SPICE

Social cohesion, Participation, and Inclusion through Cultural Engagement

D2.5 METHODOLOGICAL TOOLKIT FOR CITIZEN CURATION

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5	OU	THE OPEN UNIVERSITY	United Kingdom
6	IMMA	IRISH MUSEUM OF MODERN ART COMPANY	Ireland
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12	CELI	MAIZE SRL	Italy
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Executive summary

The aim of this report is to present a methodological toolkit for citizen curation that adopts a participatory approach to suggest methods and tools for engaging citizens and communities in producing and sharing their interpretations and reflections on cultural heritage. The report begins by introducing the central concepts of SPICE, such as social cohesion, citizen curation, and the interpretation-reflection loop. In addition, the report outlines the SPICE co-design journey and the conducted workshops which seek to inspire a participatory approach through the logic of the SPICE Interpretation-Reflection Loop (IRL).

The toolkit then compiles a selection of methods for citizen curation, such as Artefact Analysis, Narrative Methods, Slow Looking, Data Storytelling, Visualization Techniques, Narrative Identity, and Duo- and Autoethnography, along with best practices, tips, and examples of their implementation in the SPICE case studies, and other fields beyond the cultural heritage domain. Based on these, the report also describes activities from a series of workshops, providing guidelines for co-designing citizen curation activities in the interpretation-reflection loop, from exploratory co-design workshops to workshops and testing with end-user communities.

Furthermore, in the section *Exploring Reflection Processes in the IRL*, the report introduces the SPICE theoretical and digital analysis tools. These tools include a novel framework for cultural modelling, together with a set of digital tools such as DEGARI, the SPICE Semantic Annotator, the Value Reasoner, the SPICE Thematic reasoner, the SPICE Social Recommendation tool, the Linked Data Hub, and the VISIR Community Visualization tool, which support data analysis and storytelling in SPICE.

Finally, the report concludes with a summary of the implementation for each of the 5 SPICE case studies together with best practices, providing a model for museums and heritage institutions to engage citizens and communities for producing and sharing their interpretations and reflections on cultural heritage. The toolkit is designed to inspire co-creative and participatory activities within and beyond the cultural heritage domain.

Document History

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1 Introduction

The SPICE project (Social cohesion, Participation, and Inclusion through Cultural Engagement) focuses on designing, developing, and implementing new methods and digital tools in the cultural heritage domain. In this regard, the aims of the SPICE platform are twofold: First, it provides curators and researchers with a social laboratory for cultural analysis to map the ongoing cultural process. Second, it provides the participating citizens with a dynamic representation that allows them to recognize themselves in relation to the perspectives of others, thus unveiling their placement in the cultural process.

The present methodological toolkit serves as an exploration of methods for citizen curation. This includes documenting workshops and other participatory activities conducted under the SPICE project, to compile guidelines and best practices for museums and heritage institutions, to engage citizens and communities in producing and sharing their interpretations and reflections on cultural heritage. The toolkit describes a selection of methods for citizen curation, the central concepts in SPICE, and the SPICE theoretical and digital tools, to inspire a co-design journey (see Figure 1) that can serve as a model for participatory and co-creative activities within and beyond the cultural heritage domain.

For this, we provide illustrative cases and examples from the five SPICE case studies that are aimed at demonstrating how such methods can be used in various contexts and with different target audiences, including interactions between museum workers, visitors, and communities. Based on this, we compile best practices and guidelines that aim to extend the potential applications of the methodological toolkit beyond the cultural heritage field, thus serving as a handbook offering valuable insights and inspiration for citizen engagement and participation for social cohesion initiatives.
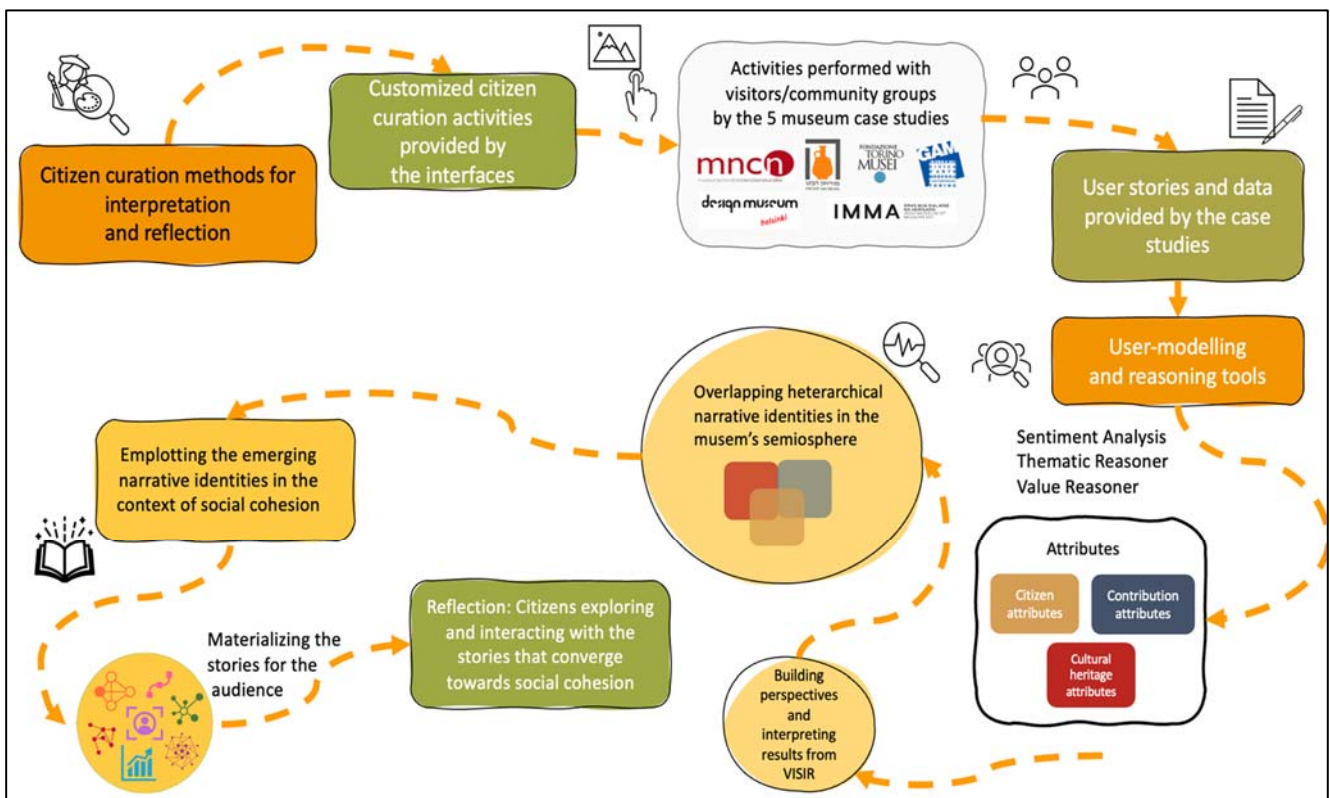
Figure 1. Co-design journey for implementing the Interpretation-Reflection Loop (IRL). The journey starts with introducing a variety of citizen curation methods, which become customized and combined by the different heritage institutions through participatory co-design workshops. This leads to activities, which are tried out with actual communities to generate data, rich narratives, and materials to be submitted to the platform's analytical tools. The narratives and the data are analysed through the SPICE IRL model in order to produce novel representations of the cultural process and the sense of belonging of the participating citizens.

1.1   Citizen Curation

Citizen curation in the SPICE project involves citizens developing and sharing their personal interpretations and reflections on cultural heritage artefacts. Through this process, the project's central goal is to enhance social cohesion and promote inclusive participation of different citizen groups, giving voice to those whose viewpoints and perspectives are often overlooked. To achieve this, the project proposes citizen curation activities based on curatorially inspired methods that aim to stimulate citizens to share their own interpretations and reflections on cultural heritage while exploring the viewpoints and perspectives of others. This aims to allow for the exchange of different viewpoints within and across different citizen groups. Moreover, the concept of citizen curation in SPICE aims to shift the focus from museum objects to the people who give meaning to these objects, making curation a more participatory social practice (Damiano, et al., 2022). The methods, activities and tools for citizen curation are co-designed, tested, and implemented through five SPICE case studies, involving different museums and cultural contexts, and representing different citizen groups. These include senior citizens, asylum seekers, communities of Deaf people, and different religious groups, among others. Through these case studies, the aim is to demonstrate how citizen curation can facilitate a more inclusive and participatory approach to cultural heritage.

What is Citizen Curation?

Within the broader context of humanities the term 'curation' has been used to characterize processes that select, annotate, and exhibit different kinds of artworks (Burdick et al. 2012). In the traditional museum context, curatorial activities are conducted by museum curators, however, as cultures of curating have continued to evolve in the world of social media and digital communication, 'curating' has become more of an ubiquitous term. This has led to the role of the curator and the practice of curation to transcend the museum setting (Longair, 2015).

In SPICE, citizen curation can be understood as "citizens applying curatorial methods to archival materials available in memory institutions in order to develop their own interpretations, share their own perspectives and appreciate the perspectives of others". As a tool for fostering social cohesion, the citizen curation process in SPICE is explored through a variety of citizen curation methods and activities which aim to support the interpretation and reflection of cultural heritage.

1.2   Interpretation-Reflection Loop

Because interpretation and reflection are intrinsically related processes, the SPICE platform considers a continuous Interpretation Reflection Loop (IRL). More specifically, the IRL represents a model for linking interpretation and reflection activities embedded and distributed in the different phases and components of the SPICE digital platform (see also D2.1 and D2.2 on the IRL).

At the outset, the SPICE platform provides users with a range of citizen curation activities, such as selecting artefacts, tagging, and sharing personal stories and opinions, which are presented through suitable interfaces that aim to support citizens in contributing and sharing rich interpretations of the cultural heritage artefacts they encounter. These contributions are then analysed to promote reflection, suggest new activities, and present users with alternative perspectives, allowing them to explore and reflect on their own contributions as well as those of others. In SPICE the IRL includes analysis tools and a framework to promote self-reflection and the exploration of others' viewpoints, forming an inclusive participatory Interpretation Reflection Loop that aims to facilitate rich representations of citizens and support collective reflections (see Figure 2).
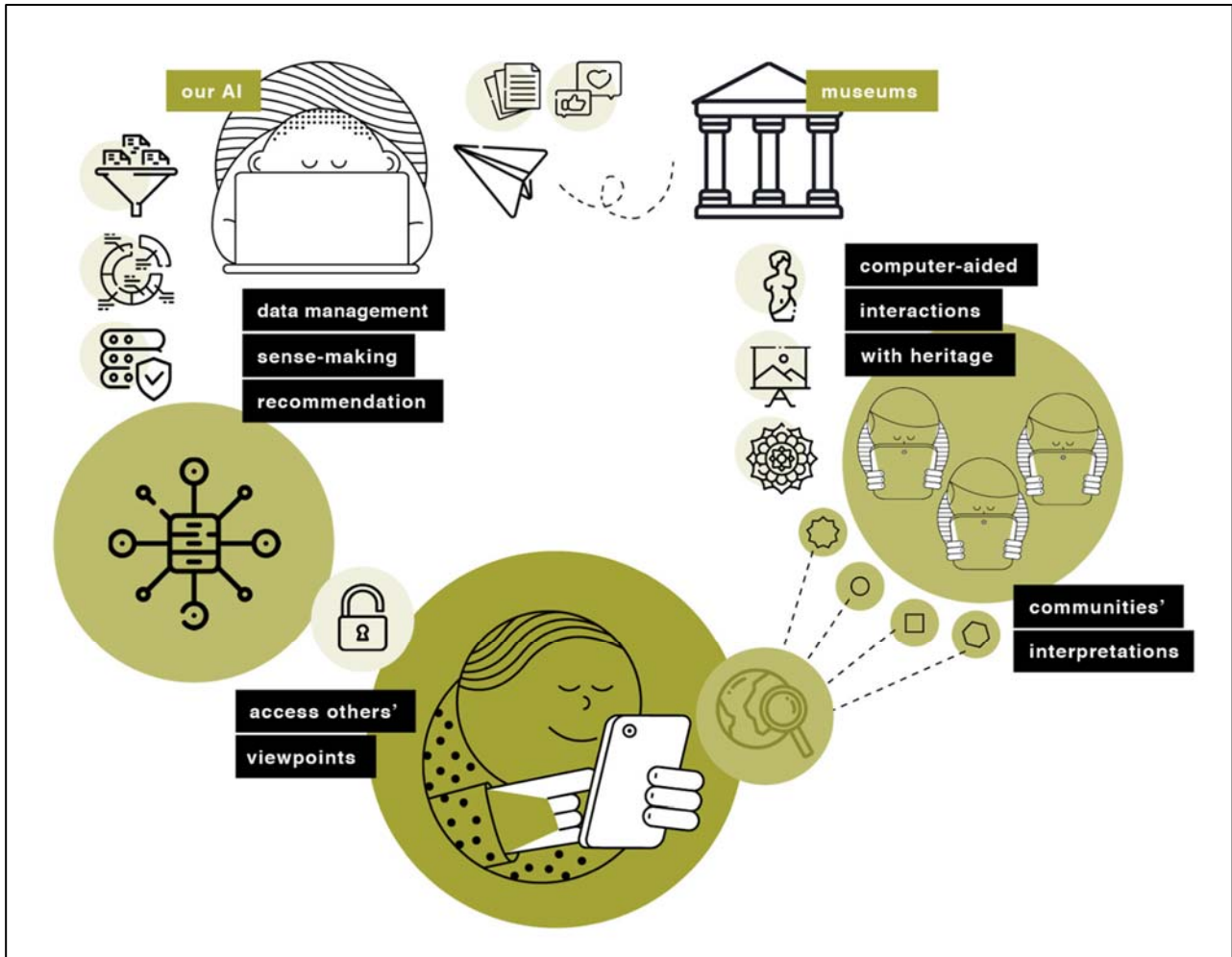
Figure 2. IRL process implemented in the SPICE platform. At the outset, the SPICE platform provides users with a range of computer aided interactions with cultural heritage (i.e., citizen curation activities), which are presented through suitable interfaces that result in citizens and communities' interpretations and shared stories and opinions. These contributions are then analysed through the platform's sense-making tools to promote reflection by providing access to other's viewpoints, suggest new activities, and present users with alternative perspectives, allowing them to explore and reflect on their own contributions (image from: https://spice-h2020.eu/).

1.3 Introduction to the 5 SPICE Case Studies

In SPICE, the citizen curation process, and the Interpretation Reflection Loop (IRL) are explored through 5 different museum cases from five countries (Israel, Finland, Italy, Spain, Ireland).
In this section, we introduce the 5 case studies to provide context for the exploration and development of the citizen curation methods and the Interpretation Reflection Loop (IRL) through the co-design journey.
The case studies in SPICE have comprised a variety of citizen groups from diverse cultures, social backgrounds, and geographical locations, selected specifically for their typically underrepresented perspectives in the cultural heritage interpretation process (see also D7.1 on the SPICE end-user communities). Therefore, these case studies provide a valuable opportunity to explore how the IRL logic can be used to facilitate more inclusive and participatory interpretation and reflection in the context of cultural heritage.

Pop-up VR Museum, Design Museum Helsinki (DMH), Finland

As an internationally recognized national specialist museum of Finnish design,
the Design Museum researches, collects, stores and documents design, and displays it both in Finland and in touring exhibitions abroad.
The DMH case study intends to enable elderly citizens, families living far from the museum, asylum seekers and immigrants, and those interested in design heritage to engage with culture, to share how their personal artefacts and interpretations connect to Finnish culture. How can virtual and touring galleries provoke understanding and contributions across family generations, geographical distance, and diverse communities? The Pop-up VR Museum has been designed as a prototype VR application to enable individuals and communities to access, interact, and engage with virtual design objects and stories about them, especially for those not easily able to access the museum's physical premises and the Finnish design heritage content in its possession.

GAM-game, Galleria Civica d'Arte Moderna e Contemporanea

Operated by The Fondazione Torino Musei, the Galleria Civica d'Arte Moderna e Contemporanea (GAM), houses approximately 45,000 artworks ranging from the 19th century to present day. GAM places a strong focus on social inclusion, regularly hosting projects for people with disabilities. These projects include augmented perception activities, such as touch tour maps and modelling workshops, guided tours with Italian sign language interpretation, workshops with artists, and special projects.
The GAM case study, collaborating with the Turin Institute for the Deaf, aims to promote the creation and sharing of personal interpretations of artworks between Deaf and non-deaf citizen groups through developing a digital application. The GAM-game, a digital web-application, allows users to anonymously create and share their contributions and emotional responses to artworks. The goal of the GAM-Game is to encourage museum visitors to interpret GAM's collection using their emotional responses and to make contributions from the Deaf community digitally accessible to others in the museum and online.

Deep Viewpoints, Irish Museum of Modern Art (IMMA), Ireland

IMMA is Ireland's National Cultural Institution for Modern and Contemporary Art. Their diverse and ambitious programme comprises exhibitions, commissions, and projects by leading Irish and international artists, as well as a rich engagement and learning programme which together provides audiences of all ages the opportunity to connect with contemporary art and unlock their creativity.

IMMA is home to the National Collection of Modern and Contemporary Art, started in 1990 and now numbering over 3,500 artworks by Irish and international artists. We make this national resource available through exhibitions at IMMA and other venues nationally and internationally, engagement and learning programmes and digital resources. This case study aims to support minoritized or marginalised groups, including those who are less able to visit the museum physically, such as asylum seekers and children with serious illnesses, to access collections and share their own perspectives, both online and in the museum. Participants are supported to create scripts using the web app Deep Viewpoints to share their perspectives through artworks and respond to the scripts of others.

Galilee Rebellion, Hecht Museum at University of Haifa (HECHT), Israel

The Hecht Museum is located on the campus of Haifa University and contains both artworks and historical artefacts. Exhibits display the archaeology and history of the Land of Israel in chronological sequence, from the Chalcolithic period to the Byzantine period. Exhibits include coins, weights, Semitic seals, jewellery, artefacts from the Temple Mount excavations; Phoenician metalworking, woodworking, stone vessels, glass making, and mosaics. The museum is also home to the Ma'agan Michael Ship, the wreck of a fifth-century BCE merchantman. The museum art collection includes French painting of the Barbizon School, Impressionism, Post-impressionism, and the School of Paris, and Jewish art from mid-nineteenth to early twentieth century.

The case study takes school students from different background and exposes them to information about the Galilee Rebellion. This is done before, during and after the Museum visit. As part of the case study, the students: answer surveys, see videos, are asked text questions, take pictures to support their views (VEP), analyse and colour different views (depolarization), and curate their own exhibition (citizen curation). An application allows researchers, curators, and teachers to reflect on the results

Treasure Hunt, Museo Nacional Ciencias Naturales Madrid (MNCN), Madrid

The Museo Nacional de Ciencias Naturales Madrid (MNCN), also known as the National Museum of Natural Sciences of Madrid, is a museum dedicated to natural history. Founded in 1771, the museum has a vast collection of over six million specimens covering various fields of natural history, including botany, geology, and paleontology. The museum's mission is to promote the understanding and appreciation of nature through research, conservation, education, and public outreach. The museum's collections and exhibits offer visitors a unique opportunity to explore and learn about the natural world and its biodiversity.

The MNCN case study presents an innovative way to make learning about biodiversity and climate change more engaging for school children through a gamified Treasure Hunt application. By using a digital platform, the Treasure Hunt app allows teachers to customize the museum visit to their students' interests, creating a more personalized and interactive experience. During the visit, students play a treasure hunt game on tablets, where they search for pieces of extinct and endangered species and solve puzzles related to them. This game not only makes learning fun but also promotes collective reflection on biodiversity among students from different backgrounds and social contexts. The case study aims to benefit all children, including those from lower socio-economic groups who may not have access to science-related resources or consider science as an interesting career option.

1.4   Co-design Journey for Interpretation and Reflection

In the context of SPICE, the *co-design journey* for the Interpretation-Reflection loop is viewed as a collaborative process that involves designing, developing, and testing participatory interpretation and reflection activities aimed at promoting inclusivity, participation, and citizen engagement.
To ensure that the suggested citizen curation methods and activities could be effectively implemented in the SPICE case studies, through the digital SPICE platform, it was essential to thoroughly test these through an iterative process. This was done by conducting a series of digital and in-person co-design workshops with SPICE partners and the end-user communities associated with the individual case studies. Through these

workshops, we obtained valuable feedback and insights from stakeholders that helped us refine and tailor the activities to meet the specific needs and interests of each group.

This co-design journey for designing the Interpretation-Reflection loop (IRL) was implemented by conducting a series of co-design workshops which spanned from October 2020 to December 2022.

- **1. First iteration of the IRL - testing initial combination of methods**: Workshop 1, which was conducted in October 2020, focused on exploring and testing initial methods for interpretation and reflection. These methods were designed to be implemented in the interpretation-reflection loop, which is a process of iteratively designing and testing museum experiences (see also D2.1 on Workshop 1).

- **2. Further exploring combinations of methods through initial interface mock-ups**: Workshop 2 took place in March 2021 and aimed to further explore combinations of interpretation and reflection methods in the interpretation-reflection loop. During this workshop, the 5 SPICE case studies co-designed early interface mock-ups that would be used to facilitate interpretation and reflection activities (see also D2.1 for Workshop 2).

Workshop 1 (October 2020): SPICE case studies exploring and testing an initial combination of interpretation and reflection methods that could be implemented in the interpretation-reflection loop.

Workshop 2 (March 2021): SPICE Case studies further exploring combinations of interpretation and reflection methods in the IRL and co-designing their early interface mock-ups.

Workshop 3 (June- Sept 2021): Consisting of a series of workshop meetings with the 5 SPICE case studies in which which the cases discuss their approach towards the different social cohesion dimensions and co-design their concrete interpretation and reflection activities into testable case-specific user-journey script(s).

