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Designing new phygital service experiences for hospitality

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Abstract: This qualitative case study explores the blending of phygital, a blending of physical and digital tourism experiences at the Rovaniemi Local Heritage Museum in the context of the peripheral Arctic Lapland. Built on participatory design, it used the mobile head-mounted eye tracking sensor device and the empathy map to study such phygital customer experiences during tourist journeys to remote peripheral areas of micro and small-scale organisations. The findings provide tourism, hospitality, service and experience design researchers, developers, and service providers with relevant information on the possible future challenges of phygital experience design. This study served as a test bed for the development and introduction of a tourism and hospitality service in the fragile local context for the larger tourism audience that simultaneously addresses the needs of local cultures, and communities, identifies possible future developments in the tourism and hospitality context and contributes to the achievement of Sustainable Development Goals 11 (Sustainable cities and communities).

Keywords: phygital customer experience; service design; experience design; tourism and hospitality

1. Introduction

The concept of blended physical and digital (phygital) experiences has been studied and discussed recently in several fields, such as design for culture (Lupo, 2021), tourism and hospitality (Mieli, 2022; Zillinger, 2021), strategic marketing (Jacob et al., 2023), and phygital transformation (Mele et al., 2023). Lupo (2021) refers to phygital as a 'heritage continuum' in experiences where time and space extend and connect as an indivisible continuum with tangible and intangible elements. Mieli (2022) and Zillinger (2021) connect phygital with tourists using digital devices, such as smartphones for fluid connections to access and transform relationships between tourists, space, and place. The perspective of phygital in marketing for new customer journey management by using a design science research methodology

(DRSM) is uplifted by Jacob et al. (2023). Mele et al. (2023) conducted a systematic literature review where they suggested a holistic framework through four specific thematic research perspectives constructing phygital development, such as objects and applications, context as the space and place, customer journey, and retail experience of the customers (Mele et al., 2023).

This qualitative and empirical case study explored a combination of the suggested four thematic research perspectives to study the elements constructing the phygital customer experiences in the tourism and hospitality context in the peripheral Arctic Lapland using participatory design. The research question *How is the phygital experience constructed during the customer journey?* sought to determine the holistic elements of the experience at the physical and digital touchpoints.

The theories in the study comprise phygital experiences, customer insights and engagement, with the sustainability of service and experience design. The phygital experiences were hybrid and layered and occurred temporally in physical realities and digitality in the smartphone-mediated journey (Mele et al., 2023; Mieli, 2022). To interpret the experiences, experience design and service design were chosen to study empathetic human-centricity in the dynamic phygital context where the narrative of the journey closely elaborated temporalities and spaces (Miettinen & Koivisto, 2009; Miettinen et al., 2014; Miettinen, 2016; Mieli, 2022; Rainoldi et al., 2020; Stankov & Gretzel, 2020).

The data for the case study were collected using a two-method combination—a mobile head-mounted eye tracking device and an empathy map—for observing, assessing and analyzing the phygital experiences. The data collection was organized at the Rovaniemi Local Heritage Museum at a Harvest Fair and Museum Open Days event in September 2022. Seven event visitors, six adults and a 10-year-old child, were requested to participate in the study upon their arrival at the museum. They were all previously unfamiliar with the tested service.

The audiovisual data collected from the study participants were on their eye-pupil movements in eye fixations and saccades with the sounds and tone of voice included (Le et al., 2020; Rainoldi & Jooss, 2020; Tobii, 2023). The data enabled the researchers to access the touchpoints of the customer journey to study the hybrid and layered contexts of visible, audible and latent contents of customer behavior, such as thoughts and feelings (Lupo, 2021). The data analysis was executed using qualitative inductive content analysis to interpret descriptive themes and their meaning in constructing phygital experience (Graneheim et al., 2017).

