Enhancing Local Cultural Heritage by Designing Narrative and Interactive Exhibitions. MEET at the "Museo del Territorio di Riccione"

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Abstract. The paper presents the application of the research project "MEET - Multifaceted Experience for Enhancing Territories" at the "Museo del Territorio di Riccione". The project aims at enhancing the local cultural heritage by involving institutions, professionals, and citizens in the realization of a co-designed interactive exhibition. The enhancement considers the narrative processes strategic for the inclusion of and broader access by different types of public and for a more effective learning process. After explaining the different types of narratives used in the installations, the contribution lists all the phases of the project, synthesised in a visual roadmap. The contribution is then carried out by mentioning all the stakeholders involved – together with their role – the cultural assets enhanced, the development of the process that brought to the creation of the audio-visual content and the realization of the exhibition path. Finally, in the conclusion, the research team presents the result of the qualitative and quantitative evaluation phase conducted through questionnaires useful to understand the actual appreciation and the effectiveness of the project.

Keywords: Design for Cultural Heritage · Co-design Processes · Interactive exhibition

1 Introduction

The contribution aims at illustrating the application of "MEET - Multifaceted Experience for Enhancing Territories" at the "Museo del Territorio di Riccione". The project is one of the winners of the contest "Io amo i beni culturali - X edizione" promoted by the Cultural Heritage Service of Emilia-Romagna (Servizio Patrimonio Culturale)[1].

MEET is a collaborative and replicable project that involves institutions, professionals, and citizens in the realization of an interactive exhibition dedicated to the enhancement and promotion of local cultural heritage through storytelling and co-design processes [8]. It was conceived in 2021 by the "Design for Heritage and Cultures" research

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[1] The documents are available at: https://servizissiir.regione.emilia-romagna.it/deliberegiunta/servlet/AdapterHTTP?action_name=ACTIONRICERCADELIBERE&operation=leggi&cod_protocollo=DPG/2021/25012&ENTE=1.

unit of the University of the Republic of San Marino[2] and combines the research fields of digital humanities and exhibition design by using co-design tools [16, 17] and digital manufacturing tools [14, 23] in order to share knowledge through storytelling processes [2, 5, 20].

The project fits within a framework where co-design processes are used to activate and promote the cultural heritage of an area by involving those who live there, thus fostering social innovation [1, 7, 9].

The research program, which can be applied to different themes and contexts, involves three main stakeholders: the university, which proposes and coordinates the entire collaborative process, the local public or private institution which provides the heritage to be enhanced, and the school which involves teachers and students in defining the content and creating the installations for the exhibition path. Alongside the abovementioned stakeholders are scholars, professionals, and enthusiasts.

The creation of an interactive exhibition path is aimed at developing a newfound sense of belonging in citizens, as well as generating the acquisition of awareness related to the existing local heritage. The project promotes the activation of new networks between institutions, professionals, and local authorities. This context offers schools room for experimenting with unconventional teaching practices [13, 18] (Fig. 1).
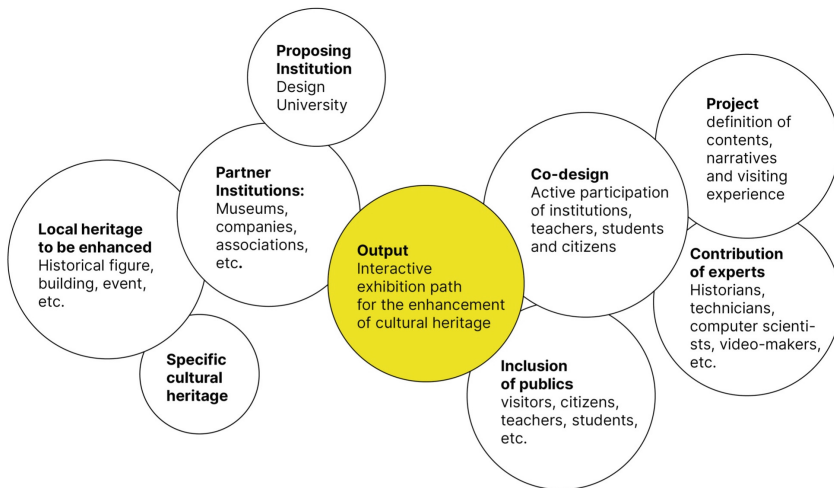

Fig. 1. General Framework of MEET - Multifaceted Experience for Enhancing Territories, 2022. Credit: Silvia Gasparotto.

