depth interview approach has provided detailed illustrations of the museum's perspective on the phenomenon, including studies from Ross (2004), Elgammal et al. (2020) as well as Marini and Agostino (2022).

3.3 Sampling strategy & Interviewee selection

In this section, the sampling strategy will be discussed. As the focus of the research question lies within the institutional perspective, the thesis will make use of purposeful sampling. According to Patton (2002), as cited by Suri (2011), this sampling technique is useful for research that looks for information-rich cases that are relevant to the given research question. Within the framework of purposive sampling, there are several distinct sampling techniques. For this thesis, the strategy of mixed purposeful sampling criterion has been adopted, meaning that the research has made use of criterion and snowball sampling (Suri, 2011).

Criterion sampling means that specific inclusion and exclusion criteria will be formulated and employed (Suri, 2011). Considering the proposed research question, the following criterion were followed when selecting the interviewees:

- (a) They must be currently employed at a public or private museum organisation that has past affiliation or interest with using digital technologies in their exhibition spaces or virtual activities targeted to their visitors
- (b) They must be currently employed at a public or private museum organisation based either in Finland or the Netherlands and have knowledge and/or experience in designing or managing museum exhibitions and/or activities

Next to this set criterion of the research units, the role of the interviewees within the respective museums needs to be also addressed. Noticeably, there is not one specific job title that would cover all the museum professionals that work with designing and managing museum exhibitions. Therefore, a strict criterion was not set for the specific job title for the interviewees. At the same time, it was important that the professionals were involved with the conceptualisation and planning of the exhibitions and museum activities, over the practical production of the exhibitions.

Addressing the snowball sampling, Suri (2011) notes that this technique refers to a chain of recommendations provided by previous cases, which for this research means the interviewees. Notably, this "chain of recommended informants" (Suri, 2011, p. 69) was first established with museum curators in Finland the researcher met during an internship in 2022. At the same time, majority of the museum professionals, in both Finland and the Netherlands were sampled through the means of criterion sampling. The remaining participants were recruited through a variety of means,

for example using platforms such as LinkedIn and contacting the museums directly. In practice, when contacting museums and museum professionals, many of them provided a referral to their colleagues, who they considered knowledgeable in the topic of the research. Snowball sampling through word-of-mouth was also one of the strategies, as one of the interviewees was recruited by a referral through a mutual connection.

The advantages of mixed purposeful sampling, employing criterion and snowball techniques, lie in the flexible and realistic aspect of it. For example, as Suri (2011) points out, the criteria should not be too strict as otherwise, the sample may result in a relatively small number of prospective research units. Therefore, the pre-determined criteria have been formulated, but these have not been set too strictly: for instance, this research is not focusing on a specific genre of museums.

3.4 Data collection

The in-depth interviews were conducted among ten Finnish and Dutch museum professionals between May 11 and May 24, 2023, with nine of them facilitated on Zoom video call and one conducted in person. For a more representative sample, the aim was to include close to an equal number of interviews from both countries. At the end, five of the interviews were conducted with Finnish experts while the other five with Dutch experts. While striving for a heterogeneous sample in terms of the gender of the participants, majority of the interviewees were female ($N = 7$) while minority male ($N = 3$). At the same time, heterogeneity was also attempted in the type of museums: the sample includes professionals from larger and regional museums, capital cities and towns. Moreover, the sample consists of museums both state/municipally and privately funded. The museums involved in this thesis research are specified in the Appendix A. The interviews lasted between 38 and 76 minutes, resulting in an average duration of 59 minutes.

The interviewees included in the research held a variety of job titles, such as museum curators, exhibition designers, product managers and product owners, however they all work closely with designing and managing exhibitions at the respective museums. On average, the interviewees had $N = 13,7$ years of experience from the museum sector, ranging from 5 months to 31 years. The interviewees had been in their current role on average for $N = 4$ years. With consent, the interviews were recorded and later transcribed using two transcribing software tools, 'Trint' and Microsoft Word. After, the interview audio files were listened by the researcher, and manual corrections were made to the transcription files.

3.5 Interview Design

The interview followed a semi-structured form, meaning that it consisted of both pre-determined open-ended questions, as well as new questions that emerged during the interview (DiCicco-Bloom & Crabtree, 2006). This flexible nature of the semi-structured interview allows the conversation to continue in a more spontaneous manner (DiCicco-Bloom & Crabtree, 2006). In practice, this means that along with the pre-determined questions, the interview also consisted of follow-up and/or probing questions.

The interview guide consisted of five different parts. The interview guide was reiterated throughout the interview process, mainly combining certain questions in order to avoid repetition. In cases when the interview deviated from the question or the interviewee discussed a topic related to another question, the order of the questions was then adjusted, to ensure a smoother conversation. As the goal of the interview was to learn more about the views, perceptions and experiences of the museum professionals, the interviewees were not asked or required to prepare for the interview questions in prior. Moreover, the questions were not forwarded to the interviewees before the interview, to evoke more spontaneous conversation.

The first part of the interview focused on building rapport with the interviewee. Each interview begun with confirming the interviewees consent for participation, followed up by a brief overview of what the interview process involves. Here, the interviewer would for example mention that while there are set questions, there are no right or wrong answers. The interviewer would also remind that the interview has been scheduled to last up to an hour. In cases when the interview continued past 60 minutes, the interviewer would ask if the interviewee were able to continue longer. As noted by DiCicco-Bloom and Crabtree (2006), establishing rapport is an integral part of in-depth interview process: a trusted and respectful relationship between the interviewer and interviewee is aimed for as it encourages the participant to be more comfortable during the interview and share more information. During this part of the interview, the questions involved asking the interviewee to introduce themselves, as well as describe their daily responsibilities at the museum. To gain a better demographic understanding of the interviewees, their work experience within the museum and museum sector were also asked at the beginning.

The main part of the interview consisted of three parts: the role of the museum, exhibition design and visitor experience, views and experience with digital technologies. The questions related to the role of the museum were designed to address the changing role of the museum on a broader level: here, the interviewee was invited to share their views on the responsibilities, strategies, and missions of the museum. As the interviewees had a general idea of the premise of the research being related to digital technologies, many of their answers would also reflect this. After, the interview moved on to discuss the design process of exhibitions, as well as focus on the visitor experience.

To conclude the interview, the interviewees were asked about their thoughts on any future developments in the museum sector. As this question is more speculative in nature, it was placed at the end of the interview guide. As a final question, the interviewees were asked if they wanted to add or elaborate on anything.

3.5.1 Operationalisation

The proposed methodology complements the research question, as the shift to audience centrism in museums, facilitated through digital technologies, can be further investigated through expert interviews. In particular, the experts' perceptions of audience centrism can be explored through the concepts discussed within the theoretical framework. Simultaneously, these concepts function as a theoretical lens as the research moves towards formulating the topic list and the interview questions. To further illustrate, Table 1 demonstrates how the concepts are constructed into interview questions.

Table 1

Operationalisation of key concepts

Concept	Definition	Interview question example
Audience centrism	Institutional agenda (collection conservation, preservation, and exhibition) and visitor experience considered equally important	How do you consider the needs and desires of visitors in this process [designing a museum exhibition]?
Modernist museum	Museum paradigm describing curators as mediators of knowledge, focused on institutional intentions of conservation and preservation of collections	Do you think the experience of visiting a museum has changed for the audiences in the past 5 years?
Post-institution	Museum paradigm describing decentralisation of knowledge sharing, meaning making	Can you give me an example of a time when you saw active visitor participation enhance

	involves audience interaction	the value of an exhibition?
Digital social museum	Digital technologies as facilitators of an inclusive and participatory museum experience	For what reasons do you think museums incorporate digital technologies in their exhibitions?
Interactive technologies	Using digital technologies to create interactions between the exhibition and people to facilitate proactive consumption	In what ways do you think interactive technologies can be useful in the exhibition spaces?
Edutainment	Content that is simultaneously entertaining and educational, experience amplified through digital technologies.	Why do you think edutainment is discussed more in the media in the context of museum exhibitions?

3.6 Validity and reliability

To address the credibility of the analysis, this section will give a brief overview of the tools employed to increase the reliability and validity of the research. To begin with the reliability, the theoretical framework of the research has been laid out, providing an understanding of the developments in the museum sector with regard to digital technologies, both in Finland and the Netherlands. As the analysis will also make extensive use of the Entarch model and U>, a comprehensive explanation has also been provided for these theories as part of the conceptual framework. Next, the research process was mapped out in the methodology section, to address the different steps that were taken in order to conduct the thematic analysis. This includes introducing the premises of the qualitative research approach and in-depth interviews as well as sampling strategy and interviewee selection. The methodology section thus far has also explained the process of thematic data analysis and data collection. The methodology section has also addressed the emerged tabulations, further reflecting on the variance within the data sample.

With the goal of making the research process transparent, the interview design was also detailed, consisting of an explanation of the structure of the interview questions and the operationalisation of the theoretical concepts. Another strategy to increase the research's transparency was by introducing quotations from the conducted interviews throughout the analysis. This way, the analysis strived to stay close to the data sample, in order to base the arguments on the

textual cues within the transcriptions.

To increase the research's validity, the analysis made use of qualitative analysis principles, following the work of Boeije (2010) and Sterkenburg (2023). These principles comprise the following components: constant comparison, analytic induction, and comprehensive data treatment. Considering constant comparison, the qualitative approach, in particular in-depth interviews, allowed a cyclical analysis process. As Boeije (2010) explains, "phenomena will manifest themselves in different ways when circumstances differ" (p. 83), meaning that with each newly conducted interview, the data can be analysed and new codes formulated, which can again change once the next round of interviews have been concluded. Constant comparison also encompasses the structure of the interview guide, which was adjusted during the data collection process. After pre-testing, conducted before the interviews, the interview guide consisted of 24 questions, some questions also comprising sub- and follow-up questions. However, it was noted that certain questions prompted repetition in the experts' answers. For this reason, the interview guide was modified by combining certain questions, resulting in the final interview guide of 19 questions. Additionally, the order of the questions was also adjusted throughout the interviews, to allow a better flow.

Next to constant comparison, the results and discussion section will also highlight certain deviant cases that emerge from the analysis, referring to cases that do not fit the formed expectations based on the introduced theoretical dimensions. In practice, there may be cases where the expert strives for more audience-centric ways of exhibiting, however in certain cases, they may also express critical views towards it. These deviant cases also demonstrate how the shift towards audience-centrism is not necessarily a linear development in the museum sector.