The digitally enhanced service, the Mill Elf Journey, is a smartphone-mediated narrative in which the customer is activated to walk, watch and learn about traditions. The newly developed service promotes cultural sustainability, such as the local identity, highlighting the importance of regionalism and traditions for community well-being (Totto, 2023b). The use of the two methods to study phygital experiences corresponds to the design for sustainability (DfS) approach in terms of redefining, re-evaluating, restoring and achieving the appointed

research dilemma of how the customer experience is constructed (Bhamra & Lofthouse, 2016; Birkeland, 2002; Ceschin & Gaziulusoy, 2016).

2. Sustainable and phygital service design

Service design has become a conceptual platform for holistic customer- and user-centric development work in which both internal and external stakeholders of companies are involved in the early phases of the design process (Miettinen & Koivisto, 2009; Miettinen et al., 2014; Miettinen, 2016). Service design offers an approach that enables companies with means to keep in sync with fast-paced developments in technology and consumer culture while responding to changes resulting from new service concepts. During the tourism and hospitality customer journeys, customer experiences are formed in service moments and touchpoints. Here, the service moments elaborate on time and temporality, whereas the touchpoint represents space or spatiality with tangible and intangible elements (Miettinen, 2011; Zillinger, 2021). Physical touchpoints are constructed with materials, such as devices, solutions, applications, collections of artefacts, humans, places and locations (Miettinen, 2011) whereas digital touchpoints indicate digital mediation transforming, augmenting and immersing the customer experience (Lupo, 2021; Mieli, 2022).

Phygital experience eliminates the boundaries between physical offline and digital online realities, as it is constructed in hybrid and layered dimensions, thereby enabling customers to immerse themselves in time–space at their desired level, depth or length of connectivity (Mele et al., 2023; Mieli, 2022). While the temporality of the phygital experience is intermeshed at the physical and digital touchpoints, the holistic approach of the customer journey architecture and the insight into customer thinking, feeling, behavior and decisions construct the understanding of the total experience (Mieli, 2022; Zillinger, 2021). Accordingly, it is possible to study the phygital customer experience as a process to follow customers' perceptions and behaviors (Mieli, 2022). Mele and Russo-Spena (2021) argued that the customer journey architecture is crucial in engaging, interacting and forming relationships with the customer. Hence, the 'Systems of engagement' are important to engage the customer with activities to enrich the experience whereas the 'Systems of insight' support organization in understanding customers' holistic needs and wants (Batat, 2021; Hsu, 2022; Mele & Russo-Spena, 2021).

When observing the phygital customer experience, the focus should stay on the human-centered design whereby the role of technology is to mediate, not to confuse the customer (Stankov & Gretzel, 2020). Far too often, the hype of a new digitalized service concentrates on high-tech, forgetting the high touch and the end-user. Service and experience design are especially needed in hybrid and dynamic contexts wherein the subjectivity of the service-dominant logic is valued and leads design for service and its sustainability (Mieli, 2022; Rainoldi et al., 2020; Stankov & Gretzel, 2020; Vink et al., 2021). When the service includes technology, the research methods should be explorative and participatory to emphasize

codesign by the organization and its customers (Tussyadiah, 2014; Vink et al., 2021). Acknowledging customers' convenience in situations that are not necessarily beneficial to the organization, requires empathy and otherness (Hanni-Vaara, 2022; Ruonakoski, 2019).

Sustainability is one of the focal points of this case study. The DfS approach is part of a larger holistic view of sustainable development that offers a novel and broader context for design in which the environment and society are considered relevant (Bhamra & Lofthouse, 2016). DfS addresses not only a single service or product but complex systems, assuming responsibility for redefining needs, re-evaluating design conventions to realise social transformation, and restoring the social and natural worlds, to name but a few of its objectives (Bhamra & Lofthouse, 2016; Birkeland, 2002; Ceschin & Gaziulusoy, 2016). Although DfS still involves the technical aspects of sustainability, the role of the users is more significant, especially in emotionally durable design and design for sustainable behavior, or the resilience of communities is paramount, such as in design for social innovation. Hence, the scope of DfS is broader because it addresses systemic design innovations. Thus, designers need to go beyond developing solutions to generating innovations that are much more complex and require a stakeholder network (users, organisations) and stakeholder collaboration for their implementation. In this study, these aspects are cross-cutting topics.