Many existing projects for the enhancement of tangible and intangible cultural heritage propose a collaboration between schools and local public and private institutions.

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[2] Since 1 October 2021, Alessandra Bosco, a former permanent researcher at the University of the Republic of San Marino, has been an Rtdb (B-type temporary researcher) industrial design researcher (Icar/13) at the Iuav University of Venice.

In the 2000s, research programs were set up which used participatory and co-design processes to involve students in redefining the experience of accessing museum collections by directing reflection towards accessibility and inclusion [6, 19].

The introduction and spread of digital technologies and tools have subsequently boosted this type of projects by extending the field of application to the experimentation of new languages[3]. Outputs are often aimed at institutional communication or specific projects for a younger community oriented towards developing content that can be used on social platforms [22].

The inclusion of universities in the network of subjects involved in enhancement processes has finally broadened the contexts of investigation by relating them to multidisciplinary networks [3, 10, 12].

Intended for a wider public, mainly consisting of citizens and the scientific community which in turn could apply the project to other contexts thanks to its open-source nature, MEET combines the articulated structure and complexity of a university research program with the objective of enhancing local cultural heritage by building co-design processes that involve citizens. The use of interaction technologies and the implementation of specific training activities introduce project opportunities that can be adapted to various themes and are inclusive in terms of tools used, type of location, fruition and expected duration (Table 1.).

Table 1. Peculiarity of the project MEET

Output	Exhibition path	Peculiarity
Tools	Interaction Design	Enhancement of heritage not yet displayed Open-source technologies
	Storytelling	Simple and direct mediated by video, animations, illustrations, audio
	Co-design processes	In the research phase, the design phase and during the realization of the output
Space	Public and private space	Low- invasiveness
Fruition	Interaction	Inclusiveness through a narrative tone
Duration	Open System	Implementable and upgradeable over time

Among the tools used, interaction design practices, which do not necessarily imply a physical dimension, make it possible to display unvalued cultural heritage stored in depositories or considered too fragile to be shown to the public. They also provide students with the opportunity to experiment with open-source, economically viable technologies.

Another tool that determines the quality of the project output is the character and tone of communicating the content created by students. The proposed storytelling is simple

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[3] See: https://festivalinnovazionescolastica.it/ and https://patrimonioculturale.regione.emilia-romagna.it/io-amo-i-beni-culturali.

and inclusive, mediated mainly by videos, animations, illustrations and accompanied by audio recordings capable of rendering the story empathetic.

Co-design processes are tools that characterise different project phases and allow involving specific interlocutors in the research, design, and creation of the output.

The interactive exhibition path can be placed in public or private spaces such as a museum, a foundation, a library, the headquarters of an association or even a company.

The exhibition venue, given the low economic resources required, the versatility, scalability, and unobtrusiveness of the visit path, can be a room normally used for another function, a connecting or distribution space or part of a building to be redeveloped.

As far as fruition is concerned, the project is inclusive both for its simple and expressive narrative tone and for the involvement of ordinary people as protagonists of the installations. Among stakeholders, a citizen can indeed find friends, relatives, and acquaintances.

The accessibility and usability with which the interactive installations are designed make their use intuitive and immediate.

Lastly, as for the time dimension, the system, which uses open tools and processes, can be implemented and upgraded both by those already involved and by other professionals able to access digital platforms and open-source languages. From time to time, the system customised on the context can support the enhancement of different assets considering a variety of narrative viewpoints.

2 Storytelling as a Design Tool for Enhancement

In the area of design for the enhancement of local cultural heritage, storytelling and its techniques play a major role as they can improve understanding and fruition of heritage by fostering effective learning processes.

"Narrating means […] properly sharing, co-producing, transforming images. And at a more complex level, it means sharing, co-producing, and transforming media"[4] [15, p.42]. The co-production operation described here by Ragone is interpreted in MEET not only with regard to the content to be enhanced, shared between all project stakeholders and especially selected and processed by the staff of the cultural institution, the teachers and the students, but it is also applied to the design of the installations. In this way, the development of the storytelling is filtered through a variety of viewpoints –both scientific and curatorial, as well as common and immediate– and is expressed in a visit path that can be enjoyed by an enlarged audience, actively involved thanks to the interaction dynamics mediated by "invisible technologies" [5, p. 48].

The MEET format associates three narrative models with the three types of interactive installations (Table 2.).

The path includes a map, which highlights the theme addressed in relation to the area; an interactive table, whereby peculiarities are explored and interpretations are offered regarding the cultural asset; a 1:1 scale projection providing testimonies in the form of a dialogue between two people from the local community.

