Investigating the Practices of Cultural Heritage Professionals Integrating Digital Technologies in a Small Museum

Author
Laura Maye

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Supervisors
Dr. Gabriela Avram
Dr. Luigina Ciolfi (Sheffield Hallam University, UK)

Department of Computer Science and Information Systems
University of Limerick

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Abstract

This thesis is situated in the discipline of HCI and contributes toward understanding the role of digital technology in cultural heritage interpretation. Cultural heritage professionals (CHPs), including curators and museum educators, are increasingly adopting digital technologies to engage visitors in their museums. The growing availability of and access to technology opens opportunities for CHPs with limited experience of interactive technologies to create content for and configure visitor interactions with technology. This provides avenues for small museums to integrate interactive technologies. However, there remains a gap in understanding how CHPs undertake evolving technology-enabled practices in context.

Therefore, this study investigates the practices of CHPs in a small museum, as they become more prominently involved in using digital technologies. The study focuses on CHPs working at The Hunt Museum in Limerick (Ireland) where I have been a volunteer for three years.

Based on an extensive ethnographic study conducted over three years, this thesis details the practices of the Hunt Museum CHPs in preparing, creating and adapting museum activities, such as workshops and tours. It further documents the viewpoints of the CHPs in using digital technologies as part of these practices. Using action research, the thesis analyses the CHPs’ journey in shaping existing resources in response to integrating a new interactive technology. I reflect on my role in facilitating this process.

The findings suggest that, while lowering the technological barriers is imperative, CHPs also face implications integrating interactive technologies as interpretive aids. Taking control of the interpretive content could require building the skills necessary to design content on a medium CHPs may be unfamiliar with. Moreover, it appears that CHPs need to understand how the behaviour of interactive technologies affects the intended visitor experience. I further argue the need to support CHPs in small museums in addressing these implications associated with technology adoption.
Declaration

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By: Laura Maye

Supervisors:
   Dr. Gabriela Avram
   Dr. Luigina Ciolfi

This thesis is presented as fulfilment of the requirements for the degree of Doctor of Philosophy, at the University of Limerick, Dept. of Computer Science and Information Systems, Faculty of Science and Engineering. It is entirely my own work and has not been submitted to any other University or higher education institution, or for any other academic award in this University. Where use has been made of the work of other people, it has been fully acknowledged and referenced.

Signed:

Laura Maye
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Glossary of Terms

**Cultural Heritage Professional (CHP):** A term developed by the meSch project team to describe the wide range of professionals working in the domain of heritage. Examples include, curators, education officers, museum directors, and exhibition co-ordinators.

**Museum activity:** Museum activities refer to the events held to engage visitors, including workshops, tours and exhibitions.

**(Museum) Interpretation:** The manner in which museum artefacts, information, and narratives are communicated to visitors to aid them in forming meanings or associations with museum collections.

**Outreach:** Where the term outreach is used in Chapter 4, it specifies the museum activities or programs that take place beyond the physical location of the museum (Johnson *et al.* 2009). These include activities that physically take place in other locations or virtually through an online presence.

**Integrate:** The process of merging two or more things together.

**Interactive technology:** In this thesis, interactive technology refers to portable devices, static installations and exhibits used to enhance in-gallery museum activities and interpretation. In some cases, it may also be referred to as an “interactive”.

**Information and Communication Technology (ICT):** ICT includes software and other tools used to create information for, and communicate information with, people. Examples range from Microsoft Word for creating information content and social media for communication.
**Digital technology:** A broad term to describe tools that can communicate and store digital information. When used in this thesis, describes all of the software tools and ICT used by the CHPs and interactive technologies to enhance museum activities.

**Toolkit:** A set of building blocks for non-specialist users to shape and configure digital technology. This definition is similar to that used by Von Hippel (2005).

**Behaviour:** Behaviour describes how an interactive technology works or functions.

**Near Field Communication (NFC):** NFC is wireless communication protocol that enables short distance communication between two compatible devices. NFC tags can store and send information when an NFC enabled device very close (typically within a 5cm range)
1 Introduction

1.1 Summary of Research

For a long time, HCI has invested research in the application and use of interactive handhelds and installations in museums and heritage sites (Sparacino et al. 1999; Grinter et al. 2002; vom Lehn and Heath 2005; Hornecker 2008; Hornecker 2010). Within the past 20 years, increasing access to technology has provided possibilities for CHPs to create content for and configure such interactive technologies without the need for specialised technical knowledge (Weal et al. 2006; Koleva et al. 2009; Petrelli et al. 2013). These developments open opportunities for CHPs in small museums to integrate interactive technologies. Nonetheless, little HCI research delves into how CHPs respond to the evolving role technology plays in their practices in depth and in context.

Therefore, in this thesis, I provide empirical evidence on how practices of CHPs in a particular small museum are impacted by the integration of digital technology. In doing so, I investigate the practices of CHPs in preparing, creating and adapting museum activities at The Hunt Museum in Limerick, Ireland, where I have been a volunteer for over three years. I examine their viewpoints toward using digital technologies as part of these practices. Using action research, I discuss the approaches taken by these CHPs in integrating an interactive device.
The question that this research investigates is:

*What are the practices\(^1\) of CHPs in small museums in preparing, creating and adapting museum activities, and how do digital technologies mediate those practices?*

In addressing this question, I describe two phases of research. In the first phase of research, I examine the CHPs practices at The Hunt Museum in preparing, creating and adapting museum activities. Furthermore, I investigate their attitudes toward using digital technology as part of these practices. In the second phase, conducted under the frame of a three-cycle action research process, I examine how the CHPs integrate an interactive device into a particular museum activity.

The Hunt Museum collection contains artefacts gathered by two antique dealers: John and Gertrude Hunt. There are four full-time CHPs employed at the museum; the others, docents and interns, volunteer due to their personal goals and interests. While volunteers, docents and interns are responsible for many tasks that are fundamental for the museum’s day-to-day running. The interns join for 2-12 months to gain experience in a museum. Their tasks are usually to prepare museum activities: for example, to schedule docents for tours and analyse feedback visitors provide for museum activities. They are also encouraged to create new museum activities; in doing so, they are given the freedom to suggest their ideas and have their creative input. While interns are not expected to have prior experience working in a museum, many of them have such experience. Furthermore, their multi-cultural and multi-disciplinary backgrounds are considered beneficial for the museum because it drives new ideas. The docents are long-term volunteers of the museum and are regarded as the experts on the museum’s collection by the other CHPs. Some docents deliver museum activities, while others are responsible for archiving the

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\(^1\) I am aware there are ongoing debates as to how practice is defined within different disciplines (Schatzki
museum’s collection. Since the interns are often given opportunities to create and adapt museum activities in the museum, they were heavily involved in integrating and modifying an interactive device in the second phase of research, alongside the full-time curators. More information about this museum and the CHPs can be seen in Chapter 4.

While the majority of the CHPs involved in this study were working in a voluntary capacity, I believe that the findings in this thesis are valid for a wider group of CHPs, particularly those working in small museums. There are many qualities that these volunteers have that resonate with full-time CHPs. Firstly, in our interview study conducted with CHPs employed in museums of various types and sizes in five countries (Maye et al. 2014; McDermott et al. 2013), we identified that very few CHPs had a formal museum background. They may have had experience in another discipline, similarly to the Hunt Museum volunteers. In addition, few CHPs were provided with training in creating and adapting museum activities and often learned through experience. Their training is also similar to the volunteers who participated in this doctoral study. Secondly, many of the volunteers involved in this study had some professional museum experience; however, they also have professional experience in other disciplines, such as marketing and digital media. Thirdly, CHPs in small museums often have many roles in the museum (McDermott et al. 2013), and this also resonates with the volunteers involved in this project, as they often have many tasks to complete as part of their day-to-day work. Overall, the profile of the volunteers participating in this study resonates with that of CHPs in general, although they were not formally employed by the Hunt Museum.

However, there are some differences between museum professionals and the volunteers in this study. The volunteers (particularly the interns) were not long-term; the transient nature of these volunteers may have had an impact on how they approached their role in preparing, creating and adapting museum activities. For instance, as I will describe further in Chapter 4, roles are often passed from one intern to the next. For this reason, new interns may join at
various points in the process of creating museum activities. In our previous study (Maye et al. 2014), we described some instances in other heritage institutions where the responsibility for creating a museum activity can be passed from one CHP to another. However, it does not appear that such transience occurs regularly; CHPs usually maintain their roles in creating museum activities from start to finish (Maye et al. 2014). This dynamic in team formation may lead to some disturbance when creating museum activities. New CHPs often need time to be brought up to date with the project and ideally be provided with documentation that demonstrates what work had already been completed in creating or preparing the museum activity. Despite these differences, I believe the findings relate to the wider group of CHPs working in small museums, since training through experience; having a background in another discipline, and being responsible for various roles are common qualities of CHPs particularly within small museums.

The Hunt Museum has always been open to experiment with novel technologies to support visitor interpretation. For example, this museum has also been involved in SHAPE, a research project that resulted in the design and development of Re-tracing the Past, an exhibition held at The Hunt Museum (Ferris et al. 2004). For this exhibition, replicas of selected ‘mystery’ objects in the collection were created, enabling visitors to physically touch the replica artefacts. In a separate room, visitors were able to record their personal opinions on these artefacts. While the museum has some experience integrating interactive technologies, the CHPs have little experience being heavily involved designing for or integrating these technologies.
To investigate the aforementioned research question, the objectives of this research are to:

- **Within a small museum, detail the practices of CHPs in preparing, creating and adapting museum activities;**
- **Analyse the role that digital technology plays in these practices;**
- **Analyse the potential for these CHPs in creating and modifying an interactive technology to support a museum activity; and**
- **Document the opportunities and challenges that arise due to the evolving role of digital technologies in their practices.**

In the following sections, I introduce the motivations for this thesis and important literature surrounding this research. I then describe how I addressed the objectives of this study, as listed above.

### 1.2 Projects Supporting this Thesis

The study presented in this thesis was conducted with the support of the Material EncounterS with digital Cultural Heritage (meSch) project. The goal of meSch is to bridge the gap between the digital and the physical aspects of cultural heritage (Petrelli et al. 2013). The project promotes the generation of tangible interactive exhibits and installations that also aim to connect the visitor’s experience on-site and on-line. The project contains twelve partners from seven different countries, including the Interaction Design Centre at the University of Limerick, Ireland. This project is funded by the European Commission’s Seventh Framework Programme (FP7).

Large-scale case studies in three museums involved in the project provided a basis for evaluating these tangible interactive technologies in real world museum contexts with visitors. The first case study exhibition, *The Hague and The Atlantic Wall*, was held in Museon, a science museum located in The Hague,
The Netherlands\(^2\). This exhibition integrated replica objects, which could be used to tell an audio-visual story surrounding the Atlantic Wall from either the German, Official or Civilian Perspective. The second exhibition, \textit{Feint} \(^3\), integrated meSch technology to demonstrate movement in Greek pottery. This exhibition was held at the Allard Pierson Museum, Amsterdam. Museo Storico Italiano della Guerra, a World War I museum in Rovereto Italy, hosted the last case study exhibition. Entitled \textit{Voices from Fort Pozzacchio}\(^4\), technology created by the meSch team was used to trigger stories of those who fought or were involved in the fort during the First World War.

The research described in this thesis provides a fourth, smaller case study that focuses specifically on the journey of CHPs integrating an interactive technology originally designed by the meSch project. The second phase of this study was co-funded by Irish Design 2015\(^5\). Irish Design was an initiative for exploring, promoting, and celebrating Irish Design.

The motivation for this thesis stemmed from my involvement in the meSch project: the meSch project team are developing a toolkit for the creation of tangible interactive technologies (Petrelli \textit{et al.} 2013). This toolkit contains an authoring tool, which enables CHPs to add content to and configure behaviours for these interactives without the need for specialised technical knowledge. The opportunities that this toolkit (and other toolkits described in more detail in Chapter 2) provide CHPs in integrating interactive technologies led to the development of the aforementioned research question.

While it was hoped to enable the CHPs to use the meSch toolkit, the toolkit could not be made available for CHPs during the period of the study. The study had fixed deadlines to meet the requirements of one of the funding bodies, Irish Design 2015. Nonetheless, the CHPs were in control of the content and


\(^3\) More about Feint Exhibition: http://mesch-project.eu/apm-feint-video/

\(^4\) More about Voices from Fort Pozzacchio: http://mesch-project.eu/voices-from-fort-pozzacchio/

\(^5\) Irish Design: http://www.irishdesign2015.ie/
formulating the visitor experience: through alternative software tools I suggested for designing the content; I also provided templates to guide the CHPs in structuring content (see chapter 5 for further details). Therefore, I argue that the outcomes of this study adequately support the contributions I highlight later in this chapter.

1.3 Digital Technologies and Cultural Heritage

Interactive technology has opened up means for museums to engage visitors in new ways. For example, it has enabled visitors to contribute their stories and interpretations surrounding artefacts to share with others visiting the museum (Ferris et al. 2004) and outside of the museum through the use of social media (Russo et al. 2008; Weilenmann et al. 2013). It has also opened up new avenues for collaborative meaning making (Hindmarsh et al. 2002; vom Lehn et al. 2007).

Nonetheless, integrating interactive technologies to complement the intended visitor experience requires significant skill (Sola 1997; Parry 2005; Vom Lehn and Heath 2005). Gammon and Burch (2008) argue that it is important to consider the placement of interactive technologies and when content is presented to visitors. Parry (2005) argues that the medium has a large effect on the message being portrayed. Klopfer et al. (2005) and Sung et al. (2010) highlight that the way content is constructed is important; they both argue for the need to encourage interactions with objects and others in museums.

As I have mentioned, HCI has a growing interest in enabling CHPs to create and integrate interactive technologies. Aside from the meSch toolkit, some other toolkits enable the development of augmented reality and hybrid experiences, as described by Koleva et al. (2009) and Roussou et al. (2015). Other toolkits support the creation of customisable interactive guides, such as the location-based PDA detailed by Weal et al. (2006) and the museum guide proposed by Ghiani et al. (2009). Simeone and Ardito (2011) describe the design of customisable interactive history games for heritage sites. These developments
open up opportunities for CHPs in small museums to become more involved in the creation and integration of interactive technologies.

However, little is known about how these CHPs approach their emerging role in integrating interactive technologies and how they can be supported in doing so in context. Indeed, there are some cases where HCI studies have reported the inclusion of CHPs in the creation of interactive technologies. In the user-centred design frame, a common HCI methodology that involves understanding the needs of users of a product or service (Benyon et al. 2005), CHPs are sometimes consulted as informants in creating and integrating interactive technologies (Ferris et al. 2004). In saying that, they are not involved in formulating important design decisions. Using co-design or participatory design, both which involve potential users as stakeholders in the design process (Muller 2003; Sanders and Stappers 2008), CHPs are encouraged to make key decisions in the creation of interactive technologies. Nevertheless, researchers are often the ones who define the methods used to design such technologies, which are sometimes unfamiliar to CHPs (Taxén 2004; Bossen et al. 2012). Due to the evolving role that technology is playing on their practices, I argue that understanding how CHPs’ respond to this role is a pertinent issue in HCI and cultural heritage research. These concerns are what my research question, as highlighted above, aims to investigate.

Phase 1 of my study targeted the first two objectives of this research. During this phase, I conducted an ethnographic study at The Hunt Museum, which involved curators, interns and docents in the Education and Public Programmes department (referred to herein as the Education Department). As researcher, I alternated between the roles of active volunteer and observer. I investigated the practices of CHPs in this department in preparing, creating and adapting museum activities. I also analysed their viewpoints toward using and integrating digital technologies as part of their work. I reflected upon how my role shifted over time as the CHPs involved me in assisting them in approaching new technologies. In doing so, I revealed considerations in preparing for a
technological intervention; these considerations shaped my role and focus as facilitator in the second phase of research.

Throughout the second phase, I investigated the CHPs’ approach in choosing and shaping an existing museum activity – a guided tour – to be delivered using an interactive device called The Loupe. The Loupe is a magnifying glass-shaped device, designed to reveal stories surrounding museum artefacts. In addressing the third objective of this thesis, I examined the CHPs journey in shaping existing tours and content to be delivered on this new medium. Moreover, I reflected on my role as mediator, supporting the CHPs in creating content for, and integrating, The Loupe as an interpretive aid. The final objective of this study involved discovering the opportunities and challenges associated with supporting CHPs from smaller museums in integrating new interactive and digital technologies. In addressing this objective, I referenced and analysed data collected during the final cycle of phase 2. I highlighted the implications facing these CHPs in taking and maintaining control of interactive technologies.

In summary, this thesis contributes to the fields of HCI and cultural heritage by detailing the implications facing CHPs in a small museum as their role in integrating interactive technologies evolves. It takes the point of view that CHPs should be empowered to make decisions regarding the visitor experience; choose and create the content and narratives; and decide how the interactive technology is implemented.

Thus, the main contributions of this thesis aims to provide more nuanced perspectives on:

- CHPs practices in preparing, creating and adapting museum activities as digital technologies become more prominent in these practices;
- How CHPs contribute to the integration of interactive technologies in contrast to other HCI and cultural heritage studies where the approach and visitor experience is defined by expert practitioners or researchers; and
• How CHPs can be supported in integrating and maintaining control of interactive technologies.

Through these contributions, I argue that HCI can gain deeper understandings of the issues surrounding the evolving role of digital technology in small heritage institutions. While this research does not provide any design guidelines or solutions for technologies in cultural heritage, the issues I investigate can open new avenues for design. Practitioners in HCI and cultural heritage interested in designing tools to empower CHPs in creating and integrating interactive technologies may reference this research to inspire design directions.

1.4 Thesis Structure

There are seven chapters in this thesis, including this introduction. In chapter 2, I provide a critical review of literature within the fields of HCI and cultural heritage. I discuss how digital technology provides CHPs with avenues to engage visitors in new ways. I also present literature from the broad field of HCI, highlighting the importance of understanding how users adopt and integrate technologies in context (Dourish 2003; Carmien and Fischer 2008). Taking this frame of mind, I then describe the contribution this thesis aims to make.

In chapter 3, I present the methodology of this research, which is qualitative in nature. I describe the two phases of this research in more detail. I also detail the methods that I have implemented, which included participant observation and semi-structured interviews. Moreover, I provide further detail on how I positioned myself as researcher in both phases. Following this, I describe the setting for this research in more detail in Chapter 4: The Hunt Museum. In doing so, I address the first two objectives of this thesis. Reflecting upon my findings, I detail how I shaped my focus and role as mediator for the second phase of research.
In the subsequent two chapters, I investigate how the CHPs’ integrated an interactive device with my support as mediator. In chapter 5, I detail the first two cycles of the action research process. I present vignettes and images to examine the CHPs’ approach toward shaping existing tours and resources in light of introducing this interactive device. I highlight the strategies that the CHPs and I have developed through experience integrating the interactive device. I also reflect on my role as mediator in the process. I aim to draw light on some of the challenges facing CHPs in this small museum as they integrate new technologies. In chapter 6, I examine how the CHPs redesigned the tour in response to the strategies we had developed. In doing so, I considered the implications for small museums in maintaining control of creating content for and integrating interactive devices and installations. I also provide recommendations for HCI researchers, designers, technologists, and CHPs in this chapter. The final chapter examines the data presented in the three analytical chapters 4, 5, 6 and details to what extent the research question was answered. I also reflect upon the overall contribution made to HCI and cultural heritage.
2 Integrating Digital Technology in Museums: A Literature Review

2.1 Introduction

In this chapter, I present a critical review of literature in HCI and cultural heritage, focusing on how users adopt and configure digital technologies for their purposes in the heritage domain. In the first part of this chapter, I examine literature in cultural heritage, discussing particularly the shift in museums, their focus, and the ever-increasing use of technology in these institutions. Following this, I investigate some of the common approaches taken to create interactive exhibitions and the typical involvement of CHPs in the process.

On the other side, particularly since the emergence of web 2.0, HCI research has focused on the shift from developing rigid technologies to creating flexible technologies that encourage participation amongst users. This change has presented implications for professionals in a wide variety of domains, including cultural heritage. Due to the increasing access to and availability of digital technology, CHPs with limited experience in creating interactive exhibits are given possibilities to create and integrate technology into the activities they offer. I highlight here literature focusing on the opportunities and challenges associated with integrating such technologies in context. The goal is to emphasise that understanding the situated context of digital technology, particularly configurable digital technology, is essential for understanding its success and purpose from a broad HCI perspective.
I believe that HCI, specifically in the subdomain of cultural heritage, is yet to gain in-depth understandings on how CHPs use, integrate, and shape technology as part of their practices. Appreciating the context of users; how users respond to new technologies; and form meanings for technology with relation to their practices, has long been understood as an important aspect of HCI research. As digital technology is playing a growing role in CHPs’ practices, we need to gain a greater understanding on 1) their viewpoints toward using digital technology and 2) how CHPs contribute to and shape meanings of technology in the context of their practices. In doing so, I argue we can gain a better understanding on how CHPs can be supported as technology plays a more prominent role in their practices.

2.2 Museums and the Evolution of the Cultural Heritage Professionals Practices

2.2.1 Definition and Role of the Museum

There are many different kinds of museums; many practitioners and researchers within both HCI and beyond have termed ‘museum’ to describe various kinds of cultural heritage institutions. Some of these are indoor institutions that hold collections of various nature (Ambrose and Paine 2012); some literature in HCI and museum studies has also included outdoor sites, or ‘open air museums’, with notable heritage artefacts (Ciolfi and McLoughlin 2012; Bennett 1988). Other studies claim that museums have evolved from the traditional characteristics described in literature to include other kinds of institutions that may not have permanent collections or even collections at all (Ginsburch and Mairesse 1997). Ginsburch and Mairesse’s (1997) attempted to widen the definition of museums beyond institutions housing artefacts is relevant in the turn of the 21st Century. For instance, virtual museums are becoming more prominent today and are also becoming more widely accepted amongst the definitions and categories of museums in literature (Lewi 2007).
Taking into account this broad definition of a museum, it is hard to determine the common practices and goals of museums, if such exist. Ciolfi and McLoughlin (2012) argued that, while there are some similarities between open-air museums and indoor collection-based museums, open-air museums tend to be more informal than collection-based institutions concerning the activities they offer. Moreover, the authors also characterised open-air museums by their natural and multi-sensory surroundings, which have been noted to influence the visitor experience. Caulton (1998) distinguished between hands-on museums and traditional, collection-based institutions by highlighting that the former are driven to encourage visitors to touch exhibits and in some way, break down the barriers associated with objects behind glass. Fleck et al. (2002) further argued that science museums tend to offer activities that are more hands-on than traditional museums; therefore the challenges involved by creating engaging activities are different between these types of institutions.

Since the intention of this thesis is not to propose a new definition of a museum, I do not aim to add to the on-going debate of what defines a museum. However, as this thesis involves investigating the practices of CHPs in a small museum that exhibits artefacts as a specific case, it has a direct focus on these kinds of museums.

Traditionally, museums that exhibited artefacts were primarily focused on their collections; the artefacts were accessible only to those who demonstrated intellectual interests toward the collection (Hooper-Greenhill 2013; Ambrose and Paine 2012; Reeve and Woollard 2006). The primary goal of the museum was to preserve artefacts as evidence for happenings of the past; therefore, they were inaccessible to a wider audience. Particularly over the past century, this image of the museum has changed dramatically. There has been an increased interest in attracting wider audience demographics and engaging heterogeneous groups of people in meaningful ways (Reeve and Woollard 2006).
The shift in focus from a collection-centred to visitor-centred mind-set in museums has sparked increased visitor access, engagement and participation. Hooper-Greenhill (1992) argued that museums are now competing with the entertainment industry; therefore, they are continuously driven to create more visitor-focused agendas to sustain themselves in society. In a later publication, Hooper-Greenhill (2013) emphasised that museums need to become more open and provide more accessible means for various groups of visitors to learn about museum collections. In doing this, she highlighted that museum materials need to be presented in a multitude of ways cater to the learning needs of different visitors. Caulton (1998) noted that visitors are increasingly expecting museums to provide more activities that are visitor-centred. He highlighted that people often visit museums with the goal of having an entertaining, yet informative experience.

Simon (2010) argued that designing for participation is imperative, as visitors are more likely to be engaged if they have an active voice. However, she warned that designing for participation is not simple; it required considering the ways in which participation can be meaningful for both the visitors’ needs and the museum’s mission. She argued that, what she describes as a ‘participatory museum’, should start with considering the core needs of visitors and understanding how the museum can respond to these requirements.

However, due to changes in society and visitor needs, keeping activities relevant for visitors is also becoming a challenge for museums. Sandell (2003) argued that the practices of CHPs need to be flexible to respond to these changes, particularly if they want to be perceived as responsive to the needs of society. Ambrose and Paine (2012) claimed that small museums were particularly faced with the challenge of keeping up to date with these changes. Notably, Falk and Dierking (1992) also emphasised the difficulty of meeting the needs of a changing society. The authors mentioned that museums not only have to respond to the changing needs of their audiences over time; they also have to meet the needs of their dynamic visitor bases, which usually change at different periods of the year.
Moreover, Falk and Dierking (1992) argued that CHPs should take into account the complex expectations of visitors. They distinguished between and compared the personal, social, and physical contexts of the visit; combined, they referred to these contexts as the 'Interactive Experience Model' (Falk and Dierking 1992, p. 1). Within the personal context, Falk and Dierking highlighted that people visit museums with their personal agendas and expectations for their experience. In the social context, the authors claimed that the visitors’ experience is inherently social; even if a visitor decides to visit alone, their social surroundings often have an effect on how they navigate and behave in the museum. Lastly, Falk and Dierking (1992) argued that the visitor experience is also influenced by the physical context, which may consist of the tangible aspects of the setting, but also the other multisensory aspects of the visit. The model proposed by Falk and Dierking (1992) emphasised the complexity of the museum visit, which is often unpredictable and influenced by many factors.

The literature presented above indicates that museums are increasingly concerned with the visitor experience and means to consider involving visitors in the construction of the experience. Specifically, this shift in focus highlights that museums are facing greater challenges to keep up with the dynamic and often unpredictable needs of society. In the next section, I will describe how digital technology opens up new avenues for museums to engage visitors into their collections. I will also highlight the known challenges in HCI and cultural heritage research in using and integrating technology as an interpretive aid.

2.2.2 Interactive Technologies and Museum Interpretation

HCI and cultural heritage research have focused a great deal on visitor behaviour and expectations toward interactive technology in the gallery (Hindmarsh et al. 2002; Vom Lehn and Heath 2005). In this section, I discuss the many ways in which the application of interactive devices and installations
has expanded the avenues for visitor participation and interpretation. I also provide some examples of how technology has provided avenues for visitors to interpret objects by themselves and in collaboration with others, both inside and outside of the museum.

According to Prensky (2001) the attention and attitude of society are changing due to the exponential growth of technology. Iversen and Smith (2012) discuss that this may also have an effect on how visitors engage with museum visitors. Therefore, CHPs are challenged to engage audiences that grew up influenced by the presence of interactive technologies in museum exhibitions.

Moreover, some researchers hypothesised that the application of interactive technology in museums may increase in the future (Anderson 1999; Johnson et al. 2013). According to Johnson et al. (2013), museums may adopt different kinds of interactive technologies to deliver various activities in the future, for instance, through location-based devices and embodied installations. Due to the growing accessibility of digital technologies, Ambrose and Paine (2012) believed that all museums, particularly small, should embrace them to attract new groups of visitors.

In the early days when digital technologies were becoming a more popular application in museum activities, many researchers began theorising the effect digital technologies, in general, would have on museums (Sola 1997; Anderson 1999). As technology is dynamically changing, ‘what was possible before 1993 and what is today possible are two entirely different propositions’ (Anderson 1999 p. 129). Anderson’s comment highlighted the growing possibilities that digital technologies have for museum interpretation. Many other researchers are now contributing this debate (Parry 2005; Stiff 2010).

Interactives have expanded possibilities for visitors to contribute and share their interpretation of objects with others both inside and outside of the museum. In Re-tracing The Past, an exhibition held at the Hunt Museum in Limerick, Ireland, visitors were encouraged to hold replicas of ‘mystery’ objects
from the museum’s collection (i.e. objects where the story is unknown) (Ferris et al. 2004). A recording station was placed in the same room, where the visitor was encouraged to record their opinions. In another room, all the recorded opinions were played back to other visitors. Interactive technologies have also opened up possibilities for visitors to connect and share meanings beyond the walls of the museum. For instance, Weilenmann et al. (2013) have shown how visitors made use of their own handheld devices to share objects and experiences with others through the use of Instagram, a photo-sharing outlet.

Research in HCI and Cultural Heritage has investigated how interactives and installations can be designed in museums to encourage social interactions, shared meanings, and interpretations resulting from collaborative encounters in exhibitions. Grinter et al. (2002) described the implementation of Sotto Voce, an audio guidebook designed to facilitate shared visits and conversations. The guidebook contained an eavesdropping feature that allowed paired visitors to listen to the story their partner was playing. While sometimes visitors described they preferred to visit independently, it was observed that those who desired to engage in a social visit were able to check in on one another and follow their companion in certain circumstances (e.g. if one from the pair was not comfortable using technology).

Furthermore, Hindmarsh et al. (2002) described the design of Ghost Ship, an exhibition consisting of an assembly of artefacts and video technologies designed to encourage social experiences and interaction. Alongside video, the exhibition comprised of a deck area and a ship with portholes. The exhibition was designed to provoke surprise; a visitor standing either in front of the ship or the deck area would have their image projected in one of the portholes. Analysis of how visitors interacted with the exhibition had highlighted interesting considerations for designing for social collaborations: this included facilitating visitors in the collective discovery of connections through ‘chance discovery’ as visitors encountered the image of others in the portholes.
Brown et al. (2003) and Galani and Chalmers (2010) described the design of a co-visiting system that enables at least three local and remote visitors (one on site and two remote) to simultaneously engage with an exhibition held at the Mackintosh Interpretation Centre at The Lighthouse, Scotland, UK. Galani and Chalmers (2010) further noted the complexities of blurring the boundaries between the local and remote visit, with references the influences that local and remote visitors have on each other's visiting behaviour, interpretation and navigation.

From the literature highlighted above, it can be seen that the use of interactives and installations in museums has indeed facilitated alternative avenues for visitor interpretation. However, as the section highlights below, literature also indicates considerations need to be made by those integrating technology to ensure its use supports visitor interpretation.

2.2.3 Considerations in Designing and Integrating Interactive Technology

The design and integration of interactive exhibits in museum galleries is a complex process; doing so requires a thorough understanding of how they can serve the museum, the intended narrative, and interpretation goals effectively (Ferris et al. 2004; Sola 1997; Sola 2010; Parry 2005). Moreover, each type of museum presents different kinds of challenges in design and interpretation, such as open-air museums (Ciolfi and McLoughlin 2012); science centres (Caulton 1998; Fleck et al. 2002); and traditional collection-based museums (Ferris et al. 2004; Barbieri and Celentano 2011).

Visitors are less patient with learning new technologies in museums than in other settings and often expect instantaneous responses (Gammon and Burch 2008). If interactions take too much time to learn or figure out, there is a risk that technology becomes the forefront of the visitors’ attention. Hornecker (2008) described this issue with relation to the integration of a multi-touch table installation in The Berlin Museum of Natural History. Hornecker argued that, because the interactions were not intuitive, many visitors spent their time
trying to figure out how the installation worked rather than embracing the story it intended to portray. 

Raising concerns toward the misuse of technology in museums, and therefore its inability to support visitor interpretation, Sola (2010) commented:

“Much too often one sees that new media, adding so enormously to the performance and capabilities of individuals and institutions, suffer from misuse. Neither the logic of their appearance nor the nature of the expression they suggest and contain is understood or applied according to the specific circumstances of different institutions.”
- (Sola 2010 p. 414)

It is important to note that Sola, as he also argued in an earlier version of this article (Sola 1997), did not maintain that technology should not be applied in museums. However, he believed that museums should do with a critical view of the implications involved.

Parry (2005) shared the same viewpoint as Sola regarding the misuse of technology in the gallery, and quotes Sola’s (1997) idea of ‘technological trap’ in his article (Parry 2005 p. 33). Referring to McLuhan’s (1964) book, Parry also argued that the medium communicating the message –for example, a computer screen– forms part of the story being portrayed and interpreted by visitors. Therefore, he maintained that choosing a medium also involves understanding the ideas and meanings associated with it. Fahy (1995) claimed that the design of interactive exhibits requires thinking about the interpretation and interactive qualities the exhibit provides; in addition, she described that interactive exhibits need to be considered regarding how they interact with other exhibits in the space.

The implication the medium has on the intended visitor experience is also discussed in HCI. Hornecker (2010) described two installations that were designed to engage visitors at a dinosaur exhibition at the National Museum of History in Berlin. The installations, collectively called the Jurascopes, consisted
of a telescope-like device called a Tele-Jurascope and a large screen. Looking through the Tele-Jurascope, visitors viewed animation overlays on the dinosaur exhibition. Using the large screen, visitors also saw animations of the dinosaurs. Since the viewers’ surroundings were blocked from sight through the Tele-Jurascopes, Hornecker (2010) commented how the visitors’ using those devices appeared to be more immersed and reactive. In contrast to the Tele-Jurascopes, the design of the large screen afforded for a more social experience since the animations could be viewed in groups.

Marshall et al. (2016) described the design of controllers for an exhibition, which were replicas of objects displayed at The Hague and the Atlantic Wall exhibition held in Museon, the Netherlands. The controllers, each reflecting a different perspective of the story surrounding the Atlantic Wall (the German, the Official, the Civilian), were designed to trigger stories when they were placed on illuminated rings throughout the exhibition space. The goal of using replicas was to make the controllers become part of the visitor experience, spark curiosity amongst visitors, and encourage stronger engagement than through the use of buttons.

Stiff (2010) argued that museums ought to consider the implications that technology provides and should critically think about how they complement the museum and exhibition. Stiff further states that museums should also critically consider the risk factor for introducing such technologies to lessen the chance of meaningless use of interactive technologies in the museum. Other researchers claimed that designing activities incorporating interactive technologies also requires understanding the needs of the people, as well as having a creative mind to apply the idea (Jones and Greene 2000).

Referring specifically to indoor collection-based institutions, there are concerns for designing and integrating technology to ensure that the intended visitor experience is not hindered. Most cases have identified that maintaining interactions with the intended story; the surrounding authentic artefacts; and social surroundings are important considerations in the design of interactive
experiences (Gammon and Burch 2008; Klopfer et al. 2005; Vom Lehn and Heath 2005).

For instance, Vom Lehn and Heath (2003; 2005) discussed particularly the implications of designing interactive technologies to encourage increased engagement with museum artefacts and promote social interactions. Following an ethnographic study, vom Lehn and Heath (2005) proposed design sensitivities for creating the physical design of portable handhelds and static displays, as well as the content coupled with these devices. The sensitivities they offered highlighted the need to design for supporting meaningful engagements with authentic objects; discussions and collaborations with other visitors; and acknowledgement of the visitors’ social surroundings. In a later publication, vom Lehn et al. (2007) highlighted that the integration of sensor-based technologies in museum activities also present similar challenges in encouraging engagement with authentic artefacts and promoting social interaction.

In addition, research has also identified that different kinds of interactives pose different challenges for displaying content effectively. For instance, Filippini-Fantoni and Bowen (2008) described the implications of designing narratives using small, portable handheld interactives since the size of the screen does not afford for collaboration and social interaction. Adding to the challenges of designing content for portable handheld interactives, Filippini-Fantoni and Bowen (2008) discussed the challenges surrounding the presentation of static maps on these devices. Due to the small screen size, designers needs to think carefully about what information needs to be presented to help visitors navigate around the space.

There are also many considerations that need to be made with relation to the content design, and how that affects the visitor experience. Klopfer et al. (2005) described the design of a collaborative, detective style game for visitors; the content and narrative was intended to provoke further engagement with the objects and encourage social interactions. Sung et al. (2010) presented a four-
level framework for interactions with objects; they argued that a good design for an electronic guidebook should encourage interactions between the visitor, the object, the context, guidebook, and their peers. The authors present their strategies for designing the content for the guidebook, which purposefully contained no visuals; rather, the content encompassed “clues” that were intended to encourage visitors to explore the objects and discover more. Gammon and Burch (2008) argued that there is a close relationship between how the content is constructed and visitor engagement with the artefacts. They emphasise that the content should contain prompts to encourage visitors to look at the objects or view aspects of content that would otherwise be hidden from view.

The above section illustrates how the integration of interactive technology is mediating the manner in which artefacts can be interpreted and where. A common issue described in this research is that technology and how the content is presented can affect the visitor experience. In the next section, I will describe the typical involvement of CHPs in creating and integrating such technologies in the museum gallery, referring to the common approaches from HCI and cultural heritage research.

2.2.4 Cultural Heritage Professionals’ Involvement in Integrating Digital Technologies

When creating interactives or installations for museum activities, the participation of CHPs varies depending on the approach taken. In the sections below, this review aims to highlight some of the common avenues in creating and integrating interactive technology in the museum. Figure 2.1 provides an overview of the typical involvement of CHPs in the common approaches described. It also highlights the level of experience those CHPs require in creating and integrating interactive technologies for visitors in the museum.
2.2.4.1 In-house Creation of Interactive Technologies
Large museums may have access to in-house professionals with the relevant knowledge and skills to design and integrate interactive technologies. However, for many small museums without these resources, it is particularly challenging to adopt this approach (Caulton 1998). Some practitioners and researchers argue that those who design interactive exhibitions in house are at an added advantage. Using this approach, Caulton (1998), Lord and Piacente (2014), and Maye et al. (2014) argued that CHPs have the opportunity to explore ideas through a trial and error approach. Therefore, CHPs have a greater opportunity to develop the skills and understandings for how to create interactive exhibits to effectively support visitor engagement. In our earlier paper, Maye et al. (2014) have described how CHPs who have the resources to build interactive devices and exhibits in-house favoured an approach orientated toward experimenting with technologies. It gives the CHPs a greater understanding of how such technologies can be used to engage visitors, and what technologies are more effective for different experiences.

2.2.4.2 Outsourcing the Creation of Interactive Technologies
Another approach for creating interactive devices from a cultural heritage perspective is to commission the task to an external design company. This approach usually does not involve CHPs extensively in the creation of
interactive exhibits and devices (Caulton 1998; Lord and Piacente 2014). Furthermore, CHPs often do not have opportunities to trial the design before it is delivered.

Due to the limited involvement of the CHP, there is no guarantee that the message the CHP wishes to portray will be prevalent when the interactive is integrated into gallery. Lord and Piacente (2014) discussed: “Sometimes, the design is completed with minimal involvement of curators and educators, with the result that neither artefacts nor learning objectives fit the way they should” (Lord and Piacente 2014 p. 2). If the learning objectives are not addressed in the design, this can be of real concern for museums. If CHPs choose to take this approach, Caulton (1998) argued that: “It is essential to monitor the design process at every stage to ensure that educational, technical and safety considerations are not compromised” (Caulton 1998 p. 41). Moreover, often the CHPs are not made aware of the progress of the design.

2.2.4.3 Co-design Approaches
Although using co-design in the formation of museum activities is more commonly reported within HCI (Dindler et al. 2010; Taxén 2004), it is also being recognised as an approach to creating museum activities either incorporating or not incorporating interactive technology (Simon 2010). Co-design approaches provide CHPs with a greater opportunity to engage in the design of digitally enhanced exhibits and gain understandings for how such technologies can suit their experiences (McDermott et al. 2014).

From an HCI perspective, involvement and knowledge provided by CHPs through co-design vary; it depends on the goal of the exhibition and also the objectives of the HCI researchers or facilitators. Certainly, HCI research has mainly focused on the design of museum activities that involve the use of museum interactives and installations (Dindler et al. 2010; Taxén 2004). In the design of an interactive exhibition for the Vasa Museum in Stockholm, Taxén (2004) described how the involvement of CHPs was to share their objectives.
and the museum’s mission. The potential visitors of the exhibition designed the content for the exhibition.

In other research studies, the involvement of the CHPs in the design of museum activities is not described (Dindler et al. 2010; Roussou et al. 2007), and the major focus is on engaging potential visitors and researchers in the design of museum activities. In some of these cases, CHPs can actively see how technology can be shaped to fit their museum’s identity and personal goals in those activities (McDermott et al. 2014). The authors described how the co-design method assisted in an active sharing of skills. The CHPs could gain not only understandings of individual technical components but also of the interactive experiences technology could offer to their ideas.

In saying that, using co-design in the creation of interactives for museum activities requires using methods for design that are often not applied in traditional museum practices. In the creation of installations for the Digital Heritage exhibition, Bossen et al. (2012) described how the CHPs were finding it difficult to appreciate the exploratory nature of co-design. The CHPs were used to approaching the creation and integration of interactives with a clear focus on the objectives of the activity and the visitors. In saying that, the CHPs did mention that they were inspired by some of the methods used in co-design and integrated them into their practices.

2.2.4.4 Other Design Approaches in HCI
Apart from co-design, there are other common approaches to the creation of interactive exhibits, devices and installations within HCI. Two of the most common approaches are those based on the use of ethnographically informed methods and user-centred design. In such approaches, the involvement of CHPs varies.

In some cases, HCI researchers use ethnographically informed methods to investigate how visitors navigate and formulate meanings in museums to inform the design of interactive technologies (Vom Lehn and Heath 2005; vom
Lehn et al. (2007). Tolmie et al. (2014) described the use of observations in two different museums to inform design requirements of technologies to support social interactions. Specifically, they argued that such technologies should be designed to take into account that many visitors are often drawn away from exhibits in response to social pressures in museums.

In other cases, HCI researchers often consult CHPs before designing and integrating technological tools to support museum activities (Ciolfi 2007; Ciolfi and McLoughlin 2012). Ciolfi (2007) described the use of walkthroughs to inform the design of Re-tracing the Past at The Hunt Museum, Limerick, Ireland. Through walkthroughs, the researchers followed the museum’s docents as they assisted visitors during their visit. In doing so, Ciolfi discussed how the researchers revealed certain characteristics relating to the museum as a place and the unique manner in which docents deliver narratives that informed the creation of content and themes for the exhibition.

Through the user-centred frame, visitors are more commonly approached to inform the design of in-gallery technologies (Baber et al. 2001; Petrelli and Not 2005). For example, Petrelli and Not (2005) described the development of a personalised mobile guide for Natural Science Museums, where requirements for design were elicited from a series of questionnaires. Moreover, the authors conducted informal evaluations with visitors to reveal their attitudes and behaviours toward using the device. Baber et al. (2001) described the use of surveys and observations conducted with visitors to inform the development of various possible augmented reality museum guides. Their study revealed interesting insights into the visiting behaviour of different visitor groups in various museums and art galleries.

For the most part, these common HCI approaches in designing interactive devices and exhibits provide opportunities for researchers and practitioners to gather requirements. However, as can be seen above, CHPs are not always consulted in the design process; who is involved in the design and the level of involvement is often dependent on the goals of the researcher. In cases where
CHPs are consulted during the design, they are usually informants and do not take an active role in making key design decisions. For this reason, we learn little about how CHPs contribute to the design of interactives beyond the role of informant.

Reviewing the common approaches to integrating interactive technologies, it can be seen that the responsibilities and involvement CHPs have in this process are diverse. It depends not only on the approach taken, but also on the motivations, skills, and resources of the CHPs to integrate interactive technologies. It also depends on the role given to them by other researchers involved in the project.

The growing accessibility of digital technology has opened avenues for CHPs in small museums to create and adapt content for interactive technologies with the added flexibility of experimentation in-house. However, due to the limited involvement of CHPs in the design of interactive technologies, I argue that we are yet to understand what are the attributes brought by these CHPs to the creation of interactive exhibits. In the light of this gap, HCI has also yet to learn how CHPs can be supported as the use of digital technology becomes more integrated into their practices. I believe this is important, as the complexities involved in creating and integrating interactive technologies into museum activities are well known from HCI and cultural heritage literature.

### 2.3 The Evolving Role of Users in Shaping Digital Technology

Outside of cultural heritage, HCI research has investigated the evolving role of users in integrating and modifying digital technology. Digital technology is increasingly being integrated into people’s professional and personal lives; moreover, it has opened up possibilities for users, who may have little specialised technical knowledge to tailor and shape its design and functionality (Dix 2007; Fischer et al. 2004; Franke et al. 2008; Von Hippel 2005).
One of the biggest innovations that has led to this phenomenon is web 2.0, which has opened up possibilities for users to participate in shaping technological tools rather than remain passive users (O’Reilly 2005; Fischer et al. 2004). From an HCI perspective, some research initiatives are investigating this shift. End User Development (EUD) examines the development of “methods, techniques, and tools that allow users of software systems, who are acting as non-professional software developers, at some point to create, modify, or extend a software artifact” (Lieberman et al. 2006, p. 2). Another approach is meta-design, which aims to investigate the creation of open systems that enable users to shape the design of the system as new needs and practices emerge (Fischer et al. 2004).

Such growing access to digital technology has also opened options for users with little specialised technical knowledge to participate in designing, creating and configuring digital technologies in ways that would be difficult otherwise (Giaccardi and Fischer 2008; Von Hippel 2005). Particularly, the emergence of toolkits has opened up possibilities for users to create and configure rather complex technological solutions. Some of these toolkits were designed with the intention to support professionals in specific domains. For instance, in education, developments in toolkits have opened possibilities for educators to form personalised learning environments for students (Moundridou and Virvou 2003; Wiedenbeck 2005). In health care, there have been developments in creating customisable portable devices to support people with cognitive disabilities in completing tasks independently (Carmien and Fischer 2008). There are also domain-oriented technologies created specifically for cultural heritage; I will describe these in more detail in section 2.4 of this chapter.

Furthermore, there has also been an increase in the availability toolkits designed for general user groups. For example, significant efforts have been made particularly in the development of augmented reality (AR) toolkits to empower users with little specialised technical knowledge, to engage in the process of designing AR applications. Such toolkits include ComposAR (Seichter et al. 2008), CATOMIR (Zauner and Haller 2004) and an immersive toolkit (Lee
et al. 2004); all of these toolkits are accompanied by an intuitive and approachable interface. On a commercial level, there are other augmented reality technology kits available, such as Layar\(^6\) and Wikitude\(^7\), enabling end users to experiment with creating AR experiences through a visual interface.

Fischer (2009) emphasised that, due to the growing accessibility of technology, users are increasingly being provided with the means to engage in activities that are perceived to be ‘personally meaningful’ to them (Fischer 2009 p. 15). However, Fischer (2009; 2013) further warned of the risks associated with this emerging culture: that users may face ‘participation overload’ (Fischer 2013, p. 221), whereby they are forced to engage in activities that they do not wish to participate. Therefore, he argued that digital technology should support rich ecologies of participation, where users are provided with a choice to partake in the design of the technology in ways they feel comfortable, shape and integrate digital technologies on levels that are appropriate for them. Giaccardi and Fischer (2008) have also argued that creative support should be provided in the design of toolkits as a means to encourage adoption and inspirations for design. For example, toolkits can provide end users with sources of inspiration for creative design from which the end users can evolve their products using their creativity (Giaccardi and Fischer 2008).