Workshop 4 (Sept - Feb 2022): Case studies testing their user-journeys with their end-user communities, and collecting data for IRL analysis and processing,

Workshop 5 (May - Jul 2022): A series of workshop meetings with the case studies. Exploring possibilities for case-specific analysis that could support reflection, i.e. exploring each case study collected data from their user-journey(s) to examine the possibilities of the different forms of user-contributions, and other inputs collected during the interactions.

Workshop 6 (Dec 2022): Case studies exploring how to storify and make sense out of the narrative identities that emerge through the citizen curation process. Delving into the possibilities for representing and didactically visualizing the heterarchical sense of belonging of different citizen groups interacting in the museum's semiosphere.

- **3. Exploring social cohesion dimensions and developing user-journey scripts:** Workshop 3 was conducted from June to September 2021 and involved a series of workshop meetings with the 5 SPICE case studies. During this workshop, the cases discussed their approach towards different social cohesion dimensions and co-designed concrete interpretation and reflection activities that would be used to create testable case-specific user-journey scripts (see also D2.3 for more on Workshop 3).

- **4. Testing user-journey scripts with end-user communities:** In Workshop 4, which took place from September 2021 to February 2022, the 5 SPICE case studies tested their user-journeys with their end-user communities and collected data for interpretation-reflection loop analysis and processing (see also D2.3 for more on Workshop 4).
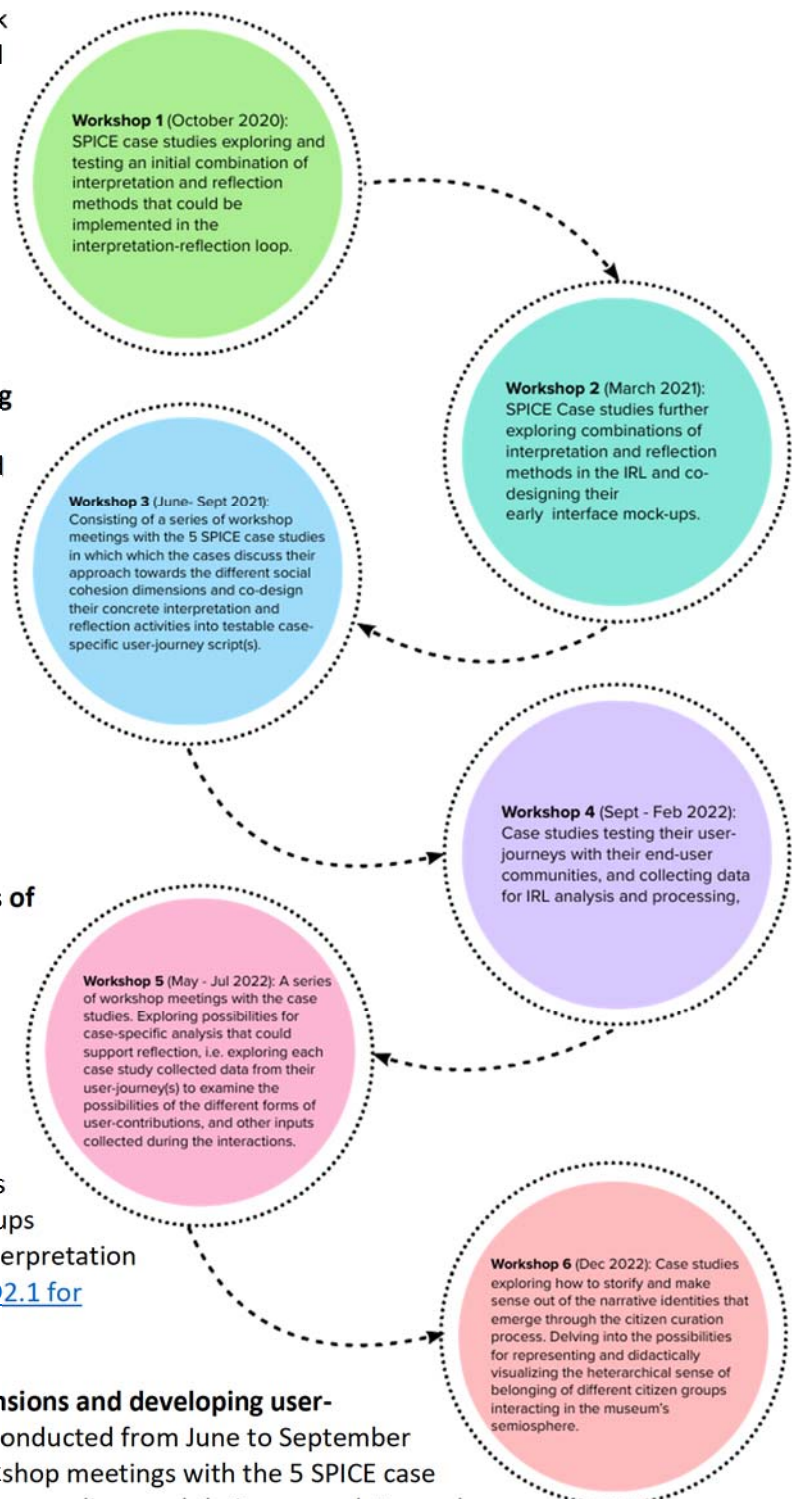
- **5. Exploring possibilities for case-specific analysis for supporting reflection:** Workshop 5 was conducted from May to July 2022 and focused on exploring the possibilities for case-specific analysis that could effectively support reflection. During this workshop, each case study examined the affordances and possibilities of the different forms of user-contributions and other inputs collected during interactions, such as demographics and platform metrics (see also D2.4 for more on Workshop 5).

- **6. Possibilities for representing and visualizing the IRL for the SPICE audiences**: The final workshop, Workshop 6, took place in December 2022 and involved the exploration of how to storify and make sense out of the narrative identities that emerge through the citizen curation process. This workshop delved into the possibilities for representing and didactically visualizing the heterarchical sense of belonging of different citizen groups interacting in the museum's semiosphere (see also D2.4 for considerations for Workshop 6).

2   Social Cohesion: A Goal for Citizen Curation

When embarking on a co-design journey, it is crucial to identify the desired outcome or goal for the journey. The goal in SPICE was to promote social cohesion through engagement with cultural heritage by exploring its different dimensions through the citizen curation process, embedded within the five SPICE case studies.

However, to effectively apply this type of an approach to the SPICE case studies, which work with diverse groups of citizens, we needed to first gain a deeper understanding of social cohesion and its various dimensions, within and beyond the cultural heritage domain. This involved exploring and defining the concept of social cohesion, how it relates to cultural heritage and the specific contexts of the case studies (see more in D2.3 under Workshop 3).

What is Social Cohesion?
Social cohesion can be defined by the different dimensions that work towards a cohesive society. By reviewing many contemporary approaches, Schiefer & van der Noll (2017) identified six dimensions of social cohesion that commonly appear in the specialized literature:

Social relations | Sense of belonging | Orientation towards the common good | Shared Values | (In)equality | Quality of life

Social cohesion is often intuitively acknowledged as a desirable goal for any society, community, or collective entity. Conversely, anything that goes in the opposite direction, e.g., social fragmentation, exclusion, deterioration of the social tissue, polarization, etc., is seen as jeopardizing development. (see more on Social Cohesion in D2.2).

2.1   Social Cohesion Dimensions in SPICE

Departing from the dimensions of social cohesion, we adapted three essential dimensions (Schiefer & van der Noll, 2017; Nowack & Schoderer, 2020) to better fit the context of cultural heritage and the SPICE case studies: (1) Social relations (and its four sub-dimensions) (2) Sense of belonging (identification) and (3)

Orientation towards the common good.

(1) Social relations focus on establishing and maintaining positive interpersonal ties that are based on reciprocity, trust, empathy and tolerance. Its sub-dimensions are:

a. *Social Networks:* emphasizes the quality and quantity of social interactions with family, friends, and acquaintances. In this sense, the museum plays a role in supporting, maintaining, establishing and enriching social networks. The social networks in SPICE relate to the quality and quantity of social interactions between the different layers of stakeholders considered in the case studies (curators, museum workers, visitors, students, teachers, researchers, target groups, etc.), which can be characterized, for example, by frequency of visits, interactions, nature of contributions, sharing patterns, etc. and correlated to social cohesion dimensions or attributes.

b. *Participation:* focuses on mutual cooperation for reaching common goals. Here we look at the role of the museum in encouraging cultural participation of diverse communities, groups and individuals whilst ensuring accessibility and inclusion for all.

c. *Trust:* is led by sincere and transparent intentions. The museum is seen as a safe place that can be trusted and which promotes trust between users/visitors.

d. *Mutual tolerance*: relies on the notion that a cohesive society requires mutual tolerance and inclusivity within and across different groups. The role of the museum is about creating tolerance, building respect and mutual understanding between diverse visitor groups, communities and individuals.

(2) Sense of belonging, with its implicit emotional connectedness, highlights the importance of community/society membership. This can for example mean identifying with a group, a region or a trans-national entity (e.g., EU). While a "strong conceptual overlap" has been noted between this and the social relations dimension, Schiefer & van der Noll (2017) argue that "attachment and identification with a social unit is", according to the authors, "qualitatively different from relations between individuals of that group". Museums play an important role in facilitating a sense of belonging by introducing "a safe space for unsafe ideas," (Bruni, et al., 2020), especially for marginalized groups, and for exploring traditional and emerging narrative identities.

(3) Orientation towards the common good brings into attention that society and communities are more than just the sum of its individual members. Being oriented towards the common good implies responsibility for, and the negotiation of social rules and norms which consider cultural differences. A closely related term could be "solidarity", which refers to caring for the other, regardless of whether one knows the person or shares their values. As previously noted, museums have the potential to help foster a shared sense of responsibility.

3   Exploring Citizen Curation Methods for Interpretation and Reflection

This section of the toolkit presents a range of citizen curation methods for developing engaging participatory activities that can encourage interpretation and reflection on cultural heritage. While these methods have been carefully pre-selected to provide a portfolio of options for case studies, the selection has been expanded throughout the co-design process to meet the specific needs of each case study and their respective contexts. Moreover, although the methods are primarily explored within the cultural heritage domain, we provide guidelines on how they can be adapted and applied beyond the museum sector. Our aim is to introduce and give an overview of potential methods in a way that can provide guidance and inspiration for new combinations and customization within and beyond the cultural heritage domain.

In this section, we have divided the citizen curation methods into two categories: *Methods for Interpretation* (3.1) and *Methods for Reflection* (3.2). Under Methods for Interpretation, we explore Artefact Analysis, Narrative Methods, and Slow Looking while in Methods for Reflection, we describe Data Storytelling,

Visualization Techniques, and Narrative Identity methods. Although we have organized the methods based on interpretation or reflection, it is important to note that they can be applied in both contexts. Thus, we encourage users to experiment and customize the methods based on their specific needs and goals.

3.1 Methods for Interpretation

In this section, we delve further into the selection of methods for interpretation, including artefact analysis, narrative methods and slow looking.

Although in SPICE we consider interpretation and reflection as intrinsically linked, in this case we organize them individually to allow for a clearer understanding of their individual applications and benefits within the SPICE IRL co-design journey. As mentioned above, all methods presented in this section have been carefully selected based on previous analysis, co-design workshops, and implementation in the five SPICE case studies. Each method is accompanied by a short description, guidelines for its application, and examples of how it was used in one or more of the SPICE case studies. For each method, we also highlight important considerations and offer recommendations on how to apply these methods with diverse audiences, both within and beyond the cultural heritage domain.

3.1.1 Artefact Analysis

While an artefact can be defined as "any item, conceptual or material, created by a human being that can be described by a large, and virtually infinite, number of descriptive features." (Diaz-Kommonen, 2004), the method of artefact analysis can be viewed as a "systematic examination of the material, aesthetic, and interactive quality of objects in context" (Martin and Hanington, 2012). Artefact analysis should not be seen as merely showing or displaying of artefacts but considering them in the specific context and environment, that these objects are brought to the people and in which meaning-making processes take place.

Applying Artefact Analysis

In the context of cultural heritage, artefact analysis can be used to explore and highlight the potential of cultural artefacts to inspire interpretive narratives.

As an alternative mode of inquiry that can make the tacit aspects of the cultural experience more accessible, a modified method of artefact analysis tailored to a museum visit can be decomposed into three basic stages:

1. Once the artefact of interest has been selected, the first stage involves an investigation for creating a description of the artefact. For example, a schoolteacher organizing a learning experience for a group of students can provide participants some training and knowledge about the artefact(s) that can allow them to assume some responsibility for sharing with the other participants. S/he can work with a designer to create an artefact-analysis probe (AAP). The probe could have all the information needed to complete the artefact analysis of selected items from an exhibition.
2. The second phase might involve sharing and comparison of the data gathered with the probe a face-to-face group session.
3. In the third stage, citizens can curate their own collections from the objects they analysed through the AAP and from the objects shared with them by others who also completed the analysis.

While artefact analysis is a method that is commonly used and related to cultural heritage, it can also be extended to other domains. For instance, artefact analysis can be useful for teachers who are bringing a group to visit a museum, as it can provide an opportunity to deepen their knowledge about the subject matter in advance. Additionally, knowledge of the artefact analysis method can be beneficial for technology developers, as it can afford a possible 'contact zone' with experts when designing digital solutions for institutions.

The method of artefact analysis brings cohesion, as it offers all parties an entry point into many active learning opportunities. While artefact analysis is most used in the cultural heritage domain, it can potentially be used in other fields which focus on tangible objects, such as design, anthropology, marketing, geography, urban design, and planning.

Artefact Analysis in SPICE

In SPICE, the artefact analysis method has been explored and applied in two case studies, the Design Museum Helsinki (DMH) and the Hecht Museum case study.

DMH is combining artefact analysis and narrative methods to suggest specific activities to support citizens' engagement with cultural objects in VR, e.g., elicitation of personal memories associated to selected design objects. For this, a collection of the artefacts from Design Museum have been 3D scanned and virtualized in the Pop-up VR Museum. Here, users can interact with these virtual artefacts via a perspective that is different from the real-world museum setting (see Figure 3). Artefact analysis is directly integrated in the interaction between the user and the design artefacts, in the form of physical affordances such as selection and manipulation of the objects (e.g., picking up artefacts, rotating them, and receiving tactile sensory feedback), as well as more abstract interaction in the form of naming and tagging artefacts. Moreover, as one of the DMH case study target groups include senior citizens and remote dwellers who cannot visit the museum that often if at all, exploring artefact analysis in this way allows the groups a new type of accessibly and experiences with design objects in the museum collection. Artefact analysis methods have been used in

Figure 3. Citizen engaging with DMH design objects in the Pop-up VR Museum. (Photo credit: Gautam Vishwanath)

workshops to collect stories and comments related to design objects to the Pop-up VR Museum. When using the VR, participants can read and listen to other's stories and write in their own narratives.

Artefact analysis methodology is also explored in the HECHT case study. The methods are adapted to a process that might be referred to as "reverse" artefact analysis. The participants first develop their own viewpoints from looking at videos, texts, other opinions and thereafter analyse and take photos of artefacts, i.e., visitor employed photography (VEP) to support their perspectives. Moreover, the students' photos of artefacts are subsequently used to justify their opinion.

> **Tips from SPICE!**
> Explore how the artefact analysis method was combined and applied together with other citizen curation methods during SPICE Workshop 1.
> See more below under 4.2 (Exploring combinations of methods).

Important considerations

Artefact analysis is a valuable method for cultural interpretation and can be used as part of various citizen engagement activities. Based on its exploration in SPICE, some considerations for applying the method include:

- Artefact analysis can be used to engage different audiences from different backgrounds and foster active learning experiences. By involving audiences in the artefact analysis process, it can support developing a deeper understanding and appreciation of cultural heritage artefacts.
- Technology and digital tools, such as extended reality technologies (VR, AR, MR), can be used in the process of artefact analysis to enhance the analysis process and make it more accessible to audiences that may not have access to the physical artefacts or to obtain a closer perspective of artefacts that do not allow physical proximity.
- The analysis of artefacts should be conducted with sensitivity to ethical and cultural considerations, including issues of cultural ownership and respect for cultural practices and beliefs.

Some examples outside of SPICE

Please find here more examples of artefact analysis being applied in the context of cultural heritage:

- **A collection** put together by Idaho State Museum for artefact analysis on the Smithsonian Learning Lab online.
- An example of **artefact-analysis guided probe**.

3.1.2 Narrative Methods

More generally, with narrative methods we refer to narrative-based approaches, such as narrative inquiry, that make use of narrative and storytelling for eliciting and examining personal stories, opinions, and reflections, and help engage different audiences. Narrative methods have been suggested to be "particularly well situated to examine meaning-making processes that concern the self" (Adler, et al., 2017), and thereby serve as useful tools for investigating identity and self-reflection. For example, within the field of psychology, narratives of personal experience are viewed as tools for obtaining information about the motivations, traits, and values of a person (Maddi, 1996). Thus, narrative methods can work well with a variety of audiences and contexts, depending on the specific goals and purposes of the inquiry.

Some examples include among others:

- Educational settings, such as classrooms or workshops, to engage students and facilitate deeper learning. By using personal stories and examples, educators can make abstract or complex concepts more concrete and relatable to their students.
- Personal and intimate settings such as therapy sessions, support groups, or community storytelling events, can help support creating a safe space for individuals to share their personal stories and experiences.
- Cultural and historical contexts, such as museums or heritage sites, to help visitors engage with exhibits and artefacts on a deeper level. By using personal stories and perspectives, visitors can gain a better understanding of the significance and meaning of these cultural objects and connect them to their own experiences and identities.
- Narrative methods can also be useful in research and evaluation contexts, to gather rich and nuanced data about individuals' experiences, perspectives, and attitudes.

Applying Narrative Methods

This section will provide a variety of different activities based on narrative methods, including directed storytelling, story circle, social tagging that can be used to elicit interpretations and reflections on cultural heritage and beyond. Narrative methods provide a powerful means of engaging participants in a meaningful and personal manner.

Directed Storytelling

Directed storytelling is a method of narrative inquiry where a storyteller is given a specific prompt or topic to guide their storytelling, while the goal is to elicit personal stories that are relevant to the research question or theme being explored. Derived from the theories of narrative inquiry (Clandinin, 2006), directed storytelling seeks to ensure rich narratives of participants by guiding them to tell "compelling stories". Directed storytelling can thus be considered a partially closed approach, as the guiding questions stem from a specific question to which the designer (or researcher) seeks an explanation to (Martin & Hanington, 2012). As such, it shows many similarities to the method of semi-structured interviews.

> **Tips from SPICE!**
> During the 2nd SPICE workshop, it was remarked by one the case studies' that the mediators of the museum often found open-ended questions to hit a dead-end with a user. Therefore, considering this, an approach like directed storytelling might serve to aid in eliciting richer contributions, albeit with a somewhat confined topic of interest.

Story Circle

The story circle is a form of narrative inquiry, that is especially adept at creating a safe space for sharing of personal stories. It is an activity that can be seen as borrowing from "therapeutic engagement and community organizing" (Lambert, 2013), and is structured much like a session of group therapy, including only the facilitator(s) and the participants. It has also been suggested that "the story circle offers a way to honour and witness the stories they [the participants] share in a community context, while at the same time offering encouragement and support in the process of the story's further development" (Rose & Granger, 2013). By listening to the stories of others and sharing one's own story, the story circle appears to promote *social cohesion* as it instils a "sense of trust, hope and reciprocity" (Jeannotte, 2003).

> **Tips from SPICE!**
> See how the *Story Circle* method was applied during Workshop 1 in combination with other methods (see also in: 4.2 Exploring combinations of methods).

Lambert (2013) describes seven distinct considerations the facilitator(s) of the story circle must keep in mind to ensure depth and effectiveness in the process (see Figure 4 below). These seven steps can aid the facilitator in establishing and maintaining a safe space that is critical for the process of sharing personal narratives in the story circle (Rose & Granger, 2013).
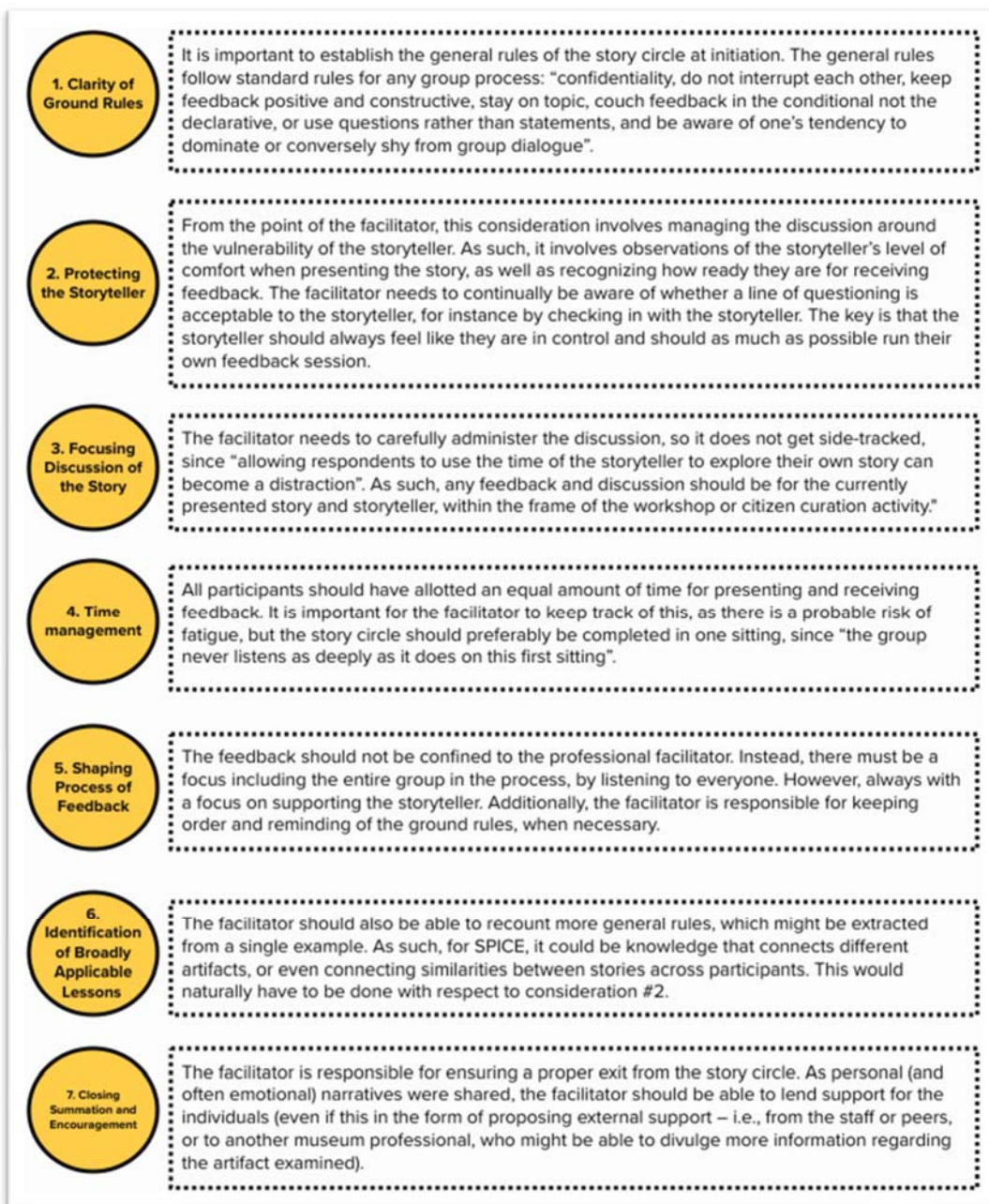

1. Clarity of Ground Rules
It is important to establish the general rules of the story circle at initiation. The general rules follow standard rules for any group process: "confidentiality, do not interrupt each other, keep feedback positive and constructive, stay on topic, couch feedback in the conditional not the declarative, or use questions rather than statements, and be aware of one's tendency to dominate or conversely shy from group dialogue".

