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Technical Report of Game Assessments

MEDGAIMS

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INTRODUCTION

The project has been running for 2 years and 6 months, and once the games are fully developed they have been tested in several moments, during the process, the Open Days, with the Peer Review videos and with the Study visits.

40 games have been developed covering several areas related with heritage, tourist destinations and providing new methodologies to the managers of the destinations.

At the beginning of the project the evaluation was intended to be conducted with final users, but because of the pandemic situation, the project has adjusted the deadlines and some of the developments have been rescheduled. Also the covid limitations to the tourist travel between countries have forced a little change in the final evaluations.

This document collects all the data related to the Study Visits evaluations of the partners in the different countries and provides with information to help understand the final conclusions of every project, every country and also the overall project.



EXECUTIVE SUMMARY

The whole document is summarized following the same structure for every country:

Abstract: With the abstract the general overview of the country is settled as well as the chosen destinations, the sites and the strategy behind the selections. This allows to have a quick overview of the country.

Methodology: An explanation of the methodology used in the evaluation process and the data collection with direct links to the different sources of information like the Peer Review Videos and the Surveys Results.

Data collection: The summarized data of the different games evaluated is presented in this section. Two different parts are splitted:

- General: with the charts derived from the general data collection.
- Game by Game: with the qualitative answers and also a final summary of the results in terms of:
 - Strengths
 - Weaknesses
 - Game conclusion

Discussion: Here every country has provided with the different aspects that have appeared during the process of the project evolution, from the starting point to the final resolution, which challenges have been faced and how they have been solved.

Conclusions (Country): Each country has provided with general conclusion of the project facing the different challenges and extracting the learnings from their individual experiences.

Conclusions (General): With all the country conclusions the WP Leader has developed and abstracted the general conclusions of the whole project.

Annex: Some additional information has been added at the end of the document.



COUNTRY - ITALY

Technical Report

ABSTRACT

1 Description of Destinations and Sites

Background information

With its 44,000 inhabitants, Alghero is the 5th largest city of Sardinia. It is the island's main harbour town, home to Fertilia airport and one of its best-loved cities for the popular walkway along the port's bastions and the gorgeous natural bay that flows into the emerald sea. The shoreline is some 90 km long and known as the Coral Riviera, home to a major colony of the finest coral. Red coral is more than just a valuable local product for Alghero: it is an expression of the culture and tradition of the town, as reflected in the name. Craftsmanship and high-value business is tied to this extraordinary product. Crossroads of cultures and landing point of many populations over the centuries, in addition to the beautiful beaches, crystal clear sea and unspoiled nature preserved as Regional Park of Porto Conte, Alghero preserves an ancient history, protected by the imposing walls that still today, despite their partial demolition, embrace the city. Numerous populations and civilizations have taken turns at inhabiting this corner of land facing the Mediterranean Sea. After the great and clever Nuragic population, others such as Phoenicians, Byzantines, Romans, Pisans and Genovese have landed on these same coasts seeking new trade routes and leaving important signs of their passage in the numerous archaeological sites in the area.

Fondazione Alghero act as a main player in the cultural and touristic development of the city of Alghero. On behalf of the City Council, Fondazione manages the cultural heritage and museum system in Alghero, working closely with tourism stakeholders in order to promote an integrated cultural and touristic offer of the territory. Thanks to MED GAIMS, Fondazione has had the opportunity to experiment new actions/products in order to tackle several structural problems which still affect a balanced development of touristic economy such as seasonality issues, audience development, increasing tourism flow in low-season.

Among the cultural sites managed by Fondazione, five of them have been selected in two destinations to be enhanced through games applications. Destinations in Alghero refers to two different parts of its territory: the urban area, represented by the historic city centre, and the natural/environmental area located in the north west area of the city, towards the end of the gulf which embraces the town. The two destinations offer different experiences of Alghero territory:

- a historic centre full of charm and history, characterised by the clear imprint of Catalan domination on the historic architecture, a centre of services, entertainment and shopping
- the nature and marine reserve, characterised by the presence of the Porto Conte Regional Park, an area offering breathtaking natural and marine scenery, including archeological sites, beaches, trails and outdoor activities



Destinations

1. **City Centre:** The centre of Alghero is made up of two parts: a historical part, characterised by predominantly Catalan architecture, and a modern part. The part generally considered most interesting by visitors is the historical one, characterised by narrow cobbled streets, the Catalan architecture of several religious buildings, such as the Duomo, and the presence of the main museums (the Archeological Museum and the Coral Museum) and ancient coral workshops, symbol of the city and its economy linked to the sea. The historical centre is surrounded by an imposing fortification, which has remained practically intact and which characterises a pleasant seafront walk. A sturdy and safe shelter in northern Sardinia, the fortress of Alghero represented for the Catalan/Aragonese Crown the key to communication between the Island of Sardinia and Catalonia. The entrance into the historic centre took place through two doors: Portal Reial (current Porto Terra) and Porta a Mare (current Porto Salve). Even today, in spite of partial demolitions, the walls continue to be a strong place of identity.
2. **Natural/Marine reserve:** the area located outside the city centre is characterized by a great variety of environments of high naturalistic and historical interest. It encompasses two parks, the Porto Conte Regional Park and the Capo Caccia-Isola Piana Protected Marine Area distinguished by their great variety of settings and for their profusion of floral and faunal species which are of particular scientific interest. Inside it includes the state forest "Le Prigionette", a part of the Geo-mining Park of Sardinia, the SCI (Site of Community Importance) Capo Caccia and Punta Giglio. Here the blue of the sea and the green of the landscape draw unexpected paths between the signs of ancient and large civilization. An infinity of paths where archeology and history coexist in enchanting and uncontaminated landscapes: Domus de Janas art the Necropolis of Anghelu Rujù, Nuragic culture in the Archeological Village of Palmavera, phoenix traces, Roman villas emerge from the Mediterranean scrub.

Sites

Five sites have been selected in the 2 destinations described above and they are part of the cultural system directly managed by Fondazione Alghero. Together with the Neptune's cave (the most visited site in Sardinia), the five sites are the main 'must-see' sites in the city's cultural offerings.

Through their collections and their identity value, sites represent the whole history of Alghero, from its foundation to the present day. Both this feature and geographical location of sites contribute to foster a whole experience of the territory from the city centre to the outside area.

City Fortification: Alghero is one of the few Italian cities that have preserved their walls and towers intact. Today its bastions, dedicated to great explorers – Columbus, Pigafetta, Magellan and Marco Polo, have become a fascinating and pleasant walk in front of the sea. Alghero was built between 1102 and 1112 by the Doria family, and its first fortifications were raised a few decades later. By late 13th century, it was increased, while during the Aragonese domination no substantial modification was made to the city, and it preserved its Genoese plant with 26 towers. Fortification is composed by seaward walls and eight 16th-century city towers plus 11 along the coast. The Porta Terra tower was the Porta Rejal, the entrance to the city when you arrive from outside. The San Giovanni tower was the “middle tower”, while the Sulis is famous for the gruesome night battle that took place between 5 and 6 May 1412: a few Alghero inhabitants opposed the troops of William III of Narbonne. It is named after a Cagliari tribune, Vincenzo Sulis, who stirred up public upheaval in the late 18th century, condemned and then sent to prison for over twenty years. The urban perimeter also



includes the towers of San Giacomo, of Polveriera (the armory) and of Sant'Elmo, named after Erasmus (Elm, in Catalan), the sailor saint. Among the 11 along coast, worth to mention the Torra Nuova which today hosts the museum of the writer / pilot Antoine De Saint Exupéry and his main character, The Little Prince

City Archeological Museum: the Museum houses the oldest evidence of human habitation in the area, from the protohistoric period to the Nuragic era and Phoenician and Roman times. The exhibition focuses on three themes that are of particularly significance for Alghero and the surrounding area: the sea, local lifestyle, religion. The museum is located on Via Carlo Alberto, in the heart of the old city. It is housed in a building that was recently restored, having once been the site of a monastery complex connected to the Church of San Michele.

Coral Museum: the Museum is housed in an Art Nouveau villa in the centre of the city. It tells about this precious living organism through a fascinating journey into the marine ecosystem, analyzing the scientific aspects that characterize it and telling the story of its use which is deeply related to economic development of coral fishing and artistic craftsmanship.

Archeological Park: Crossroads of cultures and landing point of many populations over the centuries, in addition to the beautiful beaches, crystal clear sea and unspoiled nature, Alghero preserves an ancient history, which tells about numerous populations and civilizations have taken turns at inhabiting this corner of land facing the Mediterranean Sea. After the great and clever Nuragic population, others such as Phoenicians, Byzantines, Romans, Pisans and Genovese have landed on these same coasts seeking new trade routes. The archeological park located in the nature/environment area outside the city center is the evidence of such history and it is made up of the following sites: Neptune's Grotto, Roman Villa of Sant'Imbenia, Nuragic site of Sant'Imbenia, Nuragic village of Palmavera and Necropolis of Anghelu Ruju.

Reasons for Selecting the Destinations & Sites

There are several reasons behind the choice of the two destinations and sites and related game experiences in Alghero:

- the need to **strengthen** and **consolidate** the concept of a *single cultural and environmental system between the historic centre and the area outside it*, which in fact represent two sides of the tourist's experience: that of urban exploration and experiencing the historic and commercial city, and the open-air experience in nature. In fact, this represents a strategic objective in the tourist promotion and enhancement actions carried out by the Foundation, which recently took concrete form with the creation of the pass *Alghero ticket*, a tool that offers the possibility of visiting 12 cultural sites located in the historic centre and the park area and that brings together several key partners in the area. In this direction, the games should reinforce and constitute an additional product that enriches the experience offered by the single ticket;
- Most of the selected sites, especially the museums, despite their great historical and cultural value, **do not reflect a satisfactory and sustainable flow of presences compared to the touristic flow in Alghero**. The need to innovate the offer and combine new products capable of bringing together different audiences is evident: in this sense, the games represent a unique opportunity to experiment new actions for audience development
- **seasonality:** Alghero, like most maritime destinations, suffers from the seasonality of flows. The need to strengthen tourism in the low season is closely related to the destination's ability to plan and offer



- multiple experiences for different targets. The 10 game system implemented thanks to MED GAIMS constitutes a formidable opportunity to promote the territory outside the months of mass tourism (July-August), promoting a slow experience that sees the tourist as a spectator-actor of the game dynamics, able to acquire knowledge of the territory visited through unique experiences;
- **young generations and citizens:** another aspect taken into account is the need to bring young people and citizens themselves closer to cultural heritage. The former represent a strategic audience to build on school tourism and for bridging on the digital gap that characterises most cultural sites in Sardinia. Bringing them closer to the heritage through a language they are familiar with, that of games, represents a unique opportunity. As far as citizens are concerned, although the project targets tourists, we believe that it represents an opportunity to bring permanent tourists (citizens) closer to their heritage and make them frontline ambassadors with particular regards to domestic/regional tourism.

2. Game Development

Challenge

Following the choice of destinations and sites, Fondazione, like the rest of the partners, worked on the main challenge of the project related to the design and development of the 10 games. What kind of games? Analog or digital or both? What story do we tell? What kind of interaction is generated by the game and what information is linked to the interaction between the tourist and the site? How can the game be linked to other tourist experiences? Which type of visitor do we wish to attract?

How will the 10 game experiences coexist and how will they be accessed by tourists?

What values, meanings, image of Alghero do we want to convey through the games?

How is the game useful in prolonging the visitor's stay in the area or helping them remember the destination even after they leave?

These are just some of the main points on which we have questioned and challenged ourselves both through partnership meetings and through specific meetings organized with the involvement of operators in the tourism and cultural sector, informed about the Project and involved in the brainstorming process, historians, game designers.

Sites and Games – Play Alghero

The design phase was certainly one of the most challenging and definitely the most important phase of the whole process.

In the case of Alghero, first of all, it required an important consideration on a **general strategy** to be implemented in the medium-long term, seizing the opportunity of MED GAIMS as a starting point of a process of innovation and digitisation of the cultural and touristic offer, aimed to evolve. Considerations which have become increasingly necessary in view of the radical change in our way of life over the last two years due the Covid-19 pandemic.

The result of this process is the aim to turn **Alghero into a Playable city** where the act of play becomes a key resource for the social, cultural and touristic growth of the city, capable of conveying, through gamified



experiences at the selected sites selected, key urban values such as its history, identity, traditions and to enhance the welcoming soul of Alghero.

Therefore, games developed internally and externally (thanks to a financial contribution made available in the framework of the MED GAIMS project) have been designed to answer to these specific objectives:

- to promote new connections, physical and/or digital, between the cultural heritage and the urban space of reference
- to create a network between cultural sites by proposing playable experiences before, during and after the visit to the city
- to innovate ways of connecting and interacting between heritage, permanent and temporary citizens.

This is how the *Play Alghero strategy* has been conceived: it represents the creative framework and the communicative backbone of the implemented game system. The city itself becomes the core of the storytelling behind each game experience.

Within this strategy, the main factor considered in the development of the games was to ensure a variety of experiences combining analogue and digital elements, using different platforms (video games, digital graphic novels, interactive installations and AR techniques) and active urban exploration tools such as gamebooks or role-playing modality initiatives.

In the same way, particular attention has been paid to the target audience, especially families, which is particularly strategic for Alghero, and to young people, a target that is currently far from Alghero's heritage and that we intend to approach through games.

Finally, a third factor taken in account is the economic sustainability of the games and the possibility of linking them to other products/experiences available such as the Alghero ticket card ¹promoted by Fondazione. Games will be part of the cultural offer promoted and conveyed by Alghero ticket. A pay for games option will be also considered.

Methodology

The design process has seen the involvement of several professionals in the field of game design/development and experts in the field of history and culture. The role of the game designer is a crucial one, as he/she has the task of reconciling the various creative instances proposed by Fondazione in an effective logical game framework, evaluating the effectiveness and sustainability of the action in relation to the objectives to be achieved, the targets, the technology to be used, cost of the game and future operational and maintenance costs, the business model to financially sustain game operation after the end of the project.

Main stakeholder involved is the Municipality of Alghero, and in particular the Tourism and Culture Department, which has taken part in the design process and in the final choice of the games. Several stakeholders from local cultural and tourism sector have been involved in a consultation phase.

In the development phase, some games have been developed with the participation of the group of citizens of the Municipality project “Cittadinanza attiva”² directly involved in the building process of an analogic game, the Playful itinerary. This project foreseen the installation of urban games in several spot located in the city centre and other touristic sites in Alghero. Urban games recall traditional games of Alghero, traditional games in general such as hopscotch using colours, symbols and shapes connected with Alghero’s culture and identity.

¹ <https://www.algheroexperience.it/en/alghero-ticket.html>

² The project, born in 2016 and promoted by the Alghero’s city council, encourages volunteering and collaboration of citizens in respect of public assets and provides for a discount of 50% of municipal taxes.



During project implementation, the group of Active citizenship (Cittadinanza Attiva) has been directly involved as part of the

Games developed externally have been chosen following the phase of public events such as Hackathons and Creative labs in October and November 2020. Winning games have been chosen at the end of a 2-day event that incorporated one-on-one mentoring sessions with the participating teams, as well as included training sessions on diverse topics to help participants hone their ideas. At the end of the second day, teams got the opportunity to pitch their ideas in front of a pre-selected jury that evaluated the games based on pre-set evaluation criteria. The jury was composed by experts in the field of Game design and business plus representative of cultural and tourism sector in Alghero. Before the events, several meetings were held with private sector actors such as game designers and developers at regional level to explain the subgrant scheme and strategy behind Alghero Playable City.

During the development phase, subgrantees have been continuously supported during the design process in order to ensure that games were consistent with the overall strategy, avoid overlapping themes/dynamics between internal and external games and among external games themselves, and ensure a balanced distribution of experiences across the various sites involved.

Game testing sessions have been conducted during the project through open days initiatives dedicated to tourists and citizens. Input generated by this phase was crucial to polish and refine games before the final release.

3.Solution

The main challenge we face is to bring games to life, to communicate them, to bring the user closer to these new experiences and to assess their sustainability in the long term.

Under the Play Alghero strategy, in order to face these challenges we are providing these solutions/tools:

- ***Play Alghero communication system:***
 - o an immediately identifiable dedicated visual identity designed to accompany the entire playful experience on the territory, starting from the airport a visual identity
 - o a dedicated website in which potential users can find information on the game system and each game experience
 - o dedicated merchandising and digital tools to be used in social networks
- ***Playful itinerary:*** this is one of the 10 game experiences conceived as an itinerary of playful urban installations where history, local culture, health and STEAM get mixed connecting the city and its tangible and intangible heritage. The itinerary has two dimensions: a mainly tangible one, set in the city through the game stations. A second one, intangible recalling elements of memory (the traditional games) and symbols of local culture.

The itinerary also has a dual function: on the one hand, it is purely recreational as part of the ten game experiences available, and on the other it constitutes a communicative backbone, immediately tangible, that communicates the entire system and the message that you can experience Alghero and play with the city. Located in different spots around the city, it connects the different cultural sites selected into the project with other special touristic places of the city, increasing the overall impact of the initiative.



METHODOLOGY

The methodology used during the evaluation has been based on the surveys of final users. Users have been the most valuable assets in the project, so their participation has been part of the whole process in several steps.

Open days: The open days provided the chance to final users to test the alpha versions of the games in order to provide relevant feedback to be implemented in the different games for development. The games weren't finished so the test was conducted in a controlled environment. Each tester filled in a survey to collect the feedback.

Peer review: For the execution of the Peer Review and because of the COVID situation 40 videos have been recorded with an explanation of different technical aspects of every game. The videos have been shared with the partners also with surveys to provide feedback. The feedback collected has been of use for the development of the beta versions of the games.

Link to the videos: [HERE](#)

Link to the survey results: [HERE](#)

Partner Study Visits: The project partners have visited every country and tested the beta versions of the game experiences. In this stage the games were close to being fully developed, except for some details. The feedback obtained has been used for the final evaluation.

Surveys:

The surveys have included several sections:

Q.1 Demographic Information Questionnaire: provides information about testers

Q.2 Before the Gaming Experience - Interest and Previous Experience: provides information about interests in games and tourist gamified experiences as well as experience.

Q.3 Questions after each Gaming Experience: Provides information about the game experience

Q.3.1 SUS (System Usability Scale) questionnaire: provides information about the use of the game.

Q.3.2 NASA TLX (Task Load Index) questionnaire: provides information to rate the workload of the overall experience.

Q.3.3 IPQ (IGroup Presence Questionnaire): This is an optional questionnaire only for Virtual Reality experiences.

Q.3.4 Ad-hoc Game Experience Questionnaire: Provides information about the game experience, storytelling, game design, objectives, immersion and likeness of the game.

Q.3.5 Specific Ad-Hoc Questions: Qualitative questions about the game



Q.3.6 NPS (Net Promoter Score) Questionnaire: used for measuring the engagement and satisfaction of users.

Q.3.7 GDD (Game Design Document) Evaluation Questionnaire: provides information related to the GDD of the game and its relationship with the final experience.

Q.3.8 Socio-Economic aspects questionnaire: provides information on how the game links with the environment, the destination and the general promotion of the sites.

Q.4 Questions after all gaming experience: This questionnaire provides information about the overall experience.

In this surveys the information obtained splits in two types:

- Quantitative
- Qualitative

This document includes a first technical report of the country in general and all the game experiences and a detailed description game by game of each evaluation.

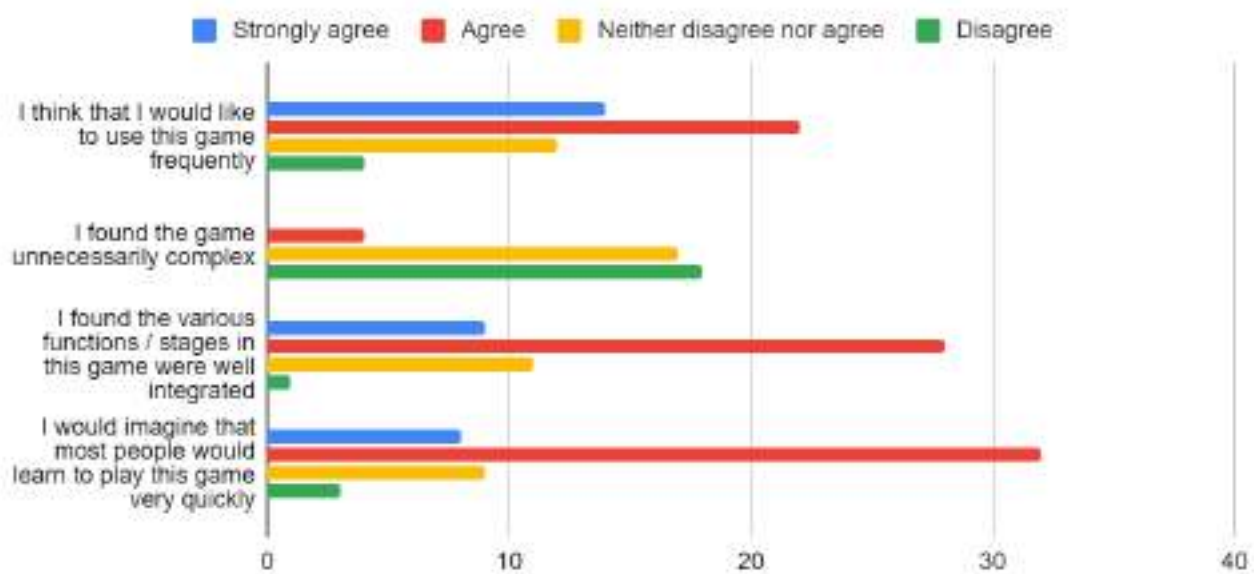
After this data collection a discussion is provided and a final conclusion chapter that holds the whole recap of the evaluation.