In the literature highlighted above, there is a need for understanding if users want to integrate or participate in the design and shaping of technology. If they are open to participating, questions also arise in HCI literature on how they can be effectively supported to partake in ways that are meaningful to them. In the next section, I will review the relevant literature on how users integrate and appropriate technology in context.

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\(^6\) https://www.layar.com/
\(^7\) http://www.wikitude.com/
2.3.1 Supporting Users in Appropriating Digital Technologies in Context

HCI and CSCW research is focusing an increasing amount of attention on how users integrate, appropriate and use digital technologies in context. Research has investigated how the introduction of technology had both shaped (Dourish 2003) and been shaped (Draxler et al. 2012) by domain professionals in context. Dourish (2006) argued that the focus should not be just about how people use technologies, but on ‘how those technologies take on specific social meanings through their embedding within systems of practice’ (Dourish 2006 p. 546). Dourish implied that the purpose of technology could not be fully understood until it is used in context. However, further challenges face users in context as digital technologies become more flexible; many researchers agreed that these technologies are more open to interpretation regarding their meaning and purpose (Fischer 2009; Randall et al. 2007; Quinones et al. 2013).

Users do not always know during the design stages what their requirements are; it is only through the use of technology that these needs are uncovered (MacLean et al. 1990; Fischer 2009; Von Hippel 2005). Dourish (2003) described the adoption and appropriation of Placeless Documents, where an emerging set of principles for supporting the integration of this flexible technology only revealed through investigations of use in context. He argued that investigating technological intervention in context is fundamental in understanding how users want to use and shape the system to their needs.

Moreover, a challenge arises to promote an atmosphere where appropriation of digital technologies is part of a user's routine. Indeed, cases may arise where users are self-motivated to appropriate new technologies. Nardi (1993) referred to these groups as ‘power-users’ (Nardi 1993 p. 115). On a commercial level, these users have been more commonly known as ‘lead-users’ as coined by Von Hippel in 1986 (Von Hippel 2005). Both power-users and lead-users are motivated to address problems they encounter with products or technologies; moreover, they are not afraid to do so.
However, it is well known in HCI literature that not all people have the same motivations, understandings, or skills to appropriate and shape digital technologies for their purposes. MacLean et al. (1990) highlighted how part of the success of their tailorable system was due to the workers learning to understand the concept of tailoring over time; hence they formed a ‘tailoring culture’ (MacLean et al. 1990 p. 176). Importantly, the authors highlighted how workers transitioned from not understanding the viability of tailoring to feeling as if tailoring was an important aspect of their work. Okamura et al. (1995) argued that mediators play a major role in facilitating the successful appropriation of technologies. The authors defined mediators as: “individuals who intervene deliberately and with organizational authorization in the on-going use of CSCW technology within its context of use.” (Okamura et al. 1995 p. 158). The authors highlighted how mediators were important for encouraging potential users to use the system, by providing training, and constantly redesigning the system in response to the users’ feedback.

Other authors have discussed similar or variations of the mediator role, and its importance. For instance, Nardi and O’Day (1999) highlighted the important role that ‘gardeners’ play in supporting others embracing the technology. They are similar to mediators; they often provide emotional support and informal training for people adopting new technology. Another variant includes peer support communities (Gorman and Fischer 2009), who are communities (possibly remote and contactable through forums) who assist others in integrating and customising new technologies. More recently, Quinones et al. (2013) highlighted that the lack of collaborative training and assistance resulted in users not understanding or using certain features of a learning management system.

Furthermore, the use and meaning of digital technologies are better understood in their context of use. Since many technologies are designed nowadays to be left flexible, it is becoming harder to predict how users in different contexts appropriate them as they are open to interpretation (Quinones et al. 2013). Randell (2004) argued that people in context define the
meaning of technology, and in turn, technology shapes the practices of people in context. In illustrating her point, she described how nurses and practitioners, who were working in an intensive care unit, commonly faced problems with technology. Therefore, they always dedicated time to deal with the issues associated with the initial adoption. Lindtner et al. (2012) coined the term ‘cultural appropriation’ when describing how technology was appropriated by users in different localities in urban China. They argued that the ways users make meanings of technology and appropriate them in various cultural contexts cannot be attributed to a stereotypical categorisation of different cultures. They claimed that many factors influence how people make and shape meanings of technology, ranging from the social, economical to the political perspectives in which it is integrated.

Indeed, the above examples illustrate how professionals from a wide range of domains integrate technologies into their work. A common belief amongst all of these researchers is that the users and the context define the meaning of the technology. Furthermore, practices of domain professionals change over time due to a variety of factors; this also impacts how users in context integrate new technologies. The present study also embraces this point of view, by considering that the activities that are meaningful to users can only be identified through seeing how technology is shaped over time and in context.

Moreover, it is important to highlight that, in many of the cases described above, the domain professionals were not integrating or using the technologies to engage or communicate with other people. Cabitza et al. (2014) proposed that the challenges facing those who shape technologies for personal use and those who shape technologies for others within and outside of their community are different. The authors indicated that users who shape and configure technologies for other users in other communities are not guaranteed that the technologies will be successfully adopted. In contrast, if a person is designing for personal use or for those in a community she is a member of, the requirements for design may be more familiar. While Cabitza et al. (2014) did not present original empirical work, their discussion brought to the fore
interesting challenges facing those who choose to design for other communities.

In an instance where users were shaping technologies for other communities, Carmien and Fischer (2008) described three cases of caregivers integrating a configurable device (MAPS) to support people with cognitive disabilities. The caregivers tailored the MAPS device to assist their clients with cognitive disabilities in performing specific tasks independently. Their use case was interesting, specifically because it highlighted to some extent how each of the caregivers responded to their role differently. In one instance, the caregiver created step-by-step instructions for folding clothes for her client. During the first few times the client used the device, the caregiver monitored her client to ensure he was using the device correctly and completing the task effectively. In the other two cases, the caregivers encouraged the clients to use the device and to complete tasks assigned to it independently.

Indeed, the case study described by Carmien and Fischer (2008) provided some interesting insights into how the different caregivers responded to their roles. It highlighted the importance of understanding how users take responsibility for shaping technologies for others, especially as people can react to this role in different ways. I believe that investigating the opportunities and challenges facing people shaping technologies for others in context is imperative; this is because users’ responses can yield new insights into how they can be supported in these practices.

In the above section, I have detailed why it is important to understand how users adopt and shape meaning of technology in context. Specifically, within cultural heritage, digital technology is having a great impact on the practices of CHPs. Emerging technologies are providing CHPs with opportunities to engage visitors into their collections in novel ways; therefore there is a need to investigate how CHPs respond to integrating digital technologies as part of their practices.
2.4 Opportunities for Cultural Heritage Professionals to Integrate Interactive Technologies

In the late 1960’s, digital technology was applied to manage collections in large museums (Parry 2007). Over time, the application of digital technology has been extended to other aspects of the museum beyond collections management. Recent advances have seen digital technologies become more embedded in the practices of CHPs, enabling them to engage with audiences in new ways. HCI and cultural heritage have invested research in examining how, where, and with whom museums communicate their cultural interpretive content because of the emergence of web 2.0 (Russo et al. 2008) and the growing importance of ICT related roles in museums (Marty 2006a).

Web 2.0 has opened up avenues for museums to form new participatory engagement relationships with visitors. Through using social media for example, museums can encourage visitors to share their interpretations of artefacts and their experiences of the museum (Russo et al. 2008; Kidd 2011). Russo et al. (2008) argued that social media has particularly provided the potential for museums to engage in ‘many-to-many’ conversations, where visitors can share meanings amongst each other as well as with the museum. In a later publication, Russo (2012) described the rise of the ‘media museum’ (Russo 2012 p. 145). Russo maintained that due to this rise, visitors could share their museum experiences with other visitors and engage in collective meaning making through social media, even within the walls of the museum. The growing access to social media outlets means that small museums can also benefit from their potential (Ambrose and Paine 2012).

On top of these developments, the emergence of various toolkits has opened opportunities for CHPs to form content for, as well as configure, interactive devices and installations. These toolkits have enabled CHPs to integrate various devices and installations into their museum activities without the need of specialised technical skill. As highlighted in the introduction, the meSch project is developing a toolkit that will provide opportunities for CHPs to create and
integrate tangible museum interactives. The toolkit contains an online authoring tool for adding content to and configuring behaviours of these interactive technologies without the need for specialised technical knowledge (figure 2.2).

This thesis is motivated by the opportunities this toolkit –and other toolkits highlighted in table 2.1– provide CHPs to become more involved in creating interactives. They have the potential to blur the boundaries between the CHP, the exhibition designer, and technologist in the practice of creating interactive exhibits. The goal of this table is to demonstrate the breadth of research focused on the development of these emerging tools.
Table 2.1: Toolkits in HCI enabling CHPs to create and modify interactive devices and exhibits

<table>
<thead>
<tr>
<th>Toolkit Name</th>
<th>Description</th>
<th>Study focus</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Virtual /Augmented /Mixed Reality</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHESS (Roussou et al. 2015)</td>
<td>Digital narratives</td>
<td>Co-design</td>
</tr>
<tr>
<td>ARCO (Karoulis et al. 2006)</td>
<td>3D Virtual/Augmented reality</td>
<td>Usability</td>
</tr>
<tr>
<td>ARTECT (Koleva et al. 2009)</td>
<td>Augmented reality</td>
<td>Usability</td>
</tr>
<tr>
<td>Curator (Sprengart et al. 2009)</td>
<td>Interactive, table top installations</td>
<td>Usability</td>
</tr>
<tr>
<td>Pachyderm (LaMar et al. 2005)</td>
<td>Online virtual exhibitions</td>
<td>Usability</td>
</tr>
<tr>
<td>Omeka (Cohen 2008)</td>
<td>Online virtual exhibitions</td>
<td>Usability</td>
</tr>
<tr>
<td>3Dpublish (Sillaurren and Aguirrezabal 2012)</td>
<td>Virtual 3D exhibitions</td>
<td>Usability</td>
</tr>
<tr>
<td>AMIRE(^8) (Dörner et al. 2003)</td>
<td>Augmented reality</td>
<td>Usability</td>
</tr>
<tr>
<td>Open Exhibits(^9)</td>
<td>Multi-touch, multi-user interfaces</td>
<td></td>
</tr>
<tr>
<td><strong>Tour/locative based</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cicero Designer (Ghiani et al. 2009)</td>
<td>Personalised tour guide</td>
<td>Usability</td>
</tr>
<tr>
<td>Chawton House(^10) (Weal et al. 2006)</td>
<td>Personalised tour guide</td>
<td>Co-design</td>
</tr>
<tr>
<td><strong>Games</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational Game (Simeone and Ardito 2011)</td>
<td>Virtual games</td>
<td>Usability</td>
</tr>
<tr>
<td><strong>Tangible interactive experiences</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>meSch (Petrelli et al. 2013)</td>
<td>Tangible/material exhibits and smart objects</td>
<td>Co-design</td>
</tr>
</tbody>
</table>

Many of these toolkits were tested by CHPs outside of the museum context through user testing. User testing involves trialling a product with users to identify functionality issues and foresee how products match specific goals of the users (Benyon et al. 2005). In most user-testing scenarios, the intended visitor experience has been pre-defined to some extent by researchers. For example, the toolkit described by Koleva et al. (2009) was intended for the creation of hybrid experiences in the museum. The researchers tested the

\(^8\) This toolkit was not developed specifically for museums (Dörner et al. 2003); however, it contains a use-case for museums (Abawi et al. 2004)

\(^9\) Open exhibits: http://openexhibits.org/

\(^10\) The researchers here highlighted that the curators working at Chawton House did not consider it a “museum” (Hornecker et al. 2006). However, the activity that they were creating for the guide – a tailorable interactive tour – is similar to those held in museums.

\(^11\) TAP into museums: http://www.tapintomuseums.org/
platform with CHPs from various art and archaeological museums in a workshop setting outside of the museum that involved creating several scenarios for hybrid experiences. Other examples describe the development of toolkits to devise educational games in historical sites and museums: for instance, Simeone and Ardito (2011) presented a tool for the creation of various educational games for heritage sites; through user testing, the researchers identified usability issues and opportunities for different scenarios of use. Another toolkit for the creation of educational games and locative based experiences is described by Ghiani et al. (2009), where CHPs tested the toolkit with the aim of identifying if the system was too complex to use. In all cases highlighted above, the CHPs were presented with a predefined visitor experience, accompanied with pre-defined tasks or pre-defined materials.

In other cases, the usability tests were primarily focused toward issues surrounding the toolkits’ interfaces and did not require any involvement from the CHP in forming interactive visitor experiences. For example, Karoulis et al. (2006) described the usability testing of ARCO, a toolkit designed to support CHPs in creating 3D models and virtual exhibitions. In this case, the CHPs were involved in providing feedback on the toolkit’s interface through questionnaires. A similar approach was taken in the user test of Pachyderm, where potential users were presented with the Pachyderm interface and asked to provide feedback on the clarity of the toolkit’s interface (LaMar et al. 2005).

In rare cases, researchers have investigated how CHPs respond to their role in integrating interactive technologies. Halloran et al. (2006) presented the design of a location based museum guide developed for the grounds surrounding Chawton House. The resulting guide system was to be used to educate children on field trips. In this particular case study, teachers and CHPs of the grounds of Chawton House were involved in the design of the tool; the overall purpose was to analyse how the authoring platform for the guide system could be designed to support their usual work patterns (Weal et al. 2006).
In developing the guide for Chawton House, Hornecker et al. (2006) detailed how the researchers came in with the ambition for creating novel visitor experiences that were tailored by visitors. The CHPs were involved in shaping this experience and recording the content for the guide; the teachers participated in structuring the tour and selecting relevant stories; and the researchers completed the majority of the content editing and shaping the experience, particularly at the beginning of the project. Hornecker et al. (2006) further describe how the CHPs were hesitant to place too much effort into creating the content for the interactive tour; the authors argued that it was because the CHPs did not see the value of the location-based device as it had not been used in context. However, Hornecker et al. (2006) highlighted that, when the CHPs saw the PDA used by schoolchildren in context, they became more enthusiastic toward creating activities using the interactive once they had seen it in use.

In a briefly described use case of the Omeka toolkit amongst museum studies students, Marsh (2013) argued that many of the students did not have the necessary skills for creating online exhibitions. In some cases, the students were having technical difficulties editing images, audio, video and other media. In other cases, Marsh (2013) highlighted that the students also did not understand the implications of designing a narrative for virtual exhibitions, emphasising that: “students were trying to translate something that would work well as a paper into something that was disastrous online” (p. 2). It is worth noting that the users were students and were learning; therefore, the students were not expected to create a visitor experience within a specific museum context.

Table 2.1 and the paragraphs presented above described the significant developments within HCI and cultural heritage, enabling CHPs to become more involved in the creation of museum interactive devices and installations. In most cases where the involvement of the CHP was required, the experience was pre-defined by researchers or practitioners coming in. The use case of Omeka as described by Marsh (2013) brings us closer to understanding the
implications toward the skills required by a prospective group of CHPs in creating and integrating interactive technologies; however, her study was based on a classroom setting and not in the context of a museum. Therefore, the goals of the students in creating their exhibitions were not predominantly driven to support an intended visitor experience. This thesis argues that this is important; designing for an intended visitor experience presents further challenges in creating and integrating interactive exhibits and installations, as highlighted by Vom Lehn and Heath (2005) and Gammon and Burch (2008).

The complex nature of creating content for interactive devices presents various challenges for CHPs. Marsh (2013) argued that those desiring to build virtual exhibitions require extensive training to develop their skills in not only technology but also in presenting narratives in the digital realm. She further highlighted that creating narratives effectively in the virtual world requires more than a small number of tutorials; the author emphasises that facilities for developing these skills need to be integrated into museum-related courses.

Although digital technologies are becoming more accessible, many researchers maintained that creating content for interactive technology requires a multidisciplinary team of professionals. Costagliola et al. (2002) described the development of their collaborative toolkit for designing virtual exhibitions. They identified four types of content creators: the curator, who coordinates the exhibition; the art expert, who designs the multimedia presentations; the media expert, who creates all of the visual media; and the layout designer, who implements the exhibition.

In describing a use case for the development of an augmented reality application using the AMIRE toolkit, Abawi et al. (2004) argued that the methodologies required to create augmented reality content are complex. Through investigating how augmented reality is usually applied in museums, the authors emphasised that it required alternating between different types of media and different ways of using it without distracting from the intended visitor experience. Therefore, the authors believe this process required the
input of a variety of content experts and developers. Roussou et al. (2015) presented an approach for creating digital stories through collaborative design comprising multi-disciplinary teams. They described three case studies involving three different museums, each case incorporating a series of workshops comprising of technical, storytelling, multimedia and museum experts, where the goal was to create interactive stories. They indicated that the process of creating narratives for digital devices is complex and discussed how experts from each of these different groups complemented each other in the creation process.

However, the above research usually starts with the assumption that museums have access to a multidisciplinary team of professionals to assist in the integration of interactive technologies. By starting with this assumption, I argue that we risk failing to understand fully how museums that may not have access to these resources respond to these technological advances. This is particularly true for small museums.

More recently, van der Vaart and Damala (2015) highlighted that textual content could be used as an alternative to complex, dynamic content on augmented reality devices in supporting visitor interpretation. These authors described another use case of The Loupe at the Allard Pierson Museum, where they examined the suitability of using textual content on this device. In this instance, The Loupe was used to reveal stories surrounding Greek vases in the collection at the Allard Pierson Museum in Amsterdam. The content, which was primarily text-based but also contained a small number of animations, was designed by the CHPs in-house alongside a team of external designers. Their case study reveals promising avenues for CHPs in small museums to create content for, and integrate in-gallery technologies in the absence of multi-disciplinary teams.
2.5 Integrating Digital Technologies in Museums: A Cultural Heritage Professionals’ Perspective

In the field of cultural heritage, a small body of literature exists that investigates, from the CHPs point of view, the challenges and opportunities faced by museums in light of the rise in digital technology. In some cases, interviews were conducted with CHPs from a wide variety of museums to gather these insights. Based on interviews conducted with CHPs from large and small museums, Marty (2006b) illustrated how CHPs increasingly felt the need to build the skills to convey information effectively through using new digital technologies. Moreover, he highlights that CHPs also need to be able to identify when new skills will be needed in the future and build upon these. Parry (2013) introduced the idea of the ‘postdigital’ museum; in doing so, he argues for a state where digital has become intertwined into the museum’s mission as opposed to being a separate entity. He argues that this state be beyond “adoption and acceptance” (Parry 2013 p. 27), a state that he terms “normative”.

Referring to interviews held with CHPs, Duff et al. (2009) indicated that museums need to be able to understand not only how to use digital technologies, but what the benefits and limitations are of integrating them. The interview data presented by McDermott et al. (2013) revealed that there is a lack of awareness from CHPs as to what interactive technologies can do to present narratives. The authors argued that workshops that encourage CHPs to experiment with new interactive technologies could help with addressing this issue.

Indeed, the literature discusses in this section provides insights into the kind of skills CHPs need to have to keep up with the evolving use of digital technologies. However, we learn little of the fears and expectations that these CHPs face because the studies were not conducted in context. Moreover, these studies are focused on CHPs with skills ranging from little experience to high experience using digital technologies in museums. Therefore, little is known
regarding how CHPs in small museums are responding to the integration of digital technologies.

Albeit they are few, there are examples of literature providing case study descriptions of how CHPs respond to integrating digital technology. From a CHP perspective, Carnall et al. (2013) described how they integrated an iPad application to support visitor contributions in an exhibition. They described the lessons learned from using this tool as a means to achieve this goal. However, the CHPs in this instance do not describe in detail the challenges that were faced in the process of creating and integrating the interactive technology; the main focus was on the lessons learned in integrating the tool.

Stuedahl and Smørslal (2015) illustrated how CHPs at a Norwegian museum shifted their practices in presenting information through experimenting with the use of social media in an exhibition. The authors revealed that the CHPs developed skills in using social media as a means to engage visitors within the context of that museum; in particular, they described the skills that the CHPs felt they needed to build to do this. While this case provides rich details toward the skills required for integrating digital technology, the case study focuses primarily on the experimental process; little focuses on the CHPs’ attitudes and viewpoints toward using digital technology. Moreover, this research aims to provide in-depth views toward the challenges that CHPs face when using and integrating new technologies.

2.6 Discussion

At the start of this chapter, I discussed the evolving nature of museum practice. Particularly, I focused on how interactive technologies open up alternative avenues for visitors to interpret museum artefacts. Indeed, the growing availability of digital technologies enables CHPs with limited experience integrating interactive technologies to be more involved in this process. However, HCI research has only explored to a limited degree how CHPs respond to their evolving role in integrating interactive technologies.
Therefore, this review has identified the following existing gaps in literature:

1. More nuanced understanding of CHP practices as the use of digital technology becomes more prominent: In both large and small museums, it is evident from this review that digital technologies hold potential in mediating various aspects of CHPs work; specifically, in how they engage visitors in the activities they provide. However, research has focused to a strong degree on the potential of these technologies rather than the opportunities and challenges associated with embracing them in practice.

2. A Better understanding of CHPs increased involvement in integrating interactive technologies into museum activities: Due to HCI's lack of understanding of these evolving practices, there also remain questions on how CHPs contribute to the integration of interactive technologies. Furthermore, the literature indicates that we have only explored CHPs' involvement in the creation and integration of interactive technologies in the gallery on a minimal level. Since the design and integration of interactives are regarded as complex, understanding how CHPs integrate and contribute to the creation and integration of interactive technologies is a pertinent issue. This applies in particular for small museums with limited resources.

3. Improved support for small museums integrating and maintaining control of new technologies: Subsequently, we are yet to understand how CHPs in small museums can be adequately supported as technology becomes more prominent in their practices.

In response to these gaps, I argue for a different approach. Firstly, I argue for gaining a deeper understanding of the practices of CHPs in creating and adapting museum activities and their attitudes toward using digital technologies as part of this process. Secondly, I emphasise that the initiation and creation of the visitor experience should be left in the hands of the CHPs in context, rather than with the researchers. By encouraging CHPs to form
activities that are ‘personally meaningful’ (Fischer 2009) to them, I believe that we learn more about how they are responding to the evolving role that digital technology is playing in their practices and how they can be better supported. In addition, I argue that leaving the creation of the visitor experience to the CHPs reveals unexpected approaches influenced by their practices, attributes and resources to the integration of interactive technologies; therefore, this potentially leads to new understandings of how the creation of interactive technologies can be approached and supported in HCI.

In saying that, I agree with other authors that the researcher should play a role in the process (Hornecker et al. 2006; Roussou et al. 2015); however, the researcher should act as a guide and provide support rather than dictating the directions to take in creating the visitor experience. Moreover, the researcher’s role and approach should not be fixed, but be open to change as new understandings of the context emerge.

In this chapter, I conceptualised my research within the field of HCI and cultural heritage. Moreover, I highlighted the necessity of understanding how CHPs in small museums are responding to the evolving role that digital technologies are playing in their practices. Having presented the gaps in the literature that this thesis aims to investigate, the following chapter discusses in detail the methodology I adopted to collect and analyse data.
3 Methodology

3.1 Introduction

This chapter presents the approach I used for conducting my research. The methods I have used for this study fall under the qualitative paradigm, combining the traditions of ethnography and action research to gather and analyse data. I discuss why these traditions were chosen to frame the research approach. These reasons are centred around the goals of obtaining detailed accounts of the practices of CHPs in creating and preparing museum activities; reflecting on my influence and role in the museum; and, in collaboration with the CHPs, designing and reflecting upon a technological intervention.

Upon describing an overview of the research approach I adopted for this thesis, I outline the two phases of this research. Each phase involved the use of participant observation, semi-structured interviews, and informal conversations. I then detail how I applied ethnography in the first phase of research. I describe my stance as researcher, which shifted between observer and active participant at different stages in this phase of the study. Subsequently, I describe how I analysed and presented the data gathered, which informed my position as researcher and facilitator in the second phase of research. Following this, I introduce the approach I used in the second phase of research: action research. This phase required planning and implementing an intervention on the CHPs’ practice in creating a particular museum activity – a tour guided by an interactive technology.

3.2 Research frame

Before defining my research approach, I feel it is necessary to re-emphasise what this thesis sets out to do. As I mentioned in Chapter 1, the aims are not necessarily to inform design of technology. Rather, it is to investigate the implications that the growing availability of novel technologies have on
In Chapter 2, I highlighted that increasing access to digital technology enables CHPs to incorporate interactive technologies into their activities. However, little research investigates how CHPs respond to their emerging role in context.

To address this gap in research, I adopted a qualitative research strategy for this thesis. The aim of qualitative research is to provide rich, descriptive accounts of real situations and contexts (Bryman 2008; Punch 2013); I argue that this approach is imperative to address the main research objectives of this thesis. Practices of CHPs in creating and adapting museum activities—with an additional focus on the evolving role digital technologies play in this process—are best witnessed in the social and cultural context where those museum activities are created. Therefore, this research combines two practice-focused approaches—ethnography and action research—and is divided into two phases accordingly.

Much debate has emerged in defining the tradition of ethnography (Atkinson 2001; Creswell and Clark 2011). However, many agree that it involves studying people, cultures and behaviours in natural settings (Creswell and Clark 2011). It requires spending time in an environment to gain first-hand experiences of the culture. Rich ethnographic data is used to formulate “thick descriptions” of the people being observed. Thick descriptions are detailed accounts of people: comprising not only of overviews of practice, but also behaviours, actions and context in which these practices occur (Geertz 1973).

Within HCI and CSCW, ethnography has been a widely accepted approach for informing the design and effects of digital technologies embedded within different cultures. Notable research highlighted by Randall et al. (2007) have also emphasised some key guidelines for conducting ethnographic research specifically for the purpose of informing design. Other notable examples of applications for this purpose include informing the design of collaborative systems within CSCW (Crabtree 2003; Crabtree et al. 2004) and ubiquitous technologies (Crabtree et al. 2006; Salvador et al. 2004) to support mobile
experiences. However, this ethnographic study was not to inform the design of a technological solution. Rather, the knowledge captured contributed to informing the second phase of research: in collaboration with the CHPs, integrating an interactive device into a museum activity chosen and created by the CHPs.

Action research is an approach\textsuperscript{12} for facilitating change with an overall goal of improving practice (Avison et al. 1999). It is a cyclic process of planning, acting, observing and reflecting on an intervention applied to a given situation or environment (Herr and Anderson 2005; Lewin 1946). Action researchers can: address how change mediates a particular context; learn from their experiences; and identify knowledge that can be useful for the wider community (Herr and Anderson 2005) if the approach is implemented appropriately.

Within HCI, variants of action research have been applied in many situations, including the design of new media solutions (Hearn et al. 2009) and the design of bespoke technological solutions (Taylor et al. 2013). Despite its growing popularity in the past twenty years, action research has remained in the margins for practical and academic research within HCI. However, researchers have argued that there are benefits of adopting an action research approach to facilitate change that implementing new technology may pose in real environments and contexts (Hayes 2011; Kjeldskov and Graham 2003). Outside of HCI, action research has been applied widely in Information Systems (IS) research, particularly in the 1990s (Avison et al. 1999; Baskerville 1999; Baskerville and Wood-Harper 1998).

The ethnographic study involved investigating the digital technologies the CHPs use behind the scenes and how they benefit from them in practice. Furthermore, it required reflecting upon my influence as volunteer and

\textsuperscript{12} Action research has also been described as an ‘orientation of inquiry’, specifically because it “seeks to create participative communities of inquiry, which qualities of engagement, curiosity and question are brought to bear on significant practical issues” (Reason and Bradbury 2007, p. 1).
observer in the museum. These insights helped to inform my role as researcher and facilitator in the intended technological intervention: designing a museum activity – a tour – encompassing an interactive device. This intervention took place under the frame of action research, which occurred during phase 2 of this research. In collaboration with the CHPs, this phase involved an iterative cycle of planning, acting, observing and reflecting upon how CHPs approached their role in creating content for and integrating an interactive technology. Figure 3.1 provides an overview of the combined two phases of research.

![Figure 3.1: Plan of action for this thesis (inspired by multiple authors: combining ethnography with action research)](image)

To ensure that the findings of this study were credible and valid, triangulation\textsuperscript{13} was used in both phases of the investigation. This ensured \textit{trustworthiness} and \textit{authenticity} were present in the findings (Bryman 2008; Hayes 2011; Punch 2013). Trustworthiness refers to \textit{credibility, transferability, dependability,} and \textit{conformability}; in sum, it points to the integrity of the findings the study gathered. Therefore, in the design of both phases of this research, several methods and data collection techniques were adopted (table 3.1).

\textsuperscript{13}Triangulation is the process of combining two or more methodologies, methods, and/or data sources (Bryman 2008).
Table 3.1: Methods used in Phase 1 and Phase 2

<table>
<thead>
<tr>
<th>Phase</th>
<th>Methods</th>
<th>Objective</th>
<th>Dates</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Participant observation, Semi-structured interviews, Informal/casual conversations</td>
<td>1. Within a small museum, detail the practices of CHPs in preparing, creating and adapting museum activities; Establishing relationship: February 2013 2. Analyse the role that digital technology plays in these practices. Formal research: September 2013 – June 2015</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Participant observation, Semi-structured interviews</td>
<td>1. Investigate the potential for these CHPs in creating and modifying an interactive technology to support a museum activity; October 2014 – February 2016 2. Document the opportunities and challenges that arise due in light of the evolving role digital technology plays in their practices.</td>
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</tr>
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In phase 1 and 2, this research involved 38 CHPs. Due to the high turnover of the CHPs, which I will describe in more detail in Chapter 4, the CHPs participated at different stages in the study. In total, 11 CHPs participated in phase 1 only; 16 CHPs were involved in phase 2; and 11 CHPs participated in phase 1 and 2. Further details of the participants and their roles can be found in Chapter 4 and Chapter 5 for phase 1 and 2 of this research respectively. A full list of the CHPs involved in this study can be seen in Appendix B.

When researchers adopt a research approach (whether qualitative or quantitative), they are too accepting the ontological and epistemological assumptions that affect: how the research is carried out; how data is gathered and presented; and how data is analysed (Creswell 2012; Willis 2007). Here, I provide an overview of these assumptions, which will be further elaborated in the sections 3.3 (detailing Phase 1) and 3.4 (detailing Phase 2). With relation to my viewpoint as a qualitative researcher, these assumptions can be reflected in the four philosophical assumptions described by (Creswell 2012). The four assumptions, and how these are reflected in this thesis, are as follows:
• **Ontological, or the nature of reality:** realities are multiple and described in a subjective manner as demonstrated by the participants in the study. In many qualitative studies, these realities are portrayed through the lens of the participants (Creswell 2012). In this study, however, reality is also reflected through my observations and influence as researcher, to acknowledge my influence and inform my role in the research process;

• **Epistemological, or how we see the world:** I attempt to get as close to the participants as possible, building a relationship with them to gain an insider’s perspective. From a research standpoint, I acknowledge that the findings generated from the research are subjective and interpretations of reality. I reference quotes and excerpts from recorded data to represent the world from the participants’ point of view; however, I also rely on my interpretations generated through field notes and my research diary to build understandings of the field and my role as researcher in this context;

• **Axiological, or the role of values in research:** values are significant, abundant, and transparent in this research study; henceforth, biases are present. Values are also represented through my interpretation of the data. The narratives illustrated in this thesis represent my standpoint as well as the participants;

• **Methodological, or the process of research:** This research is inductive, meaning it is driven by the data in the field as opposed to existing literature.

Due to the situated and reflective nature of the research, it would be difficult to replicate this study as it was conducted. As Scale (2003) argues, it is possible for findings to be different in these cases, particularly since the findings are influenced by the beliefs and skills of various researchers. Furthermore, as I mentioned in Chapter 2, different museums often have diverse challenges and goals. Nonetheless, I believe that the findings, to some extent, can be transferred to relate to similar small museum and heritage contexts; I will discuss further the transferability of the findings in Chapter 7.
This thesis takes an inductive approach to data gathering and analysis. Through inductive reasoning, researchers begin by gathering relevant data to understand a situation or context (Blaikie 2009; Emerson et al. 2011). Inductive reasoning is a common approach taken amongst researchers within the ethnographic and action research traditions (Emerson et al. 2011; Herr and Anderson 2005). Data was analysed using dedicated computer analysis software: MaxQDA\textsuperscript{14}. Ethical documents used during Phase 1 and Phase 2 can be found in Appendix A and Appendix C respectively.

3.3 Phase 1: Investigations into Cultural Heritage Professionals’ Practices (Ethnography)

3.3.1 Approach

As I have mentioned, ethnography was used during the first phase of research; this helped contribute to the preparation phase required for researchers in facilitating any change or intervention facilitated by action research (Herr and Anderson 2005). Ethnography can help researchers in distinguishing between what people do and what they say they do in practice. It can also identify tacit knowledge – knowledge that cannot be easily verbally communicated – which is imperative to understand the social, cultural, and behaviour aspects of people (Blomberg and Burrell 2009).

The chosen field for this study was The Hunt Museum; further details about this setting can be found in Chapter 4. I first entered The Hunt Museum as a volunteer in February 2013, initially motivated by my role in the meSch project. I had the goal of understanding more about what it was like to work in a museum. As a volunteer, I took part in many of the activities hosted by the museum, such as arts and crafts and children workshops. From September 2013 onwards, I began placing a stronger focus on the CHPs who were involved in the creation and adaption of museum activities. I began observing how these CHPs responded to using digital technologies as part of their behind-the-scenes

\footnote{http://www.maxqda.com/}
work. To maintain a relationship with the museum, I continued my role as volunteer after the first phase of research had officially ended.

It is important to emphasise my viewpoint as a researcher before entering the field. I was aware that I was not an insider. I was mindful that I was entering the field with several biases driven by my goals as a designer. Therefore, I felt the need to learn about their practices from the CHPs’ point of view. I made a conscious decision as to what perspective to take for data gathering, which can either be influenced from an emic (insider’s) perspective or an etic (outsider’s) perspective (Angrosino 2007). From an emic perspective, researchers enter the field with no preconceived knowledge or theories; they address their research issues through knowledge obtained directly in the field. From an etic perspective, researchers rely on predetermined knowledge before entering the field. While I acknowledge that it is impossible to enter a field without an outsider influence, this research leans strongly toward an emic perspective. I was driven to understand the field from the viewpoint of the CHPs.

Ethnographic research is usually structured in such a way that documentation, reflection and analysis portrayed from the participants’ point of view (O’Reilly 2009). Nonetheless, I felt it was imperative also to reflect on my influence and role assigned to me at The Hunt Museum for two reasons. Firstly, although I do not see myself as a true insider, I was accepted as part of the team at the museum. Secondly, there were some activities that I heavily participated in front-in-house and behind-the-scenes. In saying that, I felt it was essential to maintain the perspective of the participants in other activities. This was important when gathering insights into the CHPs’ way of working and their viewpoints towards using digital technologies as part of their work.

3.3.2 Data Collection Methods

Between February 2013 and January 2016, I spent 168.5 working days in total volunteering in the delivery of various museum activities and observing the preparation, creation and adaption of activities in the museum. A working day is 7 hours; this is reflected by the general opening hours of The Hunt Museum,
which are between 10 am and 5 pm. However, on Sundays and Public Holidays, the museum is open between 2 pm and 5 pm, a half working day.

During phase 1 of this research, I adopted several methods to address the first two objectives of my thesis goal. These were to (1) Within a small museum, detail the practices of CHPs in preparing, creating and adapting museum activities and (2) Analyse the role that digital technology plays in these practices. Moreover, my goal was to reflect upon my role as volunteer and researcher to derive considerations to support these CHPs in a technological intervention. Therefore, data collection methods were also used to gather knowledge surrounding my influence within the museum.

One of the core methods I used for data collection was participant observation, commonly used by ethnographers to gather rich insights into a particular culture (O’Reilly 2009). It requires observing a culture while participating in some activities in the context where they would generally take place. Participant observation was used to investigate the creation and adaption of museum activities as they occurred in context and to investigate how digital technologies were used behind-the-scenes by the CHPs.

Participant observation can occur on many levels. On one end of the scale, participant observers can be passive observers, with little to no involvement in the activities that take place in the environment. However, at the other end of the scale, is the highly participatory observer, whereby the researcher is actively engaging in happenings in the field. In figure 3.2, I illustrate my position as researcher. This diagram was adapted from Guest et al. (2012, p. 89).
My role as observer varied. As volunteer, my position as observer was highly participatory; this was to build and sustain a relationship with the museum. I actively assisted the CHPs in delivering the various activities and engaged in conversations with the CHPs outside of these activities. While observing the practices of CHPs in their behind-the-scenes practices in creating and adapting museum activities, my goal was to adopt a more detached approach. I was mindful that I was not an insider to this practice and desired to investigate this practice from the CHPs’ perspective. However, this initial goal was changed over time: there were instances where the CHPs wanted my assistance in these activities, particularly when learning how to use digital technology they deemed unfamiliar. On these occasions, I felt it was necessary to engage in these activities and reflect on my own involvement to inform my role in the intervention intended for phase 2. In social science, alternating between observer and active participant is common (Blomberg and Burrell 2009).
I also maintained a researcher diary where I documented many of the activities that I had been involved in as a museum volunteer. The events described in this diary also contain my interpretations and role as researcher in the field. Using research diaries to reflect upon research is becoming more common in qualitative research, particularly within social research (Ortlipp 2008; Nadin and Cassell 2006).

In addition to participant observation, semi-structured interviews were also used to gather data. Semi-structured interviewing is a technique whereby a guide is prepared in advance of the interview; this guide may consist of questions to follow, themes to explore, or topics for discussion (Bryman 2008). The flow of a semi-structured interview is flexible, and this is guided by the responses of the interviewee (Mason 2004). Although there is a certain amount of flexibility surrounding semi-structured interviews, the interviewer needs to ensure that the interview remains on track.

Semi-structured interviews were utilised for many reasons in phase 1 of this research. They were used to gather further insights into the CHPs’ practices (investigative interviews), gleaning knowledge on the CHPs’ involvement in museum activities; gaining some knowledge on their background and also obtaining further insights into their viewpoints and attitudes toward using digital technology. In other cases, the interviews confirmed happenings during observations (post-observation interviews). These interviews also contained some general questions about their work and background before entering the museum.

Informal and casual conversations were also used as a method for data collection. Unlike interviews, which are conducted at set times and planned in advance, casual conversations occur spontaneously and, for this reason, may not be audio recorded (Given and Roulston 2008). These are regularly adopted as a data collection technique by ethnographers to support observations. For the purpose of this research, casual conversations transpired for two reasons: firstly, to produce and maintain a relationship with the CHPs in the museum;
secondly, to confirm some of the observations made during the first phase of research.

Out of the 168.5 working days in the museum, 27.5 days (192.5 hours) were dedicated to observing the behind the scenes practices in creating and adapting museum activities in detail. The observations also focused on how the CHPs utilised digital technologies as part of their work and their attitudes towards these technologies. During the participant observation process, I took detailed notes of all the activities that I had observed. Due to the sensitivity of the environment, it was not possible to audio or video record any of the participant observation activities.

When I commenced my role as an observer, I initially took detailed notes while on the setting, particularly when I was observing the creation of some museum activities. However, I quickly realised this was having a negative effect on how the participants were going about their activities and also on the collaborative relationship I was aiming to build. Therefore, I refrained from taking detailed notes and instead took brief notes on the setting; I then produced detailed notes at the end of each day. Emerson et al. (2011) mentioned this as an approach many ethnographers take to capture the true happenings of a particular setting. Furthermore, I found this approach to be beneficial as I could immerse myself into the setting and maintain an insider relationship with those in the museum.

Including both the investigative interviews and the post observation interviews, the length of the interviews ranged between 30 minutes and 1 hour 15 minutes. Around 16 hours of interviews were audio recorded and transcribed using Intelligent Verbatim techniques; this involves eliminating filler phrases such as ‘you know’ and ‘erm’. Apart from this, all of the interviews were transcribed as said. Furthermore, materials that were produced by the participants were also documented. These included outputs produced as a result of creating and adapting a museum activity and drawings that the CHPs formed to clarify or communicate their ideas.
3.3.3 Phase 1: Data Analysis and Presentation

Reflecting on the goals of phase 1, I decided that thematic analysis was an apt means to approach the empirical data I had collected. Thematic analysis is a method for identifying patterns or themes in data, which are further analysed to portray findings (Aronson 1995; Ayres 2008; Braun and Clarke 2006). Analysis at this stage was inductive and data driven, meaning that analysis was driven by the data collected and not pre-conceived theories (Gibbs 2008). I acknowledge that it is not possible to conduct research without preconceived theories and the influences of the ontological and epistemological assumptions of the research, as stated by Gibbs (2008); however, I attempted to focus my analysis on the data gathered as much as possible.

Although the approach detailed herein resonates to that of Grounded Theory, it is not based on this approach to data analysis. In contrast to the flexible nature of thematic analysis, Grounded Theory is embedded with a range of systematic procedures for collecting, organising, analysing, and presenting data (Glaser 1978). In the analysis stages of Grounded Theory, researchers typically follow a coding strategy; this begins with an iterative process of open coding, leading to axial coding and then selective coding (Glaser and Strauss 2009). Furthermore, Grounded Theory is used to derive a theory that is grounded in the data gathered. Since this phase of research was not to generate a theory surrounding CHP practice but to inform the approach taken for the technological intervention, thematic analysis was deemed more appropriate for this thesis.

Especially within the ethnographic tradition, data collection and analysis often go hand in hand (Emerson et al. 2011; O'Reilly 2009). Rather than commencing data analysis at the end of the field study, ethnographers tend to analyse data while embracing themselves in their fieldwork and formulating detailed notes. The initial analysis began when I first entered the setting in February 2013, when I started forming diary entries describing my experience as volunteer in the museum (see Appendix D/1 to see a sample diary entry). Analysing data
throughout the process has helped me to identify if I needed any further information to develop my understanding of the CHPs practices and context.

I had not created codes prior to entering the field. I chose to do this in order to build empathy toward the context, CHPs’ practices as a whole, and, as much as possible, eliminate preconceived ideas. In commencing the analysis, I adopted an open coding approach which involves reading data (as it had been collected and transcribed) line-by-line, picking out as many ideas or issues regardless of their associations (Emerson et al. 2011). Codes, including those that seemed irrelevant to the research problem at hand, were also generated. I then maintained a stricter focus toward the research problem. Re-reading the data, I identified codes relating to the research objectives to create focused codes. These focused codes were generated while the data collection was taking place. Patterns began to emerge from the data, which resulted in the formation of themes. I also shared my observations with the CHPs in the museum. A copy of a document containing an overview of these observations can be seen in Appendix E. Sharing findings with participants is common in social research (Emerson et al. 2011).

Subsequently, I began looking through the codes and themes that were created to reveal further understandings towards the day-to-day practices of CHPs, and particularly those focused on the creation and adaption of museum activities. The findings from the analysis were gathered to construct a detailed account of the practices that occurred within the museum context. Importantly, it was the revision of data analysis when I began witnessing themes that pertained to inform the next phase of research. Doing this required also reflecting on my engagements in the museum through the generated themes. This was to inform my role as facilitator in the second phase of research.

In Chapter 4, I describe the details of the Hunt Museum based on my findings. Ethnographies produce rich data, which can lead to the construction of detailed narratives (Emerson et al. 2011). These narratives are comprised of holistic accounts of the happenings within a particular culture. Therefore, I felt that
telling the story in the form of a narrative format was apt. I was mindful to reveal this story from two perspectives—the CHPs’ perspective and from my perspective—to reflect on my influence as volunteer and observer in the field. I used anecdotes and excerpts from field notes and interviews to present the stories surrounding the CHPs, their roles and practices, and their attitudes toward different digital technologies. To declare my involvement in the museum and influence on these activities, I also provided excerpts from my research diary and field notes.

3.4 Phase 2: Intervention on Cultural Heritage Professionals’ Practices (Action Research)

As I mentioned, the second phase of research was conducted using action research. Action research is centred on the premise that research surrounding change is designed with participants, and not for them (Herr and Anderson 2005). Therefore, co-researchers should agree that change should improve a particular situation in some way. When I presented the idea of introducing an interactive device, the CHPs were primarily interested in learning how interactive technology could serve as an interpretive aid in the context of a guided tour. This goal was relevant for the context of this museum. As I highlighted in chapters 1 and 2, ensuring the CHPs made key decisions in forming the intended experience and integrating the interactive an important aspect of this research.

While action research is inherently collaborative, it is important to highlight that my goal was also to contribute to the field of HCI in cultural heritage. As Herr and Anderson (2005) highlight, the process of forming a thesis is an individual one and requires producing knowledge that is relevant beyond the workplace; therefore, it is common for doctoral researchers to have formulated individual goals to achieve this. For this reason, the data presented in this thesis aims to reflect my overall thesis goal: to investigate how CHPs respond to their emerging role in integrating an interactive technology.
During this phase, I adopted the role of facilitator. As facilitator, I assisted the CHPs in integrating an interactive device; suggested software for the CHPs to use to create content for this device and provided advice for shaping content. However, my role as facilitator was to guide rather than making key decisions. As I emphasised in Chapters 1 and 2, my goal was to ensure that the CHPs were the drivers in creating and shaping the activity and the ones who ultimately made the decisions on what needed to be done next. Therefore, the CHPs’ role was to design the intended visitor experience, to formulate the content, and make key decisions on how the interactive device was implemented.

Nonetheless, I feel it is important to acknowledge my influence as facilitator and researcher during this phase. As I provided suggestions and guidance throughout this process, my input may have had an impact on how the process unfolded. For example, when the CHPs were sure about their goals for the intended visitor experience, I presented four interactive technologies designed by the meSch project for them to choose from based on their preferences (this is described in further detail in Chapter 5). These kinds of intentional interventions are common in action research (Herr and Anderson 2005). Instead of viewing this intervention as contamination, those conducting action research view their active role as an imperative aspect of the research process that aims to improve the situation at hand. In this case, I felt that providing the CHPs with choices would help them focus their discussions on the potential of those technologies as interpretive aids.

3.4.1 Overview of Action Research Cycles

The number of cycles that each action research project requires is dependent on the situation it has been applied to. However, many researchers agree that at least two cycles of action research should be applied to validate change (Baskerville 1999; Hayes 2011). In this study, each cycle represents a new iteration of creating and shaping tours to be delivered using an interactive technology chosen by the CHPs: The Loupe. The Loupe is a magnifying glass-

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shaped device designed to reveal stories surrounding museum objects\textsuperscript{15}. At the beginning of this study, the CHPs and I had initially planned for two cycles of iteration two cycles of iteration following our agreement with one of the funding bodies described in Chapter 1, Irish Design 2015. Both of these cycles ended with an evaluation. At the end of the first cycle, a tour as presented on The Loupe was evaluated internally by CHPs. Museum visitors evaluated The Loupe-assisted tour at the end of the second cycle. Following the review of visitor feedback at the end of cycle 2, the CHPs and I collectively decided it was important to make significant changes to the tour as presented on the device, resulting in the third cycle of iteration described in this study.

