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SPICE

Social cohesion, Participation, and Inclusion through Cultural Engagement

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3	DMH	DESIGNMUSEON SAATIO - STIFTELSEN FOR DESIGNMUSEET SR	Finland
4	AAU	AALBORG UNIVERSITET	Denmark
5	OU	THE OPEN UNIVERSITY	United Kingdom
6	IMMA	IRISH MUSEUM OF MODERN ART COMPANY	Ireland
7	GVAM	GVAM GUIAS INTERACTIVAS SL	Spain
8	PG	PADAONE GAMES SL	Spain
9	UCM	UNIVERSIDAD COMPLUTENSE DE MADRID	Spain
10	UNITO	UNIVERSITA DEGLI STUDI DI TORINO	Italy
11	FTM	FONDAZIONE TORINO MUSEI	Italy
12	CELI	MAIZE SRL	Italy
13	UH	UNIVERSITY OF HAIFA	Israel
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Executive summary

This document includes the final version of policy recommendations devised through the work addressed in the SPICE project. Our main aim is to highlight how the work done in SPICE may affect European policies concerning making cultural heritage accessible to researchers and citizens from different European countries, cultures and communities. The dimensions used for the analysis are: (1) promoting the broadest possible access to digitised material, (2) encouraging partnerships between cultural institutions and the private sector, (3) enabling the active participation of Europeans, (4) raising awareness of our shared history and values stimulating the positive contribution of cultural heritage to society, (5) promoting solutions accessible for all, independently from people's health and other physical or social conditions. This document also describes how the evidence in running SPICE research can be translated into possible recommendations.

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Introduction

SPICE is a research project funded by the Horizon 2020 programme. SPICE is a collaborative project started in May 2020, involving seven countries and fourteen partners, including representatives from the scholarly domain, museums and companies. The overall aim of SPICE is to develop tools and methods to support *Citizen Curation* (Mulholland et al., 2021). Citizen Curation means enabling people to use specific technologies to select paintings, sculptures and other museum objects and share their interpretations with others. Citizen Curation promotes and devises technical solutions to involve everyone in actively participating in culture and to share their own stories and perspectives about themselves and other communities. In SPICE, five case studies (conducted in museums in different European countries: Finland, Ireland, Israel, Italy, and Spain) addressed specific citizen communities, including asylum seekers, citizens with health conditions, senior citizens, families living far from the museum, children from lower socio-economic groups, deaf people, and members of religious, secular and minority communities.

This document includes the final version of policy recommendations devised through the work addressed in the SPICE project during the three years of the project, the first of which was characterised mainly by the COVID-19 pandemic. Due to the pandemic, all the museums involved in SPICE have been closed for the main part of the first year. Consequently, all the activities and revenues derived from the physical and in-place organisation of events have been cancelled. This has also had consequences for the activities planned initially in the scope of the SPICE goals since the first physical meetings have happened only starting from the project's second year. When possible, in particular in the first year, part of these activities has been reorganised and rescheduled online using appropriate digital infrastructures, as suggested in (Network of European Museum Organisations, 2020). The constraints introduced by the pandemic also affected the initial identification and tracking of policies relevant to the SPICE work, which has been expanded thanks to the work done during the second year.

Our main aim for this final version was to expand the evidence of the various dimensions identified in the previous versions of this report (SPICE, 2021c; SPICE, 2022f) that are relevant to the SPICE goals and may affect European policies, in particular those related to EU sub-programmes (e.g. H2020-EU.3.6.3.1 and H2020-EU.3.6.3.2) concerning making cultural heritage accessible to researchers and citizens from different European countries, cultures and communities. By reviewing several official documents published by the European Commission and other international organisations on cultural heritage, we compiled a list of dimensions (or points of interest) to track relevant innovations regarding policy recommendations. Such dimensions are listed as follows:

> **[Reuse]** Promoting the broadest possible access to digitised public domain material as well as the widest possible reuse of the material for non-commercial and commercial purposes (European Commission, 2011).
>
> **[Partnership]** Encouraging partnerships between cultural institutions and the private sector in order to stimulate innovative uses of the material (European Commission, 2011).
>
> **[Participation]** Making available a wide range of cultural activities and providing opportunities to enable Europeans to participate actively (European Commission, 2018).

[Awareness] Raising awareness of our common history and values and reinforcing a sense of common European identity by highlighting and stimulating the positive contribution of cultural heritage to society (European Commission, 2018; Directorate General for Research and Innovation, European Commission, 2018).

[Accessibility] Promoting solutions which are accessible to all, including persons with disabilities (Directorate General for Research and Innovation, European Commission, 2018).

In the following sections, we introduce all these dimensions in the context of the work done in the SPICE project (section "Evidence and Analysis") and, starting from the evidence collected, we offer some suggestions as possible recommendations (section "Policy Implications and Recommendations") that EU policymakers can adopt.