Considering comprehensive data treatment, the relevant data with respect to the research questions have been accounted for and therefore further elaborated in the results and discussion section. Comprehensive data analysis was also assisted by a computer-assisted qualitative data analysis software called ATLAS.ti, to which the transcription files were imported and coded in preparation for the thematic analysis.

The findings may also be somewhat limited by the positionality of the researcher. Namely, the researcher has previously worked with two of the interviewees (Expert 2 and 5), which could result in bias in the answers. By comparison, it was particularly important in building a good rapport with the remaining experts, in order to have a fruitful discussion. Because the prior steps conducted, referring to analytic induction, consisting of constant comparison and deviant-cases analysis, comprehensive data treatment as well as appropriate tabulation, this research has validity.

4. Results and Discussion

4.1 Perceptions of the Dutch museum experts

The following chapter presents the empirical findings pertaining to the sub-questions, with consideration to the overarching research question. First, a detailed account is given of the significant findings based on interviews with the Dutch experts, followed by an analysis of the results derived from the interviews with the Finnish museum professionals. After, the results section moves on to a comparative discussion of the results, highlighting the similarities and differences between these two countries. From the analysis of the in-depth interviews of the Dutch museum professionals, four major themes arose. In this section, each of these themes will be further discussed within the conceptual frames of Entarch and U>.

4.1.1 Cultivation of visitor agency

Amplification of visitors' perspective. When considering *story*, the first element of Entarch model, there are several strategies that can be argued to advance audience-centric experiences. As noted by Nielsen (2017), stories can primarily be understood as narratives that create engagement among visitors: their goal is to evoke feelings, memories, and curiosity among visitors. Here, two central themes emerged, *amplification of visitors' perspective* and *freedom of choice and decision-making*, as perceived by the museum experts. A reoccurring theme among the museum professionals is the encouragement of the visitors' reflection. That is, to not only have a moment with the object but to take time to form their own interpretation of what they encounter. From the museums experts' point-of-view, they thus want to activate the visitor to break from a more passive role of spectating, and to instead hear from their perspective. This means that the moment of encounter between the museum and the visitor would be shifting towards moments of active reflection amplified by digital technologies.

The way the museums facilitate amplified visitor reflection can for example happen through virtual object labels and creative audio-guided tours. To illustrate, Expert 8 explained that in their museum, they steer away from textual signage throughout the exhibition space. The expert explains that instead of providing the visitors with all the context, they instead want to prompt their own reflection first:

But we want to invite you to first look, ask questions, be maybe a little naïve even. Even like just say what you see [...]. What does it evoke in you [...]? That's what we try to invite in our

guests in the museum.

Recognising that many of the visitors still seek additional information about the artworks, the museum implements virtual object labels instead. These labels are accessible by scanning QR codes that are placed at the beginning of each exhibition room. The QR code guides the visitor to the museum's website, where they can read more about the object. On the website, the visitor is able to access information about the exhibition spaces and the artworks, including the name of the artist. Additionally, the website presents questions that are related to the artwork that aims at stimulating reflection. For example, reading about Kathleen Ryan's sculptures, *Bad Grapes*, which are large-sized objects covered in glittering beads, the website asked the question: "How long would it have taken her [the artist] to nail down all the stones?" (LAM, n.d.). While the visitor may have originally made use of the virtual object labels to seek out more information, also referred to as information motivation (Whiting & Williams, 2013), the questions make use of the element of surprise to make the visitor look at the artwork in more detail, in order to answer the question. In this sense, the idea was not for visitors to stay on the website, but to function as a prompt to return back to the physical exhibition space and engage with the works of art.

Another tool to evoke the visitor's interpretation are audio tours. Specifically, the type of audio tours that the experts refer to as "creative" or "theatrical" ones. As described by Expert 6, the idea is to turn around the role of the storyteller to rather confront the visitor with questions. As the expert explains:

... in the early days, it was all about information. The little text board beneath the painting. [...] more and more text. And now, we try to do more theatre like information, asking questions from visitors and not only telling them, but asking questions.

Simultaneously, audio tours can help in drawing the visitors' focus on the exhibition space, what they are surrounded by and how all the different artworks relate to each other. In other words, to make the visitor experience less object-oriented. Another feature of the creative audio tours is multi-perspective narration, where the museum has recorded reflections from people with different backgrounds, for example, a sex shop worker and a bishop, to react to the art. According to Expert 7, facilitating the multi-perspective is an important strategy, to remind the visitors that there is not one right interpretation of the artworks; "... everything is okay, you know. It's not like the only [right perspective] is that one [...]. So, it's really important to tell that". In other words, there are always a variety of themes present and it is up to the visitor to construct their own meaning. In relation to the element of *story* from the Entarch model, these audio tours can be considered from the perspective of innovative storytelling strategies. In the case of audio tours, the primary focus is arguably on the stories, rather than the technologies. As pointed out by Wyman et al. (2011), this suggests effective use of technologies, when the technological devices are not overshadowing the narrative elements.

In relation to the idea of modernist and post-modernist museums, making use of the digital technologies to facilitate audience interpretation aligns with the reported shift towards non-institutional modes of storytelling. As pointed out by Russo and Watkins (2005), the modernist museum mediated power through not only the objects but the way of displaying them. For this reason, it can be argued that creating space for the visitor interpretation shifts some of that power to the audiences and increases the visitors' agency within the exhibition space. At the same time, as these initiatives derive from inside of museum, it could be argued that the ongoing change is taking place within the carefully managed frames of the museum. Therefore, while the museums give away some of the authority in the meaning-making process, by asking certain questions they still hold power in steering the visitors' thoughts.

Accommodating the visitor. As a third element of Entarch, *glue* characterises the interconnectivity of the overall Entertainment Architecture: in practice, it works towards providing coherent experiences for the visitor (Konzal, 2012). While in the past it has been understood as a strategy to bring together different transmedia components, here it will be applied to understand how visitors are offered continuous museum experiences that can be also understood as transmedia in many instances. One interesting finding from the interviews was how the Dutch experts discussed different ways of accommodating the visitor experience: the core idea here is that curators must consider the usability of the technologies. One of the experts also brought up a way to use technologies to make the user more comfortable within the exhibition, which will be further elaborated later in this section. First, Expert 6 pointed out that the incorporated technology must be easy and clear for the visitor to use. As the expert puts it:

...in order to help as many people as you can, there are a lot of different levels of knowledge how to use the technology. So, you can also frustrate people because they don't know how to use it.

What can be understood from this statement is that the visitors are not expecting for everything to be integrated into digital formats, accommodate those visitors who may find them challenging to navigate. Simultaneously, it is important to make sure the technology will not become a barrier for the visitor to retrieve information, as this may lead to negative feelings. With the same idea, the expert continues:

...And when you have the information panel, people don't read. And when they read, they have forgotten it [what they read] already when they start to use it. And we also use humans [to help navigation] to welcome our visitors and explain stuff [so the experience can be more seamless].

According to Expert 6, digital panels may become off-putting for visitors to find information from.

In this case, the reading process from a digital screen may be more superficial, as the visitor has not fully taken in all the provided information. There can be many reasons, but one that rose from the interviews is the overwhelming amount of information, that may become too much to read at one time. If one were to consider an exhibition space, in most cases the idea is to keep moving around the space. Thus, placing information-heavy displays in one spot, may go against the average the dynamic flow of visitors within the exhibition space. Sometimes, what the displays might have been intended for, end up producing more work for the museum staff members as they need to guide the visitors around the exhibition. Therefore, the museum does not only rely on digital displays but finds it necessary to also involve people to guide the visitors. To a certain extent, this finding can be regarded as contradictory to what was earlier explained about the efficiency of digital displays. Between the two museum experts, there was a consensus on the fact that after a while, the visitors often become disinterested in the displays. Consequently, one could argue that digital displays could also become wasteful. At the same time, as discussed earlier, it was also highlighted that displays can be a practical tool for providing information. For this reason, it can be noted that while Dutch professionals regard the potential of digital technologies, specifically digital displays, as a useful tool for information sharing, they may simultaneously also become ineffective, in the case of being challenging to use.

In relation to Entarch, easy-to-use technology is an essential component of museum exhibitions, to ensure that visitors can move across the different technologies without disruptions. This way, they are also able to fully make use of the provided technologies. From the perspective of *glue*, the digital displays could also be considered to bring more context to the exhibition space. For example, in exhibitions where the displayed collections are objects, screen technology can help bringing narrative dimensions to the space. Also considering audience-centrism, Simon (2010) reminds us that museums have to trust that the visitors will find the content that they consider the most useful. Conversely, the alternative may be the decision to limit the amount of navigational information that is accessible to the visitor. Following Cerquetti's (2016) notions of audience centrism, the purpose would be to cater to specific audiences, including both existing and new ones. From this perspective, the decision to incorporate technologies for the visitors to find more information, while acknowledging their disadvantages, demonstrates strive for audience-centric ways of exhibiting: the displayed content may not be looked for by everyone at the exhibition, however, the more interested visitors have been provided with additional content.

In one of the interviews, interviewee 8 brought up an acoustic arrangement that the museum is looking to have installed in the exhibition rooms. Intended as background noise, the expert explained that the idea is to always have the sound playing, in order to make the visitor feel like there would be more people in the room. To contextualise, a quiet museum space may feel intimidating for visitors and thereby, they may retrieve from making noise or even explore the whole space. As pointed out by the expert, the purpose of the project is to have the visitor "feel more at ease", even

during the quieter hours at the museum. Notably, this also coincides with the element of *glue*: With the integration of the sound system, the museum is embracing the simultaneous visitor experiences that are happening within the space. Here, the idea is to make these “disparate” (p. 129) encounters become part of the overall exhibition experience (Konzal, 2012). For example, overhearing other visitors talk about an artwork can also become part of another visitor’s experience. Although it was not mentioned that the museum had conducted prior research, the motivation to incorporate the new audio setup to make the visitor feel more comfortable can be regarded as a strategy to keep the visitor’s focus on the exhibition itself. Here, it can be noted that the motivation is not to have the collections on display, but the expert finds it important to also facilitate better visitor experiences, a practice that Samis and Michaelson (2016) consider an audience-centric approach. Specifically, the authors highlight that central to audience-centrism is to have the collections and visitor experience “on equal footing” (Samis & Michaelson, 2016, n/a). More specifically, the authors highlight that audience-centric exhibitions are bound to be both engaging and welcoming to the visitors – even when they are alone in the exhibition (Samis & Michaelson, 2016). In relation to the sound system, which does not directly engage the visitor, it can still be regarded as a technology that indirectly accommodates the visitor’s needs by removing the barrier of silent exhibition spaces.