3.4.1.1 Why Action Research?
As opposed to using action research, it could be argued that I could have continued with using ethnography. Action research demands substantial effort from the participants’ point of view – in this case, the CHPs – because it requires them to act as co-researchers in the process. However, as co-researchers, the CHPs were able to participate in analysing the relevance of The Loupe with respect to their goals. Moreover, the CHPs were also able to reflect upon the actions they had made to present the narrative and content on The Loupe and build strategies in response to lessons learned.

For example, Curator Sarah was responsible for monitoring and shaping the content for The Loupe in the second cycle, along with Intern Ciara. One of the goals the CHPs had for The Loupe was to provide wayfinding content to help visitors navigate to the next object. Following an evaluation of The Loupe with CHPs in the first cycle, Sarah felt that the wayfinding content needed to be more detailed and clear. During the planning stages, Sarah recommended adding written instructions to find the next object alongside a map. In action, she assigned Ciara the task for recreating this wayfinding content, while she provided an example illustrating how she felt the directional content should be displayed. When Sarah and I were preparing for the visitor evaluation, Sarah

\textsuperscript{15} For more information on The Loupe, see Chapter 5.
mentioned that she wanted to hear particularly the opinions of visitors who had never visited the museum before, to see if the wayfinding content effectively guided visitors from one object to the next.

I was the main researcher who conducted the interviews and observations during the visitor evaluation; once this data was gathered and analysed, I shared the feedback with the CHPs, including Sarah and Curator Dominique (see Appendix H/3). In reflection, Sarah learned that the wayfinding content was effective in aiding visitors in finding objects. However, she also discovered that other visitors felt they had to follow the tour as opposed to exploring other objects. While the directions were described well, Sarah also learned that the maps needed further clarity. As the Loupe was intended to be a guiding device and many visitors raised positive comments about this aspect, Curator Sarah and Dominique decided to maintain this content. However, this led to further action for Curator Sarah, as the maps needed to be modified. In the third cycle, she changed the map to include only the parts that needed to be shown on the map.

Moreover, the visitor feedback with relation to wayfinding also led the curators to understand further how visitors explore the museum on their own. In response, the curators started generating ideas for aiding wayfinding in the museums beyond implementation on The Loupe. One idea that Dominique formed was to create an app that could help all visitors find their way in the museum.

Therefore, while action research requires participants to act as co-researchers, the CHPs could experiment and learn the implications of integrating technology in the museum. It provided opportunities for the CHPs to support a particular group of visitors they have little experience supporting in this museum. Moreover, they were able to build their skills further in integrating technology and creating content to support a self-guided tour.
3.4.1.2 Data Collection Methods and Analysis

I used participant observation and informal conversations with CHPs again to gather data throughout all three cycles in this phase of research. Using participant observation, I acted as an active participant and facilitator alongside the CHPs in the process of creating content for and integrating an interactive device. I also observed how the CHPs responded to their role integrating an interactive device and to suggestions I made as facilitator in the process. I also maintained a research diary. In this diary, I reflected upon my involvement after each meeting and I documented my impressions to improve my role as facilitator.

My initial goal was to observe the CHPs during selected periods as they worked toward shaping the experience and content for the tour. For the CHPs however, this was not feasible: their busy schedule meant that they could not schedule fixed times to work on the project. Therefore, 30 meetings were organised to discuss the progress of the tours and develop the next action points. I organised these meetings in collaboration with the CHPs. As I was responsible for facilitating these meetings, I drafted an agenda to ensure that the most important points were addressed. The meetings lasted between 19 minutes and 2 hours, depending on the purpose of the meeting. Progress was made on forming and tours to be guided by an interactive in between these meetings. From the perspective of the CHPs, these advances involved creating the content and structure of the activity. From my perspective, it involved defining approaches for assisting the CHPs in integrating an interactive technology.

During all of the meetings, I took detailed notes of what was discussed. The notes were further elaborated once the meeting had ended. Most of these meetings were audio recorded for further reflection; however, others were not audio recorded at the request of the CHPs and because some meetings were not planned for in advance. In these instances, I took detailed notes and confirmed the happenings of the meeting with the CHPs. The meetings were transcribed intelligent verbatim and around 16 hours of audio were recorded and transcribed using these techniques. In addition, materials produced by the
CHPs were also collected (such as drawings produced to clarify ideas; notes from their research, and relevant pictures).

However, there were occasions when data collection occurred outside of these meetings and outside of the context of The Hunt Museum. Particularly during cycles 2 and 3, the CHPs started working on forming the content for the interactive device online (this will be described in further detail in chapters 5 and 6). These observations occurred between August and December 2015. During this period, I also actively participated in the discussions surrounding the content, leaving suggestions as comments on content online. To record the progression of the content, I took screenshots of the development process to analyse how the CHPs shaped the content to be supplied to the interactive device from the feedback provided during the first internal evaluation; how the CHPs were using the tool for creating the content and how my involvement influenced the creation process.

The three cycles of action research involved creating and shaping tours to be presented on an interactive device (figure 3.3). The first cycle (entitled First Iteration of an Interactive Self-Guided Tour) involved initiating a vision for integrating an interactive device in collaboration with the CHPs, implementing and testing a first iteration of the tour with CHPs. The following cycle (called Expanding Tours on The Loupe) involved reflecting on the feedback and experiences from the first cycle to shape and expand upon The Loupe-assisted tours in response. In the third cycle (named Redesigning the Tour) the CHPs redesigned a particular tour to complement the format of the interactive device.
I analysed findings continuously as new data was gathered and continued to use thematic analysis. The research direction was driven by the findings that emerged during phase 1 of this research. However, I was mindful that the CHPs involved had little to no experience designing for or integrating interactive technologies; therefore, I was open to consider new or unexpected occurrences as CHPs took control of integrating an interactive device. This approach is common in action research, as how people respond to change cannot be determined in advance (Reason and Bradbury 2007). A full list of the codes generated can be found in Appendix G.

To illustrate the rich nature of the data, I used vignettes and excerpts from meeting transcriptions and interviews to present happenings during this phase. I also provide images of content created by the CHPs. The vignettes and excerpts I chose represent significant instances that emphasised 1) how the CHPs responded to their role integrating the interactive device and 2) the actions I made as facilitator.
3.4.2 Cycle 1: First Iteration of an Interactive Self-Guided Tour

As mentioned, this cycle began with the creation and shaping of a vision for introducing an interactive technology. The CHPs were responsible for making and implementing key decisions: they formed the intended visitor experience; chose an interactive technology to integrate; and created the content to be presented on this device. As facilitator, I guided the CHPs as they embraced their role integrating the interactive technology. In doing so, I investigated the use of different software for creating content and formed templates to assist CHPs in taking ownership of their emerging role in creating content for the interactive device. The generation of codes commenced after the first few meetings occurred during this cycle. The codes were then placed in categories. Afterward, I began looking through the data again; this resulted in creating a list of focused codes and also resulted in the emergence of new codes and themes.

Once the first iteration of the tour was ready, it was evaluated internally by CHPs (including docents, interns and other museum staff) for the first time. I was responsible for conducting these evaluations. I used observations and semi-structured interviews to gather data. In analysing the data presented, the goal was to identify the next steps needed to shape the content. The end of this cycle involved identifying what feedback needed to be addressed.

I analysed the data again after the first evaluation with CHPs. The analysis resulted in the creation of further codes reflecting upon the CHPs viewpoints on how the content was presented on the interactive device. Moreover, I began to generate short memos reflecting on some of the data that I had gathered. I used these memos to document ideas that were helpful in forwarding this research. In addition, I reflected upon my role as facilitator, acknowledging the decisions and influence I had as facilitator during the first cycle (Davies 2012).
3.4.3 Cycle 2: Expanding Tours on the Interactive

The second cycle involved shaping the content to be presented on the interactive device in response to the feedback from the first internal evaluation. Furthermore, this stage also involved the process of passing over the template for creating the content – which was completed using PowerPoint – to the CHPs so they could take ownership of the content layout and design and respond to the feedback directly. Four CHPs were involved during this period; two of these were responsible for creating and shaping the content for The Loupe. Again, my role was to observe this process and provide suggestions to guide how the content was shaped.

This stage also involved designing the evaluations to be created with visitors. Although this research was not visitor focused, I was interested in conducting the evaluations to see how the CHPs would respond to this feedback. The CHPs were interested in seeing how visitors responded to the tours as delivered by the interactive device. The feedback provided by the visitors was then discussed in collaboration with the CHPs to inform the next steps in shaping the interactive-led tours in preparation for the third cycle.

At the end of cycle 2, I reviewed the data and themes formulated during the first two cycles. I focused on how the CHPs shaped their approaches through experience using the interactive device and also reflected upon my facilitation role during the process. Analysis during this cycle highlighted how the CHPs shaped their approach and thinking toward integrating an interactive device. I further reflected on my role as facilitator in the first two cycles.

3.4.4 Cycle 3: Redesigning the Tour

Before the first meeting in this cycle, two CHPs had started making changes to the tour to complement the format of the interactive device. The CHPs discussed the changes that they had made to the tour during two meetings that occurred during this cycle. As facilitator attending these meetings, I made suggestions to guide the CHPs in shaping the content to be presented on the
interactive device. The CHPs made the key decisions on what changes to implement.

Following these meetings, I analysed the data that I had gathered in detail, revisiting also the codes and themes I had generated during the first two cycles (Appendix G). Reflecting upon these findings, I formulated a series of interview guides in order to conduct semi-structured reflection interviews with CHPs directly and indirectly involved in the project. These interviews aimed to further probe their opinions toward integrating the interactive device into the museum and also share their concerns toward the implications of doing so.

3.5 Summary

In this thesis, I combined ethnography and action research to investigate how CHPs responded to the evolving role digital technology plays in their practices in preparing, creating and adapting museum activities. Since my research has a focus on practice, I believe that the combination of these approaches were appropriate. The study was divided into two phases, employing research methods such as participant observation, semi-structured interviews, and informal conversations.

In the next three chapters, I will discuss how the research unfolded. In Chapter 4, I will describe phase 1, where I positioned myself as volunteer in delivering museum activities and observer as CHPs prepared and created a number of these activities. I will also detail the viewpoints of these CHPs toward using digital technologies. From analysis of the data collected, I will describe how these findings informed my focus as facilitator in the second phase of research. Subsequently, I will describe phase 2 of this research in chapters 5 and 6. In Chapter 5, I will detail happenings in the first two cycles of this research. I will emphasise how the CHPs shaped their approach toward integrating an interactive device through experience and how I provided guidance as facilitator during this phase. Following this, chapter 6 will highlight further implications facing CHPs in maintaining control of this interactive device.
4 Cultural Heritage Professionals’ Practices at The Hunt Museum

4.1 Introduction

In this chapter, I detail the practices of CHPs at The Hunt Museum in preparing for, creating and adapting museum activities. In Chapter 1, I provided an overview of my research question and objectives. This chapter addresses the first two objectives of my research, which are:

1. Within a small museum, detail the practices of CHPs in preparing, creating, and adapting museum activities; and
2. Analyse the role that digital technologies play in these practices.

In Chapter 2, I highlighted the growing availability of digital technology designed to support CHPs in forming new ways to engage visitors. However, little research examines these practices in depth. Moreover, I argued that HCI research lacks understandings on how CHPs’ respond to using digital technologies in context. Investigating these practices is imperative since the increased access to and availability of digital technology opens opportunities for CHPs to create and configure digitally enriched experiences for visitors. This chapter is the first of the three analytical chapters aiming to address this gap.

This chapter sets the scene for the research context – The Hunt Museum – where I approached the setting by taking the role of volunteer in February 2013. It then details the practices of the CHPs within the Education Department. Moreover, it draws a closer look at their viewpoints toward integrating digital technology as part of this practice, revealing how they form
understandings and meanings for these technological tools in context. Subsequently, I reflect on how my role as observer evolved, highlighting how this shaped my viewpoints for the second phase of research. Finally, this chapter concludes with a discussion surrounding these evolving technological practices in small museums. Following this, I provide considerations in preparation for a technological intervention at The Hunt Museum.

### 4.2 The Hunt Museum: Overview and Interpretive Structure

The Hunt Museum houses an elegant range of artefacts gathered by two collectors: John and Gertrude Hunt. The Hunts were very successful antique dealers and advisors, who mainly collected artefacts that reflected their curiosities and interests. The selection of objects that they had collected was not guided by a specific theme, period or culture; due to this diversity, many of those who encountered the collection refer to it as ‘eclectic’ (as mentioned by one of the tour guide docents). Both John and Gertrude Hunt were adamant in keeping their collection undivided beyond their lifetimes. After many unsuccessful endeavours securing a permanent home, the collection was successfully opened in 1997 in the historic Palladian-style Customs House overlooking the river Shannon in Limerick (figure 4.1).

![Figure 4.1: The Hunt Museum in Limerick, Ireland](image-url)
Since the collection’s move to its current location in the Customs House, the interpretive layout of the collection has largely remained the same. The original layout was chosen by the son of the collectors, John Hunt Jr.; his goal was to provoke a sense of reflection and discovery amongst the visitors. Therefore, there is little interpretive labelling in the museum (figure 4.2), so to encourage the visitors to formulate their own meanings on the collection. To aid interpretation, the museum offers several guided tours that are delivered by the museum’s docents. The docents are long-term volunteers whose knowledge of the collection is valued by the museum and its visitors alike.

![Figure 4.2: Labelling of artefacts in The Hunt Museum is minimal (’The Hunt Museum’ 2015)](image)

The artefacts in the collection hold many histories: for the collectors, they were not mere objects to be admired through a showcase. The Hunt family once placed the artefacts around their home. For instance, a 5000-year-old alabaster vase once sat in the kitchen of the Hunts’ home; they used to put daffodils and other flowers in it. The interpretive layout of the museum is a reflection upon this homely setting: objects are not, nor were they intended to be, solely grouped thematically or chronologically. In fact, the grouping mechanism that is currently in place in the museum is very subtle and may not be immediately apparent to a visitor. In saying that, many objects are grouped in more general terms: for example, early Christian Art, Bronze Age and Egyptian artefacts are arranged close to one another.

The permanent collection spans three floors; the intended starting point for a visitor exploring the museum is on the first floor in *The Prologue Room*. From
the first floor, the visitor is then guided up to the second floor, and then down two floors to the basement. Within the gallery space, there are around 2,000 objects on display. Unusually for a museum, most of its permanent collection is on display, with a small number in storage because they can be compromised by light or other environmental factors. Due to the limited space in the museum, many of the showcases situated around the museum exhibit a wide range of artefacts. Figure 4.3 shows a section of a showcase displaying a range of small artefacts located in *The Epilogue Room* (the last room that museum visitors are guided to in a typical docent-led tour). A series of tours created by the CHPs described in section 4.8 attempted to address the interpretation challenges that this layout poses for visitors.

![Figure 4.3: A wide range of small objects situated in front of larger ones. The picture in the background shows how the objects were displayed in showcases in The Hunt Family's home.](image-url)
4.3 Staff Involvement at The Hunt Museum

There are four full-time CHPs employed at The Hunt Museum: the Director, the Head of Collections and Exhibitions, the Curator of Education and Outreach and the Volunteer Coordinator. The rest of the staff volunteer their time due to their eagerness to learn, interests, and other personal reasons. Below, I describe the involvement of those who volunteer their time.

4.3.1 The Docent Programme

The docents are highly valued members of the museum. Docents, as long-term volunteers, are mainly motivated by their interests and, therefore, every docent specialises in a particular activity in the museum. A number of docents deliver tours in the galleries, workshops or trails that take place in the museum, whilst others dedicate their time to cataloguing the museum collection. Some docents have served the museum for a long period of time with the longest being over 18 years. While some of them volunteer as much as five days a week, some docents choose only certain days of the week to volunteer due to other commitments. Furthermore, the docents are extremely knowledgeable on the collection; they tell interesting stories that can often not be accessed anywhere else. The museum also benefits from the research the docents complete on the collection, which is sparked by their interests and curiosity on the artefacts.

4.3.2 The Internship Programme

The museum greatly benefits from the input of interns who join the museum for 2 - 12 months with the broad but common goal of gaining experience. New interns regularly join, usually between four to six times per year. Although some interns have never worked in a museum before, many of them do have such experience. One of the qualities of the interns is their multicultural and multidisciplinary background. Many travel from Europe and the USA to take on an internship at the Hunt Museum. They have expertise in diverse disciplines, such as marketing, art, history, digital media, or museum studies. This diversity is key to igniting new ideas and knowledge in the museum, as will be described below. Interns work regularly: usually between four to six days per week. The
Responsibilities of the interns are dependent on what department in the museum they work in: either The Care of Collections and Exhibitions Department or The Education Department.

4.3.3 The Volunteer Programme

As well as the docents and interns, the Hunt also relies on other volunteers from the broader community of interest around the museum; they usually volunteer less frequently than the docents or the interns. Their involvement ranges from between once a week to once a year. The kind of activities that volunteers engage in also depends on their time availability and interest. To build understandings of the practices of CHPs in delivering museum activities, I began volunteering at The Hunt Museum in February 2013. As a volunteer, I actively participated in delivering several museum activities. In doing so, my goal was also to build a relationship with the CHPs in the museum.

4.4 Cultural Heritage Professionals in the Study

In Chapter 3, I described the methodology I adopted for this research, which was divided into two phases. I also explained in detail the methods that I used within each phase of the investigation. Phase 1 of this research was an ethnographic study employing observations, interviews and informal conversations. Table 4.1 presents details on the CHPs who participated in the study from September 2013 – June 2015. Out of the 22 participants, 6 participants were also formally involved in the second phase of research (between December 2014 and July 2015). Although phase 1 was due to end in December 2014, some new CHPs were entering the museum with different experiences; I felt it was necessary to investigate the dynamic this brought to the museum. Therefore, I continued the observations and interviews until June 2015.
Table 4.1: CHPs involved in Phase 1

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Observation</th>
<th>Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education Department</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dominique</td>
<td>Curator of Education and Outreach</td>
<td>3 ½ days</td>
<td>Investigative (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Investigative (2)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Investigative (3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Post Observation (1)</td>
</tr>
<tr>
<td>Sarah</td>
<td>Acting Curator of Education and Outreach</td>
<td></td>
<td>Investigative (1)</td>
</tr>
<tr>
<td>Katie</td>
<td>Intern</td>
<td>3 ½ days</td>
<td>Post Observation (1)</td>
</tr>
<tr>
<td>Thomas</td>
<td>Intern</td>
<td>3 ½ days</td>
<td>Post Observation (1)</td>
</tr>
<tr>
<td>Cathy</td>
<td>Intern</td>
<td>2 days</td>
<td></td>
</tr>
<tr>
<td>Marianne</td>
<td>Intern</td>
<td>2 days</td>
<td></td>
</tr>
<tr>
<td>Bonnie</td>
<td>Intern</td>
<td>2 days</td>
<td></td>
</tr>
<tr>
<td>Stacey</td>
<td>Intern</td>
<td>6 days</td>
<td>Investigative (1)</td>
</tr>
<tr>
<td>Patricia</td>
<td>Intern</td>
<td>½ day</td>
<td></td>
</tr>
<tr>
<td>Lorraine</td>
<td>Intern</td>
<td>2 days</td>
<td></td>
</tr>
<tr>
<td>Katrina</td>
<td>Intern</td>
<td>2 days</td>
<td>Post Observation (1)</td>
</tr>
<tr>
<td>Linda</td>
<td>Intern</td>
<td>6 days</td>
<td></td>
</tr>
<tr>
<td>Colette</td>
<td>Intern</td>
<td>4 days</td>
<td>Investigative (1)</td>
</tr>
<tr>
<td>Leeanne</td>
<td>Intern</td>
<td>3 days</td>
<td>Investigative (1)</td>
</tr>
<tr>
<td>Mark</td>
<td>Intern</td>
<td></td>
<td>Investigative (1)</td>
</tr>
<tr>
<td>Anthony</td>
<td>Intern</td>
<td></td>
<td>Investigative (1)</td>
</tr>
<tr>
<td>Sandra</td>
<td>Intern</td>
<td>½ day</td>
<td></td>
</tr>
<tr>
<td><strong>Care of Collections and Exhibitions Department</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teresa</td>
<td>Head of Collections and Exhibitions</td>
<td></td>
<td>Investigative (1)</td>
</tr>
<tr>
<td>Nora</td>
<td>Intern</td>
<td></td>
<td>Investigative (1)</td>
</tr>
<tr>
<td><strong>Docents</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orla</td>
<td>Docent</td>
<td></td>
<td>Investigative (1)</td>
</tr>
<tr>
<td>Charlie</td>
<td>Docent</td>
<td>½ day</td>
<td>Investigative (1)</td>
</tr>
<tr>
<td><strong>Marketing</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Karen</td>
<td>Intern</td>
<td>½ day</td>
<td>Post Observation (1)</td>
</tr>
</tbody>
</table>

Although I was an active volunteer in the museum, I maintained the role of observer when investigating the practices of CHPs behind-the-scenes in preparing, creating, and adapting museum activities. As I highlighted in chapter 3, I acknowledged that I was not a true insider, nor was I motivated by the same interests. However, the CHPs often consulted me to help them learn new

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16 In this thesis, all real names are replaced with fictional names with the exclusion of Dominique, who requested her real name to be used with reference to this project.
digital technologies. For this reason, there were cases when my role shifted from observer to active participant. When these cases are described in this chapter, I reflect upon this role.

4.5 The Hunt Museum Departmental Structure

There are two main departments at The Hunt Museum: The Care of Collections and Exhibitions Department and The Education Department. Each department has a different focus and different goals. As this thesis focuses primarily on the practices of CHPs within the Education Department, I only describe the Care of Collections And Exhibitions Department activities briefly. All departments are subordinated to the Director, who manages the overall strategic plans that are formulated for the museum.

The CHPs within the Care of Collections and Exhibitions department deal with many curatorial tasks, targeting the administration, the care of the permanent collection and coordinating the permanent and temporary exhibitions. As Head of Collections and Exhibitions, CHP Teresa manages this department. Examples of some of the department’s responsibilities include housekeeping: carefully examining the items within the permanent collection and reviewing their condition. Furthermore, the department organises and delivers many (roughly between six and twelve) exhibitions throughout the year. To assist her in many of these tasks, Teresa delegates tasks to interns hired specifically for the department; the primary goal of this is to help those interested in pursuing a career in curatorship, museum administration or other related disciplines to gain practical experience.
4.6 ‘Behind-the-Scenes’ in the Education Department

The CHPs in the Education Department are involved with initiatives that require engagements with the public, museum interpretation, outreach\(^{17}\), and education. In supporting these initiatives, the CHPs prepare, create and deliver many activities. For example, The Fashion Workshop, which is geared toward schoolchildren, involves exploring fashion through history and invites children to try on replica costumes. Another example is the Viking Workshop (also targeted toward children), which explores the lives of the Vikings and the types of armours they used to wear. Similarly to The Fashion Workshop, the children are also encouraged to try on replica Viking gear.

The department also delivers tours and trails for children: for example Animal Hunt - a trail that involves spotting the animals featuring in some of the artefacts in the collection. This department also organises and runs guided tours for teenagers and adults. On top of this, the CHPs also organise a weekly Arts and Crafts session for children. This activity usually is offered on Saturdays and is facilitated by the interns. I mainly volunteered at Arts and Crafts to establish a relationship with the interns; however, I have also volunteered occasionally in the other activities described.

To deliver such a complex Education Programme, the CHPs do a lot of work behind-the-scenes to ensure that everything runs smoothly. The team within the Education Department mainly consists of Dominique, her interns, and the docents who assist in creating and delivering activities for visitors. For behind-the-scenes work, Dominique and her team of interns work within the Education Office space (figure 4.4). Due to the open set-up of the office, the CHPs often collaborate to formulate ideas for new activities or share knowledge and skills with each other.

\(^{17}\)The Hunt Museum caters for various kinds of outreach activities; for example, many of the workshops that the museum provides can be delivered in other areas throughout the Limerick region, including the Fashion Workshop and the Viking Workshop.
All of the museum activities delivered within this department are centred on the Education Policy, which is fundamental for understanding the approaches taken by the CHPs in preparing, creating and adapting activities for the public. This policy is reviewed periodically (usually every four years). The CHPs always reference this policy when organising and delivering activities in the museum:

“Education at The Hunt Museum means using the collection, expertise and enthusiasm of the museum and its partners to provide learning opportunities for the widest possible range of audiences and at all education levels. Every education programme should be underpinned by intellectual integrity, give participants a sense of ownership, allow all involved to express their creativity – and, above all, should be fun!”

- The Museum’s Education Policy (‘The Hunt Museum Education Policy’ 2012)

The above statement clearly shows the point of view that the museum takes. The Education Policy attempts to combine a broad range of opportunities for learning. The policy also targets the creation and development of a variety of learning and interpretive aids for visitors who want to explore the museum without a guide. The Education Policy tries the pinpoint key aspects that need to be addressed to support audience diversification and accessibility, with a focus on how these could be achieved.
4.6.1 Dominique: Curator of Education and Outreach

As Curator of Education and Outreach, Dominique is primarily responsible for developing and delivering all of the museum activities mentioned above. Moreover, she is responsible for initiating and maintaining collaborations within the local, national and international communities. Specifically within the locality, she has promoted the museum as a place where the community are encouraged to interpret the objects in their own ways. Moreover, she has initiated and maintained collaborations with local artists and institutions to encourage them to exhibit their works within the museum. As Curator Dominique also had a role in reviewing the Education Policy: she ensured that it is adhered to with all of the activities created, prepared, and delivered in this department. With relation to her experience, Dominique has a strong background in Classical Art. Quite unusually for a curator working in a traditional museum, she also holds qualifications in the field of technology (i.e. a degree in Applied Physics and Mathematics). She also has experience in electronics and Computer-Aided Design.

Overall, managing such a complex education programme is quite challenging. Lots of preparation needs to be completed behind-the-scenes. To manage the workflow, while also providing work experience to young professionals, Curator Dominique delegates many these responsibilities to interns. Interns usually join the museum for between 2 – 12 months; within that time, they engage in a substantial amount of behind-the-scenes tasks. Interestingly, Dominique does not refer to them as interns, but her ‘team’:

“As much of it [the day-to-day tasks] I try to delegate as possible. I think if it’s some of the things... if it’s content generation, I end up being the one who selects the technology and determines the way in which we use it. And from there, the content, I try to have that populated by my team [interns] because that’s something I feel they can do and then I can edit the stuff that they create. That’s the most efficient way I think. I create the template, they fill it in, and I can polish it off at the end”

- Curator Dominique, Investigative Interview 2
The above excerpt from Curator Dominique's interview highlights the important role that the interns play in preparing activities behind-the-scenes. Her viewpoint was also witnessed in the observations. When discussing some of the findings relating to the interns' role in the Education Department, Dominique highlighted their importance in the team. Although she gives a great deal of responsibility to the interns, Dominique does provide them with guidelines and procedures to help them with their tasks.

4.6.2 Education and Public Programmes Interns

Earlier in this chapter, I had described the characteristics of the interns, highlighting their multicultural and multidisciplinary backgrounds. In her interview, Intern Katie gave an overview of the responsibilities of an intern:

“We have the day to day running of the museum. Booking docents, scheduling school tour groups in, helping [the docents] to deliver workshops, answering phones [for queries from the public and CHPs in the museum], that would be the main makeup of our job. The core programme at the museum is really the school tours and workshops, the adult tours, our summer camps, the workshops that we have that go on from time to time, and the drop in arts and crafts that we have during the school year. So those really make up our core things. And then we have the event brochure on top of that, which we work to put together and it comes out quarterly. So that covers our basic functions, everyday. We do morning rounds, which really is to make sure the museum looks tidy and things like that, and then we also do the promoting of the museum on Facebook and different social media, Twitter, and we create flyers and leaflets and things like that to pass out to local businesses and schools as well. Then we have our extra stuff. So that would be the projects the individual interns say they want to work on; things that they're passionate about.”
- Intern Katie, Post Observation Interview

A typical intern settled in the museum for around one to three weeks commences an average day with ‘morning rounds’: an intern ensures that the museum is tidy, and there are a sufficient amount of event brochures and tour booklets neatly placed around the museum and at the reception desk. Aside from morning rounds, other common tasks include taking bookings for the museum activities, answering phones and emails relating to queries from the
public and other CHPs in the museum, and assisting docents in delivering the various activities hosted by the Education Department.

Other routine tasks are divided amongst the interns, either individually or in groups. These include scheduling docents for any tour, workshop, or other activities organised by the department. Another task requires putting together and sending the weekly newsletter using MailChimp\(^\text{18}\), which the museum sends to those registered to the museum’s mailing list. Furthermore, an intern may be appointed to collate, organise and analyse visitor feedback that had been gathered from the various activities held at the museum (which is usually provided via questionnaires). One other task involves updating and maintaining the museum’s main social media outlets: The Hunt Museum website, Facebook and Twitter. Using these platforms, the interns communicate with the public and share information on activities happening in the museum.

Aside from the routine tasks, Intern Katie also highlighted that interns often lead their own projects. These projects give interns the opportunity to contribute their creative ideas and may involve forming engagements with the community, creating a new museum activity or adapting one, or organising and delivering a one-time event in the museum. In some cases, Curator Dominique suggests projects for the intern to engage in based on her understanding of their skills; in other situations, the intern embarks on the project because of her passions. Dominique encourages interns to pursue these projects because she feels that it is an opportunity for the intern to be creative and further develop her skills; furthermore, it generates a diverse and creative flow of ideas thus enhancing the museum. Dominique is updated on the intern's progress regularly, providing guidelines to help the interns along the way. The schedule that the interns have in approaching their project varies. If the museum advertises the project, the schedule is much tighter; however, if the

\(^{18}\) MailChimp is an online marketing tool for creating and scheduling emails: http://mailchimp.com/
project has not been advertised, then the intern usually works on her project in between the routine tasks.

4.6.2.1 Embracing New Responsibilities: A Creative Flow of Ideas
Although there are cases when interns joining the team have experience working in a museum, for many interns, it is their first time. However, interns have plenty of opportunities to apply their ideas and skills; moreover, they often embrace these opportunities soon after commencing their internship.

During their first week, new interns undergo a training process to grasp the routine tasks. Ideally, in this period they shadow the intern that they will be replacing. Once the first week is completed, Curator Dominique asks the new intern to take on the tasks, while the other intern shadows. The excerpt below shows an outgoing intern, Lorraine, shadowing Intern Stacey creating a sample template for the weekly newsletter using MailChimp. Although Intern Stacey was not new, this reflects a typical process that takes place when new interns are trained:

Intern Lorraine was showing Intern Stacey how to set up the newsletter template on MailChimp. Stacey was sitting down by one of the computers in the Education Office and Lorraine was standing up behind her. Stacey had a notebook beside her. They were both working from a sample template on MailChimp. Lorraine was showing Stacey how to drag and drop text boxes into the template. She guided her by giving her instructions on how to do so. As soon as Stacey had completed the task, she wrote it down in her notebook and said [something similar to] 'that’s really easy’. Lorraine then started to show her how to include images into the template. She guided her toward the images that they use in the Dropbox folder, and Stacey added the images. Lorraine then explained that the newsletter needed to be scheduled so it could be sent to the correct groups. Lorraine then continued to say what order the content is usually presented in the email, stating that the temporary exhibitions usually appear first and the other events follow that. She then continued to say to Stacey [something similar to] ‘Dominique is open about how you present that content’. Lorraine was referring to the layout and design of the template and not the content itself.

Excerpt 4.1: Intern Lorraine training Intern Stacey (Field Notes)
In the above excerpt, we can see that outgoing interns provide very detailed training to new interns. Moreover, the learning process is often very collaborative. It appears that Stacey found using Mailchimp relatively straightforward. Importantly, the above excerpt also illustrates that interns are provided with a level of freedom to contribute their ideas and creative skills; this is often emphasised to interns when they take on their new responsibilities. In this case, Intern Lorraine had highlighted to Intern Stacey that she was free to design the template in any way she felt were appropriate, as Dominique was open to new ideas. What interns decide to do and what ideas they apply are driven by their motivations and interests.

Thus, the dynamics often change from one group of interns to the next. Intern Mark, who has experience working in a gallery but not in a museum, comments on these dynamics in his interview. New interns could do new things with the tasks he was assigned:

“The dynamic completely changes, because certain kind of tasks that I was doing, you know like feedback for instance, can now be passed on to another intern so that’s up and coming so I don’t necessarily have to do that as much anymore, somebody else can take that over, but again, the new ones that are coming in, they’ll all have different talents themselves, so they might bring something completely different to the table and shake it up a bit, but I love that. It’s ever changing. The intern programme, it seems to be, using the interns and taking what their skills and knowledge are, and making sure that they can excel in their prospective areas.”
- Intern Mark (Investigative Interview)

This further highlights that ideas processes are often different between the various groups of interns and (as Intern Mark describes it) “ever changing” as interns are encouraged to add their own ideas influenced by diverse backgrounds. These idea exchanges enhance not only the skills of the intern, but also the atmosphere in the museum.
Interns are encouraged to apply their creativity even further when they engage in their projects. There is no ‘training’ procedure. The intern is provided with guidelines; however, she is empowered to lead the project. Due to the freedom that Dominique grants to the interns on their projects, many of the interns label these activities as ‘creative’. Colette, who has some experience working in another museum, described her feelings as she was about to embark on some projects toward the end of her internship: one involved creating a children’s newsletter and another involved tweaking the Fashion Workshop:

“The stricter tasks where you have to go from A to B equals C, there’s a security where you know that you just have to follow a plan and you come out with your desired answer, which is great. But then, when you have more freedom and more creativity, it can be a little bit scary. It can be a little bit daunting and there’s a possibility you will procrastinate! Especially if you don’t have a timeframe. But you get so much more out of the creativity side”.
- Colette, Investigative Interview

Colette’s comment highlights that “creative” projects are driven by the intern’s motivation to complete them, particularly when there is no timescale associated with them. For Colette, the idea of having freedom to initiate and follow through with creative projects was “scary”, although she also felt that there were many benefits of embracing creative responsibilities.

4.6.3 The Docents’ Role in Forming Museum Activities
There are also some docents who specialise in delivering activities managed within the Education Department. For example, some docents have experience guiding tours for children, while others specialise in delivering tours geared toward adults. Although many activities have a set template and structure that is produced by the Education Department, docents often personalise them in response to the visitor group. Excerpt 4.2 is from my own field notes, where I reflected upon the docent’s unique approach to delivering the Fashion Workshop:
I decided to help [one of the docents] out for the [fashion workshop], which took place in the Captain’s room [in the Hunt Museum]. They were in great need of volunteers as most of the interns were busy. One of the interns came down to help as well so at least there was two of us to help take out the costumes and dress the kids. The kids this time were between the ages roughly 6 and 10 and they were all girls. They all got to wear the dresses. [...] What I love about [the docent’s] approach is how she really seems to like getting the kids engaged in the story. She likes to encourage the children to remember the stories she told about the costumes. She rewarded the ones who got it right by allowing them to try on the dress or costume. The kids tried to memorise what the docent said so they could try the costumes on in front of their friends.

Excerpt 4.2: My experience assisting in the Fashion Workshop in June 2013 (field notes)

In the excerpt above, the docent shaped the Fashion Workshop as she was delivering it to engage the visitors effectively. It is clear that the children responded well to how the docent shaped the activity; furthermore, it was also an effective approach to engaging this particular group of visitors.

Since the docents often shape the activities as they deliver them, they are also asked (at least once a year) by Dominique and her team of interns to participate in shaping the activities they offer. For example, some docents deliver the Egyptian Workshop, which is geared toward schoolchildren. The workshop consists of a slideshow illustrating the lives of the Pharaohs, the Pharaoh tombs, and the kind of jewellery they wore. Intern Katrina was interested in adapting this workshop as one of her projects in the museum. To gather some ideas and advice, she spoke with Docent Orla and another docent who often delivers the workshop. In her interview, Orla highlighted the different viewpoints that the docents had for delivering this workshop:

“Recently, we did the Egyptian Workshop and Intern Katrina was there. We went through that. [Docent1] had done some wonderful work on it, but it was pages of information. I just felt that it was too much. That kids wouldn’t absorb so much. Ok, you have it as backup for yourself, but I thought just to simplify it. Also, [Docent1] has developed a passion for all the greens that they [the Egyptians] used and again, I thought it was a workshop in itself to talk about the colours that were used in Egyptian art.”

- Docent Orla, Investigative Interview
The above excerpt further demonstrates the diverse approaches of the docents when it comes to delivering a workshop; moreover, it emphasises the knowledge that the docents have relating to the target audience that many of the interns in the Education Department do not have due to their short time in the museum. The docents’ approaches to, and values associated with, the activities are considered when changes are made to these activities. I will discuss this issue further in Section 4.8, where I will describe in further detail the importance of understanding their viewpoints when new resources are included in the activities they deliver.

4.6.4 Docents and Interns on The Team

The docents and interns form an integral part of the team of CHPs in the Education Department. Although they are volunteers, they are not amateurs; much of the work they complete is highly professional and fundamental for the museum’s day-to-day running. Although interns are not expected to have professional experience in a museum beforehand, many of them have an academic degree (at Bachelor, Masters, or higher level) in a cultural, art, or history related discipline. Interns with expertise in other disciplines often join the team as well; this group of interns also tend to bring in new ideas and skills that are of professional benefit to the museum. Furthermore, the interns are also delegated a substantial amount of responsibility to develop and deliver activities within the core Education Programme. Moreover, they are provided freedom to integrate their skills and ideas into these activities (as will be described in Section 4.8). The docents have extensive knowledge of the collection that cannot be found easily in other places; they are also responsible for keeping the research on the collection up to date. Furthermore, they are often involved in creating and adapting museum activities. Therefore, for the purpose of this thesis, I include the interns and docents in the category of CHPs.

Now that I have described the background of the CHPs, their experience and roles, in the next section, I describe in further detail how they use digital
technology as part of their general work: in particular, I emphasise their viewpoints toward using it.

4.7 ICT in the Education Department

The CHPs frequently use ICT in behind-the-scenes work within the Education Department. ICT is used to manage the workflow and productivity of the CHPs; create tour booklets, worksheets, and other resources to support museum activities; create flyers, brochures and other promotional materials; and to communicate with the public and other CHPs in the museum. As the Hunt Museum is small and has a limited budget, the CHPs prefer to access as many free to low cost digital technologies as possible to accomplish these goals.

I describe here the CHPs’ approaches and viewpoints using the ICT as part of their behind-the-scenes tasks. Although some of the cases are not in direct reference to creating and adapting museum activities, they illustrate the viewpoints of the CHPs toward using them and also how using them affected their day-to-day work. Moreover, they emphasise that several considerations need to be made when introducing new technologies into the museum.

Curator Dominique is usually the one who introduces new ICT for their day-to-day work. In the excerpt below, she highlights her high level of confidence in doing this:

“I think that the fact that I felt comfortable with technology meant that I was able to introduce new bits of technology here and there [in the Education Office]. On some levels, it seems bizarre to talk about Google Calendar\textsuperscript{19} like it’s technology. But it is, I guess. I guess it’s my familiarity which makes me feel like it doesn’t count as technology, but for somebody who’s a technophobe, it probably seems like an insurmountable, like an Everest to climb in order to get used to it.”
- Curator Dominique, Investigative Interview 2

\textsuperscript{19}Google Calendar is an online calendar for scheduling and viewing events: https://calendar.google.com/calendar/
Reflecting on this excerpt, we can see that there are challenges facing small museums since technology is increasingly interweaved into their practices. Curator Dominique recognises that not everyone in her team has the same level of confidence or familiarity with digital technologies; therefore, she highlights that it may take quite some time for them to get used to using them. For many, Google Calendar may be considered an everyday tool that is no longer considered “technology”. However, these perspectives also need to be considered from the CHPs’ viewpoint, who may only be seeing these tools for the first time. Rather than providing answers to this challenge, I used this excerpt to set the scene: what are the viewpoints of CHPs toward using digital technology in small museums like The Hunt Museum, particularly as choosing, integrating and adapting technologies is becoming a prominent part of their practice? I aim to investigate these challenges further in the following sections.

4.7.1 Being in Control

The CHPs had various levels of skills and comfort in using ICT; this is primarily due to the diversity of CHPs in the museum and to the dynamics that occur due to the turnover of interns. How does using ICT affect how they approach their work? This section aims to demonstrate the complexity of answering these questions in a dynamic museum environment.

For the museum to maintain control of the information shared on its website, the website's content can be managed and updated using a Content Management System (CMS). The marketing intern usually maintains this site; however, interns in the Education Department also create and make small edits on the site. In the excerpt below, Intern Leeanne describes her experience updating content on the museum’s website for the first time:

“*It was exciting. It was such a big responsibility. Because I think something like that, it’s used a lot by people, the public, to advertise stuff about the museum. Loads of people would go on their website. It’s always good to know how to use it, to edit stuff, or that I can change something if ever I see a mistake, or I need to add something onto it. [...] I thought you had to know how to use all those numbers and HTML coding. So I thought ‘probably the
museum hires somebody to edit their website’. But it’s actually so easy to do. You do it on CMLS [using a CMS] or something. So that’s simple”
- Intern Leanne, Investigative Interview

The above excerpt highlights how Intern Leanne had prior expectations concerning the technical skill required to add and change content to the museum’s website. She initially believed it required strong technical skills; therefore, she assumed that this task was outsourced. Her expectations resulted in initial nerves; however, as soon as she realised that the technical barriers were not as high as she had initially perceived, she appeared to feel more confident. Importantly, what emerges here is how Leanne embraces her new responsibilities: it appears she is not afraid of making a mistake and seems to find comfort in the idea that she can change the content if she finds a mistake.

In the following example, we will see a conflicting point of view. Intern Katie was given lots of responsibility by Curator Dominique to organise an international education conference (held in September 2014). Amongst her responsibilities were to add content and maintain a website built by Dominique using Weebly and to send out regular newsletters using MailChimp. However, Katie felt uncomfortable about the prospect of using Weebly, especially as she had to learn how to use it on her own. Katie had asked me to help her learn how to use it while we were both delivering an activity in the museum. Although my initial goals were to observe and not participate in behind-the-scenes activities, I agreed to help her. As Katie felt that Weebly may be too complicated to learn and was concerned about it, I showed her only some of the options she needed to know to work with the website, for example, adding a text box and adding images. The training took place in the Education Office, where Dominique and four other interns were present at the time:

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20 Weebly is a website builder for customising website layouts and content: http://www.weebly.com/ie/
During Arts and Crafts a few weeks ago, Katie had asked me for help because she wanted to learn how to use it [Weebly], as she didn’t know where to start. Up until now, Dominique had been working on updating the site. When I discussed with another intern what I was doing, she said she wanted to have a look at what I was doing with Katie. Therefore, when Katie walked in, I demonstrated to both of them how to use Weebly. We initially started with the Hunt Museum Education website; however, Dominique preferred that we create another site from scratch. Therefore, I showed the two interns how to create a site from scratch and asked them to first of all, upload an image. I did this without letting Katie know where the image options were. Katie had control of the computer and the other intern was taking notes on a small notepad she had beside her. The other intern was also asking Katie to try out other things she noticed on the screen, for example, adding a new column. Katie adapted to using Weebly quickly.

Excerpt 4.3: Intern Katie learning how to use Weebly (Field Notes)

In excerpt 4.3, it appeared that Katie was quickly learning how to use Weebly and was becoming more familiar with it. Alongside the help I was providing, the other intern was suggesting her to add new things to the site, even though the other intern was not familiar with Weebly. However, it seemed that she was still uncomfortable with maintaining the website and using MailChimp. In a later interview with Katie, I told her that I felt she had adapted to using Weebly very quickly. In response she remarked:

“For me, I get very overwhelmed and very intimidated by technology. Even though I pick it up quickly, it’s still very intimidating to me. That aspect of it, knowing that Dominique was counting on me to put together the website which she ended up doing anyway, I don’t like making mistakes. When it comes to technology and creating websites and stuff, there’s a bigger risk of me making a mistake. [...] MailChimp was something that I had no idea how to use, what to do, six months... well, a year ago, I didn’t even know what MailChimp was and now I’m using it? I was terrified.”
- Intern Katie, Post Observation Interview

Combining these two excerpts, we can see that both Leeanne and Katie had contrasting viewpoints toward using ICT as part of their work. In Katie's case, she felt that Dominique was “counting on” her to put together the website; she felt that by using technology, the chances of her making a mistake were
amplified. Furthermore, her comment also highlights her fears toward how quickly she had to become familiar with and learn these tools as part of her role in preparing for the education conference. The need to learn quickly also increased her fear. Combined, these perceptions ultimately affected her in taking ownership of the site and taking the initiative to change content.

4.7.2 Balancing Complexity and Efficiency

As mentioned, interns are often given a certain amount of freedom to apply their ideas and skills in the museum. Investigating how CHPs used ICT behind the scenes in these instances revealed a question concerning efficiency. Is it necessary to use complex software for design, or is the basic software that the CHPs have access to enough for their purposes?

Intern Anthony, who was not very comfortable with ICT, reflects on his experience designing promotional posters for events in the museum:

“I’m not great with technology to be honest, or editing using technology... so I tend to stick to creating posters with [Microsoft] Word. I think I do quite well with them and stuff. And for my photographs, I use Google Picasa, for image editing, it is very very simple.”
- Intern Anthony, Investigative Interview

Later in his interview, I asked Anthony whether he felt comfortable with using ICT:

**Intern Anthony:** No, I definitely am not [comfortable with using ICT]. But that’s just from lack of using it. I am quite good with [complex design software], but I haven’t given them some time to work with them. I am confident that I could get comfortable with them... but it hasn’t come up and it hasn’t become necessary as of yet. I work well with the basics I think. Anything too complicated hasn’t come up yet.

**Me:** What is your definition of ‘basic’?

**Intern Anthony:** [Microsoft] Word and all of the Google services [Google Drive and Picasa], all of the simpler ones. That’s it! Microsoft.

Excerpt 4.4: Intern Anthony (Investigative Interview)
In excerpt 4.4, we can see that Intern Anthony preferred to use basic technologies for his design work. Indeed, he felt confident that he could get more comfortable with using complex software if he dedicated the time to learn; however, in his view, there was no significant reason for him to do so in the context of his work, as he "works well with the basics".