Evidence and Analysis

Reuse

Promoting the widest possible access to digitised public domain material as well as the widest possible reuse of the material for non-commercial and commercial purposes (European Commission, 2011).

The result of the recent survey with stakeholders about the possibility of creating a European collaborative cloud for cultural heritage (European Commission, 2022) reports on a shared interest in developing collaborative infrastructures for cultural heritage organisations. Regarding tools support, the most popular option refers to systems for creating, sharing, and re-using interactive digital content. However, a recent survey on open access policy and practice (Mc Carthy, 2016) in the GLAM sector shows that more than 70% of organisations have data that cannot be published openly on the Web. Our work in the SPICE project aims to tackle this important sector issue.

One of the key components developed in SPICE is the implementation of a technical infrastructure which enables anyone to interact with objects in museums, which act as proxies that allow interaction with other people interested in the same or similar cultural artefacts to tell stories about their experience, reflection, and thoughts on their identity. One of the main requirements that such a technical infrastructure addresses is to regulate the modern dynamics in a network of people (i.e. citizens) appropriately, institutions (e.g. museums and universities) and cultural heritage objects (e.g. paintings and sculptures), such as the decentralisation of information, the protection of personal data, and the reuse of technologies and knowledge to create new services and to foster the flourishing of existent and new cultural activities and related market possibilities.

In SPICE, such a technical infrastructure is called Linked Data Hub. The Linked Data Hub is based on well-known and shared guidelines (e.g. FAIR (Wilkinson *et al.*, 2016) and TRUST (Lin *et al.*, 2020) principles) and robust Web technologies (e.g. Linked Data and SOLID) to enable the creation of a decentralised network of entities which allows people and institutions to interact with each other and create new, interlinked and multi-perspectival knowledge via the (digitised version of) cultural heritage objects (CHOs) available in museums. The systematic use of this infrastructure enables providers of CHOs, such as museums, to share on the Web a vast mass of interlinked information that can be queried and reused in several applicative contexts – e.g. to develop Web-based

applications to allow museum users, being either physically or virtually within the museum, to interact with the CHOs they are observing and with other citizens interested in such cultural artefacts through a digital environment.

However, during the three years of SPICE, several partners in the consortium have pointed out possible legal, ethical and practical issues that may hamper the seamless reuse of digitised CHOs across applications. The limitations identified concern two main aspects.

The first aspect concerns the digitised material to reuse that could be copyrighted or subject to permissions of an estate which, in principle, may prevent the cultural heritage institution from freely sharing it on the Web using the Linked Data Hub. In addition to copyright, some institutions obtain annual revenue from selling such digitised images to commercial publications. Therefore, they may perceive the uncontrolled sharing of the images as threatening their long-term sustainability. To address this aspect, one possibility we have tested would be to share digitised material on the Web using a medium-resolution freely – so that whoever needs the high-resolution version for commercial purposes should still have to contact the museum. Another approach we have experimented with was to limit citizen groups to select objects from the Museum's permanent collection, for which museums have established copyright agreements with the artists or their estates regarding non-commercial, educational use of their image by the museum. Finally, an alternative approach has been not to put in the public domain the web applications used to interact with museum content. While these actions have worked in the context of the project's experimentation, in the long run, they would severely limit the impact of the project and the broader applications (e.g. within temporary exhibitions) of its developments.

Others have investigated other aspects characterising the complexities behind the reuse of cultural heritage data. For instance, Terras *et al.* (2021) surveyed the factors that hinder data reuse in cultural sectors, which included fragmentation of formats, sizes, etc. ("a patchwork of small to large scale content") and highlighted how much it is difficult to reconcile reuse endeavours with the business models of Creative Industry.

Recently, several experts (which include representatives of the SPICE project) have claimed that reuse and interoperability of cultural heritage data and infrastructures would be crucial for bringing down costs for museums, archives and libraries while increasing the visibility and usability of contents and services in education, culture, science and public administration. This sharing of resources would also positively affect energy consumption by reducing it– one of the strongest environmental motives for sharing equipment, software, and data storage (Muse-Tech Working Group, 2023). Within the museum sector, working on standardisation processes for data sharing – including the development of shared vocabularies to describe CHOs and the workflow followed to acquire, as digital twins, CHOs – is crucial to facilitate “collaboration in many areas: cross-institutional, with community groups, private sectors and international partners” (Muse-Tech Working Group, 2023). However, such standards must need “to be developed in a way that allows smaller organisations, with stretched resources, to meet the conditions required” (Muse-Tech Working Group, 2023).