DATA COLLECTION

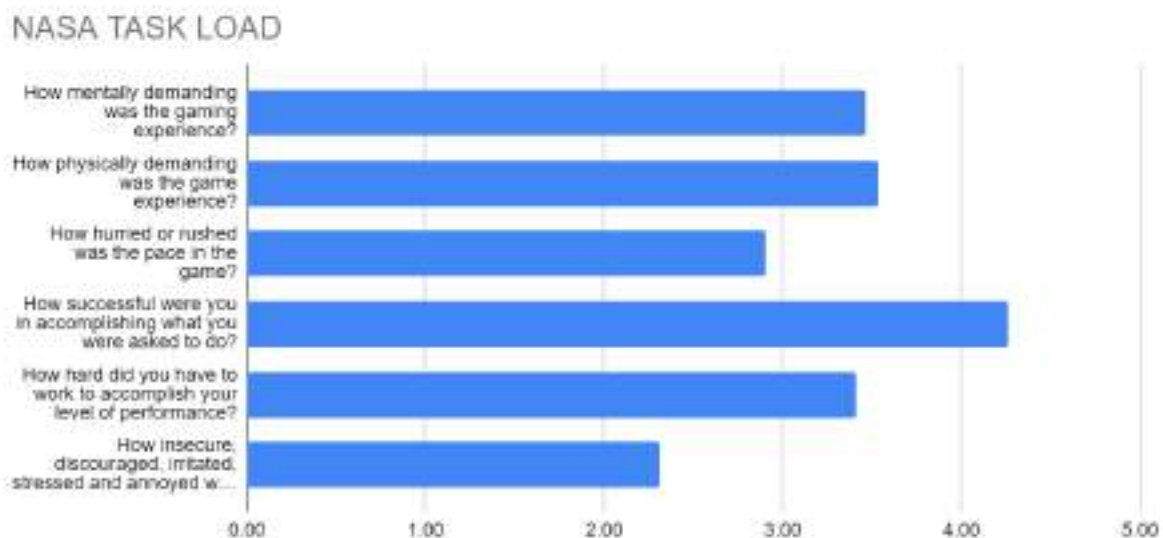
As mentioned above the data collected relates to the International Partner Study Visits because the games were in the most final version.

GENERAL

Q.3.1 SUS (System Usability Scale)

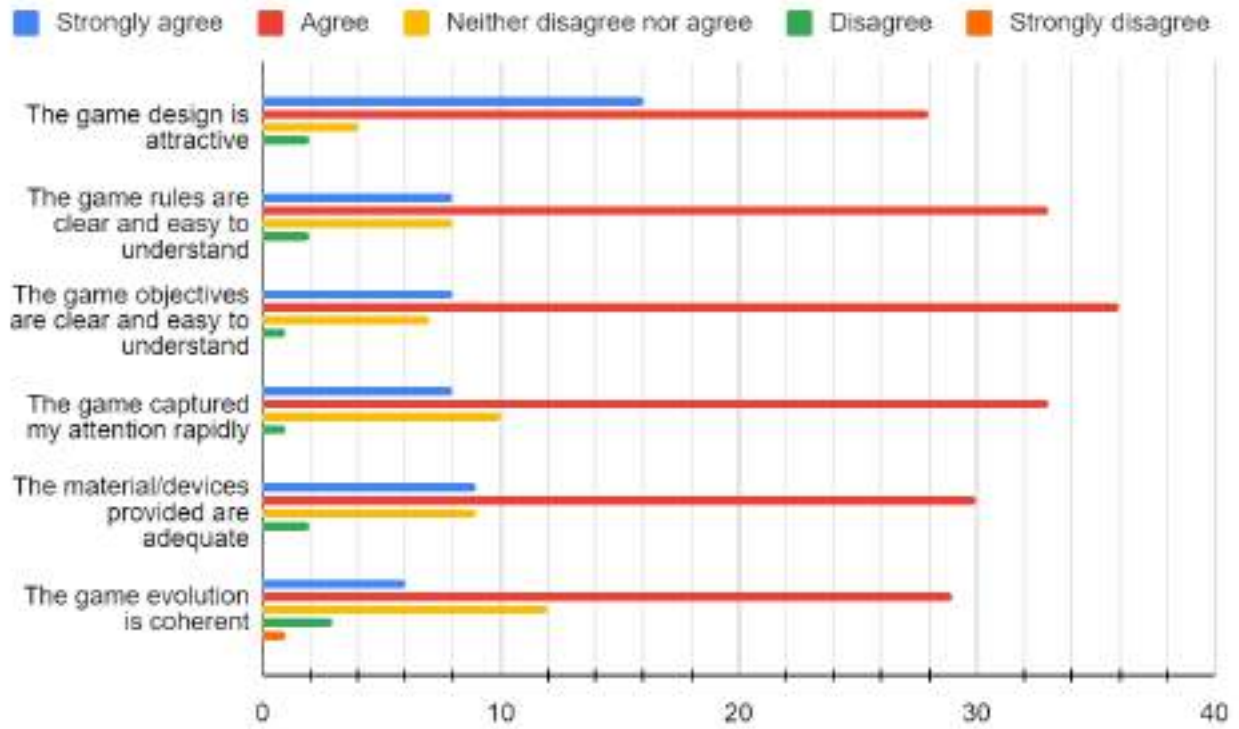


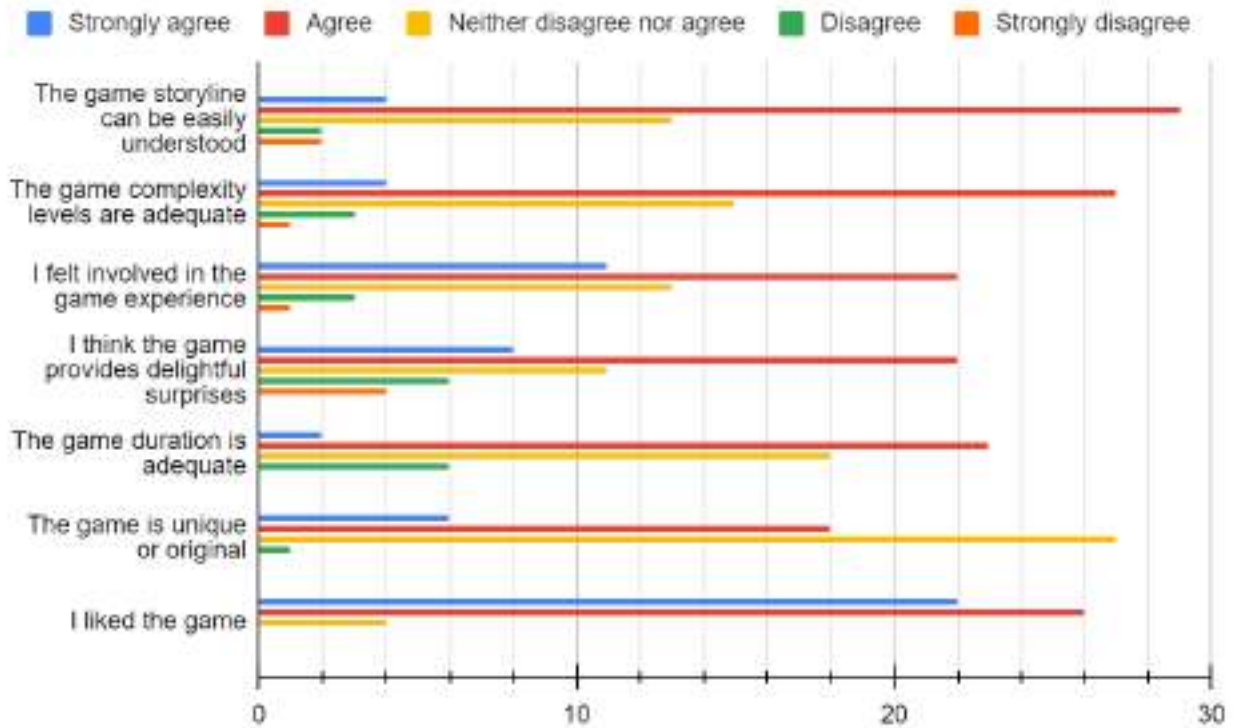
Q.3.2 NASA TLX (Task Load Index)



Q.3.3 IPQ (IGroup Presence Questionnaire) - Optional

Q.3.4 Ad-hoc Game Experience



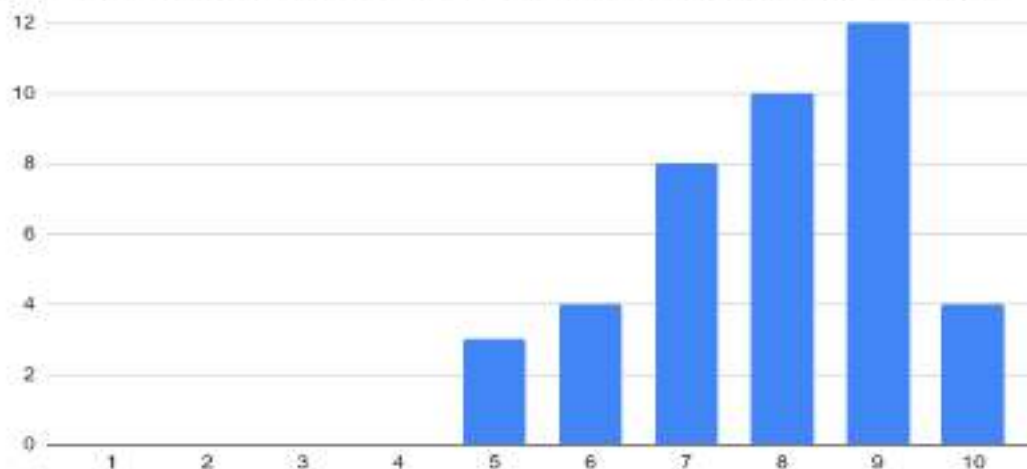


Q.3.5 Specific Ad-Hoc Questions

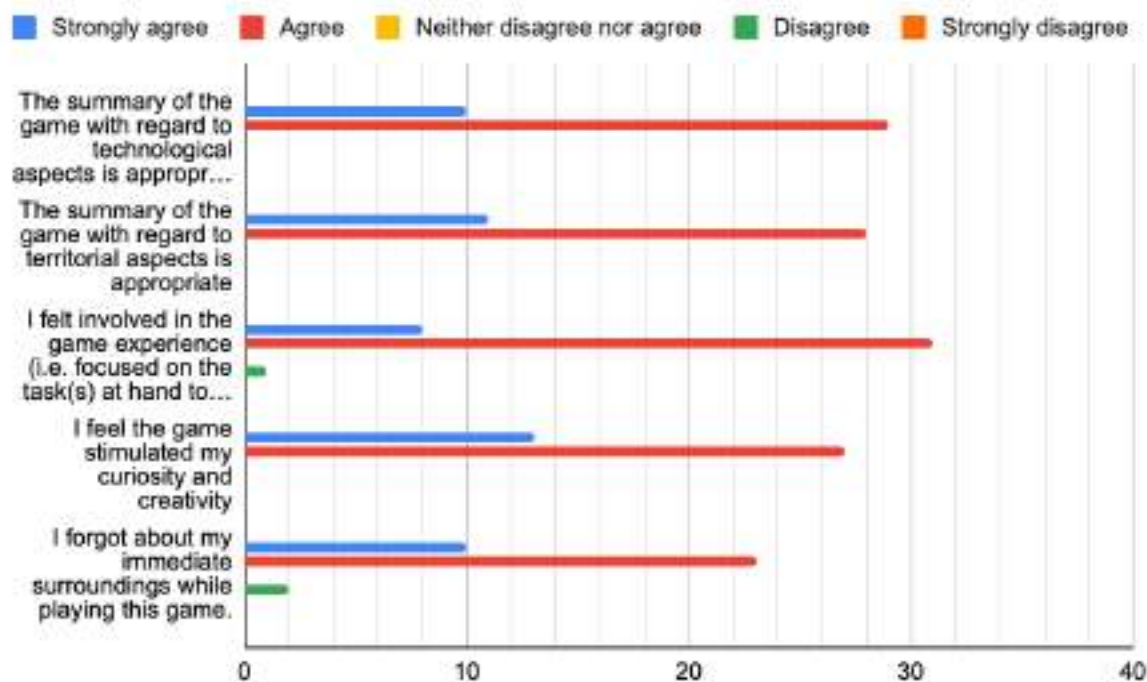
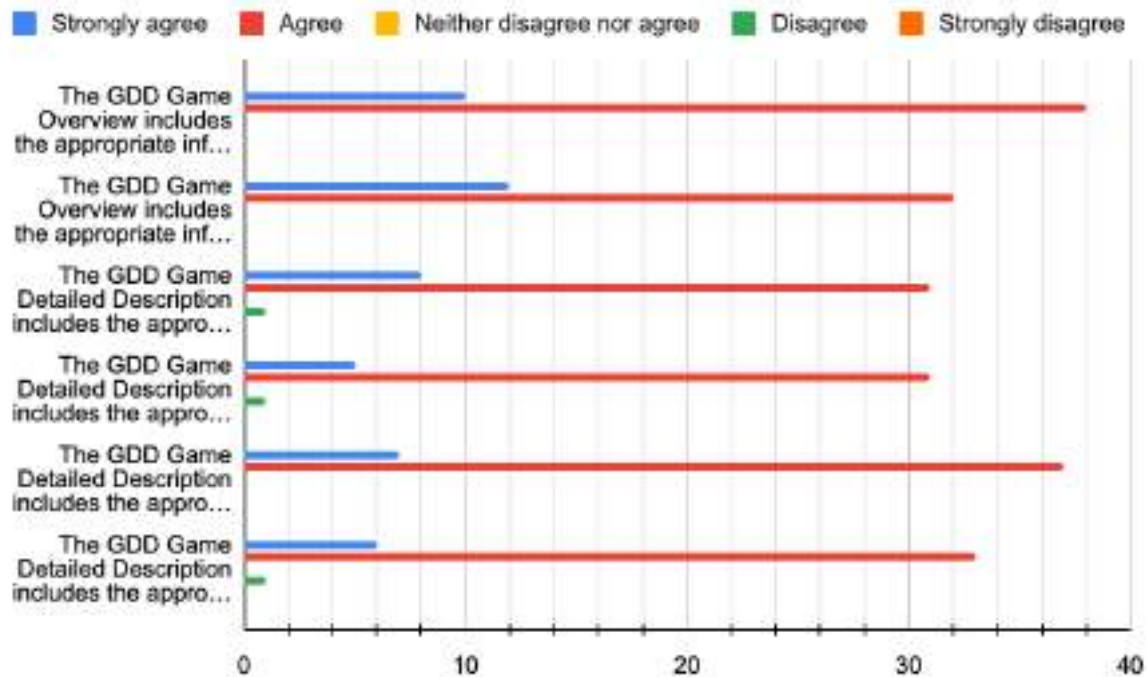
Since these questions are open ones that provide qualitative feedback it has to be checked in every game.

Q.3.6 NPS (Net Promoter Score)

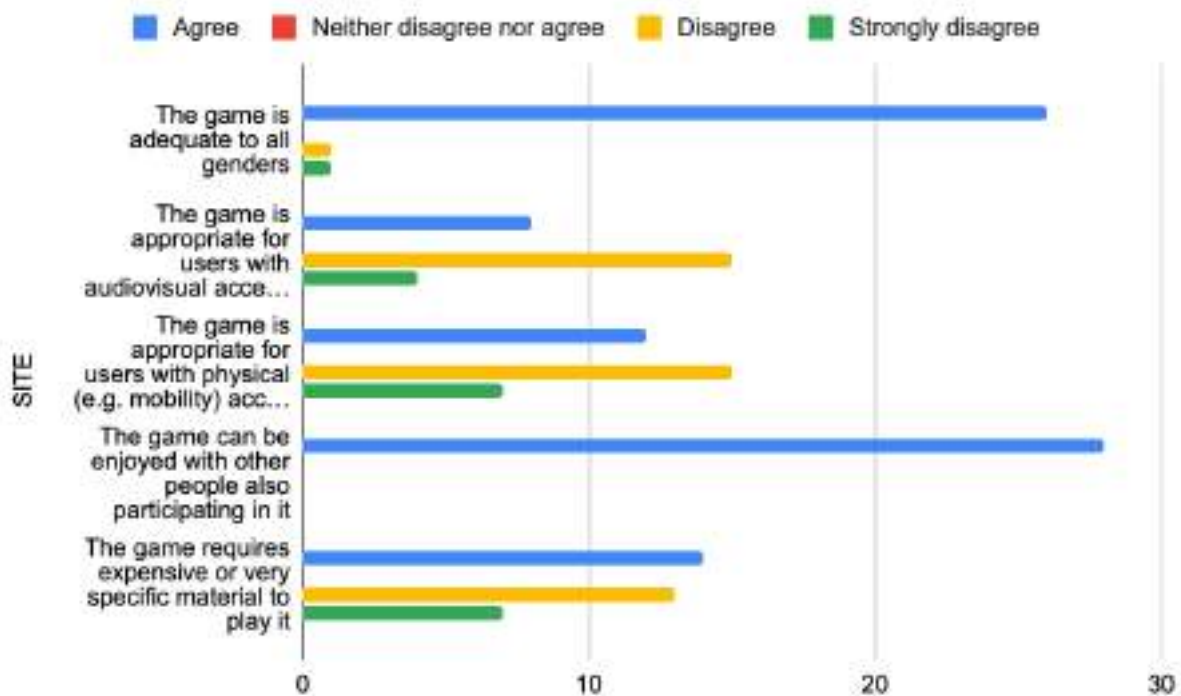
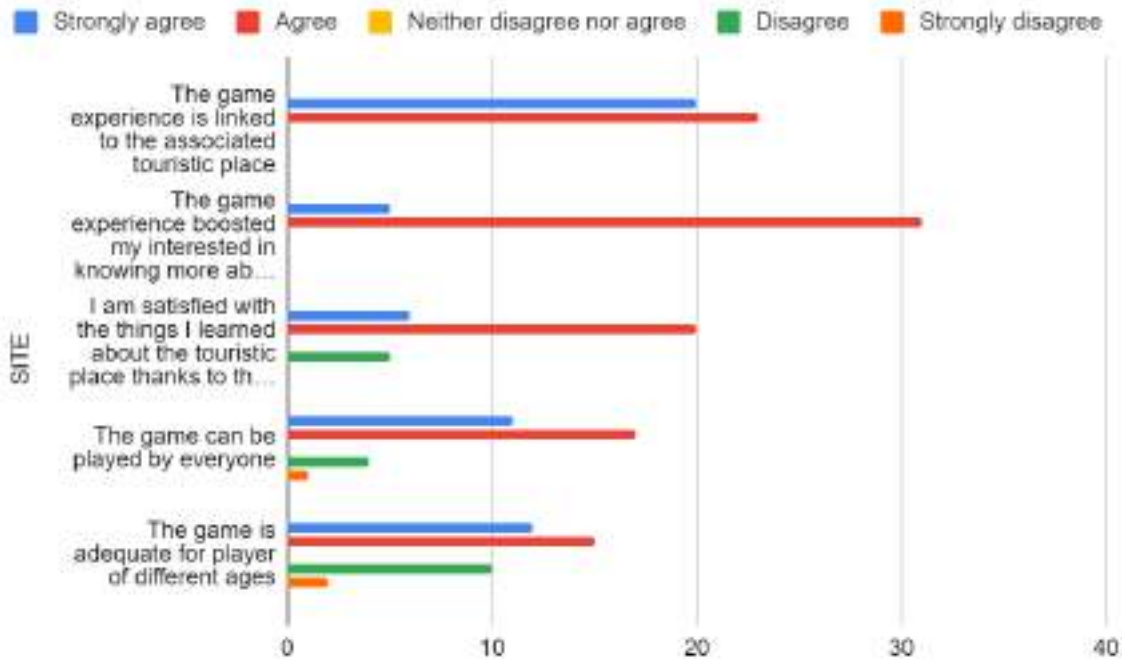
NPS To what degree would you recommend this experience?

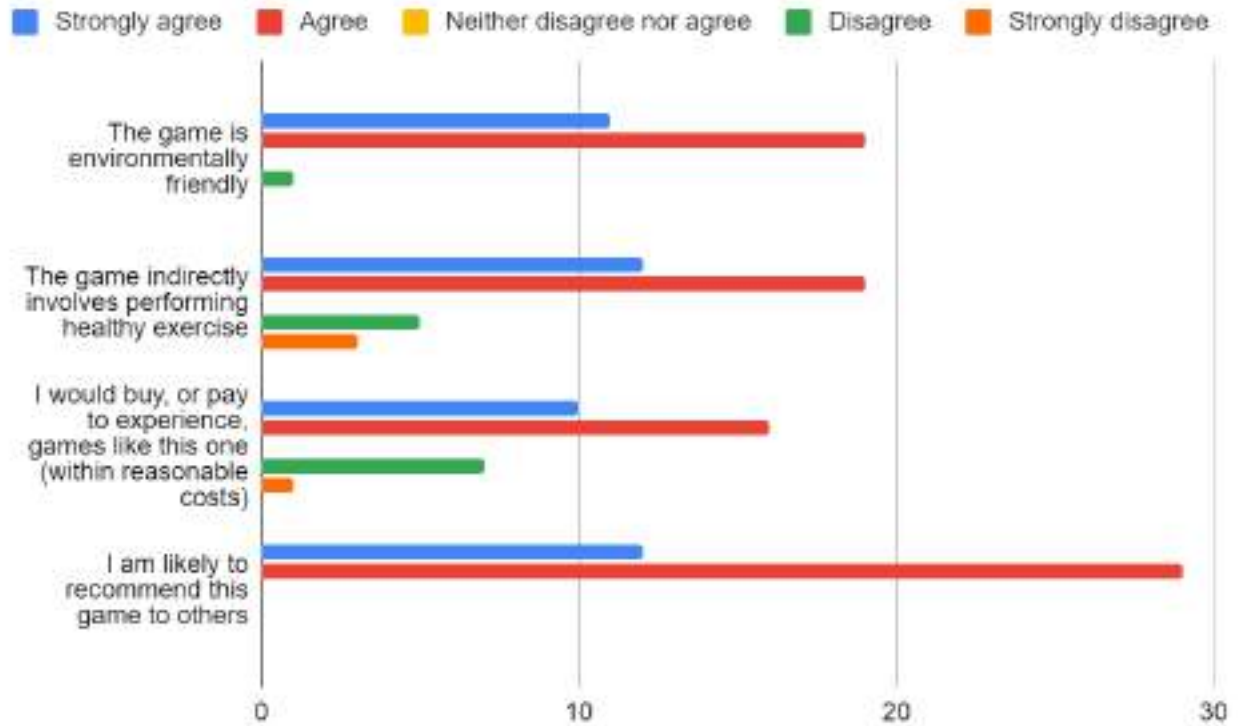


Q.3.7 GDD (Game Design Document) Evaluation



Q.3.8 Socio-Economic aspects





GAME 1 - Playful Itinerary

Q.3.5 Specific Ad-Hoc Questions

Strong aspects

- Attractive and easy going
- The connection with the arrival
- Sensitive game
- The game is an adaptation to own childhood games
- It involves citizens
- No winning or losing
- Physical interaction with urban spaces.
- The mix between sculpture/games/architecture
- Creates curiosity it's very fun
- Tactile game
- Accessible
- No begin/end (play as long or short as you want)

Weak aspects

- How do they connect when visitors arrive to Alghero
- Expensive installation
- The costs of installations
- The possible degradation of the games
- Vandalism problems
- Cost of materials
- Totem might need some guidance/instructions

STRENGTHS

- Simplicity and freedom of use
- Absence of competitive strategy between players
- Active involvement of citizens
- Connection with traditional childhood games
- Dialogue between installations and urban space
- Accessibility

WEAKNESSES

- The cost of materials
- The maintenance of the games over time
- The possible degradation of the games
- Lack of instructions



GAME CONCLUSION

The game is conceived as an urban itinerary that winds its way through a series of installations deliberately positioned in strategic places in Alghero, from the historic center to peripheric areas, with multiple purposes:

- enhancing the urban space
- stimulating the active participation of a wide audience, made up of tourists and citizens themselves
- connect different spots of the city through playful experiences

The itinerary is structured around a number of installations, conceived as punctual stages of a coordinated path of discovery: episodes recognisable as parts of an integrated itinerary linking places, but also different "stories", which can be used in a punctual manner or as a whole. These stages ideally fall into two categories: sites relevant for their historical/cultural significance in the city's history, or places deserving a revival because, located outside the usual tourist circuits, however, having a particular significance for the citizenship. The various stages of this itinerary may also differ in the way they are used. While some will be conceived as occasions for real playful experiences, others could mainly function as signposts/reminders (such as, for example, the installation that will be installed at the airport).

