

# The ΠΙΣΕΤΟ Project: Storytelling Games for Groups of Visitors in Fine Art Exhibitions

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**Abstract.** ΠΙΣΕΤΟ is a project that designs and implements gameful experiences for groups of visitors, in the environment of cultural institutions. Current research presents the project's landscape and we elaborate on its central objectives, overall approach and vision. The main research and software outcomes of the project are shortly described, highlighting key challenges that are faced in the whole process. Finally, authors outline open issues with a focus on personalization and player data collection, sketching the path for exploring them.

**Keywords:** Storytelling, Games, Fine Art Galleries, Group Visits, Mobile Design, Authoring Tools, Frameworks, Personalization, Player Data Collection

## 1 Introduction

ΠΙΣΕΤΟ designs gameful group experiences in fine art exhibitions, challenging the creative abilities of the participants. Through the game, visitors are motivated to engage with the artworks in new, resourceful, and personal ways. They are also encouraged to share their private thoughts and reflections with the group, fostering conversations and social interactions.

To support the creation of gameful group visits, from design to delivery, ΠΙΣΕΤΟ implements software tools for two different user types: i) Mobile applications for the visitors, orchestrating group activities during the game, and ii) Experience Designer Suite for the authors, enabling to create a range of gameful experience designs, tailored to the characteristics of each cultural environment.

The project has been co-financed by the European Union and Greek national funds through the Operational Program Competitiveness, Entrepreneurship and Innovation, under the call RESEARCH – CREATE – INNOVATE (project ΠΙΣΕΤΟ code:T1EDK-05362).

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## 1.1 Approach

Art exhibitions communicate implicit or explicit stories. Visitors are typically expected to take on a “spectator” role, and more or less follow the curated stories individually, on their own, personal pace.

ΠΙΣΕΤΟ seeks to investigate a different, more social and playful approach. Inspired by Nina Simon’s reflections over the “Participatory Museum”, authors envision cultural institutions as live, social places, where the visitors can interact and socialize around cultural heritage content, through ludic or game-based activities.

**From “Spectator” to “Participant” Visitor Role.** ΠΙΣΕΤΟ assigns active roles to visitors. It poses gameful challenges and motivates to engage with the artworks in creative and playful ways. The visitors are asked not only to follow the exhibition’s stories, but also to participate in group activities, and make new stories of their own.

**From Individual to Group experience.** People are social beings and the value of social interactions is repeatedly highlighted in museum studies. To that end, ΠΙΣΕΤΟ designs group experiences that carefully orchestrate moments of personal reflection to gameful social encounters. The main objective is to cultivate face to face conversations, social activities and emotions.

**From “physical space” to “experiential place”.** In the course of the ΠΙΣΕΤΟ experience, participants are guided to gather in groups, narrate and perform stories in front of their companions, make choices and discuss them. In between, they are prompted to move freely in the physical space and playfully explore it. Through this process, ΠΙΣΕΤΟ re-appropriates the exhibition environment, transforming it from an unfamiliar cultural space to a live, social playground, making it personal for the visitors in a new way.

## 1.2 Find the Artwork behind the Story!

Authors leverage a storytelling game that was proposed in previous work [2], and extend it towards several directions. The game is titled “Find the Artwork behind the Story!” and assigns different roles to the group members: “Storytellers” conceive and narrate stories about artworks of a cultural exhibition, and “Voters” try to find the artwork behind the stories. When votes are revealed, the group members elaborate on their choices, revealing and sharing their personal perspectives with the whole party (see Fig. 1).



**Fig. 1.** Gameplay and phases of “Find the Artwork behind the Story!”

### 1.3 Mission

The first main objective of the project is to investigate the potential benefits and implications of the proposed gameful experiences, identifying promising use-case scenarios and concrete design guidelines. Under what circumstances may such gameful experiences take place? Can they be combined to traditional visiting conditions? How can cultural experts participate in the group games?

Envisioning “game events” in the environment of cultural institutions, authors participating in the current project plan to invite people to participate in gameful, cultural social experiences, not just once, but over and over again, with potentially new groups, in different environments, and with varying cultural collections. To that end, ΠΙΣΕΤΟ pays special attention to “repeat play” phenomena and requirements, complementing the original gameplay with a series of in-game activities and extensions.