The other aspect of our analysis concerns issues with CHOs in the public domain. In this case, the concern is about the distributed and participatory curatorial activity performed by citizens, which is enabled by the Linked Data Hub, where the original digitised CHOs and the new content provided

by citizens through digital platforms are intertwined. For these hybrid objects, applying Data Rights Management (DRM) regulations is not straightforward and, as such, cannot be embedded into data management tools when CHOs' and citizens' data are produced and shared within different workflows devised by the cultural heritage institutions involved. To address this aspect, the hybrid CHOs created through SPICE citizen curation activities have a predefined structure that can be described/annotated, breaking down the citizen curation activity into stages, activities and actions. This provides a way to associate different rights information with different parts of the hybrid object, e.g. the artwork whose ownership may be external to the museum, the supporting interpretative materials created and owned by the museum, and the responses owned by the contributing citizens. Indeed, applying citizen curation methods to SPICE case studies enabled by the Linked Data Hub has confirmed its effectiveness in producing rich interpretations in hybrid objects encapsulating museum-owned material and citizen contributions. However, it is worth mentioning that mainstream curation platforms are not yet ready to deal with these hybrid objects (Daga *et al.*, 2022).

Partnership

Encouraging partnerships between cultural institutions and the private sector in order to stimulate innovative uses of the material (European Commission, 2011).

The cooperation between cultural institutions and the private sector to design and test the innovative uses of material made available by such institutions for dissemination and communication activities has apparent benefits for the private sector because it produces expertise and resources on which the private sector can capitalise. Private companies working in the digital sphere – such as those creating video games, mobile applications, GPS, and beacon-based technology – may bring innovation and solutions to museums.

Within the SPICE consortium, we are testing these kinds of partnerships actively. For instance, H-Farm (a company) has made available a Web-based tool for multilingual automatic annotation of emotions in textual content (Bolioli *et al*., 2021). Such a tool has been reused by UNIBO (a university) for cataloguing data provided by FTM (a museum) to develop a dashboard for data analysis of cultural heritage objects that shows the benefits of reusing H-Farm's software solutions on museum data.

Within another internal collaboration, PG (a company), OU (a university) and IMMA (a museum) have studied games and interfaces to engage users with cultural collections, such as involving users in treasure hunt games, allowing them to explore a selection of artworks as part of a trail through a gallery or online collection, or in quizzes and comparison games. During year two, OU and IMMA co-designed and evaluated specific applications (Viewpoints and Deep Viewpoints). PG derived lessons from these prototyping activities and those in other case studies and generalised them to inform the design of the Citizen Curation toolkit that could be applied/customised in various museum contexts. The same approach has been applied to another collaboration involving PG with UNITO (a university) and FTM (a museum) in developing the GAMGame.

During the project's third year, UNITO and UNIBO (two universities) cooperated with H-Farm (a company) to design and implement an integrated pipeline for semantic analysis. In parallel, UNITO (a university) has worked with PG (a company) to design and implement the client application in

support of interpretation and reflection activities in the FTM (a museum) case study (Bolioli *et al.*, 2022).

All these activities and collaborations permit the creation and testing of an extra layer of engagement through traditional methods of museum mediation. Usually, all these collaborations start from discussions that SPICE partners, stakeholders, and potential customers have within specific events – such as meetings, trials and living laboratories – where people think and experience using SPICE artefacts creatively to reach the main project goal, i.e. enable Citizen Curation.

Of course, as a drawback, cultural institutions might only have immediate benefits from taking such initiatives if they are accounted for in the assessment of their annual activities. However, in the context of the project, some of our cultural heritage institutions, such as IMMA, have observed immediate institutional benefits by ensuring that participation in SPICE activities is inherently valuable, both to the citizen groups and to cultural heritage institutions. Indeed, the process of participating in a SPICE workshop has not been seen as the means to an end (e.g. a way of collecting data) but rather an enriching experience.

In addition, maintaining applications and Web-based resources is expensive: it requires time and personnel for development. It demands monitoring and updating –activities that are usually beyond cultural institutions' staffing and budgets. Indeed, the resources and expertise required to develop and maintain the Linked Data Hub and other applications used in the case studies would be significantly beyond the capabilities and capacity of the cultural heritage institutions involved without the partnership with universities and companies – and not all the cultural heritage institutions involved in SPICE see this partnership as a mean to obtain direct benefits. In addition, often specialist expertise is not locally available in a cultural heritage institution and can be prohibitively expensive for smaller organisations to access. Thus, it should be up to the larger institutions to take the lead on establishing guidelines, providing training, and knowledge-sharing that can benefit all cultural heritage institutions (Muse-Tech Working Group, 2023).

We also observed that companies' involvement could be used to attract funds. For instance, PG's collaboration with the Museo Nacional de Ciencias Naturales (MNCN) has obtained funding from the Spanish Foundation for Science and Technology to carry out a citizen science project related to palaeontology.