2. Protecting the Storyteller
From the point of the facilitator, this consideration involves managing the discussion around the vulnerability of the storyteller. As such, it involves observations of the storyteller's level of comfort when presenting the story, as well as recognizing how ready they are for receiving feedback. The facilitator needs to continually be aware of whether a line of questioning is acceptable to the storyteller, for instance by checking in with the storyteller. The key is that the storyteller should always feel like they are in control and should as much as possible run their own feedback session.

3. Focusing Discussion of the Story
The facilitator needs to carefully administer the discussion, so it does not get side-tracked, since "allowing respondents to use the time of the storyteller to explore their own story can become a distraction". As such, any feedback and discussion should be for the currently presented story and storyteller, within the frame of the workshop or citizen curation activity."

4. Time management
All participants should have allotted an equal amount of time for presenting and receiving feedback. It is important for the facilitator to keep track of this, as there is a probable risk of fatigue, but the story circle should preferably be completed in one sitting, since "the group never listens as deeply as it does on this first sitting".

5. Shaping Process of Feedback
The feedback should not be confined to the professional facilitator. Instead, there must be a focus including the entire group in the process, by listening to everyone. However, always with a focus on supporting the storyteller. Additionally, the facilitator is responsible for keeping order and reminding of the ground rules, when necessary.

6. Identification of Broadly Applicable Lessons
The facilitator should also be able to recount more general rules, which might be extracted from a single example. As such, for SPICE, it could be knowledge that connects different artifacts, or even connecting similarities between stories across participants. This would naturally have to be done with respect to consideration #2.

7. Closing Summation and Encouragement
The facilitator is responsible for ensuring a proper exit from the story circle. As personal (and often emotional) narratives were shared, the facilitator should be able to lend support for the individuals (even if this in the form of proposing external support – i.e., from the staff or peers, or to another museum professional, who might be able to divulge more information regarding the artifact examined).

Figure 4. Lambert's (2013) seven distinct considerations for story circle facilitators

Social Tagging

More generally, tagging refers to the markup of objects, originally used within the world of graffiti painters to describe writings of a person's name or special mark on walls or other objects. The idea of *social tagging* refers to an activity by which tags, or keywords are supplied and shared online by the public. When utilized as a narrative method, social tagging can be regarded as an activity for interpretation, which can also involve the interpretation of others' tags.

In the museum context, social tagging can provide "a less formal, more participatory, and highly distributed way to augment museums' institutional documentation with content that reflects the perspectives and interests of their communities" (Trant & steve.museum, 2006). Additionally, as it involves the users *actively* applying tags to, for instance, an artefact, and directly engaging in a "dialogue" with an artefact, social tagging can also be considered as *interactive*. Hence, it is important to consider what user-actions must be afforded by the system to allow for social tagging. In this direction, social tagging can be used to ascribe a plethora of *access points* for the artefacts, for instance, personal emotions elicited by the artefact, descriptions of characters or actions depicted in an artwork, values represented in an artwork, or the geographic locations in which an artefact might have been utilized, and more. The possibilities for the meta-data supplied through social tagging, is in effect theoretically limitless.

In the context of SPICE, we consider the method as a narrative approach as it can be used as a powerful tool for interpretation and storytelling, allowing users to contribute their own interpretations and create a collaborative story about an artefact or collection.

Narrative Methods in SPICE

Narrative methods are explored across all five SPICE case studies, primarily concerning end-users, but in some cases also with mediators and other contributors. Please find examples from some of the case studies below.

In the case of **IMMA**, narrative methods are applied when allowing participants to construct narratives through the sequencing of stages when designing scripts with the support of the web app Deep Viewpoints (see Figure 5 below)

This has allowed the visitors to introduce unique viewpoints, which are in some cases even diverging from the museum's point of view, thus providing the museum with new meanings and perspectives.

For example, a group of young Afghans seeking asylum used the lens of war and peace to mediate an exhibition with an ostensibly different set of concerns. Exploring an exhibition titled *The Anthropocene,* which examines human impacts on the planet, their script invited visitors on a "short tour of four pieces that look at different feelings of peace".
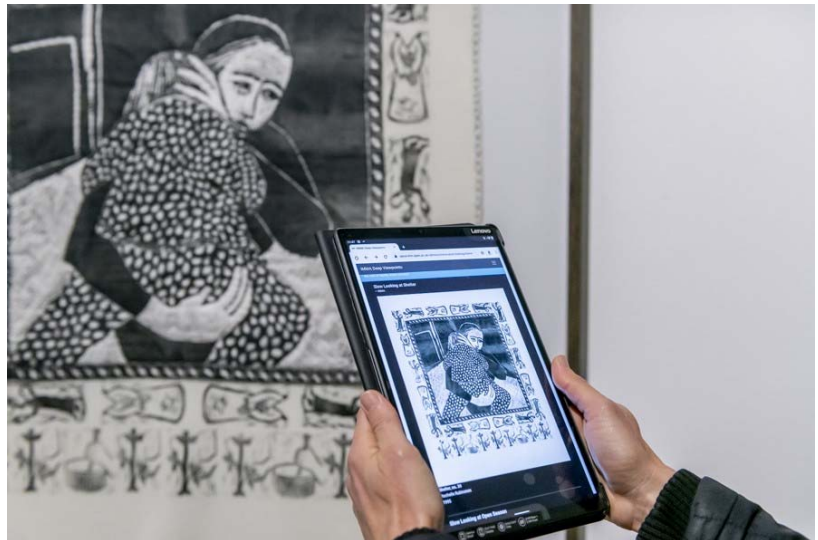

Figure 5. Members of New Communities Partnership use Deep Viewpoints at IMMA (Photo credit: Louis Haugh)

One artwork on which they focused was John Kindness' *Dulce et Decorum est…* in which homeless Vietnam veterans are pictured on the yellow bonnet of a New York City taxi. Their script drew attention though not to the representations of the veterans, but to the taxi bonnet, which they likened to soldiers and civilians

on the front line of war who are the first to feel its impact. This demonstrates the potential for revitalizing museum collections by inviting communities to contribute new narratives and layers of meaning.

Narrative methods are also embedded in the 'Story Stem' stage of the IMMA web app. In this stage, the script author selects one or more artworks and provides a story stem or story opener that the user of the script is invited to complete. The idea is *written story stems* that are open ended and could produce a variety of responses to be explored.

In the **DMH** case, during workshops conducted in care homes, and the museum, DMH found that senior citizens had personal connections to the museum's Finnish design objects, often through ownership or past ownership of similar items, resulting in numerous memories and stories about the objects. In contrast, while many participants coming from other cultures, like asylum seekers did not have extensive knowledge about the objects' design or cultural heritage, they were reminded of similar objects they had used before and shared associated memories and stories. The example also highlights the use of auto-and duo-ethnography methods in eliciting citizens' narratives and how personal connections to design objects can lead to the emergence of rich memories and stories. It also shows how narrative methods can foster engagement with different communities, bringing about diverse perspectives and experiences.

In the case of **GAM** and the GAM game, narrative methods are applied in a more visual and interactive way, more specifically in the form of social media stories. In the GAM game, the user collects artworks of interest and subsequently structures them into a "story". This type of process can be considered as a form of directed storytelling. This type of an approach is applied for not only providing an engaging format for the GAM target group (borrowed from social media), but also for allowing the users to create representations of themselves through visual storytelling, which is considered as more favourable to the target community (Deaf and non-deaf users) (see Figure 6).
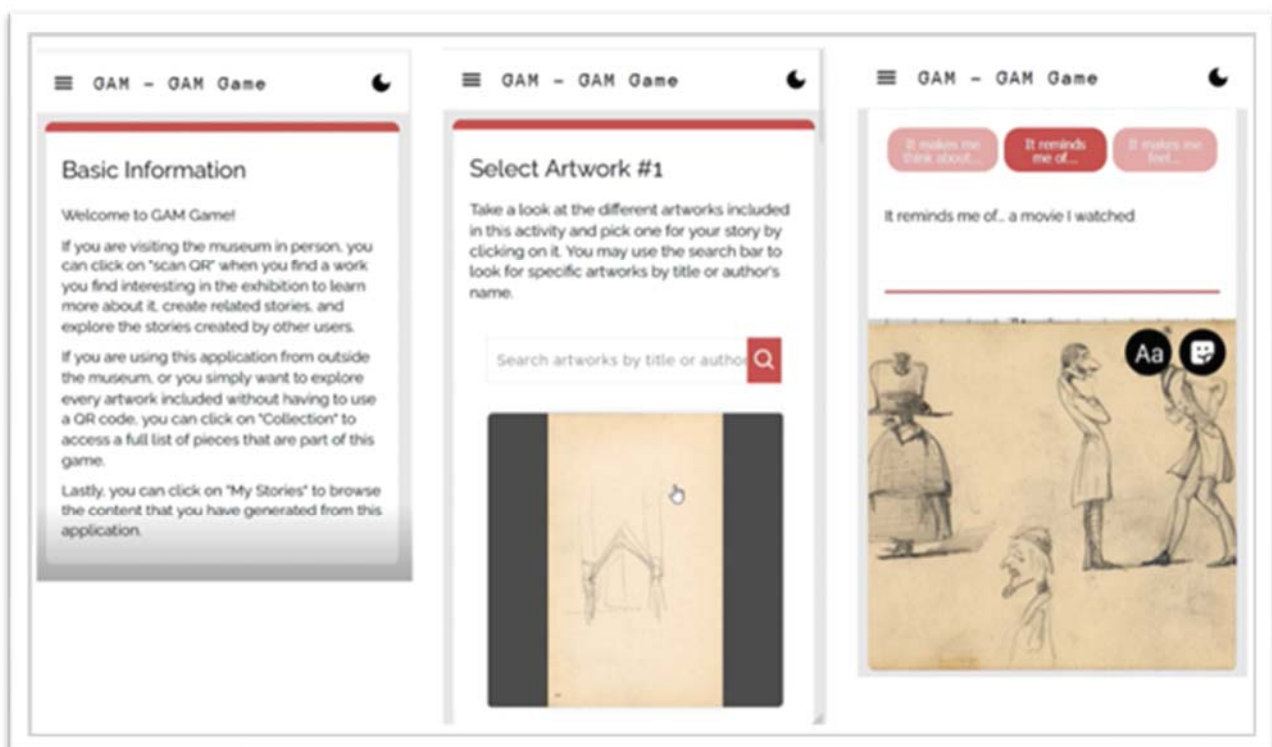

Figure 6 Screenshots from the storytelling activities in the GAM game (Image credit: GAM).

In the **MNCN** case study, narrative methods are utilized to engage both end-users (students) and mediators (teachers) in the co-design process. Directed storytelling tools are used when teachers are asked to contribute an overarching theme or narrative for the treasure hunt, shaping the students' experience of the museum visit. During the treasure hunt interpretation and reflection phases, narrative methods are further employed as students create their own stories to reflect on their experiences. Additionally, the sharing of these stories amongst the students with the facilitation of the teacher adopts a story circle approach, encouraging a deeper engagement with their experiences and reflections (see Figure 7).

Figure 7. Museum educator at MNCN mediating and contextualizing the overarching narrative of the Treasure Hunt. (Photo credit: Lily Diaz-Kommonen)

Important considerations

When applying narrative methods, there are several considerations to keep in mind:

- It is important to reflect on the specific context and purpose of the narrative methods being used, to determine what type of narrative tools might be most relevant and useful in terms of the context at hand.

- It is important to keep in mind how the produced narratives will be used in the eventual representation or analysis of the produced material. For example, some applications may wish to characterize the audience by mining values, sentiments, or other kind of meanings in citizens' narrative. The methods for producing the narratives must ensure that the narratives will be rich enough for their intended purpose (e.g., characterizing groups of citizens, analysing emotional responses, identifying emerging identities, representing citizens' sense of belonging, etc.).

- When applying narrative methods, it is essential to consider the unique ethical issues that can arise, especially when working with personal stories, opinions, and reflections. It is essential to obtain informed consent from the participants before eliciting personal narratives. This means that participants must be aware of the purpose of the study, how their data will be collected, used, and shared, and their rights as a participant. As personal narratives are often sensitive, it is crucial to protect the confidentiality and anonymity of the participants.

- Consider debriefing. In some cases, participants may experience emotional distress when sharing personal narratives, researchers and other professionals must provide participants with debriefing sessions to discuss their experiences and any emotions that may have arisen during the research process.

Some examples outside of SPICE

Please find here more examples of narrative methods being applied within and outside of the context of cultural heritage and SPICE:

Your Story, Our Story (2015)
The Your Story, Our Story is a project launched by the Tenement Museum in New York City. The Tenement Museum is a historic site that interprets the history of tenement housing and the stories of immigrants who lived there. Using artefact-based storytelling, the museum brings to life the experiences of immigrants who lived in the tenements. Participants are invited to share a story about an object or tradition that carries special meaning related to their personal experience. These stories are submitted online, creating a digital exhibit of immigration stories that highlights the complexities, commonalities, and differences of American identity. The initiative also offers an educational curriculum and storytelling tools for teachers and institutions to engage their communities in exploring their diversity and common history.

CHESS (2011-2014)
CHESS (Cultural Heritage Experiences through Socio-personal interactions and Storytelling) is a research project funded by the European Commission's FP7/2007-2013. CHESS is an initiative that aims to create more engaging experiences for visitors to cultural heritage institutions, such as museums, by capitalizing on the use of interactive digital content and systems. Its objective is to research, implement, and evaluate an innovative conceptual and technological framework that enables the experiencing and authoring of personalized interactive stories for visitors of cultural sites.

3.1.3   Slow Looking

The "Slow Looking" method does not exclusively apply to curatorial practice, but can be more generally defined as, "taking the time to carefully observe more than meets the eye at first glance" (Tishman, 2017) or similarly as, "a mode of learning, a means of gaining knowledge through observation." (ibid.). It is considered to have emerged from the 'Slow Movement' in the 1980's, which calls attention to people's increasingly busy and time-pressured lives in the modern world. In 2008, the slow movement incentivized the 'Slow Art Movement', through which 'slow art' activities and events targeted to museums and art galleries aim to encourage visitors to acquire more profound ways of looking and experiencing art. The 'Slow Art Movement' culminates each year in the international 'Slow Art Day' event in which numerous art and culture institutions around the world sign up to involve their visitors in different types of Slow Art activities. For example, this can be inviting the gallery visitor to look at a series of paintings for some specific amount of time, after which they will be asked to reflect on their subjective experience with other visitors (Chamberlain & Pepperell, 2021).

Applying Slow Looking

In 2019-20, IMMA developed a series of Slow Looking Art Videos as part of their program for senior citizens. The videos were developed and presented by the museum's Visitor Engagement Team, each focusing on one specific artwork (see Figure 8). The videos generally start by asking the viewer to make sure they are comfortable and inviting them to let their eyes wander over the artwork. Initial questions are then introduced to prompt the viewer to think about what they see (e.g., "What is our attention drawn to first?"). In this research, IMMA explores whether the authoring of Slow Looking style experiences could be carried out by amateurs as well as museum professionals. As well as being more scalable, a crowdsourced authoring process could actively encourage contributions from traditionally underrepresented groups. This could refocus empathy: rather than museum professionals imagining what the visitor may want and what support they may need, amateur authors could potentially create activities from their own viewpoint, for people like themselves or for people from other communities to encounter their perspective. Undertaking the Slow Looking activities may then become an exercise in empathy, in which the activity gives an insight into the world of its author.
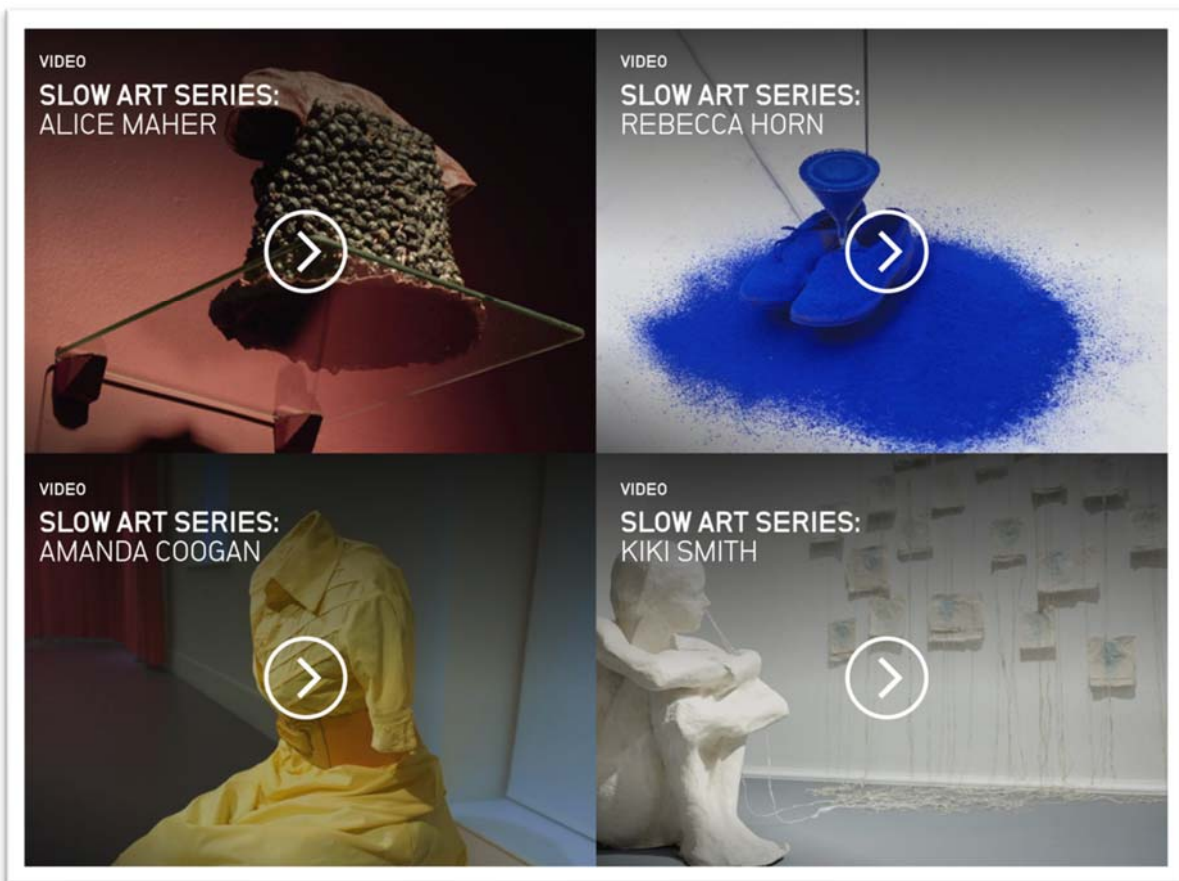
Figure 8. Screenshot of Slow Looking Art Videos on the IMMA website (https://imma.ie/learn-engage/art-and-ageing/slow-looking-art-videos/)

Another example of application draws from the pedagogical domain.
In Emily Boudreau's (2020) coverage of Slow Looking in *Usable Knowledge*, an online resource published from the Harvard Graduate School of Education, (with the help of Shari Tishman), she outlines several activities for applying slow looking to support students. While the examples of activities draw directly from educational practices, we suggest that these can be easily adapted and used both within and outside the pedagogical domain (see Figure 9).
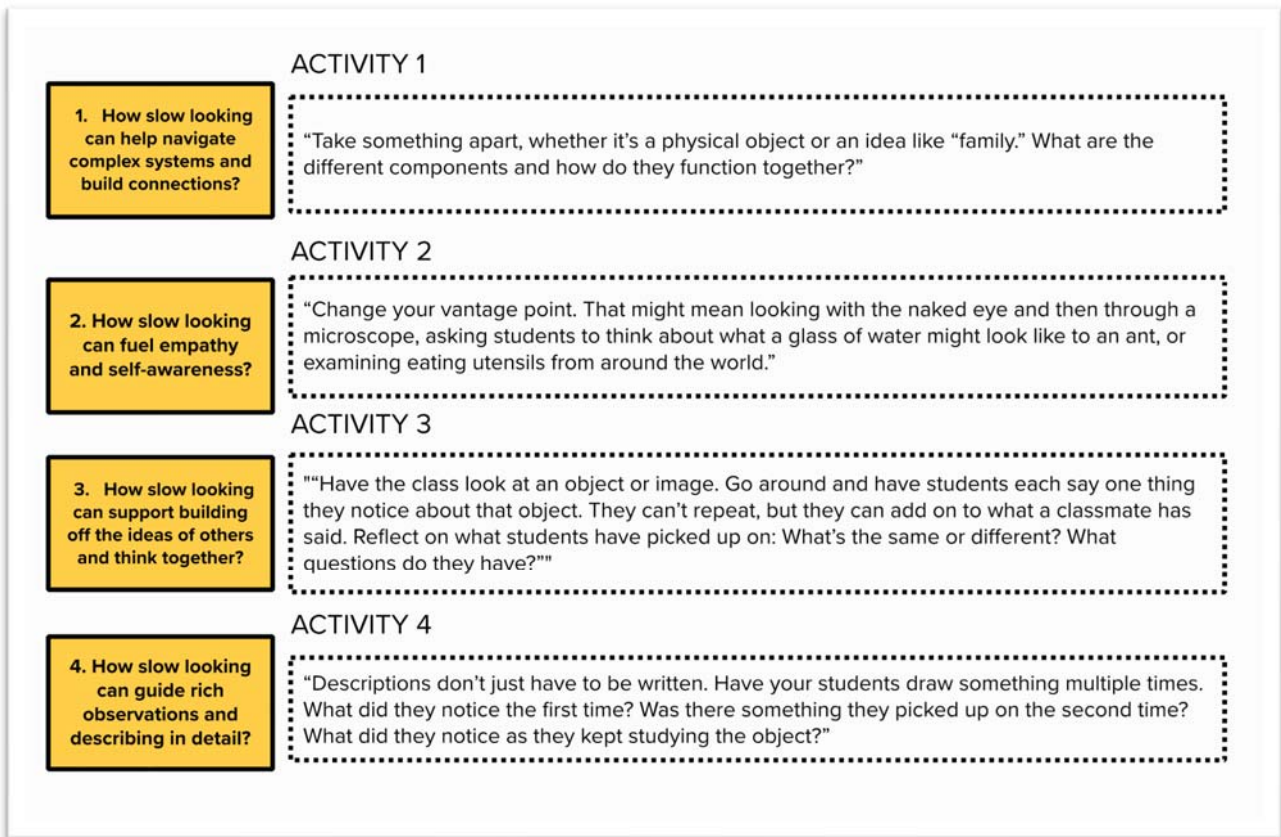
Figure 9. Examples of activities for Slow Looking in educational context by Emily Boudreau. These kinds of activities can be adapted to other application domains (https://www.gse.harvard.edu/news/uk/20/01/art-slow-looking-classroom).