However, in Intern Stacey’s case, there was a clear motivation to use complex design software. I had mentioned that Stacey was assigned the task of disseminating the weekly newsletter. She had a strong interest in design and when she was assigned the task to create and send the weekly newsletter using MailChimp, she saw it as an opportunity to build upon her design skills. As one of her main projects in the museum, she wanted to create a newsletter for children full of games and activities to be sent to families with children and schools around Christmas 2014. She collaborated with Intern Colette, who created the content.

For this project, she wanted to learn how to use Photoshop to see if it would help her. Her motivations to learn Photoshop were also sparked by comments made by another intern when she was designing a newsletter to send to primary schools. As she was keen to make the design appealing for the target group, she re-designed The Hunt Museum title on the top of the page by designing cube shapes. While she was doing this, another intern had encouraged her to try Photoshop:

“[Another intern] saw me doing the cubes [for the primary school newsletter], and she said ‘wow, how did you do that?’ I said [Microsoft] Paint. She said, ‘Oh my God, you need to get Photoshop! You could do great things on Photoshop. You’d be so good at that’. I was like ‘yeah, I want to’.”
- Intern Stacey, Investigative Interview

In the above excerpt, we can see how one of the interns was surprised at the complex designs Intern Stacey was able to create using Microsoft Paint. The intern also felt that Stacey would be able to develop her skills further if she
learned how to use Photoshop. Furthermore, we can also see how interns often encourage each other to develop their talents further.

After the interview, I approached Intern Stacey and asked her if I could observe her create the newsletter alongside Intern Colette, who was creating the content. Accepting my request, Stacey also enquired if I could help her learn Photoshop; she knew that I was familiar with the program. I agreed to help her with some basic functionalities of Photoshop. I started with an image that did not have any associations to the newsletter she was creating - namely a guitar. Excerpt 4.5 is from the field notes where I showed Stacey how to use Photoshop for the first time:

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My plan was just to demonstrate some of the basic features of Photoshop, including the lasso tool (or, pretty much all of the selections), how to modify an image, how to create layers, and how to add some small effects to it [the image]. The goal was to make it as distinct from her work as possible, to create an environment where Stacey felt she could make a mistake [...] When I said to Intern Stacey we were going to use the lasso tools, Intern Leeanne said [something along the lines of] 'lasso tool! I know how to use that.' Stacey smiled. [...] She used the magnetic lasso tool to select the guitar, but she was getting annoyed that her selections were very messy. She kept trying to go over it again. It seemed that she wanted to make it perfect. I showed her how to use the quick mask mode, where she could fine-tune her selections using the paintbrush and the eraser. Throughout the training, she stated comments out loud: 'this is so cool!'
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Excerpt 4.5: Helping Intern Stacey learn how to use Photoshop (Field Notes)

Comparing Anthony and Stacey's reactions toward using complex design software, we can see that they both have different viewpoints toward using complex software. Unlike Anthony, Stacey seemed self-motivated to try something more complex. Furthermore, another intern had also reinforced this motivation, commenting that her skills would prosper through the use of such software. Reflecting on Stacey's training, we can see that she was also very meticulous in her design work. Even though the image she was working on was a practice image, she wanted to learn how to select perfectly, possibly so she could translate that skill to her professional design. Stacey was also encouraged
by her fellow interns who made comments as she was learning; in turn, she also made some remarks out loud, showing her excitement toward learning a complex design software.

4.8 Reflections: My Shifting Role

So far, I revealed that it is common practice in the museum for CHPs to share expertise and skills to enhance the museum's atmosphere. Interns contribute what they have learned to others through training; CHPs share knowledge with one another and interns are encouraged to embark on their projects. They also help each other to build upon their skills.

While my goal at the beginning was to volunteer in museum activities, I had also planned to maintain the role of passive observer in investigating the behind-the-scenes practices of CHPs. However, as the fieldwork progressed, my involvement behind the scenes became more pronounced. As CHPs are encouraged to share skills, it seemed more natural to me to participate and share my skills when I was invited to rather than observe. I noticed that my involvement happened not only in instances where CHPs felt uncomfortable with using new technology but also in cases where CHPs were motivated to grasp new complex software. On reflection upon my emerging role, I felt it was important to consider these occurrences when shaping my role as facilitator for the second phase of research: as someone who could suggest and help the CHPs approach new technologies. In doing so, I believed it was important to understand the challenges that they face, particularly those CHPs who were less comfortable with using digital technology, to understand the implications of this intervention.

So far in this chapter, I have provided an overview of the practices of CHPs in the Education Department and their viewpoints toward using digital technologies as part of this practice. In doing so, the overall goal was to detail the complexities of their behind-the-scenes practices and to demonstrate how technology is interweaved into these practices. In the next section, I will
describe cases where CHPs were creating and adapting museum activities. I will also present a case where the CHPs created digital resources to support two of these activities to set the scene for considerations toward a technological intervention.

4.9 Creating/Adapting Museum Activities

To complement existing or new museum activities, the CHPs create many resources to support visitors. In doing so, the CHPs are attempting to advance toward their goal (as described in the Education Policy) to provide increased access to and diversification of activities for their audiences. In this section, I will describe three cases of CHPs creating resources to support museum activities. One instance involved devising a paper booklet to aid visitors’ interpretation and two other examples involved introducing a digital resource.

4.9.1 Alternative Perspectives Tours: Addressing Interpretation Challenges

In Section 4.2, I described the interpretive layout of the museum, which has largely remained the same since the museum’s opening in The Customs House in 1997. With little labelling and in-gallery interpretation, it can be difficult for a visitor who wants to learn more about the artefacts or a specific subject matter to make sense of the collection. The Alternative Perspectives tours were introduced to address this challenge: these are themed tours that focus on a small selection of the collection and tell visitors a story in a way that relates to the theme. Available Alternative Perspectives tours in the museum include The Queer Tour, Architectural Perspectives, Gross and Gruesome, and The History of Ireland in 10 Objects. The Alternative Perspectives tours are provided as guided tours led by a docent or as self-led tours, using a booklet. Intern Thomas, who had previous experience in creating museum tours, chose to create an Alternative Perspectives tour as one of his projects in the museum. He wanted to create a tour that reflected humour in history, or The Humour Tour. This section describes his experience creating a paper booklet for this tour.
Excerpt 4.6 illustrates a common challenge that the CHPs face when designing interpretive content for booklet-led tours. In this excerpt, Intern Thomas was having difficulties when creating the text for the booklet-guided version of The Humour Tour. Indeed, he was aware that the booklet needed to have 10-12 objects, accompanied by an image of the object and some text. However, his challenge was related to presenting the text effectively:

[As Intern Thomas had finished his daily tasks, he decided to work on the content for The Humour Tour]

Intern Thomas was working in the Education Office, forming a script for The Humour Tour in Microsoft Word. He was finding it difficult to present the text for the entire booklet in a humorous way without it appearing forced and cheesy [he turned to me to tell me about the issue he was facing]. He then continued to say that visitors might not understand the humour if it is not crafted correctly; therefore, forming the text effectively required a great deal of skill. He then started to describe a few exhibitions where humour was presented pretty well. One for example, was a London exhibition that was Roman themed – placing humorous objects from today beside their Roman equivalent. For example, placing a ‘Heat Magazine’\(^{21}\) beside the Roman equivalent of that magazine, helping people associate the object to its function today.

Excerpt 4.6: Intern Thomas creating an Alternative Perspectives tour (Field Notes)

In the excerpt above, we can see that Intern Thomas had some free time in the afternoon and therefore, he had decided to work on The Humour Tour. However, he had spent some time figuring out the best way to present the story through text. In his post-observation interview, I questioned Thomas about challenges he faced presenting humour through text. He replied by sharing the strategies he had formed to create the text:

“I know from having read previous research on that [presenting humour through text], that trying to shoehorn humour into museums never works. It’s much more than just telling a joke. You have to find it on a deep level if you know what I mean, it’s not just like a punch line. So bearing that in mind, I try to make it light hearted and something that would appeal. So for

\(^{21}\) http://lifestyle.one/heat/
example, focusing on quite extreme things that might be quite disgusting but also quite funny, so using keywords as an educational tool.”
- Intern Thomas, Post Observation Interview

On reflecting of Thomas’ experience, it appears that using primarily text to portray certain types of narratives to visitors can present challenges. Thomas felt that visuals were a much better way to present humour, particularly when they were associated with objects that people can relate to. However, the format of the booklet meant that he needed to create strategies to form an effective narrative using text. In his view, the way the story was phrased through text was important: highlighting that in this case, “using keywords as an educational tool” was necessary for grasping visitors' attention.

4.9.2 Creating Digital Pre/Post Visit Resources

4.9.2.1 Choosing Modes of Delivery
In creating pre/post visit resources for two workshops provided by the museum, Curator Dominique decided to experiment with Prezi. She felt that many of the workshops offered would be better supported if there were pre/post visit resources for school groups, to either prepare for their visit or to reflect on what they had learned afterwards. She decided to start with both the Fashion Workshop and the Viking Workshop. Dominique’s goal was to embed the Prezi resources onto The Hunt Museum’s website so that school groups could easily access them in the classroom either before or after groups attended these workshops in the museum. Due to Thomas’ expertise on the Vikings, Dominique suggested that he should work on the Prezi for the Viking Workshop, and she encouraged Katrina to create a Prezi for the Fashion Workshop.

In the following excerpt from Curator Dominique’s interview, it is clear that she had given much thought to the medium to be used to present the pre/post visit resources for the workshops:
“I decided to use Prezi for two reasons: one, I think it’s a bit different. PowerPoints are static and the information comes in a static way. Prezi means that, in order to progress to the next slide when you press the forward button, you don’t necessarily know what’s going to happen. And that sense of expectation, I think, makes people pay more attention. The second reason why I chose Prezi for these resources in particular is that the design can be used to support the interpretation or the meaning behind the thing. In PowerPoint for example, if you want to say that something is a motivating factor or progresses toward another thing, you have to write it out in words or show it with an arrow. With Prezi, that can be done visually through the zooming in, or the zooming out, or a turn, or something like that. So the design helps to tell the story in a way that you can’t do with PowerPoint. So if something was very factual and I wanted to give people facts... and often in academic lectures I do use PowerPoint over Prezi because sometimes that design and sometimes the animation can take away from the deep ideas. It can distract people from the content. With Prezi, which is something that is slightly less intense, it can support the ideas and it can enhance the way in which people understand connectedness in a way that PowerPoint does not have the ability to do.”
- Curator Dominique, Post Observation Interview

Curator Dominique demonstrates how she integrated an everyday presentation software -Prezi- and shaped it to be meaningful for the context of use. While she does recognise that Prezi can be used to provoke surprise for non-academic audiences, she does believes that Prezi should only be used for certain narratives:

“A good design always helps to support interpretation, whereas design on its own doesn’t really have value. If the point is to tell people about 800 years of fashion, Prezi for the sake of Prezi, it is a poor use of Prezi. To show people things across a timeline, for example, where you can actually zoom into bits on a timeline, it’s extremely useful and I think that’s the situation where Prezi really comes into its own.”
- Curator Dominique, Post Observation Interview

The way in which she compares the two software tools highlights the importance for Dominique in understanding how the capabilities and behaviours of technology can complement the intended visitor experience. She describes these aspects of the two tools she was considering -Prezi and
PowerPoint- as if they are part of the story to be told. For example, she describes how the behaviour of Prezi means fewer words need to be constructed to guide visitors through certain kinds of narratives. Importantly, she appeared to have strong understanding of these tools since she can talk about how those small details can complement the visitor experience.

In section 4.5, I described the important role that the docents play in shaping museum activities. In her interview, Colette further emphasised this point, referring directly to the introduction of Prezi. It is important to note that Colette was not sure if the Prezi resources were going to be used within the workshop itself or as a pre/post workshop resource:

“You can’t change it [the activities that are being delivered] without telling them [the docents] because they are almost the creators behind the workshop. Every time they give the workshop, they are changing it a little bit, to make it just a little bit better, they are reading the feedback that Intern Stacey collects and keeps record of. They themselves will change it, we will change it, and it’s about coming together and ensuring that it all still works. It’s very important to keep them up to date with those things, and also to ask them ‘look, are you OK with introducing the idea of a Prezi, or a PowerPoint presentation, or are you OK with moving it upstairs to the [top floor] because that’s where the Viking workshops are?’ […] It’s about ensuring that they’re happy with the workshop, but at the same time, making sure that the workshop is being delivered to its full potential”
- Intern Colette, Investigative Interview

Intern Colette states how the docents do more than deliver the workshops: they are also co-creators. As co-creators, Colette stresses that the docents need to be aware of any changes that the interns make to the workshops to ensure the docents running them feel they are appropriate. This includes the introduction of a Prezi.
4.9.2.2 Designing the Intended Experience

As mentioned above, Curator Dominique was adamant about using the Prezi to present stories dynamically and using these dynamic features to support the intended interpretation. How do the CHPs, Intern Katrina and Intern Thomas, respond to their role in creating narratives in a dynamic way using Prezi?

Similar to Intern Katie, Intern Thomas and Intern Katrina were also required to learn Prezi by themselves. On Thomas’ request, I was the one who had shown Katrina and Thomas how to use Prezi. I had provided them both with the same template during their training, which I had chosen because it was easier to use than the other templates. They both continued with this template when they created their Prezi. However, they had different levels of self-confidence using Prezi. One observation was how they shaped the template in different ways to support the narratives they were aiming to portray.

The excerpt below emphasises the obstacles faced by Intern Katrina, who is comfortable with using Prezi, while she was designing the Prezi for the Fashion Workshop. In this excerpt, she describes how she modified the original template design that she was working from to complement her ideas:

“It’s easy for me to say ‘this looks good’ and ‘this should go like this’, but you have to think about what’s the most effective way of relaying information. I designed the Prezi in a circle, because I wanted it to go around chronologically like a clock, so I thought that kind of matched up in terms of understanding and comprehending the material and making everything aesthetically pleasing”
- Intern Katrina, Post Observation Interview

Later in her interview, Intern Katrina commented:

“I really just liked choosing the layout of the Prezi, and the colours, and I loved the images. Like putting the images in and putting filters on them and putting a frame around it… I am really visual so that was really fun for me.”
- Intern Katrina, Post Observation Interview

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Combining the excerpts from Intern Katrina’s interview, these comments highlight the differences between recognising a good design and taking the role of designer. In response, she developed strategies to present the content in what she felt was “the most effective” way. In Katrina’s case, she designed Prezi like a clock, which she felt suited telling the story of fashion through time.

Excerpt 4.7 highlights Intern Thomas’ challenges in creating the narrative for the Prezi. He was less comfortable with using Prezi than Katrina; therefore, he did not deviate from the original template like Katrina had. However, while he was gathering the content before he had approached the Prezi, he had an idea for adding a riddle:

[Intern Thomas was in the Education Office working on one of the computers]

Intern Thomas was creating the Prezi for the Viking Workshop and was transferring some of the content he had created from his notebook over to the slides. He had most of the slides laid out. I asked him if he was going to make changes to the template; he mentioned that he did not feel comfortable with doing this. While he was creating the Prezi, he turned to me and asked if I knew how to create animations using Prezi. In response, I told him that Prezi had some limited animation features; however I was not as familiar with them. He reminded me of the riddle that he wanted to create for one of the slides, where he pictured the teacher in front of a classroom full of children showing them the Prezi. Arriving on the slide containing the riddle, she gives the children some time to answer. Whenever the children answer, she reveals the answer by pressing one of the arrow keys [or something similar]. He had thought about adding the riddle before he had started using the Prezi. As I was not as familiar with those features in Prezi, he began looking through the Prezi website to see if there were any options to help him create the animation features he was looking for.

Excerpt 4.7: Intern Thomas creating a Prezi for The Viking Workshop
In his post-observation interview, I questioned Intern Thomas about his approach in creating the Prezi for the Viking Workshop:

“With the Prezi, I thought quite a lot about how it could be used interactively. If you remember the riddles bit. I could envisage the teacher asking the student ‘what was the answer to this?’ and then guessing, and then it comes up. Yeah... more so for the Prezi. Not really for the Alternative Perspectives [The Humour Tour]...”
- Intern Thomas, Post Observation Interview

Intern Thomas and Intern Katrina approached the Prezi differently due to their individual motivations and what, in their opinion, was meaningful for the narrative. Intern Thomas’ lack of confidence in using Prezi meant that he did not change the original template. However, he was adamant about adding an interactive element - the riddle - and was willing to move out of his comfort zone to do this. He even trained himself how to use the animation features in Prezi. This was an instance where Thomas felt it was meaningful for him to experiment further with Prezi. In contrast, Katrina describes herself as being “really visual”; therefore, ensuring the Prezi looked appealing was important to her. Moreover, her reasoning for deviating quite far from the template was because she felt that a layout similar to a clock would help her tell the story of fashion through time.

4.10 Discussion

In this chapter, I provided a detailed view of CHPs practices in preparing, creating and adapting museums activities and their viewpoints toward using digital technology as part of these practices; these practices are seldom discussed in HCI literature in detail. The findings illustrate the complex nature of the CHPs’ practices in creating and adapting museum activities - thus filling a gap in the scholarship. The multi-disciplinary backgrounds of the CHPs played a role in how they approached their work. Some studies have acknowledged the multi-disciplinary nature of CHPs within museums (Marty 2006b; Maye et al. 2014). However, these findings provide in-depth knowledge on the implications that these multi-disciplinary backgrounds may have they could...
lead to nuances in how they approach their work and their attitudes toward building the skills necessary in using digital technologies, even within institutions and within teams.

These findings suggest that getting to the point of feeling comfortable with using new ICT can prove challenging in a small museum. In the case of The Hunt Museum, one potential obstacle to overcome was the fear of making mistakes that affect the museum’s outlook or their professional status in the museum. Some CHPs may have the motivations to learn or use ICT to tackle this discomfort for various reasons; however, this research reveals that this motivation should not be assumed universal. Their concerns toward using ICT challenges the findings in existing literature by Marty (2006b) and Duff et al. (2009); they argued that large and small museums should build the new skills to not only use digital technology but to present information effectively using these tools. To be in a position to understand how to present information effectively using digital technologies, CHPs in small museums first need to address these potential concerns toward using new digital technology.

The availability of interactive technology is increasing; therefore, a challenge that small museums face is making informed choices on what technologies best suit their needs. Prior HCI and cultural heritage work has noted the importance of understanding how technology can be implemented to support interpretation (Sola 1997; Vom Lehn and Heath 2005; Stiff 2010). The findings in this chapter suggest that integrating new interactive technology requires detailed understanding not only of the technology itself but also of how it can be used to support interpretation. This complements the concerns that other CHPs have raised in relevant HCI and cultural heritage literature (Carnall et al. 2013; Maye et al. 2014). However, the increased availability of interactive technology could make it more challenging for CHPs to make informed choices on what technologies complement their goals. It requires understanding the differences between how one technology can be used to portray interpretative content as opposed to another. The differences between how these technologies portray information may seemingly be small. For example, the
tools that the CHPs were considering to use to design a post-visit resource – Prezi and PowerPoint – have many similarities in terms of their functionality. However, these differences are considered by CHPs to have an immense effect on how interpretation is portrayed to visitors. CHPs need to be able to compare and analyse these tools with respect to their own goals if they are considering integrating them.

4.10.1 Facilitating Cultural Heritage Professionals’ Involvement Integrating Interactive Technology

In Chapter 2, I had highlighted that, despite the growing availability of digital technology, the understanding of how CHPs could be supported as technology plays an increasing role in their practices is limited. While the approaches taken by the CHPs are diverse, these findings also posed implications that needed to be considered when involving the CHPs in integrating an interactive device.

Considerations beyond providing tools for creating complex content

The CHPs seemed to respond differently to using ICT as part of their work. It seemed that these issues escalated when the CHPs were using unfamiliar technology; they felt they were more likely to make mistakes and this affected them in completing their work. Complex tools are generally only used in cases where CHPs have the motivation to do so; in some cases, using tools that were efficient for their purposes was preferable.

As facilitator, I therefore felt it was important to consider the possibility that CHPs less comfortable with using digital technology may be involved in the second phase of research. At this stage, I also wanted to keep the options for tools open, particularly in case the CHPs encounter new tools that were more fitting for their purposes or if CHPs were motivated to use complex design tools.
Avoiding misuse of technology

It appears that a significant level of understanding is required to know how these technologies can support interpretation when integrating technology, as was the case with Prezi. This raises a challenge for small collection-based museums in integrating new interactive technology for delivering activities. For instance, while the CHPs were rather familiar with Prezi, they may not have the same level of familiarity with other interactive technologies. For this reason, I felt it was important to investigate the considerations the CHPs make when integrating new interactive technologies in the second phase of research.

Designing narratives for different avenues of delivery

Designing narratives for new avenues of delivery seem to require a great deal of thinking. With the introduction of Prezi, one of the main challenges was thinking about how the story could be presented using that medium. It appears that comfort level did influence how the CHPs approached the design. Nonetheless, it also seems their motivation to portray the narrative to effectively engage their target audience also motivated them to go beyond their comfort zone to learn how to implement them. Therefore, I felt it was important to investigate if new challenges emerge for the CHPs as they take control of creating narratives for a new interactive technology in the second phase of research.

In this chapter, I described the practices of CHPs at The Hunt Museum in preparing and creating museum activities and their viewpoints toward using digital technology. I also discussed the evolving role of digital technologies in small museums, which is seldom addressed in depth in current HCI literature. Reflecting on my evolving role and analysing these findings, I presented considerations that should be taken into account to support these CHPs in preparation for a technological intervention. In the next chapter, I will discuss how I supported these CHPs in embracing new technologies and the role that the CHPs played in integrating an interactive technology. I will also reflect upon and refine the considerations highlighted in this chapter.
5 Shaping Practices Through Experience: Creating Self-Guided Interactive Tours

5.1 Introduction

In Chapter 4, I discussed the practices of CHPs at The Hunt Museum in preparing, creating and adapting museum activities and how the CHPs use digital technologies as part of this process. I reflected upon my evolving role behind-the-scenes, which in turn shaped my role as facilitator in preparation for the second phase of research. Moreover, I discussed considerations to facilitate their involvement in creating content for and integrating an interactive technology.

An objective of this thesis is to identify the implications that arise because of the evolving role that digital technology plays in CHPs’ practices. Indeed, there are a growing number of technologies and toolkits available, enabling CHPs to become more involved in the creation and integration of interactive technologies. However, HCI research has not yet investigated how CHPs adapt to these possibilities, and more importantly, how they can be supported in doing so. I believe that by placing control in the hands of CHPs, HCI researchers can gain stronger understandings into how CHPs, particularly in small museums, can be supported in these activities.

In this chapter, I investigate how the CHPs in my case study took control of creating content for and integrating an interactive device to support a specific museum activity: a guided tour. Using vignettes to present data excerpts, I detail the first two cycles of iterations where the CHPs shaped already existing tours to be provided on this device. At the end of cycle 1, the tour was evaluated internally by CHPs; the tour was evaluated by visitors at the end of cycle 2. I examine how the CHPs shaped their strategies toward creating tours
incorporating an interactive technology through experience using the device and through feedback gathered from evaluations.

I conclude this chapter with a discussion that reflects upon my role as facilitator and how this evolved. I also discuss the implications that should be taken into account as the CHPs take control of creating content for and integrating an interactive from two perspectives: creating the intended visitor experience and procedures in creating content.

5.2 Overview of the Creation Process

In Chapter 3, I provided details on Action Research - applied in phase 2 of this study. This chapter discusses happenings of two of the three cycles in phase 2, which involved creating, evaluating and refining tours assisted with an interactive. Table 5.1 details the CHPs who participated in the creation of the interactive tours during all three cycles of development. Between October 2014 and January 2016, there were 15 CHPs involved in the project that participated at different stages, because of the turnover of interns at the museum, and also the stages that they needed to take part in the project based on their expertise. All of the interns who were involved in the tour creation process were from the Education Department, except Intern Nora; she was interested in pursuing the project to learn more about the museum’s permanent collection. In figure 5.1, I provide an overview of the participants who were involved in the first two cycles, as described in this chapter.
Table 5.1: CHPs involved in phase 2 of this research

<table>
<thead>
<tr>
<th>Name</th>
<th>Role (in museum)</th>
<th>Role (in project)</th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominique</td>
<td>Curator of Education and</td>
<td>Head of Content</td>
<td>November 2014 –</td>
</tr>
<tr>
<td></td>
<td>Outreach</td>
<td></td>
<td>November 2015</td>
</tr>
<tr>
<td>Sarah</td>
<td>Acting Curator of Education and Outreach</td>
<td>Assistant Head of Content</td>
<td>May 2015 – January 2016</td>
</tr>
<tr>
<td>Tara</td>
<td>Volunteer Co-ordinator</td>
<td>Tour layout</td>
<td>March 2015 – September 2015</td>
</tr>
<tr>
<td>Teresa</td>
<td>Head of Exhibitions</td>
<td>Exhibition space set up</td>
<td>July 2015 – September 2015</td>
</tr>
<tr>
<td>Nora</td>
<td>Intern (Care of Collections)</td>
<td>Tour development</td>
<td>January 2015 – May 2015</td>
</tr>
<tr>
<td>Colette</td>
<td>Intern (Education)</td>
<td>Tour development</td>
<td>November 2014 – December 2014</td>
</tr>
<tr>
<td>Leeanne</td>
<td>Intern (Education)</td>
<td>Tour development</td>
<td>November 2014 – March 2015</td>
</tr>
<tr>
<td>Stacey</td>
<td>Intern (Education)</td>
<td>Tour development</td>
<td>November 2014 – December 2014</td>
</tr>
<tr>
<td>Katie</td>
<td>Intern (Education)</td>
<td>Tour development</td>
<td>15 March 2015</td>
</tr>
<tr>
<td>Mark</td>
<td>Intern (Education)</td>
<td>Tour development</td>
<td>15 January 2015</td>
</tr>
<tr>
<td>Chloe</td>
<td>Intern (Education)</td>
<td>Tour development</td>
<td>15 January 2015</td>
</tr>
<tr>
<td>Brian</td>
<td>Docent</td>
<td>Tour development</td>
<td>9 January 2015</td>
</tr>
<tr>
<td>Tracey</td>
<td>Intern (Education)</td>
<td>Tour development</td>
<td>15 January 2015</td>
</tr>
<tr>
<td>Ciara</td>
<td>Intern (Education)</td>
<td>Content Layout and Design</td>
<td>April 2015 – September 2015</td>
</tr>
<tr>
<td>Deirdre</td>
<td>Intern (Education)</td>
<td>Content Layout and Design</td>
<td>October 2015 – January 2016</td>
</tr>
</tbody>
</table>

Figure 5.1: The CHPs involved in creating tours for an interactive device in the first two cycles, as discussed in this chapter.
The process of building these interactive tours began in October 2014. I approached Curator Dominique with the idea to introduce an interactive that the CHPs could modify to support a museum activity. Dominique was interested in pursuing this project and introduced it to the CHPs. The CHPs were responsible for creating and shaping the visitor experience. Their role included creating the narrative structure, the interpretive content, and deciding how the interactive was integrated into the gallery. Gradually, they also took control over the content layout and design on the interactive. Curator Dominique and Curator Sarah were primarily responsible for the project in the museum; they maintained ownership of the project in the museum for the duration of the study.

While the CHPs were able to form the content and choose the kind of interactive technology to use, they did not have control over the behaviour of the interactive once the technology was implemented. The toolkit, which enables CHPs to make some changes to the behaviour of interactive technologies, was in its prototype stages during this phase of the study. While the behaviours could have been reprogrammed without the use of the toolkit, changing the behaviours extensively during this phase may have taken a large amount of time to test and implement. Changing the behaviours extensively was not feasible because of the quick turnaround between each cycle of research.

My role in facilitating this technological intervention was influenced by my experience as volunteer in the museum and through reflecting on the considerations illustrated in Chapter 4. I suggested tools and created templates with the overall goal of supporting the CHPs in taking control of the content creation. Moreover, I provided suggestions for shaping content; however, I was also mindful that the CHPs were the experts in creating the visitor experience and their target audience. My role was shaped throughout each cycle as I began to learn and observe how the CHPs engaged in the process. Furthermore, I was
the main researcher who conducted the evaluations presented in this chapter. I also analysed, and summarised the feedback from these evaluations.

5.3 Avenues For Delivering Alternative Perspectives Tours

In Chapter 4, I described the Alternative Perspectives tours; these are a series of themed tours that visitors can choose to take either guided by docents or by themselves using a booklet. These avenues provide completely different experiences. The docent guided version is often slightly personalised depending on the docent who delivers it; furthermore, the information they provide is rich, detailed and in depth. The booklets for self-guided tours supply a fixed number of objects coupled with a paragraph of text; these booklets are suitable for visitors who prefer to explore the museum independently or have limited time.

When approached with the idea of introducing an interactive, Curator Dominique raised her motivation to provide a wider diversity of pathways for visitors to explore the collection, starting with either existing or new Alternative Perspectives tours. The docent led tours are highly praised by the museum’s visitor base; however, Dominique was also aware that not all visitors prefer to take a guided tour. She felt that one of the ways to address this could be through the use of an interactive technology; in her view, this interactive could support self-guided tours for audiences who like technology and prefer to explore the collection on their own.

5.4 Cycle 1: First Iteration of an Interactive Self-Guided Tour

This section describes the first cycle of developing the self-guided tour to be assisted by a museum interactive. This cycle commenced in October 2014, when the vision of the project was created and refined; it continued until July 2015, when the use of the interactive as part of a self-guided tour was evaluated internally amongst CHPs. Table 5.2 illustrates the meetings that took
place during this cycle. As facilitator, I introduced the goals of the project during the first number of meetings *(Cycle1 Theme, Cycle1 Object1, Cycle1 Story1)* with reference to Curator Dominique’s motivations: introducing an interactive to support visitors who chose to explore the museum without a docent.

Table 5.2: Overview of meetings (Cycle 1)

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Code</th>
<th>When</th>
<th>Recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defining a vision</td>
<td>Cycle1_Vision</td>
<td>17th October 2015 – 11:00 am</td>
<td></td>
</tr>
<tr>
<td>Defining themes and interpretation goals</td>
<td>Cycle1_Theme</td>
<td>20th November 2014 – 3:00 pm</td>
<td>✔️</td>
</tr>
<tr>
<td>Defining themes and objects for tour</td>
<td>Cycle1_Object1</td>
<td>4th December 2014 – 3:00 pm</td>
<td>✔️</td>
</tr>
<tr>
<td>Exploring stories for one tour</td>
<td>Cycle1_Story1</td>
<td>11th December 2014 – 3:00 pm</td>
<td>✔️</td>
</tr>
<tr>
<td>Introducing a new intern into the project</td>
<td>Cycle1_Intern</td>
<td>6th January 2015 – 3:00 pm</td>
<td>✔️</td>
</tr>
<tr>
<td>Updating object list on one tour</td>
<td>Cycle1_Object2</td>
<td>9th January 2015 – 2:30 pm</td>
<td></td>
</tr>
<tr>
<td>Developing stories for one tour</td>
<td>Cycle1_Story2</td>
<td>12th January 2015 – 2:00 pm</td>
<td></td>
</tr>
<tr>
<td>Choosing an interactive</td>
<td>Cycle1_Interactive</td>
<td>15th January 2015 – 3:00 pm</td>
<td>✔️</td>
</tr>
<tr>
<td>Update on tour progress</td>
<td>Cycle1_Progress1</td>
<td>5th February 2015 – 1:30 pm</td>
<td>✔️</td>
</tr>
<tr>
<td>Narrowing tour focus</td>
<td>Cycle1_Focus</td>
<td>6th March 2015 – 3:00 pm</td>
<td>✔️</td>
</tr>
<tr>
<td>Choosing design of device (1)</td>
<td>Cycle1_Design1</td>
<td>16th March 2015 – 3:00 pm</td>
<td>✔️</td>
</tr>
<tr>
<td>Choosing design of device (2)</td>
<td>Cycle1_Design2</td>
<td>27th March 2015 – 4:00 pm</td>
<td>✔️</td>
</tr>
<tr>
<td>Reflection on tour progress</td>
<td>Cycle1_Reflection1</td>
<td>2nd April 2015 – 3:00 pm</td>
<td>✔️</td>
</tr>
<tr>
<td>Defining action points for the tour</td>
<td>Cycle1_Action1</td>
<td>17th April 2015 – 3:00 pm</td>
<td>✔️</td>
</tr>
<tr>
<td>Defining tour setup in gallery</td>
<td>Cycle1_Setup1</td>
<td>27th April 2015 – 3:00 pm</td>
<td>✔️</td>
</tr>
<tr>
<td>Briefing tour to docents</td>
<td>Cycle1_Docents1</td>
<td>5th May 2015 – 11:00 am</td>
<td>✔️</td>
</tr>
<tr>
<td>Run through issues for tour setup</td>
<td>Cycle1_Setup2</td>
<td>25th May 2015 – 3:00 pm</td>
<td>✔️</td>
</tr>
<tr>
<td>Demonstrating content procedure</td>
<td>Cycle1_Proc1</td>
<td>17th July 2015 – 4:00 pm</td>
<td>✔️</td>
</tr>
<tr>
<td>Preparation for first evaluation</td>
<td>Cycle1_Pilot1</td>
<td>22nd July 2015 – 2:00 pm</td>
<td>✔️</td>
</tr>
<tr>
<td>Internal evaluation with CHPs</td>
<td></td>
<td>24th – 31st July 2015</td>
<td>✔️</td>
</tr>
<tr>
<td>Feedback from internal evaluation</td>
<td>Cycle1_Feedback1</td>
<td>6th August 2015 – 10:00 am</td>
<td>✔️</td>
</tr>
</tbody>
</table>
Dominique's intentions for introducing an interactive device was to enhance the visitor experience; widen the appeal of the collection; and provide access to the collection for as many visitors as possible. She was not in favour of introducing an interactive that would provide little to no educational value or was a distraction on the intended visitor experience. It was also imperative for her that the interactive added something new to the tours, something that could not be achieved using the other two methods of delivery. Table 5.3 lists the goals that Dominique and her team of interns discussed for introducing an interactive to support a self-guided tour at the beginning of this project.

Table 5.3: Goals for introducing interactive technology

<table>
<thead>
<tr>
<th>1. Intended visitor experience:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Bringing history to life for all target visitor groups</td>
</tr>
<tr>
<td>- Open up the collection to those who may not otherwise be able to experience it</td>
</tr>
<tr>
<td>- Connection with the objects/the museum that could otherwise not be created</td>
</tr>
<tr>
<td>- Design to aid, and not to distract from the intended experience</td>
</tr>
<tr>
<td>- Encourage a strong engagement with the selected themed tour</td>
</tr>
<tr>
<td>- Drawing attention to objects not highlighted usually</td>
</tr>
<tr>
<td>- To get a different experience of the museum each time</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Building enhanced understanding/knowledge/skill:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Increased understanding of the Hunt family</td>
</tr>
<tr>
<td>- Increased understanding of the stories connected to the collection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Visitor appeal and engagement:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attract different age groups of people to the museum</td>
</tr>
<tr>
<td>The opportunity for visitors to be able to hold objects (possibly 3D printed ones)</td>
</tr>
</tbody>
</table>

5.4.1 Choosing an Interactive: Interactions as Part of the Experience

During the meeting labelled Cycle1_Interactive, the CHPs selected the interactive technology that they wanted to integrate into the self-guided tours. Based on Curator Dominique's intentions for the guided tour, I presented to the CHPs four interactive concepts developed by the meSch project (figure 5.2).
Three of these supported wayfinding (The Way Detector, The Belt, The Loupe). I picked these interactive devices because they were designed to support self-guiding and exploration, which was the main goal the CHPs had. However, their functionalities are quite different from one another and they are designed to reveal information in different ways. The last interactive technology provided information depending on a visitor’s distance to an exhibit (The Plinth). I chose to present this interactive to the CHPs because 3D printed replica objects could be placed on The Plinth for visitors to hold and explore; this was one of the goals the CHPs had listed. I first showed the CHPs a video that provided an overview of three of the concepts: The Way Detector, The Plinth, and The Loupe. Following this, I provided the CHPs with a document that described the characteristics of all of the concepts coupled with a scenario of use by a visitor at a cultural heritage site (Appendix C/6).

![Figure 5.2: The Four Interactive Concepts](image)

Figure 5.2A shows The Way Detector, an egg-shaped interactive that follows a hot-cold metaphor: the visitor holds The Way Detector in her hand, and as she moves closer to the object, The Way Detector vibrates at a faster rate to inform her she is close to an object of interest. When placed on a platform next to the target point of interest, the Way Detector triggers media (such as sound or visuals) on an external device. Figure 5.2B presents The Plinth, upon which replica objects can be placed. Information is projected from above on each of the six sides of The Plinth. As the visitor moves closer to one of the sides, further information is revealed about the object. Figure 5.2C presents The Belt. The visitor chooses a theme by placing a card inside the belt. When the visitor is close to a point of interest, he hears an alert sound coming from the point of interest and hears a story.
Figure 5.2D presents The Loupe. Shaped as a magnifying glass, The Loupe aims to instil a sense of discovery and exploration, giving visitors the freedom to see details on objects and unfold layered narratives. It operates through scanning a point of interest, which presents the first screen of content on The Loupe. The visitor reveals the next screen of content relating to the same point of interest by tilting The Loupe right. Tilting left moves back to the previous screen of content. The Loupe also supports other interactions, such as moving forward and shaking. The Loupe encompasses a smartphone embedded inside a case.

In chapter 4, I highlighted that Dominique placed much emphasis on the visitor experience when choosing new avenues for delivering activities. Specifically, she described the behaviours and capabilities of the technologies that she was considering as if they were part of the story. In vignette 5.1, which is an excerpt from the notes of the meeting labelled *Cycle1_Interactive*, we can see that Dominique had similar concerns while the interns were discussing potential visitor interactions.

[Interns Nora, Leeanne, Mark, Chloe and Tracey were discussing the kind of interactions that would be appropriate for revealing content on a tour. At this stage, the CHPs had not seen or chosen the meSch interactive device they wanted to use for the tour. The interns started to discuss potential interactions, including one where visitors would turn around].

**Curator Dominique:** Rather than thinking about an action, interrogate why that action appeals. Some more ideas will be able to come and you’ll be able to think of things in a more coherent way across the whole tour.

**Intern Nora:** Yeah I think we should make that relevant to the target audience. I’ve probably just repeated that. But if you have a group of secondary school kids, they’re going to feel stupid turning around. So that’s kind of young young kids, we’re talking like six year olds but how do you make it different for secondary school...

**Curator Dominique:** For kids in primary or secondary... you need to have it tied to the school curriculum in a way that can be explained to the teachers when they are booking this activity, so that they know what each element relates to in terms of their own requirements. Teachers will have a
far more narrow and separate set of requirements than say a family with a couple of kids in total. Their museum visit and aims will be slightly different. So thinking about why those different groups attend the museum and make sure that you then draw out the components of your interpretation relevant to that. If the story is good and the interpretation is rigorous and has integrity, then everything that descends from it will also have integrity because its Genesis will have come from an intelligent place. If it’s ‘let’s do this gimmicky thing for the sake of having a gimmick, then it’s going to feel gimmicky at the time. But if there’s something relevant to it... there’s that plate in the captain’s room of the guy who’s sort of singing up to the tower lady, what is it about that object that’s compelling?

Vignette 5.1: Curator Dominique wants to ensure discussions surrounding interactions are relevant to the story (Meeting: Cycle1_Interactive)

Dominique drew attention to the fact that the interaction was not a standalone aspect; it was something that forms an important part of the visitor experience. Therefore, it was important for her that the interns considered their choices with this in mind. For her, the important thing was to keep focused on what the goals were in the first place when discussing new avenues for supporting visitor interpretation.

Later in that same meeting, I showed the CHPs the video that presented three of the interactives working (The Loupe, The Way Detector, and The Plinth). Furthermore, I provided them with materials describing the behaviours and capabilities of the interactives coupled with a scenario of use in a cultural heritage site (Appendix C/6).

Upon seeing the interactives for the first time, Dominique and the interns discussed their potential for the museum (vignette 5.2). In this vignette, the CHPs were discussing why The Way Detector was not appropriate for their museum. They chose The Loupe because the behaviours of the interactive best complemented the character of the museum and the stories surrounding the objects:
Intern Mark: The castle you [Nora] were at, where they had all of the interactives in a room and the sounds, that almost adds to the experience. When you’re walking in the castle, you could imagine there would be a lot of sound. Whereas in somewhere like this, you appreciate silence to immerse yourself in an object.

Intern Leanne: Even then, if the wayfinder [The Way Detector] is vibrating, or if it’s giving a heartbeat... would that not be annoying to others? That’s a sound as well.

Intern Nora: This is a very quiet museum. There’ll never be a huge amount of people in it at the same time in the collection area. There might be a couple coming in off the street and maybe a small group or something... that couple doesn’t want to be distracted by the school going around doing sounds or anything. So something like this [looks at The Loupe image on the scenario sheet] this doesn’t make sound, does it?

Me: No it doesn’t make sound.

Intern Nora: This is my personal favourite.

[The CHPs continued discussing the potential of The Loupe. Dominique then commented on how the scanning features on The Loupe could be made relevant to the story].

Curator Dominique: It’s a nice idea that there is a particular detail like a thumbprint that you can scan an object and that thumbprint would be there and you could say ‘thumbprints are often found on ancient objects’...
Following their decision, I built a first prototype of The Loupe. A working version of this interactive was first shown to the CHPs (without the casing) in March 2015. From late June 2015, it was available with the casing. The purpose was to demonstrate how content is triggered on The Loupe and how different layers of content are revealed. On the original Loupe, the content was triggered by shape recognition on the object itself. Although this is ideal, particularly considering Dominique’s comment about being able to scan certain details on objects, implementing object recognition was not appropriate for a self-guided visit at The Hunt Museum. This is because there are many objects, often small, close to each other and in dimly lit spaces. Therefore, the target content on this version of The Loupe is triggered by scanning NFC tags. To keep interactions simple, the tilting right feature was only implemented in this version. Once scanned, tilting right revealed the next screen of content on The Loupe.

5.4.2 Refining Focus: Using Existing Tours and Reusing Content

Initially, the CHPs and the interns were making efforts to create tours from scratch. During the meeting labelled Cycle1_Focus, Dominique shared her concerns in doing this: she was adamant that the content was tested as a docent guided or booklet version tour first. Therefore, she recommended focusing on a tour already available in the museum: The History of Ireland in 10 Objects. The content for this tour, which consists primarily of text coupled with images, had been originally formulated by Docent Brian and Docent Charlie; Dominique had further refined the content. The tour reveals stories relating to Irish History and contains objects in the collection spanning three floors in the museum. In vignette 5.3 (figure 5.3), Curator Dominique further describes her motivations for reusing the tour and also reusing the content associated with it.
Curator Dominique: If I’m being completely honest, I think the ones that we should be trailing [are] some of the stuff with is in the History of Ireland in 10 Objects tour. It’s been developed; we have the short text for it; it’s all ready to go. You could essentially upload it to a device tomorrow. And it has been tested.

[Curator Dominique and I continued to discuss using the History of Ireland in 10 Objects as the first tour to use on The Loupe. I then asked her a question].

Me: I’m wondering with the History of Ireland, I know you have all the content, all of the text and everything for that. If you were to do something with this [The Loupe], would you literally just be replicating that text onto the device?

Curator Dominique: Yeah.

Me: So it wouldn’t be anything different like visuals or anything?

Curator Dominique: I’ll play devil’s advocate, why would it be?

Me: Well, I’m just thinking... why would the device be there if it’s just the text?

Curator Dominique: Because some people like to access information in different ways. So that’s one element. It means we can change it, without having to reprint, so it provides flexibility that printing doesn’t.

Me: I’m not questioning your motives; I just think your reasoning behind it is very interesting.

Curator Dominique: I think it is completely logical. There are people who like technology, and there are people who don’t like using technology. The people who like to use technology will want to use this. The people who don’t want to use technology will not use this. My goal in the museum is to provide narratives and to make sure that they are as accessible as possible. So by doing this, we are trying to cover all of our bases. You’ve got the people who like the paper and the people who like the digital.

[Curator Dominique and I continued to discuss other use potentials for The Loupe. I agreed that it was a good idea to start with a tour that had been created already as a test. Dominique then replied].

Curator Dominique: I would rather not create new work only to discover that it is not appropriate for the format. We’re literally better off just copying and pasting [from the booklet] into this format [The Loupe] and seeing how it works. If it’s great, then we’ll continue with the other stuff.

Vignette 5.3: Curator Dominique and I discussing the potential of adding different kinds of content (Meeting: Cycle1_Focus)
From this vignette, it appeared that there was some hesitation to dedicate any effort before discovering what The Loupe could offer to the museum. Dominique’s confidence toward the existing content and her limited understanding of The Loupe’s format drew her to reuse content as opposed to creating content from scratch. One of the benefits that she felt The Loupe provided was the flexibility of being able to change the content later; this opened up opportunities to shape the content through experience as opposed to investing effort too early to “discover that it is not appropriate for the format”.

5.4.3 Investigating the Procedures for Creating Content for the Interactive

In Chapter 4, I discussed that there was a need to consider the possibility that CHPs less comfortable with digital technology may be involved in the project. For this reason, I felt it was worth considering whether or not it was necessary to introduce tools for creating complex content. At this stage, the CHPs did not feel the need to create any new content. In fact, the CHPs wanted to provide content they were practiced in creating; therefore, it did not require the use of complex and unfamiliar tools.

Therefore, I made the following considerations when suggesting tools:

- **Efficiency**: the kind of content that the CHPs wanted to create at this point did not require sophisticated design skills. Therefore, I felt it was best to suggest tools that could do this efficiently, in response to the needs of those less comfortable with using complex design software;
• **Everyday tool:** time for learning was limited, and there were often fears toward approaching new technology that affected the CHPs’ work. For this reason, I felt it was important that the tools I suggested were familiar to the CHPs, or that they needed to become familiar with them as part of their work;

• **Keeping options open:** I ensured to maintain that the tools I proposed were just suggestions. I kept these options open for unexpected issues that could emerge as the CHPs were designing the content and also for CHPs more comfortable with using digital technology.

Based on these considerations, I narrowed the choice down to three that the CHPs regularly use in the Education Office: Microsoft Paint, Windows Gallery, and Microsoft PowerPoint. Upon investigating the potentials of all of these tools, I suggested PowerPoint; unlike the other tools, it provided the facility to view multiple images at once. This facility could aid the CHPs in visualising the flow of the tour.

To aid the CHPs in taking control of the content design, I created a template. The template consisted of slides suitable for exporting images at roughly the same resolution 22 as The Loupe screen (figure 5.4). The template also contained a shaded area, showing to the CHPs where not to place content.