Participation

Making available a wide range of cultural activities and providing opportunities to enable Europeans to participate actively (European Commission, 2018).

Currently, preservation, education and engagement activities carried out by cultural institutions in the digital world need to be better integrated, partly due to the separation of the tools employed to manage them. E.g., in most cases, museum catalogues are managed separately from museum websites and social media channels. This separation hinders the implementation of participatory activities by cultural institutions, whose outputs remain confined to communication initiatives.

Within SPICE, we are currently working on reducing these gaps by designing methods and interfaces to support citizens in specifying their interpretations of a cultural object, interrelating them with others' interpretations, and generally applying curatorial practices to archival material available in

cultural institutions to share their perspective and to appreciate the perspectives of others. In particular, among the cultural institutions in the SPICE consortium, we have gathered the following experiences in citizen participation during the year two activities.

UNITO has run several tests with users as part of the user-centred design of the web application supporting the Italian case study, thus ensuring the involvement of both the target community and the curators/educators who have taken part in the experiment design and execution (Lieto et al. Submitted). In addition, focus groups to discuss the potential and shortcomings of the prototypes have been organised in cooperation with the museum professional (Lieto et a. 2023).

AALTO and DMH have fostered collaboration between audience engagement and collections to design and create an application (i.e. the Pop-up-VR-Museum) and an engaging documentation process related to citizen curation, which can be used to develop future collection management systems (Vishwanath *et al.*, 2023). The objects selected for the Pop-up-VR-Museum can be reached through the museum's website, in the Digital Collection of the permanent collection exhibition.

In the Irish case study, OU and IMMA have developed tools for supporting citizens in taking part in scripted interpretation activities and author scripts for use by other visitors (Carvalho *et al.*, 2023). This has enabled outputs of one community workshop to be input for a later workshop – where visitors participate in activities authored by other visitors. Crowdsourcing the creation of activities by amateurs and museum professionals has the potential to vastly broaden the range of cultural activities that museums can offer.

The experiences gathered by the previous partners have also been supported by the research performed by the consortium to devise tools and systems to support citizen participation. The work done by AAU has concerned linking researchers, cultural institution workers and general audiences through participatory workshops for co-designing activities and scripts for citizen curation (SPICE, 2021a; SPICE, 2021b) and testing and evaluating citizen curation activities implemented in the digital platforms of the heritage institutions (SPICE, 2022b). Building on their previous work, the particular focus has been on reflection processes and activities in the cases' user journeys. This has involved AAU conducting meetings and workshops on how the five museum case studies can continue to develop their case-specific approaches to promoting reflection, e.g. guiding the cases in finding ways to support their citizens in appreciating variety within groups and similarity across groups through dynamic story and narrative based methods for data visualisation. Moreover, based on the previously described co-designed interpretation and reflection methods, activities and results of the conducted workshops (SPICE, 2021a; SPICE, 2021b), AAU compiled and synthesised this work into a methodological toolkit in the form of a handbook (SPICE, 2023a). The handbook serves as a collection of SPICE methods, illustrative cases and best practices that museums and heritage institutions can use to implement participatory cultural activities with their visitors, promoting active engagement, participation and social cohesion through interactions with cultural heritage.

PG has developed the first version of *inSPICE* (SPICE, 2022e), a tool to support implementing participatory activities by cultural institutions. This tool provides a collection of templates for citizen curation activity, where a user, typically museum personnel, can instantiate and configure a given citizen curation activity. This software enables the definition of such interface templates. It provides an initial implementation of the components needed to support the citizen curation activities

identified in the SPICE project, such as the SPICE case study at the National Museum of Natural Sciences in Madrid (Gutiérrez-Sánchez *et al.*, 2023).

Awareness

Raising awareness of our common history and values and reinforcing a sense of common European identity by highlighting and stimulating the positive contribution of cultural heritage to society (European Commission, 2018; Directorate General for Research and Innovation, European Commission, 2018).

One of the key objectives of SPICE is to identify methods that assist different communities in building a representation of themselves and appreciating variety within groups and similarity across groups, to enhance social cohesion. We are developing a framework based on theories of narrative identity to mine cultural traits and values that will allow people to reflect on their cultural groundings, which can potentially enable the grouping or clustering of citizens in novel and innovative ways, possibly revealing surprising connections to others, which in turn is expected to enhance empathy and social cohesion. To address these objectives, AAU has developed a framework based on theories of narrative identity and heterarchical clustering logic (SPICE, 2021b; SPICE, 2022b) that aims to support a more dynamic way of understanding the sense of belonging by engaging with cultural heritage and going beyond rigid a priori categories based on shared values and beliefs. The framework has been implemented in the work of UCM, in the VISIR tool for community visualisation (SPICE, 2023b, 2023c), which enables one to detect and explore communities emerging from citizens' interactions with cultural heritage, that in turn, can be shared by the museum curators in a didactic manner with their specific communities and citizen groups for enhancing empathy, cultural understanding and social cohesion. In addition, it would enable one to make explicit the relations to social cohesion dimensions that emerge through the SPICE citizen curation cultural process, e.g. by providing a broader sense of belonging to audiences that have been or have felt excluded from the cultural debate. To ensure the accessibility and feasibility of the tool, AAU and UCM have facilitated a co-design workshop that focuses mainly on how the SPICE case studies can use, interpret and storify the results of VISIR to make sense out of the emerging communities, the overlapping "cultural narratives of belonging" (SPICE, 2022b), and how to put them about the case-specific dimensions of social cohesion.