1. Activity: How slow looking can help navigate complex systems and build connections?

In the article, Tishman describes an activity wherein students dismantle everyday objects in groups and are asked to think about the purpose of the different parts. In the article, Tishman describes the main idea behind the activity, explaining that "looking at physical or conceptual systems and how they're put together and how they can be taken apart is a powerful strategy for close looking". (Boudreau, 2020).

Moreover, she suggests that in this way "students develop an appreciation for complexity and how small pieces can come together to form a larger whole — and in turn, can inspire students to use what they know to design new systems."

2. Activity: How slow looking can fuel empathy and self-awareness?

This perspective-changing exercise is described by Tishman as "When you look for a while, you become aware of how a thing might look to somebody else; you also become aware of your own lens." The central idea of this activity is to support participants in acknowledging how others around us can perceive the world differently, it also "provides a space for them to notice the commonalities in different perspectives." Boudreau, 2020).

3. Activity: How slow looking can support building off the ideas of others and think together?

This activity focuses on the power of slow looking experiences when done in a group. Moreover, "often, a member of the community will share something that will spark new thinking or bring eyes to something other people may not have picked up on originally." Boudreau, 2020).

4. Activity: How slow looking can guide rich observations and describing in detail?

Sometimes, slow looking can take the form of finding more and more things to notice," Tishman adds that, "you might look for things that come forward across time. Notice what strikes you as obvious, your first

impression, what's hidden, what you can discover." Often instructors rely on participants writing down observations. Tishman argues that drawing should be considered as an alternative, or additional approach, which can provide important insights on what people notice, "drawing can provide the same kinds of meaningful insights, especially if you emphasize that the point of the activity isn't to draw an accurate picture, it's to notice more detail." (Boudreau, 2020).

Slow Looking in SPICE

More recently, in the IMMA case study, researchers experimented with a cross-modal approach that combined slow looking methods with 'slow listening'. Developed in collaboration with Naomi Barker, Musicologist and Lecturer at Open University, a workshop was developed with the National Gallery of Ireland's Apollo Youth Panel in which participants listened to different pieces of music during the slow looking process. Participants then reflected on how each piece of music (contrasting different genres, tempo and moods) affected how they saw the artworks, and likewise how what they were looking at affected how they experienced the music. Finally, the participants created scripts on Deep Viewpoints in which they shared their perspectives on the exhibition through selecting and interpreting music.
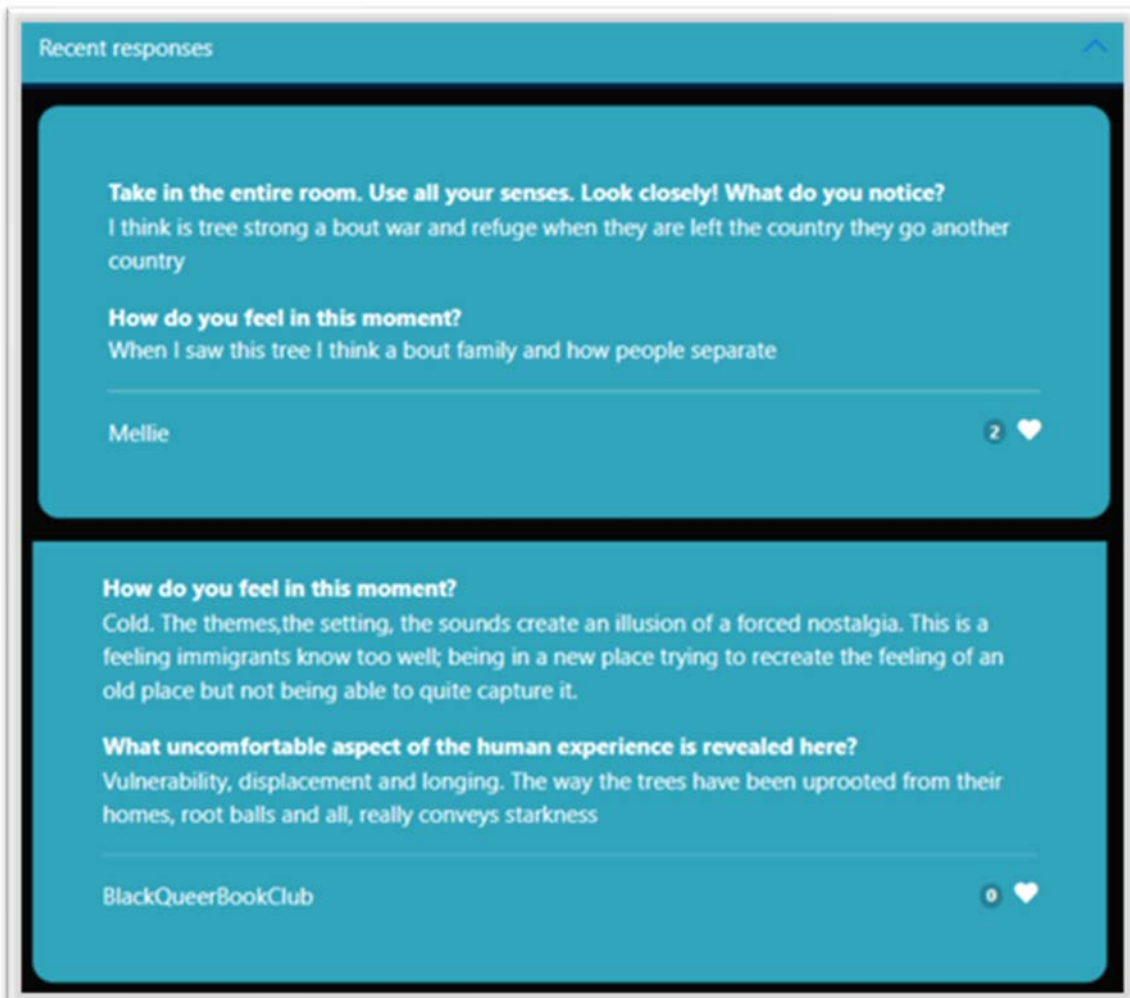
Figure 10. Examples of responses received on IMMA Deep Viewpoints using Slow looking (Image credit: IMMA). With its approach IMMA has been pioneering innovative Slow Looking methods in the museum context.

Slow Looking, as a method, can lend itself to a variety of fields and domains (see Figure 10). For instance, when applied to a healthcare setting, Slow looking methods can help healthcare professionals to appreciate different perspectives and empathise with patients. For example, in May 2022, a group of Junior Doctors

from the Royal College of Physicians took part in a SPICE workshop in which they practised slow looking and responded to a script created by a group of "chronically ill teenagers". One Junior Doctor commented, "it was very interesting to hear what other people saw and felt was important to them...it helped me to be more receptive to people offering different perspectives on a piece of art we were all engaged with. I think this could be directly applicable to work as modern healthcare is often provided by a multidisciplinary team where different specialties and professions all approach from different viewpoints." Another attendee, Dr Eimear Duff added: "We had the refreshing latitude to hold multiple interpretations as valid and learn from each other's perspectives. Returning to work afterwards, I felt a heightened mental flexibility, with greater ease in understanding the viewpoints of my patients and colleagues." (Duff, 2022).

Important considerations

- As Slow Looking involves observing details and shifting between different perspectives, it is important to encourage participants to take their time and carefully observe the artwork or object. Schedule activities in a way that allows for sufficient time to observe and reflect.

- Slow Looking activities can be particularly effective when done in a group setting, but it is important to consider the dynamics of the group. Encourage participants to share their observations and insights, but also focus on creating a safe space for participants to express their ideas without fear of judgment.
- Encourage careful discernment by prompting participants to consider different aspects of the artwork or object at hand. This can help develop critical thinking skills and visual literacy.

- Recognize that Slow Looking is a subjective process and that everyone will bring their own perspectives and experiences to the table. This should be celebrated and encouraged.

- Consider using multimodal approaches that incorporate different senses, such as slow listening, to enhance the experience of slow looking. This can help participants to engage more deeply and promote cross-disciplinary thinking.

Some examples outside of SPICE

Please find here more examples of Slow Looking methods being applied within the context of cultural heritage:

Museu Nacional d'Art de Catalunya (MNAC) has been using Visual Thinking Strategies (VTS) – a method closely related to slow looking – to engage schools with children from migrant backgrounds with "a history of stigmatisation". MNAC found that this methodology was highly effective as a method of engaging communities and bringing new audiences into the museum.

IMMA's Slow Art video series offers a guided exploration of selected artworks from the IMMA Collection. Trained guides take viewers through the galleries and grounds, introducing a different artwork in each video and encouraging a relaxed, slow examination of the work.

3.2   Methods for Reflection

In this section, we explore the selection of methods for reflection. As we have previously discussed, the processes of interpretation and reflection in SPICE are considered as intrinsically linked, however, for the

purpose of building the IRL co-design journey(s), we can also consider interpretation and reflection methods individually from each other. All methods below have been selected based on our previous analysis, subsequent testing through co-design workshops, and implementation in the 5 SPICE case studies. Each method features a short description, guidelines for application, and how it is applied in one or more of the SPICE case studies. We will also outline important considerations and provide recommendations on how the different methods can be used with different audiences, within and beyond the cultural heritage domain.

It is worth noticing that besides the methods that we are presenting here, an important part of the reflection process in the IRL is constituted by presenting the audience with an original analysis that maps their curatorial contributions in the collective cultural process (see in 6.1 SPICE Theoretical Analysis Tools - Heterarchical Clustering in the IRL Model).

3.2.1   Data Storytelling

Narratives are a powerful cognitive tool for organizing experience and have been demonstrated as highly effective in communicating abstract concepts and complex insights. With the increased adoption of digital tools and technologies, a growing number of museums and cultural institutions now have access to data, facts and insights on cultural heritage artefacts, artworks, and visitors' perspectives and experiences. For museum professionals and educators, these resources can potentially serve as useful instruments for building rich narratives which can in turn, be used for eliciting dialogue and reflection among diverse museum audiences (Kadastik & Bruni, 2023). However, while storytelling with data has been extensively studied in the field of data journalism, its potential in the museum context has yet to be fully explored.

Data narration, or data storytelling is the process of building narratives based on facts and insights derived from data analysis (El Outa et al. 2020). Data stories, on the other hand have been defined as "artifacts for revealing and communicating insights gained from the analysis of data-sets obtained from the public domain, crowdsourcing or big data sources." (Ojo and Heravi, 2018). It can be suggested that adopting data storytelling methods and tools can guide curators, museum workers, and educators in developing data-based stories that can encourage and assist citizens in participating in cultural activities and support the sharing and exchange of new perspectives.

Applying Data Storytelling

To date, much of the research on data narration and storytelling has been in the field of data journalism (Riche & Lee, 2015; El Outa et al., 2020; Showkat & Baumer, 2021; El Outa et al., 2022; Ojo & Heravi, 2018; Weber et al 2018) in which it is seen as the process for revealing the story within data (Weber et al., 2018). However, data storytelling can be applied also in domains and fields such as cultural heritage, education, public health, environmental science, urban planning, and social justice. In these domains, data storytelling can serve as a tool for communicating complex information, raising awareness, engaging stakeholders, and advocating for change.

In more recent literature, El Outa et al., (2022) suggest a message-based model for crafting of data stories that can be done through 4 distinguishable layers:

(1) **The factual layer** which focuses on the exploration of the data. This step is about gaining an understanding of the data set and identifying patterns, insights or trends that may be of interest to the audience. It involves exploring the data and identifying key insights that can be used to construct a compelling narrative.

(2) **The intentional layer** which "models the subjective substance of the story, identifying the messages, characters and measures the narrator intends to communicate and tracing how they are obtained through analytical questions, according to an analysis goal". Thus, this layer is about identifying key themes and messages that the data story should convey.

(3) **The structural layer** which is important for structuring the data narrative, "its plot being organized in terms of *acts* and *episodes*". This layer involves organizing the data story into a clear and coherent structure, with a beginning, middle, and end. The narrative should be organized in terms of acts and episodes, with each act building on the previous one to create a cohesive and engaging story.

(4) **The presentation layer** that focuses on the 'rendering' of the plot that is communicated to the audiences, which can, but does not necessarily need to be done through visual artefacts. Thus, this layer is about selecting the appropriate presentation, or visualization techniques, and other forms of communication, to convey the data story to the audience. The goal is to present the data story in a way that is engaging and impactful.

Data Storytelling in SPICE

In SPICE, data storytelling can be used to explain and build upon the *heterarchical narrative identities* described in 6.1. Outlined as a step-by-step process in 6.3 *Storifying the Narrative Identities Emerging from the Citizen Curation Process*, we characterize and describe the different phases of the data narration process in the cultural heritage domain in general, and in SPICE in particular. This includes the (1) data exploration, (2) the motivational and thematic contextualization, (3) story development (4) story organization, and (5) story realization phase. Thus, to demonstrate the potential and application of data storytelling in SPICE, in 6.3, we describe and outline a framework that aims to facilitate an iterative process to guide curators, museum workers and educators in the analysis and development of data-driven stories and narration in museum context.

Important considerations

- Data storytelling is an iterative process. Incorporating feedback from your audience and stakeholders can help refine and improve your story. Testing your story with a sample audience can help you identify any issues and refine your message.

- When developing data stories, it is important to consider the context and the audience. This involves understanding who your audience is, considering their background, knowledge level, and interests.

- Choose the right type of data for your narrative. Data selection is critical in developing a compelling data story. Choose data that is relevant, trustworthy, and supports the overarching narrative you want to tell.

- Use the right type of presentation for your story. For example, if using visualization, consider different visualization techniques. This can help communicate your message more effectively (see 3.2.2 on visualization techniques).

- Transparency and ethical considerations. Be clear about the data sources, methods used, and any limitations or assumptions made in the analysis phase. Be mindful of privacy, bias, and other ethical considerations when developing your data story.

Some examples outside of SPICE

Please find here more examples of data storytelling methods being applied within and outside of the context of cultural heritage:

1. **"The Promenade"** is an interactive data story created by Google Arts and Culture that allows users to step into Pierre-Auguste Renoir's famous Impressionist painting of a couple on a romantic promenade. The data story is presented as a virtual tour that takes users through different elements of the painting, allowing them to zoom in and explore different details.

2. **The data story about Jeter Swings**, "342,000 Swings Later, Derek Jeter Calls It a Career" was created by The New York Times in 2014 to commemorate the retirement of baseball legend Derek Jeter. The interactive data story allows users to explore Jeter's hitting patterns throughout his career using a combination of data visualization and multimedia elements.

3.2.2   Visualization Techniques

The Oxford dictionary defines visualization as "the formation of a mental image of something". As a method for interpretation and reflection, visualization can be considered as a technique for creating visual imagery such as images, diagrams, animations, or films and more, to communicate, or unveil, a potential message. There are several techniques for creating and enhancing visualizations. In this case, we focus specifically on the genre of *information visualization.* Card, Mackinlay & Shneiderman (1999) define information visualization as "the use of computer-supported, interactive, visual representations of abstract data in order to amplify cognition".

To understand why information visualization is essential, Ware (2004) suggests several of its advantages:

- Supporting cognitive ability in humans to comprehend massive data.
- Gaining new insights that were not anticipated earlier.
- Revealing problems within the data in case it was not apparent.
- Enabling pattern recognition thereby forming conclusions and facilitating decision making (Ware, 2004).

Information visualization can either take a static, or a dynamic form. Dynamic visualization is a form of communication that, when carefully used, can enable audiences and to gain a clear grasp of the presented content (e.g., artefacts and narrative). This is enhanced through embedded aspects of interactivity that delegates degrees of agency to the user. One can interpret and examine different perspectives of the same data while simplifying complex content and delegating design wherein the end-users can modify inputs as well as choose spectrums of visualization allows them to choose and explore it themselves.

Applying Visualization Techniques

There are several applicable techniques for visualizing data. For example, this includes, but is not limited to techniques such as, scatterplots, patterns, magnification, and iconic representations (Spence, 2001), (see also examples below).

Moreover, as previously mentioned, information visualization can either take a static, or a dynamic form. The advantage of dynamic visualization is that it can allow users to examine different perspectives of the same data. Some essential methods for dynamic visualization include (Shneiderman, 2003):

- Zoom: Zoom in on items of interest
- Overview: Gain an overview of the entire collection.
- Filter: filter out uninteresting items.
- Details-on-demand: Select an item or group and get details when needed.
- Relate: View relationships among items.
- History: Keep a history of actions to support undo, replay, and progressive refinement.
- Extract: Allow extraction of sub-collections and of the query parameters

Visualization Techniques in SPICE

In the **GAM** case study, data visualization has been employed to provide the educators and curators with feedback on the inputs, annotations and preferences expressed by the users in the GAM-game. This is done by analysing the collected stories using the VISIR community detection and visualization tool (6.2.7). By observing and comparing the explicit and implicit communities emerging from the GAM case study audience interactions, curators were able to gain new insights to confirm or reject their working assumptions and observations about the users and to formulate new working hypotheses.

In the Pop-up VR Museum application designed in the **DMH** case study, design objects can be experienced through a completely new "immersive" perspective offered by virtual reality as a medium. For example, upon selection of the acclaimed designer Timo Sarpaneva's Cast Iron pot, users are teleported into a giant-sized simulated pot. Similarly, users are also able to experience miniature-versions of the museum artefacts. The objects are presented in surprising, non-museum spaces where they are organised as groups to inspire selection. Traditional museum data appears on the black chalk board and stories about the objects can be listened to simultaneously (see Figure 11 below).

Figure 11 Screenshot of the Pop-up VR Museum items in VR (credit: DMH)

Important considerations

- Similarly to data storytelling, when applying visualization techniques, it is important to address the considerations and needs of your audience based on the context at hand. This can inform decisions about the type of data visualization to use, the level of detail to provide, and the appropriate visualization platform.
- The use of colour, graphic elements and layout can enhance the effectiveness of data visualization. Careful selection of colour schemes and layout can help to differentiate between data points and highlight key trends and patterns.
- If relevant, consider interactive features, as interactivity can be a powerful tool to help the audience engage with the data visualization. This could include providing interactive features such as zooming in and out or hovering over data points to reveal more information.
- In immersive media such as VR, it is essential to consider the sense of presence. Scaling museum artefacts to different sizes and providing interactive features can enhance or hinder the sense of presence, therefore designers should keep this in mind.

- Once the data visualization is complete, it is important to test it with the intended audience to get feedback and refine the design as necessary.

Some examples outside of SPICE

Please find here more examples of visualization methods being applied in the context of cultural heritage and beyond:

- *Codex Atlanticus* **by The Visual Agency (2019)**. An example of a dynamic information visualization of the evolution of Leonardo da Vinci's thoughts is *Codex Atlanticus* by The Visual Agency (2019). These thoughts are put together through an interactive digital library containing the famed artist's journals and notebooks. The collection is known for being the largest digital set of his original drawings and writings.

- *The Bohemian bookshelf* by Thudt et al. (2012) supports serendipitous discoveries in the context of digital book collections. It consists of five interlinked visualizations that offer a unique way to browse and look through the collections, encouraging serendipity by offering multiple visual access points, highlighting connections between books and enabling visual pathways between items.