The second main objective of the project is to develop an integrated technical framework to enable: i) quick design and creation of cultural gameful experiences, and ii) provision of digitally enhanced, cultural journeys to groups of visitors, promoting “visitor-to-artwork” and “visitor-to-visitor” interactions.

## **2 Partners**

### **2.1 COMIC**

COMIC is a private company that was founded in 2013, and has since been active in the field of IT and telecommunications services, specializing in the cultural sector. It covers a wide range of services related to the development of projects and IT solutions for cultural institutions, developing digital applications and providing support services for the implementation of private and public projects. Within ΠΙΣΕΤΟ, Comic manages project coordination and administration, cultural experience design and research, as well as front-end development, evaluation, results dissemination, and finally, commercial product exploitation activities.

### **2.2 CITE**

Communication & Information Technologies Experts S.A. is an enterprise activating in the area of CIT services and solutions. It was founded on June 2007 and its major activity areas include: large-scale Information Systems' analysis and design, techno-economic analysis and evaluation of telecommunication systems and services, management and technical ICT consulting, design and implementation of highly specialized software solutions, IT systems quality validation. The role of CITE within ΠΙΣΕΤΟ is mainly centered around the design and implementation of the project's technical infrastructure, back-end systems, and web authoring tools, developing a modern, extensible web service system that embeds a content management component, able to support various gaming modes. In addition, CITE supports dissemination and exploitation build-up for the ΠΙΣΕΤΟ platform.

## **3 ΠΙΣΕΤΟ Main Outcomes & Challenges**

### **3.1 Mobile Applications**

ΠΙΣΕΤΟ designs a digitally mediated group experience to support the game "Find the Artwork behind the Story!". It implements a mobile application that the visitors download on their mobile devices, such as smartphones or tablets, orchestrating their actions and location in the cultural environment, through the game phases.

The use of multiple mobile devices entails considerable dangers that need to be carefully considered in the group experience design. First, digital screens tend to monopolize the visitors' attention, notably redirecting their focus from the displayed exhibits to the mobile screen. This situation is widely known as "heads-down phenomenon" in museum studies with mobile applications. Furthermore, mobile devices are often claimed to hinder social interactions, leading to situations where people are physically co-located, but alone in their interaction with the devices, being in a private bubble that is often called "mobile cocoon".

To address these challenges, the mobile-based experience design moves away from traditional, information-centric functionality that is commonly encountered in cultural environments (e.g. using mobile guides). Instead, the personal devices are carefully leveraged either as “game controls”, synchronizing and promoting the gamified group experience [3], or as “recording devices”, cultivating performativity, social awareness and interactions between the group members. Our primary goal is to support the rich and fluid social interactions that were witnessed during playtesting with physical materials, such as face-to-face conversations, eye-contact, body gestures and movements.



**Fig. 2.** Subset of the mobile screens’ flow, depicting how key transitions are addressed for the two player roles: Storyteller above the line, and Voters underneath

### 3.2 Experience Designer Suite

The project aims to design and technically support game-based group experiences not only for the environment of a particular gallery, but for multiple exhibitions, permanent or temporary, taking place in diverse environments. To that end, ΠΙΣΕΤΟ implements an Experience Designer Suite, providing tools, templates and guidelines that enable the designers to quickly create a variety of different gameful experiences, customizing them to the specific needs and characteristics of each case.

Through a web-based interface, the experience designer is empowered to upload the cultural content that will be employed in the particular gameful design (such as digital representations of the artworks, narratives, or other resources). Then the designer may create or select one of the available “Game Templates”, customizing several parameters of the overall experience, while also specifying and overviewing its gradual evolution in the cultural space.

The Experience Designer Suite also displays statistics of prior game events, such as timing of encountered participant actions and game phase duration. The main objective of this functionality is to inform the designer how the provided mobile-based experience actually evolved, thus enabling to further fine-tune the original design.

### 3.3 Design Framework and Guidelines

The project aspires to support the design of gamified cultural journeys for groups of visitors, passing through different roles, places, interfaces and times. This process bears many similarities to staging an interactive live performance, where the visitors participate as actors in the play and define how it evolves. Obviously, the design of such experiences in the environment of varying cultural institutions, includes several challenges.