All the cultural heritage institutions involved in SPICE have worked actively to engage with the communities that are traditionally excluded in society or that find obstacles and challenges in accessing cultural heritage, specifically in museums. The system developed in SPICE aims at enabling voices to be heard and for interpretations to be offered by those who traditionally cannot access cultural forums.

For example, during year one, we organised some internal conferences to see how members of the SPICE consortium interpret and interact with (digitised representation of) cultural heritage objects (CHOs) from different European countries. In one of these events, an image related to the conflict in Northern Ireland was shown to participants. Those from outside Ireland and the UK found the image difficult to interpret in line with the intended meaning of the content. This activity led to the importance of museum learning and engagement tools and highlighted the need to devise processes for helping citizens understand and create meaning from artefacts and artworks, especially where

those artefacts and artworks are from outside a citizen's cultural or social experience and knowledge, to make citizens aware of our common history as Europeans.

In the Italian case study, citizens have exhibited excellent acceptance of the proposed citizen curation activities, investigated through interviews and questionnaires, and have been strongly oriented to share their interpretations with the other visitors. Such a positive response paves the way for citizen curation methods to create social bridges and develop empathy through sharing emotions. In addition, by reusing part of the works of art made available by FTM and used in the context of the Italian case study, we have also experimented with the use of virtual reality technologies to encourage users to adopt an alternative point of view through a virtual embodiment, aiming at increasing social cohesion (Asprino *et al.*, 2023; Bulla *et al.*, 2023).

The Finnish case study relied on the participants' personal narrations, memories and opinions of design objects. The common European, Nordic or Finnish identity has been presented in reflections on personal history and the use of the selected design objects, where senior citizens (the target group of such experimentation) showed a strong experience of a shared life story.

In the Israel case study, we have noticed that the exposure of citizens first to other people's views that agree with citizens' personal views, followed by an introduction of additional different views on the same cultural objects and topics, makes people accept more favourably different views.

The President of Ireland, in an internal correspondence to a group of young people in criminal detention, who were taking part in SPICE workshops, highlighted that "articulating and sharing your perspectives […] through the medium of art" is a "form of active citizenship". In the Irish case study, we have seen that citizen curation can facilitate and highlight marginalised perspectives, thereby stimulating the positive contribution of cultural heritage to society. For example, black and Irish, an activist and advocacy organisation for Black and mixed-race communities in Ireland, created a script, 'Necessary discomfort', that has gathered 20 responses from other citizen groups, whose responses, in turn, can be reflected upon by still more citizens, in an interpretation-reflection loop.

Accessibility

Promoting solutions which are accessible to all, including persons with disabilities (Directorate General for Research and Innovation, European Commission, 2018).

People with disabilities should have the same rights and equal access to works of art and be able to enjoy cultural life with all citizens (Pasikowska-Schnass, 2019). In SPICE, we have investigated inclusive technological solutions and processes, aiming to test them in several case studies involving people with different social backgrounds, including people with disabilities. For instance, IMMA (a museum) and OU (a university) have been exploring a slow-looking methodology (https://imma.ie/learn-engage/art-and-ageing/slow-looking-art-videos/) developed for Older People and the original Meet Me At MoMA programme (https://www.moma.org/visit/accessibility/meetme/) for citizens with dementia and their carers/ relatives.

Systematic testing of the participation tools created by SPICE has turned out to be crucial to assessing the suitability of such tools to specific communities of users. For example, in the Italian

case study, usability tests were run on the preliminary prototypes involving users with special needs (e.g. sensory limitations) to assess their autonomous use by this category of users. This activity resulted in testing and re-designing the main system (i.e. the GAMGame Web application) used to involve the target community of the case study to meet appropriate accessibility requirements, also in the light of Web Content Accessibility Guidelines (https://www.w3.org/TR/WCAG21/). In particular, the GAMGame has been co-designed and evaluated in cooperation with the Turin Institute for the Deaf to assess the acceptance of specific functions (e.g. affective-based recommendations) by the Deaf community (Lieto *et al.*, 2023).