The stations are accessible to different target groups and stimulate discovery and independent exploration as well as socialization, strengthening the sense of community of those who use them as a group.

The proposed installations, realized in collaboration with the Department of Architecture and a group of active citizens of Alghero, are inspired by the city's traditional games and reinterpret their values and principles in a contemporary way using colors, symbols, patterns of Alghero history and culture. It represents not only a game itself but also the backbone of the Play Alghero communication system

The materials used to create the installations are perceived as very expensive and subject to perishability over time and vandalism. For this reason, the game needs constant maintenance. Actually, the overall cost of the itinerary is less expensive than expected as the idea behind is to use recycled materials and optimize the structure of the games stations through simple and practical design solutions. Finally, the involvement of active citizens in the construction of the games allows a saving in the costs of implementation.

Furthermore, the lack of instructions could be penalizing and limit the use of the games, therefore communication panels should be designed for every station of the itinerary.



GAME 2 - Collezione Alghero Sticker Album + Digital Album

heQ.3.5 Specific Ad-Hoc Questions

Strong aspects

- Good for kids
- Educational
- The game is telling the story of Alghero in a very simple way
- The game is suddenly accomplished
- Nice illustrations
- Different approach
- Special stickers
- Collectionism
- Visit to the places
- Ancient mechanics understandable for everyone (even for kids)
- The story itself from prehistory to nowadays

Weak aspects

- Missing map of city
- Maybe add a location map
- Maybe too childish
- No increase in difficulty
- No extra info or extra rewards on the album

STRENGTHS

- Heritage education game
- Attractive graphics
- Immediately understandable game mechanics
- Accessible to different target groups (especially children)

WEAKNESSES

- Lack of a link to the city map
- Its simplicity may be intended for an audience that is too childish
- Competitive dynamics and increasing difficulty are absent



GAME CONCLUSION

The game consists of two different approaches: a physical part and a digital part and it is based on collecting mechanisms.

The physical part takes the form of an album of stickers created with the help of a professional illustrator, who gives the album artistic dignity and an aesthetic sense deeply linked to a magical and fairy-tale imagery that well accompanies the storytelling of the game.

The stickers can be found by directly visiting the places of interest in the city involved in the dynamics of the game: the game leads the users to discover the cultural heritage of Alghero and actively involves them in finding the stickers to collect. The collecting dynamic will push him/her to visit sites to complete the stickers artwork and follow the storytelling.

However, there is no map to orientate the player in the exploration of the places of the city included in the game. This aspect might be taken into account in the final version of the album.

The choice of a sticker album guarantees an immediate understanding of the game's mechanics to different target groups, especially children. However, the simplicity and immediacy of the sticker album can be perceived as too close to the children's target and be therefore penalizing, also because there are no competitive elements nor an increase in difficulty during the course of the game.

The digital component of the game allows, through a dedicated app, to increase the potential of the physical album. The digital game has 3 functions:

1. through the use of augmented reality, some stickers come alive and, through interaction with the players, tell more information about the cultural heritage of the city;
2. The digital app also allows users to collect stickers without being in Alghero, by solving quizzes related to the city.
3. For those who are in possession of the physical version of the album, through the app it will be possible to acquire more historical information and curiosities about the heritage, not present in the paper album.
4. Special stickers not included in the physical album represent a reward to be collected only once the the user complete the digital album.

The two experiences can be considered complementary, but can be played separately. One observation that emerged during the testing phase and will be taken into consideration, is the need to improve the instructions and make clearer connections between the physical and digital album



GAME 3 - Collezione Alghero Digital Album

The considerations about this game have been included in the previous section

GAME 4 - Digital Canvas

Q.3.5 Specific Ad-Hoc Questions

Strong aspects

- Spectacular
- Physical
- Digital translation
- The place where is set
- Stimulates imagination
- Great game design
- The technology is appealing
- Good for the kids
- Location is good (you can leave the kids playing)
- Movement of animals are nice
- Simple fascinating for children
- Enhancing creativity

Weak aspects

- Maybe too childish
- Should inform about the historical artifacts
- It needs someone that takes care of it
- Not yet integrated with scanning
- The image scanned is not always identical, important because it may be disappointing

STRENGTHS

- Captivating technology
- Intriguing design
- Setting
- Particularly suitable for children
- Develops a sense of autonomy and creativity in children
- Ease of use

WEAKNESSES

- Its simplicity may be intended for an audience that is too childish
- Lack of historical references
- Constant maintenance
- Lack of precision in image digitisation



GAME CONCLUSION

The game is proposed as an interactive immersive environment that evolves and changes according to the drawings made by the players. The space chosen for the installation, a medieval tower that is part of the ancient complex of urban fortifications, adds even more charm to the environment and favours the players' immersion in the game dynamics. The main target audience is children, who actively interact with the game elements, developing their sense of autonomy and strengthening their creativity.

An operator is needed to facilitate the use of the game by managing the procedures for digitising images and integrating important information about the historical and cultural heritage of the city from which the game is inspired. The fact that the information cannot be found independently may be a weak point in the design, but at the same time it establishes the importance of establishing a human relationship within a digital environment and of interacting with a figure who is trained and knowledgeable about the cultural heritage of the city, in order to establish the link between the game and its setting.

The dynamics of the game are appealing and perhaps create a high expectation on the part of the users: it is therefore important not to disappoint the players by maintaining a high quality of service.



GAME 5 - Alghero Expert

Q.3.5 Specific Ad-Hoc Questions

Strong aspects

- Unificate the whole experience in a quiz / give real rewards (discounts)
- Discounts can be appealing / winning certificate
- The post experience concept/ the discounts

Weak aspects

- You need to have information to be capable of playing it
- It's difficult to evaluate / no evolution

STRENGTHS

- Combines gaming experience with the real thing
- Allows visitors to receive real prizes (discounts)

WEAKNESSES

- Prior knowledge of the city's cultural heritage to be able to play
- The game does not evolve

GAME CONCLUSION

During partners visit, this game could not be tested since it wasn't enough developed. A presentation of the prototype has been showed and partners expressed their feedbacks based on the that. Feedbacks collected has brought to a general consideration regarding the game itself and its sustainability.

GAME 6 - S.Myth - The Missing Sketchbook

Q.3.5 Specific Ad-Hoc Questions

Strong aspects

- The game is instructive
- Beautiful design
- Enigmas - Material - Maps
- Creative / suspenseful
- Give extra information very interesting
- The riddles capture your attention
- Interesting kit and enigmas
- Can play at your own pace

Weak aspects

- The game is a bit complicated for me, in some page it was difficult to find the letters
- Use of the map - mind demanding
- Instructions
- Maybe a solutions page would help
- The translation of the Phaenician alphabet isn't adequate. This should be mentioned in the game.
- No solutions or hints provided
- Can be long to solve completely (days)

STRENGTHS

- Heritage education game
- Harmonious design
- Attractive game kit
- Intriguing game mechanics
- Respects players' timing and pace of play

WEAKNESSES

- Game complexity
- Unclear instructions
- Lack of solutions to puzzles
- Length



GAME CONCLUSION

It is an analogue game that physically leads players to the discovery of Alghero's cultural heritage and guides them in the exploration of the city's places, stopping especially in the Old Town.

The plot of the game is inspired by real historical events and, through riddles and puzzles, it lets the players learn interesting facts about the history of Alghero and one of its main symbols: the coral.

The game kit consists of several tools, including a map and a travel notebook with a creative and attractive design.

The level requested to play the game is medium/high, passionate of enigmas, brain teasers are the right target. The game mechanics can be complex and can take a long time to solve. It is therefore necessary to make the instructions clear, understandable and more precise and to provide a solutions section.



GAME 7 - Murder in Alghero

Q.3.5 Specific Ad-Hoc Questions

Strong aspects

- Can be played in any order you want
- Can be paused, resumed the next day
- Makes you learn about Alghero's main attractions and its traditions and history
- Story twists
- Local game
- Suspense / brain triggering
- To experience the AR
- The fact of talking about catalan language heritage
- The game will let the player interacting with people and discovering Alghero and part of its history

Weak aspects

- Difficult navigation without a map function
- Visual design
- Not geolocated
- Long physical movement; failure of some targets
- You have no geolocation inside the game
- The game can last unsolved

STRENGTHS

- Freedom of use
- Adequate playing time
- Education about the city's cultural heritage
- Points of contact with the culture of Alghero
- Captivating game storyline
- Interesting game mechanics to experiment with

WEAKNESSES

- Lack of a map
- Design
- Lack of geolocation
- Length of physical route
- Possibility of being unresolved (lack of game feedback for the user)



GAME CONCLUSION

It is a digital game that gives a lot of freedom to the player, who can choose how to play (by physically going to the places involved in the storytelling or by playing wherever he/she is, in entirely digital mode using a game book to be downloaded) and the timing.

The storyline allow the players to get to know the most relevant attractions of Alghero, the culture and the linguistic heritage of the city following the events of the protagonists of the graphic novel.

The plot is articulated through twists and plot twists, which keep the players' attention.

The mechanics of the game is based on augmented reality features.

However, the physical exploration of the locations covered by the game is difficult as there is no map or geolocation function provided in the game. It is also difficult to remember the parts of the story related to each monument. It is necessary to include constant feedback for the player, who needs to be able to solve the game and know if he/she is doing it correctly.

It is also necessary to be able to use the device in order to use it: the game can be played by players of different ages but not by children or over 65. The game is not fully accessible, since it required walking and moving around the city

GAME 8 - Angelica and The King of Algiroids

Q.3.5 Specific Ad-Hoc Questions

Strong aspects

- Very nice graphics
- Gives information about animals (local)
- Stickers (target) not invasive
- The game is interesting for kids and I think is fulfilling the target
- Graphics
- The atmosphere created
- The combination between indoor-outdoor experience
- Nice graphics
- Design/unlockable
- items/2 stages: click and point and AR
- Well organized

Weak aspects

- Very long dialogues
- Texts are long, maybe they should be shorter
- You can't silent the music through the app
- It's not clear how to get places
- Dialogues a bit long
- Lack of map-locations
- Too long
- No explanatory

STRENGTHS

- Graphics
- Additional information on local fauna
- Non-invasive stickers
- Targeted at children
- Connection between virtual game and physical reality
- Charming, well-organised game mechanics

WEAKNESSES

- Length of texts
- Lack of a map on how to reach the places covered by the game
- Audio settings of the application



GAME CONCLUSION

It is a digital point-and-click game plus an augmented reality section to be activated to search for animals around the city center. Designed primarily for a children's audience. During the game, players are led to explore and get to know the places in the city and to look for targets positioned in a non-invasive way in the urban spaces of the historic centre, which activate augmented reality and allow them to continue with the game.

The graphics and the recreated atmospheres are appealing, the combination of digital and physical experience, on the outside, is positively evaluated and the game dynamics are generally well organised.

However, the game has very long dialogues and the application does not have integrated functions such as audio control.

In addition, the lack of a map can make it complicated to locate all targets, although this aspect can be easily overcome through proactive actions of the player, who will be able to search for the places that are the protagonists of the game by interacting with the local citizens.

GAME 9 - Alghero Quest Box

Q.3.5 Specific Ad-Hoc Questions

Strong aspects

- Cultural heritage well considered
- Many new sites (museums) well explained
- The chance to explore places
- The interaction of the elements of the game
- Very instructive, it tells a lot about Alghero and it is nice to play with others
- The feelings of discovering
- New spaces through riddles
- The instruments to be used are good, not too easy, not too difficult
- The gadgets in the box
- Learning history in a fun way and discovering the museum
- Interaction between players

Weak aspects

- It needs too much time
- The amount of elements
- I would recommend a most performing design
- Too many tools
- I felt the third part in the museum had no link with the space. Was not sure if I missed something because I didn't do/check anything in that room (skeletons)
- An easier way to retrieve the stickers

STRENGTHS

- Enhancing cultural heritage
- Heritage education game
- Possibility of exploring physical places
- Simplicity and accessibility of the game mechanics
- Interaction between players
- Game kit

WEAKNESSES

- Game length
- Game difficulty
- Unattractive design
- Overabundance of game tools
- Lack of complete adherence to physical reality



GAME CONCLUSION

It is an analogue game that physically takes users to places of interest in Alghero and its territory following the adventures of two old friends who loved to visit and stroll in Alghero. The game thus enables users to deepen their knowledge of the city's historical and archaeological heritage, stimulating a sense of discovery and exploration through game mechanics accessible to different target groups.

The game also stimulates interaction between players since it has a cooperative soul.

Game kit is composed by several tools: stickers, cards, cypher, ruler, a wheel which should be contained in a box that can be kept by the player as a curious and nice gadget. A way to combine and use easily the full set of tools must be improved for a better game experience.

The duration of the whole game experience can be perceived as too long to complete and the events do not always adhere perfectly to physical reality. Following open days and partners visit some adjustments were needed.

The game tools are perceived as many and the design of the kit provided to the players would need to be revised in order to be more appealing and attractive.

GAME 10 - Alghero Urban Game

Q.3.5 Specific Ad-Hoc Questions

Strong aspects

- A story about Alghero not many people know (St. Exupery)
- Can be expanded/updated with new or different missions
- Interaction with the local community
- Character of the helping silent person
- Joining forces at the end
- Mixing with locals
- Tasks individual and group
- You go around Alghero the team competitive
- The game is interesting in terms of discovering Alghero and its specific history

Weak aspects

- A bit long, cannot decide your own timing or spread over more days
- Works only for Italian audience
- Downloading issue
- Timing a bit long
- Timings
- The app platform
- The actors sustainability
- The language
- In some parts you need to talk with local people, but maybe they're busy
- I think the game is a little bit long, it can be shorter

STRENGTHS

- Recounts little-known true-life historical events
- Engaging game dynamics
- Interaction with the local community
- Possibility of updating and expanding the game

WEAKNESSES

- Length
- Sustainability of actors
- Currently only available in Italian



GAME CONCLUSION

A digital urban game that includes the support of an actor who guides players through the game. The game allows players to explore the places of Alghero and discover a side of the city's history unknown to most people.

The game, which is configured as a team investigation to be carried out also through the interaction between the players and the local community, stimulates the sense of competition and can be implemented with new missions.

Interacting with citizens can be perceived as a strength or a weakness if they do not cooperate with the players.

However, the whole game can be too long and the player cannot choose the timing if he decides to leave. It is therefore important to communicate clearly the rule of the game and the timing needed.

In the long term, the sustainability of the player may be perceived as a weakness as well as the need to refer to an external actor needed to run the game. Fondazione has worked with local cultural associations to involve them in the implementation of the game. The idea is to have them running the game and offer it as part of their product. This process needs control and follow up from Fondazione.

It is necessary to translate the game experience into other languages.

The application supporting the game experience needs to be implemented



DISCUSSION

Thanks to the MED GAIMS project, in Alghero 10 gamified experiences have been developed aimed at enhancing 5 sites in 2 destination: historical city center and Natural reserve.

The design, implementation and testing phase of the games was particularly challenging for Fondazione Alghero, both from a strategic and, above all, a technical point of view.

The Foundation in fact, within the project consortium, represents an institutional partner whose mission is the management of the museum heritage of the city of Alghero and the touristic promotion of the territory. This has certainly been a favorable aspect for the definition of a strategic vision required by the project: the foundation, by its nature, works to improve, innovate and make more accessible the experience of the tourist in the territory of Alghero and from this point of view the project has been a huge opportunity. On the other hand, the lack of technical skills within the project staff required a particular effort in the choice of external technical experts needed for the development of the games and often a slowdown in the development phases. In addition to this, it has been necessary to start a phase of study and research in the field of gamification applied to tourism, something still new and not so common in Italy. Collaboration and contamination with experts in the field has contributed to the growth of the Foundation's staff involved and to the definition of a medium-long term strategy to make Alghero a playable city where permanent citizens and temporary citizens (tourists) act and interact and experience the heritage being enhanced.

Games developed ensure a variety of experiences combining analogue and digital elements, using different platforms (video games, digital graphic novels, interactive installations and AR techniques) and active urban exploration tools such as gamebooks or role-playing modality initiatives.

In the same way, particular attention has been paid to the target audience, especially families, which is particularly strategic for Alghero, and to young people, a target that is currently far from Alghero's heritage and that we intend to approach through games.

Although not fully developed, games were tested during public days with the participation of citizens and tourists still present in September and October and by project partners.

From these activities, it was possible to draw a list of points of discussion:

- General feedback on the initiative: the word game, play, is in itself attractive. If accompanied by attractive graphics and a well-communicated general concept, it can generate positive effects on a tourism offer and a powerful tool to enhance a destination. In the various meetings with stakeholders and during public testing, the initiative was particularly appreciated and aroused a lot of interest due to its innovative approach to heritage.
- games and playability: public participation in the test days was very positive and in general games were appreciated. At the same time, a certain frustration of the testers was noted regarding the duration of some of the games, not perceiving that these were designed for tourists with an average staying in the area from 3 to 5 days. Some games were appreciated more than others, some were rated too complicated, others too easy or childish. This aspect shows the need to bring the game closer to the target for which it was designed: a user too different from the target of the game could give a misleading feedback and consequently have a frustrating experience.
- Transmission of historical and cultural information: in general, all the games, some more, some less, have been considered strongly linked to the reference heritage and have contributed to a greater knowledge of the history of the city and the monument by the players.



CONCLUSIONS

The internal evaluation of games has to be done between partners. Because of the COVID situation the evaluation will be done partly with audiovisual content. The video content has to provide information enough in order to provide the evaluators the necessary information to evaluate the game.

The final evaluation has been conducted with partners but not tourists or final users also because the travel limitations and pandemic lock downs.

MED GAIMS overall objectives: generally speaking, results from the evaluation have confirmed that objectives of the project have been met. The approach has been perceived innovative, the games provide historical and cultural information with a new modality and the experience offered is interesting and interactive.

Play Alghero vision: constitutes the communicative and promotional system of the game system and conveys the concept that in Alghero you can experience the city by playing. The communication system is clearly expandable and can include all the game experiences that will be added over time, it is easily communicated and promoted through a communication campaign designed ad hoc. Like any strategy, it needs a sense of ownership and commitment from the political and managerial class of the city and consequently a continuous and active involvement of the tourism and cultural system that must consider the games as an additional and valid tool for promoting the territory and its experience.

Variety of platforms and target : games developed ensure a variety of experiences combining analogue and digital elements, using different platforms (video games, digital graphic novels, interactive installations and AR techniques) and active urban exploration tools such as gamebooks or role-playing modality initiatives. In the same way, particular attention has been paid to the target audience, especially families, which is particularly strategic for Alghero, and to young people, a target that is currently far from Alghero's heritage and that we intend to approach through games

Sustainability of the games: many of the games developed require high printing and/or maintenance costs and the presence of operators in the management of the game itself. It is necessary to hypothesize a business plan for the games in order to foresee the possibility of selling the most successful experiences and therefore cover fixed costs. Ecological issues should also be considered and alternative solution to massive paper printing should be provided.

Communication and promotion of the games: it is necessary to implement an effective communication system for the games and an ad hoc promotion strategy aimed at bringing the right target to the experiences proposed. This is necessary to avoid expectations that are too high or wrong with respect to the variety of experiences offered, to give the player all the necessary information to prepare him to the experience (timing of the game, age, level of difficulty, etc). The same strategy must also target the system of stakeholders in the tourism and cultural sector that can integrate these new products, the games, in their offer in favor of the tourist.

COUNTRY - JORDAN

Technical Report

ABSTRACT

Destinations

1- Umm Qais

Umm Qais situated 110 km north of Amman occupying an area of 1554 km² at the strategic location of Gadara. The Yarmouk River is located at its northern side comprising the borders with neighbouring Syria, while the forested hills of Ajloun stretches at its southern borders. At its eastern side lies the Horan plateau with Irbid city in its middle, and lastly to the west it overlooks the evergreen Jordan valley. Umm-Qais is distinguished by various relieving and fascinating natural scenes with a beautiful weather, which combines perfect elements of environmental, historical, religious, and therapeutic tourism experience. These set of elements gives the site an opportunity for new types of tourism such as Eco-tourism, Hiking, Biking, and sightseeing. On top of that, it is qualified for receiving and hosting the increasing number of tourists.