A mixture of factors need to be explicitly considered during the cultural experience design, in a combined and holistic way. Gallery environment characteristics (such as space syntax, available seating areas, artwork distribution, displayed narrative labels and other resources), as well as different participant roles, timing availability or constraints, group synchronization issues, key content, spatial and interface transitions, access to physical resources, and personal play preferences, are only some of the parameters that affect and shape the overall group experience.



**Fig. 3.** Snapshots from playtesting session with two groups of participants, at the exhibition “Van Gogh Alive – The Experience”, Athens Concert Hall, Megaron, March 2018.

The diversity of the potential scenarios poses the need, not only for authoring tools, but also for a conceptual framework that includes customizable templates along with fine-grained guidelines, to ease the creators in this intricate experience design process. In order to gradually reach a series of concrete design principles and guidelines, ΠΙΣΕΤΟ performs a series of playtesting sessions and user studies in different galleries (Fig. 3, Fig. 4). Authors leverage the trajectories HCI framework for the analysis of the participants’ behavior, and they proactively apply it in the design of the proposed mobile-based, gameful experience.



**Fig. 4.** Snapshots from playtesting session with the artist, Stefanos Rokos, joining one group of participants, at the exhibition “«Stefanos Rokos: Nick Cave & The Bad Seeds’ No More Shall We Part, 14 paintings 17 years later»”, Benaki Museum, May 2019.

### **Trajectories**

The trajectories framework [5] has proved to be a valuable instrument so far, enabling us to clearly reflect and investigate many of the aforementioned issues, in a combined, holistic way. It has provided us with key sensitizing concepts, guiding the analysis of the experience, and helping us structure the entire design with regard to its complementary main objectives [4].

Thinking in two levels of scale, authors have decomposed the overall experience in local and global trajectories, separating the experience design issues that strongly relate to contextual parameters and requirements (imposed by the physical environment), from the core game procedure (i.e. the episode), which in fact is not closely tied to particular environmental conditions. In this way, each trajectory design practically addresses different, yet complementary goals. The local design focuses on orchestrating group interactions through the mobile application, while the global focuses on the bigger picture of the visit, examining how to tailor the gamified experience through the web authoring tools, so as to be aligned and better match the physical environment, which is the “stage” of the group play.

The emphasis that trajectories pay to the gradual progression and temporal continuity of cultural experiences, made us also realize that, the gamified journey unfolds even beyond the scope of each gameful visit, thus driving us to investigate this issue. Although the effects of repeated play are well known and addressed in digital, as well as board games, they are not commonly addressed in the design of cultural gamified experiences, a point of concern, since “repeat visits” are one of the central goals in the cultural heritage field. To that end, ΠΙΣΕΤΟ examines the impact of prior game participations on player behavior, engagement and expectations, and explores how to model and address this issue.

## 4 Open Issues

### 4.1 Personalization

Playtesting with the game “Find the Artwork behind the Story!” has revealed highly different player expectations and behavior, over the following main aspects [1,2]:

1. **Pacing.** Some participants repeatedly dwelled on the artworks, examining in detail several candidates. On the contrary, other participants maintained a quick pace throughout the whole experience, thus often experiencing long waiting times.
2. **Competition.** This aspect was regarded in tremendously different ways. Some players practically ignored the scoring aspect, or even expressed a strong dislike on “the feeling of losing or winning”. On the opposite direction, several players focused notably on scoring, highlighting the lack of objectivity and competition as the main game shortcomings.
3. **Engagement with narratives & learning expectations.** Some visitors systematically went through narrative labels and data, often focusing on the learning dimension of their gameful experience, while others showed a tendency to ignore textual information in general, mostly focusing on visual aspects or creativity tasks.

The value of personalizing gameful systems to each participant is highlighted in several works [6] and different user typologies have been explored to that end, such as personality traits or player types (a comprehensive review may be found at [7]). The challenge here is, that individual player preferences may vary significantly between the members of the same group. Therefore, the main issue that ΠΙΣΕΤΟ plans to investigate is *how to tailor the shared, group experience, in order to better suit the personal preferences and styles of ALL its group members.*

In addition, besides its gameful dimension, the proposed experience takes place inside a cultural environment, under the context of a cultural visit. So, an important aspect to consider along is, *how do player preferences and user traits relate [8] to the various visitor types [9], personas [10] or/and visiting styles [11] that have been traditionally identified and reported in cultural studies?*

### 4.2 Recording Activities & User Data Collection

Noticing the wealth of user generated stories and input acquired while playing the game, it was recently decided to introduce recording activities and roles, at various points of the game experience. For instance, a temporary “Story Recorder Role” was added in the mobile-based design, which is taken on by one of the Voters. The Recorder performs the exact same activities to the Voter, but is also responsible for capturing the Storyteller’s performance with his/her personal mobile device, during the Storytelling phase of the game.