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[4] The translation has been made by the authors. The original sentence quotes: "Narrare significa […] propriamente condividere, co-produrre, trasformare immaginari. E a un livello più complesso, significa condividere, co-produrre e trasformare media.".

Table 2. Types of interactive installations of the MEET project and their narrative models.

Installations	Interactive Map	Interactive Table	1:1 Scale Projection
Focus	Territory	Object	Person
Type of Narration	Contextual and systemic narrative	Interpretative and focused narrative	Interpersonal and dialogic narrative

The map is based on a *contextual and systemic narrative* that allows users to have an overview of the relationships between the cultural asset being enhanced and at the same time to orient themselves towards a system of remarkable points.

The interactive table proposes an *interpretive and focused narrative* that reinterprets and explores heritage through various types of narration by means of audio-video content and is oriented towards the dissemination of cultural concepts with a view to expanding knowledge [4]. An off-screen narrator who presents the events from an external point of view is alternated with interpretive videos in which actors, professionals or amateurs read texts in first person or excerpts from interviews recalling private and public anecdotes.

The 1:1 scale projection proposes an *interpersonal and dialogic* narrative [11] with the aim of engaging and intriguing the visitor. The dialogue between the projected characters takes place dynamically; the tone and mime lead the user to feel involved and empathise with the actors [21].

3 Methodology

The application of the MEET format in Riccione took place following the model developed, theorised, and only partially applied in the first months of 2021, due to the pandemic, in an initial pilot project on Dante in Ravenna.

The roadmap in Fig. 2 represents in a visual summary the entire process carried out in the Riccione area.

The first phase of the process provided for the definition of the network of stakeholders involved as project partners, and the identification of local professionals to be invited as experts. At the same time, the research led to the strategic choice of the cultural heritage elements to be enhanced and the verification of the existing skills in the overall work network.

The second phase involved the search for funding, the writing of the project together with partners and the subsequent application for competitions.

The third phase, concerning the project launch, involved the choice of the installations to be realised, the definition of the economic resources necessary for the development and implementation of the project, the identification and selection of sources, documents, and statements functional to the interpretation and representation of the content.

In the fourth phase, which was mainly dedicated to collaboration activities, after receiving installation guidelines from the university, the students were coordinated by their lecturers and the museum managers and helped by professionals in the co-design of the visualisation of installation content and structure.
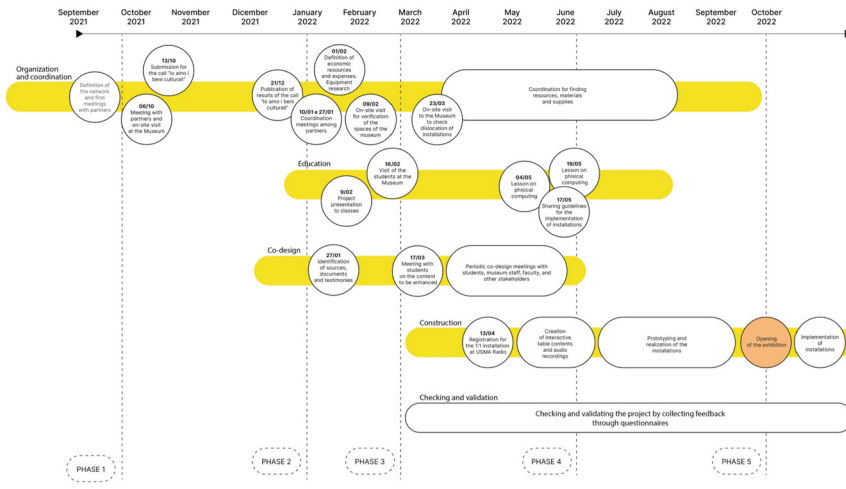
Fig. 2. Roadmap. Visual summary of the entire process carried out in the Riccione area, 2022. Credit: Silvia Gasparotto.

The fifth phase, which finalises the project, required the commitment of all stakeholders: the students created visual representations, videos, animations, and sound recordings useful for the narration of the content to be enhanced; the university, together with partners, coordinated the group and dealt with finding materials and equipment. Finally, once all the content had been developed, the IT professor, assisted by some students and the museum staff, prototyped and realised the installations.

The last phase depicted in the diagram started simultaneously with the third phase and concerned the verification and validation of the project by collecting feedback after submitting questionnaires. The process ends with the qualitative and quantitative analysis of the data shown in the conclusions.