![Figure 5.4: PowerPoint template with a shaded region](image)

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22 One of the limitations of using PowerPoint to export images is that the resolution of the exported image may not be exactly the same as that of the smartphone embedded in The Loupe, which is 960x540 pixels.
In addition to this, I also created graphics that the CHPs could use when continuing to create the tours. This included a semi-transparent white rectangle background, to amplify the text but also to maintain the see-through nature of a magnifying glass and a transparent rectangle for the background of the title slide (figure 5.5). Furthermore, it included an animated slide with instructions to be placed at the beginning of any tour they created to guide visitors using The Loupe.

At this stage, I maintained control over the layout of the content in PowerPoint: the CHPs provided me with the content of the tour and I arranged it in the PowerPoint in the proper order. I was conscious not to provide the CHPs with the template straight away, for three reasons: firstly, I felt the need to understand further the strengths and limitations of using PowerPoint as a tool to create content on The Loupe; secondly, I wanted to see if anything else could be added to this template that could aid the CHPs; and thirdly, I wanted to understand the process of creating content for The Loupe using PowerPoint in order to facilitate the CHPs in creating the content layout for The Loupe. As can be seen in this figure 5.5, I arranged the content so that the title appears first; once the user tilts the Loupe, she sees the content associated with the object. When the content was arranged in the PowerPoint file, I saved each image separately. I then uploaded the content to The Loupe using a prototype version of the authoring tool.
Vignettes 5.4 and 5.5 are excerpts from the notes from the meeting labelled \textit{Cycle1 Proc1}; at this meeting, the CHPs had seen the content on The Loupe (without the casing) for the first time. In vignette 5.4, Curator Sarah responded to using The Loupe for the first time. At this stage, she was new to the project, and this was the second meeting with relation to the project that she had attended. Curator Dominique reacted positively to seeing the content on The Loupe for the first time:

| Curator Sarah: | So that’s the thing you scan [the NFC tag]?
| Me: | These [NFC tags] tell me which object is connected to which content. [Curator Sarah seems to be intrigued by The Loupe. I show her how the scanning works with the NFC tag].
| Me: | So this is what comes up when they scan it. They see the name [of the object], and then, when you tilt it... [The next screen appears with the content].
| Curator Sarah: | aaaaaaaaaahhh... oooooooo!!! [She takes The Loupe phone]
| Me: | And tilt it again... [Sarah tilts it once and see sees the next screen of content] it changes and shows you more information on it [the object]. And then it gets rid of the content. You have to keep [it tilted] for a while. It has to be programmed that way [to ensure only intentional tilts change content].
| Curator Sarah: | We’re going to look so cool in the gallery!
| Curator Dominique: | I think it would be good to be able to adjust the
content or the text slightly to make it relevant to the particular tour. Or the particular theme. That’s obviously something that we [the museum] need to do. We can, as I understand and correct me if I’m wrong, change the text at any time?

**Me:** Oh yeah, that’s the whole idea.

**Curator Dominique:** Awesome!

Vignette 5.4: Demonstrating The Loupe (Meeting: Cycle1_Proc1)

There appeared to be a sense of excitement from both curators in seeing The Loupe coupled with the content for the first time. Sarah was initially drawn in by the novelty of having an interactive device in the museum. She also seemed to understand how to use it very quickly and was also excited to try it out for herself. I feel it is also important to emphasise how I described The Loupe to Sarah, considering it was her first time seeing it. While I presented the scenarios of use to the other CHPs at the beginning, I focused primarily on how the device physically worked and how the information was revealed on The Loupe.

Dominique felt it was the museum’s responsibility to have control over the content: to be able to change it and to make the text relevant to the themed tour. Moreover, she appeared to be excited about the prospect of being able to do this. At this stage, the kind of changes she was considering making to the content were relatively simple ones: being able to edit the text slightly to make it relevant for the tour.

Vignette 5.5 is a continuation of that same meeting (Cycle1_Proc1), where I presented the content from *The History of Ireland in 10 Objects* tour in the PowerPoint template to the CHPs.
I opened up the *History of Ireland in 10 Objects* content on my laptop and showed them the template on PowerPoint.

**Me:** This is the content here. And this circle here [points to the template] is supposed to represent where you can put the content.

**Curator Dominique:** So it’s like a margin?

**Me:** Yeah, exactly.

[Dominique and I continued to discuss some of the features of the PowerPoint template. Sarah then asked a question.]

**Curator Sarah:** How does it [the content] connect to the device?

**Me:** Well, you have to save the image first. So when you go there [showing her on my laptop, right clicking on the slide], you go to ‘save as picture’, and then save it [I demonstrate by clicking on the save as picture option]. Then, we have this authoring tool [toolkit], which you use to upload the image then onto The Loupe. Unfortunately, it is a laborious activity...

**Curator Dominique:** But it seems that is a straightforward activity... to save it as an image... but you could alternatively save it as an image file, and just save it...

**Me:** Oh yeah. You can create it in [Microsoft] Paint for example, that’s perfectly fine. All that matters is it’s an image file.

Vignette 5.5: Discussing the potential procedure with Curator Dominique and Curator Sarah (meeting: Cycle1_Proc1)

There were mixed reactions toward using PowerPoint as a tool for creating content for The Loupe. Indeed, it is clear that the curators understood the template quite quickly. Curator Dominique appeared to be attracted to the fact that saving images using PowerPoint was a “straightforward” activity; however, it also seemed that she felt there was a more efficient way of doing this. In response to her comment, I assured her that she could create the image files using another software if she preferred.
5.4.4 Tour Setup for Evaluation: Internal Trial with Cultural Heritage Professionals

To prepare for the first internal trial of The Loupe, the CHPs and I discussed how The Loupe should be set up in the gallery. The CHPs felt that the most logical place for visitors to obtain The Loupe was from the reception desk. This location was chosen by the CHPs because it is the first place that the visitor sees when they enter. The Loupe was a prototype for the first iteration; however, it was fully functional (figure 5.6A). Therefore, this did not affect the integrity of the device during the evaluation. The labels that were used for the first internal evaluation can be seen in figure 5.6B. I had designed the labels so that the NFC tags were hidden; the goal of this was to ensure that the design of the labels were not too obtrusive in the gallery.

Furthermore, the CHPs considered having a symbol that represented the tour as reinforcement to the theme. For *The History of Ireland in 10 Objects*, the symbol the CHPs chose was the shamrock; they felt it was instantly recognisable to visitors as an association with Ireland. This symbol can be seen on the first version of The Loupe available at The Hunt Museum (figure 5.6A) and also on the label (figure 5.6B).

![A. The Loupe (version 1) B. Loupe labels](image)

Figure 5.6: Loupe (A) and a sample label (B)

Figure 5.7 provides a sample illustration on how the content flowed on The Loupe when a particular object was scanned. Alongside the content that was taken from the booklet, Curator Sarah wanted to add wayfinding content to The Loupe. As I had the template, she asked me to add some initial guiding content,
so that it could be changed after the first internal evaluation; this was done two days before the first evaluation. I had found some maps that the museum used for their booklet tours, and created some initial wayfinding content for The Loupe (figure 5.7C).

Figure 5.7: Flow of content. A) Title appears on scan; B) Object description appears after 1st tilt. There may be more than one screen for object descriptions; C) Wayfinding content appears once object descriptions are finished.

5.4.5 Evaluating The Loupe 1: Internal Evaluation with Cultural Heritage Professionals

Between 24 – 31 July 2015, the first iteration of *The History of Ireland in 10 Objects* tour using The Loupe was evaluated by CHPs for the first time. Indeed, various evaluations have been conducted that highlight the effect that interactives have on the visitor experience and have also identified similar challenges to those faced here. However, the goal here is to demonstrate how the CHPs and I formulated strategies in response to this feedback. In cycle 2, the CHPs’ response to this feedback is described in detail. Furthermore, it also served a goal in providing other CHPs in the museum, who would ultimately be affected by the introduction of The Loupe, the opportunity to try the interactive. I was the main researcher who conducted these evaluations. Two of the CHPs that participated, Curator Sarah and Intern Ciara, were also going to
be the main CHPs responsible for shaping the tour in the next cycle (cycle 2). The CHPs who evaluated the tour were recruited via email by the CHPs involved in the project; furthermore, an information sheet was posted on the docent notice board. I also invited some CHPs to try the tour through informal discussions and email.

Two main methods of data collection methods were used: observations and semi-structured interviews. The observations took place while the CHPs were taking the tour. Most of the CHPs took the entire tour; however, two CHPs could only try the device on selected objects due to time constraints. After their tour, the CHPs provided their feedback in the form of a short interview. Table 5.4 lists the CHPs who participated in the evaluation. It also highlights if they took the interactive tour more than once; this was the case for two CHPs who wanted to provide further feedback and try the device again.

<table>
<thead>
<tr>
<th>Group</th>
<th>Name</th>
<th>Role (in museum)</th>
<th>Observation</th>
<th>Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sarah</td>
<td>Acting Curator of Education and Outreach</td>
<td>35 minutes</td>
<td>✔</td>
</tr>
<tr>
<td>2</td>
<td>Adam</td>
<td>Docent</td>
<td>55 minutes</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Mary</td>
<td>Docent</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>3</td>
<td>Sandra</td>
<td>Intern (Education)</td>
<td>25 minutes</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Charlie</td>
<td>Docent</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>4</td>
<td>Ciara (1)</td>
<td>Intern (Education)</td>
<td>31 minutes</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Sinead (1)</td>
<td>Intern (Education)</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Monica</td>
<td>Intern (Education)</td>
<td>40 minutes</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Amanda</td>
<td>Intern (Care of Collections)</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Dario</td>
<td>Intern (Education)</td>
<td>31 minutes</td>
<td>✔</td>
</tr>
<tr>
<td>7</td>
<td>Martin</td>
<td>Intern (Care of Collections)</td>
<td>31 minutes</td>
<td>✔</td>
</tr>
<tr>
<td>8</td>
<td>Jill</td>
<td>Intern (Education)</td>
<td>51 minutes</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>Sinead (2)</td>
<td>Intern (Education)</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Caroline</td>
<td>Docent</td>
<td>40 minutes</td>
<td>✔</td>
</tr>
<tr>
<td>10</td>
<td>Ciara (2)</td>
<td>Intern (Education)</td>
<td>25 minutes</td>
<td>✔</td>
</tr>
</tbody>
</table>

The observations lasted for the entire duration of their tour and were recorded through notes taking. The interviews were short, ranging from 15 to 30 minutes. The interviews focused on the specific experiences the CHPs had in using The Loupe for the first time.
I summarised the main feedback from the evaluation, providing the CHPs with this summary (see Appendix H). From this feedback, Curator Sarah, Intern Ciara and I formulated a plan of action for addressing any changes that needed to be made to the tour content. In the sections below, I describe the main concerns the CHPs had toward the tour content and how the story was presented using The Loupe, and their suggestions for addressing the challenges that were identified.

5.4.6 Understanding the Presentation Space on The Loupe

Indeed, the size of The Loupe screen posed several challenges during the evaluation. For example, while the maps that were used on the booklet served their purpose effectively in that medium, it seemed that they were not entirely appropriate when presented on The Loupe screen. Consider Intern Martin’s comment:

“Written directions on the software as well, I think, or on the app might help. Rather than just maps; because the maps, because of the size of the screen, aren’t the easiest to read.”

- Intern Martin, Internal Trial (Evaluation: Feedback)

Intern Martin’s advice for adding written instructions highlighted a consideration for presenting content on The Loupe: the limited screen space. Readability of the maps due to the size of the screen was a common concern and was mentioned by many of the CHPs during the interviews and observations.
As Curator Sarah was going to be responsible for the content in the next cycle, she commented (excerpt 5.1):

**Curator Sarah:** This is my own thing because I’m not a big map person, I think a bit more personal touch, directions, telling you what you need to do rather than pointing to where you need to get to, if that makes sense!

**Me:** So, rather than having a ‘this is where you go’, it’s kind of ‘look, turn around, go behind you... once you get into this room, Once you get into this room, tilt’ or something like that...

**Curator Sarah:** And as you were saying, if you keep those to three points, then you’re not bombarding people with these crazy descriptions on how to get somewhere. I don’t think you should get rid of the map, the floor plan, I think it’s fine to still have the image of the floor plan and have a little point that shows you where you’re to go next. Because I think some people do like maps and will probably find that helpful.

Excerpt 5.1: Curator Sarah discussing the need for a map (Evaluation: directly involved)

Curator Sarah felt that both written guiding instructions and a map were necessary to satisfy visitor preferences. Therefore, providing both forms of wayfinding content was the CHPs’ main strategy in approaching the redesign of this content. However, the challenge remains on how the maps should be presented on the screen, especially as the size of the screen rendered them unreadable.

In addition, there were challenges in presenting the stories themselves clearly on The Loupe. Due to the size of the screen, many CHPs felt that the text needed to be made bigger and clearer. However, one CHP also made a suggestion to add dynamic content to address this challenge:

*The information itself isn’t the finished product. [The Loupe could do with] a bit more [information] on the objects. Also maybe better pictures or better visuals of the objects. Whether that’s panoramic views of them, or videos of them, or just close-ups of the details on some of the objects. Because, with the size of the screen, they can be lost quite often.*

- **Intern Martin**, Internal trial (Evaluation: Feedback)
Although Intern Martin was the only CHP to highlight the need for adding dynamic content, he raised an important issue. It is important to consider how visuals are presented on the screen to ensure their clarity. However, Martin also suggested an alternative to using dynamic content: using close-ups of details on objects. Therefore, for the next iteration, it was important to consider how the images were presented to ensure their clarity on the screen.

5.4.6.1 Forming Stronger Connections with the Objects
Research has shown the challenges of engaging visitors with museum artefacts through the use of interactives (Vom Lehn and Heath 2005; Gammon and Burch 2008); comments supplied by the CHPs emphasised similar challenges within this context. In observation, it was noticed that many of the CHPs were looking at The Loupe rather than the artefacts (figure 5.8); however, this could also have been influenced by their prior knowledge of the collection.

With relation to this issue, Jill responded:

“I think it would be nice to maybe just have a picture of what you are going to be looking at and giving you a prompt to say look at it in person. Because some of the objects are vastly different and larger. And then ‘tilt more to learn about this objects’. Even though that’s what the prompts are already, but otherwise I feel I’m looking too much at the screen and there’s some objects that I’ve barely looked at in actual [...] because If you have both of them at the exact same time, the picture and then the words, I feel less likely that I won’t look up at the actual object or where the actual object is.”
- Intern Jill, Internal Trial (Evaluation: Feedback)
Since The Loupe has the capability of presenting information dynamically, Intern Jill felt these features should be utilised more to engage visitors with the objects. By being mindful of when the images and the text are presented in the tour, Jill believed it would encourage the visitors to look at the objects themselves rather than the associated images presented on the screen. From this, it seemed that prompts to encourage increased engagement with the authentic objects were necessary. Where possible, it was also clear that the CHPs needed to consider how the content is presented over time to achieve this.

5.4.6.2 Modifying the Content Template: Adding Graphics to Help Visitors Scan
During the evaluation, many of the CHPs highlighted issues with regard the scanning of the labels. While the scanning was functional, many CHPs noted that the target was hard to find on the label and raised concerns toward visitors using The Loupe for the first time. Consider Docent Adam and Intern Sinead’s comments on this issue:

“You would need to have a little sign on The Loupe telling people that they must go very close to the sign [the label]. Because they may not realise that. Even though, whoever’s on the desk giving them The Loupe may say that, very often it goes in one ear and out the other. People, they switch off.”
- Docent Adam, Internal Trial (Evaluation: Feedback)

“I think that might help to have that [the NFC tag] more visible. Because it’s [the NFC tag’s] not an ugly thing. It’s not something that’s going to be hideous! On the museum walls! It looks nice. So I think maybe having it visible. And then it will be more obvious I guess to visitors that this is what you’re scanning.”
- Intern Sinead, Internal Trial (Evaluation: Feedback)

Other CHPs’ concerns relating to the scanning can be represented by the comments above. The CHPs felt that the visibility and clarity of the scanning instructions needed to be improved. Importantly, there needed to be a target for visitors to scan.
Following the evaluation, I continued to discuss with Intern Sinead the possibility of adding a target image. However, I informed her that the NFC tag, as she had suggested, was not the ideal solution because visitors would more likely try to scan it with the camera on the phone. We collaborated and formed a solution: that a shamrock could be the target for visitors to scan. We chose the shamrock because it was the symbol for the themed tour at the beginning of the project; it also meant that this target could be reused for all of the labels in the tour. Therefore, it would make the label distinguishable. We then sketched a rough version of this label (figure 5.9). The Loupe could provide an outline of the shamrock on the screen, indicating to visitors that they need to align it with the shamrock on the label (figure 5.10).

I felt these targets were something that I needed to design to accompany the original content template for this tour. I took this responsibility because they were complex to create: the target on The Loupe needed to be measured properly against the shamrock target on the label. Designing this graphic also required some understanding of the NFC technology. Moreover, they needed to be created using complex design software. Since the outline graphic for The Loupe could be reused throughout the tour, I felt it was best if I added it as part of the template I provided to them.
5.4.7 Transitioning to the Second Cycle

In chapter 2, I highlighted that when digital technology is integrated in context, it can often lead to unpredictable patterns concerning how users react and respond. As we move to the second cycle: expanding tours on the interactive, I feel that it is important to draw attention some challenges that emerged during the first cycle as CHPs integrated an interactive technology into their museum.

As also discovered from the first phase of research described in Chapter 4, the CHPs placed a lot of emphasis on the behaviour of the interactives and what they afforded to the visitor experience when making their decisions. The behaviours of the interactives shown were discussed in terms of how they contributed to telling the story and of supporting the intended visitor experience. It appears that understanding the behaviours and other qualities of interactives in this way is imperative when choosing to integrate new devices.

So far, it seems that the CHPs feel ownership and control of the content should remain the responsibility of the museum. This was clear when I showed The Loupe with the content to Curators Dominique and Sarah for the first time. In approaching the formation of content, Dominique felt it was best to reuse content for three reasons: it was accessible; it had been tested and she felt she did not understand the format of The Loupe yet to invest too much effort in creating other forms of content. However, the evaluations particularly highlighted that changes needed to be made concerning how the content is presented on The Loupe. How the CHPs responded to the challenges presented will be described in the next cycle.

Moreover, it was clear that the template needed to be extended to include a target graphic to assist visitors in scanning. It seemed that there were certain kinds of content that required more understanding of the underlying technologies to formulate. As facilitator, one of my concerns was that the CHPs might not feel comfortable designing this kind of content. In the subsequent cycle, I had handed over the template for creating and shaping *The History of Ireland in 10 Objects* tour content for The Loupe to the CHPs. In response to the
challenges faced in this cycle, I wanted to investigate how the CHPs responded to this shift in control.

5.5 Cycle 2: Expanding Tours on The Loupe

Following the first internal evaluation of the interactive tour, the tour was revised between August and September 2015. Table 5.5 provides an overview of the meetings that took place during this cycle of research.

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Code</th>
<th>When</th>
<th>Recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reviewing requirements for tour launch</td>
<td>Cycle2_Review1</td>
<td>13th August 2015 – 2:00 pm</td>
<td></td>
</tr>
<tr>
<td>Running through revised content (1)</td>
<td>Cycle2_Revision1</td>
<td>5th September 2015 – 1:00 pm</td>
<td>✔</td>
</tr>
<tr>
<td>Running through revised content (2)</td>
<td>Cycle2_Revision2</td>
<td>7th September 2015 – 2:00 pm</td>
<td>✔</td>
</tr>
<tr>
<td>Visitor Evaluation (2 weeks)</td>
<td>Cycle2_Reflection2</td>
<td>11th – 25th September 2015</td>
<td>✔</td>
</tr>
<tr>
<td>Reflection on visitor evaluation</td>
<td>Cycle2_Reflection2</td>
<td>21st September 2015 – 2:00 pm</td>
<td>✔</td>
</tr>
<tr>
<td>Feedback from visitor evaluation (1)</td>
<td>Cycle2_Feedback2</td>
<td>16th October 2015 – 10:00 am</td>
<td>✔</td>
</tr>
<tr>
<td>Feedback from visitor evaluation (2)</td>
<td>Cycle2_Feedback3</td>
<td>30th October 2015 – 3:00 pm</td>
<td></td>
</tr>
</tbody>
</table>

The requirements generated for integrating the interactive device at the beginning of this project remained in this second cycle. However, based on the feedback generated from the internal evaluation, the CHPs felt that more sustained efforts should be made to help visitors in exploring objects; finding their way from one object to the next; and aiding visitors in scanning and revealing information.

The CHPs agreed to add another themed tour on The Loupe before the visitor evaluation. Dominique felt more comfortable with reusing content from a tour that had been delivered before because it had been tested: Architectural Perspectives. The reasoning was similar to the one behind the reuse of The History of Ireland in 10 Objects tour. The Architectural Perspectives is geared
toward exploring architecture through history using The Hunt Museum's collection. Similar to *The History of Ireland in 10 Objects*, the artefacts span between the three floors of the museum. When adding the content from *The Architectural Perspectives* tour to The Loupe, the CHPs were mindful of learning from the feedback gathered during the first internal evaluation.

Moreover, I had also implemented the tilting left feature to The Loupe following the request of the CHPs during the first internal evaluation. Therefore, during cycle 2, The Loupe had three behaviour capabilities: scanning a label to reveal content; tilting right to move to the next screen and tilting left to view the previous screen.

Two CHPs were directly involved in shaping the tours for The Loupe during this iteration: Curator Sarah and Intern Ciara. Sarah was responsible for making and confirming any major changes to the interpretive content supplied and finalising all changes. Due to Ciara’s experience in digital media and her proficient design skills, she was responsible for the layout and display of the content and making small changes to the content text. Ciara was also responsible for preparing the images needed for the content. My role was to modify the content template and to make suggestions for shaping the content for The Loupe.

At this point, I had passed the content template to Intern Ciara. I informed her that she could change or adapt the template in any way she felt was necessary. Furthermore, I explained that she could also use other software to PowerPoint for the creation and the layout of the content. However, I also mentioned that she needed to be mindful of the other CHPs creating and changing content who may not be as technically apt as she was. Ciara modified the procedure for creating content and the template based on her way of working. Firstly, she moved the content for *The History of Ireland in 10 Objects* tour from PowerPoint to Google Slides. To her, the advantage of using Google Slides was the ability to edit content in collaboration with Curator Sarah in real time;
moreover, it did not require her to have the software installed on her computer.

5.5.1 Redesigning Content for the Medium

Earlier, I highlighted that the CHPs felt that the maps used for the first evaluation were not appropriate for The Loupe. In vignette 5.6, which is an excerpt from the meeting labelled Cycle2_Revision1, Intern Ciara mentioned that there were challenges in identifying and creating new maps that complemented the format of The Loupe:

[Intern Ciara mentions that she was trying to redesign the maps that were used during the first iteration of The History of Ireland in 10 Objects tour. She notes that Intern Sarah had found other maps that may be appropriate; however, they still need to be redesigned. Intern Ciara continued].

**Intern Ciara:** It was great that Curator Sarah actually found these [maps] (figure 5.11) because I was finding it very difficult to read the ones, you know the ones that were at the angle [on The Loupe]? They were difficult to re-create [for The Loupe]. I had sent her [Curator Sarah] examples of maps, and she said 'look I had found these, could we work with these?' and I said yeah. [The new maps that Ciara redesigned can be seen in figure 5.12].

[We continued to go through the content. Later in this meeting, I asked her where she had redesigned the maps. She mentioned that she had designed the maps in Adobe Illustrator and Photoshop because she has access to both of them at home].

**Intern Ciara:** I coloured them [the maps] in Photoshop; I only just drew the lines in Illustrator. But that can be done in Photoshop.

**Me:** And you can change them without having a Photoshop file easily because they’re not inconsistent... I mean the colour on the inside [of the map] is very consistent.

Vignette 5.6: Intern Ciara describes the challenges when redesigning the tour (Meeting: Cycle2_Revision1)

Figure 5.11, which is related to vignette 5.6, shows the map that Curator Sarah sent to Intern Ciara. The maps contained additional information not needed on The Loupe; therefore, it needed to be redesigned by Ciara (figure 5.12).
The CHPs had a clear need to redesign some of the content that they had to present it on The Loupe. While the CHPs were aware that the content needed to be redesigned, doing so required the use of more complex software tools. Indeed, the use of such tools may have been out of reach for some CHPs, as highlighted in Chapter 4. Since Intern Ciara was skilled in Photoshop, she was able to edit the maps to make them presentable on The Loupe. It was clear that the museum benefitted from having someone with the confidence and skills in using more complex software to do this.
5.5.2 Challenges in Putting Other Strategies into Practice

Indeed, the CHPs had changed some of the content: in the example, above, Ciara did redesign the maps to ensure that they were appropriate for The Loupe. Furthermore, Ciara had changed the overall design of the content to make it more comprehensible for a visitor; she had used a different text colour for the instruction text (blue), the description text (black) and the title (dark grey) (figure 5.13).

![Drinking Horn (15th Century)](image)

Figure 5.13: Using colours to differentiate between the title, description, and instructional text

However, the CHPs faced challenges in putting many of the strategies that had been formulated into practice. In vignette 5.7, which is an excerpt from the meeting Cycle2_Revisions2, Curator Sarah described the changes she felt needed to be made to the content to ensure the narrative flowed properly on The Loupe. Here, we were discussing objects from The Architectural Perspectives tour. However, these comments were also applicable to The History of Ireland in 10 Objects tour.
**Curator Sarah:** The booklets that you’re taking it from - when you read the booklet, it has a picture and a paragraph of text. But when you’re here, you’re in front of the object and you are getting half of the text and you move on to the other half of the text. So, sometimes it jars. [Because] you read this [screen] as one thing and then you go on and you read this [next screen] as another thing. Then you go on and you read this [next screen] as another thing. So when the information has to go across two [screens], it’s the link sentences that need to be worked on properly. It’s not a big thing, but it will probably take a bit of thinking about.

**Me:** It definitely takes an awful lot of thinking I think, because I was trying to look through this content myself and figure out… like there’s simple things you can do like, “look at X”. But I think that’s kind of… “you must do this”.

**Curator Sarah:** Yeah, and I mean there’s things that we can do here that we can’t do with a guided tour, it would be nice in the future to have all of these not to be photographs. That they’re just outlines. As you were saying, you’ve got everything that you need on the screen, so what’s the point of them being in front of the object? Whereas, this is just an outline of a [Meissen] snuffbox...

**Me:** Or a certain detail...

**Curator Sarah:** Or a close up. Because a snuffbox is really small, so we could show the picture of the guys having their picnic or something. There’s things that can be taken advantage of here [on The Loupe] that I just don’t think we’ve had enough time to really get into because we just don’t have enough time. It’s literally just a time thing, and using it as well, and the more we use it, the more things we will go “oh, wouldn’t it be cool if we did that”, getting the interaction between this [the target image] and the object, you know with the shamrock [the target image], lining it up, and stuff like that we could do a bit more with.

Vignette 5.7: Curator Sarah describes the challenges of shaping the content and implementing strategies (Meeting: Cycle2_Revsision2)

Sarah acknowledged that the presentation of The Loupe-assisted tour needed to be treated differently to how it appears in the booklet. She described two ways in which the presentation of the content could be approached differently. First of all, she felt that the narrative as presented in the booklet does not

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23 A snuffbox is a container used to hold tobacco. The Meissen snuffbox is a small, intricately decorated ceramic box: http://www.huntmuseum.com/collection/collection-items/dg-002.aspx
translate effectively to The Loupe. On the booklet, the information is displayed on one page. However, because the story is presented dynamically over a series of screens on The Loupe, Sarah felt that the narrative needed to be phrased differently on The Loupe to ensure it flowed properly. Interestingly, her suggestions to shape the story did not require the use of dynamic content. She felt these issues could be addressed by making some changes to how the content is presented.

Following my suggestions on encouraging visitors to engage with the artefacts in vignette 5.7, Sarah agreed that there were features on the Loupe that could be “taken advantage of” by shaping the content. Nonetheless, limited time and limited experience had an effect on her capabilities to apply these ideas in practice. It appeared that Sarah felt the museum was still in the midst of understanding what The Loupe could offer.

Vignette 5.8, which is taken from the meeting Cycle2_Revision1, shows another point of view expressed by Intern Ciara associated with putting the strategies into practice. Ciara had also mentioned here that time availability and limited experience using The Loupe were factors affecting her when shaping the content. Also, she did not feel she had the confidence or the authority to change the content.

[Intern Ciara opens the History of Ireland in 10 Objects tour on Google Slides].

**Intern Ciara:** [talking about directions to the first object on the tour] Turn left... I suppose we should probably [add more details to the directions]... well, we'll leave it to Sarah, because she's probably going to re-script all of this, but she'll probably have... you know, [Ciara starts running through the directions] you're starting in reception and you're going to find your way to... you know, in here [the room where the first object is]. So we should add more details to that. And also, she [Curator Sarah] took note of where you made the comments for where you point out parts of the images that people can take a closer look at and stuff.

[Ciara continued running through the content on the tour. Later in the...]

Intern Ciara: I’ve no control over what they [Curator Sarah and the museum] want here [for the content] you see. So that’s the only thing that’s frustrating. And waiting because I don’t know how much text they’re going to put in, you know if it’s going to throw off other stuff [the layout design]...

Me: And who is doing that?

Intern Ciara: It would be Sarah [...] I just make it look nice! But they have full control over that type of content. [...] Otherwise, it was just going back and forth [if Intern Ciara made changes to the content]. So I said, it’s easier if you read through it and make the changes and then... I’ll just make sure it fits [to the design of The Loupe].

Vignette 5.8: Intern Ciara did not feel she had the authority to make major changes to the content (Meeting: Cycle2_Revision1)

Ciara did not feel it was her role to change content, even if she had encountered opportunities to do so as shown in the above vignette. Her expertise was in digital media; therefore, she was more comfortable with making design-related decisions. Moreover, Ciara’s lack of confidence to directly change the content was not related to any discomfort with using technology, but rather she did not feel that she had the authority to make those changes without approval from Curator Sarah.

Indeed, the CHPs were facing many challenges in taking control of the content. A question remains from this: did this mean the CHPs did not want to take ownership of the content design? Vignette 5.9 is an excerpt from the meeting labelled Cycle2_Revision2, where Curator Sarah highlighted that the title screens provided for the objects on both tours needed to provide more meaningful content. When I offered to help the CHPs change some of this content, Sarah highlighted that changing the content should be the museum’s responsibility:
Curator Sarah: Is this [the title screen] even necessary? Do you know what I mean?

Me: The title?

Curator Sarah: Yeah, because all they’re doing is getting Drinking Horn, and then they have to tilt again. They’re not getting any information out of the title apart from ‘welcome to the drinking horn!’, which they can see anyway, because they go to the case. There’s a drinking horn with a label that says ‘Drinking Horn’. We can leave it for now.

[Curator Sarah and I continued to discuss opportunities for making the title screen more meaningful. I responded by offering to shape the title screens before the visitor evaluation].

Me: Yeah. I agree. I’m going to actually make a comment here [on Google Slides]. If I can fix that before Friday…

[We continued discussing other possibilities for providing more meaningful stories in the title screen of The Loupe. Curator Sarah then interrupted].

Curator Sarah: But that’s for us to do as the museum, do you know what I mean? That’s not stuff you should spend loads of time on. The only thing is if we were to delete this slide [the title slide] altogether, then when you scan it [the label], where do you get into the tour? That’s the sort of thing we need to ask you. I think if we leave them as titles, but we say we’re going to make them juicier titles, then we don’t need to involve you as much and give you extra work!

Vignette 5.9: Curator Sarah highlighted that ownership of the content should remain with the museum (Meeting: Cycle2_Revision2)

Curator Sarah highlighted that ownership of creating and shaping the content should remain with the museum. This was despite the factors affecting the CHPs in taking advantage of The Loupe’s strengths, including time to work on the project; experience; and confidence shaping the content on behalf of the museum. Moreover, the flexibility of being able to change content using Google Slides also meant that the CHPs could modify the content when they would have more time and experience using The Loupe. For this reason, Sarah felt that they did not need to involve me so much in forming the interpretive content. From Curator Sarah’s view, it appeared that my role was to help them if any technical problems arose rather than having control over the interpretive content.
5.5.3 Setup for Visitor Evaluation

The Loupe casing was redesigned for the visitor evaluation; however, it was presented as a prototype rather than a final product, in both the content and design (figure 5.14A). Initially, it was envisioned we would provide two tours: Architectural Perspectives and The History of Ireland in 10 Objects. However, as only one case was available for the prototype of The Loupe, it was decided to run the tour that the CHPs wanted to redesign for The Loupe during the third cycle: The History of Ireland in 10 Objects. As mentioned earlier, the labels needed to be redesigned in order to help guide visitors through the scanning process. Figure 5.14B shows a sample label that I created for the visitor evaluation following this feedback. The label contained an image of the shamrock to match with the outline of the shamrock provided on The Loupe screen (Figure 5.14C).

![Image](image_url)

Figure 5.14: A) The Loupe; B) A Sample Loupe Label with NFC tag; and C) The target graphic for scanning the label.

Figure 5.15 shows a sample flow of content that the CHPs created for one of the objects in The History of Ireland in 10 Objects tour. Although the CHPs had created the content, I was responsible for exporting these images from the PowerPoint file downloaded from Google Slides and uploading them to The Loupe. This involved: downloading the completed content from Google Slides as a PowerPoint file when the content was completed; saving each slide separately as an image; and using the prototype version of the meSch authoring tool to upload the content to The Loupe.
5.5.4 Evaluating The Loupe 2: Responding to Visitor Feedback

Following efforts shaping the interactive tour, The Loupe was launched in September 2015 for visitors. The CHPs were interested in seeing how visitors responded to the tours guided by The Loupe. As highlighted in Chapter 2, numerous studies have already investigated the effects of using interactives as part of the visitor experience; however, my main interest was to examine how the CHPs responded to the visitor feedback in preparation for the third cycle. Since the challenges, goals and visitor base of each museum are highly individual (Gammon and Burch 2008; Barbieri and Celentano 2011), it was important for the CHPs to identify the implications of the interactive tour within the context of their museum.

In collaboration with the CHPs, we chose a number of key questions for the visitors using the interactive guiding device. I was responsible for conducting the interviews with visitors and summarising the feedback. The main methods used during visitor evaluation were interviews and observations. Visitors were invited to take part in the evaluation through social media and also by the receptionist at the reception desk. Seventeen visitors agreed to participate in the study. Further details of this study can be found in Appendix H.
Working together with four CHPs (Curator Dominique, Curator Sarah, Intern Ciara and Intern Deirdre), the main feedback provided by visitors was discussed during three meetings between September and October 2015: Cycle2_Reflection2, Cycle2_Feedback2, and Cycle2_Feedback3. The last two meetings focused on reflecting upon the summarised feedback that I provided to the CHPs and drafting solutions together with Dominique, Sarah and Deirdre. During the meeting labelled Cycle2_Feedback2, Dominique expressed interest in seeing a shorter version of the feedback with an overview of the visitors who participated in the study and how they were recruited. Also, she requested a summary sheet, which included all the feedback points and space to write suggested solutions to the feedback.

Therefore, I redrafted these for the meeting Cycle2_Feedback3 (Appendix H). Intern Deirdre has joined the project team during this meeting; she was a new intern who was going to be involved in shaping the content for The History Of Ireland in 10 Objects tour for The Loupe. Unlike Intern Ciara, Intern Deirdre did not feel as confident in her knowledge and skills when dealing with technology.

Since The Loupe was a prototype, the visitors raised some concerns relating to the use of the interactive, particularly its weight. Although these comments were critical and indeed addressed, the issues described and reflected below are those that influenced how the CHPs shaped their approach in redesigning the tour for the third cycle.

5.5.4.1 Reassessing the Potential of The Loupe
While examining the visitor feedback, the CHPs spent some time reflecting upon the relevance of The Loupe in supporting the intended visitor experience. In Vignette 5.10, which is an excerpt from the meeting Cycle2_Feedback2, the CHPs reflected upon The Loupe’s capability to support the intended narrative: a self-guided tour. The CHPs noticed that there were conflicting viewpoints with relation to the guiding features on The Loupe. While some visitors favoured the wayfinding content since it aided them in finding the next object
in the tour, others found this distracting and would have preferred to have the option to explore. Since the guiding content was one of the most favoured features on The Loupe, and the CHPs’ intention was to support a self-guided tour, the CHPs decided to keep the guiding content. In doing so, Curator Dominique compared The Loupe to one of the other interactive technologies they had to choose from at the beginning of this phase - The Way Detector:

> Curator Dominique: Some people felt that they had to dedicate their attention to The Loupe....
> Me: Yeah, a lot of them felt that they had to. I don’t know why. This wasn’t a common thing. Some people felt that they could explore when they wanted to.
> Curator Sarah: So they felt it was distracting them...
> Curator Dominique: They didn’t have to take it [The Loupe]. It doesn’t buzz. That’s a really good reason against [The Way Detector] or whatever it was. Because if that was in your hand and you went by an object, you’d have to pay attention [because it vibrates]... zzzzzzzzzzzzz!! Oh right, ok, I’ll pay attention! It’s like a torture tour!

Vignette 5.10: Curator Dominique reassessing the potential of The Loupe

The above example demonstrates that experimentation was important for the CHPs in understanding the opportunities and challenges of using The Loupe as a guiding device. Here, Curator Dominique compared the features and behaviours of The Loupe and The Way Detector. She briefly analysed the manner in which these two devices could be used to guide visitors from one object to the next. In her view, the Way Detector would have been a bigger distraction because the vibrations could have proven distracting. In contrast, The Loupe supplies visual guiding content. In her view, the presentation of this content is less obtrusive on The Loupe as it is on The Way Detector. In the end, she felt that The Loupe was a better option to The Way Detector in providing the guided tour.
5.5.4.2 Redesigning the Narrative Flow for The Loupe
The CHPs had noted from the visitor evaluation that, unlike the booklet-guided version of the tour, the theme of the tour had to be reinforced on The Loupe. Since The Loupe presents narratives dynamically through the scanning and tilting behaviours, the narrative needed to be clearer. In vignette 5.11, I discussed this point of feedback with the CHPs and made suggestions for what they could do to emphasise the theme of the tour. At the beginning of the project, the CHPs did not feel it was appropriate to create new content specifically for The Loupe when they were unsure if it was suitable for the format. Here, we see that the CHPs were willing to invest further work to structure the tour after trying it out with visitors:

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**Me:** I think it definitely needs to be highlighted throughout the tour that this is the History of Ireland in 10 Objects. Because a couple of people, when I interviewed them afterwards, didn’t realise it was the History of Ireland in 10 Objects. Even though it was said at the beginning.

**Curator Sarah:** It doesn’t go chronologically, doesn’t it not? Because the museum is all higgledy piggledy [the interpretive layout is difficult to follow]...

**Curator Dominique:** We could do... I have an idea. I mean, this is a lot more design work, what you would want is some sort of...

**Curator Sarah:** Timeline...

**Curator Dominique:** Timeline. But you would want to say, ‘History of Ireland in 10 Objects’ and then you would say ‘Object 1’ and then you have a circle... you have everything in a trendy circle. Then you scan the object, then the timeline comes up, and it shows you where on the timeline... maybe like ‘3000 BC’, although there wasn’t anyone here at 3000 BC... well there were, but they were just playing with rocks.

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Vignette 5.11: The CHPs discuss the need to structure the tour further (meeting: Cycle2_Feedback2)

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Once Curator Dominique had understood how the narrative needed to be structured on The Loupe, she was willing to invest more effort into the design. Even though the idea of designing a timeline, in Dominique's view, required 'a lot more design work' for the CHPs, she felt it was a solution to consider when redesigning the tour. This suggests that understanding of how the behaviour of The Loupe can affect visitor interpretation and engagement was an important
factor for the CHPs to understand when creating and shaping content for the interactive device.

5.5.4.3 Opting for Efficient Solutions for Presenting Content
While the CHPs wanted to place more effort into shaping the content, it was also obvious that the solutions needed to be efficient. In vignette 5.12 (meeting: Cycle2_Feedback2), Sarah, Dominique, Deirdre and I discussed the need to redesign the map again to increase its clarity on The Loupe. Although many visitors favoured the detailed navigation content, some visitors commented that the maps were difficult to read on the screen. Moreover, most visitors described that the self-guiding aspect was what distinguished the tour from other modes of delivery; therefore, the CHPs learned it was important to improve the clarity, whilst also maintaining the richness of, the wayfinding content. In this vignette, all of the CHPs were referring to The History of Ireland in 10 Objects tour on Google Slides; they were looking at the maps and discussing strategies to make the wayfinding content clearer, but also efficient:

<table>
<thead>
<tr>
<th>Curator Dominique:</th>
<th>I think we could do a slightly different... I think this should be white inside here [points at the coloured areas on the map] so you can see the text in here. This is going to be very difficult to read with the white text on the light background. But maybe make the text dark... but maybe rather than having all of these labels in there, maybe actually say ‘you are here’, because that’s what people are used to seeing. Instead of you.</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Curator Sarah wrote this comment down on her notepad].</td>
<td></td>
</tr>
<tr>
<td>Curator Dominique:</td>
<td>You are here, maybe the object name, and then next object... instead of object, because they’re looking at an object.</td>
</tr>
<tr>
<td>Intern Deirdre:</td>
<td>You need to customize it [the map] to every single journey.</td>
</tr>
<tr>
<td>Curator Dominique:</td>
<td>I completely agree.</td>
</tr>
<tr>
<td>Intern Deirdre:</td>
<td>Rather than having one map and changing the dots. You need to get rid of everything except for the line.</td>
</tr>
<tr>
<td>Curator Dominique:</td>
<td>I think that you don’t have to put a line to... like a pathway? I mean we can try that. We can put little feet or something... [gets excited] little detective feet!</td>
</tr>
</tbody>
</table>
[The CHPs continue to discuss the possibility of adding detective feet to the maps. Then Curator Sarah comes up with an idea].

Curator Sarah: Can we animate that [the detective feet on the wayfinding instructions]?

Curator Dominique: If you want to make it more difficult, then... it's a lovely idea... if you'd like to write that program, can you put an animated GIF in [The Loupe]?

Me: Yeah, sure the introduction [is an animated GIF]...

Curator Sarah: That's what I mean...

Curator Dominique: The GIF making days are behind me!

Curator Sarah: You can do it online! If there's only like 10 footprints... but anyway, it's not worth doing... it's gimmicky...

Vignette 5.12: CHPs discussing solutions for the wayfinding content, Meeting (Cycle2_Feedback2)

Dominique wanted to ensure that the solutions they provide were practical and an appropriate use of time. Dominique and Deirdre started this conversation by making some small suggestions for changing the wayfinding content. When Dominique formulated the suggestion for creating detective feet to show visitors where to go next, Sarah came up with the idea of including an animated GIF. Although Dominique liked the idea and also knew how to make animated GIFs, she commented that “the GIF making days are behind” her. Dominique was not willing to create complex content unless it was a necessary solution to a problem they had identified. While Sarah showed enthusiasm about the idea, she was also conscious toward the end that it was not worth time spending on it if the maps could be made clearer in a more efficient manner.

5.5.4.4 Interactions as Part of the Story
Throughout this chapter, I emphasised that the CHPs did not fully understand the format of The Loupe. One of the important aspects that emerged from the feedback meetings was the CHPs did not realise the relevance of the behaviours on The Loupe (the tilting gestures) and their purpose for the visitor interpretation. In vignette 5.13, which is an excerpt from the meeting labelled Cycle2_Feedback3, I described to the CHPs the reason for the interactive features, as intended in the original design.
[Curator Sarah had asked me if the tilting gestures were an important aspect of The Loupe’s character. I then responded].

**Me:** The idea- from the guys who created the Loupe - of using the gestures [the tilting] was so you didn’t touch the screen. It is basically part of the discovery process. There’s also other features for being able to zoom into different objects, and seeing things from the back, for example, having a high resolution image which you can explore, and pan around through it. So there is other options.

**Curator Sarah:** I mean it’s convenient. I mean if this is your design, it is easier to do that [tilting] than to get involved with the screen. I want to know is it a convenience thing or is it ‘sssecchhhhhhhwwwoooo! Forward in time! Zoom in!’

**Curator Dominique:** If that kind of gesture can be translated into additional content which is intuitive, like zooming in, then I think it’s worth it. If it’s a constraint we just have to deal with, that’s fine, I agree, we should figure it out. So in your view Laura, is the gesture an essential character of The Loupe from meSch’s [the project’s] perspective?

**Me:** The idea of having the gesture was so that you didn’t have to touch the screen. Basically trying to follow as much as possible the metaphor and going past through content.

**Curator Dominique:** Right. And the idea of the magnifying glass is that you move it, you don’t touch the Loupe.

Curator Dominique mentioned that she had a magnifying glass. She went to look for it as a reference, but she could not find it anywhere. Sarah then interrupted.

**Sarah:** So we need to incorporate that [the tilting] into the way that we are presenting our text.

**Dominique:** Yeah, and that can be done in one sentence. I think if we simply say “The Loupe attempts to evoke the physical experience of exploration by the gesture control combined with the design/magnifying glass. We hope to introduce the mind-set, or bring the user to thinking about the process as one of exploration and discovery rather than using The Loupe as a simple wayfinding device.

Vignette 5.13: The CHPs discussing the gesture aspects of The Loupe (Meeting: Cycle2_Feedback3)

Sarah highlighted the importance of understanding the tilting gestures as part of the story for them. She wanted to know what kind of experiences the tilting
could support, or if it was programmed that way to support certain kinds of narrative structures. She listed as examples moving forward in time and being able to zoom into objects to see further details. For Dominique, the gestures appear to make sense if the content can be translated in this way: to bring out different aspects of the story. Moreover, Dominique also highlights that these goals need to be translated to how The Loupe-assisted tour is presented to the visitors.

5.6 Discussion

In this chapter, I highlighted the approaches taken by CHPs, who are not experts in using ICT tools or integrating interactives, when they take control of the creation of interactive experiences. I illustrated how the CHPs developed strategies for shaping content after evaluating The Loupe self-guided tour internally and with visitors. In this section, I discuss the implications on CHPs’ practice spawned by their role integrating an interactive technology; these may also be relevant for similar small museums with limited experience integrating interactive technologies. I also reflect on my role in supporting the CHPs in this transition.

An interesting outcome here is that the CHPs decided to reuse content from existing museum activities rather than start from scratch. The reasons why the CHPs chose to reuse this content was their attempt to present the same narrative through multiple modalities; at this point, they had a very limited understanding of the interactive.

5.6.1 Reflections: Facilitating the Technological Intervention

Throughout this chapter, I discussed my role in facilitating the technological intervention. My goal was to suggest tools for the CHPs to create content for The Loupe and to assist them in gradually taking control of the interactive technology by creating a content template. I also provided advice for shaping the interpretive, and in some cases, offered to help shape the content when the CHPs faced difficulties in doing so.
Here, I feel that it is important to reflect on the role that the CHPs pictured I should have in the process: the expert they could consult for technological assistance. While I did provide suggestions on the content, which were often taken into account by the CHPs, it appeared that the CHPs wanted the museum to retain control of the interpretive content. Therefore, I felt it was important for the CHPs to maintain control over the content and the visitor experiences in the third cycle.