Today's site of Umm-Qais not only represents the integration of natural and human forces, but also a combination of stratigraphy of different number of historic periods; Roman, Byzantine, Islamic and Ottoman. The Greeks were the first to marvel at breath-taking view and established their acropolis, later Roman Byzantine, and ottomans would follow, leaving their own marks on this site. Therefore, it should not be surprising that contemporary visible features generally comprise the most recent layer The modern town of Umm-Qais is the site of ancient Greco-Roman town of Gadara one of the cities of the Decapolis. In such a dynamic system, there is a continuing element of growth, modification, and development. While any historic destination derives its primary significance from a particular historic period, alterations or additions may have achieved a significance of their own

The Greco-Roman remains are of great importance in the city, from the fact that the remaining parts of this period are so interesting and show the main features of an integrated Roman city in terms of city planning, monuments, and artistic works, as well as its distinctive type of basalt stone. The Byzantine part of the city is also dominant from the octagonal church at the side of the Cardo Street which is astonishing in its style and the dark basalt stone.

Sites:

a. Roman Theatres

Umm Qais has two roman theatres. A large portion of the western roman theatre has vaulted passageway supporting its rows of seats. These seats were built of hard basalt stones with a row of elaborately carved seats for dignitaries stand near the orchestra. At the centre was a large white marble statue of Tyche, Goddess of fortune and of the city, which is now displayed at local museum.

b. The Basilica

The Basilica Terrace (the octagonal church and its Atrium): The Five Aisled church: The basilica terrace is composed of two coherent parts, the basilica octagonal church to the south, and its rectangular atrium to the north. The early sixth century octagonal church was formed by re-used basalt columns and capitals; the atrium was also formed by re-used limestone columns and capitals.



c. Roman Street

The Roman Street System in Umm- Qais consists in Colonnaded Decumanus Maximus: Cardo Street and its front vaulted shops: The Decumanus Maximus is the paved and colonnaded long street in ancient Umm-Qais; it is the main thoroughfare, which divided Gadara into two areas, small northern part, and big southern part. The Decumanus Maximus is oriented into east- west direction with 1,7 km length, and was colonnaded from both sides by limestone columns, and paved with basalt slabs.

d. Ottoman village

The Ottoman village is the most interesting part of the city. Umm-Qais, on the road from Damascus to Tiberias and hence to the Palestinian seaports, overlooking Lake Tiberias and the Golan Heights, attracted the people during the Ottoman period to construct the village.

2- Ajloun Castle

Sites:

Ajloun area displays a rich diversity of natural, cultural, historical and archaeological resources all of which represent heritage assets of the area. However, almost all of the arranged tours to Ajloun are a few hours to one-day duration at most; mainly to visit the most famous historical and natural sites. Thus, the local community does not get the proper benefits of touristic revenue. Moreover, tourists spend less than a day in the region despite the richness of cultural, natural and historical heritage sites of Ajloun and they may find themselves forced to visit places might not be interesting to them.

a. Castle

Ajloun Castle is a 12th Century fortress that was built under the rule of the Sultan and military leader Saladin. The castle is set on top of Mount 'Auf and provides visitors with astonishing views of the Jordan Valley and surrounding areas. Over the years the castle has undergone many rebuilds and although much of the original features no longer exist, there are many chambers, carvings, and towers to keep both adults and children interested. Ajloun Castle is approximately 50 kilometers away from the city of Amman which takes around one and a half hours drive by car. The city of Jerash is just a 40 minute journey away via a picturesque route of olive groves and woodland. The castle was constructed between 1184 and 1188 by the nephew of the Muslim military leader Saladin. Saladin fought against the Christian military during the Crusades in the 12th Century. The strategic location of the castle enabled Saladin's army to look out across the Jordan Valley for possible invasions.

b. Museum

a small museum which contains historical information about the castle and a number of artefacts. The museum contains a collection of mosaics and interesting medieval weaponry.

c. Tower of Aybak-Meeting Hall and mosque

The L-shaped Tower 7 or Tower of Aybak (left from the entrance) was added to the building at its southeast corner for extra fortification. It is named after the governor of the castle, as stated in an Arabic inscription on one of the tower stone blocks: "In the name of God. This blessed tower was built by Aybak Ibn Abdullah, Master of the Greatest House, in the month of the Hijri year 611" (1214-15 AD). Each of the three levels of the tower had a different function.



Reasons for Selecting the Destinations & Sites

With the availability of several historical layers and buildings, tourists need an experience different from a standard sightseeing or museum-going itinerary. Such experience should provide better understanding of the relation among historical layers, time synchronization, the original of things, people, and civilizations. Revelation of such complicated relations requires deep involvement and full engagement of tourists with the site and its particulars. In both Umm Qais and Ajloun, there is a need for the creation of authentic experiences for the tourists by deploying innovative technologies supporting a feeling of connection to a place rather than a simple visible image.

Technologies and creativity can come together in gamification product that would support historical sites with lower popularity with an educational, enjoyable, and ever lasting memory for its tourists. Gamification in tourism would encourage tourists to explore even more places in each tourist destination. Moreover, it encourages longer visits, revisits, with higher tendency to communicate the unique experience. Tourists would have interesting experience that they would love to share with family and friends and even to communities on social media. Features of the developed games should have features that facilitates the communication of tourists' memories. Gamification help to revolutionize the cultural and historic site experience, by gamifying it with both physical and virtual applications in Umm Qais and Ajloun.

Game Development

1. Methodology

a. Stakeholders

Stakeholders from JUST, public authorities (DOA), and private sector were working together to develop internal and external games. Both analogue and digital games were developed through the joint collaboration among all stakeholders by having many meeting and brainstorming sessions to produce a variety of creative ideas.

b. Awareness

Awareness campaigns in both destinations, Umm Qasi and Ajloun, were conducted to increase public awareness and to market the idea of gamification in historical sites. Many lectures and public events were implemented, and brochures designed for promoting the idea and encourage of the involvement of more parties to join the effort. We targeted managers of historical sites, tour operators, students, gamers, and technical game developers.

c. Hackatons and Creative labs

Two main hackathons were conducted in the months of October and November 2020. The objective was to invite more stakeholders, game developers and companies to participate in creating more gamification ideas in historical sites. The process included training sessions, teamwork, pitching, judging and evaluation and finally announcement of winners of sub grants

d. Sub grants

Five Sub grantees groups were selected to develop three digital games and two analogues. The winners had direct and continuous technical and financial support from JUST team. Monitoring tools for both technical and financial issues were developed including reporting, presentation, GDD, PoC, videos and development stages to ensure that games were developed in consistence with the overall strategy of MED GAIMS.



e. Game Testing

Game testing and monitoring days have been conducted during the project for both internal and external games. Firstly, open days for local community and tourist to ensure development of games that are based on users' feedback and to avoid any technical or usage issues. Secondly, open days for MED GAIMS partners in order to exchange the ideas among all partners and to ensure that all games are consistent with MED GAISM objectives and strategy. The testing survey and questionnaire results from both events were analyzed and the feedback was used to improve the final versions of the games.

2. Strategy

Gamification strategy for historical sites in Jordan was based on two main aspects. The first aspect is to enhance the understanding of archaeological sites through experiential and entertaining process. The second aspect is the deployment of the idea of gamification to enhance the tourism in less know destination.



METHODOLOGY

The methodology used during the evaluation has been based on the surveys of final users. Users have been the most valuable assets in the project, so their participation has been part of the whole process in several steps.

Open days: The open days provided the chance for users to test the alpha versions of the games in order to provide feedback to be considered in the final development. The games at that point were not final, so the testing was conducted in a controlled environment. Each tester filled in a survey to collect his feedback.

Peer review: For the execution of the Peer Review and because of the COVID situation, 40 videos have been recorded with an explanation of different technical aspects of every game. The videos have been shared with the partners also with surveys to provide feedback. The collected feedback has been of value for the development of the beta versions of the games.

Link to the videos: [HERE](#)

Link to the survey results: [HERE](#)

Partner Study Visits: The project partners have visited every country and tested the beta versions of the game experiences. In this stage the games were close to being fully developed, except for some details. The feedback obtained has been used for the final evaluation.

Surveys:

The surveys have included several sections:

Q.1 Demographic Information Questionnaire: provides information about testers

Q.2 Before the Gaming Experience - Interest and Previous Experience: provides information about interests in games and tourist gamified experiences as well as experience.

Q.3 Questions after each Gaming Experience: Provides information about the game experience

Q.3.1 SUS (System Usability Scale) questionnaire provides information about the use of the game.

Q.3.2 NASA TLX (Task Load Index) questionnaire provides information to rate the workload of the overall experience.

Q.3.3 IPQ (IGroup Presence Questionnaire): This is an optional questionnaire only for Virtual Reality experiences.

Q.3.4 Ad-hoc Game Experience Questionnaire: Provides information about the game experience, storytelling, game design, objectives, immersion, and likeness of the game.

Q.3.5 Specific Ad-Hoc Questions: Qualitative questions about the game

Q.3.6 NPS (Net Promoter Score) Questionnaire: used for measuring the engagement and satisfaction of users.



Q.3.7 GDD (Game Design Document) Evaluation Questionnaire: provides information related to the GDD of the game and its relationship with the final experience.

Q.3.8 Socio-Economic aspects questionnaire provides information on how the game links with the environment, the destination and the general promotion of the sites.

Q.4 Questions after all gaming experience: This questionnaire provides information about the overall experience.

In these surveys the data obtained are of two types:

- Quantitative
- Qualitative

This document includes a first technical report of the country in general and all the game experiences and a detailed description of each game and its evaluation.

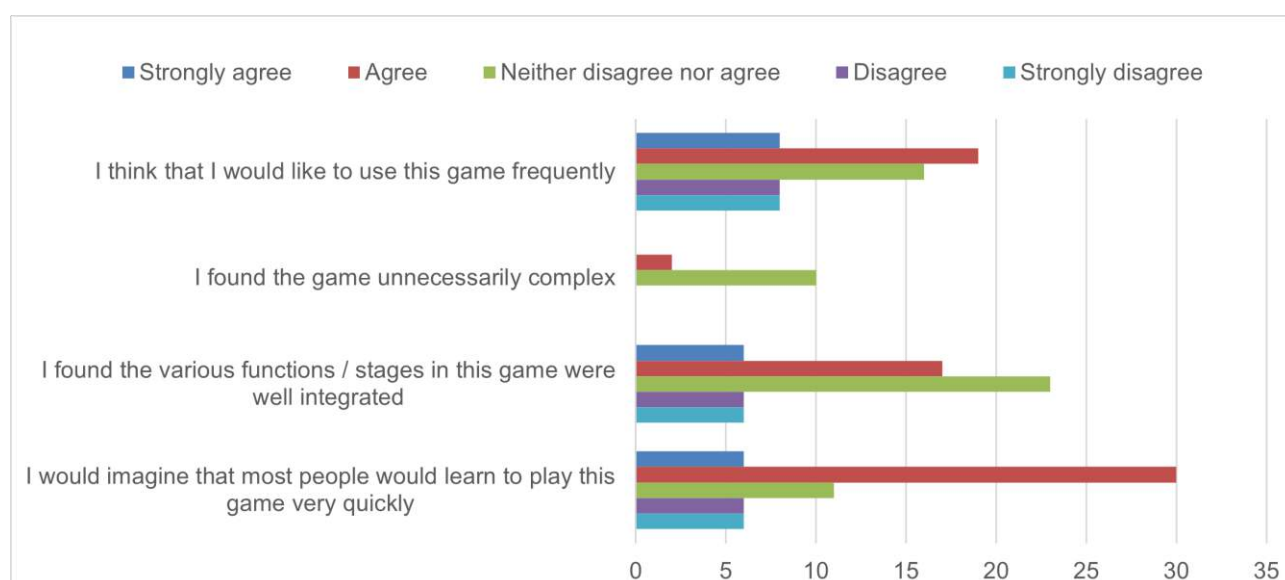
Following the data collection section is a discussion and conclusion chapter that presents the whole recap of the evaluation.

DATA COLLECTION

As previously mentioned, the collected data relates to the International Partner Study Visits because the games were in their final development stages.

GENERAL

Q.3.1 SUS (System Usability Scale)



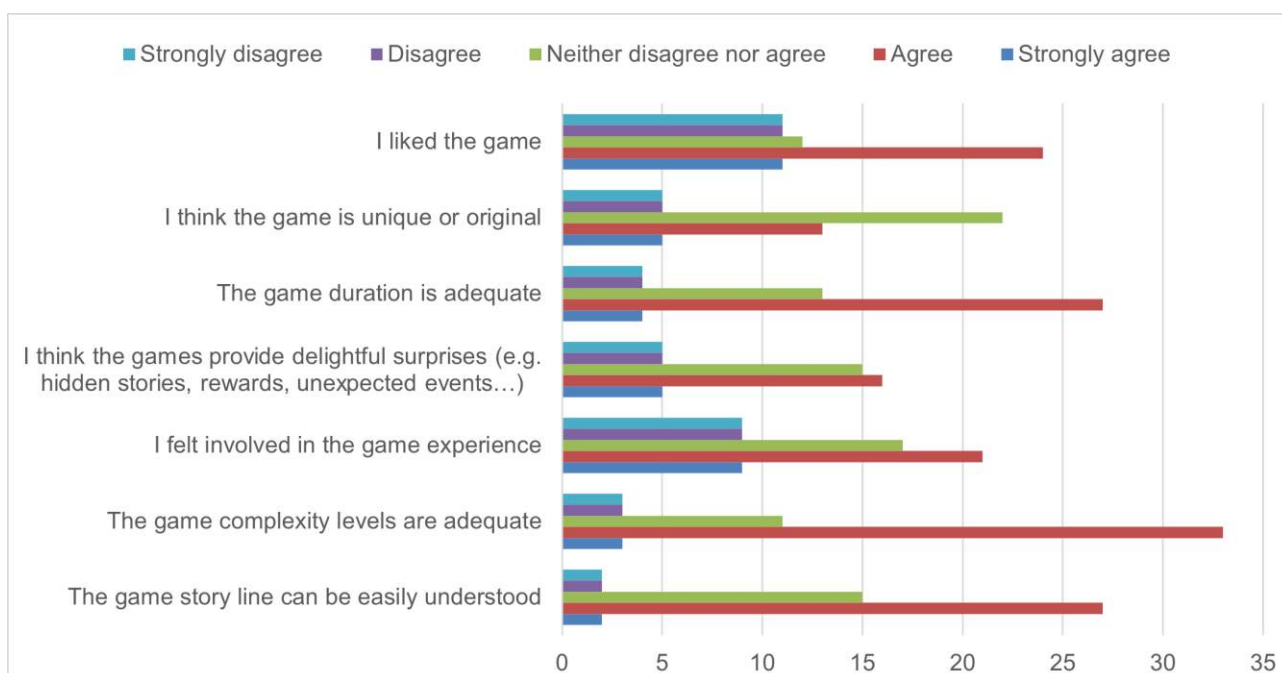
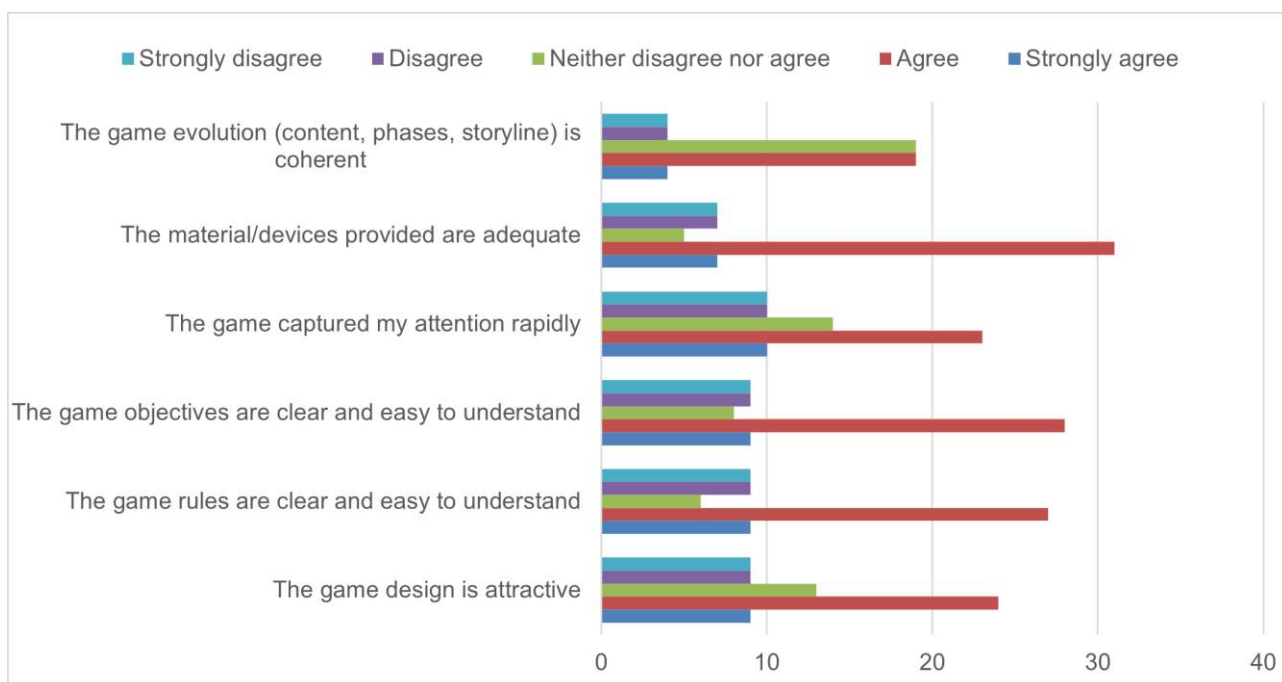
Q.3.2 NASA TLX (Task Load Index)



Q.3.3 IPQ (I Group Presence Questionnaire) – Optional

Only in VR individual game evaluation

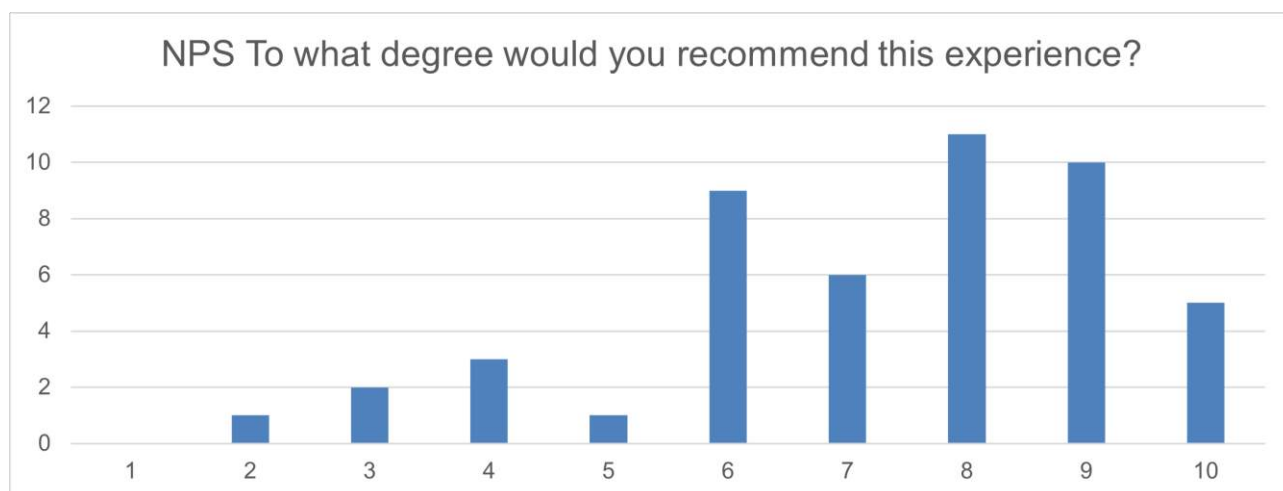
Q.3.4 Ad-hoc Game Experience



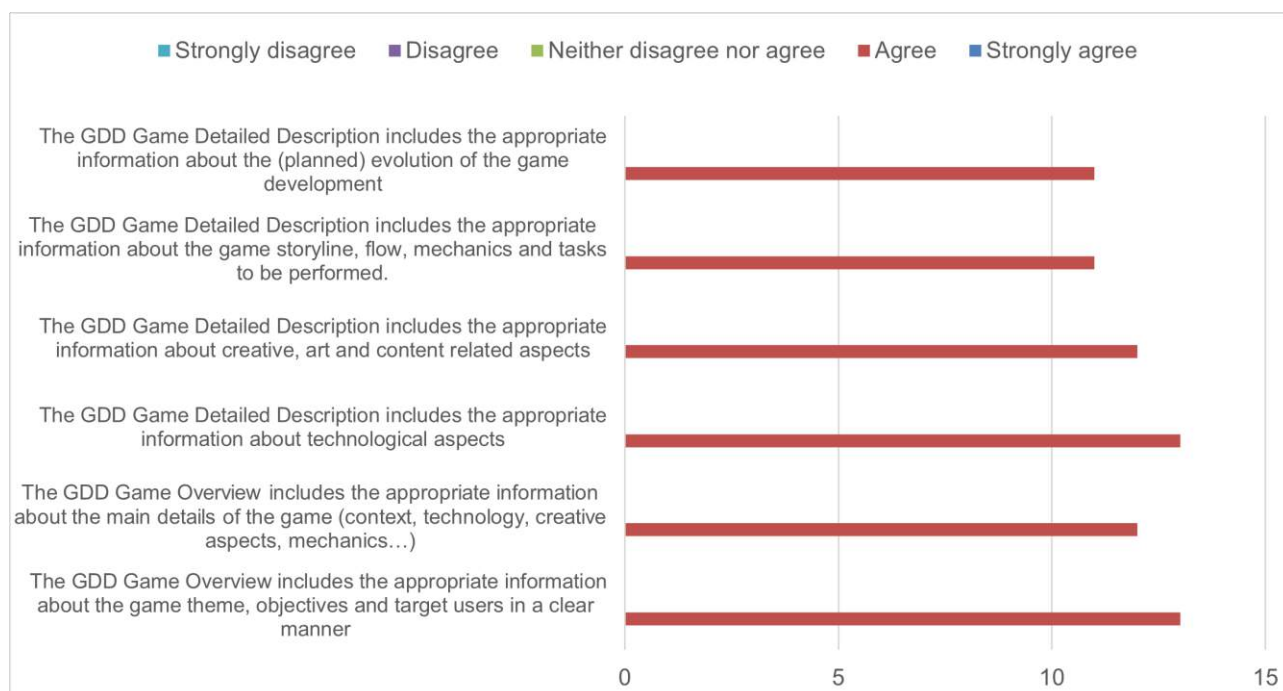
Q.3.5 Specific Ad-Hoc Questions

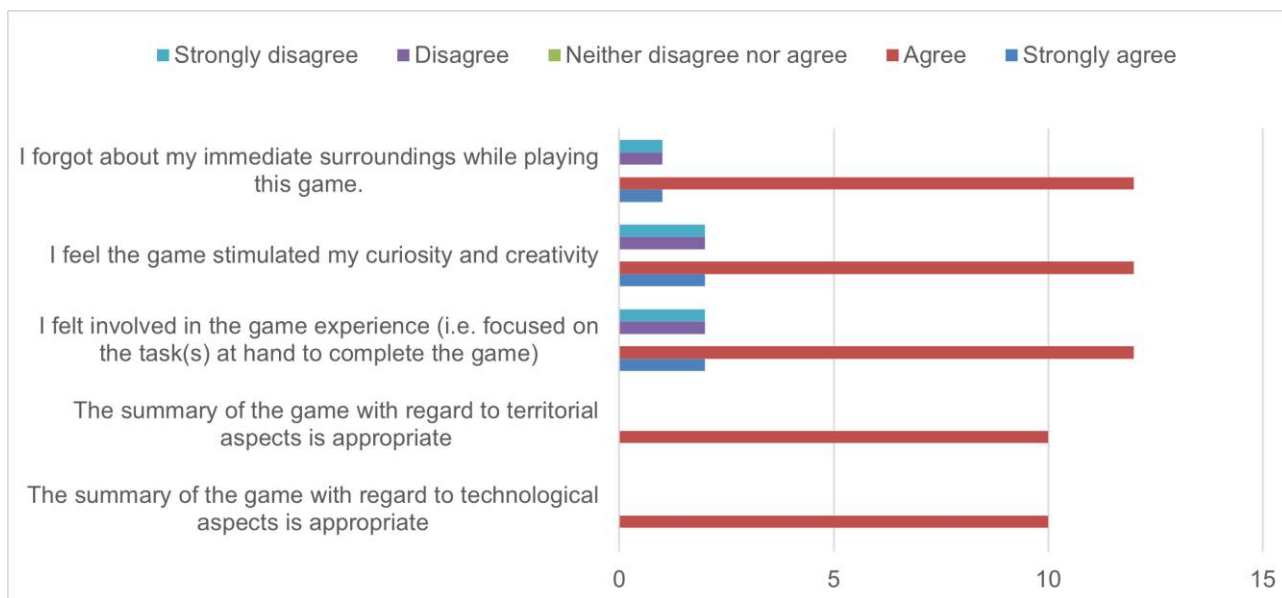
Because these questions are of the open type, they provide qualitative feedback that needs to be checked for every game.