Similar experiments have been carried out also in the Irish case study, where we have gathered feedback from young people living with life-long illnesses (e.g. blind or partially sighted users and people with epilepsy) participating in the case study. Here screen-reading software was used with the web app Deep Viewpoints to ensure compatibility and accessibility. Furthermore, in the Irish case study, we have investigated how museum engagement can be more democratic, bringing in different communities to create their interpretations and mediations of artwork. This analysis is crucial to help make the museum a more polyvocal space, presenting visitors' perspectives from different social, cultural and ethnic backgrounds. Engagement with Irish Traveller communities leads to the suggestion of including a voice notes/voice recording function to Deep Viewpoints to increase access for those with low literacy levels.

In the Finnish case study, we have used methods of co-design and co-creation. The first phase of workshops with senior citizens has also been organised to test how to document and record individual narrations, learn about the skills and motivations of senior citizens, and discuss their motivations for using digitality and the related challenges that have been encountered.

In the Israel case study, we have also observed intrinsic accessibility issues derived from the fact that some of the people in the case study's target community (i.e. students) did not have devices that could support the activities proposed in the case study. This concern has been, thus, an important accessibility wall to the SPICE activities related to the case study.

During the project, we worked on several aspects to foster accessibility in all the case studies devised in SPICE. During the co-design workshops, museum workers have been prompted and guided to reflect specifically on the design concerns of their specific target audiences to promote inclusive participation of different citizen groups, with different needs. The goal was to ensure that the needed skills for participation were appropriate and adequate to the specific target audiences. The methodological toolkit (SPICE, 2023) developed by AAU includes descriptions and examples of how the interpretation and reflection methods (SPICE, 2021a; SPICE, 2021b; SPICE, 2022a; SPICE, 2022b) can be used in practice in different contexts and with different kinds of audiences and target groups. The focus is on the specific needs, considerations and requirements of the diverse participating citizen groups and communities represented in the five SPICE case studies, which are suggested as examples of participatory design.

Policy Implications and Recommendations

Reuse

Promoting the widest possible access to digitised public domain material as well as the widest possible reuse of the material for non-commercial and commercial purposes (European Commission, 2011).

Digital Right Management (DRM) and the General Data Protection Regulation (GDPR) (European Parliament, Council of the European Union, 2016) can be perceived as barriers to reuse by cultural heritage institutions. Indeed, often, "legal compliance is insufficient to create social value" (Terras *et al.*, 2022) and, thus, such a social value should be fostered by accompanying legal requirements with appropriate tools and technologies.

An important aspect for enabling cultural heritage institutions to share digitised cultural heritage objects (CHOs) within digital services and infrastructures is to let such institutions become aware of specific legal tools for regulating the reuse of their material, such as the Creative Commons licenses (https://creativecommons.org/) (Lessig, 2003). These tools enable the sharing of digitised material in a way that possible commercial interests are still protected, while allowing a controlled reuse for non-commercial activities. When curating and producing new contents describing their CHOs in a digital environment, cultural institutions are recommended to adopt such licenses to make their material as sharable as possible, which would also enable them to reach a wider visibility. Specific programmes and workflow should be either adopted (if already developed) or devised to support people working in cultural institutions to choose the appropriate mechanism to protect their interest and to share knowledge with society.

In addition, though, there is also an urgent need of either adopting or designing standards for representing the compositional structure, provenance and responsibility of the derivative assets made available in a digital environment. On the one hand, part of the data and images are created by curators in cultural heritage institutions, such as the descriptions of their cultural heritage objects (CHOs) and may be associated to specific licenses to protect their interest and to foster reuse. However, a policy to extend and deepen the commitment to open and reusable digital cultural heritage in Europe for non-commercial, educational uses would be welcome, as it would encourage institutions and copyright holders to use open licences for their digital assets in the case of non-commercial, educational uses.

On the other hand, people can interact with these digitised versions of CHOs by adding, collectively, additional knowledge (e.g., experiences, interpretations, reflections). Each contribution can be regulated by a different license that, while enabling reuse, permits at least a clear attribution of the material produced by citizens and the protection of their personal data as regulated by the GDPR.

Such a hybrid and compositional object (i.e., the data about a CHO provided by an institution and the collective knowledge added by citizens) is complex. Therefore, we need to use appropriate technological and legal tools to enable its creation, tractability and traceability within society and digital environments. The technologies adopted by SPICE, in particular Linked Data tools, the Policy Management Layer, and the Privacy Monitoring facilities of the Linked Data Hub (SPICE, 2022c) and specific data models to describe the provenance of knowledge (SPICE, 2022d), are a crucial mechanism that should be adopted systematically to enable the correct handling of these objects since they allow the specification of a formal structure (e.g., either an ontology or a metadata scheme) to describe and manage rights associated with components from different sources. In

addition, tracking precisely the provenance of the contributions within these hybrid objects is crucial to account for individual responsibilities and rights.