Our motivation for adding the Story Recorder role is three-fold. First, by explicitly signaling a recording action before Storytelling, authors wish to highlight and promote the performative dimension of this phase, thus further prompting the Storytellers to engage into the storytelling activity in a theatrical way. Second, the acquired recordings provide valuable multimedia resources for the creation of personal or/and group digital souvenirs from the gamified experience. Souvenirs (video or photograph) relate to the concept of historic trajectories, reviewing parts of the participants' past experience. Depending on the participants' personal preferences, souvenirs may be shared between the group members or uploaded to their social networks.

### Digital Player Souvenirs

To investigate the value of digital souvenirs from the participants' perspective, an image souvenir was created for each of the playtesting groups that was conducted in our previous work [2]. The souvenirs reviewed the participants' stories, depicting the artwork that each Storyteller selected along with the corresponding story underneath it, as well as a couple of screenshots from the group experience (Fig. 5). One to three weeks after each session, the group souvenir was e-mailed to all group members and the participants were asked to individually answer the following question: “*Would you like to receive such a souvenir after your game?*” (in a 5-Likert scale). The overall feedback was very positive: the average score of 23 participants reaches 4,7 (out of 5) while in many cases the participants added qualitative comments, expressing their appreciation of the souvenir or their willingness to participate in future studies.



**Fig. 5.** Sample digital souvenir depicting the Storytellers' stories and artwork selections.

It is worth noting that one participant reported in his email reply that he had talked about his game experience to his friends and plenty of them asked when future studies are going to take place, expressing their eagerness to participate. Although this comment does not relate to the value of the digital souvenir itself, authors wish to stress out that it was the action of sending the souvenir that paved the way to receive this comment, re-opening a channel of communication between the participant and the game facilitators. Authors believe that the affordances of souvenirs towards re-engaging the visitors and inviting them into future cultural game experiences is a very interesting issue that needs to be further explored.

### Leveraging the Players' Input

Finally, the collection of user-generated stories provides a valuable pool of resources about the particular collection of artworks, with multiple potential uses. For example, the collected stories may be leveraged within the gamified experience of

other groups. In a “Short Edition” of the proposed game, the “Story Making” phase is entirely skipped; pre-existing stories are displayed instead, hence assigning the Voter role to all group members. The stories collected from preceding game sessions may provide the employed “pool of stories”, and be presented to new groups of visitors, who join the “Short Edition” of the game.

Most notably, authors believe that the participants’ stories, comments and explanations may indicate or even reveal parts of their internal meaning making processes from visiting the exhibition. So, it is suggested that players’ input may be also viewed under the lens of visitors’ feedback, potentially informing the curators of the gallery over the visitors’ personal thoughts and understanding, acquired while/after visiting the gallery. However, sharing group recordings to external parties (i.e. other visitor groups or curators) raises critical GDPR issues that need to be carefully considered and regulated. In addition, the manual inspection of all players’ video recordings will probably be rather overwhelming, particularly as the amount of collected data increases, thus posing the need for automated multimedia processing and analysis, along with novel reporting and summarization techniques.

Finally, on another direction, the analysis and mining of co-occurrence data that emerges during the “usage” of the game (such as frequently “co-voted” or “co-selected” artworks), may reveal new forms of semantic relations between the employed works of art, originating from, and thus reflecting, the players’ perspectives.

## 5 Conclusions

Cultural storytelling games provide an excellent “tool” for creating engaging visitor experiences that challenge the visitors’ creative abilities and foster social interactions in groups. Most notably, the user generated stories provide an incredible, resourceful source of input. Its exploitation shows exciting potential to advance the communication and establish an open dialogue between the main end parties that are involved in a cultural experience, i.e. the curators or/and artists who create the exhibitions or/and the displayed artworks, and the visitors of the cultural exhibitions.

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