3.2.3 Narrative Identity

Narrative identity refers to "the sort of identity to which a human being has access thanks to the mediation of the narrative function" (Ricoeur, 1991). This can be the "life stories" of an individual, or of a historical community. Narrative identity is thus regarded as the combined story of a person. The story one tells others about how one came to be the person one is. Nowadays the concept has evolved in many different directions, encompassing perspectives from cognitive science, life-course developmental studies, cultural psychology, sociology, and personality and social psychology, having become a central component of a "full, multi-level theory of personality" (McAdams, 2011).

As a method, self-constructed narratives serve as a direct representation of a person's perceptual model of experience, sense of personal and cultural identity, and enable individuals to be involved in the creation and construction of memories and social relational patterns (Ricoeur, 1984; Bruner, 1991). In the context of SPICE, narrative identity is considered as a reflection method since it provides a conceptual tool to analyse, organize and reflect on the narrative products emerging from the citizen curation process. It is important to notice here that part of the reflection process in the IRL is constituted by presenting the audience with an original analysis that maps their curatorial contributions in the collective cultural process (see section 6.1). In this regard, narrative identity can be a useful tool to map and represent the complex and overlapping relations by which participating citizens constitute their sense of belonging while they reflect and discover unexpected outcomes.

Narrative identity in SPICE

In SPICE, narrative identity is used as a conceptual tool to map the multifarious (i.e., heterarchical) sense of belonging of the participating citizens, and the overlapping identities that emerge from their inputs (see also in 6.2.8). It is also used to outline the narrative identity of the museum and the curators, to be used during the data narration process (see section 6.3).

In other words, SPICE uses methods of narrative identity to develop a better understanding and build upon the heterarchical overlapping identities that can emerge from citizen inputs (see section 6.1 SPICE Theoretical Analysis Tools - Heterarchical Clustering in the IRL). This approach aims to engage citizens in

reflective processes to promote a more dynamic sense of belonging, empathy, and social cohesion. In this direction, narrative identity informs the development of the user and community models, as well as the recommender systems by suggesting a more nuanced model for categorizing and clustering users. Moreover, through collecting and analysing citizens' contributions, narrative identity methods can support citizens building representations of themselves as individuals and as part of a community.

Narrative identity can also be a valuable tool for developing and presenting a compelling story of an institution or organization, based on its history, values, and mission. It has previously been explored in the museum context by Linda Sandino (2012), who argues that the curator's values become a central part of the museum's narrative identity.

Tips from SPICE!

During the SPICE Workshop 5, the narrative identity of the 5 participating museums has been explored through the following three tasks, (see more about the (procedure in D2.4):

- Providing a short and compelling story of the history and vision of the museum (from the curator point-of-view)
- Characterizing the typical museum audiences
- Characterizing the core values and the mission of the museum

Important considerations

- Both narrative identity methods and narrative methods share similarities and significant overlaps in their application considerations, as they both involve the construction and interpretation of stories (see also 3.1.2 on Narrative Methods).
- More generally, narrative methods, including narrative identity, focus on the elicitation and analysis of stories to gain insight into the experiences, perspectives, and behaviours of individuals or groups. In narrative identity methods, the focus is specifically on identifying and understanding the personal and cultural traits coming from the contributed narratives, and analysing how they shape or reflect individual and group identity. This involves examining the stories individuals tell about themselves, as well as the stories they share with others in their community or culture.
- Narrative identity methods require a deep understanding of the cultural and social context in which these narratives are constructed and interpreted, as well as the ethical implications of using personal stories to inform research or practice.

Some examples outside of SPICE

Please find here more examples of narrative methods being applied within and outside of the context of cultural heritage:

Poetic Reflection Through Digital Storytelling: A Methodology to Foster Professional Health Worker Identity in Students

This paper reports on a case that involved a group of students in the field of "Public Health Issues" at Oslo University College (Jamissen & Skou, 2010). Typically, students prepare for their future career as health workers by developing scientific and technical knowledge – for example through assignments which are often descriptive and factual and emphasize analytical and rational thinking. However, students are not often offered the possibility to reflect on other key aspects of healthcare, such as the need to understand the feelings and the different ways of thinking and behaving of patients, relatives, co-workers, and other professionals involved in the complex processes of healthcare.

In this case study, the students were therefore asked to produce some digital stories that represent some key moments of the life of a health worker. The very activity of crafting stories and sharing stories allowed students: (a) to develop a more personal and empathic understanding and (b) to learn to appreciate how people can interpret the same situation in different ways. The stories that these students tell themselves during the workshop are important to build their identity as health workers.

This study can be connected to the concept of *Story Circle* (see in 3.1.2) and Workshop 1 (in 4.2) in which it was applied. Similarly, here there are arguments for improved empathy from the exercise of listening and telling personal stories.

Seasons of migrations to the North: A Study of Biographies and Narrative Identities in US-Mexican and Swedish-Chilean Return Movements

In this study, Tollefsen Altamirano (2000) applied the concept of narrative identity when examining the dynamics of geographical return movements in two North-South contexts, US-Mexican and Swedish-Chilean. Although the study was largely based on in-depth biographical interviews focusing on the individual lived experiences of migrants and refugees, it also took into consideration the broader social, economic, and political contexts. Built around various themes, such as everyday situations, circumstances and meanings ascribed to the emigration and return, the empirical data from the two case study contexts involved 17 life history interviews. Moreover, the study investigated the consequences of return concerning "social mobility, meanings of return and the shaping of identity-place relationships for the subjects of migration". Thus, the narratives from the biographical interviews were used to investigate how migrants made sense of their exile and return experiences and were additionally used to analyse the process of shaping the migration biographies. This involved establishing different categories and themes for various situations and experiences (e.g., family situations, work identities, experiences of migration, exclusion etc.).

3.2.4   Duo- and Autoethnography

Autoethnography has been defined as "an approach to research and writing that seeks to describe (graphia) and systematically analyse personal (auto) experience in order to understand cultural experience (ethno)" (Ellis, Adams, & Bochner, 2011). Whereas autoethnography refers to a self-oriented (auto) historical narrative, duoethnography refers to a dialogical process through which more than oneself-oriented narratives can be instantiated.

Applying Auto and Duoethnogaphy

Duoethnography has been considered as a useful method to explore one's own subjectivity and experience. In duoethnography, two or more persons work in tandem to dialogically criticize and question the meanings they ascribe to social issues and other cultural constructs with the purpose of exploring how "life histories of different individuals impact the meanings they give to those experiences by employing multiple voices in

dialogue" (Norris and Sawyer, 2014) Therefore, the key is to systematically analyse two different personal experiences in order to understand them in the given cultural context.

Autoethnography seeks to bring a reflexive insider's perspective to data acquisition. Here research and writing are used to describe and systematically analyse personal experience to understand cultural experience. For example, personal histories in the form of reconstructions of life can be used as the point of origin to launch processes involving data collection, organization, and visualization. These processes could involve a retroactive selection and writing of past experiences. Also, the autoethnographer can make use of interviews with others, or consult texts, photographs, journals, or even artefacts (Ellis, Adams, & Bochner, 2011). Autoethnography can be used to link personal histories with other more general history streams. Using duoethnography one can instantiate a dialogue between different autoethnographic narratives, each presenting different perspectives about the same artefact or event.

Auto- and Duoethnography in SPICE

There are several areas within the design and development of the SPICE systems that require empathy and understanding of the autoethnographic accounts on the experiences of the museums' end-users, community members, visitors, and citizens. This process helps in comprehending specific upbringings as well as the targeted audience's social and cultural backgrounds. Duoethnography conducted by two different participants could assist in the process of deeper understanding of a topic through a personal, social, and cultural lens.

Figure. 12 MELLIE workshop applying duoethnography methods, conducted on the premises of IMMA. (Photo credit: Gautam Vishwanath)

The stronger potential for duoethnography, is in the workshops and activities conducted by the Case Studies in their activities with end-user communities, communities of interest, and communities of practice.

For example, participants can be paired up, thereby allowing the researchers and/or mediators to interrogate the contexts of their autobiographical experiences to gain insight into the participants' current perspectives. In the IMMA case study, duoethnography methods were used in the MELLIE workshop wherein MELLIE participants in pairs create sculptures of each other (duoethnography) after going through Deep Viewpoints (see Figure. 12).

An important aspect to consider is that ethical issues such as trust between duoethnography participants and privacy concerns need to be addressed clearly before and during the workshops. Conductors of duoethnography should map out all the possible anticipated outcomes and be prepared for the process prior to its implementation.

Important considerations

- The process of duoethnography involves recognition and assistance of each other as participants, thus the method can help foster different perspectives and fill gaps in understanding.

- Ethical issues such as trust between duoethnographic participants and privacy concerns need to be addressed clearly before and during the workshops. The researcher should consider how to ensure ethical practices throughout the research process.

- The facilitator should map out all the possible anticipated outcomes and be prepared for the process prior to its implementation.

- As duoethnography involves a dialogue between different autoethnographic narratives, each presenting different perspectives about the same artefact or event, the facilitator should consider how to facilitate this dialogue effectively.

- As autoethnography involves using personal experience as the point of origin to launch processes involving data collection, organization, and visualization, it is important to recognize the significance of personal experience in understanding cultural experience.

Some examples outside of SPICE

- [Duoethnography as Relational Whiteness Pedagogy:](#) Human Orientation Toward Critical Cultural Labor by Gregory Sean Hummel and Satoshi Toyosaki (2015).
- [Using World of Warcraft to Teach Research Methods in Online Doctoral Education:](#) A Student-Instructor Duoethnography by Snelson, C., Wertz, C. I., Onstott, K., & Bader, J. (2017).

4 Workshops for Co-designing Citizen Curation Activities

In this section, we present and discuss the workshops for co-designing citizen curation activities. These workshops bring together museum staff, researchers, developers, and members of end-user communities to collaborate on the development of citizen curation activities that can converge towards social cohesion and its dimensions. For this, we will explore various participatory activities and approaches that have been used in SPICE to engage citizens and other community groups, providing tools and materials to assist in this process.

4.1 Exploring the Goal: Social Cohesion

As part of SPICE's co-design approach, it was essential to involve the five SPICE case studies as much as possible in defining their perspectives on the different social cohesion dimensions (see also Social Cohesion dimensions in 2). We were interested in how these dimensions, i.e., social relations, sense of belonging and

orientations towards the common good, (as described in Social Cohesion Dimensions in SPICE above) are interpreted and approached by the individual case studies, i.e., how do they fit with the case studies' needs, requirements, and planned interpretation and reflection activities. For this purpose, in the SPICE third co-design workshop, we developed a worksheet containing descriptions of the previously adapted social cohesion dimensions, as described in 2.1, together with a variety of tasks that each museum was asked to complete (for a visual overview of how this was presented to the SPICE museum partners, see

Figure 13).

Figure 13. Screenshots from the case studies' worksheet. The image above describes the different social cohesion dimensions as previously defined. In the second figure (below), the tasks for the museums to relate their cases to the social cohesion dimensions, are defined.

The social cohesion workshop tasks involved the case studies considering and elaborating on how the introduced dimensions and their components were relevant to their envisaged user-journeys, as well as how the various interpretation and reflection activities presented to the citizens can support the selected dimensions. In Figure 14, we can see how DMH has elaborated on how to approach the most relevant social cohesion dimensions in the context of their case.
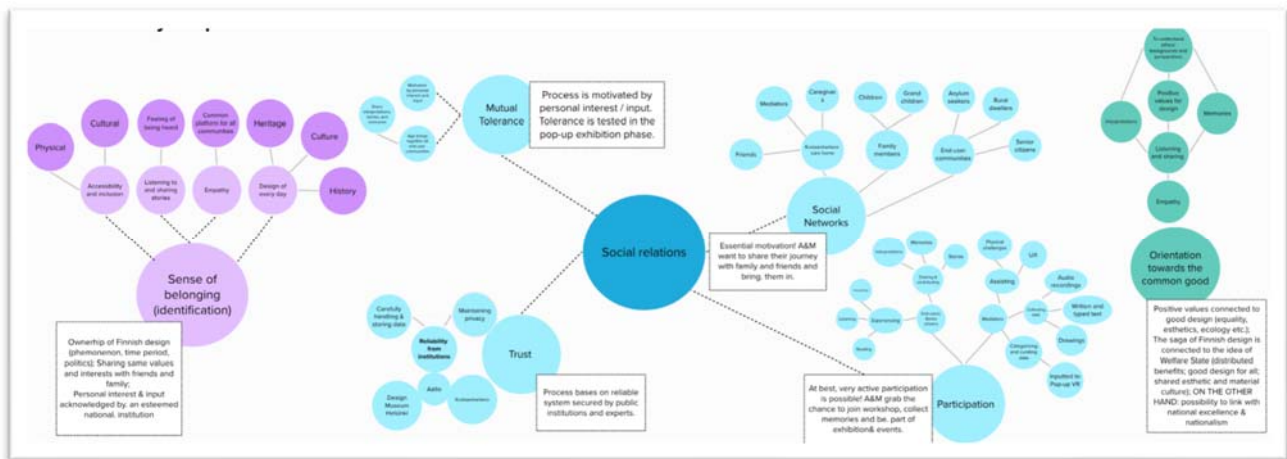
Figure 14. Visualization of the different social cohesion dimensions in the DMH case study

This type of workshop activity can inspire similar participatory activities for exploring the social cohesion dimensions to also include end-users and can be expanded to other domains beyond cultural heritage (e.g., education, conflict resolution, social work, community building, institutional identity, etc). Based on our experience, some ideas for this include:

- Start by defining the context for exploring social cohesion. What are the key issues, challenges, or opportunities related to social cohesion that you want to address? Who are the target groups, what are their needs and expectations?
- Based on the context, identify the dimensions of social cohesion that are most relevant. Adapt and tailor the essential dimensions to fit the context of your workshop/activity. For example, similarly to the SPICE workshop, you may consider social relations, sense of belonging, and orientation towards the common good.
- Use participatory approaches to engage participants actively in the workshop activities. This can include group discussions, role-playing, and other interactive activities that encourage collaboration and active participation.
- Always ensure that the workshop is accessible and inclusive to all participants. Consider factors such as language, cultural background, physical accessibility.

4.2   Exploring Combinations of Methods

Combinations of interpretation and reflection methods can be effectively arranged and combined to elicit and motivate citizen contributions. For example, in SPICE, one such combination was the use of artefact analysis, narrative inquiry, and narrative identity methods. This combination can help elicit more profound narratives on cultural heritage artefacts, i.e., encouraging citizens to reflect on the artefacts' material and socio-cultural context when generating personal stories. In this section, we will explore how these previously presented interpretation and reflection methods can be combined into a series of activities that can elicit meaningful contributions from citizens.

Workshop 1: Combining Artefact analysis, Narrative inquiry, and Narrative identity

In October 2020, the artefact analysis method, together with narrative methods, was tested with the SPICE partners as part of an online workshop (see more on Workshop 1 in D2.1). The workshop explored combining different interpretation and reflection methods namely *artefact analysis*, *narrative inquiry, story circle,* and *narrative identity,* for eliciting the sharing of participants' personal stories using images of different cultural heritage artefacts. This workshop can be used as inspiration for designing similar workshops, using, and combining different methods for activities with different stakeholders and end-user communities.

The objectives of this SPICE workshop were:

- To explore creative approaches that can motivate citizens in producing and sharing their stories about cultural heritage artefacts.
- To explore and adapt narrative analysis methods for investigating ways to implement insights from the citizen contributions into the SPICE interpretation-reflection loop.
- To understand the possibilities and limitations of the proposed approach.
- To identify, through qualitative analysis, relevant approaches, and markers to provide insights into their potential in the context of the SPICE digital tools and the SPICE IRL.

Workshop procedure and materials

Firstly, during the workshop, all participants were divided into groups. Thereafter each of the groups was provided with an image of an artefact, and an identic questionnaire for interpreting a specific artefact (see Figure 15). The questions for interpretation were specifically derived from artefact analysis (e.g., materials, age / time-period, condition, functionality, emotions elicited) and were based on our previous description of artefact analysis from the viewpoint of Martin & Hanington (2012) (see examples of questions below).

Examples of questions from the artefact analysis questionnaire:

- Can you describe which emotion(s) - if any - you are experiencing upon viewing the artefact?
- Overall, do you feel that the artefact communicates to you a sense of positivity or negativity?
- What kind of object is the artefact?
- Are you familiar with this specific artefact? If "yes", what do you know about it?
- What is the primary material of the artefact? (E.g., iron, brass, silver, cloth, porcelain, canvas etc.)
- What other materials do you notice?
- What is the age of this artefact?
- How would you describe the condition of the artefact?
- Please specify why you rated the age and condition of the artefact the way you did.
- Can you describe a certain time period or era that the artefact is from?
- Can you describe a certain time period or era that is represented in/by the artefact? (If any)
- What is the function of the artefact?

After this task, the participants engaged in the first storytelling task. The participants were asked to individually make up a short story about their experience with the artefact, assuming the roles of themselves as a child. The reason for exploring a narrative from the focal point of the participant as a child and later, as an adolescence respectively, was based on that "[s]hared family narratives take on an increasingly important

meaning in adolescence, when a primary developmental concern becomes the exploration of identity (Erikson, 1968) through narrative meaning-making" (Fivush & Merrill, 2016).
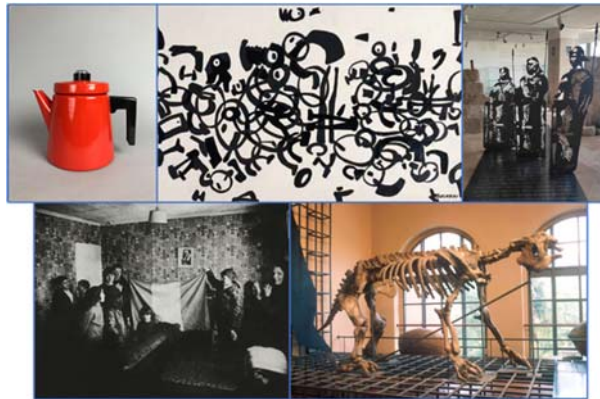

Figure 15 Artefacts presented to participants during the workshop. From the top left: Antti Nurmesniemi: Coffeepot Pehtoori, Carla Accardi: Arciere su bianco (Painting), Roman Legion (Sculpture), Les Levine: Deery Family of 13 (Catholic) (Photograph), Megatherium Americanum (Fossil).

During the second iteration of the activity, all the participants were provided with more information on the artefact. This information included textual descriptions of the artefact, which was provided by the museum curators. After having received this additional information, the participants were asked to create yet another story, but this time assuming the role of themselves as an adolescent. After creating these two stories, the participants were gathered in a *story circle* (see also 3.1.2 on Narrative Method) and asked to select and share one of their stories.

The workshop concluded with a collective discussion, during which facilitators thanked the participants and collected feedback on the workshop activities and tasks. The data was thereafter analysed using methods and tools from narrative analysis.

Workshop outcomes

The outcomes of the digital co-design workshop demonstrated the potential of combining methods for designing activities and prompts to elicit rich narrative contributions inspired by cultural heritage artefacts. The approach, which combined methods of artefact analysis, narrative inquiry, and narrative identity, was found to be effective in motivating citizens to produce and share their stories relating to cultural heritage artefacts. Moreover, the workshop contributions were analyzed using narrative analysis methods to identify key patterns and themes within the participants' narratives. This analysis aimed to support the interpretation and reflection processes embedded in the SPICE Interpretation-Reflection Loop (IRL) and provided valuable insights into the potential of citizen narratives within the IRL.

Best practices and considerations for applying narrative-based citizen curation methods

- Be prepared for participants to share stories that may include personal details or unexpected perspectives. Embrace the unexpected outcomes as they can add valuable insights to the process.

- Design activities that allow participants to engage in personal reflection and creative expression. Providing a safe and open space where participants feel free to share their personal experiences and stories can lead to more meaningful contributions.

- Combining diverse interpretation and reflection methods can offer different yet complementary approaches to eliciting and analysing user contributions.

- Ensure that participants have clear instructions and materials for the activity. This can help to ensure that participants understand the purpose of the activity and can engage fully.

- Design activities with the target audience in mind. Consider the age, background, and interests of the participants to ensure that the activity is engaging and relevant to them.

- Provide participants with the freedom to decide how they want to share their contributions and stories. This can include the choice to share personal recollections or to share stories in the form of fantasy. Allowing for such freedom can help participants feel more comfortable and engaged in the activity.

4.3   Designing Interfaces for Citizen Curation

As part of the co-design journey, the next important step was to research and develop early user interface designs that could effectively integrate the various citizen curation activities while keeping in mind the diverse needs and requirements of the case studies' end-user communities. The aim was to design and develop interfaces that could promote inclusivity, participation, and collaboration in both physical and virtual spaces. Recognizing the importance of accessibility, the focus was on ensuring that they are accessible to all. For this, we started with an analogue approach that aimed to involve the case studies in the early design process as much as possible. This step was also important to develop the activities in the direction of the interpretation reflection loop (IRL).

Workshop 2: Designing interface mock-ups using the methods

The aim of SPICE Workshop 2, was to support the case studies in combining and integrating the different citizen curation methods into their desired interfaces (see more on Workshop 2 in D2.1). For this, the cases were provided with materials and tools that guided them in designing and sharing their case-specific mock-ups.

Workshop procedure and materials

Before the actual workshop, the case studies were provided materials and resources for independently exploring the methods and designing their first mock-ups. This included:

- **Seven methods cards** that described the four interpretation and three reflection methods originally envisioned for SPICE (see Figure 16). The interpretation methods were meant to be used to develop activities that could encourage citizens' sharing contributions (e.g., the activities in the mock-ups). These contributions could then be used with the reflection methods, either for analysis or as a foundation for new types of activities for further contributions.