Partnership

Encouraging partnerships between cultural institutions and the private sector in order to stimulate innovative uses of the material (European Commission, 2011).

As described in the previous section, sharing and fostering the reuse of data and other digital material by cultural heritage institutions is a key factor in enabling and starting a partnership with the private sector. Thus, in addition, to recommend sharing such data and material with appropriate licences (as highlighted in the previous subsection) and guaranteeing their compliance with the European regulations on data protection such as the GDPR (European Parliament, Council of the European Union, 2016), it is important to encourage cultural institutions to participate in partnerships with companies by ensuring that the innovative actions carried out receive incentives when the activities of the cultural institutions are assessed. In particular, we suggest, when possible, to:

- make available targeted funding to encourage private digital companies to partner with cultural institutions in developing applications and Web-based solutions which engage citizens with online collections and physical galleries;
- establish clear partnership agreements based on mutually beneficial relationships;
- create predefined activity templates for making the approach of adopting digital technologies sustainable for the museums in terms of staff;
- bear in mind that collaborations between companies, universities and museums may need particular models of design that may separate the co-design and testing of prototypes from the development of commercial products;
- allocate some R&D time in cultural institutions activities to be spent on research projects involving companies;
- limit the web-based applications and activities to the essential ones for fostering their sustainability and privilege open source platforms for the development and maintenance;
- encourage the government to support the cooperation between cultural heritage institutions and companies by making available public funds for joint projects with social objectives.

Participation

Making available a wide range of cultural activities and providing opportunities to enable Europeans to participate actively (European Commission, 2018).

The creation of established methodologies and tools for actively enabling people in the activities in the cultural sector would permit and, thus, encourage the implementation of such initiatives by cultural institutions, thus expanding the opportunities for Europeans to participate in lively discussions about their heritage. The work on Citizen Curation methods and tools in SPICE contributes actively to this dimension by providing (a) examples of how this can be done in practice and according to different contexts and communities and (b) the proposal of an authoring framework for the development of further curatorial activities involving citizens.

To maximise citizens' engagement and participation, we recommend that cultural heritage institutions make known and accessible – in a digital and Web-based environment – the rich heritage inventory under their custody, even when such cultural resources are not part of permanent exhibitions. This can be done by developing digital resources that are publicly accessible, which accommodate a variety of didactic and self-reflecting activities and possibilities to ensure cultural diversity and inclusion.

The involvement of museum professionals and experts in gathering the requirements and designing the evaluation activities is a way to ensure seamless integration of the museum staff into the design and development of the end-user applications, ensuring their utility for the museum activities.

Most online platforms are mature enough to support direct online interaction with well-crafted digital replicas of museum assets. It is different for FTM, for example, and museums that cannot afford ad hoc solutions and still rely on catalogue software. Efforts should be made to develop further new online experiences where citizens have direct access to these types of resources, especially in situations where physical access might be constrained. According to the evidence gathered, it is crucial to involve museum visitors in creating and sharing activities with other visitors to enable a broader range of cultural activities. In addition, developing digital collections, exhibitions, and resources must be ingrained with the principles of cultural democracy and create opportunities for community participation (Muse-Tech Working Group, 2023).

Awareness

Raising awareness of our common history and values and reinforcing a sense of common European identity by highlighting and stimulating the positive contribution of cultural heritage to society (European Commission, 2018; Directorate General for Research and Innovation, European Commission, 2018).

Several actions are needed to raise awareness of our common European history and values, which can be reached by promoting collective reflection and measured and scrutinised through publicly available digital tools. First, citizen participation should be encouraged by appropriate funding and promoting the development of prototypes and guidelines for participatory initiatives in cultural heritage. Second, there is an urgent need to set up initiatives to actively search for hidden histories of groups that have traditionally been excluded from direct (and digital) participation and continuously enhance and expand existing resources carrying such histories, such as Europeana (Isaac & Haslhofer, 2013). Third, it is crucial to accompany the sharing of data and material by cultural institutions with tools and other resources which aid the interpretation and understanding of artefacts and artworks from different cultures. Fourth, cultural institutions should make creative, safe, and digitally-aware cultural spaces available to put many overlapping cultures and communities in relation in constructive and innovative ways. Finally, formats and standards should be encouraged to represent the hybrid objects generated by citizen curation activities, thus enabling their circulation and re-use regarding copyright and privacy regulations.

Thus, cultural heritage institutions should offer systems, resources and activities, supported by a digital environment, that go beyond the factual and encyclopaedic dissemination of information. They should make available their collections to accommodate societal needs for debate,

interpretation, reflection, research and freedom of thought and expression. These actions benefit the whole of society, strengthening inclusion and increasing mutual understanding.