Visitors’ freedom of choice and decision-making. In the discussion of story-like elements within museum exhibitions, it is also evident that the museums are implementing ways to broaden what content the visitors are to explore in the exhibitions. Notable technologies that the museum professionals pointed out were related to increasing the visitors’ ability to choose what kind of content and what type of experience they prefer to consume within the exhibitions. The museum professionals approached this from two perspectives. First, in terms of audio tours, Expert 9 discussed how the museum is experimenting with new audio tour options. To clarify, the museum can provide either a longer, in-depth tour of the exhibition or alternatively, a highlight tour, which is a shorter version of the full museum audio tour. While the visitors from both groups would be able to access any content of their choice during the tour, they are yet not given the option to select which audio path they will experience. This experiment is part of one of the museums’ initiatives to find out whether the different route options affect visitor satisfaction, which will be further discussed later in this paper. However, as in its current state, the different route options in themselves have started to acknowledge the different wants and needs of the visitor and indicates that one-fits-all model of the audio tour may change in the future.

Second, many of the museum experts also considered screen technology, namely different digital displays, as one of the more common types of technologies used in museum spaces. It is also noted that they offer an alternative way of sharing content to those visitors that are interested in the topic. To illustrate, Expert 7 explained:

... we had big screens with background information, and they were touch screens, so you

could read texts, see some videos and it was really like [...] looking at a website from a newspaper [...], a lot of headlines and if you want to know more, you can click on it and get more information.

While presenting a newspaper digitally allows the visitor to spend as much time as they want on a specific topic, the museum found that in practice, it would not actually happen as much. As Expert 7 explained, the displays would often be of interest to the visitor for a brief moment, but after a while, they would not feel compelled to select and read all of the available content. As an explanation for this, it was suspected that for the visitor, there would be too many options to choose from and this would discourage them from continuing that exploration. As explained earlier, the amount of information embedded on the screens may be useful for some visitors, but it appears as in some cases, they are not used to full capacities.

In terms of the possible gratifications, the utilisation of digital displays corresponds to the theme of information seeking (Whiting & Williams, 2013) or utilitarian gratifications, as proposed by Rauschnabel (2018). While the concern of the visitor having too many options was expressed, Expert 6 also noted that for a museum, integrating forms of technology is needed, as it is a strategy to connect with the visitor. She explains that as people are used to finding information through a couple of short clicks, the museum has to speak this same language in order to connect with the visitor. Simultaneously, for individuals that have, what Rauschnabel (2018) refers to as, a cognitive need, the digital displays gather material to them in a compact manner. In other words, museums are thereby making the exploration easier for those visitors that are looking for further information.

Experience personalisation. Within Entarch model, the element of *play* is characterised by interactive and playful visitor interactions (Konzal, 2012). Within museums' efforts of offering visitors interactive experiences, many of these involve the element personalisation. As pointed out by Simon (2010), personalised experiences help visitors to build emotional connections, which contributes to being more interested, remembering the work better as well as re-engaging. To describe different personalisation strategies, the Dutch museum experts discussed three different experiences: personalised museum routes, visitor-curated collections, as well as interactive artworks. The personalised experiences were discussed through concrete examples, that will be further described in the following paragraphs. First, Expert 6 shared her experience with working with personalised museum route tools. Second, drawing on her personal experiences, Expert 7 discussed their recent visit to another museum. Based on this experience, a comparative observation was made of how she perceives personalisation at her own museum. Lastly, in response to one of the interview questions, Expert 9 mapped out different technologies they envisioned to see the museum employ in the future.

Next to the different audio route options that were discussed previously, museum Expert 6 pointed out a personalised museum route tool, enabled by RFID technology. There would be several

computers at the beginning of the exhibition, on which the visitor was able to fill in their personal profile, including demographic information such as age or religious background. With this information, personalised museum routes would be generated for the visitor, based on the information they had provided. The museum had made use of the museum route tool in the past, around the 2000s, however, it did not reach the museum's expectations. The challenge that the museum encountered was related to the theme of their exhibitions: it was noted that a visitor's age, for example, would not necessarily be of good indicator of whether they would be interested in a specific work of art. According to the expert, the technology may have worked in other museums, however, implementing it at the given museum was not successful. On the other hand, the failure of this application may have also been connected to the lack of social engagement, which Simon (2010) notes as one of the premises for audience-centric ways of exhibiting. She explains that highly personalised tools can lead the participant into a state of isolation, as they are not interacting with others (Simon, 2010).

Another strategy for personalising the exhibition experience is to involve the visitor in the act of curating. Drawing upon her recent museum visit, Expert 7 explained how the visitor was given the opportunity to choose the artworks that they would like to include in the collection. The museum had placed a computer at the end of the exhibition, on which the visitor could indicate the artwork of their choice and customise the description for the artwork. According to Expert 7, the encounter was described as follows: "I think people like that, it's really small and really not that difficult, but I think it really works if people can participate". What can be understood from the example, is that for Expert 7, personal experiences constitute the act of letting the visitor choose and curate their own description. Importantly, this process needs to become tangible in one way or another. This type of open discourse between the museum and the visitor arguably exemplifies what Wyman et al. (2011) describe as the shift from the authorial shift of curation. This way, the visitors are provided with more multi-faceted experiences, that do not solely rely on the authorship of the curators. According to Wyman et al. (2011), fostering conversation and interaction with visitors stems from increasingly diverse audiences, which the museums want to cater to. On the other hand, the expert viewed that using the computer to personalise the collection added a personal touch to the exhibition. Therefore, the exhibition is responding to the need for personal integration (Rauschnabel, 2018): being able to take part in the curation process, the exhibition suddenly becomes more personal, which can contribute to more meaning for the visitor.

Lastly, interactive artworks, specifically large-sized projections, emerged as technology highlighted by Expert 9, which can also be connected to personalised experiences. More specifically, the expert discussed interactive art projections, which would transform upon the user's touch. Notably, the museum had yet not made use of such technologies, however, they see potential in them. Similar installations have previously been constructed in the art sector, such as teamLab's interactive projection mapping or Ekho Collective's immersive artworks. Expert 9 also pointed out

that such interactive art installations could not only be constructed for the museum visitors inside of the building but could also be employed outside of the museum, for example, on the outside wall of the building. This way, the museum would be able to invite people from outside of the museum to also participate museum experience: “But then outside and like every night throughout the summer or something. Would be really, really cool, especially for developing audiences”. As such, it would also function as a marketing strategy, inviting by-passers into the world of the museum. As the museum has the challenge of catering to a large number of visitors, tickets often selling out, the interactive projections present themselves as an attractive way to continue reaching new audiences.

4.1.2 Data-informed experiences

As discussed in the previous section, museum experts have considered different technologies as tools for creating more personalised visitor experiences. Another way to facilitate audience-centrism in the exhibitions can also be connected to forms of data collection. Specifically, two different kinds of data collection processes were pointed out in the interviews. The first type involves visitors submitting data themselves, for example through surveys. The second type discussed here is data that museums collect from the visitors through more discrete ways, such as by following visitor’s interactions on their platform.

Acquiring data from the visitors (data submitted): Notably, the increased use of digital technologies, including screens and other forms of interactive technologies, has made real-time data collection easier for museums (Derda, 2023). For example, Expert 10 discussed a participatory project in which the idea was to create ‘couples’ from the different objects that the museum has in their collections. To participate in the light-hearted project, the visitors could download the museum’s app, called Depot, where they can vote for potential couples. Emphasising the involvement of the visitor, the expert described how the project worked in practice:

... the public [...] could scan the QR code and [vote] between like 13 partners, potential partners. And that's the way we tried to use technology in the depot to do all our communication, through this Depot app. Because there are just too many objects around to have title cards.

What Expert 10 is shedding light on is the convenience of voting through the app, which appears as a more efficient tool for the project. This way, every visitor with their own mobile device can participate in the project, and their input will be recorded in the system. The expert also reflected on a previous co-creative project, where the visitors had written their thoughts on physical cards, which brought upon a laborious digitalisation task. Concerning audience-centrism, the use of digital

data collection thus allows a more efficient data collection process, in which the visitors' responses are automatically saved and can later be incorporated into an analysis. According to the expert, having a set idea or goal what the visitor-submitted data is important. Following the premises of co-creation as understood by Barnes and McPherson (2019), inviting visitors to become active agents within the participatory process can be expected to last for the whole process. Therefore, collecting data without the intention to utilise it could be considered to fall outside of the definition of co-creation – in that case, it only may become a question of efficiency for the museum.

Producing data from the visitor experiences (data collected): Another example of making use of visitor-submitted data was brought up by Expert 9. As the museum makes use of audio tours, they make use of the moment when the user is returning the device to ask them to fill out a survey, to give insights on the satisfaction they have for the visitor experience. As the project's objective lies in improving the visitor experience, inviting the audience's input can be considered to bring their perspective to the forefront. As noted by Russo and Watkins (2005), with the emergence of the post-museum, museums have begun working more with their audiences in order to create meaning for the visitor – surpassing the limited objective of only the collection and preservation of objects.

In addition to visitor-submitted data, the museum simultaneously collects visitor data through audio tour devices. The visitor information is anonymised and the museum makes use of data analytics research, where details of the completed tours are further analysed. For example, the museum focuses on aspects such as time spent on each work, and which route the visitor took, making use of what can be referred to as spatial and path-tracking technologies (Derda, 2023). Describing the project, Expert 9 notes: "...you can use statistics also improve on the experience. So, it's really useful". Along the same lines, Derda (2023) writes that these visitor data streams allow museums to add layers of flexibility and personalisation to their experiences. For a deeper understanding of the visitor experiences, the museum matches this generated data to the data submitted by the visitors. As Cerquetti (2016) writes, museums are presupposed to operate for the public benefit and therefore required to remain critical towards the value of their collections and maintain a sense of the quality of the visitor experience. For this reason, striving towards the identification and understanding of the type of experience the visitor is experiencing within the exhibition can be considered to make use of an audience-centric way of working (Cerquetti, 2016).