Figure 16. Visual overview of the SPICE methods cards used during Workshop 3 (see more about the initial cards in D2.1)

- **One empty card** for the case studies to select which methods they find interesting for incorporating in their interface mock-ups.
- **A brief description and visualization of the IRL**, as a reminder that citizen curation activity processes should converge into "user-journeys" that produce interpretations and reflections to promote sharing of perspectives, inclusive participation, and social cohesion.
- A document describing the **Citizen Curation mock-ups,** a starting point for the case studies to make their own mock-ups.
- Instructions for the case studies to make **their own mock-ups,** how to download the Balsamiq software that was used to make the citizen curation mock-ups.
- Two Balasmiq files containing interfaces from the mock-ups documents that one can reuse in the mock-up (see Figure 17).

Figure 17. Examples of IMMA's mock-ups from Workshop 2 (see more in D2.1)

At the start of the actual workshop, each case study was asked to do a short 10-minute presentation of their mock-ups and present their selected methods using the 'My Card' method card. Each case study presentation was followed by a 5-minute discussion. At the end of the presentation WP2 suggested five guiding questions to help the case studies improve and enhance their reflection methods and activities, converging towards the interpretation-reflection loop (see guiding questions below).

5 guiding questions for enhancing activities for the Interpretation-Reflection loop (IRL):

- How do the activities enable citizen curation in relation to your exhibition?
- What kind of reflections do you expect your activities to elicit on the participants?
- What type of reflection "outputs" could help you best elicit important conversations in your community?
- What do you think you could do to direct these activities, to make your audiences reflect in a direction that promotes social cohesion? (use your intuitive understanding of social cohesion)
- What changes to your original design would you consider based on this?

The outcomes of the workshop revealed that all the case studies demonstrated different approaches when presenting who the 'main' users of their system were. While some case studies were more focused on the visitor perspective, then others presented their mock-ups more from the curator, or museum mediator perspective. During the workshop, this allowed discussing and addressing the different considerations for the platform from various viewpoints. Moreover, an important consideration that was pointed out was concerning the primary target groups and communities surrounding these target groups. During one of the case study presentations (GAM), it was pointed out that although it was important for them to keep their focus on their target group, they simultaneously wanted to focus on cultivating the broader community around their target group, highlighting essential consideration for all the SPICE case studies.

5 Designing and Implementing User-journeys

After exploring and combining the methods and activities, and integrating them into the interface mock-ups, the next step is to design and implement the use-journeys. In this context, a user journey refers to a step-by-step linear process through which we can better understand how (from the user's point of view) the user moves through the interpretation-reflection process. Furthermore, it is important to consider how the intended user-journey can support the general goal of the IRL. In the following section, we will introduce the tools for designing case-specific user-journeys as well as illustrate how the SPICE case studies approached the development and implementation of these.

5.1 Tools for Designing User-journeys

To support the case studies in designing and implementing their user-journey(s), for Workshop 3 (see more in D2.3), we developed several tools to support the cases in this process.

The *design criteria template* considers several important aspects of the user journey. This includes among others, how the user is introduced to the initial (interpretation) activity, how is the data collected and processed, and how is the user-journey expected to elicit reflection. The template can be directly used during the development of the user-journey script.

Another template was developed for exploring *the semiotic space of the museum,* to support the exploration of the boundaries and opportunities within the semiotic space in which the visitors, target groups and end-user communities will be participating and interacting in.

5.1.1 Design Criteria Template

The design criteria template (see Figure 18) aims to support the development of the user-journey script through the following considerations:
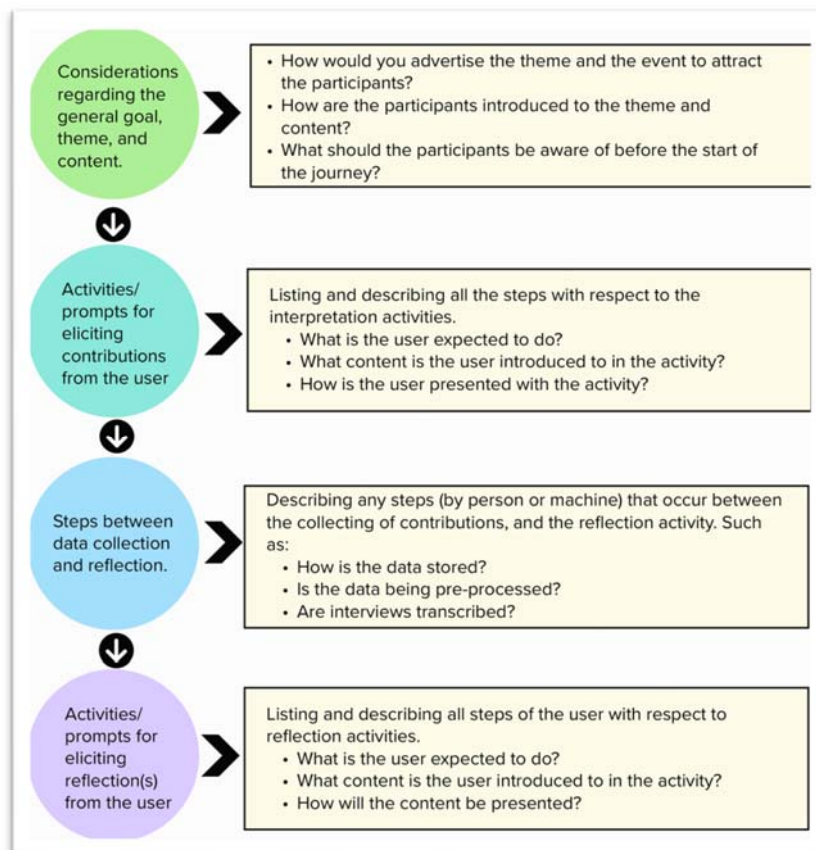

Figure 18. The design criteria template for the user-journey script

5.1.2   Exploring the *Semiotic Space* of the Museum

Following Lotman's notion of the *semiosphere* (Lotman, 1990), defining the semiotic space of the museum can support exploring the boundaries and opportunities within the semiotic space in which the visitors, target groups and end-user communities will be participating and interacting in.

Moreover, using the metaphor of the museum, Yuri Lotman has defined the concept of the semiosphere as follows: *"... imagine a museum hall where exhibits from different periods are on display, along with inscriptions in known and unknown languages, and instructions for decoding them; there are also the explanations composed by museum staff, plans for tours and rules for the behavior of the visitors. Imagine also in this hall tour-leaders and visitors and imagine all this as a single mechanism (which in a certain sense it is). This is an image of the semiosphere. Then we have to remember that all elements of the semiosphere are in dynamic, not static, correlations whose terms are constantly changing. We notice this specially at traditional moments which have come down to us from the past."*

 (Lotman, 1990, pp. 126-127)

However, similarly, to the idea of narrative identity, the exploration of semiotic space does not necessarily have to involve a museum but can also be adapted and expanded to other scenarios. For example, teachers can use the concept to analyse the classroom environment and how it affects student learning. They can examine the materials, tools, and activities used in the classroom, and how they contribute to the overall learning experience.

<u>Tips from SPICE!</u>
For the SPICE case studies, the semiotic space being designed by the cases can be explored by answering questions such as:

- What degrees of freedom are provided to the museum visitors/ participants?
- What degrees of creativity are provided to the museum visitors/ participants?
- What constraints are placed on the museum visitors/ participants?
- What kind of values are already implicit in the activities of the user-journey?
- What kind of values are implicitly forbidden in the activities of the user-journey?

5.2   Developing and implementing the user-journey scripts: Examples from workshops

As part of Workshop 3 and 4, the case studies approached the development and implementation of their user-journey scripts using some of the tools described above. Moreover, after developing the user-journey scripts, the case studies were guided to test them with their respective target groups and end-user communities. In the following, we will exemplify how this process was developed for DMH and HECHT.

DMH

As shown in Figure 19, DMH's user journey script illustrates a step-by-step linear process of how the user moves through the experience, including the steps from the introduction stage to the selected activities. DMH's user-journey involves three stages: Pre-visit stage, Pop-up VR Museum stage and post-VR stage. During the pre-visit stage mediators inform the potential participants about the Pop-up VR Museum and make note of the ones interested in participating. Moreover, it is also in this phase that the mediators note and address the specific needs and requirements of the members of the target community, for instance, the participants' physical and psychological condition. Accessibility is also considered in the pre-visit stage.

The "main" experience takes place during the Pop-up VR Museum stage. The VR experience is initiated with the assistance of a mediator, who introduces the experience to the participant, and explains and adjusts the equipment. Thereafter, the participant will see a 'Welcome' screen and is asked to choose an avatar. Once the participant has selected an avatar, the participant is "morphed" into that character in VR. The next interaction is elicited by the participant following the instructions of the avatar's voice, introducing how the participant can interact with the objects in VR. Once the participant has been introduced to the possible interactions in the experience, the participant can explore the embedded stories connected to the various objects in the virtual world through interacting with various objects. Once the participant exits the virtual "world", the participant can stay in the virtual "space" to draw or sculpt in 3D and share their creation.
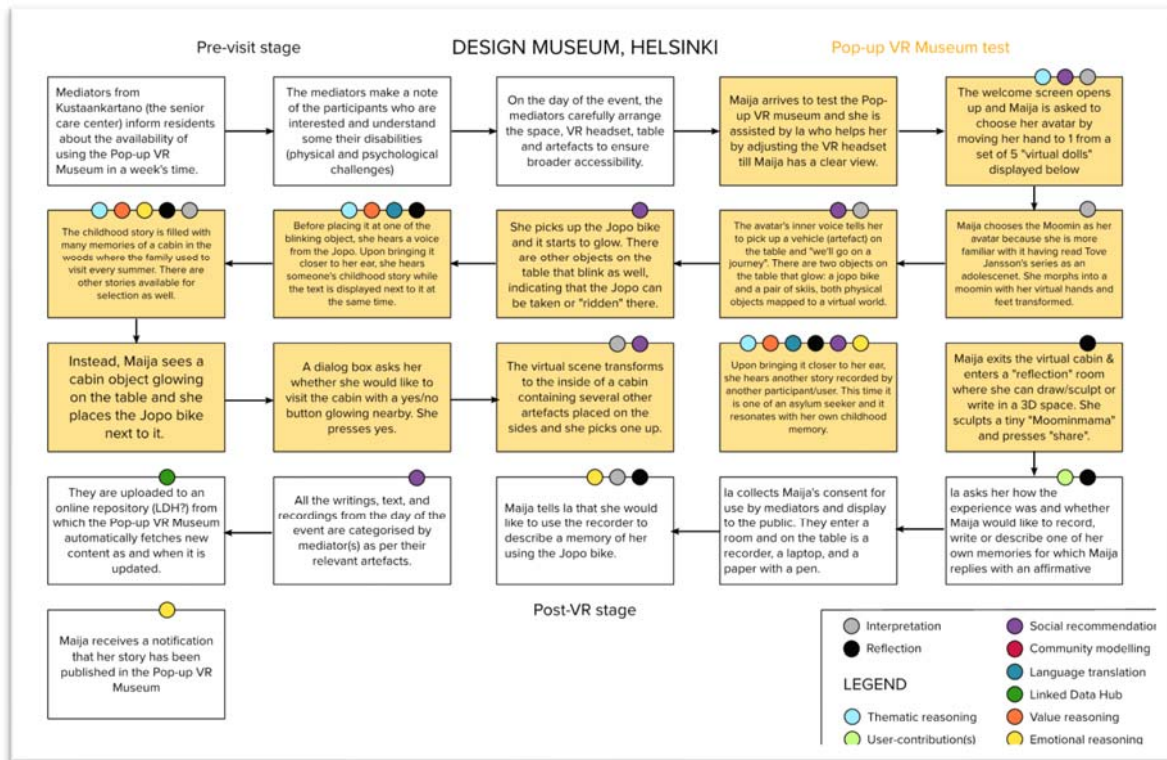
Figure 19. DMH's user journey script.
Graph depicting the user-journey as envisioned by DMH during Workshop 3.

The post-VR stage also represents the reflection stage. In this stage the mediator asks the participant what they thought about the experience, and if they would like to contribute something themselves (e.g., a story of a personal memory relating to a specific object). If the participant is interested in contributing, the mediator collects the participant's consent and follows the procedure for recording the contribution. Thereafter, the recorded story is categorized by the mediator (per relevant objects) and uploaded to an online repository from which the Pop-Up VR Museum automatically retrieves new content and when it is updated. The participants will also receive a notification about their contribution being published in the Pop-up VR Museum platform.

DMH also equipped their script with a legend which allows the technical work packages to determine the points where data for the system is collected. As this provided a good solution in terms of better operationalization and implementation, this idea was subsequently also applied to the other case studies' user-journey scripts. In addition to this, DMH also elaborated on ideas regarding the promotion and introduction of the experience for potential users, including strategies for contacting relevant institutions, visual materials and preparing the mediators. Important considerations were also discussed in respect to the awareness before the journey.

HECHT

The HECHT user-journey (see Figure 20) consists of three stages: (1) pre-visit stage taking place in the class, (2) at the museum, and (3) post-visit stage in the class.

1. During the pre-visit stage at school, the students are asked to fill in questionnaires on demographics, RHMS (Relevance of History Measurement Scale) and AOT (The Actively Open-minded Thinking Scale). Before the actual visit to the museum, the students are also introduced to the main topic, a historical dilemma (which is part of the curriculum). In the context of this, the students will be shown a video, presented to a historical artefact, and then asked about their personal opinions on the topic.
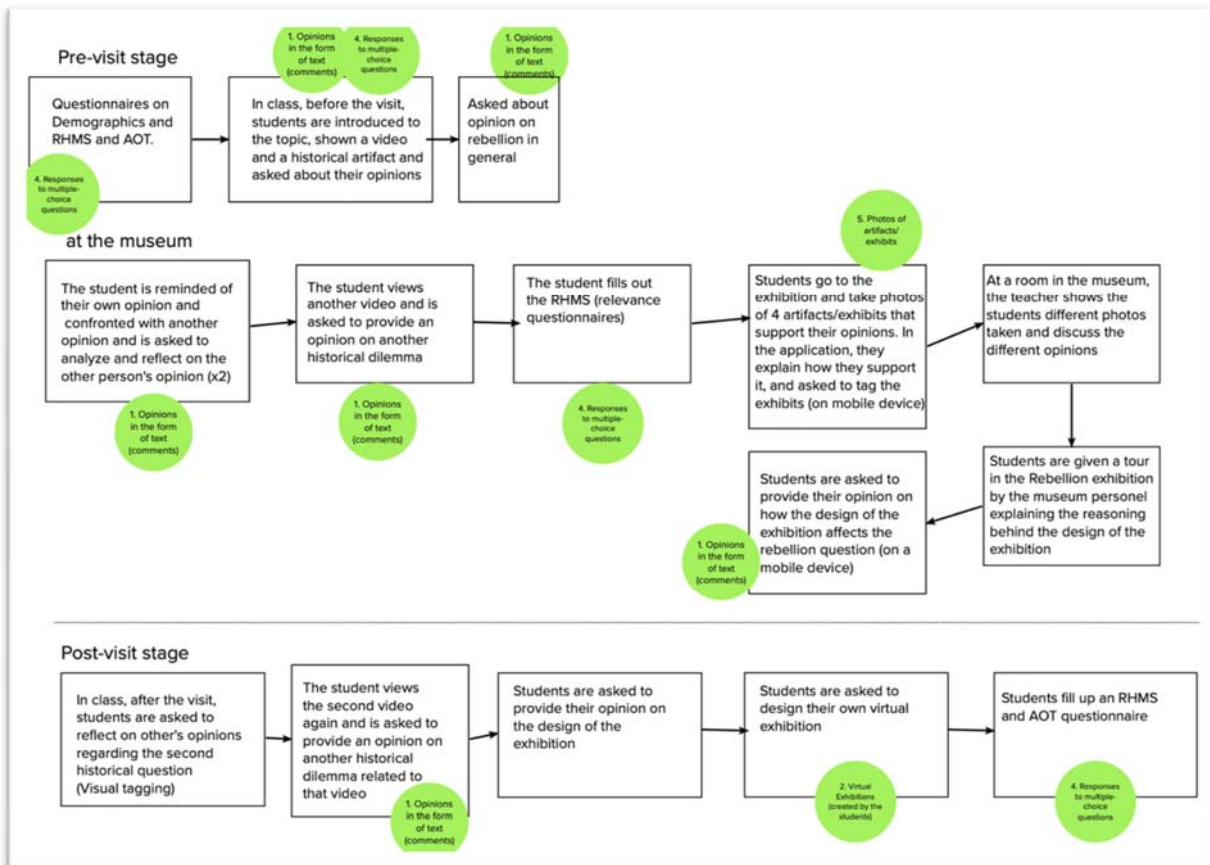
Figure 20. HECHT user journey script. Graph depicting the user-journey as envisioned by the HECHT case study at the time of Workshop 3.

2. At the museum, the students are provided with the necessary technology, and are then individually reminded of their previously expressed opinion (from the previous stage). Thereafter they will be confronted with someone else's opinion on the same topic. The students' task is to analyse and reflect on the other's opinion. After this, the students are asked to watch a video conveying another historical dilemma, (a different video from the one introduced in the first stage) and asked again to provide their opinion. This will be followed by another RHMS questionnaire.

The following museum activity involves the students exploring the museum exhibition and taking photos of the artefacts/exhibits that support their previously expressed opinions. To support the students in this task, they are asked to explain how their selected artefacts support it and are asked to visually tag the exhibits on a mobile device. Subsequently, the teacher will be presenting the students' photos, which will be followed by a discussion of different opinions on the topics.

The discussion at the museum will be followed by a tour of the museum, which will aim to explain the reasoning and rationale behind the exhibition. It also aims to elicit opinions and thoughts on how the design

of an exhibition can affect one's ideas on the presented topic. Additionally, it hopes to introduce how these types of exhibitions are designed.

3. Lastly, during the post-visit stage, the students are asked to reflect on each other's opinions in respect to the visual tagging task for the second historical dilemma. They are also asked to curate an exhibition of artefacts which support their viewpoint (using a PowerPoint presentation).

The design process for the case studies to develop their case-specific user-journey scripts was fruitful in terms of gaining a better understanding of how the users of the application move through the interpretation-reflection process in a step-by-step linear process. Thus, instead of proposing a rigid template, the case studies were encouraged to approach their user-journeys based on their individual case study needs and requirements. Thus, while some case studies focused more on the users' steps in the system (HECHT), others described in more detail the mediation process around the system (IMMA). Furthermore, developing the user-journey scripts helped the case studies in concretizing the IRL processes in their pilots. A good example of this was in the case of MNCN where the user-journey script helped to highlight gaps in the interpretation phase, serving as the foundation for the user-journey to be able to produce content amenable to the kind of analysis aimed by the IRL. Moreover, the designing of the user-journey scripts also supported the case studies envisaging in which points of the journey different types of data would be collected. This subsequently supported facilitating dialogue in terms of the technical considerations.

5.2.1   Case studies testing the user-journeys

In some cases, rather than testing a 'complete' user-journey, some of the case studies focused on specific parts of their intended user-journey scripts. Nevertheless, in all cases the testing of the user-journeys was considered as fruitful in terms of gathering insights on the user-experience and the embedded methods, as well as regards to generating and collecting initial data.

For example, within their various workshops with senior citizens, **DMH** focused on the collecting of personal narratives from participants. The personal narratives and memories were elicited through a participatory process in which the participants interacted with museum's pre-selected artefacts and were to a great degree supported by the mediators. The workshops not only helped to assess the activities and overall experience, but also evoked considerations in terms of the processing and editing of the collected narratives.

In the case of **MNCN**, the testing involved primarily one aspect of the user-journey, namely the at-the museum experience. Although it was found that the treasure hunt application was found engaging by the primary target group, the testing did not yet provide all the necessary insights for the evaluation of the IRL. While initial data from multiple-choice questionnaires could already be used as input for the development of some of the digital tools, i.e., the community-modeler (see also D3.3 and D3.5), it also highlighted some possible limitations. More specifically, the initially planned multiple-choice questions inherently pre-determined the possible outcomes, and as such, limited the possible depth of the user-contributions. Although during the testing this worked well for the underlying teaching objectives, at the same time it was viewed as an issue with respect to the idea of citizen curation, in which the users should be encouraged to share their own unique interpretations (see also D2.1). In this direction, MNCN began investigating how to provide more opportunities for their participants to share open-ended and personalised contributions.

The **GAM** workshops also provided essential insights in terms of the general experience of the user-journey but also informed about the necessary changes to the visual interface of their GAM-game application based on the considerations of their primary target group. The data gathered during the workshops fulfilled the expectations of GAM, both regarding the user-experience (UX) as well as with respect to the intended user contributions. The responses from the qualitative interviews conveyed the users' deep attachment to their contributions, and thereby highlighted the artworks' capability to encourage expression of personal memories and feelings. Outside of reflecting on one's own contribution(s), the users also expressed curiosity

and desire to explore the stories of others. Additionally, art and culture professionals valued the possibility of seeing the stories created by the users as possible visit paths in the museum collection, thus envisaging a use of the story browsing function as a form of guidance in the physical museum.

On the other hand, regarding user-experience (UX) aspects of the IMMA application, the IMMA application was well received by all the groups taking part in the workshops. The pilot was found easy to use, with no prior skills or expertise found necessary to perform the activities.

In the HECHT application, it was found that the fact that the participating students were being graded on the SPICE activities as part of their course of study was an advantage and viewed as a catalyst for the eliciting of rich user contributions. Additionally, it was reported that, from informal feedback, the UX of the user-journey was considered positive, as students seemed to enjoy the activity. Changes in the students' openness to the opinions of others were also analysed from the responses to AOT and RHMS questionnaires presented multiple times during the user-journey. It was found that "the disposition to be fair towards different conclusions even if they go against one's initially favored or pet conclusion" (Baron, Reflective Thought and Actively Open-minded Thinking, 2016, p. 109), increases, when introducing a similar opinion to the participants, before presenting a dissimilar opinion (Goldberg, Wecker, Tabashi, Lanir, & Reinhartz-Berger, 2022).