3. Hospitality, arctic lapland and the Mill Elf journey

Lapland is the northernmost province of Finland. Its capital is Rovaniemi. The province has become one of Finland's leading tourism destinations during the past decades. For example, winter tourism accounted for nearly 50% of the international overnights in Finland in 2022–2023 (House of Lapland [HOL], 2023). Most (63%) of Lapland's overnighters are international tourists, numbering over 2.2 million (HOL, 2023). This number of visitors is significant compared to Lapland's only 179,000 inhabitants. Therefore, Lapland has fostered sustainability programs in developing its tourism and hospitality industry to balance the needs of tourists, locals, organisations, destinations and the environment (Visit Finland, 2022).

The Rovaniemi Local Heritage Museum (Figure 1) is operated voluntarily and is owned by the Totto Association (Totto, 2023c). The association was established in 1951 to maintain the spirit of the local heritage by inviting people to visit the museum (Totto, 2023b). During the past years, the museum's message has been to renew its brand in responding to the changes in society and to the needs of the customers, the locals and tourists. In response, the association innovated a new digitally enhanced narrative service, the Mill Elf Journey in 2022 (Totto, 2023b). By designing a smartphone-mediated service, the museum contributed to the emergence of a new hospitable service concept (Totto, 2023b). Thus, the museum responded to cultural sustainability by preserving the traditional narrative in transforming it into a new mode that is phygital and engaging (UN, 2023).