5.6.2 Creating the Intended Visitor Experience

As described in chapter 4, the CHPs in this museum are more practiced in creating and delivering docent-led tours and self-guided tours using a booklet. At the end of cycle 2, the CHPs noted that designing the narrative on The Loupe is different to presenting it on a booklet. For instance, when designing tours to be guided with a booklet, the CHPs have more space to work with for placing content than they do on The Loupe. Moreover, visitors can skim and look over content relating to other objects easily using a booklet. However, on The Loupe, content is presented dynamically and in a particular order. Therefore, the narrative requires a great deal more structure on The Loupe than it does on a booklet. Moreover, the CHPs are also targeting a different audience to those who would use the booklet: those who are interested in technology and want assistance in guiding from one object to the next. These are some of the lessons that the CHPs learned. Based on this knowledge, what do CHPs need to know if they want to integrate new interactive technologies?

Reviewing this chapter together with chapter 4, it seemed that the CHPs needed to understand how the behaviours of interactive technologies could affect interpretation when choosing to integrate new technology. Indeed, the CHPs understood how Prezi could support their interpretive goals. However, it seemed that the CHPs did not have the same level of understanding when choosing The Loupe, with particular reference to the tilting gestures. When I presented the interactives to choose from, I did show a scenario of use for each interactive. However, scenarios alone were not enough for the CHPs to understand how these technologies could complement their goals; in fact, it
was through experimentation and experience that CHPs learned the implications of The Loupe as an interpretive aid.

I argue therefore that it is important to explicitly demonstrate how these behaviours can complement different kinds of stories and experiences. In this case, the CHPs wanted to know what kind of stories the tilting gestures on The Loupe could enhance. Examples include moving through time, zooming in to see further details on objects.

Another challenge arises about understanding how to structure the narrative. In the light of this chapter, it emerges that content cannot be translated directly from one mode of delivery to another easily. Other considerations have to be taken into account in how the narrative is presented for it to present effectively on the device. CHPs, particularly with limited experience integrating interactive devices, may need to be willing to move away from their everyday practices in designing activities to integrate these devices.

The strategies that the CHPs developed through experience reflect this need: for example, structuring the narrative, so the theme of the tour is reinforced throughout, and also so the visitors are encouraged to look at the objects (as noted in the CHP evaluation). For this reason, it is important that CHPs are aware of the implications of structuring narratives and the challenges in presenting narratives in new ways. In this instance, there were times when the CHPs were mindful the content presentation could be better adapted for the medium; however, they commented that they had no time availability to implement those changes. Nonetheless, being able to change content means that CHPs could address those issues at a later stage when time becomes available; moreover, this provides the possibility to build new ideas through experimentation and experience.

5.6.3 Procedures of Creating Content on the Interactive
Reflecting upon the CHPs’ viewpoints toward taking control, the CHPs felt they should have control of the interpretive content from the very beginning, and
throughout the two cycles of iteration. This was even reflected in instances when the CHPs found it challenging to address the issues surrounding the content. From this, it appears that the CHPs want to retain ownership and control of the interpretive content; moreover, they felt it was important that the museum addressed issues with interpretation when the time and resources emerge. Therefore, it is important that CHPs are provided support and means to address key interpretive challenges themselves, without having to consult a technological expert who may not have the same understanding of these difficulties.

From the onset of the project, I suggested the use of PowerPoint as a tool to create content in light of the challenges facing CHPs using digital technology highlighted in Chapter 4 and also their preferences toward the content. Over time, the CHPs shaped this procedure. There were also times when more complex tools were used, such as Illustrator and Photoshop. The need to access more complex software sparked because content that the CHPs had access to were not appropriate for The Loupe format. Therefore, there could be a need to use more complex software for some editing. Moreover, upon addressing the visitor feedback, the CHPs showed interest in forming more complex design solutions. However, there was also a clear need to do this efficiently, particularly from Curator Dominique’s point of view. For the most part, it seemed that the use of a simple tool was appropriate to get started. However, it remains an open question as to whether access to simple tools is enough to maintain control over the design of the content. I will investigate this issue further in Chapter 6.

5.6.4 Small Museums Integrating Interactive Technologies

In HCI, there is a growing interest in involving and empowering CHPs in creating and integrating interactive technologies (Hornecker et al. 2006; Roussou et al. 2015; Koleva et al. 2009). The findings verify that providing CHPs in small museums with the ability to create and change content on
interactive technologies may be necessary; CHPs may feel it is their responsibility to ensure that the interpretation is portrayed effectively.

However, taking the first steps towards integrating interactive technology can be a challenging process for CHPs in small museums. In many ways, these findings complement and extend upon some of the challenges articulated in literature. Marty (2006b) and Duff et al. (2009) argue that it is important to identify and build the skills in portraying information effectively in a society where technology is evolving rapidly. This research contributes to these discussions by providing an in-depth focus on the challenges that occur while CHPs build the skills and resources necessary to portray narratives effectively using interactive technology. For small museums, they may have little experience portraying narratives effectively using interactive technology. While they may have concerns regarding interpretation, it may be challenging for these CHPs to make an informed decision on 1) what interactive technologies they should integrate to support their goal and 2) how to present the narrative effectively using these technologies. As indicated in Chapter 4, there are a growing number of technologies available that can support similar activities; however, they may do so in different ways. For example, The Loupe and The Way Detector can be used to aid a self-guided tour; however, the haptic feedback provided by The Way Detector and the visual feedback provided by The Loupe could result in differences in how the tour is portrayed to visitors.

Providing scenarios of use may not be enough; experimentation appeared to be the best way for CHPs to identify the necessary skills and the subsequent steps they needed to make in shaping the narrative. This research suggests that a ‘learning by doing’ approach is important to understand how to use technology to engage visitors, as indicated by Stuedahl and Smørdal (2015). However, these findings also suggest that experimentation could be beneficial for CHPs to engage in before integrating new technology and not only after. Experimentation is important to ensure the CHPs can make an informed
decision as to what interactive technology is appropriate to complement their goals.

Moreover, this research supports the concerns acknowledged in the literature about building the resources necessary to present information effectively using technology (McDermott et al. 2013; Marty 2006b). The findings confirm that it may take some time for small museums to build and shape the necessary content to portray on interactive technologies. While the content technically may be available, it is likely that it will require at least some tweaking to be appropriate for the medium used. While these resources may take some time for CHPs to build, it is important that CHPs take the time necessary to build these skills. As indicated by Marty (2006b) and Duff et al. (2009), requirements for engaging visitors may not be consistently the same. The challenge for CHPs in small museums is to be able to build these resources quickly to be in a position where they can identify when new resources and skills may be required.

In this chapter, I described two cycles involved in the creation and shaping of a series of interactive tours. I further described the creation process, which involved my collaboration with CHPs as facilitator, providing suggestions on how to shape the tour content and the procedure put in place for creating the content layout. I discussed how the CHPs increasingly took control of the creation of the interactive tours; these were supported by vignettes and excerpts selected from recorded meetings and interviews. The goal was to draw attention to how the CHPs’ thinking regarding integrating the interactive technology as an interpretive aid evolved through experience. In the following chapter, I describe the final cycle of development, which involved the CHPs redesigning a tour for The Loupe in light of their new understandings. I also present data from interviews reflecting on the process of integrating the interactive technology.
6 Redesigning a Tour for an Interactive Technology

6.1 Introduction

In the previous two chapters, I reflected upon the challenges that needed to be considered when supporting CHPs in becoming creators of interactive tours and then shown how CHPs created tours incorporating an interactive - the Loupe. It detailed how their viewpoints toward creating these tours changed through experience and how CHPs formulated strategies for building tours for the interactive.

In this chapter, I discuss the implications the museum is facing in maintaining control of these tours from two perspectives: creating the intended visitor experience and implementing procedures for creating content. I further detail the expectations that the CHPs have about the interactive and the implications this may have for them in maintaining control. I also discuss the challenges that CHPs may face in similar museums, particularly smaller ones. These findings highlight issues that need to be further investigated in HCI and cultural heritage research. I conclude this chapter with recommendations for HCI researchers and designers in aiding CHPs in small museums in taking their first steps toward integrating digital technologies in their museums.

6.2 Cycle 3: Redesigning a Tour and Reflections

The findings I am presenting in this chapter are based on the CHPs experiences redesigning The History of Ireland in 10 Objects tour for The Loupe. The two meetings held during this cycle were geared toward discussing the changes made to the content with two CHPs directly involved in this process. Moreover, I will discuss the findings that emerged from a series of semi-structured reflection interviews that I conducted with CHPs at The Hunt Museum.
During the third cycle, the CHPs deployed the additional strategies they formulated during the previous iterations of the interactive tour, as described in chapter 5. There were two CHPs directly involved in shaping *The History of Ireland in 10 Objects* tour during this cycle: Curator Sarah and Intern Deirdre. This cycle covers a period between October 2015 and January 2016; it consisted of two meetings (codes: *Cycle3_Progress2, Cycle3_Update1*). At *Cycle3_Progress2*, which lasted two hours, Sarah and Deirdre discussed the changes that they had made to the tour and the challenges that they had faced during the process. In *Cycle3_Update1* (lasting 15 minutes), I demonstrated to Sarah how to use Google Drive on The Loupe phone. Following this, I observed the CHPs as they provided a brief update on The Loupe to the docents, interns and other CHPs at the monthly docent meeting; at this meeting, the CHPs were aiming to elicit docents’ help for generating content for the tour. Furthermore, I collected materials created between October and December 2015 for analysis. These materials included screenshots of the content for the tour as it progressed and snapshots of notes the CHPs had made during the process.

Based on the visitors’ feedback and their experience using The Loupe, the CHPs devised an additional set of requirements that the device should facilitate. These are:

1. To provide interpretive content that is currently not available in the gallery;
2. To provide interpretive content that cannot be gathered from the docent guided version of the tour;
3. To provide meaningful interpretive content for visitors who did not want to take a docent-guided tour; and
4. Have the capability of providing more activities, which could be of economic benefit for the museum due to the cost of printing tour booklets.

The CHPs followed the first three requirements when redesigning the tour as presented on The Loupe. The final requirement was not a priority for the CHPs.
during the third cycle; however, it was something that the CHPs felt should be considered in the future.

Additionally, I interviewed 12 CHPs between December 2015 and February 2016 (table 6.1). The overall goal of these interviews was to gather CHPs’ feedback on The Loupe; how the content was redesigned for The History of Ireland in 10 Objects tour; and their viewpoints on the degree of control the museum should have regarding the creation and alteration of content on The Loupe. The interviews included:

• Four CHPs who were directly involved in shaping the tours
• Two CHPs responsible for creating the original tour;
• Two CHPs who tested the interactive as part of the internal evaluation (as described in Chapter 5);
• One CHP who demonstrated The Loupe to the visitors during the visitor evaluation;
• One future intern who was interested in creating tours for the interactive; and
• Two of the full-time CHPs, to get an institutional perspective.

The selection criterion was based on the fact that they had used The Loupe before and were aware of its functionalities. As the CHPs interviewed were involved at varying levels in the process, the questions that were directed to each group of CHPs were slightly different (Appendix C/4). However, the basis of the interviews was the same.
Table 6.1: CHPs participating in the reflection interviews

<table>
<thead>
<tr>
<th>Name</th>
<th>Role (in museum)</th>
<th>Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominique</td>
<td>Curator of Education and Outreach</td>
<td>Directly involved</td>
</tr>
<tr>
<td>Sarah</td>
<td>Acting Curator of Education and Outreach</td>
<td>Directly involved</td>
</tr>
<tr>
<td>Ciara</td>
<td>Intern (Education and Public Programmes)</td>
<td>Directly involved</td>
</tr>
<tr>
<td>Deirdre</td>
<td>Intern (Education and Public Programmes)</td>
<td>Directly involved</td>
</tr>
<tr>
<td>Brian</td>
<td>Docent</td>
<td>Creator of original tour</td>
</tr>
<tr>
<td>Charlie</td>
<td>Docent</td>
<td>Creator of original tour/internal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>evaluation</td>
</tr>
<tr>
<td>Mary</td>
<td>Docent</td>
<td>Internal evaluation</td>
</tr>
<tr>
<td>Caroline</td>
<td>Docent</td>
<td>Internal evaluation</td>
</tr>
<tr>
<td>Tara</td>
<td>Volunteer Co-ordinator</td>
<td>Institutional</td>
</tr>
<tr>
<td>Teresa</td>
<td>Head of Exhibitions</td>
<td>Institutional</td>
</tr>
<tr>
<td>Adrianna</td>
<td>Intern (Education and Public Programmes)</td>
<td>Education Perspective</td>
</tr>
<tr>
<td>Catherine</td>
<td>Receptionist</td>
<td>Receptionist demonstrating the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>interactive</td>
</tr>
</tbody>
</table>

Before the interviews commenced, I briefed the CHPs about the goals of the interview. Furthermore, all groups of CHPs were shown the updated content for *The History Of Ireland in 10 Objects* tour as shaped by Sarah and Deirdre on Google Slides; I also reminded them how The Loupe functioned. During the interview, I revealed to the CHPs not directly involved in shaping the tours the procedure for creating the content. This step involved demonstrating to these CHPs how the content was prepared using Google Slides.

During the third cycle, the content for the tour changed significantly. In cycle 1, the content of the tour was reflective of the interpretive content supplied in the booklet-guided tour. During this cycle, the content was really adapted to the format of The Loupe. As described by the CHPs during the meeting *Cycle3_Progress2*, Sarah asked Deirdre to take the tour using printed slides from the Google Slides file because she had not taken the tour before. Deirdre felt that the theme of History Of Ireland was not consistently strong throughout the tour. Therefore, Sarah and Deirdre used the printed slides again and walked from object to object to consider how they could reinforce the theme of the tour in the redesigned version.
In response, the CHPs divided the tour into five different sub-themes: *Rural Ireland, Modern Ireland, Symbols of Irishness, Ceremony in Irish Life*, and *Religion and Politics in Ireland* (figure 6.1A). These themes were colour coded to help visitors know where in the tour they were. Furthermore, the title screen was changed to include a background to emphasise the text (figure 6.1B). The CHPs also suggested showing only the rooms the visitors needed to see on the maps (figure 6.1C). At the time of writing, the tour contains mainly text and static visual content. However, as described later in this chapter, the CHPs are also hoping to include additional multimedia content.

**Figure 6.1: Redesigning content for *The History of Ireland in 10 Objects* tour**

**6.3 Creating the Intended Visitor Experience**

As the museum has little experience with incorporating interactives into their tours, this endeavour clearly presented challenges. In chapter 5, I discussed how the CHPs shaped their thinking and approach toward creating the intended visitor experience at the end of the second cycle. Other small museums with limited experience in integrating digital technology might
encounter very similar problems. In this section, I will discuss the various implications CHPs are facing as they attempt to integrate interactives into the museum activities they offer.

6.3.1 Retelling the Story on an Interactive

In chapter 5, I discussed how particularly small museums with little experience in incorporating interactives could rely on re-using content as a starting point for creating novel interactive activities. Furthermore, I emphasised that it is not a matter of copying content from one format to another: other considerations that need to be taken into account to ensure that the narrative flows appropriately on the interactive device. However, recognising these considerations demands a high level of understanding of the interactive device and requires taking into account the device's behaviour as part of the narrative being portrayed. However, now that the CHPs had an increased awareness of The Loupe's behaviour and these implications, how did the CHPs take this into account when redesigning the tour?

In Chapter 5, I provided an excerpt from a meeting where I described to the CHPs some of The Loupe's features: being able to zoom in on objects, seeing close ups and looking at other angles of the objects that are not necessarily visible. In vignette 6.1, which is an excerpt from the meeting labelled Cycle3_Progress2, Curator Sarah described how she explored some of these features to draw the visitors' attention to the story surrounding The Luck Stone24. On Google Slides, she created a placeholder for providing potential zoom or a close up of the object:

24 The Archer-Butler Luck Stone is an amulet or charm that was formerly owned by the Butler family. It was traditionally believed that these stones protected cattle from disease. See: http://www.huntmuseum.com/collection/collection-items/hcm-152.aspx
Curator Sarah: This one [looks at The Luck stone], I don’t know what we’re going to do here because I don’t think…. Maybe looking at it… one of these motifs here or something would be nice? But I don’t think there’s particularly anything of vast interest on it. Do you know what I mean? Not being mean. It’s a pretty thing, and it has a very interesting back-story, but I’m not sure if there’s actually anything on it that you particularly need to see…

Me: Yeah, I think if you’re going to do a zoom, particularly on this object, then there’s parts of it... like Dominique was talking about, it really needs to have some intricate value to what you’re talking about. If there was a design that was specific to Irish History, and how they designed it...

Curator Sarah: Yeah exactly. So what might be a bit more fitting, which may also be a bit more difficult for us in terms of when this [tour] goes live but I’ve talked to Deirdre about this as well, that it might be nice to try and find examples. So maybe in the rural life museum, they might have other ones of these, so it might be nicer to show a couple of different, but similar ones [Luck Stones] that are in different collections around the country.

Vignette 6.1: Curator Sarah and I describe why presenting close ups of The Luck Stone was not appropriate (Meeting: Cycle3_Progress2)

The above vignette shows again the importance of understanding the behaviours of interactive devices and how they can be used to complement the
Curator Sarah demonstrated an interest in using two of The Loupe’s features – zooming and showing close up details – to draw attention to details on the object, she noticed through further investigation that it was not a relevant aspect of the story. Therefore, Sarah felt that it was better to show similar objects in other museums that would help put the story in context.

This challenge leads to another realisation that Curator Sarah made during the redesign of the tour: that it is possible that different narratives may be easier to work with on The Loupe than others. Initially, the CHPs reasoning for working with The History of Ireland in 10 Objects was because they had already tested the content and they were initially unfamiliar with The Loupe’s format. However, Sarah highlighted that there also needs to be some reference to the challenges of engaging visitors with the actual objects using The Loupe:

“When we are saying we don’t want to take away from them [the visitors] actually engaging with the artefacts in the museum, how do we make this piece of technology as good as it can be without it becoming the thing that you’re looking at or it almost becomes the exhibit, you don’t need to look at the exhibit? So it’s trying to find that point where yes they’re looking at this, but also their attention is drawn to the piece. Which sounds easy, and would be easier with possibly a different tour, so like the architecture tour, pointing out architectural features, obviously they’re going to have to go and look at the architectural features on the building, but this particular tour, we’re talking about discussing The History of Ireland through the objects, so we’re not necessarily giving them all the information that there is about the objects.”
- Curator Sarah, Reflection Interview (Directly Involved)

Further elaborating on this point, Sarah comments:

“I think we may have possibly shot ourselves in the foot! Thinking that this, because we have a narrative already, that this would be a really easy one to just take that and to do it!”
- Curator Sarah, Reflection Interview (Directly Involved)

Sarah’s comment reinforces the importance of understanding the challenges of presenting some types of narratives on different interactive devices. With The
Loupe, for example, it is important to present information in such a way that it draws attention to the authentic objects, and ensuring that it is not “the exhibit almost” as expressed by Curator Sarah. However, drawing attention to those features is a difficult process, particularly when using narratives that do not demand as much engagement from the objects themselves. For this reason, CHPs may need are aware of the challenges associated with starting with particular kinds of narratives.

Moreover, during the redesign of The History of Ireland in 10 Objects tour, the CHPs highlighted that building the basic content required to tell the story on The Loupe required skill and experience. Due to the size of the screen, the Loupe required the use of more visual content than the booklet or docent-led version to portray complex stories. However, the CHPs need to create this content first, as highlighted by Intern Deirdre:

“If the docent was giving the tour, they would say ‘100 years ago, children might not have worn shoes’ and then you would have an image in your mind! But if you try and do that on a screen, it demands that you have a picture. And because you can’t fit many words on The Loupe either... so the docent will probably say like a couple of thousand words. You can’t fit that on the tour! So you have to say more with pictures and then we don’t have that many pictures here, so it’s trying to get all of that across.”
- Intern Deirdre, Reflection Interview (Directly Involved)

Furthermore, Deirdre mentioned that the museum also lacks the resources to utilise the strengths of The Loupe:

“I think with photos we really needed to do. Like, get some more pictures that we... because the museum doesn’t have that many pictures of its objects; it just has the one [for each object]. And it could do with like a few different angles. That was the other thing that we were thinking about when you said trying to use the machine’s strengths, to zoom in and to look around the back [of the objects] and stuff. So we would need pictures to use for them. And that would be the ideal, that if we could get that content. Or like 3D stuff and things like that. That would be cool! But like, me and Sarah don’t know how to do that!”
- Intern Deirdre, Reflection Interview (Directly Involved)
Deirdre’s comments confirmed a finding highlighted by Weal et al. (2006): that a considerable amount of effort needs to be made by CHPs to create the basic content required for interactive devices. However, these findings also shed light on why this may be the case. In Deirdre’s view, telling elaborate stories on The Loupe requires the use of different kinds of media that the museum does not have the resources to build. While The Loupe supports textual content, she believes that the format “demands that you have a picture” that attracts the viewer to the story.

While The Loupe can also be used to view certain details of objects and look closer at objects, the CHPs needed to create this content to make use of these features. Indeed, there are some cases where the CHPs have access to high-resolution images of their objects (for example, the Luck Stone as described above). However, this is not the case for many of their objects. Intern Deirdre felt that there was a need to create new content to use The Loupe to present stories in new ways. I do not suggest that, before The Loupe, the CHPs did not have any intentions to build upon the images available in their digital archive. The CHPs were aware that they needed to build upon the digital content they had available before this project commenced. Nonetheless, integrating interactives like The Loupe places additional pressure on small museums similar to The Hunt Museum to build upon the digital resources they have available.

Information was also presented dynamically through the use of the scanning and tilting gestures on The Loupe. Therefore, Curator Sarah felt that the content needed to be more structured and more exciting to make the most of the story using the device:

“I think it was really helpful when we [Curator Sarah and Intern Deirdre] themed The History of Ireland in 10 Objects. Because although the tour itself is themed, it needed more structure in The Loupe than maybe it does when a guide takes you around. Do you know, just so you’re always reinforcing what the tour is and what bit of the tour you’re on, and what the
focus is at any given point. So it's not just screens of information floating in front of you and you're kind of going “I'm getting a bit bored of flicking [tilting] through all this information” so that you’re like “oh, now I'm on to the cultural part!”

- Curator Sarah, Reflection Interview (Directly Involved)

Here, Sarah describes her strategy for restructuring the narrative to complement the format of The Loupe. In her view, adding subthemes could be a solution for presenting narratives on The Loupe and ensuring the theme of the tour is reinforced. She believed they could couple the action of tilting with the concept of moving through different aspects of Irish History.

Furthermore, Sarah discussed the implications of telling a coherent story using The Loupe. This is how information is revealed on The Loupe: first of all, a visitor scans a label and then uses the tilting gestures to navigate through content (right: forward; left: backwards). The CHPs decided from the beginning to provide wayfinding content after the content supplied for each object to help guide visitors to the next object. Indeed, it is important to guide visitors from one object to another; however, Curator Sarah felt that having to provide wayfinding instructions interrupted the flow of the story. Therefore, she believed they needed to somehow integrate the story with the wayfinding instructions (also shown in figure 6.3):

“[The] directions and really having to link [the content] together, I think is important. Especially when you have to talk about something, give directions and then start talking about something again? [...] It interrupts what you’re doing. Ideally, you would magically relocate them to the next object, but unfortunately we can’t do that!”

- Curator Sarah, Reflection Interview (Directly Involved)
Combining figure 6.3 and the excerpt from Curator Sarah’s interview, we can see that Sarah and Deirdre tried to resolve this issue by connecting the story with the wayfinding content. In figure 6.3, the CHPs described why the theme *Rural Ireland* was relevant to the tour. By tying the theme description with the wayfinding content, the goal was to provide the illusion that the visitor is also being guided by The Loupe through that aspect of Irish history.

It appeared that the content needed to be changed to ensure the narrative complemented the format of The Loupe. However, Curator Sarah and Intern Deirdre were mindful of the original intended experience of the tour and the values associated with it. During the meeting labelled *Cycle3_Progress2*, Curator Sarah and Intern Deirdre mentioned that they had shown the docents who created the original tour the changes they had made as a result of using The Loupe to ensure they were appropriate. The changes included the new sub-theme structure for the tour and the addition of pictures the addition of pictures exemplifying different parts of Irish history. The concern regarding the original intended experience was further emphasised by Deirdre, particularly since making changes to the content had left her with some feelings of uncertainty. She was adamant to receive the approval of the docents who originally created the original tour:
“It was like ‘oh we’re not starting from scratch, we already had something to work with’, and that was where you had to be careful what you did with it, cause you couldn’t just change it, we nearly had to like make sure it was still kind of the original a little bit I think.”
- Intern Deirdre, Reflection Interview (Directly Involved)

Reflecting upon Deirdre’s comment, it appeared that the CHPs felt they needed to maintain the original essence and goals of the tour. Therefore, although it was important to change the content to suit the medium, the CHPs needed to ensure that they did not lose the original spirit of the tour in doing so.

Since the content had changed considerably for The Loupe, I was also interested in learning how the other CHPs, who were not directly involved in this process, responded to these changes. Docent Brian, one of the original creators of the tour, acknowledged that the docent-led version and The Loupe-assisted version of the tour needed to be different because they were designed to support different kinds of visit experiences:

“[The original tour] required a docent to explain it, yes. And that’s the function I suppose where myself and Docent Charlie originally came from: that this was a guided experience rather than a self guided experience.”
- Docent Brian, Reflection Interview (Creator of Original Tour)

I feel that this is important to highlight because the change of medium was not the only challenge that the CHPs were having when redesigning the tour for The Loupe. The CHPs were using The Loupe with the intention of supporting visitors on a self-guided tour; this added another challenge to integrating The Loupe than it would have been if it were an assisted experience in the gallery. Indeed, it was possible for a visitor to ask a CHP for assistance if they were experiencing problems finding labels or using the device itself. However, the CHPs wanted to avoid these problems.

Other CHPs agreed that the content did need to be changed on The Loupe to provide at least some differences in the different modalities for delivering the tour. Docent Mary highlighted this in her interview, stating:
“It [the History of Ireland in 10 Objects as redesigned for The Loupe] is a different tour, but I suppose you were using the information that was there from the 10 objects [at the beginning]. But that was... the idea for that came about for a different reason. And while it was a good base to start off for The Loupe, it probably wasn’t the one you were going to stick with anyway, because if you hadn’t learned from the pilot project, there would have been no point. [...] Well, ok, there has to be some overlaps, I think the two of them should be different. Or else, there might not have been any point; you might as well just have made The Loupe tour... the 10 items is available either on a page or on a Loupe. So, why bother at that stage? If you’re going to do something, you might as well put something new into it.”
- Docent Mary, Reflection Interview (Internal Evaluation)

Docent Caroline also felt that The Loupe needed to provide something different:

“I think it [The Loupe] is more designed for an individual experience. And it [the redesigned content] is more dated there than a couple of lines, which was, if I remember correctly, the previous version [the first version of the History of Ireland in 10 Objects tour on The Loupe] was only one or two lines and you were saying ‘well, I can read that off a label!’ There’s more text there, which is good, because otherwise, what’s the point of going around with this thing [The Loupe]? If you can read the label, then that’s it. The idea is, you should be giving them, to me, you should be giving something extra. Other than the label.”
- Docent Caroline, Reflection Interview (Directly Involved)

Most CHPs responded in the same way as docents Mary and Caroline. Mary noted that the information provided for the original tour was formulated with a different goal in mind, which was to support a guided tour experience with a docent. For this reason, she believed it was important to modify the tour for The Loupe. Interestingly, she also emphasised that there was no point in integrating a device like The Loupe if there were no plans to provide at least some different content down the line. Docent Caroline also felt that the information needed to be different. The content provided in the first Loupe-assisted version of The History of Ireland in 10 Objects tour was designed to replicate the booklet guided version of the tour and was successful in doing so. However, Caroline added that The Loupe needed to provide visitors with
something extra: something that was worth the visitors' time in using The Loupe to take the tour.

This subsection highlighted the implications of redesigning a narrative for an interactive device; these may also be witnessed in other small museums incorporating interactives for the first time. It seems that that redesign is necessary to adapt the format for the interactive and provide choice diversity for visitors. However, doing so could require understanding how to make use of the opportunities, or deal with the constraints, of the device's behaviour. Furthermore, dealing with these features may also require generating new kinds of content to tell the story effectively using the device. Since small museums may not be practiced in telling stories using this kind of content either, it may also take some time and experimentation to build the skills necessary to do so.

6.3.1.1 Supporting the Intended Visitor Experience
In this instance, the CHPs had intended to use The Loupe to support a self-guided tour of a selected number of objects in the collection. Since visitors needed to figure out how to use it with minimal assistance, this raised concerns for CHPs during the redesign of the tour. For this reason, the CHPs also felt it was important that they knew exactly how The Loupe worked and also how a visitor may interact with it. When the CHPs had changed the content, they could not test it on The Loupe itself in the gallery because they did not have access to the device itself. Therefore, the CHPs decided to print the content of the tour and test it (excerpt 6.1). Here, Intern Deirdre described the challenges of understanding how the interactive worked while redesigning the tour. She mentioned how herself and Sarah had to remember to instruct visitors what to do at each stage of the tour during this process:
**Intern Deirdre:** We printed it [the content] off because it’s easy to forget the screens that kind of come and go. So the ones that say like 'tilt right to continue’ it’s easy to forget that was there. But when you have it on the paper, you have to pretend to do that! Turn it over or something like that!

**Me:** Did you actually pretend to do the tilt [with the paper]?

**Intern Deirdre:** Yeah! Let me go around to the next one and scan the labels!

[We continued to discuss this, until Deirdre commented]:

**Intern Deirdre:** Because it gets you into the head of like ‘would you do that?’ and then... because, for some of them when we reformatted it, we’d accidentally take off ‘now scan the label’. And then when you take the piece of paper around, you’d be like ‘ok, now what am I doing?’ And in your head you’re like ‘there’s the label; I should be scanning it’ but it’s not telling you to do that? So you have to be like ok, I need to add that bit back on ‘now scan the label!’ ‘Cause they don’t know to do that. And that way [by printing it], we could write loads of notes on and stuff as well, which was really handy when you go back to Drive [Google Slides], because you’ve got notes... like I wrote all over the first one that I did, just saying like ‘this needs to be here, that needs to be added in, this content and this date and stuff needs to be checked’ and stuff like that.

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**Excerpt 6.1:** Intern Deirdre describes how she simulated a Loupe tour using printed slides (Reflection Interview – Directly Involved)

Intern Deirdre drew attention to an important consideration when designing tours incorporating novel interactives. There were particular aspects with relation to how the interactive works that CHPs could overlook when designing interactive tours; therefore, she believed that it was important to remember how the interactive works and constantly simulate the experience of the visitor to ensure those aspects are accounted for. This example further illustrates how experimentation can be useful for CHPs to understand how to construct narratives using interactive technology.
6.3.1.2 Challenges in Meeting Expectations

Before I delve into this section, it is important to highlight the CHPs expectations toward The Loupe being used in the museum. I asked all of the CHPs during the interviews what they hoped it would add to the museum. Earlier, I had highlighted that those not directly involved in redesigning the tour felt that The Loupe needed to provide an alternative experience for those visitors interested in trying it. Also, many of these CHPs felt it was important that The Loupe sent a message that the museum was moving forward and making attempts to be innovative:

“It would give the message that we’re moving forward. And offering services and new ways of interpreting the objects. And perhaps we could be one of the leaders in Ireland in the field as well, which I think echoes the ethos of the museum that the doors are open to try most projects that engage different audiences.”
- CHP Tara, Reflection Interview (Institutional)

It seemed to be this sense of adding new realms to interpret objects and demonstrating innovation that attracted them to The Loupe. In the excerpt below, Docent Caroline reveals that she also felt The Loupe should show the museum is innovative. When I shared with Caroline the fact that The Loupe was an interactive that could be, and has been, reused and repurposed for other museums, she highlighted that The Loupe would make a stronger impact if it were unique to the museum:

“I think, at the moment, if not everybody has it [The Loupe], it’s a plus. Because it shows the Hunt Museum, or this particular museum, or whatever museum has it, is innovative.”
- Docent Caroline, Reflection Interview (Internal Evaluation)

However, this expectation leads to further implications for small museums. Larger museums may have access to professional technicians and designers with the expertise to shape the physical appearance of interactives or create and modify complex behaviours. However, small museums like The Hunt Museum may not have these resources readily available in-house, or even the
opportunity to outsource these tasks. In these instances, CHPs may need to rely on the content they supply and ensure that this is the innovative aspect.

In the excerpt below, Curator Sarah highlighted that she held high expectations for the content they created on The Loupe; she compared its eventual standard to other high-end interactives:

“I just think that we need to make sure that it’s the best that it can be and that... because there’s a lot of sort of faffy [innovative] things out there and I would like this to be something really good that people use it and they’re like ’wow! Have you tried that at the Hunt? You know like, it’s really cool’ or like “oh I’ve been to the museum before, but I decided I was going to do it with The Loupe this time and I learned like loads more stuff than I’ve done before I’ve found something new that I hadn’t found before. I think we just need to make sure that the standard is high, which it will be!”
- Curator Sarah, Reflection Interview (Directly Involved)

Sarah described that there are also challenges with the content on The Loupe and with ensuring that it provided an innovative experience: it was important that it was memorable for visitors; provided a high-quality learning experience and was different to the other modes of delivery. Furthermore, her comparison between The Loupe-assisted tour and the other means for delivering the tour suggests that she felt The Loupe needed to provide an exciting alternative, as highlighted by some of the docents above. These findings imply that the CHPs had high expectations toward The Loupe and its associated content for the museum. Nonetheless, developing this kind of content places pressure on this small museum. Earlier, I have highlighted the challenges the CHPs faced in gathering the fundamental content required to portray the narrative using The Loupe. Reflecting on these challenges, how were the CHPs responding to these expectations in the third cycle? Furthermore, what efforts needed to be put in place to ensure that the “standard is high” (as phrased by Sarah)?

Throughout the process, the CHPs were in control of the interpretive content. However, the CHPs did not have the ability to configure the behaviour of the device; therefore, they were constrained to stick with the range of behaviour
options on The Loupe: tilting and scanning. The limited availability of behaviours presented challenges for the CHPs; in some cases, the CHPs felt these behaviours would pose a distraction. In vignette 6.2, which is an excerpt from the notes from the meeting labelled Cycle3_Progress2, Curator Sarah discussed the challenges of presenting a complex story surrounding a Sean Keating painting in the museum. While the story could be revealed using the tilting gestures on The Loupe, her goal was to limit the number of times this behaviour was used for this object:

Curator Sarah: This is the verse from Romeo and Juliet from which the title of the [Sean Keating] painting is taken. And this is Sean Keating explaining the title of the painting. So it makes sense to have both of them. But I don’t want people to have too many... swinging The Loupe around so there’s that as well. Getting enough content in, but not breaking their arms in a sense. If there’s too much content, it’s better than not enough because we can take it out.

[Curator Sarah and I continued to discuss the challenges of presenting the story of this particular painting using text. We both agreed that the text may be too small and unreadable].

Me: Yeah. One of the major comments during the [visitor] test was that the text was quite small on the thing [The Loupe] as well. And even though it was bolded as well, you couldn’t really see that it was bolded on The Loupe because the screen is quite small.

Curator Sarah: And if we can’t have a(n) [animated] scrolling... then it’s a case of tilting. We could do a little gif animation of this [points at letter – figure 6.4] comes up, then it comes in and then it fades into this quote [points at the Sean Keating’s quote – figure 6.4]. I don’t really know how to do that, which is why I haven’t done that! But I know there’s a website or something called giffy... which I’m sure, we can learn how to use!

Vignette 6.2: Curator Sarah describes why she was considering creating dynamic content (Meeting: Cycle3_Progress2)
Sarah did not want to rely on the tilting gestures to be the only way for revealing content on The Loupe. She was primarily concerned that imposing too many tilts per object would have an adverse impact on the visitor experience. In response, she considered learning how to use software for creating GIF animations in order to present the content in figure 6.4.

So far in this section, I have revealed some of the challenges the CHPs are facing in meeting their expectations toward The Loupe. However, Sarah did not expect to meet those expectations right away. As the museum has plans to integrate The Loupe permanently, the CHPs will have the opportunity to improve the content at a later stage, since the CHPs have the means to change content. Since the facility for changing the content was available, the museum could run with a simple version of the tour while they are building the necessary content to match these growing expectations:

“*I think that we will probably keep it simple for the minute in terms of getting additional media and stuff onto it. I think we’ll just try and get our text and images sorted out first. And run through it and have something that we can use. Because of the way it’s done, we can always go back and make changes and do improvements and stuff on it, which is great! We’re not publishing a booklet that we can never change, so I think that’s... we’re kind of at the stage we have all of the actual content, we just need to do the layout part of it and a few fanny things with some of the images that need to go onto it, transparent backgrounds and stuff like that.*”
- Curator Sarah, Reflection Interview (Directly Involved)
Here, Sarah highlighted that being able to change content provides the CHPs with the opportunity to build the necessary content over time to meet their expectations. Indeed, while it was important for the CHPs to add complex content, having something that was ready to use was also imperative here. During the redesign of the Loupe-assisted version of the tour, Sarah was primarily concerned about ensuring that the interpretive content was appropriate.

6.4 Procedures for Creating Content on the Interactive

Due to the growing access to digital technologies and toolkits, CHPs are empowered to become more involved in the creation of museum interactives. This evolution provides opportunities for all museums, including small ones, to embrace the opportunities and include museum interactives into their exhibitions. More recently, HCI researchers have become increasingly interested in the role of the CHPs in the design of interactive exhibitions (Taxén 2004; Hornecker et al. 2010; Maye et al. 2014). This section aims to extend some knowledge on the role and viewpoints of CHPs (who may not have experience in designing interactive exhibitions) when they take increased control of the creation of content for museum interactives.

To introduce this section, I am referring to a quote from Teresa, Head of Collections and Exhibitions, who had just seen the content on Google Slides and was made aware of how the CHPs in the Education Department used this tool to change content. When I asked her if she would feel comfortable to use this tool herself, she responded:

“I’ve been here a long time, so you have certain ways of doing things. And I’m not opposed to change in any way; I’m certainly always anxious to learn, but I... it [technology] doesn’t come as easy to me as it might to some other younger members of staff. But I think change is good.”

- CHP Teresa, Reflection Interview (Institutional)
Teresa raised an interesting challenge this museum is facing in maintaining control of creating and changing content on the interactive. As someone who coordinates exhibitions, she has established ways of working; moreover, she felt that using technology does not come as easy to her as it does for “younger members of staff”. Indeed, the idea of having control over the content on interactive devices is very new to small museums like the Hunt Museum, and having to get accustomed to using technology to do this can prove challenging. Due to these challenges, I raise two questions that I aim to address in this section:

*How much control do CHPs want over the design and where should the line be drawn?*

*Furthermore, how can CHPs be supported effectively as creators of content for interactives?*

### 6.4.1 Balancing Control: Where Should the Line be Drawn?

As CHPs in small museums are gaining further opportunities for taking control of creating content and configuring interactive devices, a question remains regarding how much control is desirable or needed by CHPs. Throughout the three cycles of developing and redesigning tours for The Loupe, the CHPs mainly held control of the creation and presentation of the interpretive content. They did not have direct control over the device's behaviour. In Chapter 5, I highlighted that the CHPs felt they should maintain control over the interpretive content, despite the challenges they were facing in addressing and shaping the content on the interactive. Although the CHPs faced challenges structuring the interpretive content in the third cycle, they maintained that control of the interpretive content should remain with the museum. Intern Deirdre, who had been involved in redesigning *The History Of Ireland in 10 Objects* tour for The Loupe, highlighted this:

“You need to have the people in the museum being in control of it [the interpretive content], because they know, it is interpretation at the end of the day. The way that you tell a story affects how people hear it, so if you miss important points, that could be the whole of the point that you were
trying to take home. So, the people in the museum know exactly what they want to say, they just have to get used to using the technology to do that. They shouldn’t outsource it, because it might come back with a message that looks great but doesn’t really give much of a history or it doesn’t really get the main point across. So if it says a tour about women, it might not get the feminist point... [...] It might just be... this happened, this happened, and this happened, and it might.... [...] They [the museum] still need to be in control of the interpretation whether that’s on technology [in this case The Loupe] or without it.”
- Intern Deirdre, Reflection Interview (Directly Involved)

In this excerpt, Deirdre highlighted that museum knows the point of the story that they are trying to portray; for this reason, it was important for the museum to maintain ownership and control over the interpretive content “whether that’s on technology or without it”. She highlighted that outsourcing could lead to missing key elements of the story that are considered by CHPs as required for the interpretation. Her concerns are similar to those emphasised in literature (Caulton 1998; Lord and Piacente 2014). Deirdre believed that CHPs will “have to get used to the technology” to maintain control of the interpretive content. However, as highlighted earlier, getting used to the technology involves understanding the implications of presenting narratives through the use of interactive devices, as well as using the tools required to create the content.

The CHPs, who were not directly involved in shaping the tour, also reflected on the importance of maintaining control of the interpretation. Intern Adrianna, speaking from the perspective of CHPs working in the Education Department, emphasised:

“I think that [the museum being in control of the content] is the most important thing. Because they can really use the Loupe in different ways. For example, they can create different things, exhibitions or even events; some particular event for example, we have the birthday of the Hunt on Sunday [14th February], so maybe it would be good to create something you know, just for the event.”
- Intern Adrianna, Reflection Interview (Education Perspective)
Intern Adrianna felt it was essential for the museum to be able to use The Loupe in other contexts beyond this tour. She highlighted that having control of the content means they could also have flexibility; they could incorporate The Loupe in one-time events, which would normally be an expensive option if the museum outsourced it.

Curator Dominique also agreed that the museum needs to maintain control of the interpretive content; however, she also emphasised that there was a line to be drawn here regarding how much control the museum should have on the other aspects of creating the interactive:

“I think it's really important [for the museum to be in control of the content]. I think it was a nice collaboration to be able to have designers who are responding to features that we think that we need and also be able to maintain control over the curatorial content. I think that's important. What museums do best is know about their collections. And so the problems arise with these sorts of things when those lines get blurred and people aren't working in their area of expertise. That's not an efficient system. If everybody's working in a place where they have their expertise, then you can be reasonably assured [that the outcomes] will reflect the expertise of the various people who are participating in the project. But it doesn't make sense to me for a museum to get involved with industrial design, well, unless the people involved are industrial designers. And it doesn’t make sense to me for the designers to be making decisions about the curatorial content because that's not where their knowledge plays.”
- Curator Dominique, Reflection Interview (Directly Involved)

I asked Dominique to provide more detail on what aspects of the design she felt should be within the museum’s control. Dominique responded:

“So all of the text, and the images which appear on the Loupe, the choice of wording, the choice of perspective of learning, all of that. That is what the museum needs to be doing. And when I talk about design [i.e. what another professional should maintain control over], I'm talking about the shape of the Loupe and everything, but I'm also talking about the program and the way in which the user interacts with the device.”
- Curator Dominique, Reflection Interview (Directly Involved)
In the above excerpts, Curator Dominique argued that the museum’s role should be limited to interpretation. In her view, it was not an “efficient system” if the museum also had to program the interactive, design the casing, or design the behaviours of the device. This is a revealing comment, particularly if seen in the light of the importance of understanding these behaviours as part of the story, as highlighted in Chapter 5. It seems that the CHPs feel they need to understand how the behaviours complement their story; however, their expertise is not actually in deciding what these behaviours should be and how they should be implemented.

The viewpoint that the museum needs to be in control of the content is also shared by other CHPs who were not directly involved in shaping the tour. Docent Mary agrees with Dominique that the technology aspect needed to come from outside of the museum:

“People have different roles in these projects, so I don’t see it as an either or, but I do think that it’s good that the museum itself has control of the information, because at the end of the day, they’re a priority and the responsibility is with the museum and how they pitch it to the public. But I think the technology part is the new part for us, for the museum, so that had to come from the outside.”
- Docent Mary, Reflection Interview (Internal Evaluation)

Mary emphasised that the museum has a responsibility to its audiences about how they pitch the information to their visitors. However, like Dominique, Mary believed that the technological aspects needed to come from outside of the museum. For her, this is because the museum itself has limited experience in integrating new interactive technologies.

So far in this section, the findings suggest that having control of the interpretive content is an important aspect. The CHPs also agreed that the design of the interactive and its associated behaviours needed to come from the outside. However, what are the challenges of providing CHPs with complete control over the presentation and layout of the interpretive content, and how much
control do the CHPs want to have over this? In vignette 6.3, which is an excerpt from the notes of the meeting labelled Cycle3_Progress2, issues also emerged when the CHPs decided to redesign the layout for the tour. Here, Curator Sarah and Intern Deirdre mentioned that there were many aspects of this work that fell outside their area of expertise as we were discussing the challenges of design:

[Curator Sarah was showing me the changes that Intern Deirdre and herself had made to The History of Ireland in 10 Objects content on Google Slides. We started to discuss the changes that they had made to the design and layout of the tour].

Curator Sarah: So one of the things that I’m trying to make use of is these spaces [around the edges of the circular screen on The Loupe] that get wasted a lot. So, do you know what I mean? So with this one, we can do a bit of that and try and use all of the corners and stuff. But there might be a better way of doing that as well.

Intern Deirdre: [Turns to me] Have you seen what it [the content] looks like on there [The Loupe] yet?

Me: [scanning through content on The Loupe] oh yeah… this is the… I’ve a feeling you might want to make the text a bit bigger...

Curator Sarah: Yeah...

Me: But again, these are things you’ll change once you have the… [Curator Sarah interrupts]

Curator Sarah: It also might be worth at some point, if we have any money, paying a designer to actually just make it look good. Because that’s their job. That’s what they do all the time. Because as nice as we’ll get it, I’m sure that they’ll be able to make it… [...] Make it work better. Because it is a difficult space to work with, isn’t it? The shape of it, and then the scale of it, and all of the stuff that you have to put into it...

Intern Deirdre: It’s something that I’m not used to working with… so they’d be able to do something with that...

Curator Sarah: Because part of me thinks… that we’d almost be better making these slides in something like Photoshop, and all of this would just be an image. But that would mean then that you can’t change it as much, because whoever is changing it has to know how to use Photoshop. So this kind of does what it needs to do in terms of being ‘easy to use’, but once we have got to grips with the shape and the size of it, maybe then... we can
Indeed, there were challenges involved concerning taking control of the content design and layout. Curator Sarah acknowledged that the design tool – Google Slides – “does what it needs to do in terms of being ‘easy to use’ “. However, neither Sarah nor Deirdre had experience with designing content for an interactive device like The Loupe. While the CHPs had formed a strategy for reshaping the content to suit The Loupe’s screen, they felt that the design could benefit from the attention of a professional designer. A professional designer could use more complex software like Photoshop to form images and potentially form better solutions for using the space available on The Loupe. However, Curator Sarah also showed some hesitation in using Photoshop and hiring a designer. She further commented here that it was probably “more important that people can just go into it and change it” because, by outsourcing the design, the CHPs may also lose some control of the interpretive content.