Thus, although the case studies approached the testing of their user-journey scripts somewhat different from each other, in all cases, the outcomes and results from the testing provided important insights, particularly regarding the case studies' target audiences, considerations for data analysis and processing, and how the methods and activities could better support the intended IRL.

5.3 Guidelines, best practices, and tips for designing and testing user-journeys with participants

Based on the testing and lessons learned, we can suggest the following considerations and suggestions:

- When designing and testing the user-journey, it is important to identify target user groups and recruit participants, but also to keep in mind to involve a diverse range of participants to ensure that feedback is representative of the user population. e.g., different age groups, cultures, and backgrounds, to obtain a range of perspectives and feedback.

- If possible, involve stakeholders and co-design partners in the design and testing process, e.g., teachers and educators who can provide valuable insights into the user journey.

- Consider the scope and determine which parts of the user-journey to test and what specific aspects to focus on. It is important to prioritize testing based on what is most critical to the user experience and to set realistic goals for the testing phase.

- In the design process, consider the accessibility of the activities including for those with physical or cognitive disabilities and ensure that the different technical features are also pre-tested prior to the actual testing.

- Make sure that the testing objectives for the workshops and user journey are clearly defined and communicated to all participants, including the specific elements of the user-journey script that will be focused on. The objectives should include what you want to achieve through testing and what insights you are looking for.

- Ensure that participants understand what is expected of them during the testing phase. Provide clear instructions on how to use the product, what actions to take, and how to provide feedback.

- Address ethical considerations related to consent, editing of content, and translation of in-person sharing of contributions.

- During the testing, observe how participants interact with the product and take note of any issues or problems they encounter. This feedback can be used to improve the user experience and to refine the user-journey.

- If possible, conduct user testing in multiple sessions. Conducting testing over multiple sessions can help to identify issues that may not be immediately apparent during the first session. It also provides an opportunity to gather more feedback and insights from participants.

- Focus on considerations regarding the data collection.
    - Use a mix of different tools and methods for recording content, including audio recordings, written documentation, and other relevant methods, to cater to different preferences and abilities.
    - Consider how the collected data is planned to be analysed.
    - If possible, collect both qualitative and quantitative data on user experience, including feedback on usability, engagement, and satisfaction. This information can be used to identify areas for improvement and to prioritize future development efforts.
    - When it comes to storing data, consider appropriate measures to protect users' privacy. For sensitive data, use anonymization techniques such as anonymized user-IDs.

6   Exploring Reflection Processes in the IRL

In the context of SPICE, we propose a theoretical framework for cultural modelling which focuses on how citizen curation activities and the data collected from the user-journeys can be used to model the ongoing cultural process. We do this by proposing a theoretical model for aggregating the different types of citizen data and inputs, using the SPICE digital tools, to facilitate a representation of emerging narrative identities (see in 6.1). This mapping of the curatorial process serves different purposes in the IRL, which can be related to the reflection process. For example, it can be used to represent the cultural process emerging from citizen curation, producing data-stories, meta-stories, visualizations, innovative recommending criteria, all of which enhances reflection in the audience and within the museum community.

In this section, we will describe the rationale of the theoretical framework and the logic that lies behind the integration of the digital tools developed for the SPICE platform, which are used to support reflection and provide tools for citizens to create representations of themselves.

6.1   SPICE Theoretical Analysis Tools - Heterarchical Clustering in the IRL Model

In order to produce innovative and original representations of the citizens' contributions during the citizen curation process, in the SPICE context we delineated the following criteria and objectives:

- Recognize the various culturally constructed stories in which citizens are emplotted (i.e., narrative identities).
- Avoid misleading and stereotyped pre-conceived conceptions of identity, i.e., let the narrative identities emerge in the process.

- Find "solidarities" and "sense of belongings" that can overlap in seemingly contradictory or unexpected clusters of shared cultural artefacts, values, opinions, emotions, taste, demographic attributes.
- Map the "heterarchical entanglement" of (demographic) traits, emotional profiles, values, and interests (or themes) in such narrative identities.
- Organize subjective reactions (emotions), values and interests (themes) expressed from a particular (subjective) standpoint.
- Create a dynamic linkage between identity (sense of belonging) and agency (social cohesion dimensions).
- Contribute to the representation and visualization of such relational networks.

For this purpose, we suggested a logic that we called "*dynamic heterarchical clustering*". At the core of this logic is the inherent characteristic of a heterarchical perspective, which allows us to organize subjective values, emotions, or opinions (expressed from a particular standpoint) in non-transitive relations, i.e., avoiding hierarchical and categorical criteria of inclusion (von Goldammer, Joachim and Newbury, 2003; Bruni and Giorgi, 2015).

To analyse and cluster the data in this sense, our framework proposes to initially demark two spaces: the citizen space (which includes both the data about the citizens, and their curatorial contributions in the process) and the cultural heritage space (which includes the existing data on the cultural artefacts and the museums themselves). Initially, these two spaces are disjointed or unrelated, but they become united during the curatorial process, putting in relation three types of data: citizens' demographics, citizens curatorial contributions (i.e., selections, tags, narratives, emotional profiles, etc.) and cultural artefacts' descriptions and databases.

The idea is to develop logical ways for "kaleidoscopically" clustering attributes based on these three types of data: cultural artefacts (attributes, descriptions, history, etc.) demographic attributes (provided or inferred information), and citizens' contributions (which can be analysed or mined for values, emotions, and themes).

This allows us to produce a richer and more nuanced relational logic with the possibility of representing the citizens' overlapping sense of belonging to different emerging narrative identities, which make evident differences within, and similarities across, putative pre-established groups.

Hence, heterarchical clustering is a way for challenging the system's initial characterization of the participant at the user-journey's point of departure, based on static *a priori* categories. The idea is to avoid "categorical rigidities by emphasizing the embeddedness of identity in overlapping networks of relations that shift over time and space" (Somers, 1994). The emerging communities and their narrative identities are not in this sense pre-determined (although the initial predetermined categorical community may be necessary to kick-start the process, e.g., secular, or religious groups, students from a particular neighbourhood, Deaf people, etc.). One can "kaleidoscopically" finetune the attributes that determine a dynamic community, in relation to an artefact, a context, a theme, a value, an emotion or any other "minable" attributes that one may wish to put into the centre of the perspective.

From SPICE, we have learned that we need to use at least two or three kinds of attributes to define an emerging community, for example, who has responded to Marc Chagall's *Dans mon Pays* (painting from GAM) in relation to a particular emotion. This per se does not define a community but it puts in relation several putative communities with overlapping identification relations, those that experience the emotion "fear" in response to *Dans mon Pays*, those that felt "joy" etc. Of course, feeling "joy" or "fear" in response to the painting does not define a narrative identity, but the more attributes are included in generating the clusters, the more the aggregation of attributes will resemble some sort of narrative identity. When we add values into the picture, one could discover for example that some individuals of the emerging communities that felt "joy" coincide in the value of "honesty" with some of the individuals that were in the emerging community that experienced "fear" in response to *Dans mon Pays*, constituting a new potential sense of

belonging. The more refined and the richer the aggregated clusters (i.e., more values, themes, emotional responses), the more they will resemble a narrative identity.

Depending on the quantity of participating citizens, extension of the exhibition, and amount of citizen contributions, this analysis and representation can be become a very strenuous process. Therefore, in the context of SPICE, the question became how to use the available semantic and meaning-making tools in the SPICE platform to facilitate the analysis and the representation of the emerging narrative identities in such a heterarchical perspective. Before elaborating on this aspect, it is pertinent to introduce the different semantic and meaning-making digital tools developed in the project.

6.2 The SPICE Platform and Digital Analysis Tools

In this section, we provide descriptions of tools, services and infrastructures developed for the SPICE platform. While the tools in this case have been specifically developed to support the goals of SPICE, they can nevertheless also support scenarios and contexts outside of the domain of cultural heritage.

The SPICE digital tools include:

- **DEGARI** - an affective based sense making tool.
- **The Spice Semantic Annotator (SSA)** - an annotation service for the semantic enrichment of textual contents.
- **The Spice Value Reasoner** - a value detector tool that aims at representing and extracting users' moral, cultural and personal values from textual inputs.
- **The Spice Thematic Reasoner** - a tool able to enrich structured or unstructured content with thematic information.
- **The Spice Social Recommendation tool** - a tool that takes a user's characteristics and tries to find similar/dissimilar items (based on emotion or sentiment) of people who are in similar/dissimilar communities.
- **VISIR (VISualization for Interpretation and Reflection)** - a tool that enables museum curators to detect, visualize, and explain the implicit communities emerging in the SPICE IRL model.
- **Linked Data Hub (LDH)** - a data infrastructure which supports the acquisition and management of dynamic data from a variety of sources, including cultural heritage databases and citizen curation inputs.

6.2.1 DEGARI

DEGARI (Dynamic Emotion Generator And ReclassIfier)
is an affective based sense making tool based on the TCL reasoning framework (Lieto et al, 2021). It allows to reason upon an ontology with commonsense (i.e. prototypical) descriptions of emotional concepts and, once exploited the affective classifications of museum items, the system is also able to make different types of recommendations aiming at improving the experience of emotional inclusion and critical reflection in museum fruition (Lieto et al. 2023).
The system has been used as extractor of complex emotions (i.e. emotions derived from the combination of basic ones) for the case studies of the GAM, the Hecht and the Design Museum. In these case studies, then, the DEGARI system is an important component for the generation of implicit communities. In addition, it has been used in the GAM Game application to recommend to the Deaf users the exploration of museum items evoking affective responses that are different from the ones associated to the selection of artefacts already seen by the users. It can be used as a tool suggesting diversity-seeking recommendations based on the affective dimension. The system has been already used and tested on dataset coming from different artistic fields (Lieto et al. 2021). The standalone version of the system is publicly available at https://github.com/alieto/DEGARI (with license GNU 3).

6.2.2   SPICE Semantic Annotator

Spice Semantic Annotator (SSA)
is an annotation service for the semantic enrichment of textual contents, targeting user generated contents as well as descriptions of museum artefacts. The service is multilingual and supports English, Finnish, Hebrew, Italian and Spanish. It consists of a natural language processing pipeline that performs: Sentiment Analysis, Emotion Detection, Entity Linking and Hate Speech Detection.

The process of semantic annotation is realized by a Natural Language Processing Pipeline that includes different analysis modules, each one responsible for annotating the document with respect to a specific aspect: sentiment analysis, emotion detection, entity linking. The overall process is exposed by means of standard RESTful APIs and produces a JSON-LD document as output. JSON-LD is a JSON-based serialization for Linked Data that can be seamlessly stored in the Linked Data hub of WP4.

SSA analyses textual contents collected from museum visitors interacting with the activities scripted in the interfaces (WP5) and realized for the different use cases (WP7). The service annotates contents with respect to the ontological models developed in WP6 and generates as output an RDF graph to be stored in the linked data hub developed by WP4. Such analysis puts the visitor at the centre by interpreting and then enhancing his point of view.

6.2.3   Value Reasoner

Spice Value Reasoner
is a tool that aims at representing and extracting from natural language different moral, cultural and personal values of a User in relation to some Item from a Collection. The Value Reasoner can be used to detect the "Value profile'' (namely the set of values evoked by a single artefact or collection) of some item and it allows Cultural Heritage Institutions and Curators to cluster them and organize them in a meaningful way according to their design intentions. In SPICE, the tool has been used for enriching Stories collected during the case study of the Design Museum of Helsinki and stored on the Linked Data Hub.

A prototype of the value detector is now available online at this link. Additional details concerning the Value Reasoner and its usage within the project can be found in Deliverable D6.6.

6.2.4   SPICE Thematic reasoner

Spice Thematic Reasoner
The Thematic Reasoner is a tool able to detect the subject (or theme) of a piece of text and to deduce the thematic subject of a collection of entities (e.g., the artworks located in a room of a museum). The tool adopts the taxonomy of Wikipedia categories as a reference inventory of concepts used as target themes. In short, it applies a set of heuristics to associate any entity (or collection of entities) to a set of concepts of the reference inventory. The Thematic reasoner has been used to cluster topically associated stories collected by the Design Museum of Helsinki during the workshops.

The result of the analysis of the Thematic Reasoner is available in RDF format (complying with the SON's Theme Ontology - cf. D6.3) and can be queried via the SPARQL endpoint at the following link or explored via the web-based application available online at this link.

In conclusion, the Thematic Reasoner is a tool able to enrich structured or unstructured content with thematic information. Such enrichment can be useful for common tasks such as clustering, classification, and exploration of knowledge of any domain.

Additional details concerning the Thematic Reasoner and its usage within the project can be found in Deliverable D6.6.

6.2.5   SPICE Social Recommendation tool

Spice Social Recommendation tool
takes a user's characteristics and tries to find similar/dissimilar items (based on emotion or sentiment) of people who are in similar/dissimilar communities.

It is used in SPICE to explore similar/dissimilar viewpoints to promote inclusion and cohesion.
In the Hecht case study, it is used for example to find items by dissimilar people who have similar emotions or sentiments regarding a topic (i.e., in HECHT's case the Galilee Rebellion). The technique can be used to either promote inclusion by showing similar views from different/similar communities;
or encourage cohesion (openness) by showing dissimilar views from different/similar communities.

6.2.6   Linked Data Hub

Spice Linked Data Hub (LDH)
was developed as a data infrastructure to support the acquisition and management of dynamic data from a variety of sources including museum collection metadata and digital assets, social media events and user activities, systems' activities (e.g., recommendations, reasoning outputs), ontologies and linked data produced by pilot case studies. The SPICE LDH approach is to go beyond aggregators and research on an infrastructure that could mediate between cultural heritage institutions and citizen engagement businesses and organisations, keeping ownership and control in the hands of the data providers. The Linked Data Hub aims at:

- building a development infrastructure to allow citizens' opinions, responses, and memories to be shared within safe channels preserving the privacy, ownership, and fair use of the resources involved.

- support developers of applications for citizen engagement in requesting and negotiating access to digital resources and exploiting a stack of intelligent services for content discovery, analysis, and tracing, e.g., supporting application developers for negotiating licenses with data managers.

 A detailed description of the SPICE Linked Data Hub and a summary of SPICE pilot applications that are making use of this data platform are available in deliverable D4.7.

6.2.7   VISIR Community Visualization tool (an integrator)

VISIR (VISualization for Interpretation and Reflection)
is a tool that enables museum curators the detection, visualization, and explanation of the implicit communities needed in the SPICE IRL model.

In SPICE, reflection processes are based that the same citizen can be classified in different implicit communities using different perspectives, where a perspective represents how *Artefact Attributes* and *Citizen Contribution Attributes* –using similarity functions and a clustering algorithm– are employed to group citizens into those implicit communities.

To assist curators in the analysis of these communities and perspectives, VISIR can show simultaneously two different perspectives with common explicit citizen attributes. Each perspective visualizes the communities computed by the Community Model.

In SPICE, the VISIR tool is used in conjunction with the Community Model, and this system needs not only the artefact data but also the citizen contributions, that should be enhanced with emotions, values, etc. by the reasoners employed in SPICE. For more details about how to configure and deploy a new Community Model see Deliverable D3.7 Final Clustering Techniques.

6.2.8   Mapping Emerging Narrative Identities

As mentioned in section 3.2.3, Narrative Identity as a method, allows us to analyse the narratives contributed by citizens to relate, organize, and represent the emerging overlapping identities, and in turn, explore their relations to the different dimensions of social cohesion considered in SPICE. In the context of the project, the narrative approach towards the perception of identity helps us to conceptualize the subtle relations between "similarity", "identity", "inclusion" and "sense of belonging". In this direction, the emerging narrative identities can contain overlaps between different levels of belonging and sometimes even make evident some internal contradictions or paradoxes. Moreover, similarity within groups is not solely dependent on the characteristics of the individuals, but it is also affected by the specific context as well as by long-term subjective experiences (life stories). More specifically, in the context of SPICE, narrative identity becomes an explanation for the ways in which different implicit communities (which perhaps share explicit attributes) overlap in non-transitive ways (i.e., heterarchically), representing more nuanced identities of the emerging groups.

In the SPICE platform we can configure a pipeline which starts with the curatorial activities combining two or more methods for interpretation (e.g., artefact analysis and narrative methods) to gather narratives from the participating citizens. These narratives are stored in the Linked Data Hub (where there is also a rich database of the artefacts that have elicited the citizen narratives). From there, the narratives can be analysed through the lens of two or more semantic reasoners (e.g., *DEGARI* for emotions, *The Spice Value Reasoner* for values and *The Spice Thematic Reasoner* for relevant themes). Based on this analysis, the system constitutes a user model and a community model by aggregating the data. All this input is used in the SPICE data visualization tool, VISIR, to configure different perspectives based on permutations of attributes from both the citizen space (demographics, values, emotions, themes) and from the museum space (artefacts, artefact descriptions), which can be related by the VISIR algorithm and visualized simultaneously for comparative purposes. VISIR enables us to explore the implicit communities that are emerging from the data from which we have proposed a procedure for characterizing the emerging narrative identities as follows:

- Identifying interesting or pertinent clusters that define implicit communities using two or more different perspectives.
- Describing the identified narrative identities that emerge from the interpretation of the implicit communities.
- Finding links between clusters from different perspectives by identifying shifts based on the criteria for belonging for certain individuals or communities.
- Describing these linkages and elaborating on any contradictions/paradoxes/curiosities, or interesting observations.
- Interpreting, describing, and explaining these linkages/observations in the context of the specific case-study.
- Describing and explaining these linkages in the context of relevant social cohesion dimensions.

Once the overlapping criteria for belonging, and the different linkages and relations, have been identified, through the above-mentioned procedures for comparing perspectives and clusters, finally the emerging narrative identities could be storified to be proposed as a tool for reflection on the on-going cultural process driven by citizen curation.

6.3 Future Steps: Storifying the Narratives Identities Emerging from the Citizen Curation Process

To demonstrate how to storify and make sense out of the narrative identities that emerge through such citizen curation process and analysis, and how to put them in relation to social cohesion, we propose here a data storytelling methodology.

Building upon the practice of data storytelling introduced under Data Storytelling in 3.2.1, in the context of SPICE, we have adapted a data narration process and a framework that aims to support the analysis and development of data-driven stories for SPICE museum audiences.

Within this framework, we characterize and describe the different phases of the data narration process, including (1) data exploration, (2) motivational and thematic contextualization, (3) story development (4) plot development (5) and story realization phase.

1. The data exploration phase

As an essential part of the data narration process in this first phase *data excerpts* pertinent for the data story are collected through the procedure introduced in the previous section 6.2.8 (Mapping Emerging Narrative Identities). For this, a supporting visualization tools can be used. In the context of SPICE, this is done using the VISIR community visualization tool (see Figure 21). In this case, the collected data excerpts will serve as 'story pieces' for the data story (Lee and Riche, 2015).
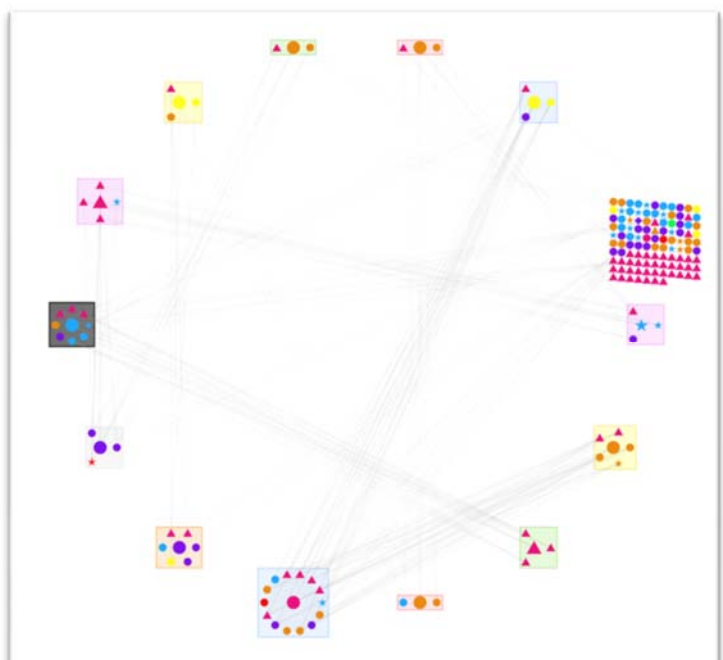

Figure 21. Example of VISIR visualization that can be used to gather data excerpts for the data story. In this case, the visualization considers similar emotions and beliefs about the Roman Rebellion (HECHT case study)

2. Motivational and thematic contextualization phase

This phase focuses on establishing the intention and motivation of the "storyteller" (e.g., the museum curator) and the thematic context for the story, which is sometimes also referred to as the "intentional layer" (Outa et al., 2022). In the context of the museum data narration process and SPICE, we build on the previously introduced idea of the *narrative identity of the museum* and of the curator (see Narrative Identity under Methods for Reflection, see also Workshop 5 in D2.4). Thus, in our framework the motivational and thematic contextualization phase is constituted in 3 steps:

a. The intention and motivation of the 'storyteller'. In SPICE, the intention and motivation for the case studies can involve focusing on one of more of the different dimensions of social cohesion as well as the narrative identity of the museum (core values and mission of the museum).

b. The target audience. In SPICE, this involves the target audiences of the case studies.

c. Message and context. In SPICE, the message and context can build on the narrative identity of the museum and involve the specific context of the case study and the general context of SPICE.