Q.3.6 NPS (Net Promoter Score)

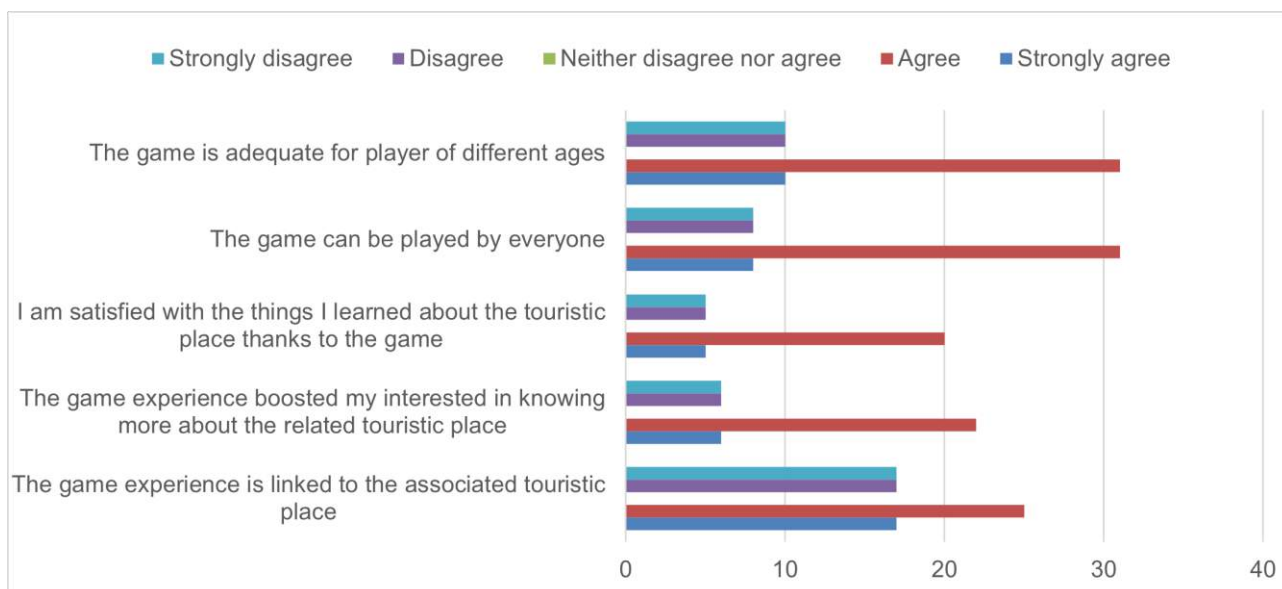


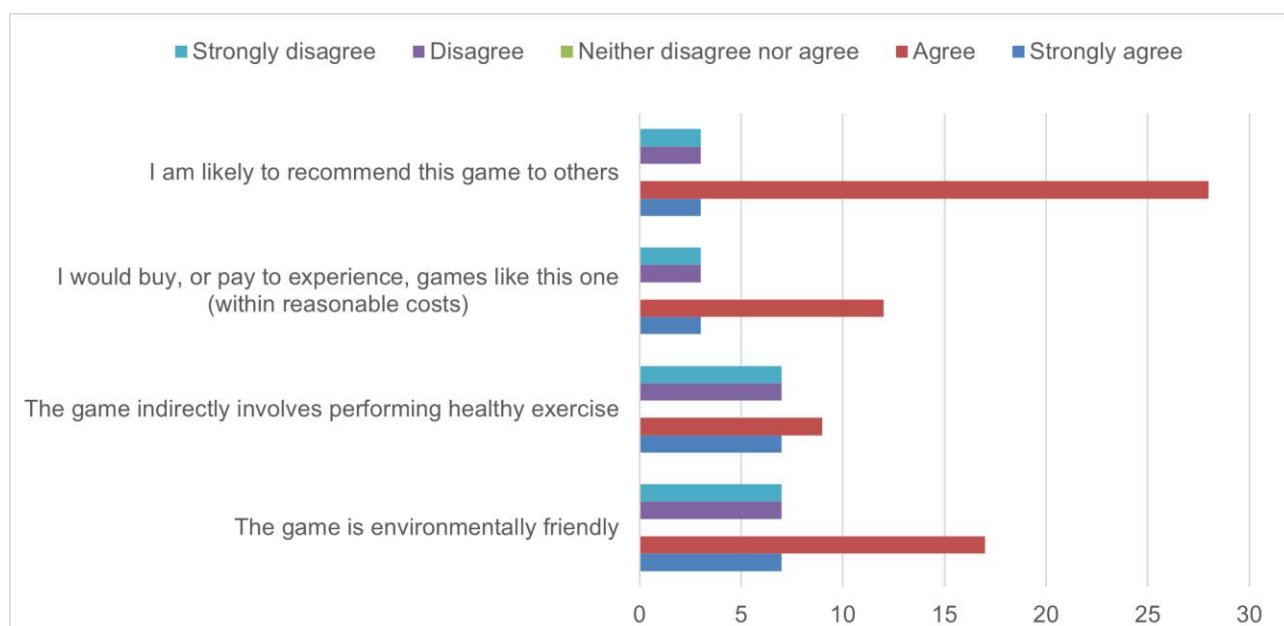
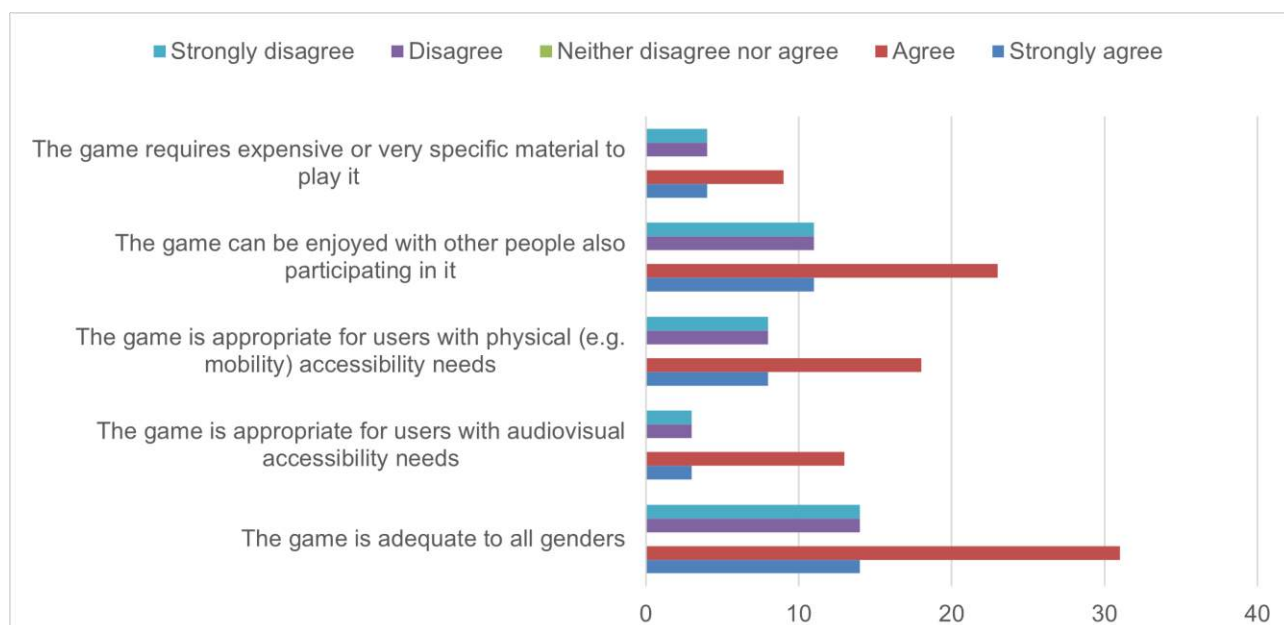
Q.3.7 GDD (Game Design Document) Evaluation





Q.3.8 Socio-Economic aspects







GAME 1 - Ajloun War Against Crusaders

Q.3.5 Specific Ad-Hoc Questions

Strong aspects

- Beautiful objects created
- The setup
- The props are nice and can be sold as souvenirs.
- Figures, analog part if well implemented can be nice

Weak aspects

- The game is very far behind. You need to work hard to finish. Be careful of dangerous projectiles, need safety for eyes. Physical game mechanics need to be better figured out. Add mechanics for soldier combat
- The connection with digital game - the boardgame setup - lack of game mechanics
- Consider changing the title of the game.
- No design app, no integration.

GAME CONCLUSION



The " AJLUN WAR _AGAINST CRUSADERS" game is aimed at promoting tourist participation by presenting the tale of Ajlune. The first section of the game is built on an itinerary with a unique style of interaction that has been redeveloped for use by players. The tour includes all Ajloun's major cultural sites, including the castle, surrounding environs, and Mar Elias. The itinerary is built on a paper-based computer platform that includes an activity recorder, a digital paper, and a pre-installed program; however, it requires the player to visit the locations and sites to play the game. Each player can check out a digital recorder of the itinerary map and visit the destinations on the map in any order they want, thanks to a pre-designed treasure map (where they visit the locations and bring proofs of visit).

The second section is analogue and can be played on location. It is a specific playground area near the castle that will be visited as the last stop on our trip. There are two armies in the game. Each army might be made up of a single individual or a group of people who completed part 1 of the schedule. Soldiers and siege weapons are included in each army (catapults and ballista). The time limit was set at 5 minutes to reflect the nature of visitors' time constraints while learning and having fun. The player can play as either an attacker or a defender. The member of that squad will have extra ammo for the catapult and ballista based on the proofs obtained from the previous sites in part 1.

The other party wins if the defender's castle is demolished or if they lose more units because of the onslaught. If the other party loses additional units after running out of ammo or having their catapult/ballista struck, they lose.

The purpose of this game is to create a hybrid (analog and digital) instructional game for the Byzantine and Islamic cultural monuments in Ajloun. Furthermore, the game should enrich the site's visitors' experiences by educating them about the era in various gaming contexts (analog and digital), encouraging tourists to study more about the Saladdin era's history, and delivering historical facts in an engaging manner. Such activities will aid in the development of new types of site experiences that are both enjoyable and offer a unique blend of more desirable digital and physical activities.

The game is a hybrid, the equipment that it will be using will be already programmed (map with annotations and locations) for the itinerary, so it can easily guide the visitor to reach out the different locations, as well as play the second part of the game which is using material and models for the castle and some sample siege weapons.



The used recorder can mix your writing and audio together to relive that moment of inspiration, using just your pen. Save time, the pen makes your handwriting searchable giving you more time to brew another cup. Everything included in the map design, items, and concepts for creating Ajlun castle, which will be made from the final material, as well as a sample army for the gameplay (scaled-down – small-sized army team), and siege weaponry.



GAME 2 - Archery Battle

Q.3.5 Specific Ad-Hoc Questions

Strong aspects

- Very nice idea
- Simple but satisfying. No need to read long instructions before starting to play. Competitive element.
- The crossbow - the physical activity
- Nice idea, fun to play

Weak aspects

- Lots more work to do. Use AR to overlay to the user where they shot. Use higher-quality cameras. Use buzzer for haptic feedback for each shot. Embed power in the inside, not outside. Use simpler computer vision object detector for target
- Players may want to know their score and score of other players while they are playing. No educational information about the castle or about archery. The castle steps are very slippery, take care to protect tourists, provide warnings and/or have them sign disclaimers so that you are not responsible for accidents while they are distracted when playing the game and walking.
- Difficult to evaluate not ready
- Initial demo, far from deployment

GAME CONCLUSION



This game is designed to help the tourists reenact the historical archery battle, live the castle's history, and enhance their experience in the castle. The player needs to adjust the bow and hit the target with an infrared beam by pressing a button; When the beam hits a sensor in the target, the player will win a point. Each team has a limited number of trials. The team who gets more points will win the game. Status: GDD, User Profile, PoC or Demo, under improvements, and Beta Version Planned for end of July.

Playing go through these steps, there will be two main shooting devices (two teams) or more. Each team will try to aim and shoot the targets to get more points. The targets will be distributed inside the castle. And the results will appear on a Realtime dashboard screen.



GAME 3 - Break into the Castle

Q.3.5 Specific Ad-Hoc Questions

Strong aspects

- Very entertaining and educational
- The outdoor activity.
- Engagement with the site.
- Good for team building

Weak aspects

- The graphic design
- Materials were not ready yet, need props, communication materials.
- Not for tourists.

GAME CONCLUSION

The game depends mainly on a good analysis of the symbols related to the history of the castle and its features, players need to decipher the codes of each station and overcome different obstacle to reach the command center, playing the game involves physical effort, teamwork, time management and overcoming challenges.

The game offers an exceptional visit and a kind of excitement through a game to explore Ajloun Castle. He created the idea of the analog game (The Discovering of Ajloun Castle). The distinguished aspect of the game is an opportunity to visit and explore the castle in the way that different form the traditional way, as it will attract visitors through real engagement and experience. Therefore, it will help to for develop the tourism and economic in the city of Ajloun.

Ranger developed interactive games between the visitors of Ajloun Castle and between different companies and institutions to compete in the game of exploring the castle and simulating its siege and storming and reaching the top of the castle to achieve victory for the winning team after it passes the dilemmas and decodes the codes and symbols of the game. Each team is made up of 7-10 players dressed in the historical costumes of their era. Ranger will seek to enrich the experience of the tourist in Ajloun, whether local or guest, and activate community participation.



GAME 4 – Gadara Not Just a Story

Q.3.5 Specific Ad-Hoc Questions

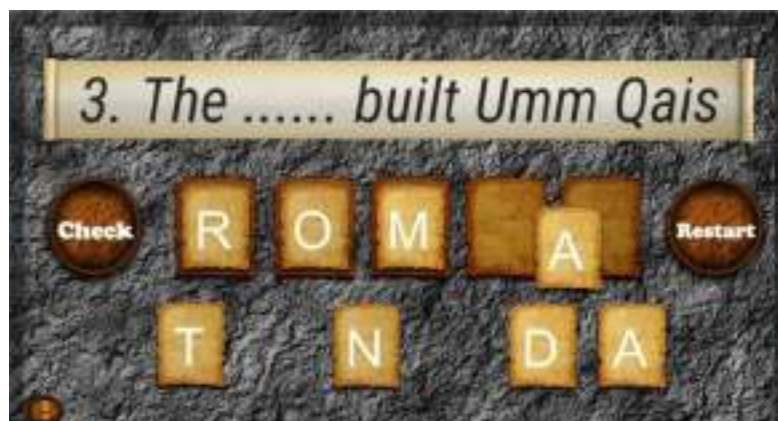
Strong aspects

- The graphics are nice
- Simple but effective game
- Good designs in the menu
- Nice 3d reconstruction

Weak aspects

- You need onboarding to explain to the user the commands. You need to guide the user throughout. Arabic versions must be added
- Instructions are not clear
- Walking and solving puzzles, no help for learning
- Too like re Livingstone the ancient Gadara, too sport, no challenging
- The storyline behind the game is not clear
- Very similar to reliving the ancient Gadara game

GAME CONCLUSION



As a new game offering diversified minigames with different levels and targets to introduce the civilizations created in Gadara. It will offer a sustainable touristic product even during off-season periods, to increase the attractiveness of the site and introduce it as a region with desirable sightseeing compared to other well-known sites by tourists in the region, and so to increase demand.

Point-and-click adventure game in which the player follows the story of some Roman soldiers who take on a quest of figuring out what has happened to this place in that era (roman theatre)

Along the way, the player will need to explore various locations in the selected spot, throughout history, solve puzzles, and put together all the pieces of the story to reach the end. The game is loaded with factual historical content, along with positive messages and insights that players can take with them into the real world.

Some of the questions will be Arabic. The game will change depending on the character that the player chooses at the beginning. Change the character. At the beginning you should have a choice between two characters. The first is roman (this makes the puzzles about photos and puzzles from that era). The second character is from the Ottoman era, and this also will bring up puzzles from that era. Change the rooms at the beginning. This should become a map of Um Qais and you will start moving from one place (that represents a puzzle) to the next. You cannot bypass a place until the puzzle before it is solved.



GAME 5 - Gadara Spinner

Q.3.5 Specific Ad-Hoc Questions

Strong aspects

- Easy to play, components quality, well-integrated with the historic places
- Very nice 3d printing reproduction
- Everything. I loved it
- The models are good
- It presents information in an easy way
- Overall, a fun game to play
- Entertaining, learning

Weak aspects

- FLAGS colors, site's name to easy associate question card with site
- Colors and pictures in cards are not very recognizable
- Printing cost
- Size of the box
- Fix the spinner to spin much more smoothly
- Might be expensive to make
- A onetime game, u would love to see how this is evolved

GAME CONCLUSION



The ancient Gadara (or modern Umm Qais) located in northern Jordan, boasts one of the richest multi-layered heritages from ancient civilizations -Greeks, Romans, Ottomans. found little to no documentation of these periods online. This is what prompted them to gather stories from locals living around the site and use them as a basis for her game. We want to use games to educate, entertain and help people appreciate their culture and history. The plans to establish a game startup focusing on making Jordan's ancient cities more attractive to tourists, ultimately contributing to job creation for fresh graduates and youth empowerment.

The Gadara spinner game is an innovative board game based on local history and heritage, which aims to drive tourists to less-known sites in Jordan. Entirely based on luck, the game engages players through the collection of informative cards and 3D models of Gadara's archaeological sites.

Gadara Spinner game is an immersive gaming experience that, thanks to the spinner, 3d models, cards, flags, and interactive board. it transforms the player into a real citizen ready to build the features of the beautiful Gadara. Status: GDD, User Profile, PoC or Demo, the game meets the requirements for the second payment, The team has received feedback for improving the delivery, and Beta Version Planned for end of June.



GAME 6 – Gadara Unravel the Mystery

Q.3.5 Specific Ad-Hoc Questions

Strong aspects

- Simple and very informative
- Suitable for all ages
- Easy to master, nice interface
- Simple and easy
- Interaction with the site
- the 3d models
- It is simple and informative
- Nice to complement the site info

Weak aspects

- All The 3 models MUST be VERIFIED by an expert or DoA
- There are currently only 3 questions
- There should be at least 6 questions to cover the area
- Too short, no progression
- Still a proof of concept
- Add as many stations as possible
- Allow more manipulation for each object in different orientations
- Very basic, no gamification, just q&a

GAME CONCLUSION



This is a story-based game in which the player is an explorer who takes a journey in-person to discover various artifacts and uncover details about the culture in Gadara. The site will have many sensors that are planted next to the selected artifacts. As soon as the player approaches the artifact, the sensor will recognize their place and send a trigger saying that you can get some info here if you want. Some might be a complementary story, and some might be part of the key to solving the puzzle. Players will read a lot about the Gadara civilization, from its geographical details to its historical significance, and everything in between. Along the way, the game quizzes players about what they have read, and they must answer questions correctly to continue. Moreover, the game might be hiding one of the artifacts in a certain place (virtually) and requires you to solve the puzzles around that to reveal the item.