Sarah and Deirdre further commented in their reflection interviews on whether or not the CHPs should be in control of the content design and layout. Curator Sarah responded:

“If it’s something that we can work out and get it looking well ourselves, I guess that’s better in terms of, it means we’re going to be able to use The Loupe more, we’ll be able to develop our own tours, and more options for people whereas if we have to hire a graphic designer every time we want to do that, well that’s something that’s probably not going to happen!”
- Curator Sarah, Reflection Interview (Directly Involved)

Curator Sarah appeared to be motivated to learn how to design content that is appropriate for the technology. She believed that the museum would benefit more from the use of The Loupe if they focused on developing the skills required to design around the space effectively. However, if the museum
needed to hire a graphic designer to assist them in these instances, the advantage of being able to change content on The Loupe would be hindered.

Deirdre agreed with Curator Sarah; nevertheless, she felt that the museum would benefit from further guidance regarding the design of the content layout. She emphasised that the template to guide CHPs needs to include further guidelines and an appropriate structure, to ensure all they have to think about is interpretation:

“It would just be really good to have a template, a template that says ‘use this font, use this size for titles, use this size for picture credits, put your picture over this side’. Basically, someone to sit down beforehand just say, this is what it should look like. And then you can follow that point, but to the point, because we ended up with slides looking slightly different. We tried really hard to make sure they all look the same. But it would be good to have a template that we could work from. And it was nice that it’s [Google Slide’s] not that complicated because I can’t do Photoshop or anything like that. And when you are doing content, you just want to get it in as quick as possible and then think about how it looks afterward.”
- Intern Deirdre, Reflection Interview (Directly Involved)

Deirdre’s comment highlights the need to have access to tools that aid CHPs in focusing on interpretation. Deirdre favoured the use of Google Slides for this reason: the tool was not complicated to use, and she could concentrate on getting the content right and consider the design later. Although I had provided a template to the CHPs and had shaped it throughout the process, Deirdre emphasised the need for further guidance on designing content: she felt the CHPs could be guided on how to present content on The Loupe. In her view, the CHPs could use with guidance on what fonts to use for the tour; the themed look of the tour; and how to organise the content on the slides. In this way, the CHPs could focus more of their time on the interpretive content, because interpretation is their area of expertise.

Apart from the interns and the curators in the Education Department, some CHPs felt that the docents should also be involved in creating the tour. As I had
mentioned in Chapter 4, the docents are in many cases the creators of the museum activities; moreover, they often personalise these activities in response to the visitors’ needs when delivering them. Docent Caroline particularly felt that the docents should be involved in creating tours for The Loupe:

“I wouldn’t mind. I have used PowerPoint. I would say potentially a docent or somebody who gives a tour should get involved in it [creating a tour for The Loupe] because they’re the ones dealing with the public, as opposed to [the Education Department] giving the tours if you know what I mean.”
- Docent Caroline, Reflection Interview (Internal Evaluation)

Docent Caroline was familiar with Google Slides and felt confident that she would be able to create a tour. However, two of the other docents raised a different point of view toward being involved in creating these tours. When I showed her the redesigned History of Ireland in 10 Objects tour on Google Slides, Docent Mary commented:

“Well, I mean I can see what you’re showing me on the screen and I mean, I’d know how it works. But I wouldn’t be able to produce that, I wouldn’t be good with that kind of technology!”
- Docent Mary, Reflection Interview (Internal Evaluation)

Docent Charlie, who created the original version of The History of Ireland in 10 Objects tour, responded in a similar way to Mary:

“[I would] probably not very confident at this stage, because it’s quite a while since I’ve used PowerPoint! I used to be pretty good with it, but I haven’t... it’s been a long time, just out of practice. I’d probably be, well the museum would be better off if somebody else did that!”
- Docent Charlie, Reflection Interview (Creator of original tour/internal evaluation)

Indeed, for some CHPs, it was ideal to include the docents in developing the interactive tours because of their expertise in delivering tours. However, some docents felt that their technical skills were not strong enough to use
PowerPoint or Google Slides; therefore, they did not believe they should be directly involved in creating The Loupe-assisted tours. I feel it is important to highlight this issue because, while technology is becoming more accessible, barriers remain in involving those who are experts in interpretation in taking control of the interpretive content.

For this reason, I argue that we need to consider these important issues surrounding the levels of ownership and control that CHPs feel they should have in creating and shaping content for interactive devices. The most important aspect for museums to maintain ownership and control over is the interpretation. While the CHPs had encountered challenges in deciding how the content should look, having the flexibility to maintain control is an important and attractive feature for them. Further support could be given to assist CHPs in building the skills required to design for different interactive devices. While other aspects of the technology are important, for example, the behaviour and design of the technology, it appears that the CHPs feel it is not in their area of expertise to implement these. However, CHPs should at least understand how the behaviour of the interactive technology impacts interpretation, as noted in Chapter 5.

6.4.2 Supporting Cultural Heritage Professionals as Creators of Content for Interactive Devices

In this section, I outline what should be considered when CHPs are taking initial steps in designing for interactives, especially since they may not have the expertise or resources in house to embrace those opportunities. In Chapter 5, I discussed how I attempted to support the CHPs in creating content through suggesting tools, creating and shaping the content template, and providing advice to CHPs in presenting the content on The Loupe. Throughout the journey, the CHPs also faced difficulties when taking control of the content design.

During the reflection interviews, I asked those directly involved in redesigning the tour for The Loupe if they foresaw any challenges facing new CHPs
designing tours or other museum activities incorporating The Loupe. I asked this question with reference to CHPs at The Hunt Museum, but also to other museums that may have little to no experience integrating interactives into museum activities. Curator Sarah mentioned that museums integrating The Loupe for the first time could use some guidelines, similar to the ones that the CHPs had started to formulate during their experience, to develop their tours effectively (excerpt 6.2):

**Curator Sarah:** I think what would be really great is when we get through this process is that we have some sort of, and it might be helpful for the meSch project, I don’t know if they have this already, if they do, please give it to me! Is there’s some sort of best practice guidelines for developing your tour on The Loupe, and it gives you pointers on all the different things that we’re trying to work through at the moment. Do you know what I mean?

**Me:** Yeah, I think you hit it on the nail when you said that each tour is very different.

**Curator Sarah:** Yes, but I do think that there’s things that we spent a lot of time talking about that, like thinking about the directions, thinking about the questions that bring them back to the objects… all of those kind of things, that could just be a list of general guidelines that you can kind of apply. They’ll obviously have to trial it in their own space and all of the rest of that sort of thing, but I think some sort of little pack wouldn’t go astray.

Excerpt 6.2: Curator Sarah feels that guidelines would be helpful for those integrating interactives for the first time (Directly Involved)

Referring to this issue later in her reflection interview, Curator Sarah mentioned:

“I think [it is necessary to provide guidelines] because there’s things that you don’t immediately think of, because we’re so used to maybe designing brochures, or giving tours in person, so there is things that are kind of like applicable to this kind of device.”

- Curator Sarah, Reflection Interview (Directly Involved)

Notice that the guidelines that Sarah suggested are not focused on learning what kind of tools could be used to create content easily, but on pointers for integrating a specific interactive to support a particular type of visitor.
narrative: a self-guided tour assisted by The Loupe. Sarah learned that creating tours encompassing interactive technologies required different skills from designing docent guided or booklet-guided tours. As I have discussed earlier, this is not a matter of converting content, word-for-word, from one medium to the next; the CHPs had discovered that the story needed to be presented differently on The Loupe.

As I mentioned in Chapter 1, there were three other larger case study exhibitions taking place across Europe as part of the meSch project, integrating technology designed by the meSch team. Dominique was aware that these exhibitions were running; she was also aware that designers from the meSch project were involved in designing and integrating these interactive exhibits. However, Dominique felt that if The Hunt Museum had an opportunity to communicate with the CHPs in the other museums integrating new technologies, it would have been useful:

“One of the perverse outcomes [of the project] is we are talking about DIY technologies and being able to do this stuff without the designers. But the designers have been, you folks [me as part of the meSch project] have been in the centre, middlemen for every interaction between a museum. I think having opportunities for the museums to talk without having to go through you, or without having the communication from other museums be delivered via you, would have been really a good thing.”
- Curator Dominique, Reflection Interview (Directly Involved)

Dominique's response highlights that there remains a missing link if CHPs are to take further control in integrating interactive technologies. Indeed, there are several challenges that designers can support CHPs with, as I attempted to demonstrate throughout this research: for example, providing templates for forming content and suggesting easy-to-use tools for design. However, the designer's expertise is not in creating interpretive content. A significant amount of the challenges faced by CHPs relates to understanding how the device itself can be used to support the intended visitor experience: for example, how the narrative should be structured, how the behaviours work with the story, and how to engage visitors with the artefacts. These are
challenges that could be addressed if museums have the opportunity to share their experiences. Combining Dominique’s response with Sarah’s, it appears that the two curators feel that inter-museum support is necessary.

6.5 Maintaining Control: Thinking Beyond Technological Barriers

This chapter discussed the implications faced by CHPs in maintaining control of creating content for, and integrating an interactive; these may also be present in similar small, collection-based institutions. The CHPs felt responsible for the interpretive content, whether it was presented using an interactive technology or not. This suggests the need to enable CHPs to have control of the interpretive content. The findings presented in Chapter 5 and Chapter 6 suggest that the implications of integrating interactive technologies as an interpretive aid are not due solely to the technological barriers as represented in relevant HCI research (Ghiani et al. 2009; White et al. 2004; Simeone and Ardito 2011).

Moreover, current developments in toolkits enable CHPs to create and integrate interactive technology at various levels of technical skill (Koleva et al. 2009; Karoulis et al. 2006; Simeone and Ardito 2011). This study indicates the challenges that CHPs face when the when resources for modifying behaviours on interactive technologies may not be present. Throughout this thesis, I emphasised that CHPs describe the behaviour of interactives as if they were part of the story and the visitor experience. Therefore, I argue that this connection needs to be understood regardless of whether CHPs decide to take control of configuring these behaviours or not. In this case, the CHPs highlighted that they should not be the ones in control of configuring the behaviour of these interactives. However, the device’s behaviour was a fundamental aspect of the story that was taken into consideration when redesigning the tour. Therefore, CHPs need to have at least an understanding of those behaviours and how they can contribute to the story. In fact, it is possible that the CHPs without the expertise to modify these behaviours would be
required to have a strong understanding of this connection when choosing an interactive technology to integrate.

In cultural heritage, literature has indicated that CHPs in all different kinds of museums need to be able to understand what technology can do to serve their goals (Duff et al. 2009; Sola 1997; Stiff 2010). However, making the decision to integrate new technology to complement their interpretative needs may be challenging for small museums. For instance, those CHPs that have the resources or motivation to configure behaviours on interactive technology have the option to modify behaviours later to suit the interpretive goals of their activities. Nonetheless, if CHPs do not have the resources to change these behaviours once the technology implemented, it is important that they understand how the technology can aid their interpretive goals before choosing to integrate these technologies. Obtaining this understanding could prove challenging for CHPs who have little experience of being heavily involved in the design of interactive technologies. CHPs will need to be in a position where they can assess and evaluate what those technologies can offer before implementing them. This could mean making time to learn and experiment with different options, while also keeping in mind their goals for introducing interactive technology.

Moreover, if CHPs do not feel that their expertise is in modifying behaviours of the interactive, this may affect their role forming the content. In this study, the CHPs were constrained to using the predefined behaviours on The Loupe; nonetheless, they had high expectations for the interactive and its associated content. These expectations are in line with other literature describing the anticipations of small museums integrating new interactives, such as our previous study presented in Maye et al. (2014). However, they were challenged particularly by overuse of the tilting gestures. While the tilting gestures theoretically enabled them to add more content for each object, the CHPs felt overuse would distract from the story. Therefore, the CHPs considered creating animated content to add complex stories. Nonetheless, one of the benefits of being able to change content and not having to commit to a specific solution is
that CHPs can build up the necessary skills and resources gradually through experience.

Confirming the findings of (Marty 2006b; Duff et al. 2009), it is not just about being able to use technology; it is also about understanding how to portray information effectively using those technologies. Designing content effectively for interactive devices requires a significant amount of skill. For example, one of the challenges that the CHPs had faced was designing content effectively to comply with both the size and scale of The Loupe. While building these skills may take time, it means that CHPs will have more flexibility concerning what they can do with new interactive technologies they integrate. CHPs in small museums particularly need to be open to developing these skills because they may not have access to resources to design content professionally.

However, the challenge does not just lie with the fact that small museums need to develop these design skills; the challenge also lies regarding their expectations about the output they aim to provide for visitors. It may prove difficult for small museums to integrate and maintain an interactive at a high standard that demonstrates the museum is responsive, innovative, and in par with other museums integrating interactive technology. To do this, CHPs may need to continuously be in a position where they can build the skills necessary to meet the ever-changing needs of their visitor base, as indicated by Marty (2006b) and Sandell (2003). To keep up with these changing expectations, CHPs in small museums may need to build the skills and resources to experiment with new technologies and new avenues for interpreting the collection.
6.6 Reflections: Supporting Cultural Heritage Professionals in Integrating Interactives in Small Museums

CHPs are becoming increasingly involved in creating and integrating interactive technologies in their museums. There have been many collaborations between HCI researchers and museums including The Hunt Museum (Ferris et al. 2004; Bossen et al. 2012); however, little research describes how CHPs, particularly in small museums, can be supported in creating and integrating interactive technologies. In this section, I provide recommendations for HCI practitioners and researchers concerning how they can support CHPs in small museums in taking and maintaining their role in integrating interactive technologies. I also present recommendations for CHPs in small museums interested in developing these skills.

It remains an open question if small museums can get started with integrating interactive technologies without support from designers and technologists. Museums are expected to keep up to date with new skills necessary to integrate and use technology effectively to portray narratives, which are evolving (Marty 2006b; Duff et al. 2009). In many small museums, CHPs are responsible for multiple roles; therefore, they could benefit from partnerships with HCI researchers and students in universities, or perhaps other local designers that may be willing to collaborate with the museum on a voluntary basis. These partnerships could be helpful for bringing in new ideas and helping museums respond to current interpretation challenges.

As partnerships can be beneficial, I recommend that designers, technologists and CHPs spend some time to build a relationship at the beginning of the project. Building relationships could help build shared understandings and limit conflicts that might occur between these parties when designing and integrating interactive technologies. In this research, it took some time to identify what my role as a designer should be, and what the CHPs felt should be within their control. Moreover, conflicts can occur between designers and CHPs regarding the approach adopted to integrate interactive technology (Bossen et
From my experience, I believe designers should learn about CHPs’ concerns and expectations toward using ICT tools and toward integrating interactive technology as an interpretive tool for visitors. If possible, volunteering for other activities in the museum, such as delivering tours or workshops alongside other CHPs, could be a good strategy for building trust amongst HCI researchers/practitioners and the CHPs. It could also be useful to investigate the approaches that CHPs take in preparing and creating museum activities since introducing new interactive technologies may challenge those existing practices.

Building the skills to use digital technology is not the only issue. CHPs should be able to 1) recognise how interactive technology can serve their intended interpretive goals and 2) present narratives coherently using interactive technology. CHPs may need to understand the potential interactive technology holds for facilitating interactions with objects, narratives, and other people. As recommended by McDermott et al. (2013), designers could provide the means for CHPs to experiment with interactive technology. However, experimentation with the interactive tools themselves may not be enough to obtain the skills required; in my view, designers and technologists could also encourage CHPs to think about how those technologies could be used to support different activities offered in their museums. To support CHPs in experimentation, designers could provide CHPs examples on 1) how different technologies could facilitate the presentation of a narrative and 2) how the features and behaviours of the technologies could enhance interactions with objects, stories, and other people.

There may be cases where experimentation using the actual technologies may not be feasible due to financial constraints; this could be the case for smaller museums. In these instances, designers could also build low-fidelity prototypes25 that simulate how the interactive technology would work. Low-fidelity prototypes are simple representations of a product (in this case, an

25 As part of the meSch project, we have provided some guidelines on how to use low-fidelity prototypes in a museum context, see McDermott et al. (2015)
interactive technology). They are usually created quickly and are incomplete. They contain enough characteristics of the product to test important concepts.

In collaboration with the CHPs, designers could also organise a design workshop where CHPs can experiment with the low-fidelity prototype in the context of a museum activity they are creating. In advance of such a design workshop, I would suggest that CHPs prepare some content that could accompany a low-fidelity prototype to be tested. Using bodystorming, a technique that involves acting out, step-by-step, how a particular scenario may unfold, the CHPs could trial the content and reveal it in the same way that the interactive technology would in the museum activity. CHPs could then reshape the content as appropriate. Designers could help CHPs to get started with this; however, it is important that CHPs are empowered to do this themselves to develop their skills in integrating interactive technology as an interpretive aid.

If CHPs want to take control of creating content for interactive technology, they might need to tackle any discomfort they have toward using ICT first. I believe designers and technologists could help CHPs with issues that may arise. I suggest that designers and technologists identify if CHPs are experiencing any discomfort in using ICT before the onset of new digital projects. Designers and technologists could suggest directions for CHPs to take to address their concerns toward using ICT; their suggestions may include, for example, software for creating content or learning resources that CHPs could access to get started in using ICT. If resources are available, I envisage that designers and technologists could also organise training events to help CHPs use different software tools. In preparation for these training events, designers and technologists could identify what the CHPs goals are in connection with the content they want to use alongside the interactive technology. I recommend they ensure that the training events are adapted to the CHPs’ needs.

For designers, conducting reflection interviews is particularly useful, as they also help in understanding how CHPs felt about the approach taken to integrate

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26 As part of the meSch project, we have provided some guidelines on how to use bodystorming in a museum context, see McDermott et al. (2015)
interactive technology. Moreover, they are beneficial for learning what could have been done differently in the project; this was also identified in the research presented by (Bossen et al. 2012). Provided the opportunity is available, designers could conduct similar interviews in the middle of the process so that hidden issues and conflicts can be dealt with before the project ends.

For those designing toolkits to enable CHPs to reuse interactive technology, I recommend noting that CHPs need to be able to recognise what interactive technology can do to support visitor interpretation. By the time CHPs are choosing to use a toolkit to re-use interactive technology, they may have some interpretation goals in mind. Toolkits commonly contain templates for CHPs to browse through; these templates usually include pre-configured behaviours that, when reused, enable an interactive technology to function in a certain way. I believe those creating these templates could supply resources that aid CHPs in choosing the interactive technology that is appropriate for addressing their interpretation goals. To do this, they could provide an indication as to what type of narrative the template was designed to support. If facilities are available, I recommend that the creators of these templates provide video examples that explicitly demonstrate what the interactive technology and its associated behaviours may add to the intended visitor experience. Particularly for CHPs in small museums, these resources could be beneficial, as they may not have the opportunity to change the technology behaviours included in the template once the technology is integrated.

If CHPs are to take control of creating and integrating interactive technology, inter-museum support is beneficial. Inter-museum collaborations could enable CHPs to share guidelines for designing activities incorporating interactives and learn how the behaviour of interactive devices can contribute to or distract from the intended visitor experience. Marty (2006b) also discusses this need with a particular focus on large-small museum collaborations. However, CHPs in small museums should have the opportunity to share with each other the
lessons they had learned with integrating interactive technologies and how they worked with the resources they had available.

Therefore, designers and technologists should investigate how online platforms could be created or modified to support ‘communities of practice’ (Lave and Wenger 1991; Wenger 1999) or inter-museum interaction. These platforms could also provide the facility to communicate with local designers who may be willing to partner with small museums on a voluntary basis. Examples of existing platforms that support communities of practice/interest in Europe include the Museums Computer Group 27 (MCG) and the eCultObservatory 28. In my view, those designing new online platforms to support these interactions could include filters so that CHPs can choose to collaborate with particular groups. Some example filters could include CHPs in small museums; CHPs in large museums; CHPs in a particular type of museum (e.g. science, history or archaeology); designers; technologists; or a combination of the above. Moreover, these platforms could include filters to offer special support for collaborations or messages addressed to those with limited experience integrating interactives, to those with a lot of experience integrating interactives, or both. To some extent, there have been efforts to create online platforms with some filtering options in the USA (for example, the online platform provided by the Museums Computer Network). I believe that designers partnering with museums could notify CHPs about the availability of these platforms as early as possible, to ensure CHPs make use of them when integrating interactive technology.

Reflecting on this project, online platforms that support these communities of practice should remain separate of the toolkits that enable CHPs to reuse and integrate interactive technology. CHPs might want to communicate over a broad range of issues, such as ways to integrate technology to support

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27 The Museums Computer Group is a UK-based independent group supporting CHPs interested in digital cultural heritage: http://museumscomputergroup.org.uk/
28 eCultObservatory is a platform to aid CHPs interested in digital technology implementation. It enables CHPs to share their technological projects and for technologists to suggest solutions for digital projects: http://www.ecultobservatory.eu/
interpretation; share guidelines and experiences with one another; and in general, communicate with other museums integrating interactive technologies. In my view, CHPs would only use toolkits at certain stages in the design of museum activities, such as when changing content, experimenting with new templates and technologies, and exploring ideas. In saying that, I recommend that designers of toolkits could provide links to existing communities of practice elsewhere that may be useful for CHPs in dealing with these issues.

Indeed, the skills required to integrate interactive technology may be different to the skillset that many CHPs in small museums hold. Based on my experience, I feel CHPs need to believe that experimenting with new technologies is required for developing their skills as experts in interpretation in a world where digital technology has become the norm (Parry 2013). To get started, CHPs could actively seek and build collaborations with local designers and technologists. CHPs can use existing platforms that support communities of practice to gain advice from designers, technologists and other CHPs. If the opportunity arises, I recommend that CHPs try to attend events designed to encourage collaborations between designers and CHPs. From my knowledge, examples of such events include MuseumCamp, a formula that was initiated by Nina Simon in the USA. The Allard Pierson Museum in Amsterdam organised a MuseumCamp in July 2015. Moreover, The Creative Museum Project has hosted several events across Europe that encourages exchanges of ideas between designers and CHPs. While these events are designed to last 1-3 days, CHPs could also maintain partnerships with designers they engaged with during such events on the long term.

In this chapter, I highlighted the implications faced by CHPs in small museums in maintaining control of creating and integrating interactives into the activities they offer. If we consider a level of entry where CHPs can control the interpretation on interactive technology, it may be important to consider that the practice of creating a visitor experience and designing content is radically different to what these CHPs are used to. For this reason, it remains an open
question whether smaller museums in today's culture would be able to engage in these activities without support from outside experts, including designers and other museums working with interactives. Moreover, I provided recommendations for designers, technologists interested in supporting CHPs in small museums in becoming more involved in the design of interactives, based on the lessons learned from this project. I also provided suggestions for CHPs in small museums who want to integrate interactive technology.

Through the last three chapters, I have discussed the practices of CHPs in creating and adapting museum activities. Furthermore, I examined their journey in choosing and creating content for an interactive technology to support a self-guided tour of the museum. In the next chapter, I will summarise the results presented in these chapters and discuss the extent of which the research question raised in the introduction of this thesis was answered.
7 Conclusions

7.1 Introduction

In this thesis, I have investigated how CHPs in a small museum respond to the growing role digital technology plays in their practices. In doing so, I have identified the implications and challenges these CHPs are facing. Responding to findings from my empirical work, in Chapters 4, 5, and 6 I have detailed considerations that should be taken into account to support CHPs’ evolving practices. Here, I summarise my findings with respect to the contributions I aimed to make. Furthermore, I reflect on how this work can be extended and revisited in future.

In Chapter 1, I presented the research question that guided my research:

What are the practices of CHPs in small museums in preparing, creating and adapting museum activities, and how do digital technologies mediate those practices?

I proposed this research question in response to gaps in literature detailed in Chapter 2, mainly to do with the need to investigate how CHPs respond to the increasing role digital technologies play in their practices in preparing, creating and adapting museum activities. Growing access to digital technology enables CHPs to integrate interactive technologies without the need for specialised technical knowledge (Petrelli et al. 2013; Koleva et al. 2009; Ghiani et al. 2009; Simeone and Ardito 2011). However, the existing literature only peripherally discusses CHPs’ involvement in creating and integrating interactive technology. In HCI, CHPs are sometimes consulted as informants of design (Ferris et al. 2004; Petrelli and Not 2005). In co-design, they may make decisions in the design process. However, the overall design of intended visitor experiences,
including the methods used to create them, are often chosen or defined by the researcher (Taxén 2004; Bossen et al. 2012). Therefore, there is little known about how CHPs approach their emerging role in integrating interactive technologies as interpretive aids.

To address this gap, I formulated the following objectives:

- *Within a small museum, detail the practices of CHPs in preparing, creating and adapting museum activities;*
- *Analyse the role that digital technology plays in these practices;*
- *Analyse the potential for these CHPs in shaping and integrating an interactive technology to support a museum activity; and*
- *Document the opportunities and challenges that arise due to the evolving role of digital technologies in their practices.*

To address these, I combined the approaches of ethnography and action research; these practice-focused approaches enabled me to gain rich insights into the CHPs’ practices and their evolving participation in integrating an interactive device.

### 7.2 Contributions

In the following sections, I describe the main contributions of this thesis. While I divided these contributions into categories, they are related to one another; I identified these in an investigation dedicated to gain better understandings on how CHPs practices in preparing, creating and adapting museum activities are mediated by digital technology in a small museum. Together, they suggest that it is not a straightforward process to involve CHPs in the integrating of interactive technologies. This research also suggested that lowering the technological barriers associated with creating content for and integrating interactive technologies is important. However, the implications raised in this thesis also suggest that further attention should be given to assisting CHPs in designing for and integrating interactive technologies as interpretive aids. The
goal of this thesis was to provide rich insights into these implications; however, in the following sections, I will provide a simplified synopsis of these contributions.

7.2.1 Understanding of Cultural Heritage Professionals’ Practices as the Role Digital Technology Plays in These Practices Evolves

While there is an increase in the availability of digital technology to support CHPs practices, their practices are seldom investigated in depth. Most HCI research in this area begins with the broad assumption that CHPs are experts in interpretation and museum conservation (Karoulis et al. 2006; Simeone and Ardito 2011; Ghiani et al. 2009; Koleva et al. 2009). In Chapter 4, I presented the practices of CHPs in the Education Department at The Hunt Museum in preparing, creating and adapting museum activities. The findings show that there are no specific guidelines to follow when creating and adapting activities; the way in which these CHPs approach their role is often driven by the motivations, multicultural and multidisciplinary backgrounds of the CHPs. The process of creating and adapting museum activities is also collaborative, involving particularly those CHPs with expert knowledge on the collection and visitor base. These findings suggest that the practices of CHPs in small museums may not be clear cut as the expectations gathered from job specifications. As in this case, there may even be nuances in these practices within institutions. Therefore, I argue that further studies of CHPs practices in other small museums need to be conducted to gain deeper understandings of the complexities of their practices.

Although there is a growing interesting in designing tools to support CHPs in becoming more involved in integrating interactive technology (Ghiani et al. 2009; Simeone and Ardito 2011), little research focuses on CHPs’ viewpoints toward using digital technology. There is some literature in cultural heritage that provides insights into CHPs attitudes toward using digital technology (Marty 2006b; Duff et al. 2009). However, the findings in this thesis provide rich details on the concerns and issues that CHPs have toward using these
technologies. Moreover, the findings of my research suggest that it is difficult to determine the level of technical comfort or skill CHPs may have. In this case, the CHPs had diverse viewpoints toward using ICT as part of their work. While some CHPs demonstrated motivation in using complex tools, other CHPs showed discomfort toward these technologies. For the CHPs, much of this discomfort spawned from the perception that using technology increased the possibility of making mistakes. Other CHPs highlighted that using basic tools was efficient for their purposes. For these CHPs, this was their main concern when deciding to use a tool - that it would be a good fit for their goals.

Regardless of their comfort level, the CHPs regularly appointed me as someone who could help them in learning new tools. Reflecting on my emerging role prompted me to believe that there was a need to assist CHPs in grasping tools that would support their role in creating content for new interactive technologies. In approaching my position as a designer, I ensured to consider the viewpoints of those less comfortable with digital technology when suggesting tools. However, I also kept these options open in consideration of those CHPs more comfortable with technology.

Moreover, the findings suggested the need for CHPs to understand how technology can support the intended visitor experience. For the CHPs, creating narratives for and integrating new technology required a detailed analysis of how those technologies can support their interpretation goals. Their considerations toward integrating technology are similar to those of researchers in HCI and cultural heritage, who warn against misuse of technology and the need to understand how technology can support interpretation (Sola 1997; Parry 2005; Vom Lehn and Heath 2005). However, these concerns raise potential implications for CHPs in small museums when choosing to integrate technology as a means to engage visitors. For instance, they may be choosing to integrate interactive technologies that are unfamiliar to them; for this reason, they may not fully realise the potential of these tools in supporting their interpretive goals from the onset. Thus, I took these
considerations into account when involving these CHPs in integrating a particular interactive technology: The Loupe.

7.2.2 The Cultural Heritage Professionals’ Contribution to the Integration of Interactive Technologies

Since relatively little research has investigated the involvement of CHPs in creating and integrating interactive technologies, little is known about how CHPs want to contribute to this process. The data presented in Chapters 5 and 6 suggest that enabling CHPs to have control over the creation of the interpretive content for interactive technologies is a desirable feature. The CHPs frequently stated that control of the interpretive content should be with the museum as they felt that they were more aware of the messages to be communicated than any other expert outside of the museum. Their concerns for outsourcing are similar to those of Caulton (1998) and Lord and Piacente (2014).

Moreover, the data showed the importance for CHPs to understand that a chosen technology and its associated behaviours can affect the presentation of the intended narrative. In chapters 5 and 6, I highlighted that the CHPs initially had limited understanding of what The Loupe could do to support their interpretive goals. Their limited understanding resulted in reusing an existing tour and content rather than generating an entirely new idea. It was through experience and experimenting with the device that the CHPs realised that the narrative needed to be presented differently on this medium. This process required shaping existing (and creating new) content. This finding suggests that experiment is important as recommended in other literature (McDermott et al. 2013; Stuedahl and Smørdal 2015). However, It appeared that, when the CHPs developed strategies for integrating the behaviour of the interactive device into the story, they were more confident in what their next steps should be to incorporate the interactive technology as an interpretive aid. Therefore, when CHPs choose to integrate a particular interactive technology, they need to understand that they are also choosing an aspect of the intended
experience that they aim to design. Predominantly in situations where CHPs do not have the resources to modify behaviours, like the CHPs at The Hunt Museum, it appears that having some understanding when choosing to integrate technology is important.

If CHPs do not have the expertise to modify behaviours of interactive technology, this may also affect their role in controlling the interpretive content. As noted in Chapter 6, it appeared that the CHPs were attracted to The Loupe as it presented their museum as innovative; this verifies findings from other researchers regarding the expectations of small museums with digital technology (McDermott et al. 2013; Maye et al. 2014). They were adamant to ensure that the content provided on The Loupe reflected the high standard seen on interactives in larger museums. Further, it appeared that the CHPs faced challenges forming content for a device with predefined behaviours. In some cases, these behaviours could be a distraction rather than an aid to the story. For example, the tilting gestures on The Loupe are used to move from one screen of content to another. While technically this option enabled the CHPs to add more content for each object, the CHPs were concerned that consistently using the tilting gestures would distract the visitors from the tour. Therefore, the CHPs considered placing additional effort on designing dynamic content, such as animations, to overcome these limitations. Nonetheless, the fact that CHPs can change the content provides flexibility to gain this expertise and alter the content later.

7.2.3 Supporting Cultural Heritage Professionals in Creating Content for and Integrating Interactive Technologies

To maintain control over the interpretive content requires tackling the discomfort toward using digital technology. For the most part, suggesting the use of basic ICT tools like PowerPoint and Google Slides aided CHPs in dealing with their concerns toward using ICT. However, some CHPs wanted also to include those with the most expertise on the museum and its collection – the docents – in creating the interpretive content. Nonetheless, their lack of comfort
approaching tools similar to Google Slides hinders their direct involvement in creating content for the interactive technology. While it is not possible to include CHPs with no interest in being directly involved, it could be feasible to help those with interest to face their discomfort with technology. An example could include providing training events to help CHPs grasp these basic tools to build their confidence.

Based on findings from Chapters 4, 5 and 6, I argue that, if CHPs in small museums want to integrate interactive technologies, they need to build the skills required to create content for and integrate interactive technologies as interpretive tools. On the onset, They may not be adequately aware of what the interactive can do to support the narrative they are trying to portray. However, I believe that CHPs in small museums could benefit from support from designers and technologists to understand the potential of interactive technologies as interpretive tools. Designers and technologists could aid CHPs in understanding what technology can do for them by encouraging them to simulate a potential museum activity incorporating those interactive technologies.

I believe those designing templates provided on toolkits could facilitate CHPs in deciding what interactive technology is appropriate for their goals. While it may be impossible (and also unwise) to predefine what kind of experiences different interactive technologies can support, showing examples could help CHPs analyse if they are useful to serve their interpretive goals. These examples could show them in use as part of a real use-case in another museum; moreover, they should also demonstrate how the device’s behaviour aids the story in some way. While this support may be useful, I recommend that CHPs are aware that integrating interactive technology requires a great deal of time and dedication.

Furthermore, I argue that support is also helpful to guide CHPs in presenting content for different interactive technologies. In Chapter 5, I described how I designed and evolved a template in PowerPoint to enable CHPs in taking
control of the interpretive content. For the most part, this template served its purpose in assisting CHPs less comfortable with using technology. However, as noted in Chapter 6, the CHPs often felt they were moving outside of their area of expertise; they commented that were often focusing heavily on the design layout rather than getting the interpretive content right. I recommended that designers and technologists working with museums in similar projects could help guide CHPs in forming good design practices for presenting narratives on different interactive technologies.

While having a designer is beneficial for CHPs embracing new technologies, my findings also reveal a potential for providing inter-museum support. The CHPs felt that exchanging feedback and sharing doubts and challenges with other museums was necessary in order to help new museums integrate new technologies to support visitor interpretation. In Chapter 6, I described how designers of online platforms that support communities of practice could facilitate this. I recommended these platforms could provide a filtering feature, which enables CHPs to communicate directly with particular groups of CHPs, or even other designers and technologists. Using such platforms, CHPs may be able to learn from each other by sharing their experiences of integrating interactive technologies to support visitor interpretation.

7.2.4 Who Could Benefit From These Contributions?

The findings presented in this thesis contribute to the field of HCI specifically in the domain of cultural heritage. In Chapter 6, I provided recommendations for 1) designers and students supporting technology adoption in small museums and 2) HCI researchers and designers involved in the creation of toolkits that support CHPs in small museums to integrate interactive technology. Moreover, while these findings do not contribute design solutions for a particular technological artefact, they raise relevant issues when considering the possibility of involving CHPs in the creation and integration of interactive technologies.
In Chapter 6, I suggested ways in which designers and technologists could support CHPs could in integrating interactive technology as interpretive aids. Designers of templates on toolkits could provide examples that explicitly show CHPs the possibility that different interactive technologies and their associated behaviours provide for the story. Designers partnering with small museums could suggest good practices for presenting content on various interactive devices and aid CHPs in experimenting with these tools. Designers of online platforms that support communities of practice could encourage inter-museum communication that enables CHPs to share challenges, guidelines and concerns with relation to integrating interactive technologies as interpretive tools. For designers interested in technology adoption in small museums, they can use these findings to investigate if the provision of such support can be helpful for CHPs. For designers and practitioners, these findings may be useful if considered in the design of future toolkits and technologies for cultural heritage.

7.3 Summary of Conclusions

The contributions raised in this thesis were a direct result of investigating in-depth the research question proposed. The summaries I presented earlier in this chapter and the detailed data presentation and analysis in Chapters 4, 5 and 6 provide a rich picture of the practices, challenges, and strategies put in place by CHPs when integrating digital technologies into their activities. Therefore, I believe that the research question that I have set out to investigate has been answered. To address this question, I proposed four research objectives. Referencing the first objective, (Within a small museum, detail the practices of CHPs in preparing, creating and adapting museum activities), I have identified the nuances of the practices of CHPs in the Education Department at The Hunt Museum. I illustrated that how they approach their role in preparing, creating and adapting museum activities is influenced by their multicultural and multidisciplinary backgrounds.
With relation to the second objective, *(Analyse the role that digital technology plays in these practices)*, I have demonstrated how the CHPs responded differently toward using ICT tools in the Education Department. The CHPs often highlighted that using basic tools was preferable; however, there were some cases where CHPs had the motivation to use more complex tools. When choosing to use digital technology to engage visitors, I further revealed that they place a lot of attention on how those tools can support visitor interpretation. The considerations that resulted from addressing the first two objectives are summarised in section 7.2.1.

Referring to the third objective *(Analyse the potential for these CHPs in creating and modifying an interactive technology to support a museum activity)*, I have identified that the CHPs were adamant to maintain control of the interpretive content. Moreover, I presented data illustrating how the CHPs developed strategies for integrating an interactive device to support a guided tour through experience using it. The findings suggested the importance of understanding how the medium, and the associated behaviours, can complement the narrative (see Chapters 5 and 6). In addressing the final objective *(Document the opportunities and challenges that arise due to the evolving role of digital technologies in their practices)*, I have presented data highlighting how the CHPs often felt they were moving outside their area of expertise to integrate an interactive technology. For instance, the CHPs were uncertain of their role in designing the content: they found difficulties in making the design look appealing. While outsourcing the design would make the design look better aesthetically, the CHPs were nonetheless attracted to the flexibility that having control of the content presents. In saying that, I recommended that designers and technologists could support CHPs in maintaining their role integrating interactive technologies as interpretive aids, as highlighted in Chapter 6.
7.4 Reflections

7.4.1 On the Legacy of the Project at The Hunt Museum

As described in Chapter 1, The Hunt Museum has been open to experimentation with new interactive technologies for well over a decade; for example, the museum has been involved in designing and hosting the “Re-Tracing the Past” exhibition (Ferris et al. 2004). It has also partnered with various other HCI researchers, students and designers to design and integrate interactive technologies to support visitor engagement with their objects as part of smaller projects. High staff turnover at the museum has meant that these experiments have not necessarily had a strong long-term legacy. Furthermore, the museum itself had little experience being heavily involved in the design of these interactives; these were built by HCI researchers and designers, albeit in consultation with museum staff. At the conclusion of my project, the Hunt museum received an interactive technology and artifacts that CHPs can reuse for different scenarios and purposes. Therefore, it is important to reflect on the long-term impact that this project may have on the museum; this may be useful for other postgraduate students, designers, and technologists who choose to partner with this museum on similar digital projects.

From the beginning of my research, the CHPs at The Hunt Museum had concerns about integrating the interactive technology; they were adamant that the tools they integrated were appropriate in supporting visitor engagement. These concerns remained important throughout the CHPs’ participation in the project. However, their heavy involvement in creating and integrating the interactive device has shaped their viewpoints toward technology adoption in this museum; in particular, the CHPs noted the efforts required to integrate technology to address their interpretation goals and the challenges involved in keeping up with expectations. The CHPs developed strategies and skills through experimentation that could be useful for the future reuse of this interactive technology or even for integrating new technologies. Examples include methods for simulating and imagining how a narrative is portrayed to
visitors using interactive technology; issues to consider for maintaining connections with authentic artefacts; and approaches to design and present content on The Loupe small screen. Moreover, the museum has also been able to identify skills that should be developed (for example, the need to ensure that the content is aesthetically pleasing and presented well) to maintain this device and possibly integrate new ones in the future.

Ideally, there should be a system put in place in the museum to ensure that these skills and strategies are not forgotten beyond the scope of this project. However, the primary challenge in implementing this system is the transient nature of the CHPs work in The Hunt Museum. Indeed, the CHPs and designers could keep a written record of the skills and knowledge gathered and provide access to the archives of previous projects that involved integrating interactive technology. It could also be beneficial for the CHPs to access video and written resources provided by digital heritage practitioners on platforms such as eCultObservatory or Museum Computer Group to develop new inspirations. However, particularly in such a dynamic environment, the museum could dedicate some time to experiment with the interactive technologies acquired; I feel this is important to keep up to date with existing strategies for maintaining new technologies and to develop new skills.

Designers, technologists, HCI researchers and postgraduate students could also help CHPs building new skills for integrating interactive technology into their activities. They could help facilitate regular training sessions (at least twice a year, for example) to keep the CHPs up to date with these skills. Moreover, this training could help CHPs think about new possibilities that The Loupe technology, or new/other technologies, can offer. Training should also include periods for experimenting with software for designing content, which may include conventional technologies such as PowerPoint. The training could be geared toward the CHPs in The Education Department, including the interns and the Curator of Education and Outreach. However, the training sessions could also be open to other CHPs who wish to participate, including docents or the CHPs working in The Care of Collections and Exhibitions Department. The
idea is to provide CHPs with a safe, yet realistic, environment for experimenting and exploring with what technology can offer. A recommendation for training in museums resonates with other literature (Duff et al. 2009).

I suggest that CHPs and designers take some time before these training sessions commence to build a relationship and formulate a training plan that is appropriate for all parties involved. While this may take time, I feel it is important to start building mutual understandings between the team members. From the knowledge gathered here, I recommend that the designer, technologist or postgraduate student facilitating the training session allocate some time to uncover what topics need to be covered in the training session. Ideally, these training sessions should take place in the museum, where the CHPs can simulate or experiment with the concepts they had created in situ.

While participant observation during planned meetings was appropriate for my project, it may not be the case for other designers and technologists partnering with the museum. Before commencing any research or commercial collaboration, I believe HCI researchers and/or designers could dedicate some time to formulate a plan of action for the project alongside the CHPs. During this period, designers could discuss with the CHPs the preliminary plans they have for collecting data during the project. I suggest that designers keep their research plans flexible, in case these methods and techniques for gathering data need to be changed in response to concerns raised by the CHPs.

If the collaboration is part of a long-term project. I recommend designers, technologists or postgraduate students partnering with the museum to take time in building and maintaining a relationship with the museum. If the resources are available, I believe they could do this regularly as new CHPs enter the museum. During these times, designers could learn about the CHPs’ current understandings and skills toward integrating interactive technology in the museum and whether they have any prior experience in this direction. However, one limitation of maintaining this relationship is it is time and
resource intensive; therefore, those partnering with the museum will need to identify if this approach is necessary for their plans.

The CHPs at The Hunt Museum could set up an internship dedicated to training and supporting other CHPs integrating technology. The internship could commence by demonstrating what digital projects are currently running in the museum. Where possible, the intern could test an interactive technology that is available at the museum. The intern could communicate with the CHPs in the museum to learn about their interest in becoming involved in creating interactive museum activities; their attitudes toward using digital technology; and what experience they have of being involved in these projects. Furthermore, the intern could be responsible for hosting workshops to discuss ideas for integrating new interactive technology or re-using an existing one in the museum (for example, The Loupe). If the workshop involves discussions on integrating new technology, the intern could encourage the CHPs to create a low-fidelity prototype that represents the technology they have in mind. The intern could then invite them to simulate how it would aid visitor interpretation in the museum. If the idea is to re-use technology, the intern could devise low-fidelity prototypes to provoke experimentation and discussion. This intern could be responsible for ensuring that low-cost, everyday technologies are available for creating content; creating templates that the CHPs could re-use on different interactive technologies; and creating any complex content that the museum requires.

7.4.2 Final Remarks and Future Work
Due to the scope of this research, which was focused on a particular small museum, I acknowledge that generalisation of the findings is difficult. Particularly, since I chose to combine ethnography and action research to frame my research approach, the findings detailed in this thesis are very specific to the context (Atkinson 2001; Herr and Anderson 2005). As mentioned in Chapter 2, there are many different kinds of museums with diverse goals; therefore, the experiences may be different from one museum to the next.
Nonetheless, I believe that the findings presented here could be transferred –to some extent– to relate to CHPs in other small museums or CHPs with limited experience integrating interactive devices. For instance, many small, collection-based museums do not have access to a dedicated IT team in-house (Ambrose and Paine 2012; Murphy 2014). Particularly for CHPs with limited experience in integrating interactives, it is possible that they may face similar challenges to those described in this thesis: for example, in designing content for, or presenting, various narratives on different interactive devices. In these cases, these CHPs could benefit from solutions that aid them in addressing their interpretive goals. My findings from working at The Hunt Museum also resonate with the experiences that my colleagues and I encountered working with other small museums as part of the meSch project, and this further suggests that the contributions of this thesis are transferable within the domain.

In addition, I believe HCI as a field could benefit from these nuanced understandings of CHPs as integrating and using digital technologies becomes more embedded in their practices. For instance, this thesis raised a number of recommendations for designers that, if considered to inform design solutions or multi-disciplinary collaborations to assist CHPs in integrating new interactive technologies, could be beneficial for other small museums. I also believe there is a need to investigate further how CHPs in other museums respond as the role of digital technologies increases in their practices in preparing and creating museum activities. This research has identified implications of involving CHPs in designing for and integrating interactive technologies seldom discussed in HCI; therefore, I believe it is worth investigating if similar issues emerge or if other implications surface that are worth considering, as CHPs’ role in integrating interactive technologies continues to grow.

In addition to small museums, I believe it is worth investigating to what extent the considerations raised in this thesis may be witnessed in other kinds of
museums, for example, outdoor museums and science centres - as discussed in Chapter 2 of this thesis. For instance, science museums have different broad learning objectives to small, collection-based museums and also have more experience integrating interactive technologies (Caulton 1998). Fleck et al. (2002) describe a case of integrating portable interactive technologies at The Exploratorium, a science museum located in San Francisco. While this case study does not highlight the CHPs’ perspective on integrating these devices, it does reveal that the hands-on nature of the museum has an effect on how the device is implemented. Since the setup of the museum also encourages hands-on engagement, the authors argue that this should be taken into account when integrating interactives, to ensure they do not distract from this hands-on experience. Therefore, the experiences, implications and requirements for integrating interactive technologies in science museums may be different. These issues fall out of the scope of this thesis; however, I do hope to investigate these in future research. Moreover, I hope to examine if the considerations for supporting CHPs in creating content for and integrating interactive devices are also reflective of these settings.