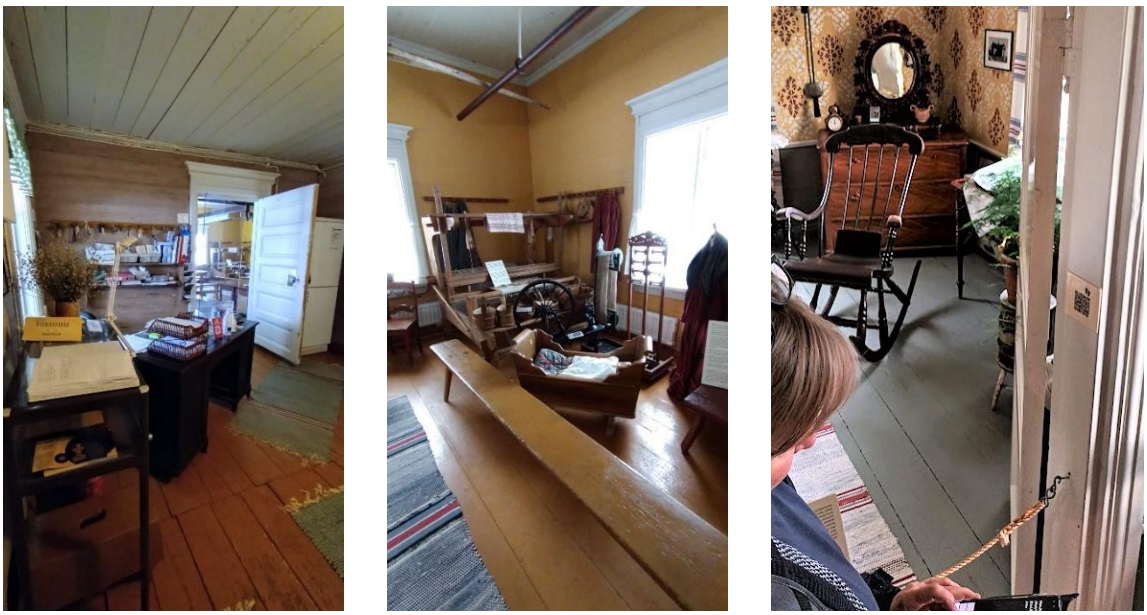


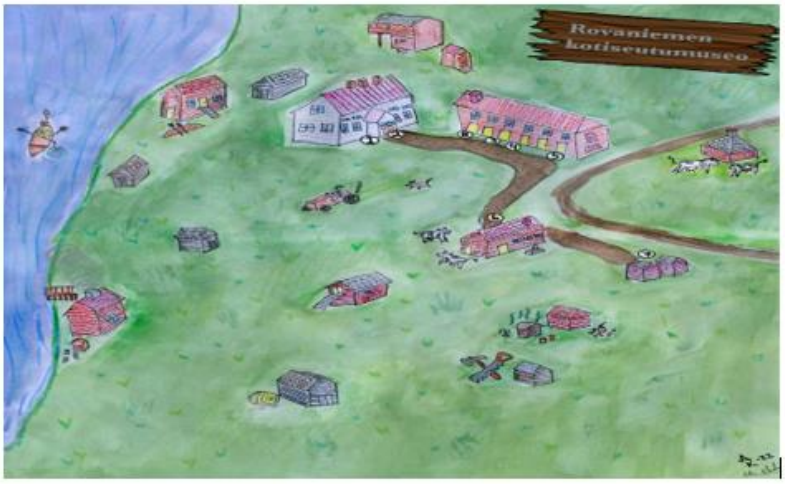
Figure 1 The authentic Rovaniemi Local Heritage Museum is one of the buildings saved from the Lappish War in the 1940s. On the left is the porch. In the middle, the living room's women's side. On the right is the hall with a tiny QR code of the Mill Elf Journey (Photos by Päivi Hanni-Vaara, 2022-24).

The manuscript of the Mill Elf Journey is based on the book 'The Mill Elf Stories' written by Annikki Setälä, the writer who lived in the museum's main building in the 1920s (Suomen Kirjallisuuden Seura, 2019; Totto, 2023a). The service consists of eight touchpoints starting from the museum's main building, the porch, where the customer is given practical information about the journey and a narrative leaflet (Figure 2) to guide around the museum premises. On the journey, the customer follows the narrative in the leaflet and searches for physical and digital touchpoints, such as the museum's untouchable artefacts and QR codes marked with Mill Elf's tiny footprints (Totto, 2023a). The QR codes in the digital touchpoints lead customers to download and watch videos of the traditional children's plays and duties of the past.

THE MILL ELF JOURNEY (5 €/family)

Totto
Kotiseutuyhdistys
Rovaniemen Totto ry

Welcome to get to know the lives of children in the past and search for the Mill Elf on the museum premises. While walking *the Mill Elf Journey*, we learn the regular duties of the boys and girls in the farmhouses of the 1940s.



Adults: Please, read the introduction to guide children. Download a QR code reader on your smartphone.

Introduction:

1. The Journey starts at the museum's main building. Follow this guide and **the numbers (1-8)** while walking the Journey.
2. Each building explains the duties of the children.
3. Search for QR codes marked with tiny footprints 👣 including short videos of the Mill Elf.
4. Search for the Mill Elf friends hidden on the Journey as tiny dolls.
5. Remember to search for the nimble Mill Elf. 

The Journey Starts:

1. THE LIVING ROOM

The children participated in adult's work, girls for the women's and boys for the men's work.

Do you find sledge runners?
Do you find tools to take care of small children?
Do you find the footprints of the Mill Elf? 👣

2. THE HALL / CHAMBER OF THE MASTER AND THE MISTRESS

Girls and boys: In the old days communication with friends and relatives was different.

Do you find three elements to keep in touch in the old days?
Do you find the footprints of the Mill Elf? 👣

Figure 2 The Mill Elf Journey's leaflet guided the research participants on the narrative journey (the visualization by Aatu Kulmala, the manuscript by Kerttu Oikarinen and Sirkka Veikkolainen based on 'The Mill Elf Stories' by Annikki Setälä. Translated into English by Päivi Hanni-Vaara, 2024).

4. Case study methodology and the data

This qualitative case study was theoretically based on human-centered contexts that combined art and design-oriented service design, and social sciences-oriented tourism research. Ontologically, customer experience is understood as a reality that is constructed through interactions of humans, non-humans, and the self (Jennings, 2010) whereas the phygital is constructed spatially in physical and digital touchpoints during the temporal moments of the experience (Mieli, 2022). This study explored, assimilated, and evaluated how phygital experience was constructed in the physical and digital touchpoints at the Mill Elf Journey. The objective was to indicate the elements constructing phygital experiences to sustainable future design.