Notably, Experts 6 and 9 reported making use of the path tracking technologies using an audio tour. As the museums have external partners that help coordinate the projects, the professionals note that it is fairly easy for them to make use of the provided visitor data. At the same time, Expert 9 also noted that the goal objective must always be carefully planned, as the external partners usually work outside of the museum sector, mainly in commercial environments where the main research objective is to know more about the customer in order to increase revenue. For the museum itself, the main objective remains visitor satisfaction.

4.1.3 Expanding the museum experience beyond the exhibition

Hybrid Museum experiences: In this section, the discourse surrounding hybrid and virtual museum experiences can be discussed through the element of *glue*. When considering possible future developments in the museum sector, one of the experts highlighted the shift towards open collection repositories. As previously discussed, the Dutch museum sector could be considered a pioneer in the open collection practice, with Rijksmuseum leading this transformation for the past 10 years (Rijksmuseum, 2021). Expanding the idea of the virtual museum, meaning a virtual space where the museum collections can be accessed, Expert 9 brought up the idea of open sourcing: “And so, things like open sourcing collections. So that images can be used in all sorts of different ways. I definitely see a future in that”. Here, the expert is shedding light on the possibility of museums turning the content publicly accessible, not only in terms of being able to view the content but also making them available for modification and free use. While Expert 9 did not further specify the possible outcomes of open sourcing, they could relate to forms of digital art, as mentioned by Expert 10. This collaborative approach can be understood from the perspective of co-creation and co-production: inviting the public not only to view the content and material the museum holds but also to become collaborators with the museum. As highlighted by Barnes and McPherson (2019), co-production can create cultural change, notably “increased democratisation of the museum’s content” (p. 2). In this case, museums would shift towards modes of open-sourcing, this could advance the dialogical efforts between the museum, not only through idea exchange but also through co-produced art.

In the interviews with the Dutch experts, ideas related to hybrid museums also came into the discussion: varying from museums in the metaverse or inside games. To clarify, a hybrid museum has been defined as an entwinement of both physical and online spaces, blurring medium and discipline-specific boundaries with the effort of engaging the visitors (Barnes & McPherson, 2019). From an Entarch perspective, these online spaces, such as metaverse, could also be considered as components of the overarching museum experience. Here, the underlying idea from Expert 10 was that museums should not expect visitors to come to them:

That's like a way of being present [...] in a space that isn't traditional, but also where audiences live and are used to go. So, we don't have to advertise on them to come to the museum. No, we're going to find them [...].

In scholarly discussions, metaverse has been considered to emerge as one of the significant online spaces, particularly replacing offline events (Lee et al., 2022). From a transmedia perspective, the museum experience thus becomes “dispersed” (p. 944) across virtual spaces (Jenkins, 2010). In these spaces, audiences would be able to interact with museums in novel ways, also highlighting the presence of the element of *play*. This conceptualisation is also in line with the scholarly discussion,

as virtual museum spaces have been granted as a possible strategy for attracting new audiences (Barnes & McPherson, 2019). The authors also refer to the cultural divide between museum visitors and non-goers, a gap that could be closed through participatory practices, in particular modern digital methods (Barnes & McPherson, 2019). For this, entering different platforms, such as the metaverse or existing games, could function as a way to connect the non-goers to the museum space, particularly younger audiences. In addition, one of the experts also suspected that in the future, museums may also take the initiative in creating more of their own platforms.

Online Experience: Along with the notion of museums becoming to be understood as hybrid spaces, the Dutch interviewees also called attention to museums working towards online experiences, particularly on social media platforms. In particular, Expert 10 pointed out podcasts as a tool he has noticed as an evolving medium for other museums: “modern media to make education more fun”. Within the cultural sphere, the use of podcasts as a medium for information sharing could arguably still be considered to be emerging. However, in the past years, there has been more attention given to them within the broader discourse of the museum becoming more open to the audiences, particularly responding to their wants and needs (Valtysson et al., 2021). Another area where the museums pay attention to is their website and social media, such as Instagram. Here, Expert 9 explains, “Instagram, like our website, is very much targeted to younger people, so we get more compelling stories.”. As Más and Monfort (2021) write, social media encourages the visitors to “continue participating in the relationship with museums even after the visit” (p. 11). Therefore, expanding museum activities to social media sites suggests that museums wish to surround the visitor with their content and maintaining a continuous relationship with them – even outside of the physical museum.

4.1.4 Evoking active participation

With the efforts of evoking active participation, games within the museum exhibition were also brought up in the interviews. Specifically, Expert 7 discussed two different types of games: touch screens embedded on the floor of the exhibition room and a museum game visitors can access on an iPad. As explained by the expert, the embedded screens were eventually removed as they were considered to distract the younger visitors from the other contents. On the other hand, with the iPad game, the visitors, who are also school children, play the game by moving around the exhibition space. As the expert put it: “We use technology also for participation, not only telling stories”. As found in the research conducted by Agostino and Arnaboldi (2021), entertaining technologies such as games can transform the visitor’s knowledge acquisition into more fun. From this perspective, the “hedonic factors” (Rauschnabel, 2018, p. 218) can be regarded as the gratifications to which the museum is aiming to respond.

Next to museum games, another view relating to evoking active participation surfaced from the interviews: participatory art. When asked about any ideas for future projects, Expert 9 finds interactive artworks as a way for the visitor to take more action within the exhibition. Specifically, the expert describes the idea as follows:

If you have a room where you could do your painting in and upload it to a wall and then interacted with someone else's painting [...] like a learning lab with interactives would be super fun, to make it a space where people can do a lot more of that interactive work and leave also something after they visit.

From the perspective of Entarch, this vision of an interactive and participatory artwork demonstrates a way to facilitate both socialness as well as personal experiences among the visitors. To elaborate, this idea of a digital painting that the visitors could contribute to could be understood as dynamic-interactive art, which means that the participant can influence changes within the object (Jeon et al., 2019). Being able to see other visitors' paintings could be seen as a way to enhance social interaction and sense of collectivity. From U> perspective, such objects could be considered to respond to social integrative needs, meaning that they either help manage existing social relationships or even evoke the visitors to socialise with strangers, meaning they become conversation-starters (Rauschnabel, 2018).

4.2 Perceptions of the Finnish museum experts

From the analysis of the in-depth interviews of the Finnish museum professionals, three major themes arose. In what follows, each of these themes will be further discussed in relation to the conceptual framework of Entarch and U>. The first theme, diversification of the visitor experience, emerged as the most prevalent out of the three. In the following section, the different digital tools, and strategies that the museum experts highlighted will be further examined.

4.2.1 Diversifying the visitor experience

New storytelling strategies. A common view amongst the Finnish interviewees was that digital technologies enable new kinds of storytelling strategies, including more targeted content to different target audiences. Here, one of the more emergent strategies mentioned was immersive spaces. As noted by Expert 1, some of the advantages of using immersive spaces lie in the possibilities of evoking bodily experiences and the opportunities the physical spaces hold. To further elaborate, beyond aesthetical experiences, exhibition spaces were also understood to contribute to the

storytelling. For this reason, the exhibition space itself becomes the medium of analysis.

The current discourse surrounding bodily experiences highlights digitally enhanced multi-sensory experiences, such as bodily engagement with digital interactive technologies (Liu & Lan, 2021). For Expert 1, the benefit of immersive spaces is to draw the visitor's focus away from digital devices and the virtual spaces to feeling physically present in space and time, to what Liu and Lan (2021) refer to as "balancing the virtual and actual experience" (p. 418). The expert further elaborated on one of their upcoming exhibitions, where the main objective is to have the visitor feel like they are in a completely different space. In this case, the museum is producing a cosmos-related room, where the visitors can look outside of a rocket ship window and look into 'space'. According to the expert, this type of spatial immersive experience can benefit from digital technologies, such as projections, in combination with the actual exhibition space. The expert explains the significance spatial immersion can have on storytelling:

These are tasks, like 'missions' or job descriptions that have to be done there for different reasons. So [...]you can try these different tasks [...]. Then you start looking at [the topic] in a way, what could interest people in this, what is the scientific part, what is happening and what would it be good for everyone to know about this.

What the expert's statement tells us, is the way spatial immersion can decrease the amount of information the museum will directly offer to the visitor. Instead, the content has been transformed to spatial format, where through exploration the visitor can retrieve information.

Another benefit of the immersive spaces as highlighted by the experts is the element of escapism: visitors often perceive museums as a place of calmness where they do not have to be surrounded by the constant flow of information. This points towards the tension-release needs, which often leads towards hedonic gratifications such as enjoyment, which allows them to diversify or distract themselves from everyday responsibilities (Rauschnabel, 2018). Therefore, by making use of immersive spatial experiences, the visitor can rather experience an affective encounter with the topic, instead of more traditional ways of storytelling (Liu & Lan, 2021).

In relation to the immersive spaces, the experts also discussed the use of animations, which can transform the spaces from static to more dynamic experiences. As pointed out by Expert 4, instead of projecting photographs onto the walls of the space, these objects can also be animated. Meanwhile, Expert 5 also pointed out the advantage of a video-format of displaying, which can translate pages of text to be told within a short animation: "In practice, it's [...] a short and good way to illustrate things and create contexts, and [further] connect those things [back together], and so on". This demonstrates the more multi-faceted storytelling techniques that museums are moving towards: notably, good storytelling can also be in short form (Wyman et al., 2011).

Along with immersive spaces and animations, a recurrent theme in the interviews was the use of virtual reality (VR) as a tool for recreating historical moments. Both of the museums that

brought up VR in this context, can be classified as historical museums. As explained by Expert 3, “[...] if you want to move to a historical moment in a comprehensive way, then VR is a great tool for that [...]”. With a quarter of Expert 3’s museum visitors being school groups, the museum found VR as a way to introduce and teach historical themes to middle school students. Strategies for visitor engagement also include dialogue. In one of the VR experiences, the museum employed actors to play the characters, who would also talk to the visitor, evoking real life situation (Figure 1). In relation to learning opportunities, this strategy is supported by Miklošević (2021) who points that the incorporation of virtual characters can have a positive impact on the visitor’s memory. On a broader level, the author also notes that different modes of communication, particularly digital interpretation, can influence satisfaction, including visitor engagement and learning (Miklošević, 2021).

Figure 1

Virtual Reality production of the Diet of Finland, by The National Museum of Finland.