4   MEET at the "Museo del Territorio di Riccione"

The application of the MEET format to the Riccione area was made possible thanks to the competition "Io amo i beni culturali – 10th edition"[5]. The competition is aimed at promoting new initiatives to enhance the heritage related to cultural institutions such as museums, archives, libraries, or theatres through the active involvement of high school students, fostering cross learning methods and approaches that bring together historical-artistic and technical-IT disciplines[6].

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[5] The competition was announced in 2010, promoted by the Cultural Heritage Service of the Emilia-Romagna Region, designed to develop cultural heritage education projects for middle and high schools, museums, archives, libraries, and historical theatres in Emilia-Romagna.

[6] In the 10 years of the Prize, 120 enhancement projects have been financed and implemented, such as: eBooks, audio guides, videos, interactive and emotional maps, design objects, educational paths, websites, tourism promotion projects, virtual reconstructions, catalogues, and exhibitions.

The project was designed with the aim of enhancing cultural heritage, partly previously unknown, kept by the Museum, whose collection retraces, from a historical perspective, the evolution of the Riccione area: from the geological structure to prehistoric findings, up to the urbanization in Roman times.

The format consists of two interactive installations. The first, the 1:1 scale projection located at the entrance to the museum, describes the history of Riccione seafarers. The second, the interactive table, is placed at the end of the visit path and illustrates the archaeology in the Riccione area through some excerpts from the diary of Luigi Ghirotti, one of the founders of the Museum.

Among the main partners of the project are two fifth-grade classes of the Fellini Arts High School. Thanks to the specific educational plan, the 40 students were able to put in play some of the skills they had already acquired at workshops held by Andrea Solomita, professor of audio-visual and multimedia disciplines, working on the development of motion graphic elements and audio-video shooting for the representation of the installation content. The strong aptitude for technical and IT disciplines was also evident in the curiosity and willingness to explore interaction design practices for the enhancement of heritage. Together with Paolo Petrangolini, professor of computer science relating to FabLab Romagna, the students dealt with IT design and installation prototyping.

As for the scientific part and the development of the content, whose sources were identified and provided by the museum, the classes were supported by Andrea Tirincanti, manager of the "Museo del Territorio", who lectured in the history of Luigi Ghirotti's diary and the local archaeological excavations and explained the history of the Museum and its collection. The historical re-enactment association Legio VI Ferrata, alongside Carlo Volpe, an expert in Riccione seafaring, also played an important role in these educational activities.

Usma Radio, the research centre for radio broadcasting at the University of San Marino, supported the recording of some audio and video tracks thought up with the students, offering the equipment and the skills of Alessandro Renzi, station manager, and Emanuele Lumini, in charge of the photo-video laboratory for the Design degree courses, who made two video interviews that were later published and interpreted through editing by the students. The graphics illustrating the interactions were created by Ilenia Balella, interaction designer.

4.1   1:1 scale Projection

The first installation, the 1:1 scale projection, is placed near the entrance to the "Museo del Territorio", inside the premises it shares with the public library Osvaldo Berni. The choice of the location derived from the desire to intrigue passers-by who are invited to enter the museum rooms when accessing this public space.

The installation projects two people from the local community: Carlo Volpe, an expert of Riccione seafaring and an Arts High School student.

The dialogue is divided into two moments: initially the projected characters look around while waiting for the user to pause in front of them for more than 3 s. After this period of time, the conversation between the two protagonists begins.

The narrative expresses two interconnected themes: an initial conversation on Riccione seafaring is followed by an in-depth look at Saviolina, an example of a traditional

Adriatic boat – among the oldest still existing today – that represents the economic and cultural transformation of the Romagna coastline and the development of the city of Riccione. At the end of the projection, once the dialogue has ended, the two characters look back around waiting for another visitor.

4.2   Interactive Table

The second installation, the interactive table, is placed at the end of the section dedicated to the Roman Age, which completes the Museum's exhibition path. The interactive table offers an overview of the figure of Master Luigi Ghirotti through the narrative of parts of his personal diary, still unpublished, that can draw a significant picture of the history of archaeological finds in the Riccione area. The interactive table consists of a series of audio-visual content that can be enjoyed thanks to an activator object: an organizer that ideally represents the master's diary. Once the object is placed on the table at a spotlight, thanks to an RFID tag contained therein, the visitor will be able to access four specific contents:

- In the section "***Who is Ghirotti***", a narrative voice describes the figure of the master and his relationship with the "Museo del Territorio" by means of historic photographs.
- The section "***Archaeological Map***" displays the many areas discovered by Ghirotti, delving into some of them through an account of the excavations and finds.
- The section "***Diary***" narrates his passion for archaeology and his relationship with the area through the reading of excerpts.
- Finally, in the section "***Testimonies***", two video interviews to Monica Ghirotti, the master's daughter, and an archaeologist friend, Fosco Rocchetta, offer personal anecdotes and stories.