The research utilized two methods combination—mobile eye tracking and an empathy map to study museum visitors' phygital experiences. Eye tracking technology is based on sensor technology that collects visual data on eye pupils' movements within the area of interest (Novikov, 2022; Tobii, 2023). The eye fixations form gaze points and saccades as gaze patterns that correlate with cognitive processes, such as attention, memory, and perception (Rainoldi & Jooss, 2020; Rainoldi et al., 2020). The empathy map encouraged the participants to 'think aloud' their feelings and thoughts, such as what they see, hear, think, and do (Ferreira et al., 2015). Hence, the audio data revealed spoken words, sounds, and the tone of voice.

What do you hear? What affects to your decision?	**What do you think and feel?** What is most important to you?
What do you say and do?	**What do you see?** How does the environment look like? What are you offered?
Pain points What frustrates you? Do you avoid something? Is something hindering you?	**Gain Points** What do you wish to gain? How do you evaluate your success? How do you gain your objective?

Figure 3 The Empathy map method included questions whose aim was to encourage the participant to 'think aloud' their feelings and thoughts during the experience (Ferreira et al., 2015).

For recording the audiovisual data, the Tobii™ (Pro Glasses 2 version, Tobii™, Stockholm, Sweden) mobile head-mounted eye tracking device with wearable smart glasses, integrated microphones, and a tablet was used (Tobii, 2023). The data collection was executed at the Rovaniemi Local Heritage Museum Harvest Fair and open days event on 10 September 2022. Due to the event schedule, there were five hours to collect the data. Spatially and because of time management, the data collection was defined to cover the porch and the two touchpoints that are located at the main building as shown in Figure 4.

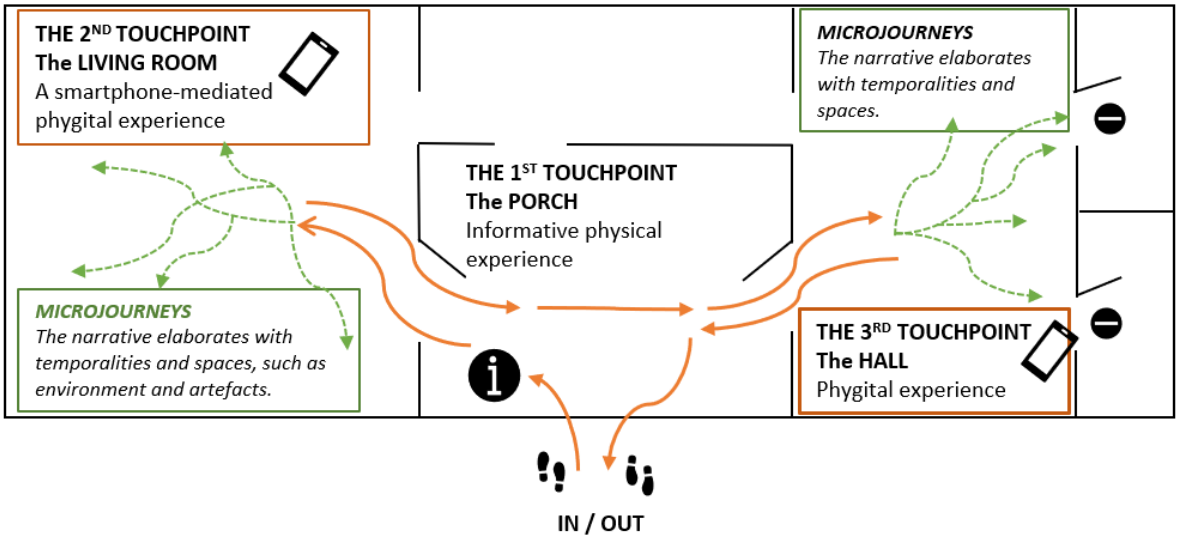


Figure 4 The illustrated floor plan of the museum's main building presents the route at the Mill Elf Journey that starts from the porch and is followed by the touchpoints and activating micro-journeys (Päivi Hanni-Vaara, 2024).