Note. The National Museum of Finland/ZOAN. February 14, 2018. (<https://www.youtube.com/watch?v=-sqaIs2Sjbo>)

At the same time, concerns were expressed about the use of VR within museum exhibitions. First, several of the interviewees commented that as VR is mainly used individually, it can easily cause queuing within the exhibition: particularly in the case of younger visitors, one of the experts said that they all want to try it. To address this problem, one of the museums tried to approach VR in a lighter manner. Here, Expert 1 was explained that with shorter VR experiences, the visitors are still able to immerse themselves to the topic, meaning that the duration of the VR experience should not have to be long. Additionally, instead of relying on just one VR device, the museum incorporates multiple VR devices, placed next to each other, in order for multiple visitors to participate at the same time. Concern was also expressed by Expert 5 for the lack of collective experience that the use of VR encourages: even if the VR experience is projected onto a screen, the visitor is still considered to be alone in the experience. From the perspective of the digital social museum, visitors are expected to interact with each other, instead of the visitor purely interacting with the object in

question (Más & Monfort, 2021). Moreover, Expert 5 also pointed out the question of the accessibility of VR devices: for example, visitors who wear glasses or experience nausea may not be able to use them. Therefore, the *story* element becomes compromised.

Next to the more prominent themes, the experts also brought up technologies that haven't yet become fully implemented within the museum sector, namely 3D-modelling, holographic installations, and AI-generated stories. Brought up by Expert 3, for 3D-modelling and holograms, the motivation for adoption lies in the opportunity of presenting the topics in more diverse ways to the visitors. Next to incorporating 3D-models into the exhibition, the museum has also published them as open data. This can be understood to align with the idea of a digital social museum, that underlines the meaning of a museum as non-spatial or temporal location, but rather accessible from anywhere at any time (Más & Monfort, 2021). In terms of holograms, Expert 3's museum has used in them in their prior exhibitions and would like to keep incorporating them in the future. On the other hand, Expert 2 was also more critical towards holograms, questioning on what additional value it could bring to the exhibition. She also noted that at the right price and easy usage the museum would be interested in incorporating them in the future. This also suggests that museum experts are interested in emerging digital technologies to extend their display and storytelling strategies. This openness to new technologies can also be of benefit, as innovative strategies are considered opportunities for enhanced knowledge sharing to the visitors (Dal Falco & Vassos, 2017). Moreover, Expert 5 also brought up the use of AI, specifically helping to generate stories or visualisations. Here, the reason to incorporate AI has more practical meaning, related to the exhibition design process, to outsource labour-intensive tasks.

Connection to the intangible. Another recurrent theme amongst the Finnish experts was the idea of digital technologies as facilitators of connection with otherwise intangible themes. For Expert 5, the benefit of technology is the possibility of realising something that is otherwise out of the visitor's touch. To illustrate, this can refer to past or historical events that the museum would be able to transform into more tangible presentations. This view was also echoed by Expert 2 who expressed interest in making use of AR technologies. More specifically, the expert pointed out the opportunities AR holds for taking the visitor outside of the museum. Namely, with AR the visitor would be able to move around and explore the themes more freely within the environment without being confined to the exhibition space. As an example, the expert pointed out the possibility of presenting what a certain location looked like in the past. Approaching from the perspective of audience-centrism, employing such technologies would give the audiences the opportunity to make use of the tools that are of interest to them: only if they consider the provided themes interesting, in this case, local history, they can take it upon themselves to make use of those provided contents (Simon, 2010). Another benefit would be accessibility, as again, the visitor would not be tied to the physical museum space. At the same time, Expert 2 highlighted some of the disadvantages of AR, namely the

price of the technology. In this case, it was noted that while there is interest in employing it, it is currently considered too expensive for the museum to invest in.

In terms of making intangible tangible, the use of VR technologies can also be connected to this theme. As previously explained, Expert 3 also discussed the opportunity for historical figures to talk to the visitor within the VR experience. More specifically, the visitor was able to interact with Alexander II of Russia, who was the Grand Duke of Finland during the second half of the 19th century. Overall, these results suggest that AR and VR technologies can be particularly useful for presenting historical content to visitors and are favoured by the Finnish experts.

Offering convenience. Another prevalent theme discussed amongst the experts was the emphasis on digital technologies offering convenience to the visitors. To specify, as digital technologies may be useful for museum professionals to produce the exhibition, this section will particularly highlight how the technologies can be used to respond to the certain needs and interests of the visitors.

As prefaced earlier, a common thread among the experts was the notion of digital technologies allowing more content to be displayed to visitors. For the visitor, the advantages could be considered to be the range of contents that they are able to choose what they want to focus on and for how long. In relation to *glue*, what becomes important for the museums to consider is the continuity of the experience, which is central component to Entarch (Konzal, 2012). As a response, museums are able to make use of what Simon (2010) refers to as the “Pull technique” and “Pull content” (pp. 37-38): the concept refers to the visitors actively seeking out information that is of interest for them and importantly, the museum inviting them to retrieve the content rather than presenting all at once. Another way to describe the pull devices is the notion of direct access: for example, there is no mandatory sequence in which the contents can be accessed (Simon 2010). To compare, sequenced audio tours or informational videos would not allow the free exploration of content for the visitor while open-ended and multiple-channel technologies enable this (Simon, 2010).

Content repurposing was also frequently mentioned by the Finnish experts. To specify, Expert 2 pointed out the possibility to make use of the produced digital content on various museum platforms. This way, the contents would expand from the exhibition to various online platforms and social media channels. Continuing, Expert 2 expressed that this way, the museum would be able to bring museum content more to popular culture: “[...] we should be able to popularise content”. In the scholarly discussion, there is not a clear consensus as to how much importance the online museum experience holds, however, it has been argued that online environments, such as social media, are useful channels for museums to communicate with their existing audiences and shape their visitors’ expectations (Marini & Agostino, 2022). Meanwhile, Expert 4 also brought up a media management software that is shared with media companies in Finland. In practice, the museum can upload its

produced digital content onto a centralised platform, which different media companies are able to access them. While this creates a virtual repository or cloud for the museums and different companies to access the contents, it was not further specified if there is an intention to share the tool with the museums' visitors or the general public. In this context, the content and data management systems become the *glue*: while there is no direct impact on the visitor experience, more sustainable digital content management can be considered to help improve their future exhibitions. In comparison to many of the other museums' strive towards virtual and open museums, this museum's approach could be considered to distance from the general understanding of virtual museums as the goal (Esposito et al., 2021). Arguably, the value virtual museums are regarded for is the opportunity to leverage the digital content in the hope of activating the public and communities (Esposito et al., 2021).

Next to the possibilities of repurposing digital content, the experts also emphasised the aspect of modifiability. Expert 2, whose notions were echoed by Expert 4, explained that with digital technologies, the curators are able to edit the content, while exhibitions relying more on physical objects or analogue tools, the contents are not so easily modifiable. Additionally, the expert mentioned that digital technologies allow the museum to quickly react in case certain content has to be corrected. These steps could be considered to move towards the democratisation of museums, where dialogue becomes more horizontal and non-judgmental between the professionals and the visitors (Marini & Agostino, 2022). As noted by the authors Marini and Agostino (2022), this process may eventually result in the visitors becoming the storytellers while the museum is the listener. While digital technologies allow the experts to modify the contents more easily, concrete, and practical tools for collecting visitor feedback within the exhibition were not mentioned.

Another prevalent theme that was discussed by the experts was the connection between digital technologies and short-form content. The benefit of digital storytelling is two-fold: as explained in previous sections, the experts considered digital technologies to allow more diverse ways of presenting museum contents and stories. Simultaneously, Expert 1 noted that the exhibitions are transforming alongside their audiences:

We are nowadays consuming more and more [...] quick and concise content. [...] the new generations are directly growing to certain [...] dimensions and speed of the texts. And it becomes a specific way of reading.

Along the same lines, Expert 2 holds the view that while museum content cycles are shortening, visitors are expecting faster and more intense experiences. Furthermore, the expert also highlighted that textual content is increasingly getting shorter, while visuality is being emphasised more. What can be understood from these notions is that the interviewees consider museums to be under development, much of which is influenced by platforms that push short-form content. As a response to the Covid-19 pandemic, scholars have reported an increase in museums becoming more active on

social media (Huebner, 2022). Consequently, this requires museums to publish content within the specific frames set by each platform. What can be comprehended from this is that the museum experts recognise the prevalence of short-form content, facilitated by social media, that their audiences are used to, and see this having an impact in the museum exhibitions as well. In other words, the element of *glue* is no longer present in connecting the museums' content, but instead the visitors own entertainment experience: moving from one platform to another, they can remain in the specific format: for example, without having to adjust to long-form texts when consuming museum content.

Other remarks that the experts brought up in terms of the convenience that digital technologies can offer to the experiences related to the physical advantages of the technologies. First, Expert 1 noted that different technologies are becoming not only lighter but also easier to use. As Expert 2 had mentioned that there were incidents when older visitors found certain technologies, such as VR, challenging to use, the easy-to-use technologies could be considered largely desired by the museum professionals. Second, digital technologies have allowed us to move away from analogue and physical objects. To exemplify, approaching from the perspective of historical museums, maps can hold much importance within the exhibition. With digital maps, visitors are able to interact with the content more conveniently. Furthermore, Expert 3 also noted that digital maps can be more dynamic: "Nowadays, maps can be animated, and you can see what is happening in them". Similarly, Expert 2 pointed out that by embedding maps on touch screens, the visitor is able to interact with them and find out more information about each location.

Personalisation & Education. Another strategy for diversifying the visitor experience that was brought up in the interviews is personalisation. Considered a central component of audience-centrism, Simon (2010) emphasises that personalisation can become effective when attention is paid to the visitors' unique identities within the exhibition. To illustrate, Expert 3 brought up an exhibition in which the visitors were encouraged to take part in the artwork. The exhibition focused on Finland's recent history, approximately the past 100 years when Finland has been an independent country. As the emphasis was on state history, the exhibition also displays portraits of former Finnish presidents, which are slightly moving images. The expert compared these portraits to the photographs from the Harry Potter franchise – where the portrayed people are never static. Describing the moving presidential portraits, Expert 3 explains:

At the beginning, [we thought that], putting those portraits of presidents on that wall, it is boring. But it was not in the end. It became the most photographed object.