The interactive table provides for possible extensions. An additional thematic level, which can be accessed thanks to a second activator object – the archaeologist's trowel – will be dedicated primarily to the already known and studied Riccione sites, such as the archaeological area of San Lorenzo and the former Podere dei Conti Spina. The installation will also show sites still being explored, such as the area of the Castello degli Agolanti, whose excavations began in the summer of 2022. In this case, the narrative will develop through the navigation of a timeline enriched with historic photographs and images of finds from different eras.

5   Conclusions

The research group, which played an active coordination role from the design, the writing of the application and the establishment of the work team to the support to training and design activities by ensuring their feasibility, combined the realization of the exhibition path with a verification and validation phase. Alongside the design activity, evaluation questionnaires were distributed to all stakeholders in order to collect feedback.

Data, both qualitative and quantitative, provide an overview of the perception of the project and the entire process carried out by the students, the professors, and the museum staff.

Two questionnaires were submitted to the students: one at the beginning and one at the end of the experience. The first questionnaire mapped the degree of knowledge of the "Museo del Territorio" and the cultural heritage to be enhanced, as well as their level of familiarity with the activities on which they were supposed to work actively.

The data collected showed relatively low knowledge of the historic boat Saviolina, the archaeological area of San Lorenzo and the "Museo del Territorio" itself, as well as a lack of familiarity with Master Ghirotti's diary. The results of the questionnaire also showed the level of difficulty perceived by the students towards the subsequent implementation of the installations. The data reported that 79.4% of the students considered the work to be done to be corresponding to their level of competence, and on a scale of 1 to 5, most of them rated the degree of interest perceived in participating in the project with a grade of 4.

The second questionnaire, which was shared at the end of the work, collected data on the students' experience of processing the content of the interactive installations. The project, which took place during school hours with the coordination and support of teachers, was carried out independently for 50% of the groups.

The analysis of the results also showed that the experience was particularly positive for 87.5% of the students and that they felt part of a project that made them more aware of the cultural heritage of the Riccione area (95.8%). MEET was experienced as a project with a strong educational impact at both the historical-archaeological and technical levels: students dealt with topics outside the study plan, acquired skills in the fields of computer science and technology, and reinforced soft skills such as teamwork.

Lastly, the classes report the importance of the project in enhancing the cultural heritage of the Riccione area, emphasizing the key role played by the interactive installations in offering historical-archaeological content in alternative ways. Technology made information more accessible and interesting, and the development of different types of storytelling represented in a dynamic form made for a personalised feel that was more inclusive to younger and inexperienced audiences.

In the face of a predominantly positive impact, the application of the MEET format to the Riccione context ran into two critical issues: the first concerns the time required for content creation, which was perceived as insufficient by the teacher and the two classes. The second critical issue is about the coordination of the partners, which did not guarantee continuity and planned deadlines in advance due to a series of previously scheduled unbreakable commitments, lengthening the time for sharing historical-archaeological content and the related class processing phase.

Ultimately, considering the point of view of the research group, the MEET project proves to be, in its implementation in the Riccione area, an opportunity to test and apply the theoretical model in all its phases on a real context, thus building a case study that will form the basis for the scientific and critical validation of the whole project alongside other future applications, in the event of research.

The implementation phase showed that the development of a complex project involving interactive installations benefited from the specific skills and relationships of researchers, professors, and partners, without the enthusiasm and dedication of whom the project would not have been effectively completed.

Having more resources available would have allowed for the respect of timing and everyone's skills, delegating procurement, logistics and administrative procedures to specific figures.

Therefore, a preliminary phase of critical feasibility analysis concerning the availability of the people involved, their aptitudes and skills, the conditions and peculiarities of the locations, the organizational structures of the institutions involved, their network of relationships in the area and the resources available is essential for future applications of the project.

The recent organisation of research programs financed by national and international competitions, in which schools are included among the stakeholders involved in collaborative networks alongside research centres, universities, businesses and other public or private institutions, makes the MEET format particularly interesting.

As a matter of fact, because of its flexibility and scalability in terms of issues addressed, people involved and assets enhanced, the project, based on the interpretation of the place parameters, guarantees a process customised on the enhancement of the local cultural heritage in which the community is also directly involved.

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