Seven voluntary research participants showed their interest and motivation to participate in the study: six adults and one 10-year-old child accompanied by his parent. Their gender and age represented five females (from 20 to 55 years) and two males (10 and 70+). The discussions with them revealed that they only had some occasional phygital experiences but none for narrative journeys. After the research information was delivered, the research participants signed the consent letter of the study which was followed by smartphone and QR code reader testing, use of the empathy map, and eye calibration for the adults with the Tobii device. A research assistant took the participant to the porch, where the data recording started.

At the porch, the museum servant welcomed and informed the participant of the journey practices (Totto, 2023a). The customer was given an informative leaflet (Figure 2) including instructions on how to proceed on the journey from one touchpoint to another (Totto, 2023a). During their journey, the triggering questions of the leaflet activated participants to microjourneys (Hsu, 2022) to seek physical untouchable artefacts and, thus, interconnect the journey narrative with the museum's collection. Finally, the microjourneys led participants to the touchpoints of the living room and further to the hall to meet the smartphone-mediated phygital experiences as shown in Figure 4.

The audiovisual video data covered a total of 85 minutes where the visual data showed the eye fixations as gaze points and saccades explaining the points, order, and the time spent in the point of interest (Shindler & Lilienthal; Tobii, 2023). While the Mill Elf Journey touchpoints are versatile and spacious, these features made it difficult or even impossible to compile the visual data of all participants as a heat map. Hence, the weight of the audio data became relevant as it supported simultaneously the analysis of the visual data and the experiences on the journey.

The empathy map method encouraged participants to 'think aloud' when proceeding on the journey. The visual data confirms some exact temporal moments when the participants looked at the empathy map. However, based on the instructions in the beginning, it was analyzed that the participants expressed their feelings and thoughts throughout the journey, though the empathy map reminded them of it in a few moments. The audio data indicated active sounds and voices, such as spoken words, hums, and sighs with variation in the tone of voice highlighting obvious and latent feelings and thoughts of the phygital experience.

The audiovisual data enabled the researchers to analyze the phygital experiences concretely to form abstractions, interpretations, and findings for future sustainable phygital service development (Graneheim et al., 2017). The importance of the audiovisual data was recognized when comprising the synthesis of the elements and experienced realities that construct the phygital experience (Chang & Lin, 2019; Rainoldi & Jooss, 2020).

The data were analyzed using qualitative inductive content analysis to interpret the themes of their meanings and their characteristics to uncover the comprehensive direction and nuances (Graneheim et al., 2017). The findings discuss the descriptive themes of the visible, audible and latent phygital experience realities of the data reflected in the theories of the case study. The participants were coded as C1–C7, whereas the museum's customer servants were as M1–M3 in the findings.

5. Findings

5.1. Empathy in the design process

The data indicated a range of variations in how the customer servants [M1–M3] empathised with the participants on the porch. The discrepancies in empathizing and reacting with the participants correlated with cognitive and multilevel processes throughout the journeys. For example, after C2–C4 was thoroughly informed by the servant [M3] about the journey engagements, such as the testing of the QR code reader and the guidance on how to proceed on the journey, the participants felt confident when proceeding with the phygital touchpoints. The analysis of the visual data substantiates them to have fewer gaze points and saccades with the audio of tranquil sounds and tones in their voices. The finding reflects that the phygital experience was constructed through communication, interaction, engagement, and forming social relationships with the customer servant [M3] (Batat, 2021; Hsu, 2022; Mele & Russo-Spena, 2021; Mieli, 2022).