GAME 7 - Reliving Ancient Gadara

Q.3.5 Specific Ad-Hoc Questions

Strong aspects

- Graphic design of the walking part, initial overview of the site
- Design
- recreations of spaces
- Environmental reconstruction, easy to master
- Very nice graphic design
- Nice graphics, nice and fun mini games
- Instructive

Weak aspects

- Seems like 2 separated games, starts like an RPG game, and then u solve simple puzzles.
- Difference between design and puzzles
- No replay ability, no mobile version
- Very similar to the Gadara, not just a story
- The shown objects and items should be linked to Gadara and no other places. Provide a compass showing the location of games. Make the player jump over objects to reach locations and add playability
- It's a bit short
- It's doesn't always reflect Gadara architecture

GAME CONCLUSION



The "RELIVING ANCIENT GADARA" game is aimed at increasing tourist involvement by telling the story of Gadara. The developer created a gamified product by combining digital media with cutting-edge hardware and software. Her creative game is intended to present Gadara in an appealing and engaging manner, increasing the probability of repetitive visits.

Gadara is one of Jordan's most well-known historical sites. The aim of the game Re-living Ancient Gadara is to tell the story of Gadara via its various historical periods. It is a new type of communication that is built on gamification mechanics and employs digital media as well as cutting-edge gear and software. As a result, tourists are more engaged in the whole plot, which includes a variety of gaming technology for effective involvement.

The game is digital and features various levels that may be completed at various sites across Gadara. Puzzle Minigames and Memory Games are used in some levels, while Augmented Reality is used in others (AR). The various strategies are aimed to give a one-of-a-kind and appealing experience. The ancient city monuments, such as the City Wall, the Triconch and Basilica, the Two Theatres, the Church Terrace, the Decumanus Maximus, the Nymphaeum, the Hellenistic Temple, the Gates, and the Tombs, are all covered in detail using a variety of techniques.

Based on the sites encountered, the game is divided into five levels. Some levels have a minigame, while others have an AR application. Some monuments, on the other hand, are designed to aid in the creation of a wonderful city during the game experience. Playing minigames, hunting for clues, and having chats are all part of this experience. To pass a test, some levels require the player to physically be at a specific area where images and videos are placed. When you finish a level, you may be prompted to watch promotional or informative videos.

The player's active participation is measured by a point-scoring system in which points are awarded for completing a level or watching promotional or educational content. The player will receive his or her final score at the end of the game. To encourage active participation, the player's score qualifies them for a prize, such as a local art memento or coupons for local restaurants and cafés. This is an opportunity to work with local SMEs to boost their visibility through a game-based reward system.



GAME 8 - Road to Heaven

Q.3.5 Specific Ad-Hoc Questions

Strong aspects

- Lack of instructions
- The 3d Model isn't for Ajloun Castle
- Difficult controls.
- Needs time and investment to be completed. Not for older, non-gaming people (pensioners).
- Killing Christians is not something u should develop in a cooperation project funded by the European union.
- They are all Christians.
- Not finished

Weak aspects

- Lack of instructions
- The 3d Model isn't for Ajloun Castle
- Difficult controls.
- Needs time and investment to be completed. Not for older, non-gaming people (pensioners).
- Killing Christians is not something u should develop in a cooperation project funded by the European union.
- They are all Christians.
- Not finished

GAME CONCLUSION



As a new game offering different levels and targets to introduce the civilizations created in Ajlun. It will offer a sustainable touristic product even during off-season periods, to increase the attractiveness of the site and introduce it as a region with desirable sightseeing compared to other well-known sites by tourists in the region, and so increase demand.

Status: GDD, User Profile, PoC or Demo (Delivered but under improvements), and Beta Version Planned for end of June

GAME 9 - Tracing Story

Q.3.5 Specific Ad-Hoc Questions

Strong aspects

- Group playing, provides interesting info while playing
- Set up of the game - boardgame
- Nice and simple concept
- Nice idea

Weak aspects

- Could be faster
- Low rhythm - Some bugs
- Make the game easier to win. Max 15 min for visitors to finish. Make sure lights centered on each block and covers all the block when lit. Some bugs when moving backwards. If you can, create questions with options to pick with buttons. Raise the volume of the descriptions
- The game is way too long
- The program response is too slow.

GAME CONCLUSION



This game is under the educational and entertaining category to engage the tourists in Umm Qais historical site in an entertaining way. Tracing history is a game board that is connected to a screen. The game's main concept is to immerse the tourist in Umm Qais history and help them explore the historical features in Umm Qais while playing using the written information on the board, audio, and the presented videos on the screen. Status: GDD, User Profile, PoC or Demo under improvements, and Beta Version Planned for end of JUNE.



GAME 10 - Umm Qais Run

Q.3.5 Specific Ad-Hoc Questions

Strong aspects

- The idea of walking around playing the game is nice
- The interaction with the site - walking around

Weak aspects

- Too many coins. Coins should only appear close to an interesting event. Remove constant repeating music. Use GPS to locate coins. At each coin collected, one should play a game. Allow competition between players to collect coins
- The game should provide more historical information
- Each coin to be link with a physical component of the site
- number of coins to be limited between 15 and 20.
- It is not easy to recognize which coin should be collected
- Dangerous in some parts, since you are walking on ground and in some parts, there are no borders, and you might fall
- Collection of coins do not provide with information on the place
- Needs to solve the bugs - it was frustrating collecting coins that were out of reach

GAME CONCLUSION



UMM QAIS RUN

Umm Qais run is a hybrid 3D running video game. The user or the player controls an explorer is running to collect coins. using smart devices along with the augmented reality technology player will be able to track and follow the coins to reach the treasure.

The "UMM QAIS RUN" game is aimed at increasing tourist involvement by telling the story of Umm Qais. he created a gamified product by combining digital media with cutting-edge hardware and software. His creative game is intended to present Um Qais in an appealing and engaging manner, increasing the probability of repeat visits.

One of Jordan's most well-known historical sites is Umm Qais. The Umm Qais is a 3D Gam that is playing a video game. After scanning the QR code the game will be redirected to the store to download it and if it is already downloaded a start menu will be appear showing the levels, information and setting will be opened directly.

When the player scans the code upon arriving at the physical site, the game begins, with the player strolling or running around collecting coins. The user will be able to track and follow the coins to the treasure using the phone camera and AR technologies.

After collecting a certain number of coins, an event will arise; after solving the event, he can either restart the game or, if he obtained a high score, he could share it with his contacts on the leader board, increasing the level of competition among players and friends. In the case of a loss, users must rescan the code from the beginning to begin again.

While the visitor walking through the archaeological site coins will appears on the mobile camera for the player to collect it by using the AR technology and with every count of collected coins a message will appear to the player. This message could be tutorial tips, or list of questions related to umm Qais or a small puzzle to solve.



DISCUSSION

The project's initial goal is to revolutionize tourist destinations through gamified experiences; nevertheless, there are three strategic objectives to consider: integration of gamification as a methodology in tourist destinations, create new jobs based on gamification industry and increase the number of visitors. The significance of involving local stakeholders, such as site owners, heritage managers, tourism office employees, local citizens, and students, has been proven as a crucial to having a possibility of success in the final implementation for as long as the project has been progressing.

In Jordan, the approach was to choose two cities (Umm Qais and Ajlune) and develop the entire project as a strong huge experience spread out across ten experiences. This concept allows for the creation of a "one-of-a-kind" experience, but it will need additional effort to ensure that the 10 experiences are coherent and coexist. As stated in the abstract, the necessity to create ties across games in mechanics, storytelling, and deployment locations has become a difficulty. Maintaining a comparable look and feel, common storytelling, and the figure of a director of the experience has been vital.



CONCLUSIONS

The internal evaluation of games must be carried out among partners. Because of the COVID 19 situation, the evaluation will revert to audiovisual content. The video content must provide information enough to provide the evaluators the necessary information to evaluate the game.

- There's a lack of safety issues for some games that required real engagement and walking through the sites in both Umm Qais and Ajloun as user will focus on their devices more than of the walkways or any obstacles or danger.
- The need for printing material, using smart devices as pictures and pdf or digitally display the guidelines on large screen for some games to make them more visually attractive and easy to play on the site.
- Some games required involvement of many participants which required large space taking considerations acoustics and health issue
- More and continuous awareness campaigns are required to make user, visitors, students and stakeholders know the difference between games in general and gamification in archeological sites
- Engagement and involvement of more stakeholders like tourist guides, travel agencies, hotel owners and schools could be an efficient way for sustainability of the gamification in archeological sites and to increase the awareness



COUNTRY - LEBANON

Technical Report

ABSTRACT

This document is intended to provide a summative assessment of the evaluation of the 10 games developed in Lebanon. In the Med GAIMS project, the gamification is used to provide locals and tourists with memorable experiences at the same time that the usage of game methodology is implemented in tourist destinations.

The final tools are the game experiences linked to the destinations and sites. In this document, there are the evaluations of both the overall as well as the individual game experiences.

Description of Destinations and Sites

Three sites at three different destinations were selected for the development of new interactive experiences that would be offered to tourists and locals alike using analog and digital games. The destinations and sites include:

1. Mseilha Castle, North Lebanon:

Located at the bottom of the newly built dam in Batroun, the Castle of Mseilha controls the valley where the river of Nahr Al Jozz flows. The building thus made it possible to monitor this strategic place between North Lebanon and the city of Tripoli and Batroun then Byblos and Beirut and to block access to it with a reduced garrison. The first structures must have existed since Antiquity, but they have disappeared with the exception of certain blocks of stone that have been reused. However, during Antiquity, its importance was minor as crossing points made it possible to bypass it via Ras el Chékaa. However, the collapse of part of the cliff during the famous 551 Earthquake after JC interrupted this axis. The first mention of the castle of Mseilha occurred in 1106, and its first construction is attributed to the constable of Tripoli, Guillaume de Farabel. In the 13th century, the Mamelukes regained control of the Castle of Mseilha, then it was the Ottomans in the 16th century, just like they did for Smar Jbeil Castle. However, its current structure is more recent: the current building was refurbished by Emir Fakhr-al-Din II, around 1624 during his revolt against the Sublime Porte. The Castle of Mseilha, however, retains architectural elements typical of the Crusaders period, such as shooting slots.

2. Fidar Tower, Mount Lebanon:

Watchtower located on the coast near Nahr el Fidar and therefore Byblos, from which it takes its name, also called Burj Mouheish, Burj el Fidar is a remarkably preserved construction of a set of towers built in the time of the Crusaders distributed along the coasts from the South of Lebanon to North Lebanon. Located on the side of a cliff about ten meters from sea level, this tower was recently restored by the Directorate General of Antiquities (DGA). The masons at the origin of this defensive structure would have been probably the same as those of the crossed castle or the cathedral St Jean-Marc de Byblos. As proof, some architectural features, resembling those of the baptistery of the religious building and sharing many characteristics, date from the



12th century. According to other sources, the tower dates from the 14th century and is part of a group set up by the Mamelukes and not by the Crusaders. The interior consists of 2 levels with characteristics of local architecture from the 12th century. It opens on its eastern facade via a low door formed by a single block of stone. On its sides, some loop-holes remind us that the building was built for defensive purposes, and not a place of life. Finally, from its rooftop, one can have a panoramic view from Beirut in the south to Amchit in the north, which was ideal for the guards who used to communicate from a distance, particularly by using lights in the event of an alert.

3. Saida Sea Castle, South Lebanon

In the 13th century (specifically between the years 1227 and 1228), the Crusaders came and built a castle on a small island dominating the sea. It is said that this island was formerly the site of a Phoenician temple. Intending to defend Sidon's harbor, the sea castle (also known as the sea fortress) is one of the most prominent archeological sites in the city. It is connected to the mainland by a narrow but fortified 80 m long causeway built on nine arches, that was later added by the Arabs to provide access to it. To protect against the swelling of the sea, the Sidonians built walls along the natural rocky reef. The typical architecture of the Crusaders, however, was mostly represented by the Roman columns that were used in the outer walls to reinforce horizontally. Primarily, the sea castle consists of two chambers, one of those chambers in the West tower, which is best preserved today. Sadly, the East tower is not very well preserved. It was constructed in two phases, where the lower part was built by the Crusaders and the upper one by the Mamluks. The two towers are connected by a wall. To the right of the porch lies a small domed mosque whose origin is probably Ottoman. Known as "Masjed Qalaat el Bahr," the mosque is a simple cubic form topped by a central dome. However, the most important element of the dome is the cantilevered part that indicates the correct direction of prayer. Finally, a staircase connects up to the roof, which offers, in turn, great vistas of the fishing harbor and the old part of the city. Unfortunately, the sea fortress was destroyed by the Mamluks in 1291, when they took over the city from the Crusaders and was later renovated by Prince Fakhreddine in the 17th century. When the water is calm, one can detect the remains of the rose-granite columns, recovered from Roman buildings, sinking in the shallow seafloor. Additionally, around the fortress, statues, cisterns, and structures of walls, columns, and stairways buried under the sea show evidence of the Old Phoenician city.

Reasons for Selecting the Destinations & Sites

Three destinations were selected: North Lebanon, Mount Lebanon, and South Lebanon. The various destinations were selected based on geographic diversity, proximity, and accessibility. When it comes to geographic diversity, the goal was to have the gamification initiative not centralized in one location, but instead have a greater reach. As for proximity, all three of the destinations are more or less close to Lebanon's capital, Beirut. If an individual is departing from Beirut, it would take a maximum of 1 hour to reach the furthest destination. Lastly, accessibility; all destinations are accessible using public and private transportation.

After multiple discussions with the DGA, the three sites—Mseilha Castle, Fidar Tower, and Saida Sea Castle—were chosen for gamification. The selection of the sites was based on popularity, the number of visitors, history, and the state of the sites. When it comes to touristic sites in Lebanon, some sites are widely popular among locals as well as tourists. Thus, when selecting sites for gamification, those chosen were made sure to be not as popular as some of the mainstream ones. Moreover, data provided by the DGA regarding the number of visitors per year helped in selecting sites that had low influx of visitors and needed exposure. Also, even though the selected tourist sites were visited throughout the year, the history and information about them are



not widely known. Furthermore, these sites do not have tour guides available on the premise, thus visitors do not usually get rich and in-depth knowledge about the history and architecture. Finally, the selected sites had to be restored, preserved, and in good condition so that visitors can walk safely around the castle and its surrounding areas.

It is worth noting that AUB and the DGA discussed other tourist sites which ended up being discarded. These include Beaufort Castle in Nabatieh located in the Far South of Lebanon, Umayyad Ruins in Anjar in Bekaa, and Crusader Castle in Menjez in the Far North of Lebanon. These sites were later on abandoned because they are located too far away from the capital and coast. Moreover, the sites were difficult to reach using public transportation, making them not as accessible to the public as they should be.

Game Development

1. Sites and Games

When it comes to the conceptualization and the development of the gamified ideas, multiple factors were taken into consideration. Key factors were chosen to help narrow down the ideas and create a compass for the brainstorming of the gamified experiences. Important factors included: physical characteristics of the sites, type of visitors, visitor's nationality, cost of game development, cost of operation and maintenance, and linking the games to local businesses.

Physical site characteristics encompassed whether the site was indoors/outdoors, the infrastructure of the touristic site, access to wifi, security of the site, etc. When it comes to the Mseilha Castle, the characteristics included the architecture of the site, the surrounding outdoor fields, the nearby river, and the mill located behind the castle. As for the Fidar tower, the size of the building along with its interior design and wall structure were taken into consideration. Lastly, for Sidon Sea Castle, the castle's fortification characteristic, and its unique location near the sea were the main factors to consider when developing gamified experience.

A specific audience was pre-defined when brainstorming for games. The gamified experiences were agreed to be targeted towards families, young adults, and groups. As for the nationality of the visitors, Lebanon has always been famous for the widespread use of three languages among its people (Arabic, English, and French). Thus, the developed games would have those languages incorporated making them suitable for diverse nationalities.

When choosing game ideas, it was important to take into consideration the costs that would mount up to have them achievable. Three types of costs were considered, 1) cost of game development which included the cost of equipment and human resources, 2) cost to maintain hardware, software, costumes, and other physical components, and 3) cost to operate the games, including human resources (if any).

The last factor considered when choosing games was the ability to link them to local businesses in the future. This would widen the spread of gamification and have a bigger impact. This was mainly aimed for the games in Sidon Sea Castle as the site location makes it possible to expand gamified experiences to incorporate the local market nearby.



2. Methodology

Diverse stakeholders from AUB and DGA were involved in the decision-making for the in-house games. Stakeholders included owners of tourism sites, managers/operators of tourism sites, technical game developers, creative game developers, and historical experts. Conducting group brainstorming sessions and having diversity in stakeholders (age, gender, the background of expertise, etc.) among members, helped in having a variety of ideas, allowed the piggyback of ideas, and boosted creativity.

Multiple ideation sessions were conducted, which resulted in a wide list of ideas for gamification experiences. The ideas were ranked based on favorability and those that ranked the highest were later on further discussed, developed, and expanded upon.

As for the subgrant games, two Hackathons and Creative Labs were planned and executed to select 5 gamified experiences to be developed in Lebanon. The Hackathons and Creative Labs targeted game designers and had them propose innovative, original, and creative ideas, under the theme of discovery and gamified experiences. The Hackathons were a 2-day event that incorporated one-on-one mentoring sessions with the participating teams, as well as included training sessions on diverse topics to help participants hone their ideas. At the end of the second day, teams got the opportunity to pitch their ideas in front of a pre-selected jury that evaluated the games based on pre-set evaluation criteria. The jury was composed of individuals from different backgrounds and experiences so as to have diverse opinions brought to the table.

3. Strategy

The strategy for gamification in Lebanon was centered around mixing history with gamification and targeting historical castles. All sites were castles or towers and had historical significance. For the actual development of the games, the plan of action was to encourage individualized development of games without a unified theme. The overall aim was to create diverse experiences and not be restricted with limiting themes or scenarios. The strategy was applied across both, in-house and sub-grant games.



METHODOLOGY

The methodology used during the evaluation has been based on the surveys of final users. Users have been the most valuable assets in the project, so their participation has been part of the entire process in several steps.

Open days: The open days provided the chance to final users to test the alpha versions of the games in order to provide relevant feedback to be implemented in the different games for development. The games weren't finished so the test was conducted in a controlled environment. Each tester filled in a survey to collect the feedback.

Peer review: For the execution of the Peer Review and because of the COVID situation 40 videos have been recorded with an explanation of different technical aspects of every game. The videos have been shared with the partners also with surveys to provide feedback. The feedback collected has been of use for the development of the beta versions of the games.

Link to the videos: [HERE](#)

Link to the survey results: [HERE](#)

Partner Study Visits: The project partners have visited every country and tested the beta versions of the game experiences. In this stage the games were close to being fully developed, except for some details. The feedback obtained has been used for the final evaluation.

Surveys:

The surveys have included several sections:

Q.1 Demographic Information Questionnaire: provides information about testers

Q.2 Before the Gaming Experience - Interest and Previous Experience: provides information about interests in games and tourist gamified experiences as well as experience.

Q.3 Questions after each Gaming Experience: Provides information about the game experience

Q.3.1 SUS (System Usability Scale) questionnaire: provides information about the use of the game.

Q.3.2 NASA TLX (Task Load Index) questionnaire: provides information to rate the workload of the overall experience.

Q.3.3 IPQ (IGroup Presence Questionnaire): This is an optional questionnaire only for Virtual Reality experiences.

Q.3.4 Ad-hoc Game Experience Questionnaire: Provides information about the game experience, storytelling, game design, objectives, immersion and likeness of the game.

Q.3.5 Specific Ad-Hoc Questions: Qualitative questions about the game

Q.3.6 NPS (Net Promoter Score) Questionnaire: used for measuring the engagement and satisfaction of users.



Q.3.7 GDD (Game Design Document) Evaluation Questionnaire: provides information related to the GDD of the game and its relationship with the final experience.

Q.3.8 Socio-Economic aspects questionnaire: provides information on how the game links with the environment, the destination and the general promotion of the sites.

Q.4 Questions after all gaming experience: This questionnaire provides information about the overall experience.

In this surveys the information obtained splits in two types:

- Quantitative
- Qualitative

This document includes a first technical report of the country in general and all the game experiences and a detailed description game by game of each evaluation.

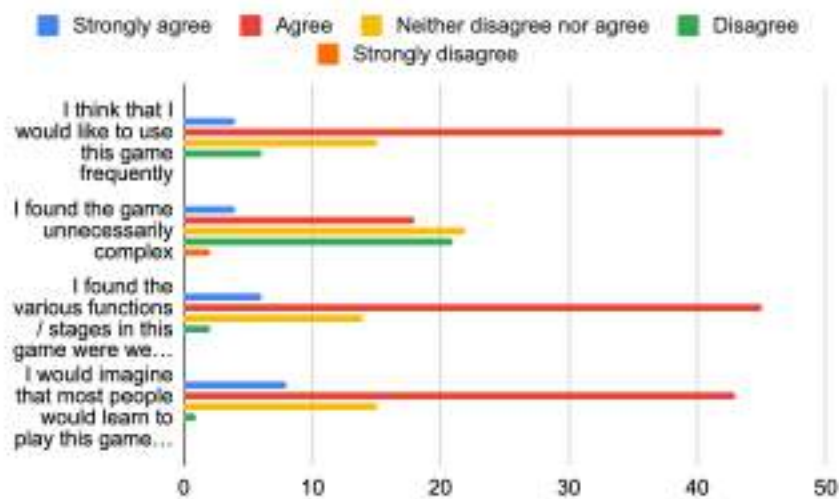
After this data collection a discussion is provided and a final conclusion chapter that holds a recap of the evaluation.

DATA COLLECTION

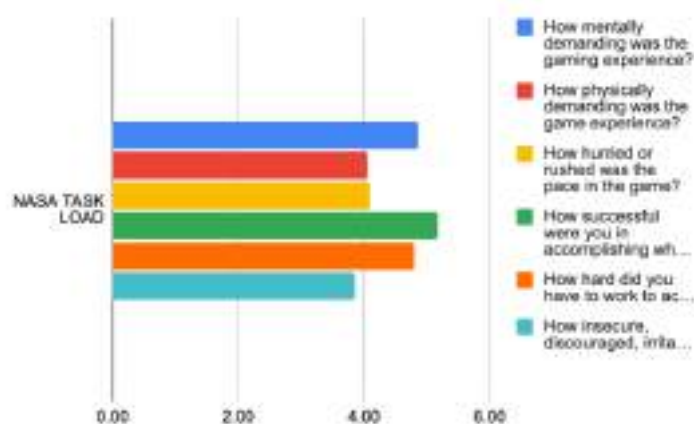
As mentioned above the data collected relates to the International Partner Study Visits because the games were in their most complete version.