Besides the fact that I focused on one small museum, I also chose to investigate how the CHPs integrated a particular interactive technology – The Loupe – and their approaches to doing so. For this reason, questions remain as to whether different implications emerge when integrating other interactive technologies that are designed to present content in a variety of ways. For example, The Way Detector (another portable meSch technology described in Chapter 5) unfolds narratives in a different way. When a visitor places this device on a reader, it reveals content on an external screen or projection surface (Ciolfi et al. 2016). The presentation of the narrative differs The Loupe, as the content is displayed on the screen on the device. Since the content is presented differently on each of these devices, it may also reveal different implications that need to be considered when involving CHPs in integrating interactive technologies. For instance, installing technology in the gallery requires thinking about placement to ensure that it does not interfere with the museum’s interpretive layout and
ethos. For future investigations, it would be interesting to examine if new challenges emerge if different interactive technologies are used to tell the story.

Moreover, the CHPs chose to focus on a particular kind of narrative experience: that of a guided tour. Research in HCI and cultural heritage has indicated the challenges of integrating technology in supporting different types of experiences: for example, games (Klopfer et al. 2005) and interactive digital labels (Gammon and Burch 2008). Indeed, it is possible that from a broad perspective, the implications facing CHPs in both forming the visitor experience and creating digital content for an interactive device may be similar. However, it remains an open question as to how CHPs respond to integrating technologies in support of other kinds of experiences, especially as the considerations in doing so are rather different.

While the CHPs in this case study had control over the visitor experience and were in charge of creating the content, they did not have the opportunity to use the meSch toolkit to upload content. The development and testing of the kit took longer than initially planned and there were fixed deadlines to meet the requirements of one of the funding bodies for my doctoral project - Irish Design 2015. In future research, I aim to examine how the CHPs from The Hunt Museum respond to using the meSch toolkit to add content and (potentially) configure behaviours on the interactive device. An issue I am particularly interested in here is whether their experience with using the toolkit would affect their viewpoints toward being in control and developing new skills, and to what extent they wish to have control.

Overall, I believe that the findings presented in this thesis advance HCI’s understanding of the application of digital technology in the cultural heritage domain. It highlights how CHPs respond to the evolving role of digital technology in their practice, an issue that has seldom been investigated in HCI research.
8 References


Appendix A: Sample Research Documents (Phase 1)
Information Sheet: Observations (Appendix A/1)

Dear Participant,

I am part of a research project, entitled “Material EncounterS with digital Cultural Heritage” (meSch). The purpose of the overall project is to devise a platform for cultural heritage professionals to successfully link digital cross-media with relevant physical materials, without the need of specialised technical knowledge. The aim of this observation study is gain insights into the practices museum professionals undertake when planning, co-ordinating and reflecting upon museum education and exhibition activities.

The observation study will take place between July and December 2014. The study will take place at the Hunt Museum. Periods of the observation study may be photographed and video recorded. Furthermore, the video recording may have a corresponding audio-recorded track. The purpose of the video recordings is to gain in depth understanding of how museum personnel plan and reflect upon museum activities. However, should participants feel uncomfortable, they may request recording equipment to be turned off. There are no foreseeable risks in taking part in this study. All real names will be replaced with pseudonyms from the beginning of the study, and all data collected will be anonymised.

Thank you for taking part in our research. The data collected will provide useful information for gaining further in-depth insights of museum personnel. Your participation in this study is voluntary and you have the right to withdraw from this study at any time.

If you are not satisfied with the manner in which this study is conducted, you may report any concerns to Dr. Gabriela Avram or the Chair of the Science and Engineering Research Ethics Committee, Dr. Thomas Waldmann; both of these contacts are provided below.
Yours Sincerely,

(The meSch team at the University of Limerick)
Researcher:
Dr. Gabriela Avram, Laura Maye
e-mail: Gabriela.Avram@ul.ie e-mail: Laura.Maye@ul.ie
phone: +353 61 20 2782

Chair of Science &Engineering Research Ethics Committee:
Dr. Thomas Waldmann,
e-mail: Thomas.waldmann@ul.ie,
phone: +353 61 20 2802
Consent Form: Observations (Appendix A/2)

Consent Section:

I, the undersigned, declare that I am willing to take part in research for the project entitled “Material EncounterS with digital Cultural Heritage (meSch)”.

• I declare that I have been fully briefed on the nature of this study and my role in it and have been given the opportunity to ask questions before agreeing to participate.
• The nature of my participation has been explained to me and I have full knowledge of how the information collected will be used.
• I am also aware that my participation in this study may be photographed and video recorded with a corresponding audio-recorded track and I agree to this. However, should I feel uncomfortable at any time I can request that the recording equipment be switched off. I am entitled to copies of all recordings made and am fully informed as to what will happen to these recordings once the study is completed.
• I fully understand that there is no obligation on me to participate in this study.
• I fully understand that I am free to withdraw my participation at any time without having to explain or give a reason.
• I am also entitled to full confidentiality in terms of my participation and personal details.

______________________________________  ______________________
Signature of participant                   Date
Interview Information Sheet for Cultural Heritage Professionals (Appendix A/3)

Dear participant,

I am part of a research project, entitled “Material EncounterS with digital Cultural Heritage” (meSch). The purpose of the overall project is to devise a platform for cultural heritage professionals to successfully link digital cross-media with relevant physical materials, without the need of specialised technical knowledge. The purpose of the interviews is to gain in depth insights into how museum personnel plan, co-ordinate and reflect upon museum activities.

Each interview will take approximately less than 1 hour to complete. The interview may be completed in a location of your choice (for example, in a public space or in your office). The interview may be video recorded. The video recording may have a corresponding audio-recorded track. However, should you feel uncomfortable with this, you may request audio equipment to be turned off. The participants will remain anonymous. All real names will be replaced with pseudonyms from the beginning of the study, and all data collected will be anonymised. If you choose to participate, please answer all questions as honestly as possible.

Thank you for taking part in our research. The data collected will provide useful in depth information into the practices of museum personnel in conducting particular museum activities. You have the right to not answer specific questions. Your participation in this study is voluntary and you have the right to withdraw from this study at any time.

If you are not satisfied with the manner in which this study is conducted, you may report any concerns to Dr. Gabriela Avram or the Chair of the Science and Engineering Research Ethics Committee, Dr. Thomas Waldmann; both of these contacts are provided below.
Yours Sincerely,
____________________

(the meSch project team at the University of Limerick)

Researchers:
Dr. Gabriela Avram, Laura Maye
e-mail: Gabriela.Avram@ul.ie Laura.Maye@ul.ie
phone: +353 61 20 2782

Chair of Science & Engineering Research Ethics Committee:
Dr. Thomas Waldmann,
e-mail:
phone: +353 61 20 2802
**Consent Form (Appendix A/4)**

Consent Section:

I, the undersigned, declare that I am willing to take part in research for the project entitled “Material EncounterS with digital Cultural Heritage (meSch)”.

- I declare that I have been fully briefed on the nature of this study and my role in it and have been given the opportunity to ask questions before agreeing to participate.
- The nature of my participation has been explained to me and I have full knowledge of how the information collected will be used.
- I am also aware that my participation in this study may be video recorded with a corresponding audio-recorded track and I agree to this. However, should I feel uncomfortable at any time I can request that the recording equipment be switched off. I am entitled to copies of all recordings made and am fully informed as to what will happen to these recordings once the study is completed.
- I fully understand that there is no obligation on me to participate in this study.
- I fully understand that I am free to withdraw my participation at any time without having to explain or give a reason.
- I am also entitled to full confidentiality in terms of my participation and personal details.

____________________________________  ______________________
Signature of participant                   Date
Interview Guide with Cultural Heritage Professionals

(Appendix A/5)

Introduction and purpose of the interview
Introduction information includes information about:
- The project (meSch) and about my PhD
- The information I am trying to gather for this interview and why it will be useful for my PhD thesis
- Consent form and information sheet
- Also need to ask the CHP how much time he/she has available

Introductions and overview:
Questions include....

What are your education, experience and training backgrounds?

Have you any experience working in other museums to the Hunt Museum?
- If so, what was your role and activities in these museums? Or any other project/activity in those museums?
- What words or descriptions would you use to describe the role/activities you were responsible for there?
- Are your focuses different here than they were in your previous roles?

What were your expectations when you began your internship at the Hunt Museum?

What were your first impressions when you began working in the museum?

Do you remember at all what your feelings were when you began working here?

What activities have you been involved in since you began your internship here? What is your favourite part about working in the museum so far?
What words, or short descriptions, would you use to describe:
- The work you have been involved in so far?
- The collection at the Hunt Museum and the experience visitors get here?

Is there any specific activity at the museum that appeals to you the most in the museum? Why is this?

How were you trained when you first came into the museum?

What are your main roles in the museum?

About specific activities the CHP is working on

Introduction:
Can you give me a brief description of a specific activity that you were or are currently working on?
- What was it about, and what is the goal and purpose of this activity?
- What were the themes of the activity, and who was/is responsible for choosing this?
- What was your goal of this activity? Why?

Is the creation of the activity complete?
- If so, has it been delivered yet? When had it been delivered?
- Is it a one-off activity, or is it something that is on-going?
- If not, when is it planned to be delivered or complete?

Who formed the idea for this activity (Curator/another intern/you)?

What was your main role in the activity and what decisions were you responsible for making? Who decided what role you should take in the activity?

Involvement and planning:
What were your reactions to working on this activity initially?

When did you start planning for the activity?

Were you given any guidelines to follow to work on this activity? For instance, how to approach it?
- If so, what were these guidelines?

Was there a timeline for when specific tasks had to be completed?
- If so, can you give me a brief description?

Did you collaborate with anyone while working on the activity? If so, who were they and what was their role(s)?
Did you receive any training to work on this activity in the museum?
- If not, had you been trained before or had experience before? For example in another museum or as part of a course?
- If not, how did you adjust to working on this activity?

Have you ever had to train anyone else to work on this type of activity? If so:
- If not, did you have to train anyone else to work with any particular activity?
- How did you feel about that?
- How did you approach that?

How was the content for the activity? For example, objects chosen for a museum activity, or people for a lecture/talk?
- Who was responsible for choosing this content?

What key resources did you use in forming this activity?
- Was there any resource that you found specifically helpful? I
- If so, what was it and why?

Technology related (regarding museum activities):
What kinds of software do you generally use, if any, in your office and what are they usually used for?

Were you trained on how to use that software? If not, how did you learn? How did you find adapting to using the software?

Did you use any digital technologies to assist you in forming this activity? For example, the content
- If so, what were these technologies?
- Did you feel you could adapt to using them easily?

Did you receive any training for using these technologies at any stage during your internship?

What is your comfort level with technology? How did you feel working with specific technologies in the museum?

Intern ‘how to’ and training resources
Have you ever used the intern how to resources before? If so, what have you used them for? If not, why?

What kind of ‘how to’ resources are available in this folder, do you know?

Concluding the activity questions:
What was the most challenging task that you have been involved in and why do you feel that way?

What was your favourite part about working on the activity?

What were/are the main challenges with this activity? How did you overcome those challenges?

If you were to approach this activity again, would you do it differently?

How does your experience working at the Hunt Museum compare with:
- Your experience in other museums (if worked in a museum before); or
- To your expectations (if never worked in a museum)?

From any of these activities that you have described, do you feel that you have obtained any new skills that may beneficial for you later, whatever that may be? If so, what are they, and why do you feel they would be of benefit?

Are you planning on working on any other activities in the museum in the future?
Appendix B: Table of Participants (Phase 1 and Phase 2)
# Table of Participants (Appendix B/1)

<table>
<thead>
<tr>
<th></th>
<th>Name</th>
<th>Role</th>
<th>Phase 1</th>
<th>Phase 2</th>
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<th>Reflection</th>
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<td>Observation</td>
<td>Role</td>
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<td>Yes</td>
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## Education

## Docents

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Appendix C: Sample Research Documents (Phase 2)
Dear Participant,

My name is Laura Maye and I am currently undertaking a PhD and Research Project at the University of Limerick under the supervision of Gabriela Avram. The title of my proposed research is ‘Exploring Interactive Digital Technologies and Toolkits in the Design of Museum Activities’. As part of this study, I aim to observe the evolution of the design of a personalized tour due to take place in the museum that incorporates a museum interactive. This research is supported by “Material EncounterS with digital Cultural Heritage” (meSch). The purpose of the overall project is to devise a platform for cultural heritage professionals to successfully link digital cross-media with relevant physical materials, without the need of specialised technical knowledge.

The observations will take place during periods of the planning, design, delivery and reflection stages of the museum activity (October 2014 – January 2016). The observations will take place during pre-planned meetings at The Hunt Museum. The study will take place at the Hunt Museum. Periods of the observations may be audio recorded and photographed. However, should participants feel uncomfortable, they may request recording equipment to be turned off. There are no foreseeable risks in taking part in this study. All real names will be replaced with pseudonyms from the beginning of the study, and all data collected online will be anonymised.

Thank you for taking part in this research. The data collected will provide useful information for understanding the role digital, interactive technologies play in the design of museum activities. Your participation in this study is voluntary and you have the right to withdraw from this study at any time.
If you have further questions regarding this research please feel free to get in touch with either myself or my supervisor using the email addresses listed below. If you have concerns about this study and wish to contact someone independent, you may contact: The Chair, Faculty of Science & Engineering Research Ethics Committee, University of Limerick, Limerick. Tel: 061 202802.

Yours sincerely,
Laura Maye
Email: Laura.Maye@ul.ie

Gabriela Avram
Email: Gabriela.Avram@ul.ie
phone: +353 61 20 2782
Dear Participant,

My name is Laura Maye and I am currently undertaking a PhD and Research Project at the University of Limerick under the supervision of Gabriela Avram. The title of my proposed research is ‘Exploring Interactive Digital Technologies and Toolkits in the Design of Museum Activities’. As part of this study, I observed the evolution of a personalized tour, which was shaped to be delivered by a guiding device. As you were involved in creating and/or shaping this tour, this interview aims to reflect upon your experiences. This research is supported by “Material EncounterS with digital Cultural Heritage” (meSch). The purpose of the overall project is to devise a platform for cultural heritage professionals to successfully link digital cross-media with relevant physical materials, without the need of specialised technical knowledge. The project is also supported by Irish Design (ID) 2015; ID 2015 is an initiative for exploring, promoting and celebrating Irish Design.

The interview should not take more than 1 hour to complete. It will take place at a location of your choice (for example, your office or a café). The interview may be audio recorded. However, should participants feel uncomfortable, they may request recording equipment to be turned off. There are no foreseeable risks in taking part in this study. All real names will be replaced with pseudonyms from the beginning of the study, and all data collected online will be anonymised.

Thank you for taking part in this research. The data collected will provide useful information for understanding the role novel digital, interactive technologies play in the practice of creating museum activities. Your participation in this study is voluntary and you have the right to withdraw from this study at any time.
If you have further questions regarding this research please feel free to get in touch with either myself or my supervisor using the email addresses listed below. If you have concerns about this study and wish to contact someone independent, you may contact: The Chair, Faculty of Science & Engineering Research Ethics Committee, University of Limerick, Limerick. Tel: 061 202802.

Yours sincerely,
Laura Maye      Gabriela Avram
Email: Laura.Maye@ul.ie  Email: Gabriela.Avram@ul.ie
phone: +353 61 20 2782
Consent Form (Appendix C/3)

Consent Section:
I, the undersigned, declare that I am willing to take part in research for the project entitled "Material EncounterS with Digital Cultural Heritage", which supports the PhD research: “Exploring Interactive Digital Technologies in the Design of Museum Activities”.

• I declare that I have been fully briefed on the nature of this study and my role in it and have been given the opportunity to ask questions before agreeing to participate.
• I declare that I am between the ages of 18 and 65
• The nature of my participation has been explained to me and I have full knowledge of how the information collected will be used.
• I am also aware that my participation in this study may be recorded (audio) and I agree to this. However, should I feel uncomfortable at any time I can request that the recording equipment be switched off. I am entitled to copies of transcripts of my recordings on request, the recordings will be destroyed once the study is completed.
• I fully understand that there is no obligation on me to participate in this study
• I fully understand that I am free to withdraw my participation at any time without having to explain or give a reason
• I am also entitled to full confidentiality in terms of my participation and personal details

_____________________________  _______________________
Signature of participant  Date
Reflection Interview Guide (Appendix C/4)

Perspective: CHPs directly Involved

Overview
In your opinion, what was your main role in this project?

What was your main motivation to become part of the team on the project?

What was your overall impression on being part of the project?

Have you ever been involved in creating similar activities, events or exhibitions to this one? If so, what were they and how were they similar?

If you feel they were similar, do you feel that your experience has helped you in any way here? Why/why not?

Viewpoints toward procedure and role
Content on tour
Overall, how did you feel about being in control of creating and adapting content for the Loupe?

How did you first approach modifying the content for the Loupe, and why did you feel this needed to be done?

Do you feel that there were any sources for helping you in creating/adapting the content?

What are your opinions on the content provided on The Loupe for The History of Ireland in 10 Objects tour (as it currently stands)?

For you, what were the main challenges in your role in adapting the content for the tour (in both the visitor pilot and shaping the content afterward)?

Procedure
Reflecting upon your experience designing the content layout, what were the challenges in making the content design work for The Loupe?
Did you feel that there were any challenges in making the booklet content fit for The Loupe? If so, what were these challenges?

Did you foresee any of these challenges? If not, what were your feelings when you encountered them?

Do you feel that you have addressed all of the visitor feedback to date? If not, what steps do you feel need to be further made to address this? What are your feelings toward this?

Do you feel that you did the best that you could with the content so far, and why?

**Tools**
For you, what were the benefits, if any, of using Google Drive to create the content?

Did you use any other tools in creating the content, and if so, what were these tools used for?

Did you have any challenges working with Google Drive for creating content? If so, what were they?

Would you have preferred to work with another type of software to create the content? If so, why?

How do you feel about the interns/staff/you changing content on The Loupe in the future?

**Integrating Loupe in Gallery/Tour**
Did you have any strategies for visualising the flow of the tours? If so, what were these?

Did you face any challenges in visualising the flow for the tours? If so, what were these challenges?

What responsibility did you have in setting up the tours every morning? Did you face any challenges in doing this?

What are your opinions towards the docents’ reactions toward The Loupe?

Did you see any of the visitors using The Loupe? If so, what were your impressions?

Did you see any of the receptionists handing the Loupe to any of the visitors? If so, how do you think the receptionists took to using The Loupe?

Based on your experience, do you feel that the setup of the activity was appropriate, with the receptionists handing out the Loupe, the instruction
sheet at the beginning? If not, what do you feel needs to be changed in the future?

Apart from the receptionists, do you feel anyone else will need to be trained to use the Loupe in order to implement it fully and demonstrate to visitors?

Do you foresee any challenges in doing this? If so, what are these challenges?

**Reflection and future steps**
Overall, did the Loupe tours turn out as you had expected? If not, what was different to your expectations?

Overall, what do you think worked well on The Loupe?

In terms of the procedure (of creating the content: tools, flow; and setting up the flow of the tour) what do you think worked particularly well that should be continued in the future, and why do you feel this way?

Do you feel that you have learned anything through your role in the project, in terms of preparing content and creating tours to be delivered on The Loupe?

Starting from the very beginning when you first became involved with the project, if you could have done anything differently with the tour, what would you have done and why?

Is there anything that you feel could be done (particularly with the content) to enhance the interpretive content currently provided on The Loupe?

If the museum were to implement your suggestions, what do you think the main challenges would be for other interns/curators/staff? How do you think these challenges could be addressed?

Let’s just say that another intern in the future is in a similar situation. They have a tour, which is currently provided on a booklet that they would like adapt it on The Loupe/another device similar to it. From your experience, what words of advice would you provide to them to reshape the tour for The Loupe or a similar device?
- In terms of content and kinds of content to present?
- Testing and trialling the tour?
- Software for creating content?

In your opinion, are there any challenges for the museum to create other tours for the Loupe in the future? If so, what are these challenges?

If you feel the process (i.e. role that CHP took) is appropriate, do you feel there would be any challenges in involving new interns/staff in this process? Do you have any ideas on how these challenges could be addressed?
Do you feel this that the procedure that was put in place could be something that could continue in the museum in the future? If not, what alternatives routes would you suggest?

What, in your opinion, are the next steps for developing the content for the tours?

Is there anything else you would like to add?
Sample Meeting Plan (Appendix C/5)

Date: 4 December 2014
Meeting: Discussing audiences; narrative sequence/path
Duration: 1 hour (agreed timeframe) – a longer duration if possible

Objectives of this meeting:
1. To discuss the potential challenges of creating these tours;
2. To define the audience for each theme;
3. To discuss the narrative sequence for each theme;
4. To define the visitor path for selected theme(s).

3:00 – 3:15 Discussion
What do you hope this museum activity will serve or open up for visitors to the museum? Why do you feel this way?
What, in your opinion, do you feel the biggest challenge of creating this museum activity/event will be? Why do you feel this way?
Have you ever been involved in forming or creating museum activities similar to this one? If so, how are they similar? If not, how are they different?

3:15 – 3:30 Audiences for each tour and narrative sequence
For each theme, discuss:

What is the narrative flow? E.g.:
Will objects be in a specific order (i.e. linear)? Or is it non-linear and guided by the visitor’s ideas?

How might the visitor be made aware if they are approaching an object in the tour?
3:30 – 4:00 Interactions in themes
While walking through the gallery, think broadly about what kind of things/stories you want to tell the visitor for each object.

- If you were a wizard, what would you do at each stage of the tour to open up the object or story in a meaningful way?
1. The Way Detector

Concept Description:
- A tangible museum guide that follows a hot/cold metaphor
- Designed and tested for indoor museums
- It provides tactile/touch feedback to visitors (vibrations)
- As a visitor gets closer to an object of interest, the wayfinder will vibrate faster to inform the visitor
- When placed on or near a targeted location, it can trigger sounds or visuals (like images or videos)

Short scenario in use:
Jason, a 20-year-old student, is visiting a World War I exhibition in a local museum as part of a school trip. He and his friends decide to take an interactive tour using the Wayfinder. Jason is the leader; he holds the Wayfinder and guides his friends surrounding him. As Jason approaches a Roman Soldier helmet, the Wayfinder begins to vibrate faster, but in the pattern of a faster heartbeat. The heartbeat can also be heard. Jason and his friends see visuals of world war surrounding them, with the heartbeat as an emphasising factor that they are “becoming a soldier also”.

MeSch Interactive Technologies (Appendix C/6)
2. The Plinth

Concept Description:
- Can detect the presence of visitors around an object
- Objects can be placed on it
- Information about the object can be displayed on each side of the plinth
- Can be used to display visual content (such as videos, images and text)

Short scenario in use:
Dick is visiting Amsterdam for a student exchange semester. He is on the way to one of the large local history museums which was recommended by a friend. In the museum, he enters the Egyptian exhibition room. The room is dim; however, objects are highlighted by the lamp placed above. There are no labels around but as he approaches a large label titling it as “Ramses IV.” appears on the surface in front of him. As he comes even closer a more detailed description appears in smaller font. When walking around to see it from all sides, further information is projected on the surface in front of Dick explaining details of the pieces the figure is wearing. On one side a projected arrow is pointing towards one side saying “next”. Dick takes a look in this direction and notices that another exhibit object near him is highlighted now.
3. The Belt

Concept Description:
- A museum guide that is designed to be worn
- Visitors use the cards to choose the theme they would like for their visit (shown above)
- When a visitor approaches an area of interest, an audible sound will play to attract a visitor
- Can be used to trigger audio
- After this sound has played, the visitor hears relating to the object of interest that also relates to the theme she has chosen

Short scenario in use:
A couple have decided to visit an outdoors trench related to World War 1. The couple are invited to take an interactive guided experience using the Belt; therefore, the couple decides to try it out. Maria, the wife decides to wear it. They are invited to choose a card that represents the themed experience they would like to take, for example: camp regulations, letters and diaries from the trenches, war as seen through the eyes of women, and poems. They choose letters and diaries from the trenches. When they arrive at a war hideout, an audible sound is heard to alert the visitor they have arrived at a point of interest. At this point, the visitor hears a personal letter written by a soldier that relates to that location.
4. The Loupe

Description:
- Used as a museum guide and to also display additional layers of content to enhance a museum experience
- Can be used to display visuals (including text, video, and images)
- Markers are placed around the museum; when the Loupe device is facing the marker, an animated character appears to show them the way

Short scenario in use:
Two children, Ciara and Kate, were visiting an Educational Museum as part of a family trip; there was an exhibition running dedicated to the Inuit of Greenland they want to explore. They were both given a Loupe each and given brief instructions about the tour. The Museum’s grounds were surrounded with markers that are aimed to guide the visitors to the objects. When holding the glass above markers on the floor, a polar bear or seal appeared in the magnifying glass, which served as virtual guides to the objects. The markers outside the exhibition space were only used to lead the children to the objects in the exhibition space. The markers near the objects in the exhibition space activated contextual information about the objects, which was also shown in the magnifying glass.
Appendix D: Sample Data (Phase 1)
Sample Field Diary (Appendix D/1)

Saturday 14th December 2013, All day

Excerpt from volunteering day:
I went into the museum today to help out with the last arts and crafts this year before Christmas 2013. One of the interns was in charge of the craft this time around, and it was a really nice butterfly craft. However, not many kids arrived to arts and crafts today. There were about three kids and four volunteers – the main intern, two volunteers, and I. You can never really tell how busy arts and crafts could be.

One of the volunteers was going to be in the Christmas Presence tour – this is a tour that was organised by one of the interns in the museum to celebrate Christmas. I had heard about it through the other interns and the events brochure. Though she needed someone to fill in for her and asked me if I could do it. I remember thinking to myself that I needed to build up more courage in delivering tours, so I said yes. Thankfully, I was just one character and I only had to talk about one object – the cauldron on the top floor. I was glad it was that object, particularly since there’s not much known about it anyway. The only thing I really knew about it was it was found in Ballyscullion Co. Antrim and that it wasn’t likely used for cooking, as the cauldron was so thin. The volunteer provided me with her sheet, describing her role. She told me that I was a character called Brac. Brac has a family with children. They were from the Celtic times. He was travelling forward in time to tell kids about how pagans celebrated winter, and the similarities between Christmas and how they celebrated Winter. At the end, I was told I would have to give the children a brooch if they answered a question correctly. To be honest, when I saw the script and learned of all of the things I would need to say in such a short space of time whilst also somehow linking it to the cauldron, I was a bit nervous. Especially since it was my first time alone to do this (there were other volunteers talking about other objects but I was alone at the cauldron) and I only had a few hours to prepare.

I therefore spent the next few hours looking over everything that I needed to remember about the Pagan Winter Solstice and the similarities to Christmas. I tried to highlight some meaningful things to talk about like the things they ate, so I could pretend they had once used the cauldron for cooking. Once I had finalised what I could say, I went downstairs to the Education Wing to get into my costume. I met with the other volunteers. One was a former intern and she was talking about an object in the jewellery room (I’m actually not sure which one). I was given a sword and a shawl to wear. They also gave me a few brooches to give to children at the end. The tour was happening twice. I was hoping that the second time would be easier!

I went upstairs to the top floor where the cauldron was. I stood there for a while. As my object was the second last one, I was waiting for quite a while. I think the waiting made me feel a bit more nervous; in a way, I was hoping that the kids would arrive quickly. Then they arrived. I think it was a spur of the—
moment thing, but I found it very easy to talk about the cauldron, pretending that I had travelled forward through time to talk with them about the Pagan Winter Solstice. I tried to keep it short and then ask them the question. Afterward, I gave them the brooch once they got the answer correct.

We had a short break so we went downstairs again. After about 15 minutes, I went back upstairs to the cauldron. I was less nervous this time, thinking that it would be at least a little easier having done it once. One of the interns came up to take a picture of me in the costume for the museum publication. I thought it was funny with me in the costume! Once she had taken the picture, I waited at the cauldron. Then I heard the kids arriving up. I told the same story again, and the kids seem so engaged it actually felt nice. It was really great that I could make the story a bit more playful and tell it in a way that I wanted to. Though I have to say, at first, I was very nervous!
Sample Field Notes (Appendix D/2)

Monday 25th November 2014, 3:30pm – 5:00pm (excerpt 3:30pm – 4:20pm)

**Topic:** Teaching Stacey how to use Photoshop  
**Location:** Education Office, Hunt Museum, Limerick  
**Occupants:** Three other interns

Overview:
Today, I went into the museum to help Stacey learn a bit about Photoshop. She will be using it as part of the newsletter herself and Colette will be creating. It was exciting. My plan was just to demonstrate some of the basic features of Photoshop, including the lasso tool (or pretty much all of the selections), how to modify an image, how to create layers, and how to add small effects to it. The goal was to make it as distinct from the work as possible, to create an environment where Stacey felt it was OK to make a mistake. I had agreed to help her for the next few weeks. This had initially began as a request from Stacey. However, I felt that helping her how to use Photoshop would also be helpful for my research.

3:30 pm  
I arrived at the Education Office. Stacey was not there yet as she had to do some work in the museum. Another intern had informed me that she would be in the office soon. As I had Photoshop on my laptop (which is a mac), I set it up because she was going to be working from my computer.

3:40 pm  
Stacey arrived in the office and sat down at her desk. She told me that she had to send some letters and I said it was fine.

3:45 pm  
We turned to my laptop and I showed her what Photoshop looked like. Firstly, I showed her how to import an image into Photoshop. I had pre-selected the image as I wanted to ensure that it did not have any association with the work she was doing. The image we were importing was the one below:

I showed her a few different options. Firstly, I showed her how to import an image using the file menu option. Secondly, I also showed her that this could be done by dragging and dropping the file. After I did this, I deleted the image and started again. In doing so, I asked Stacey to replicate the actions I had just completed: importing the image in either one of the two ways. She was able to do this quite quickly and so far she seemed comfortable with what she was asked to do.

3:55 pm  
Once the image was imported, I showed her some of the basic Photoshop features: what the background layer is and how to unlock it, where the move tools are in the Photoshop toolbar, how to move an image using the move tools, where the basic selection tools are (i.e. the marquee select tool, the circle select), how to select and move part of an image using those basic selection tools.
It was kind of funny. When I said to Stacey that we were going to use the lasso tools, Leeanne said (something along the lines of) “lasso tool! I know how to use that!” She apologised, but I actually thought it was interesting how excited she had gotten when she overheard what we were talking about. Stacey tried out some of the selection tools for herself on the image. She seemed to be grasping it quite quickly and was moving through the tasks very fast.

4:10pm Stacey was starting to get more excited as she was learning more about Photoshop. She particularly got excited when we started to experiment with the magnetic lasso tool – a tool in Photoshop that can identify edges on an image. She was saying something along the lines of “that’s cool!” “That’s exciting!” So far, that seemed to be her favourite tool. Once I had shown her that tool, I asked her to try those tools herself and replicate some of the things I had done with it. But not in exactly the same way. For instance, I had initially done a magnetic lasso selection around the body of the guitar, but I had asked Stacey to select the sound hole of the guitar. She was able to do that brilliantly.

4:20pm I then talked Stacey through what layers were in Photoshop. I sensed that Stacey was getting a little more confused at this point; however, I felt that providing a visual representation did help a little here. To show her what I meant about the layers, I created a new layer. On one layer, I used the paintbrush to colour it in a little. Using an eraser, I deleted some of the paint. Then I moved to the second layer and tried to use the paintbrush. I told her that it was not erasing because it was on the other layer – that she needed to be on the same layer as the paintbrush to erase it. I asked her to experiment with it. She understood it a little more after both trying it out and seeing the difference.
Appendix E: Preliminary Findings (Phase 1)
Preliminary Findings, as discussed with CHPs (Appendix E/1)

Goal:
1. Identify how museum activities (such as tours, trails and workshops) are created and adapted;
2. Identify key design roles, responsibilities, strategies and sensitivities of these museum activities;
3. Evaluate the role digital technologies plays in this design process.

General Findings  A. Role and responsibilities for design:
• The Curator of Education and Outreach (CoE) is in charge of approving, designing, and monitoring education, outreach and specific museum interpretation activities on behalf of the Hunt Museum
• Key design and creative responsibilities are delegated to the interns. The CoE considers to some extent the education and backgrounds of interns when delegating tasks
• Interns may also be empowered to suggest design projects or make adaptations to existing museum activities
• However, there is an education mission in place and all activities must conform to it. Therefore, the CoE must approve the any design decisions made by the interns
• From the interns’ perspective: when adapting existing guided museum activities, many of the interns contact the docents/volunteers involved in those activities first to ask for their opinions. There is a sensitivity that they have been doing the workshop/activity in such a way for a while and also know a lot more about it. Is this similar from the CoE’s perspective? - YES

B. Resources for design:
• Hunt Museum Essential Guide – a key resource for those designing around objects from the collection
Other museum team members: docents, other interns, education officer, etc. – a key resource for those

Museum Gallery

Research documents by docents or other researchers/volunteers

Internal server – documents there (however, not as often accessed for activities relating to the museum’s collection)

Internet – for ideas on presenting content

Interns "how to": some include design resources created by past interns to help new interns joining the team

Writing ideas in notepad and drafts in MS Word: this notepad was given to them on their first day at the museum

C. Design schedule:

From the intern’s perspective: design schedule may be in place, but must be flexible to more urgent activities like meetings, phone calls, addressing urgent tasks.

Some design tasks and responsibilities may not have a fixed or strict deadline and are completed in between more urgent tasks that need attention

Mostly down to motivation of intern rather to schedule

D. Diverse and dynamic design backgrounds, cultures, and education:

Multi-cultural, multi-lingual, multi-disciplinary – CoE sees this museum as an 'International Museum' (taken from notes)

Diverse education and experience backgrounds: e.g. Thomas – knowledge on Vikings, Museology and periods of History;

Dynamically changing as new interns arrive

A diversity that offers unique and dynamic creative opportunities for the museum

E. Sharing design ideas and ICT skills

Confirming design ideas with other interns
• Collaboration between the museum team seen as imperative to develop design ideas, even for small design tasks that are delegated to one person - YES
• Sharing knowledge on technology, their specialties, etc.
• Dynamic as new interns are added to the team etc
• Decision to use technology based on efficiency and ease of use. More complex software is used on motivation of individual intern
• Try to work with as many free or low cost resources as possible - YES
• Experimentation with new technologies more time is available – not imperative

F. Design practices and thinking applied:
• Driven by diverse backgrounds but with the core education mission in mind
• Design practice is dynamic and changes in reflection to:
  - New team members sharing new ideas and skills;
  - New team members adapting existing design projects
  - Feedback every year from the other museum activities – writing up reports on what worked/did not work

G. Experimentation with novel interpretation methods and technology:
• Open to experimenting with diverse design approaches and methods for engaging visitors in the same theme, story and activity, e.g.:
  - 800 years of Fashion workshop, with now a creation of an 800 Years of Fashion Prezi
  - Also experimentation with 3D Printing techniques to create tangible replicas from popular workshops at the museum
• Considerations based on how medium affects the narrative. Does it add anything to the visitor experience?

H. Role of technology in design:
• A dynamic and expanding role
• New technologies open up diverse affordances for designing narratives, for instance, thinking about how content can be presented and dynamically changed time
• Various different technologies used at all stages in the design process

I. Stages of Design:
• Starting point is varied: can begin from adapting an existing project or from creating a new project entirely
• Concept development is a vital stage in the design process:
• No one in the museum designs using the exact same structure; however, some things were found common in a general sense:
• If adapting an activity for the museum:
  - Decide on what could be edited, if at all:
  - If it is to be edited, they decide on what content should be changed and what it could be changed to
  - Review changes with other team members and CoE
  - If more changes need to be made, then these steps are repeated

J. Type of design content:
• Images and text: not usually auditory or other kinds of content
• In most cases, the activities are designed in the form of a template (like a tour booklet, workshop) and the docents, interns and visitors decide on the interactions when the activity is being conducted (improvised or learned interactions)
Appendix F: Sample Data (Phase 2)
CHPs taking control of the content design: cycle 2

(Appendix F/2)
Next: O’ Dea Mitre and Crozier

Walk out of this room. Turn left and walk into the Treasury (tiled room). The O’Dea Mitre and Crozier is in the case on the top left.

Tilt to see map...
Appendix G: Theme Development
(Phase 1 and Phase 2)
Code Development (Phase 1) (Appendix G/1)

Atmosphere and dynamics
- Learning/sharing skills
- Embracing new responsibilities
- Diversity of skills and ideas
- Starting point for CHPs in the museum
- Dynamic
- Leaving a trace

General work practices
- Training
- Diversity of tasks
- Level of responsibility
- First impressions
- Misconceptions

Integrating ICT and digital technologies (behind the scenes)
- Types of technologies used
- Communication
- Collaboration
- Productivity
- Interpretation
- Approaching ICT and digital technology
  - Comfort and motivation in experimentation
  - Team and social support/surroundings
  - Strengthening skills and knowledge
  - Feelings toward taking control
  - Misconceptions
  - Familiarity
  - Effect on productivity

Practices for adapting/creating museum activities
- Motivations
- Diversity of ideas
- Terms to describe role
  - Freedom
  - Creative
- Starting point
- Plan/strategies in approaching
- Collaborators in creating/shaping activities
- Schedule
- Inspirations and helpful aids
- Reasons for adapting
- Considerations in adapting existing activities
- Interpretation
- Accessibility and appeal
- Meaningful portrayal of narratives
• Target group
• Link to authentic collection

**Integrating technology to support interpretation**
• Motivations to integrate technology
• Portraying content and narratives effectively
• Capturing visitors’ attention
• Medium as part of the interpretation
• Complementary and non-disruptive
• Encourage engagement in the authentic collection
• Helping visitors learn and comprehend visit
Code Development (Phase 2) (Appendix G/2)

Implementing Procedures (for creating content on interactive)

- **Approach**
  - Collaboration
  - Starting points

- **Balancing control**
  - Building understandings of interactive
  - Advantages
    - Desires
    - Flexibility
    - Control of interpretive content
  - Limitations
    - Time
    - Resources
    - Effective design

- **Efficiency**

- **Passing/explaining procedure**
  - Understanding
  - Shaping/building upon procedure
  - New team members

- **Experimentation**
  - Version control
  - Comparing ideas

- **Skills**
  - Technological
  - Comfort
  - Designing within the interactive space

- **Resources**
  - People
  - Tools for creating/shaping content
    - Reasons for choosing
    - Advantages
    - Limitations

- **Visualizing flow**
  - In/out gallery
  - Sharing strategies
Creating The Visitor Experience

- Intended goals
  - Highlight objects not usually highlighted
  - Variety and choice
  - Access
  - Focus on theme
  - Varied narrative paths
  - Entertaining
  - Discrete/unobtrusive
  - Engagement with authentic artefacts
  - Meaningful interactions

- Skills
  - Understanding of medium/interactive
  - Understanding of narrative structure
  - Responding to new processes
  - Knowledge on collection
  - Sharing skills/ideas

- Forming/shaping narrative structure
  - Flow of narrative
  - Changing flow/structure
  - Supporting intended narrative path/structure
  - Challenges with structure

- Shaping interpretive content
  - Starting point
  - Supporting meaningful links with artefacts
  - Identifying effective/ineffective content
  - Shaping content for the medium/delivery
    - Clarity
    - Linking content
    - Dynamic presentation of content
  - Efficiency
  - Shaping content flow
  - Implications of reusing content

- Future uses
  - Extending narrative styles
  - Extending forms of media used
  - Extending languages

- Resources
  - People
  - Content/media/activities available
  - Building content
  - Time

- Audience
  - Learning about visitor base

Integrating The Interactive In The Gallery

- Opinions on interactive
- Supporting visitor interactions
  - Creating instructional content
- Concerns for understanding
  - Placing interactive in the gallery
    - Access
  - Introducing interactive to other CHPs
  - Training
    - Understanding
Appendix H: Evaluation Feedback
CHP Feedback (Appendix H/1)

Overall feedback (this applies to all content):
- Font needs to be made bigger
- Prompts to encourage visitors to look at the objects and not just at the Loupe
- “Tilt to see more” should be added to encourage visitors to tilt the Loupe at ALL appropriate points:
  1. “Tilt gently for more” – for seeing more on the object
  2. “Tilt gently for map” to reveal map at end of content
- Would be nice to have close ups of some of the objects: like drinking horn, mitre and crozier, rather than the images in place. Do we have any close ups?

Individual (this applies to selected content):
1. Custom’s House:
   - should say “marked beginning of Georgian Limerick”

2. Ardagh Chalice:
   - the title part needs to be adjusted to fit Loupe
   - the Ardagh Chalice is the replica, NOT THE METHER
   - The content does not tell the visitor what exactly the objects are – this should be on the first slide of content
   - also pin point which object is which – e.g. the mether (left) and chalice (right)
   - content here should be in the following order (the GAA needs to be brought in first for it all to make sense):
     a. Talk about the objects in one image (one line each)
     b. Talk about when the GAA was founded
     c. Highlight the GAA in the second slide: the “All Ireland GAA trophy for hurling was inspired by…”

3. Sean Keating:
   - need to mention that old Ireland is on the left and new Ireland is on the right – from left to right we move to a new Ireland. The conservative priest on the right and is ignoring the change.
   - use a different image on the second slide, maybe the family moving to the newer Ireland

4. Bronze Shield: needs to have additional content added to say it is more likely to have been a ceremonial instrument. (as it states it is not likely to have seen combat)

5. Neolithic Axe: use an image of an object that is already there – maybe able to find this on the flickr account
6. Antrim Cross: should also say that it representing the Golden Age of Early Christian Art (at the moment, it only says it represents the Golden Age)

7. Penal Cross 2: Content does not read right – rephrase the sentence

8. O' Dea Mitre and Crozier:
   - Add something about the Mitre
   - Measurements should be in mitres and feet (for international visitors)
   - Weight should be in kg and pounds (for international visitors)
## Visitor Feedback (Appendix H/2)

Participant table (Visitor Evaluation)

<table>
<thead>
<tr>
<th>Group</th>
<th>Name</th>
<th>Observation</th>
<th>Interview</th>
<th>Recorded</th>
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<td>Patricia</td>
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<tr>
<td></td>
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<td></td>
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<td></td>
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<td>✔</td>
</tr>
<tr>
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<td>Ruth</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>3</td>
<td>Dick</td>
<td>-</td>
<td>✔</td>
<td>✔</td>
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<td>Carol</td>
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<td></td>
</tr>
<tr>
<td>4</td>
<td>Rachel</td>
<td>-</td>
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<td>Michael</td>
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<td>-</td>
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<tr>
<td>9</td>
<td>Leeanne</td>
<td>-</td>
<td>✔</td>
<td>-</td>
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</table>
Main Visitor feedback on content (Appendix H/3)

Tour analysed: History of Ireland in 10 Objects

Data collection method: Observations and/or short interviews with visitors

According to visitors, what experience did The Loupe provide that could not be gained otherwise?

• Feedback overall was positive

• Most visitors appreciated it’s guiding, tour-like aspect:
  “If the Loupe had 58 tours programmed into it and you picked the one you want, then you don’t need to queue up and be with other people that you don’t know. You don’t need to do it at schedule. You don’t need to wait two hours because the next tour isn’t starting for two hours. You just turn up, grab the Loupe, and it drags you around. Without that element, you could just give someone a book. It was the intelligent part: turn around, go here now” – A man visiting with a woman

  “I feel like the Loupe itself was more streamline. I know when we were going through, the three of us had been before but they had not, It brought us to all of these objects that we may not have seen before but then it brought you through everything else. So it was almost like we got to hone into what we saw and were interested in.” – A woman with a group of friends

  “It made it easier to find the objects that were described” – a young couple visiting

• A tour that could be done at the visitor’s pace:
  “If you were coming here in a hurry, and you only had an hour or something in the museum, you could take that and it would take you to the 10 important things and it would give you an indication about history in that period” – an older man visiting with his wife

• It would be even more useful if more tours were available and in different languages

• However, at the moment, many visitors felt that a lot of work needed to be done in order to ensure the content provided justified the relevance of The Loupe – especially since a lot of information could also be seen on the labels (more content in some cases) – see below
Consistent feedback from visitors

Things that worked well:

• It encouraged the visitors to open the drawers and explore other objects they never knew existed (One visitor referred to the Sybil Connolly dress and being able to open drawers):
  “For me, it was the dress, the miniature of the dress. I didn’t even realise those drawers opened when we were here on Sunday. But it was cool not just to see the dress itself which was really interesting, learning about Sybil Connolly but also the other objects in the other drawers” – woman with a group of friends visiting
• It helped the visitors find their way around the collection
• It could be a great way to get children engaged
• Provides a more interactive experience for the visitor
• Could be an option to make the collection more accessible for different types of visitors
• It is an option for visitors who prefer self guided tours or like visiting the museum at their own pace

Things we need to work on – general:

• Many visitors interviewed were not aware that the tour they were taking was ‘The History of Ireland’:
  - Some people highlighted this through stating more renown objects should be on the tour, like the Picasso
  - Other visitors mentioned they were not aware it was a themed tour until the receptionist told them afterward

• The kind of content provided on The Loupe did not justify certain interactive features, e.g. having to tilt and scan the labels:
  - Many visitors would like to see more information and felt the labels provided more information:
    “Especially the archaeological bit, has got a lot of axe heads and jewellery and things which we could do with more explanation about. There should be more information about the axe heads, how they developed, it would be very interesting.” – Older Man with wife visiting
  - The amount and type of information did not justify having to tilt The Loupe, or having to carry it around
  - A number of visitors mentioned that they were expecting more animations, videos, or more interactive content etc. relevant to the format (in some ways, it was too similar to taking a booklet led tour (bar the guiding part). For example, one group of visitors thought it was nice that they could see the close up of the crozier, to see the
depictions of the Holy Trinity. Though maybe there could be an animation to guide their eye toward it.

- One visitor group highlighted it did not take advantage of the interactive potential The Loupe could provide, for example, having different kinds of information on each tilt, incorporating questions that visitors have to answer about the objects, or zooming into details of objects

- **Narrative appears to be pre-defined and does not allow for visitors to go to other objects:**
  - How can we ensure visitors know they can skip an object and go back to others if they like? Especially if something is on in the Captains’ Room, this is necessary as they cannot go in there
  - Some visitors like to be able to explore other objects and go back to others, not following the pre-defined narrative.

- **Some visitors skipped the other objects in between – they were just looking at the screen. However, this is a conflicting point, as some visitors noted that it actually provided an opportunity to explore more**

- **Some visitors would like the opportunity to deviate away from the themed tour**

- **Some visitors felt they had to dedicate their attention to The Loupe**

- **There were not enough prompts to encourage visitors to look at the objects**

- **Text is too small and unreadable**

- **Visitors should be told explicitly to look out for the labels on the walls**

*Things we need to work on – specific content:*

- **Can we place the directions and the map on the same tilt, or make the map more meaningful?**

- **Penal Crosses – wording here does not make a lot of sense**

- **Mitre and Crozier – Can we talk about the mitre (all at once) and then the crozier?**
• **Instructions:** need to tell people that the labels to scan are on the walls: one visitor thought they had to scan the object

• **Antrim Cross:** states it is important – but there is so little information provided on it. Why is it important?

   “*We only got a really short snippet about it. Then why is it so important? There’s got to be more history there*” – a woman with a group of friends