Conversely, C1 and C5, who had little to no human-to-human interaction, struggled throughout the journey by trying to solve the touchpoints' challenges. "Yeah, I don't know where the Mill Elf footprints are. Are they on the floor, you might think?" [C5]. Without a servant's proper guidance, the experience tended to include pain points for the participant [C5] who only had the leaflet to follow or a very short technical discussion [C1] initially with M1. For example, when the leaflet guided the participant to proceed to the next touchpoint, C1 said, "Where can I find a customer servant? I don't know where the hall is?". The findings indicate that the narrative and the instructions of the leaflet were inadequate for a purely or nearly

independent journey emphasizing the importance of design practice and 'systems of insights' in understanding participants' holistic needs and want (Mele & Russo-Spena, 2021). The data confirmed that the participants had an increasing number of gaze points and saccades with a growing number of vocal expressions including snorts indicating pain points, such as frustration and anxiety.

A contrast was analyzed for the adult participant [C6] and a 10-year-old child [C7], a mother and her son, who started their journey without human-to-human guidance. Their collaboration was active and successful with shared roles and social interaction. The child was eager to find the QR codes to guide the adult to download the smartphone-mediated videos to immerse themselves collectively. The finding correlates the importance of sustainable social and cultural transformation between generations where the phygital experience is constructed through divided roles and shared memories, for example (Bhamra & Lofthouse, 2016).

5.2. The engaging microjourneys

The phygital experiences included triggering activities, the microjourneys (Hsu, 2022) whose aim was to interconnect the narrative with the museum's spatial environment and artefacts. A triggering question on the leaflet requested, *where can you find the sledge runners,* that urged the participants to look for them. "Do you remember those at grandma's place?" asked C6 from C7 sharing memories of past generations' family traditions. The visual data showed abundant gaze points and saccades, as the participants searched for the physical, untouchable artefacts within the museum's space. The audio data revealed that the microjourneys increased the participants' interest and knowledge of the local heritage.

The microjourneys as enriching activities of the journey reflect the 'systems of engagement' of following participants' perceptions and behaviors during the experiences (Batat, 2021; Hsu, 2022; Mele & Russo-Spena, 2021; Mieli, 2022). They correlated with the experience process and how the phygital experience cumulated throughout the journey. For example, the engaging actions enhanced participants' forming subjective experiences with the flexibility to proceed on the journey in their space and temporality to learn of the local heritage. This finding reflects one of the important gain points when designing phygital experiences.

The findings demonstrate that the activities aroused curiosity, although their role in the narrative remained somewhat unclear. The microjourneys were experienced as fascinating, although sometimes intriguing, because of the inability to understand the traditional concepts describing the artefacts. Hence, the 'heritage continuums' should perceive changes in language within decades (Lupo, 2021).

5.3. Towards the phygital experience

The findings demonstrate technical and technological elements constructing the phygital experience. Some pain points were technical, such as having challenges with spatial accessibility with obstacles during the journey. "How do you get there when it is in such a difficult place?" C1, C3–C4 and C6 commented when standing behind a long bench and trying to

stretch forward to scan the QR code in the cradle. Other data indicated that the journey's QR code confused participants. "I found the first QR code easily"' C1 and C4 happily said, without recognizing that the code revealed a museum artefact without connection to the Mill Elf Journey narrative.

The use of the QR code reader was found to be easy. Thus, the technological solution supported the accessibility to the phygital experience (Stankov & Gretzel, 2020). The findings demonstrate that physical experience blended at the digital touchpoint, where the smartphone bridged the physical transformation and mediated it into phygital (Koo, 2022). The digital touchpoint in the living room immersed participants in a one-minute video of the Mill Elf, the character of the narrative and his tiny friends. In the hall, a two-minute-long video immersed the participants in the children's plays and duties of the past.

Interestingly, the visual data emphasized that the gaze points focused varyingly on the videos. The gaze patterns showed that participants started multitasking by checking the smartphones' icons and glancing at the leaflet and the empathy map. After immersion, the audio data revealed neutral comments about the video, "Okay, it was like that!" [C3] or "It was nice, though the video was a bit long" [C1]. The audio data reported some signs of humming when immersed in the video.