GENERAL

Q.3.1 SUS (System Usability Scale)

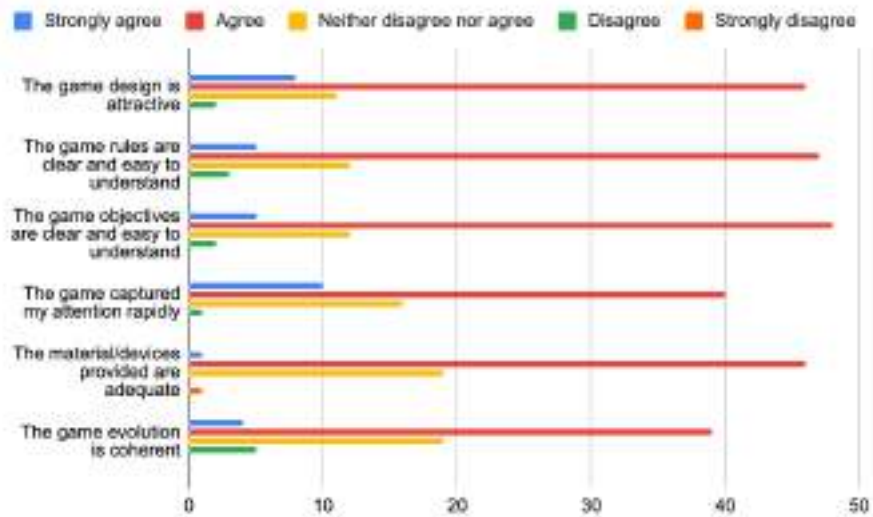


Q.3.2 NASA TLX (Task Load Index)

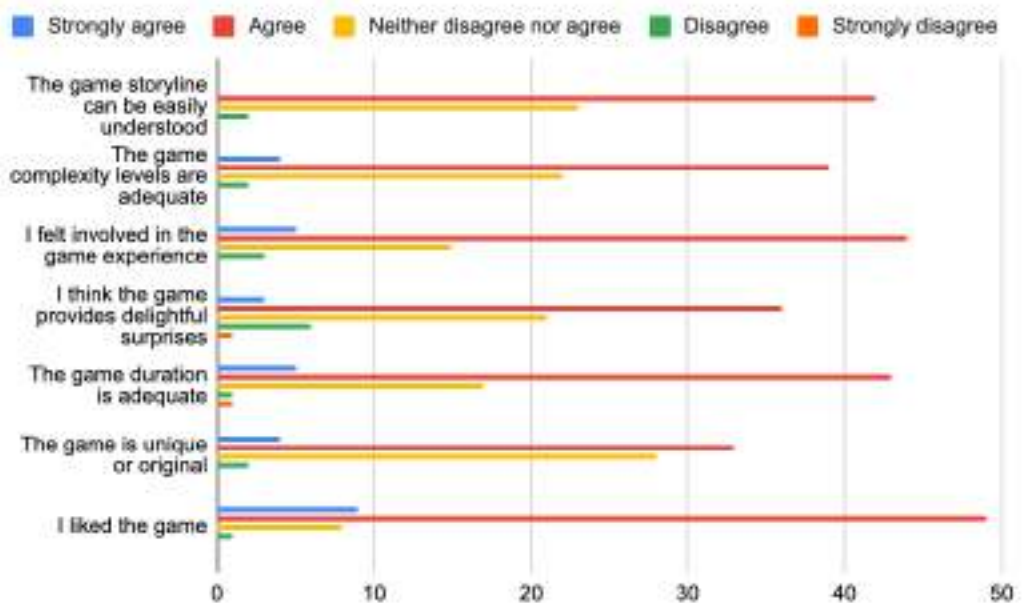


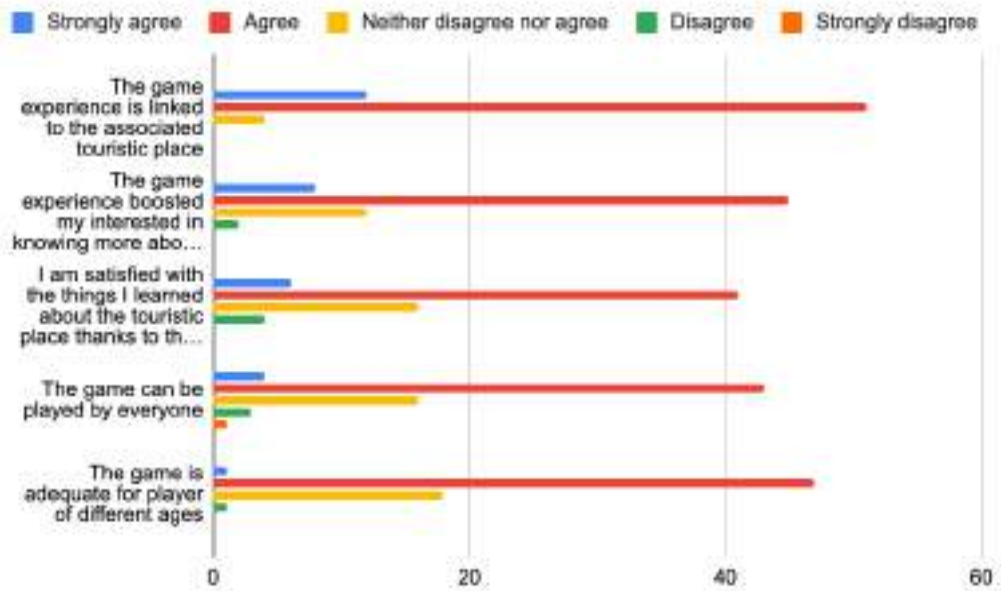
Q.3.3 IPQ (IGroup Presence Questionnaire) - Optional

Q.3.4 Ad-hoc Game Experience

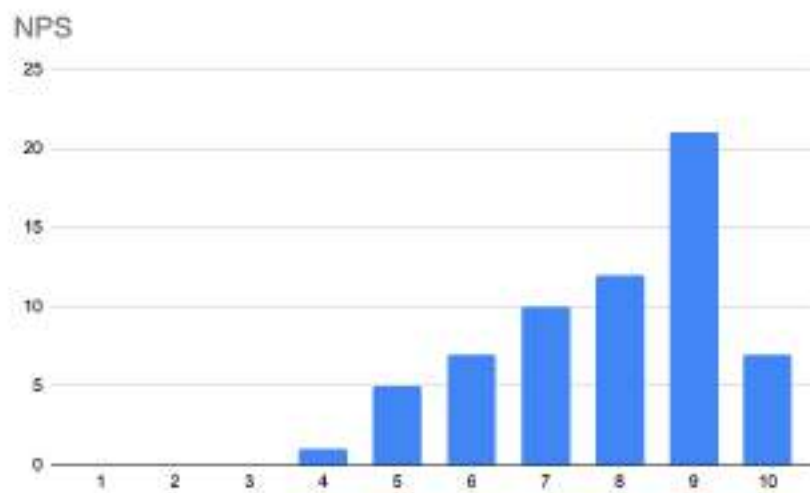


Q.3.5 Specific Ad-Hoc Questions



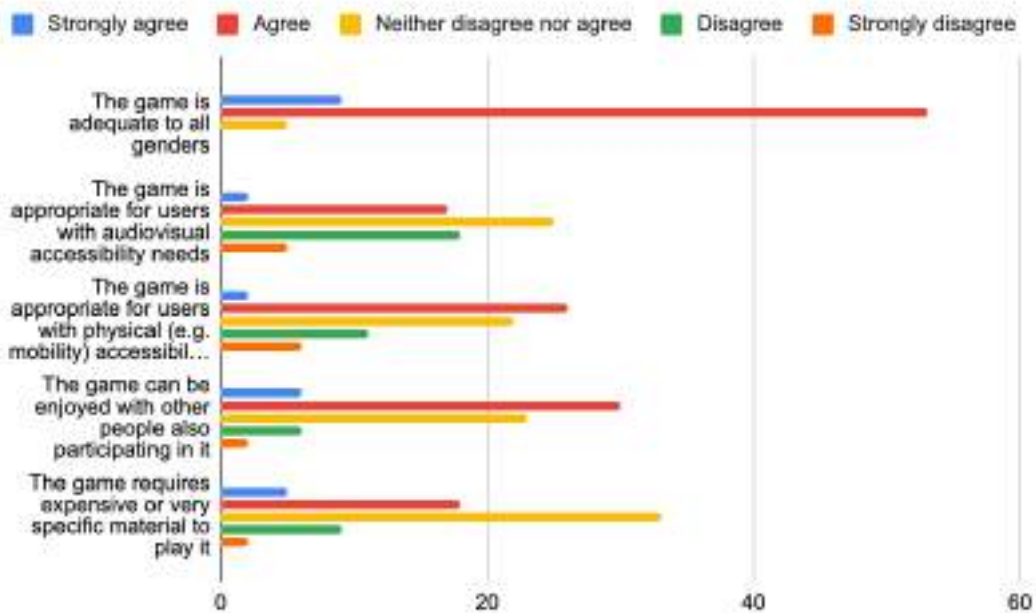
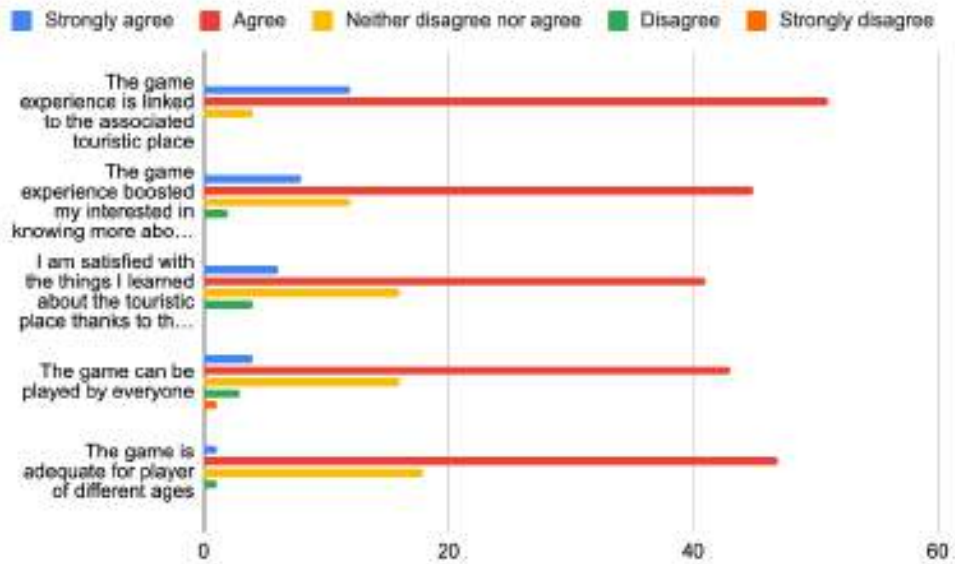


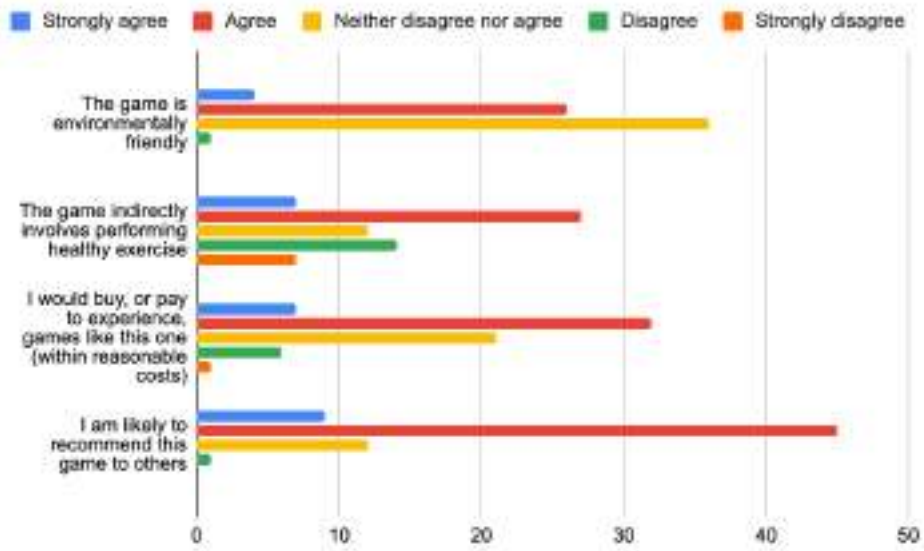
Q.3.6 NPS (Net Promoter Score)



Q.3.7 GDD (Game Design Document) Evaluation

Q.3.8 Socio-Economic aspects







GAME 1 - The Mills

Based on the charts presented below summarizing the responses of surveyed people who played the 'Mills' game, the following can be stated about this game:

STRENGTHS

- On average, the game was well received, well integrated, and easy to play
- People did not have to work too hard to complete the game
- The game is attractive and clear
- The game is attractive and the storyline is well understood
- The game makes people more interested in the tourist site.

WEAKNESSES

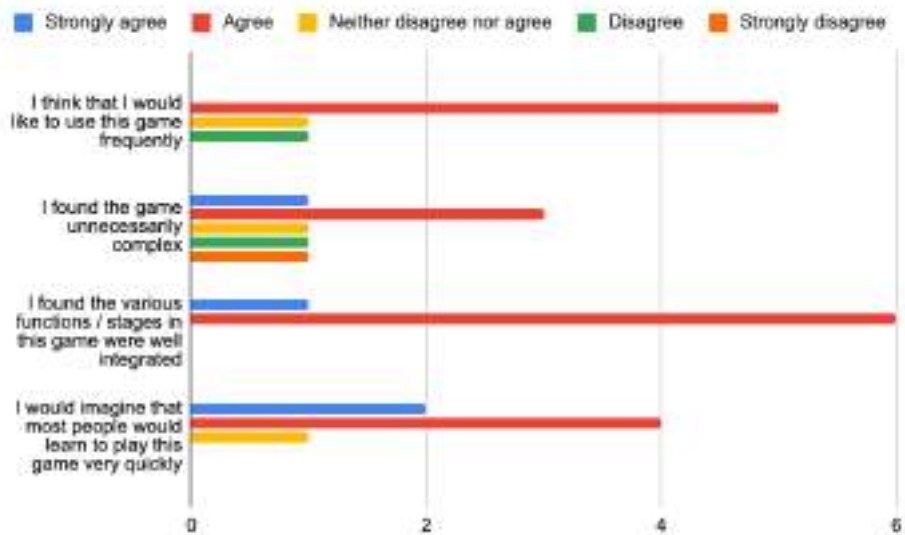
- Some components were found to be too complex
- People felt rushed in some places
- The game could be more coherent
- The game could be less complex
- There was a feeling that the game requires expensive equipment

GAME CONCLUSION

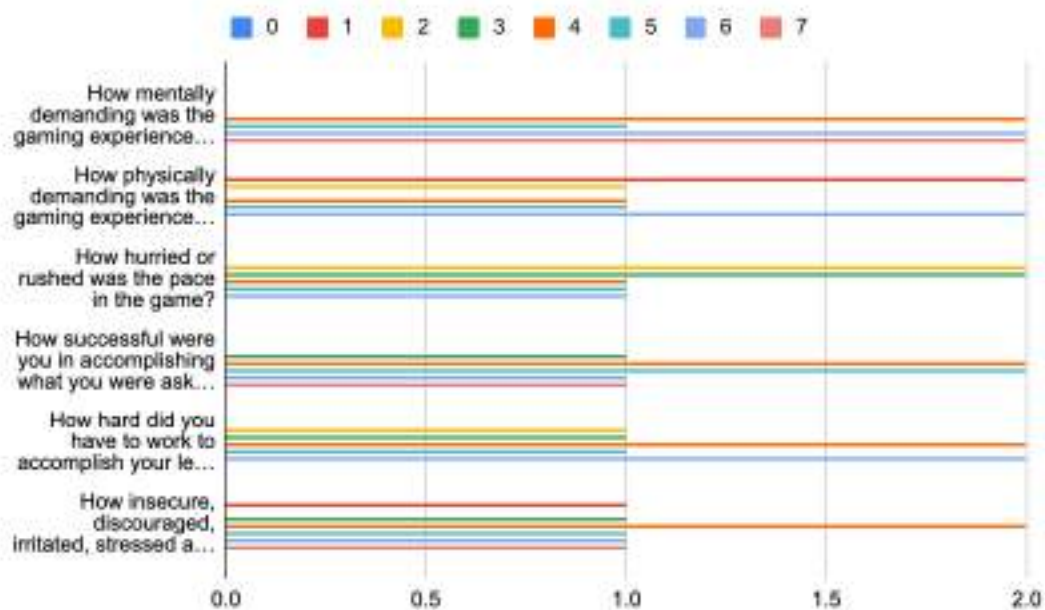
This Mills game was overall well received with a high number of people willing to recommend it to other future players. The game is attractive and well integrated with a clear storyline. Most importantly, most of the users felt that the game made people want to know more about the tourist site.

The game could be improved by simplifying some of the stages, making it less complex, and slowing the pace in some places. Finally, the data suggests we should provide hardware (tablets, phones,..) on site for people to play in case the user does not possess the needed equipment.

Q.3.1 SUS (System Usability Scale)

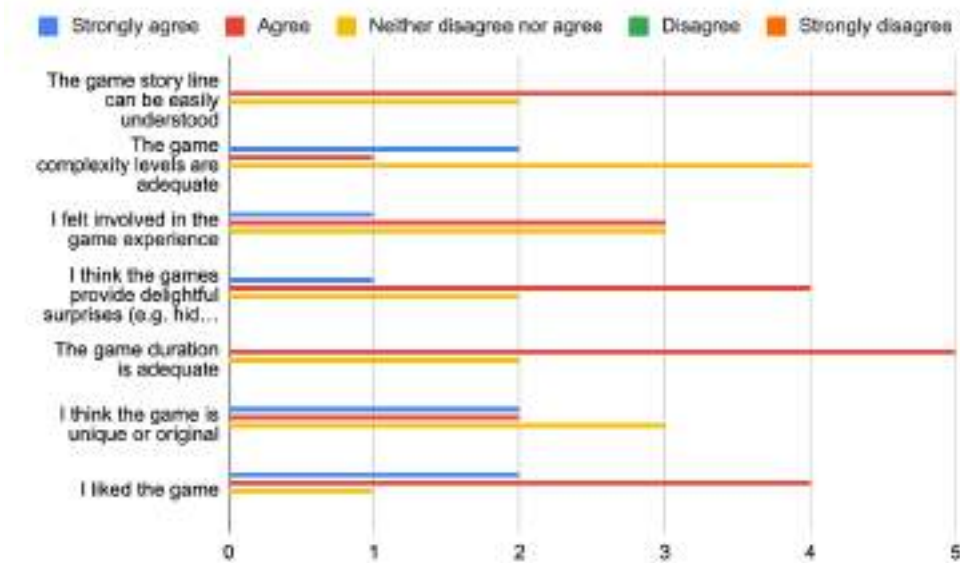
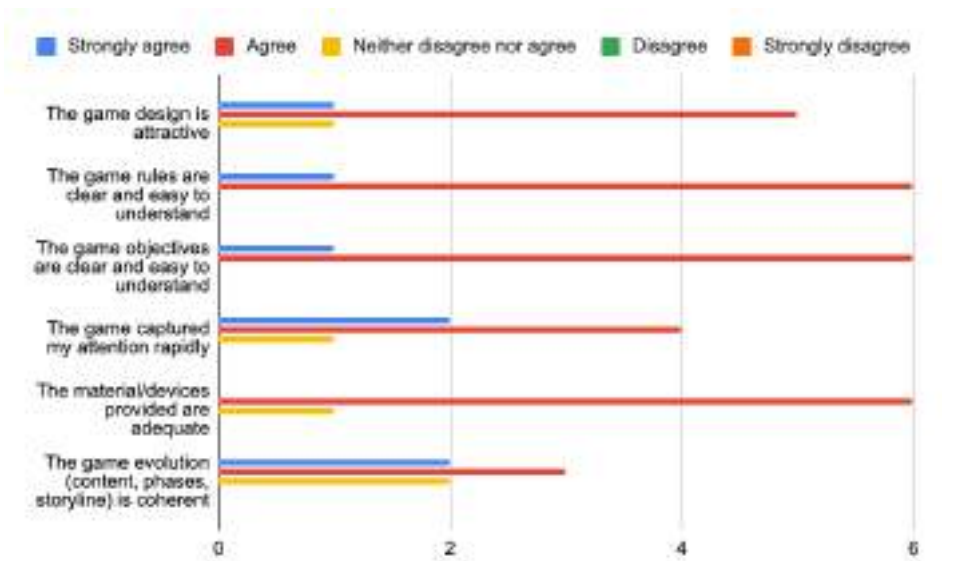


Q.3.2 NASA TLX (Task Load Index)