In SPICE, we have actively worked to produce technological and theoretical frameworks to help institutions reach these goals. During running SPICE case studies, we have also noticed that the involvement of the curators and educators in the design of citizen curation methods is not only a way to promote social cohesion but also a mechanism for museum professionals to grain a deeper understanding of the audience's response to art. Other users have underlined the value of dialogue and communication with other people and a mutual feeling of community when aiming at creating a suitable environment for participation mediated by a digital environment.

Accessibility

Promoting solutions which are accessible to all, including persons with disabilities (Directorate General for Research and Innovation, European Commission, 2018).

Enabling accessibility mediated by a digital environment is one of the key issues to address in SPICE. Considering our experiences on this topic, to guarantee accessibility to all people, including those who are traditionally excluded from gaining access to and contributing to cultural heritage sites and organisations, it is necessary to tailor cultural activities (e.g. curation activities) to specific groups in risk of exclusion, in order to give them voice and space in the central cultural debates in contemporary society. Often, this has indirect benefits also for other groups of citizens. Indeed, encouraging accessibility of cultural heritage objects and institutions, even when tailored for a particular target group, universally improves access for the wider public. For instance, the videos developed by IMMA (a museum) and OU (a university) for older people with cognitive degeneration have become popular with school students and the general public unfamiliar with modern and contemporary art. The activities templates designed at FTM (a museum) in cooperation with UNITO (a university) with accessibility for the Deaf in mind have been accepted and welcomed by the general audience, thanks to the focus put by these templates on affective rather than textual language.

In addition, enabling digital accessibility is key to continuing to bring people to visit the museums even during strong and unpredictable events, such as the lockdown imposed by the COVID-19 pandemic. As we experimented with in SPICE, it is strongly recommended to develop hybrid activities to promote empathy, health and well-being online by adopting appropriate technologies. For instance: 3D virtual technology can be accessed by anyone around the world with internet access; video content targeting the specific requirements of groups may also benefit other groups of citizens; use of video conferencing for virtual engagements can be used between museum mediators and school students in class or at home as a substitute for gallery guided tours; using museum website for exclusive online-only content, by fostering citizen engagement, reflection and exchange of interpretations and insights mediated by a digital environment.

All the experimentations done for the case studies have enabled us to reinforce the outcomes of such a preliminary analysis and identify additional requirements to strengthen accessibility to museums' collections. The positive and negative feedback on the usability of the digital applications produced, collected in user studies, confirms the need to include and involve specific user categories in the user-centred design and the necessity of testing to ensure the suitability of the final prototype

for these categories. Thus, it is important to involve diverse stakeholder communities to give them voice and space in the central cultural debates in contemporary society, limiting their risk of exclusion in such a dialogue, and enabling them to contribute to the design process of the activities.

Finally, museum experts should also curate the citizens' experiences with which other visitors can engage to maximise accessibility aspects. Based on this evidence, promoting and financing activities that bring curators, citizens and museum researchers together to instantiate participatory processes that may include in situ and online activities based on collections and exhibitions would be very beneficial.

Project Identity

Project name	Social cohesion, Participation, and Inclusion through Cultural Engagement
Project acronym	SPICE
Grant agreement ID	870811
Coordinator	Silvio Peroni, Department of Classical Philology and Italian Studies, University of Bologna, Bologna, Italy, silvio.peroni@unibo.it
Consortium	Alma Mater Studiorum - Università Di Bologna, Italy Aalto Korkeakoulusaatio Sr, Finland Designmuseon Saatio - Stiftelsen for Designmuseet Sr, Finland Aalborg Universitet, Denmark The Open University, United Kingdom Irish Museum of Modern Art Company, Ireland Gvam Guias Interactivas Sl, Spain Padaone Games Sl, Spain Universidad Complutense De Madrid, Spain Universita Degli Studi Di Torino, Italy Fondazione Torino Musei, Italy Maize Srl, Italy University of Haifa, Israel Consiglio Nazionale Delle Ricerche, Italy
Funding Scheme	Horizon 2020 Framework Programme for Research and Innovation (2014-2020), H2020 sub-programmes "H2020-EU.3.6.3.1. - Study European heritage, memory, identity, integration and cultural interaction and translation, including its representations in cultural and scientific collections, archives and museums, to better inform and understand the present by richer interpretations of the past" and "H2020-EU.3.6.3.2. - Research into European countries' and regions' history, literature, art, philosophy and religions and how these

	have informed contemporary European diversity", call H2020-SC6-TRANSFORMATIONS-2019
Duration	May 2020 – April 2023 (36 months)
Budget	EU contribution: € 3,124,131
Website	https://spice-h2020.eu
Social Media	Twitter: @SpiceH2020 Instagram: @spice_h2020 LinkedIn: @spice-h2020 YouTube channel: SPICE Consortium

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