3. Story development phase

The story development phase brings together the collected data exploration with the motivational and thematic contextualization phase. In order to characterize and adapt key narrative 'components' in the context of the museum data narration, we build on Ryan's description, stating that, "[n]arrative representation consists of a world (setting) situated in time, populated by individuals (characters), who participate in actions and happenings (events, plot) and undergo change." In the following, we explore what have been referred to as the three basic elements of a story, and how these can be adapted and related to the museum context (Chatman, 1975).

i. Characters. Central component of a narrative, tied to both the action and the message. Characters are the ones that "cause things to happen" (Abbott, 2008). In the cultural heritage context, characters can be either derived directly from the data, or involve featured artists/designers, individuals or characters portrayed in the artworks, the museum visitors, the curators, and museum professionals, or even the early founders, architects, or patrons of the institution.

ii. Setting(s). Setting is an essential literary component that provides context for character actions (where? when? how?) We can consider three types of settings: spatial (physical environment), temporal (time), and social (socio-cultural context). For example, in the museum data narration process, setting(s) can be developed based on artwork/collection context and/or narrative identity of the museum.

iii. Events. What happens in the story? This considers how the previously established data excerpts, i.e., insights and other interesting observations, can be used as story pieces to suggest events involving unpredictable changes of state by characters. Events can also be suggested based on already existing information/data. In this case, it's important to think about how the events can form a chain and how characters and setting(s) perform, undergo, or act as a background to these events

4. Plot development phase

Once the characters, setting and pertinent story pieces, or events have been established, the following step is to develop the plot, "how the reader becomes aware of what happened" (Chatman, 1975). Moreover, the events in the plot can be organized in a sequential manner, take the form of 'flashbacks' or start in *medias res*. For the SPICE context, we have developed the SPICE storytelling arc (see Figure 22).
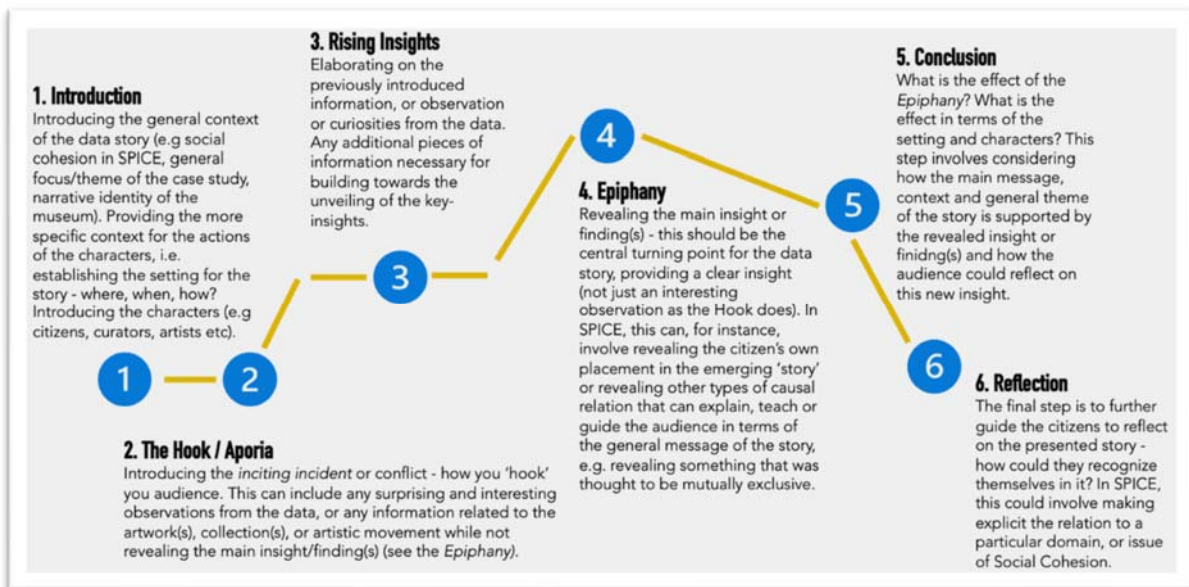

Figure 22. SPICE Storytelling Arc introduced during Workshop 5

5. Story realization phase

The story realization phase involves considerations for implementing and bringing the data story to life. This can involve a more author-driven or a more reader-driven approach. Although frequently used synonymously with data visualization, data stories do not necessarily entail visualization as they can also be designed based on textual or numeric basis. As a more user-driven approach, interactive digital narratives (IDNs) introduce several advantages for realizing data stories, e.g., more engaging, and accessible to a broader audience, more possibilities for customisation and personalization that can respond to the preferences of the user.

Data storytelling for the SPICE case studies

Following the outlined steps above, the SPICE case studies can benefit greatly from incorporating data storytelling to reveal complex insights to their audiences, such as the narrative identities emerging from the citizen curation process. In this direction, data storytelling can help to promote social cohesion by highlighting the connections and commonalities between different communities and cultures in a more engaging way. Furthermore, by utilizing the wealth of data on cultural heritage artefacts, artworks, and visitors' perspectives and experiences, the museums can create compelling narratives that offer insights into the history, culture, and social issues surrounding their collections which can help foster dialogue and reflection among diverse museum audiences.

7 Summary of Implementations: SPICE Case-study examples and best practices

In this section, we provide an overview of the full implementations of the 5 SPICE case studies (see below). We begin by introducing the objectives, the communities involved and the collected data in each case study, providing context for the general overview of the activities and testing, which were carried out throughout the process. Furthermore, as one of the key features of the SPICE framework is the interpretation-reflection loop, which allows for a continuous process of interpretation and reflection, we illustrate how the IRL was exemplified in each case study. Finally, we provide a set of best practices that can be used to guide the process and implementation of similar projects and initiatives. By sharing these best practices from the case studies, we hope to encourage the development of similar projects and promote the use of SPICE as a framework for community-driven interpretation and reflection on cultural heritage.

design museum
helsinki

Photo credit: Linda Svarfvar

The Pop-up VR Museum, developed in the case study of Design Museum Helsinki (DMH), aimed to capture the diverse perspectives and reflections on Finnish design objects and cultural heritage by different communities.

Communities that have been involved in the DMH Case Study include (D7.7):
- Senior citizens
- Asylum seekers and immigrants
- Adult Finnish language learners
- Museum visitors
- Library visitors
- Museum curators and experts at DMH
  (collection team, education team, marketing, and communication team)
- Experts from other museums
- Experts such as healthcare professionals in senior care
  centres, instructors in reception centre of the Finnish immigration office
  and event producer in municipal library
- Designers and developers of the Pop-up VR Museum and other services in the Case Study
- Researchers

In the context of SPICE, extensive testing was done with the Pop-up VR Museum, including workshops in Helsinki and across Finland, as well as one-time events in Israel, Italy, and Ireland. Over the course of the SPICE project, more than 1000 people have been involved in the development and testing of the application, including 400 test-users, an estimated 200 observers, companions, and other visitors, 500 contributors of stories (many of whom also tested the Pop-up VR Museum), and around 50 designers, researchers, museum professionals, and mediators (see also D7.6; D7.7).

Over 600 stories about design objects were collected through contributions from various communities and individuals in 29 workshops. These stories include approximately 460 written and 140 audio-recorded accounts, in both Finnish and English, as well as some other languages. The written stories vary in length, with many of them being short stories on post-it notes. The audio recordings were transcribed, and all stories have been translated into Finnish, English, and Swedish. Most of the stories focused on everyday life, personal histories, and autoethnographic accounts related to the design objects from the museum's collection (see also D7.6 - Case Studies Fully Operational, p.51 - 55).

THE IRL in the DMH case study

The DMH case study aimed to capture the diverse perspectives and reflections on design and cultural heritage by different communities. For instance, while senior citizens may have extensive knowledge about the Design Museum's collection and personal memories of the objects, younger people or recently immigrated individuals may relate to them from different perspectives. By exposing individuals to other people's stories, whether similar or different from their own, the Pop-up VR Museum aims to promote understanding, empathy, and social cohesion across communities.

Read more about the Pop-up VR Museum here:
https://www.designmuseum.fi/en/pop-up-vr-museum-2/

The case study of the Irish Museum of Modern Art (IMMA) and the application *Deep viewpoints*, was centred around promoting inclusion for minoritized or marginalized groups. This included individuals who may face barriers in visiting the museum physically, such as asylum seekers and children with serious illnesses. The goal was to create opportunities for these groups to interact with and share their unique perspectives on the museum's collections. The *Deep Viewpoints* web application was co-designed by IMMA with the underrepresented groups.

Communities that have been involved in the IMMA Case Study include (D7.7):

Photo credit: Louis Haugh and Kyle Tunney

- Migrant groups
- Black & Irish organization
- LGBTQ+ groups
- Healthcare workers
- Asylum seekers
- Young people in detention
- Young people living with life-long illnesses

In total, 180 participants took part in the different workshop activities and user-testing sessions carried out by IMMA, and a total of 73 autoethnographic accounts of visitor's reflections were collected via the Slow-Looking method. These were largely obtained through the Deep Viewpoints web application designed in the IMMA Case Study (D7.6 – Case Studies Fully Operational, p.76, D7.7).

The IRL in the IMMA case study

Participants of the IMMA case study were supported in creating scripts using the IMMA web app *Deep Viewpoints* wherein the visitors can use the museum's collections to develop their own perspectives and share them with others to help people appreciate alternative points of view. In the IMMA case study, visitor feedback on Deep Viewpoints led to the following observations:

Museum visitors appreciated the value of accessing other viewpoints and alternative narratives. One museum visitor commented that experiencing community authored scripts on Deep Viewpoints *"gives you different interpretations of the artworks from someone with a different culture or upbringing"* and museum visitors enjoyed learning about someone else's culture or story through a script.

Reading different viewpoints helped visitors to think about the artwork for themselves. Visitors commented that encountering the interpretations and narratives of others helped them to find their own interpretations: *"Reading someone's description of other people's work helps you to think about them"*. One visitor enjoyed that the scripts were open ended and focussed on emotional responses: *"I like that there are no wrong answers. So it's not like school. It is about what do you feel, does it touch you, how does it connect to humanity"*.

Explore more on IMMA Deep Viewpoints here:
https://spice.kmi.open.ac.uk/demos/imma-viewpoints/home

The GAM case study collaborated with the Turin Institute for the Deaf to design and develop a responsive web application, the GAM-game.

The GAM-game allows the Deaf community (GAM's primary end-user community) and other museum visitors to interpret the GAM collection using their emotional responses and visual stories.

In this way, the GAM-game aims to attract a community of users that is independent of the communities of origin, e.g., the Deaf, teenagers, art lovers, and teachers. The GAM-game was co-designed with museum staff and end-user communities, refined through several prototypes, and focus groups, and tested for usability and accessibility. Moreover, the final prototype of the GAM-game incorporates AI tools that promote diversity in both interpretation and reflection stages.

Photo credit: Anna Follo

Communities that have been involved in the GAM Case Study include (D7.7):

- Mediators from the Deaf Association
- Museum curators and educators
- Researchers
- Teenage students from the Deaf Association

The GAM-game protype has been thoroughly tested with 78 users over the course of the SPICE project, and a total of 198 stories have been collected from the users. Based on the recorded responses to artworks, researchers and museum professionals have been able to discern patterns of interaction from the choices made by the GAM-game users (D7.7).

The IRL in the GAM case study

The GAM-game applies the IRL, with the aim of fostering engagement and inclusivity, by enabling anonymous creation and sharing of personal interpretations of artworks between Deaf and non-deaf citizens. Emotions play a key role in the proposed GAM citizen curation activities, as they can be considered a universal language that can facilitate sharing and reflections across all participants. In this direction, the GAM game encourages museum visitors to interpret GAM's collection using their emotional responses and seeks to make contributions from the Deaf community digitally accessible to others in the museum and online. To achieve this, citizens are invited to create stories, in the style of social media stories, using artworks from the museum collection. The implementation involves adding personal responses to the artworks in the form of short text comments, tags and emojis, and thus adopts the social media inspired creative paradigm. This familiar format is expected to also engage the primary target audience, I.e., teenagers. The stories are created through a responsive web app that users can access from their mobile devices, tablets, or desktop computers. Once the stories are created, they can be anonymously shared with other users, and users can view and react to the stories of others. The app is designed to support multiple use scenarios, both inside and outside the museum, before and/or after a visit.
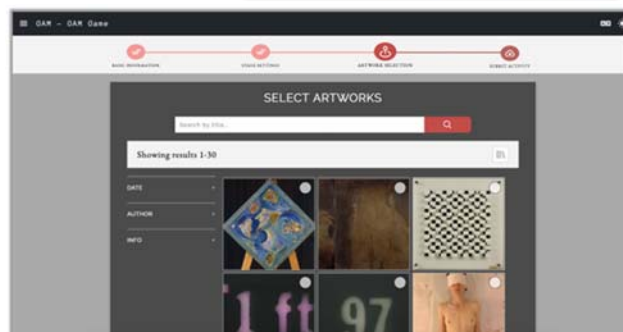
Read more about GAM game here:
https://spice-h2020.eu/italy/

In the HECHT Case Study, dilemma is utilized as a rhetorical device to introduce high-school students to a range of perspectives on historical and national issues related to the Galilee Rebellion.

Photo credit: Joel Lanir

Typically conducted during and after a museum school trip, the aim is to help students to work on their interpretive skills by analysing museum artefacts through the lens of their personal viewpoints.

Through reflection on the opinions of others and participation in citizen curation activities, students gain an understanding of the diversity of perspectives surrounding the topic (D7.7).

Communities that have been involved in the HECHT Case Study include (D7.7):

- High-school students
- School teachers
- Museum curators
- Developers
- Educational researchers

Through a close collaboration with education researchers and teachers, a total of 200 students were involved as participants over the course of the SPICE project and around 200 written autoethnographies reflecting on the Galilee rebellion were obtained from the students.

The HECHT case study found that participants who were previously exposed to an opinion that was contrary to their own showed a greater appreciation for a second opposing opinion compared to their peers who were previously exposed to a confirming opinion.

In this direction, the findings from the HECHT case study suggest that exposure to opposing opinions can increase openness. However, it was also found that argumentative evidence-based museum activity had the opposite effect and reduced openness, which was contrary to the initial hypothesis. To summarize, these findings suggest that exposure to opposing opinions can increase openness, while argumentative evidence-based museum activity can have the opposite effect. (D7.7)

The IRL in the HECHT case study

The Interpretation-Reflection loop in the HECHT case study is applied through the various interpretation and reflection activities embedded in the HECHT pilot. The HECHT pilot is structured in three different stages (pre, during and post-museum visit), which are centred around a school visit to the HECHT Museum. For this, HECHT designed and built a web application that supports students (1) in the classroom, (2) during the museum visit (on handheld devices) and (3) after the visit.

In the first phase, the pre-museum activity, students are introduced to the historical topic, e.g., by being shown a video, either about a historical event, a historical text, or presented with a live talk about historical curation. This initial exposition is used to frame the general historical context of the museum visit and is thereafter followed by various supporting questions for eliciting reflection, hereunder concerning the relevance of history. In the second phase, during the museum visit, students are asked to take photos of artefacts that relate to or support their opinions. They are encouraged to evaluate the importance of these artefacts in relation to their opinions and tag them accordingly. In the last phase, during the post-museum activity, students analyse the opinions of others through markup and elaborating questions. Visualization techniques are used for both presenting the opinions of others and for the subsequent markup and commenting. (D2.3) Moreover, using digital images and 3D models of artefacts from the HECHT museum, the students subsequently also design virtual exhibitions to further reflect on their opinions (D7.7).

![mncn museonacionaldecienciasnaturales]

The MNCN Case Study aims to improve middle school children's engagement in learning about science, specifically biodiversity and climate change, through a gamified solution. The digital platform used in the study allows teachers to personalize the museum visit for their students, making it more interactive and engaging. Students participate in various gamified activities that

Photo credit: Lily Diaz-Kommonen

involve exploring fossils and sharing anonymous contributions about biodiversity, encouraging discussions about environmental protection and individual actions. The case study intends to benefit all students, including those from lower socio-economic backgrounds who may not have access to science-related resources or consider science as a viable career path.

Communities that have been involved in the MNCN Case Study include (D7.7):

- Museum educators
- Game designers
- School teachers

The MNCN Case study involved museum educators selecting schools based on an age-criteria proposed by the game designers as well as the diverse backgrounds of the students. Throughout the SPICE project, around 200 members of these communities participated in Treasure Hunt activities. As a result, 57 documentary essays were written by the students which included drawn images emerging from the content delivered in the workshops about conserving nature. During the workshops, students were encouraged to explore the gallery space, scan artefacts, and write their essays using tablets that contained software supporting the Treasure Hunt metaphor (D7.7).

The IRL in the MNCN case study

The Interpretation-Reflection loop in the MNCN Case Study is applied through a more gamified approach, introducing interpretation and reflection activities that are designed to engage students in learning about science. The experience is divided into three stages - pre-visit, at-the-museum, and post-visit.

During the pre-visit stage, the teacher plays a crucial role in introducing foundational concepts related to the main topics, e.g., biodiversity, climate change, and/or species extinction. The students then reflect on their own perspectives and habits using a pre-designed questionnaire. Thereafter, the teacher prepares an activity using the digital platform, i.e., selects relevant artefacts from the museum collection and creates questions for the students for in-between activities.

The at-the-museum stage is where the students build upon their knowledge and engage with the digital treasure hunt activity using a tablet computer. For instance, this can involve searching for pieces of extinct and endangered species and solve puzzles related to the artefacts with the help of the museum educator. Throughout the activities, the students also answer questions related to the things they learn along the way. Once the activity is completed, the children share and reflect on what they have learned from the experience in person.

During the post-visit stage, the children write an essay on a specific topic related to their museum experience, which can, for example, include reflecting on their own role in climate change. The teacher collects the stories and ideas, which can then be shared with the museum as part of an exhibition or to propose another activity for new visitors.

7.1 Important lessons learned from the five SPICE case studies

- Building trustful and supportive relationships with communities is key to successful engagement with citizens. This process can begin with informal relationship building and focuses on the inherent value and benefits of engaging with an institution, e.g., a museum, rather than making participants feel like subjects of an experiment.

- Museums should engage with mediators who could play a broad role in co-designing with communities that are often excluded from museum-based activities and even sharing stories. In this way, mediators can play a crucial role in co-designing with communities that are often excluded from museum-based activities.

- Different community groups have different motivations for engaging with museums, and understanding these motivations can help tailor engagement efforts. For example, for the selected community groups, there were a range of different motivations for engaging with IMMA. There was a desire to become an active part of a cultural sector of which they felt outside (this was particularly true of migrant communities and asylum seekers who were artists or worked in the cultural sector in their home countries but were unfamiliar with the cultural institutions in Ireland); for others there was a belief that IMMA could be a powerful national platform from which to articulate their voice (e.g. Black and Irish, MASI); finally, there was simply curiosity and the desire to experience something different (e.g. healthcare workers).

- Providing informal, 'non-gallery' spaces can be invaluable in the process of relationship building and helping groups gain a relaxed familiarity with the museum. For example, in the case of IMMA, while citizen curation workshops were at the heart of the work, informal, 'non-gallery' spaces such as the People's Pavilion, the Studios and the IMMA café were invaluable in the process of relationship building, helping groups to gain a relaxed familiarity with IMMA. Also, reciprocity was vital in strengthening these relationships, e.g., visits to communities in their own spaces, such as MELLIE in DCU, attending events by Black and Irish, frequent visits to Oberstown.

- Prioritize considerations relating to the accessibility in the design of the technological applications. For example, when working with immersive technology such as Virtual Reality (VR) keep in mind to consider a seated experience that caters to wheelchair requirements and minimizes motion-sickness in VR.

- Be sensitive to the needs of different users and communities. For example, when designing virtual environments, pay attention to design elements that might evoke discomfort, fear, or unpleasant experiences for some users. Gather user feedback and monitor areas where participants may feel discomfort to continuously improve the experience. For example, during one of the testing sessions of the Pop-up VR Museum with asylum seekers, participants experienced a virtual environment that simulated an open sea with the user floating on a boat. During the experience, one participant expressed discomfort due to bad memories from a sea crossing, prompting DMH to re-evaluate the experience. Based on this, DMH reflected on this and redesigned the environment to make it more accommodating to sensitivities of different users and communities.

- The GAM case study demonstrates the effectiveness of visual approaches to storytelling activities and diversity-seeking recommendations in creating an inclusive environment for museum visitors. This approach can be applied in contexts where non-textual media needs to be prioritized over text-based methods, such as when working with citizens or communities with technical limitations, linguistic or cognitive barriers.

- By prioritizing inclusivity and leveraging AI tools, the GAM case study can serve as a model for promoting community engagement with art across diverse user groups. By incorporating voices and perspectives of minority communities, museums can create more inclusive spaces and encourage broader participation in cultural experiences.

8 Conclusion

This report has presented a methodological toolkit for citizen curation, which introduces methods and tools to encourage citizens and communities in producing and sharing their interpretations and reflections on cultural heritage. The report introduced central concepts in SPICE such as social cohesion, citizen curation, and the interpretation-reflection loop, along with the SPICE co-design journey and conducted workshops, to inspire co-design approaches through the logic of the SPICE Interpretation-Reflection Loop (IRL).

The toolkit includes a selection of methods for citizen curation, including guidelines, best practices and examples of their implementation in the SPICE case studies, and beyond the cultural heritage domain. Additionally, the report provides guidelines for co-designing participatory activities, from exploratory co-design workshops to testing with end-user communities. We also described the SPICE theoretical and digital analysis tools which support the data analysis and reflection in the SPICE IRL.
The implementation of these methods and practices in the 5 SPICE case studies provides a model for museums and heritage institutions to engage citizens and communities to promote the sharing of diverse perspectives and voices through the citizen curation process. While in the context of SPICE, the primary focus was on supporting interactions between museum workers, citizens, and communities, the toolkit is also intended to inspire co-creative and participatory activities in other fields and domains such as pedagogy, social work institutions, NGOs, community building, conflict resolution and advocacy groups.

The report highlights the importance of developing methods and approaches that enable citizen groups to construct representations of themselves. Through the SPICE Interpretation-Reflection Loop (IRL) and co-design journey, the toolkit serves as a resource for museums, heritage institutions, and other organizations looking to engage citizens and communities in co-design and participatory activities that aim to promote social cohesion.

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