The findings support the view that the phygital experience brings the participant to the center by allowing them to experience digital immersion in their rhythm, temporality and stimuli. Hence, immersion has a significant role in enabling the participants to intermesh and oscillate between physical and digital on a new, hybrid phygital experience level which invigorates and retransforms the total journey experience (Choi et al., 2022). The hybrid and layered space with elastic temporality enabled the participants to multitask during the experience in several roles and realities (Mieli, 2022).

Figure 5 The phygital experience enabled participants to intermesh and oscillate between physical and digital on a new, hybrid phygital layer in several roles and realities (Choi et al., 2022; Mieli, 2022). (Figure illustrated by Päivi Hanni-Vaara, 2024).

6. Discussion and Conclusion

The findings of this study of how phygital experience is constructed in a smartphone-mediated narrative journey promoted attention to the socio-cultural sustainability of the local heritage at the peripheral Arctic Lapland. This case study provided tourism and hospitality, and experience and service design researchers, developers and service providers relevant information on the possible future challenges of sustainable phygital experience design and sustainable development initiatives in the hospitality context.

While the phygital experience eliminates the boundaries between physical and digital realities, it calls for responsibility in designing sustainable hybrid, layered and intermeshed experiences enabling customers to immerse themselves in time–space at their desired level, depth and length of connectivity (Bhamra & Lofthouse, 2016; Birkeland, 2002; Ceschin & Gaziulusoy, 2016; Mele et al., 2023; Mieli, 2022). Immersion has a significant role as it enables the customers to enmesh and oscillate between physical and digital touchpoints on a new, hybrid layer and level of phygital experience that invigorates them to personalize and redesign the experience as end-users (Choi et al., 2022). The redesign permits the customer to design each phase of the experience based on their contemporary feelings and motivation (Mieli, 2022; Zillinger, 2021).

This study agrees that the phygital experience is constructed in complex nonlinear systems and frameworks implying empathetic, socio-cultural interaction between human/nonhuman-to-human/nonhuman (Mele et al., 2023; Vink et al., 2021). Emotionally durable design, such as empathizing with the customer refers to 'systems of insight' in forming relationships that construct customers' cognitive perceptions (Hanni-Vaara, 2022; Vink et al., 2021). The

interaction, information delivery and quality of service encountered are critical variables when assessing the success of the phygital experience. Spatially, in the authentic local heritage museum, the customers are challenged to create new norms for their behavior to access the environment that is sensitive and preserved. Thus, the design for sustainability invites us not only to guarantee the customers' well-being but also to save the fragile and unique environment when innovating phygital experiences.

The findings of this study cannot be generalized as there is a limitation with the number of participants in the study. However, as a ground paper, the findings generate and propose elements and contents for further development discussion for new and redesign of phygital services. Moreover, the assessment of the phygital experience reality as a design process is valuable for each micro and small-scale organization to enhance their service innovation in responding to the changes in the society and needs of the locals and tourists as customers.

From the methodological perspective, the findings reveal the opportunities to use a two-method combination of mobile head-mounted eye tracking and an empathy map in generating data. The two-method data collection merit was that the audiovisual data was collected during the experience. Hence, it deepened the analysis while the visual data exposed the eye fixations as gaze points and saccades within the area of interest where the audio data revealed sounds and voices with tones of the experience (Le et al., 2020; Rainoldi & Jooss, 2020; Tobii, 2023).

Our findings suggest several avenues for further research on designing phygital experiences in hospitality contexts. From interpreting the two-method data, the hybrids of the participants' experiences rose as a dominant theme. This calls for more thorough empirical and theoretical analyses of the nature of the phygital experiences for user-centered design. For example, how the movement between the different spatial-temporal contexts of the experience is experienced as a bodily phenomenon (see Haanpää, 2022). Theoretically, turning into service-dominant logic, more theorizing could take place on how value is co-created in such multidimensional contexts where social, spatial and temporal dimensions of experiences entangle and are shaped by the interactions of human and technological agents but also existing material space. This also calls for creative research and design methodologies that grasp the phenomenological experience but also pay nuanced attention to physical and digital spaces that may turn to phygital or other further dimensions and touchpoints (see Haanpää, 2022).

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