Therefore, the work was expanded by allowing the visitor to take a photo of themselves, which would be then displayed within the frames. This allows not only the visitor to actively participate in the exhibition, as well as be reminded that as Finnish-born citizens, they also hold the chance of becoming the next president. To conceptualise this idea, Antoniou et al. (2019) refer to "personalised

narratives that focus on history reflection” (p. 1). Often, these personalisation tools involve mobile applications, however many museums also make use of other innovative tools (Antoniou et al., 2019). As the authors note, the process pays attention to catering to the visitors’ individual needs, which can also be recognised in the presidential portrait item (Antoniou et al., 2019). Here, also the element of *play* can be recognised: As mentioned earlier, many of the museums cater to younger audiences. For them, actively engaging with historical phenomena on new levels can make the topics more understandable, which contributes to the learning objectives that many museums hold. These learning objectives are often considered central to the visitor experience, as European museums are often characterised by their educational approach to history and other phenomena (Antoniou et al., 2019). Another tool to make historical events more tangible to the visitor is projections: as brought up by Expert 2, the museum will be making use of visual projections in their upcoming exhibition, which will represent a 19th-century fire that took place in the city. Aimed to replace a miniature model of the city, the projections are instead designed to fill an entire room, bringing the visitor to the middle of the historical event.

4.2.2 Driving active participation

From the interviews from the Finnish museum experts, the aspects of learning emerged as prominent themes. As discussed in previous sections, various digital technologies were brought up as tools to enhance the aspects of learning among the visitors. Concurrently, Expert 4 also brought up the aspect of entertainment as a way to increase visitors’ active participation. More specifically, the museum has a VR karaoke device as part of their permanent exhibition, which Expert 4 described as purely entertaining: “It doesn't have any kind of informative content. It's just funny”, resembling the playful interaction as described in the element of *play*. Notably, the VR karaoke is also described as one of the popular items at the museum. In addition, the museum also has an immersive dance studio, where the visitors are able to select from various musical themes, ranging from heavy metal to classical music. Benefitting from the element of *dance* from the Entarch model, the dance studio offers the visitors also the social experience, as instead of individual experience, they can create meaningful memories with their companions. From the perspective of uses and gratifications, these technologies could be considered to respond to the tension release needs, which probe the gratifications of enjoyment and entertainment. As described by Rauschnabel (2018), employing media that holds hedonic value, which can be understood in terms of fun activities, they can have a reduction in feelings of boredom. In this sense, while the museum is not aiming to offer informational or educational value to the visitor, these mentioned technologies help with engaging the visitor and making them an active participant within the exhibition.

Following the subject of entertaining technologies, Expert 3 brought fourth VR game which

the museum has made use in the past. While the game could be regarded to hold many of the qualities as previously discussed historical AR and VR experiences, namely the connection to intangible dimensions, it differentiates itself by responding simultaneously to the visitors' cognitive and the tension-release needs. To clarify, the VR game could be considered to take a more casual and fun format while still educating the participant, also referred to as edutainment. Central to edutainment is the notion of engaging the visitor through less-didactic approaches, such as games (Derda, 2023).

Furthermore, Expert 2 also discussed the topic of mobile guides, which could be connected to the notion of engaging the visitor through the use of mobile devices. The expert brought up an application called Smartify, which markets itself as all-in-one application for cultural exploration, in particular cultural travel (Smartify, n.d.). According to Expert 2, the purpose of the application is to help with visitor guidance within the exhibition, as it allows the museum to create virtual tours, both on-site and outside of the museum walls. As explained, one of the disadvantages to the application is the non-sequential feature: ideally, the tours would have been able to be presented in a certain order, creating a specific narrative. When considered the audience-centric ways of working, where the visitor is given the choice of selecting their preferred materials (Simon, 2010).

4.2.3 Changing Museum definition

Expanding to at-home experience. The interviews with the Finnish experts unveiled prominent themes related to museums' activities in virtual environments. More specifically, topics related to virtual museums, online repositories, social media, and events were brought up in the discussion, which can be connected to the element of *glue*. In relation to virtual museums, Experts 2 and 4 highlighted Digimuseo.fi platform, which is European Union's NextGenerationEU-funded project, released in May 2020, which aims to develop museums' digital services, including museum activities, digital preservation, and accessibility to cultural heritage (Finnish Museum Association, n.d.; Digimuseo.fi, n.d.). Both experts emphasised the slow adoption of the service across the sector, also noting FMA's strive to include more museums within the service. Yet, Expert 2 recognised an increase in the number of involved museums due to museums having to close from the public, caused by the Covid-19 outbreak. However, she was particularly critical of the added value of the service: while virtual museums can increase museums' accessibility, she viewed that they rather depict the existing material world than create new experiences. It could therefore be argued that for Expert 2, the aspect of "cultural accessibility" (Dal Falco & Vassos, 2017, n/a), does not present itself as a satisfactory reason to expand to virtual museum platforms. Instead, Expert 2 would like to see more 'free roaming' within the experience, which according to her could be achieved more easily through technologies such as AR. This view is consistent with Expert 5, who mentioned digital technologies,

specifically VR, as means to bring the museum content to people who cannot visit the museum in person: “[...] elderly people with difficulty getting around got the full exhibition experience. And it was really great. And it was a nice experiment”. With portable VR devices, the visitors are able to fully immerse into the exhibition, and not only view the reduced version that is depicted in the virtual museum platform.

Next to virtual museums, Expert 2 also discussed online repositories, specifically an online platform called Finna, where the museum has previously uploaded online teaching materials. Expert 1 also pointed out the online materials the museum produces for schools, directly linked to specific learning goals. When the museum can directly curate the teaching materials onto the platform, the more traditional frames of power and knowledge are at work, leaving minimal room for visitor interpretation or co-creation, but rather promoting the more hierarchical understanding of the learner and the teacher (Russo & Watkins, 2005).

Portability. Another strategy for museums to expand the museum experience and facilitate audience-centrism is through co-creative projects. Specifically, Expert 5 brought up a project in which the museum strives to understand certain themes through discussion and collaboration with local communities: “We really want to give a voice to those for whom it may not be so obvious. [...] through participation we will be able to work with them in such a way that their voice will be heard”. In practice, the museum organises discussion evenings, where the members of the public are welcome to join. In relation to digital technologies, these discussions are also streamed in order for the broader public to be able to join, even though they cannot join in person. While the nature of the co-creative project was discussed with museum Experts 2 and 5, the aspects of streaming were only specified after the interview recording with Expert 2, which will be further noted in the limitations section of this thesis.

4.3 Comparative Discussion of the Findings

After a discussion of the principal findings of the in-depth interviews with the museum experts, the following section will move on to a comparative analysis of these results. As such, the section is concerned with the second sub-research question, which sought to identify how the perceptions varied between the experts from the Netherlands and Finland.

4.3.1 Active visitor participation

The first finding that stands out from the results reported earlier is that experts from both countries brought up the topic of active visitor participation. In this context, a key theme discussed by the experts from both countries were games, which were brought up in relation to engaging

visitors in both fun and educating way. For this reason, the concept of edutainment can be considered a relevant lens to understand this topic. To exemplify, the museum mobile games introduced by Expert 7 as well as the VR game brought up by Expert 3 can be considered. In both cases, the museums were aiming to engage younger visitors, in particular school visitors, and familiarise them with the topic at hand in a gamified format. In contrast to the Dutch expert views, incorporating game technologies only for the purpose of entertainment and fun was brought up by Finnish Expert 4, notably in relation to the VR karaoke and Dance Studio. While museums are generally regarded as educational institutions (Falk & Dierking, 2018), in certain cases, they can be considered to be slowly moving towards spaces of amusement and fun first. Talking about entertainment in the museum sector, Expert 3 commented:

I don't see entertainment as a swear word at all. On the contrary, because as a historical museum, we have a bit of a dark brand, that we only tell boring things, and everything is black and white [...]. So yes, for us at the historical museum, I see it as an opportunity for us.

In contrast to this, Dutch Expert 7 expressed a more critical view of the notion of entertainment. For her, entertainment and play often comprise the same things, however, play would be a more fitting term in the museum context. From this perspective, Expert 7 associates play also with the visitor getting inspired and creating their own stories – referring to the type of active participation that is not necessarily associated with the presence of digital technologies. Overall, the notion of active participation as discussed by experts from both countries can be regarded as a form of play, as mapped within the Entarch model. As another example of engaging active participation among the visitors, Expert 2 highlighted mobile apps that function as mobile guides within the exhibition. In terms of active participation, the experts focused on the individual visitor experiences, excluding the vision of participatory art, as brought up by Expert 9. When playful interaction takes place with other people, the elements of *play* and *dance* can be regarded to operate in one (Konzal, 2012).

4.3.2 Role of the museums & Expansion of the museum experience

Another important finding is the discussion on the shifting role of museums, in particular the expansion of the museum experience outside of the physical museum building. What stands out here is that for the Dutch experts, the expansion of the museum experience beyond the exhibition was connected to various developments, ranging from hybrid museum experiences to mobile engagement, and online presence. In the future, Dutch experts, namely Expert 10, expect the museum to leverage new ways of existing, for example through integration into emerging online spaces, such as metaverse applications and game spaces. Notably, the potential of cyberspace, in particular metaverse, as a way to cater to younger museum visitors has been also highlighted by scholars such

as Lee, Park and Lee (2022). Therefore, the Dutch museum experts are evidently looking ahead in the development of emerging virtual platforms.

A shared idea that museum exhibitions and collections are no longer confined to the physical building can be detected in the interviews from both countries. For example, the topics of virtual museums, open exhibitions, and public online repositories recurred throughout the interviews. In this context, the element of *glue* becomes significant: these online and virtual services could be considered coherent products on their own, which visitors can visit regardless of having visited the physical museum before. Similar to transmedia narratives, virtual services can be regarded as additions to the entertainment architecture of the museums, which contribute to the interconnected coherent experience (Konzal, 2012). The ideal form of a transmedia network is for each medium to have its unique contribution to the overarching experience (Jenkins, 2010). For this reason, virtual and online services could be regarded as supportive components in the shift towards “a museum without walls” (Arvanitis, 2010, p. 170) while not making the physical exhibition any less significant component.

4.3.3 Visitor agency & Diverse visitor experience

In relation to the discussions on the visitor experience, two divergent discourses emerged between the Finnish and Dutch experts. Common views among Dutch experts related to the cultivation of the visitor agency, which comprised strategies such as evoking visitor reflection, freedom of choice and personalisation. Meanwhile, the Finnish experts’ views mainly surfaced in relation to producing more diverse experiences within the exhibition, particularly as regards storytelling. To elaborate, the digital technologies brought up by the Dutch experts can be associated with the post-institution experience, as understood by Russo and Watkins (2005). From this perspective, it is evident how Dutch museum experts are actively looking for ways to evoke more input from their visitors. As they look for the visitors to create personal meanings and routes within the exhibitions, it can be noted that Dutch experts highlighted the fading significance of standardised visitor experiences.

The Finnish experts’ views differed from the Dutch peers, as many of the interviews focused on digital technologies that can provide new perspectives into the topics, which also relates to the element of the *story* from the Entarch model. To compare, amplifying visitor reflection and freedom of choice were discussed either minimally or not at all with the Finnish experts. Based on the interviews, the mentioned technologies could be regarded as tools to bring the visitor closer to the topics, particularly by employing the strategy of immersion. Yet, the theme of interactivity did gain some prominence in the interviews, along with the convenience digital technologies can offer in the exhibitions. While the digital technologies discussed by the experts could be regarded to facilitate

modes of audience-centrism, as long as the museum is framing the provided experience as a response to visitors' wants and needs (Simon, 2010). However, what was less emphasised were the strategies to cater to the visitors' unique needs, such as through modes of personalisation.

4.3.4 Data-informed experiences

A striking result to emerge from the interviews is the discourse surrounding data within the discussion on visitor experience in museums. It is worth noting that this topic was exclusively discussed by the Dutch interviewees, mainly Experts 6, 9 and 10. Of interest here is the two-way approach to the data-informed experiences: First, evoking the visitors to submit data through interactive technologies and second, collecting data of the visitor experience in the background, without the visitors' deliberate submission. This finding is aligned with past scholarly discussions highlighting how data has become a useful point of reference within exhibition design (Derda, 2023). As noted by Ferrato et al. (2022), automating the data collection on the active visitor is regarded as the prerequisite for customisation of the visitor experience.

In the context of the interviews, the generated insights were primarily said to be used for improving the visitor experience: As Expert 10 put it, "... it just helps us design different new tours and see what the nicest way of doing this is". Moreover, the data-gathering methods were also said to be used to involve the visitor to actively participate. Considering the Dutch experts' emphasis on emerging technologies and striving for personalised museum experiences, involving data can be regarded as a natural continuation in the curation of the audience-centred visitor experiences.

5. Conclusion

5.1 Main research findings

With ongoing developments in the museum sector, formalised in the renewed ICOM museum definition, this thesis set out to gain a better understanding of museums' perspective on the use of technologies as the facilitators of audience-centrism in museums. Approaching the topic from an institutional perspective, museum professionals were regarded as the most valuable sources for deeper insights into the topic. Consequently, this thesis presented the following research question: *How do museum experts perceive the role of digital technologies in supporting museums with delivering audience-centric visitor experience?* This central research question was supported by the two sub-questions, which will be answered below. After, the social and theoretical limitations of this thesis will be discussed, followed by recommendations for further research.

SRQ1: How do museum experts perceive the role of digital technologies within museum exhibition spaces in supporting audience-centric visitor experience?

The results of this thesis suggest that museum experts find digital technologies as supportive components in delivering a variety of experiences, expanding the museum's activities, and improving exhibition processes. In supporting audience-centric visitor experiences, the experts highlighted several ways in which technologies can be used to better engage with visitors.

First, the interviews revealed that museums are looking to use technologies to enhance visitors' agency, which primarily encompasses the way how museums are moving towards spaces of non-standardised and personal experiences as well as an open dialogue. With the latter, the shift towards more democratised museums can be recognised: the curatorial role as understood thus far is now changing towards bidirectional perspectives (Nielsen, 2017; Marini & Agostino, 2022). In practice, this means that museums are no longer striving to function as authoritative knowledge centres but are open to constructing the meaning of their exhibition content together with the visitors.

The previous theme also reflects in the discourse surrounding the changing role of museums, in particular its role in broader society. Museum experts from both countries elaborated on the premise of expanding the museum experience beyond the museum building towards hybrid and digital channels. Following the introduction of the concept in the 1980s, the idea of the museum without walls has been prominent in prior scholarly discussions, particularly in relation to mobile technologies (Schweibenz, 2019; Arvanitis, 2010). However, the conducted interviews expanded the concept beyond mobile technologies. The central proposition here is that the museum is no longer understood as just the physical space: museums are looking to become more integrated into the

everyday lives, of their audiences, both virtually and in-person, so that they can experience the museum without visiting the exhibition.

Third, both Dutch and Finnish experts considered digital technologies as tools to drive active participation in visitors. Notably, the notion of active participation was mainly associated with learning objectives: from the experts' perspective, by actively participating in a given task or activity, the visitor can become more engaged with the exhibition. By stimulating active participation, the visitors are more likely to lead themselves through the topic instead of the museum operating as a lecturer on the topic.

Lastly, while the experts demonstrated to a large extent neutral and positive views on the use of technologies, the interviews also shed light on the disadvantages museum professionals have towards the integration of digital technologies into exhibitions. Namely, multiple interviewees pointed out how they rather see digital technologies as just one of the tools they can benefit from, but not as the main attraction: rather, the content remains the most important component within the exhibitions. In other words, the experts emphasised the importance of content-driven exhibition design, over technology-driven design.

SRQ2: How do the perceptions of digital technologies supporting museums with delivering audience-centric experiences vary between Dutch and Finnish museum experts?

The investigation of the views of museum professionals from the Netherlands and Finland has shown that these two countries have varying perceptions on the use of digital technologies in enabling audience-centrism. While closer inspection shows overlap in the type of technologies and experiences the museum professionals expressed, overarching differences can be detected within the relationship between the museum and the visitors as well as in the future-views mapped out by the experts.

To a large extent, the Finnish museum experts focused on how digital technologies facilitate diverse visitor experiences, particularly the aspects of storytelling. The central proposal that the experts underlined were related to how museums function as the *providers* of stories and experiences. In contrast, the approach the Dutch experts brought forward was the museums turning into *facilitators* of diverse museum experiences. Importantly, evoking and collecting the visitors' opinions, perspectives, and ideas, that contribute to the meaning of the experience were emphasised. Consequently, the Dutch experts also found importance in data practices, namely the collection of visitor data. Digital technologies allow museums not only to collect their visitors' insights more efficiently but also enable the use of data analytics to further improve the visitor experiences. In both cases, the importance of the visitor becomes a central objective for the museum, demonstrating the shift from object-oriented museums to experience-oriented museums. With respect to the main research question, museum experts in Finland and the Netherlands have diverse expectations for digital technologies, meaning that various potential usabilityes are envisioned, while simultaneously

emphasising that digital technologies should always be incorporated with a specific purpose in mind.

5.2 Social implications

This thesis will be of interest to museum professionals across other regions where the use of digital technologies is deliberated and possible areas of investment. Moreover, this thesis has provided deeper insight into the use of digital technologies, both in terms of their value-proposition in relation to audience centrism, as well as critical notions on what practicing professionals are highlighting as possible risks.

The findings reported in the thesis also shed light on the data practices within museums. Aligning with previous research, the increasing use of digital technologies translates to easier data collection processes for museums to track their audiences (Derda, 2023). The contribution of this thesis has been to confirm the shift towards datafied experiences, but also the unequal presence of the discourse surrounding data. Notably, the topic became only prominent among the Dutch experts, resulting in unexplored theme in the Finnish sector, whether more museums find significance in the use of data. With the proliferation of data practices in the cultural sector and museums, questions of data use and privacy also arise. From a critical perspective, the use of visitor data has the chance of becoming yet a form of authoritative control over the visitor, which could be considered conflicting with the notions of increased visitor agency brought by audience centrism.

5.3 Theoretical implications

The empirical findings in this thesis make several contributions to the current literature. Much of the existing research on the topic has conducted country-specific studies (Marini & Agostino, 2022). This thesis has been one of the attempts to thoroughly examine the opinions of museum professionals on the use of technologies by extending the sample beyond one country of study. While ideas rooted in theory from the field of museology and cultural studies are applied interchangeably across regions, the insights gained from this study suggest that even in countries with relatively similar cultural conduct, museums hold significantly different motivations and views on the use of technologies in the production of visitor experiences.

The theoretical findings complement those of earlier studies, particularly the idea of the visitor experience and collections being considered equally important. To illustrate, throughout the interviews, the experts focused on how the visitors can gain the most from the exhibition, whether that is discovering new information or having fun. For this reason, extending the Uses and

Gratifications Theory to study audience centrism in museums can be considered to broaden the phenomena on which the theory can be applied. While U> theory is often used for deepening the understanding of the use of different technologies and media, museum exhibitions are becoming increasingly technology-saturated, making the application of the theory more fitting. The in-depth interviews also shed light on themes such as entertainment in museums, which suggests that visitors are looking for gratifications beyond learning. These results add to the expanding field of developing visitor needs of museum visitors, which U> can help conceptualise.

Following, the principal theoretical implication of this study could be connected to the use of the Entertainment Architecture (Entarch) model. It can be argued that this thesis challenged the framework as proposed in the Entarch model, comprising four different elements. While the model provides the tools for an in-depth analysis, the overlapping nature of the elements can also cause interference considering the scope of this study.

5.4 Limitations of the study

As prefaced in the research implications, the generalisability of these results is subject to certain limitations. For instance, the thesis has focused on two countries located in North and Northwestern Europe, where the museums have gone under through significant transformations brought by the digital era. For this reason, applying the generated knowledge may be of challenge in other regions with limited access or resources to the discussed technologies.

While the participating museums in this study represented a relatively diverse type of museums, including five art museums, three history museums, one science museum and one music-themed museum, this distribution was not equal between the two countries. Namely, all the participating Dutch museum experts represented the art museums, whereas the rest were Finnish museums. As the prompted expert insights may be of variance depending on the type of museum, it is unfortunate that the study did not include a more diverse set of museums from both of the regions. In other words, it could be criticised that the views represented by Dutch experts are more art-museum-specific than country-specific insights.

5.5 Recommendations for future research

Further research is needed to fully understand the implications of the use of digital technologies as facilitators of audience-centric ways of exhibiting in museums. Specifically, a study similar to this one could be carried out in other countries, to gain a broader understanding of museum

professionals' views on the topic. At the same time, further work involving a specific genre of museums, such as art or history museums, in order to validate whether there are similarities or differences across the sector. Future studies should also assess the size of the data sample. Arguably, increasing the number of participating museums would help to establish a stronger consensus on this matter.

A natural continuation of this research would be to extend the Entarch model to specific digital technologies or online experiences. As the model is proposed for Internet-native transmedia entertainment, it could be used to examine more closely the various online extensions of the museum, as brought up in this thesis. These include not only virtual museums but also emerging forms of platforms, such as metaverse. With the use of digital technologies, data practices can also be expected to gain stronger discourse in the museum sector. Thus, further research in this field would be a great help in ensuring the ethical use of data, even when there are non-commercial interests involved.

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Appendix A: Participating museums

Table 1

List of experts and museums

Museum Expert	Museum	Location
Expert 1	Heureka, The Finnish Science Centre	Vantaa, Finland
Expert 2	Lahti Historical Museum	Lahti, Finland
Expert 3	The National Museum of Finland	Helsinki, Finland
Expert 4	Finnish Music Hall of Fame	Helsinki, Finland
Expert 5	Lahti Historical Museum	Rotterdam, the Netherlands
Expert 6	Dordrechts Museum	Dordrecht, the Netherlands
Expert 7	Het Noordbrabants Museum	's-Hertogenbosch, the Netherlands
Expert 8	LAM museum	Lisse, the Netherlands
Expert 9	Van Gogh Museum	Amsterdam, the Netherlands
Expert 10	Museum Boijmans Van Beuningen	Rotterdam, the Netherlands

Appendix B: Interview Guide

Table 1

Interview Guide

Theme	Interview question (English)	Interview question (Finnish)
Establishing questions - Ice breakers	Can you briefly introduce yourself and your role within the museum?	Voitko lyhyesti esitellä itsesi ja työnkuvasi museossa?
	a. For how long have you been in your current role (years)?	a. Kuinka kauan olet ollut nykyisessä roolissasi?
	b. For how long have you been in your field (years)?	b. Kuinka kauan olet ollut alalla?
	What are your daily responsibilities?	Voisitko kuvailla päivittäisiä työtehtäviäsi?
Role of the museum	How would you describe what the main goals of the museum are today?	Voisitko lyhyesti kuvailla museon tämänhetkisiä tavoitteita?
	Do you think the role of the museum has shifted in the past years?	Onko museon rooli tai asema mielestäsi muuttunut viime vuosina?
	a. If yes, how? If not, why not?	a. Jos on, miten? Jos ei, miksi ei?
	Can you describe your museum target audience?	Voisitko kuvailla museon kohderyhmää?
	a. Why this group exactly, why is it important?	a. Miksi juuri tämä ryhmä, miksi se on tärkeä?
	b. Can you give me examples of how you address/reach this specific group of people?	b. Voitko antaa konkreettisia esimerkkejä siitä, kuinka toimitte tavoittamaan tämän tietyn ryhmän?
Exhibition design and visitor experience	How do you approach designing a museum exhibition?	Miten lähestyt museonäyttelyn suunnittelua?
	a. How do you consider the needs and desires of visitors in this process?	a. Miten arvioit vierailijoiden tarpeet, toiveet ja odotukset tässä prosessissa?
	Do you think the experience of visiting a museum has changed for the audiences in the past 5 years?	Onko vierailukokemus muuttunut museoyleisön kannalta viimeisten (5 vuoden) aikana?
	a. If yes, how? If not, why not?	a. Jos on, miten? Jos ei, miksi ei?
	Can you walk me through a recent project where you aimed to improve the visitor experience in a museum?	Voitteko käydä läpi viimeaikaista projektia, jossa pyritte parantamaan vierailijakokemusta museossa?
	a. What steps did you take and what were the outcomes?	

		a. Mitä toimenpiteitä projekti sisälsi ja mitkä olivat tulokset?
	Can you give me an example of a time when you saw active visitor participation enhance the value of an exhibition?	Voitko antaa esimerkin projektista, jossa kävijöiden aktiivinen osallistuminen nostatti näyttelyn arvoa?
Digital technologies and edutainment	What have been your experiences with digital technologies in your museum exhibitions?	Millaisia kokemuksia sinulla on ollut digitaalisen teknologian käytöstä museoesittelyissä?
	a. How has the use of digital technologies in your museum evolved over time?	a. Miten digitaalisen teknologian käyttö museossasi on kehittynyt ajan myötä?
	What inspired your museum to invest in digital technologies?	Mikä inspiroi museotasi investoimaan digitaaliseen teknologiaan? Esim. trendit/data/jne. joka vakuutti
	a. In what situations would you incorporate digital technologies in the exhibitions?	a. Millaisissa tilanteissa käyttäisit digiteknologiaa näyttelyissä?
	For what reasons do you think museums incorporate digital technologies in their exhibitions?	Mistä syistä arvelet museoiden ottavan käyttöön digiteknologiaa näyttelyihin?
	a. What do you think museums hope to achieve from using technologies in exhibitions?	a. Mitä luulet museoiden toivovan saavuttavan käyttämällä digiteknologiaa näyttelyissä?
	What role do digital technologies play when planning [current/future] exhibitions?	Mikä rooli digitaalisella teknologialla on [nykyisten/tulevien] näyttelyiden suunnittelussa?
	How do you think the Dutch museum sector has been impacted by digital technologies?	Miten digiteknologia on mielestäsi vaikuttanut suomalaisen museosektoriin?
	If you would have the resources – what kind of digital technology would you like to use in your next exhibition?	Jos sinulla olisi tarvittavat resurssit – mitä teknologiaa haluaisit käyttää seuraavassa näyttelyssä?
	Can you think of any disadvantages or risks to using technologies in exhibitions?	Tuleeko mieleesi teknologian näyttelyissä käyttämisen haittapuolia tai riskejä?
	Why do you think edutainment is discussed more in the media in the context of museum exhibitions?	Miksi mielestäsi opettavaisesta viihteestä keskustellaan enemmän mediassa museonäyttelyiden yhteydessä?

The future and ending the interview	How do you see museum exhibitions and services evolving over the next years? a. In the next 5 years? b. In the next 10 years?	Millaisena näet museoiden näyttelyiden ja palvelujen kehittyvän tulevina vuosina? a. Seuraavan 5 vuoden aikana? b. Seuraavan 10 vuoden aikana?
	Is there anything else you would like to mention or elaborate on?	Onko jotain muuta, mitä haluaisit mainita tai tarkentaa?

Appendix C: Coding Trees

Table 1

Coding Tree – The Netherlands

Selective codes	Axial codes	Open Codes	Open Code Example
Cultivation of visitor agency	Amplification of visitors' perspectives	Creative audio tours	And now we also try to do more theatre like information, asking questions from visitors and not only telling them, but asking questions.
	Accommodating the visitor	Background acoustics	to have a sound system throughout the museum. So at all times it sounds like there are people there, even if it's a quiet hour, a quiet day, it sounds like there are more people, so you feel more at ease.
	Visitors' freedom of choice and decision-making	Digital displays allow more content	if you want to know more, you can click on it and you get more information.
	Experience personalisation	Interactive artworks (projections)	Or like a really nice cool digital interactive on Museumplein, like on the building, you know, like the grey building.
Data-informed experiences	Acquiring data from the visitors (data submitted)	Online surveys	Where people are handing in their audio device, we're asking for if they are willing to fill out the

			survey again.
	Producing data from the visitor experiences (data collected)	Visitor tracking via audio tour	it's like a data analytics research where we match the data that we're getting. So someone walks the tour and we can we can see then where they stopped, how long they stopped, what, which route they walked, basically based on the audio device
Expanding the museum experience beyond the exhibition	Hybrid museum experiences	Virtual & open exhibitions	... things like open sourcing collections so that images can be used in all sorts of different ways. I definitely see a future in that
	Mobile engagement	AR-experiences	in terms of AR, I would say it can help to bring an artwork somewhere, when to where the actual artwork cannot be found or seen or brought to. And so it adds to accessibility.
	Online experience	Online content	I know that people use, like there's some museums working, making podcasts.
Evoking active participation	Gamefication	Mobile games	So, we now have a museum game. It's for a secondary school, but then they walk around with an iPad and play really like an escape room sort of game.
	Participatory art	Paint and upload	if you have a room where you could do

your painting in and upload it to a wall and then interacted with someone else's painting, ... like a sort of like a learning lab with interactives would be super fun

Table 2

Coding Tree – Finland

Selective codes	Axial codes	Open Codes	Open Code Example
Diversifying the visitor experience	New storytelling strategies for multiple target groups engagement	Animations	Ten pages of A4 can be told with a 10-second animation. In practice it's a short and good way to illustrate things and create context
	Connection to the intangible	Historic recreations (VR)	in my opinion, if you want to move to a historical moment in a comprehensive way, then VR is a great tool for that
	Offering convenience	Content repurposing	Information, videos, interviews and texts can be stored in such a form that they can be taken out again.
	Personalisation	Interactive artworks	The most photographed object in our Finnish story exhibition are portraits of the presidents that subtly move, it's like a Harry Potter-like

			adaptation ... At the end, you will get your own picture in the frame.
	Education	Visual projections	The old village and the fire that happened are projected. The whole room is actually built around it and it's like a stopping element in that exhibition.
Driving active participation	Entertainment	VR karaoke	We also have a virtual karaoke, which is something new. But it's a karaoke and it doesn't have any kind of informative content. It's just funny
	Mobile engagement	Mobile guides	Museum tours could be organised with it, either inside or outside of the building
Changing museum definition	Expanding to at-home experience	Virtual museums	What is being developed now is a digital museum project. That is, that all museums should strive to create digital content that can be used to visit the museum through a computer. So this is a great effort.
	Portability	VR portability	Elderly people with difficulty getting around got the full exhibition experience. It was really great. And it was a nice experiment.

Appendix D: Abbreviations

Table 1

Abbreviation meanings

Abbreviation	Meaning
AI	Artificial Intelligence
AR	Augmented Reality
Entarch	Entertainment Architecture
FMA	Finnish Museum Association
ICOM	International Council of Museums
MR	Mixed Reality
U>	Uses and Gratifications Theory
VR	Virtual Reality