Q.3.3 IPQ (IGroup Presence Questionnaire) - Optional

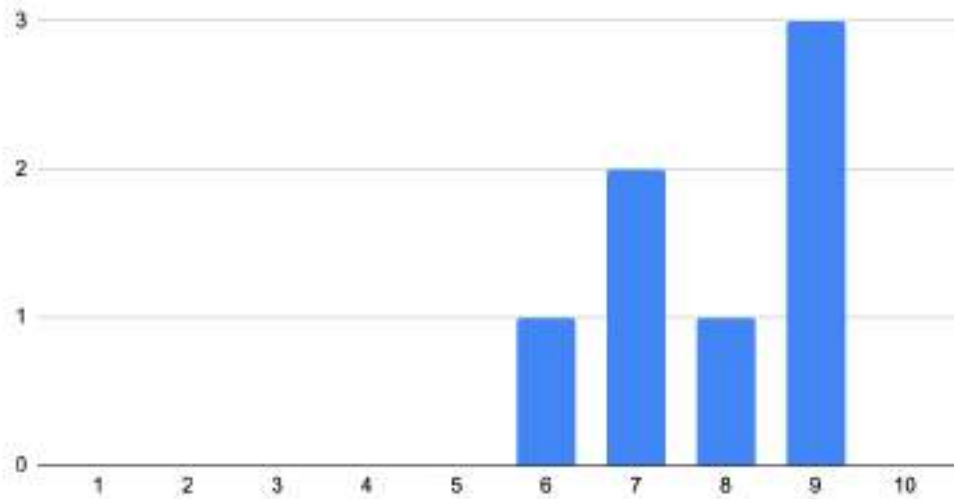
Q.3.4 Ad-hoc Game Experience



Q.3.5 Specific Ad-Hoc Questions

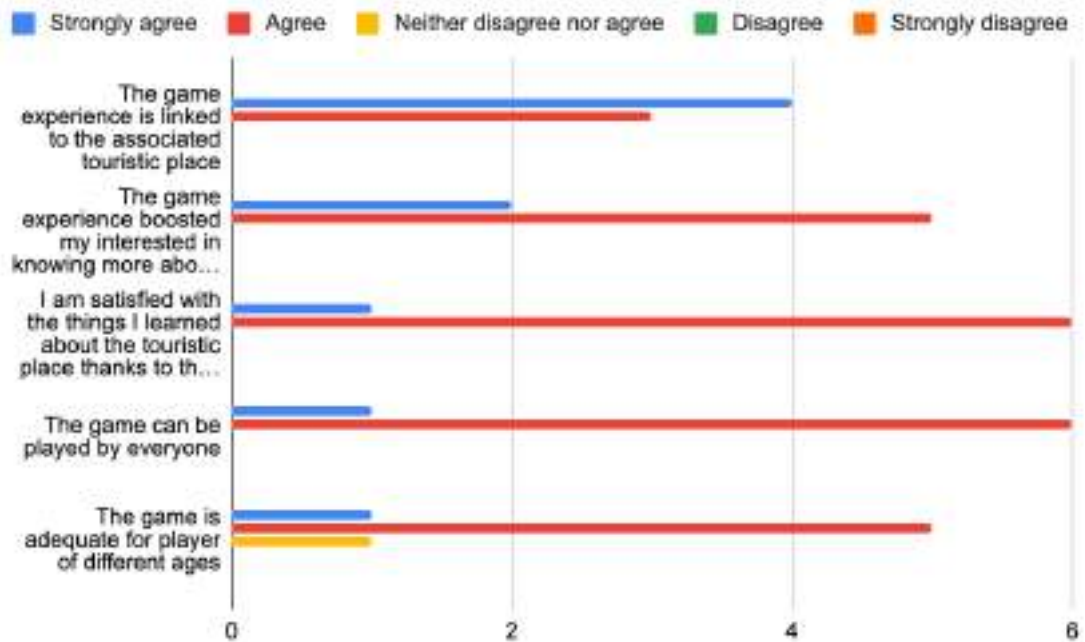
Q.3.6 NPS (Net Promoter Score)

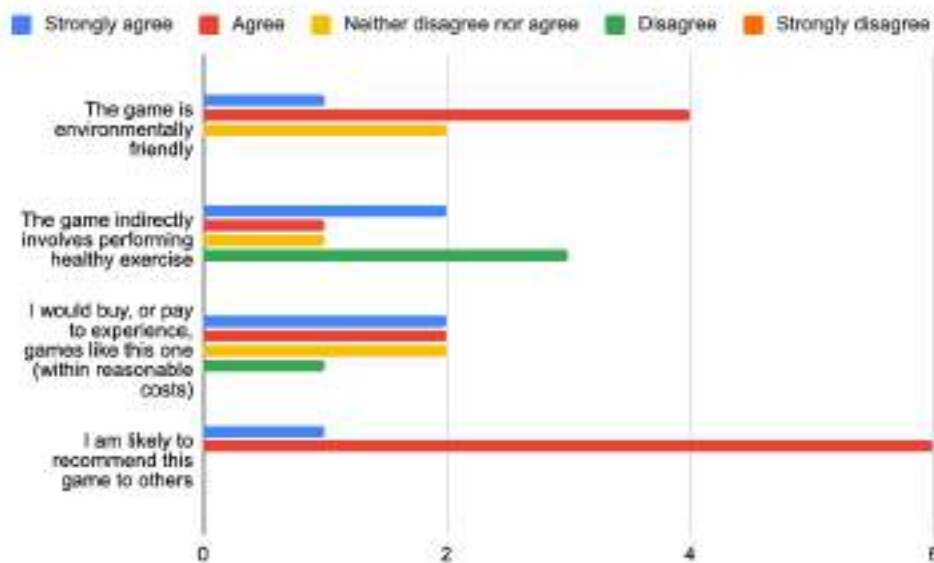
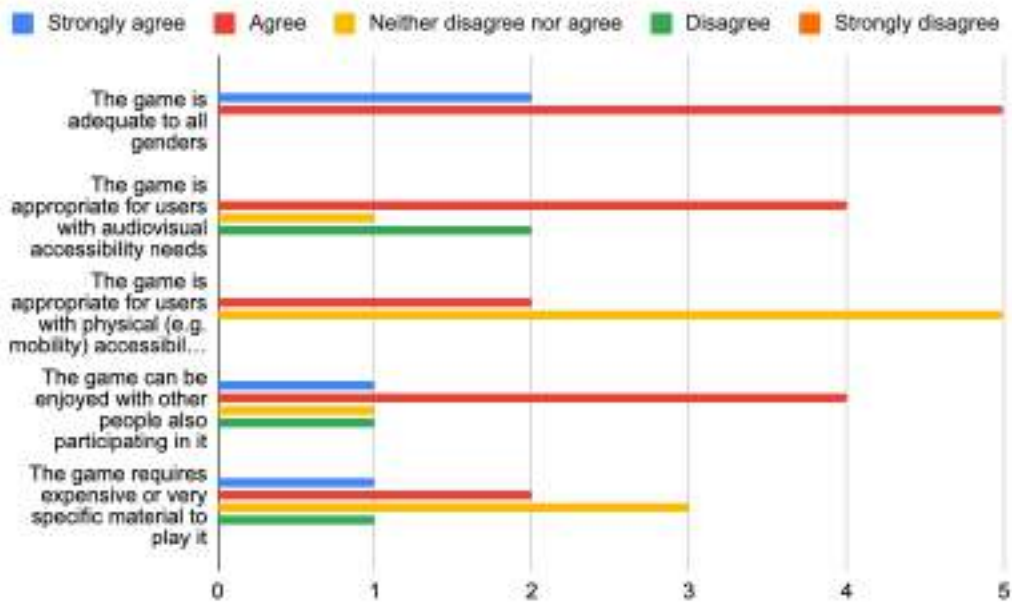
To what degree would you recommend this game to someone else



Q.3.7 GDD (Game Design Document) Evaluation

Q.3.8 Socio-Economic aspects







GAME 2 - Towered

Based on the charts presented below summarizing the responses of surveyed people who played the 'Towered' game, the following can be stated about this game:

STRENGTHS

- The game was well received overall
- The game is very attractive
- Players felt involved in the game
- The game boosts one's interest in the area
- The game is associated well with the tourist site

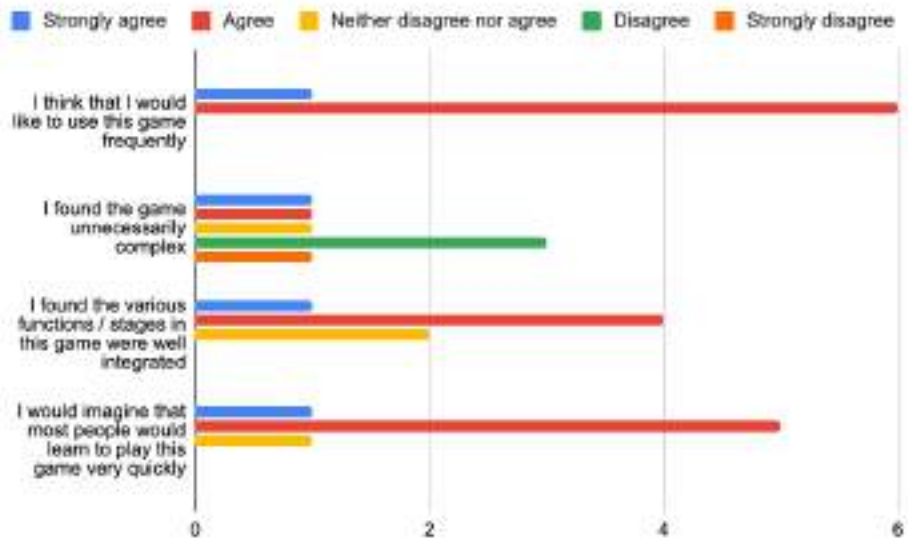
WEAKNESSES

- The game was overall found too complex
- Most people were not successful in finishing the game
- People felt frustrated and insecure because they could not complete the various stages of the game

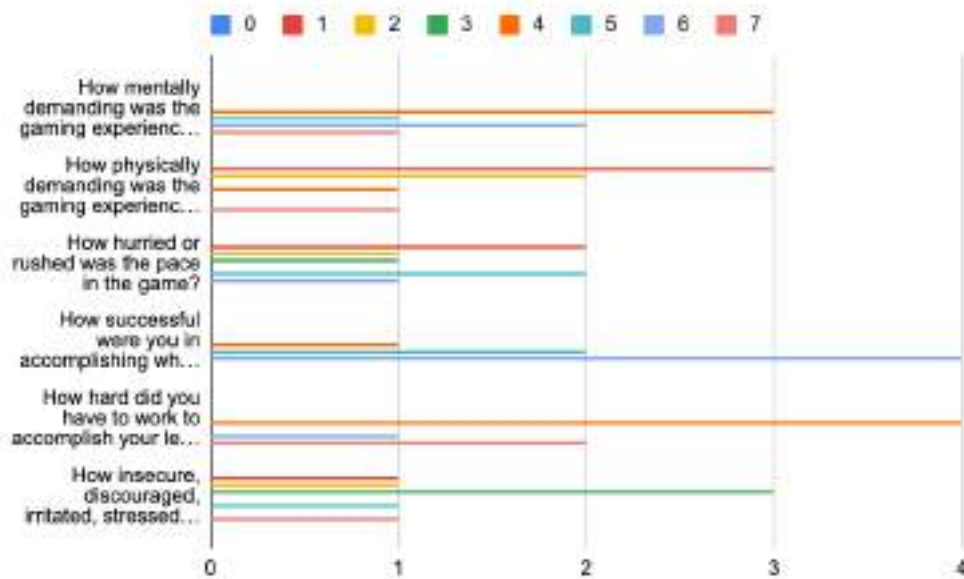
GAME CONCLUSION

The Towered game was well received, although it was found to be too complex, and as a result, most people were not able to complete the game. These issues were addressed since the game testing and the game now has an onboarding experience and a simpler user interface with clear guidelines on the playability of the game. On a positive note, the game was found to be very attractive, and tightly linked to the tourist site. Finally, despite its difficulty most players wanted to play the game again and would recommend it to others.

Q.3.1 SUS (System Usability Scale)

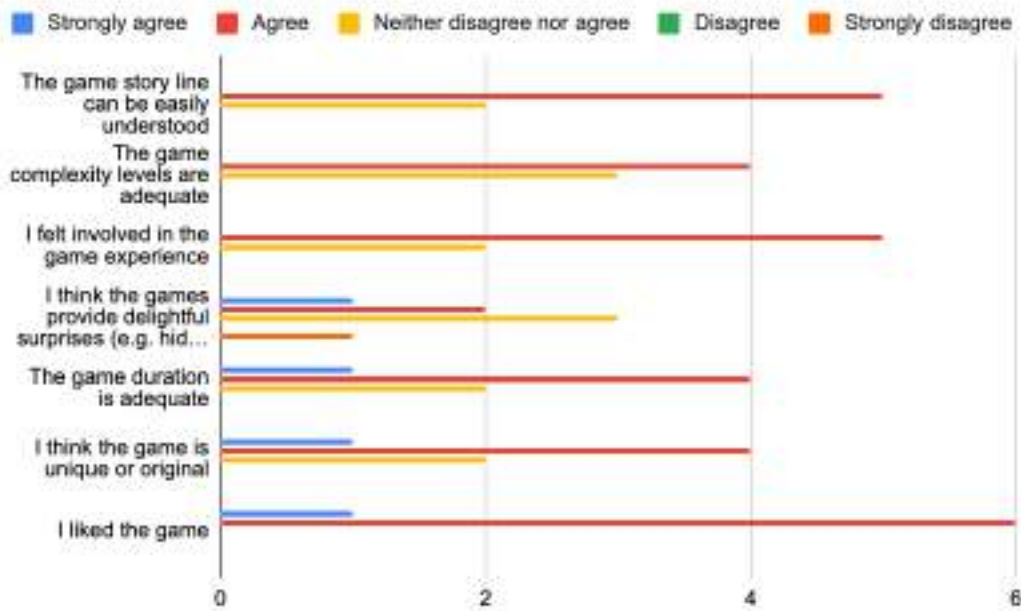
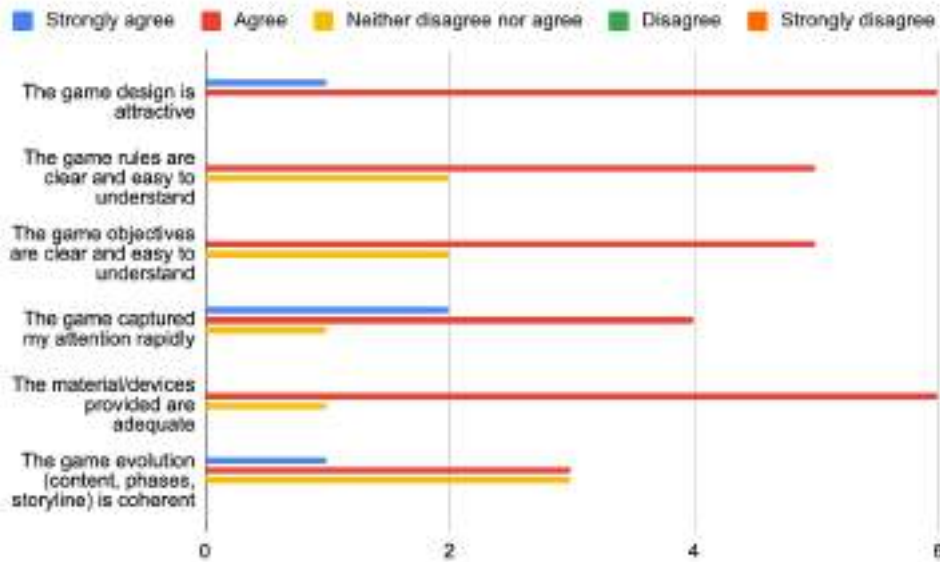


Q.3.2 NASA TLX (Task Load Index)



Q.3.3 IPQ (IGroup Presence Questionnaire) - Optional

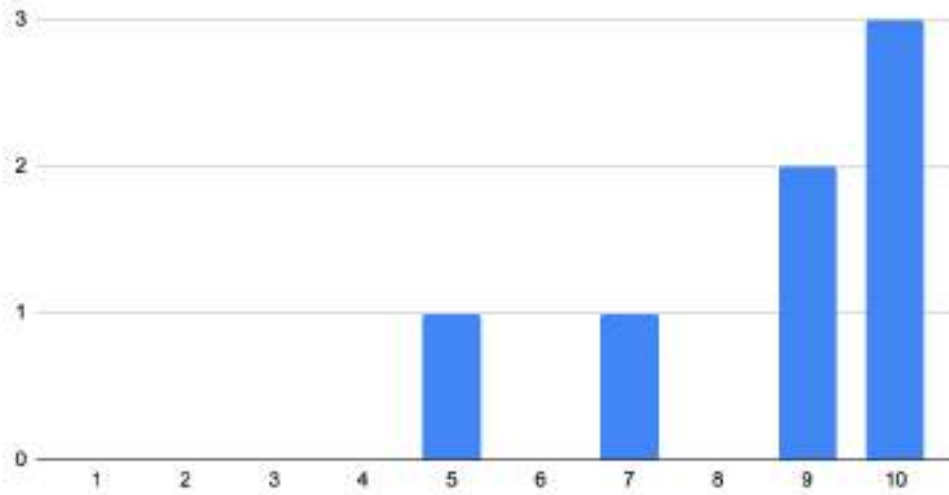
Q.3.4 Ad-hoc Game Experience



Q.3.5 Specific Ad-Hoc Questions

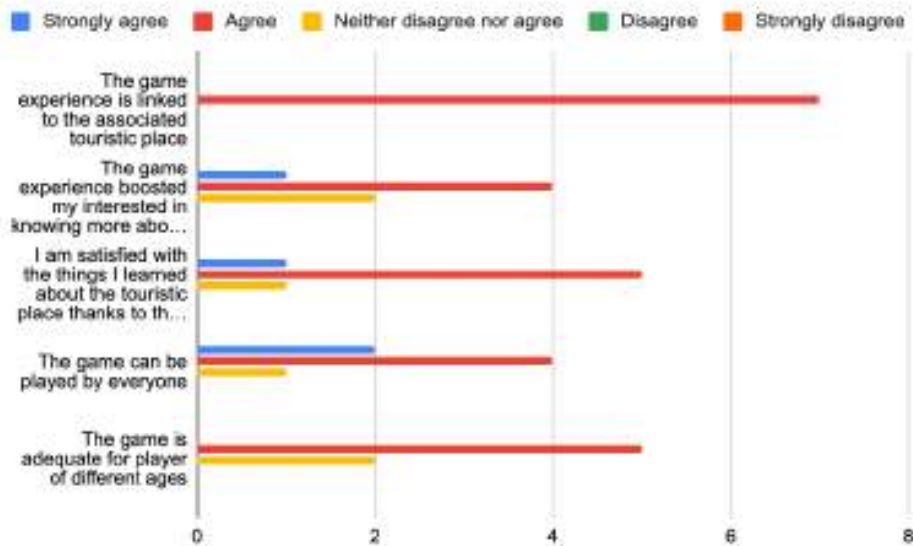
Q.3.6 NPS (Net Promoter Score)

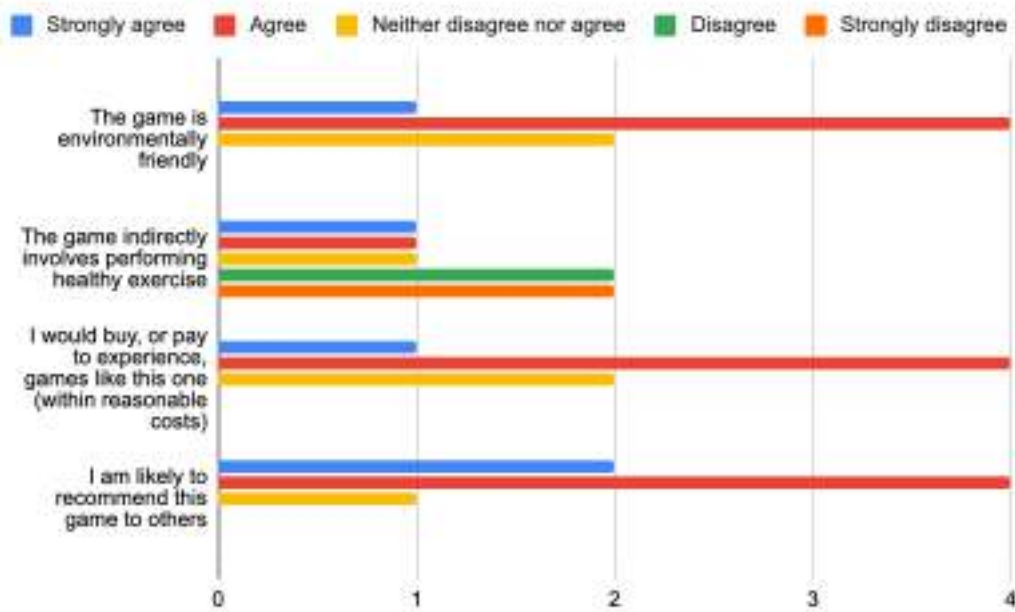
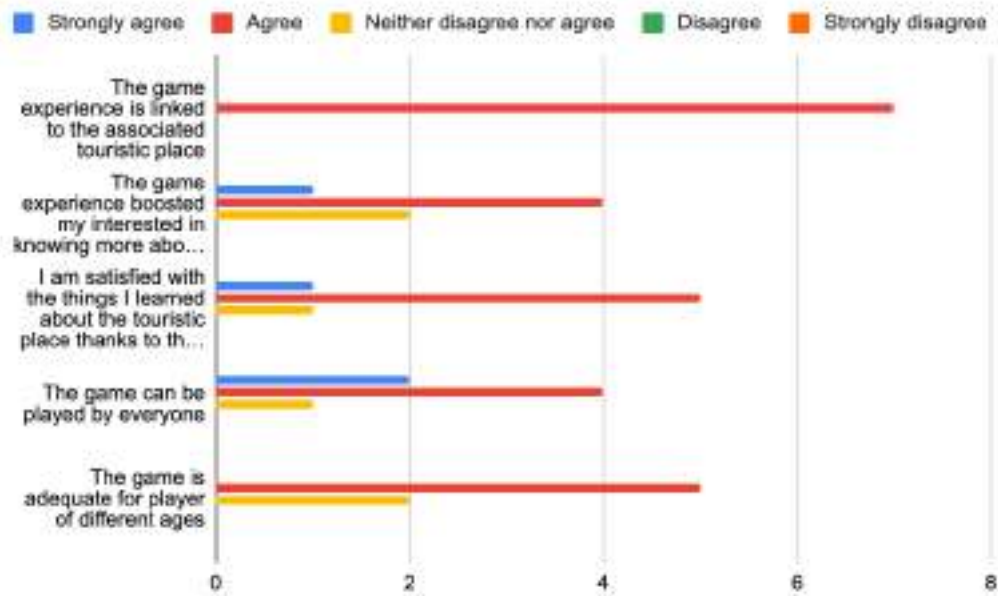
To what degree would you recommend this game to someone else



Q.3.7 GDD (Game Design Document) Evaluation

Q.3.8 Socio-Economic aspects







GAME 3 - TripnTap

Based on the charts presented below summarizing the responses of surveyed people who played the 'TripnTap' game, the following can be stated about this game:

STRENGTHS

- The game was well received
- Not too complex, well integrated, and people enjoy playing it
- The game is tightly linked to the tourist site
- Most people would like to play the game again
- The game is attractive

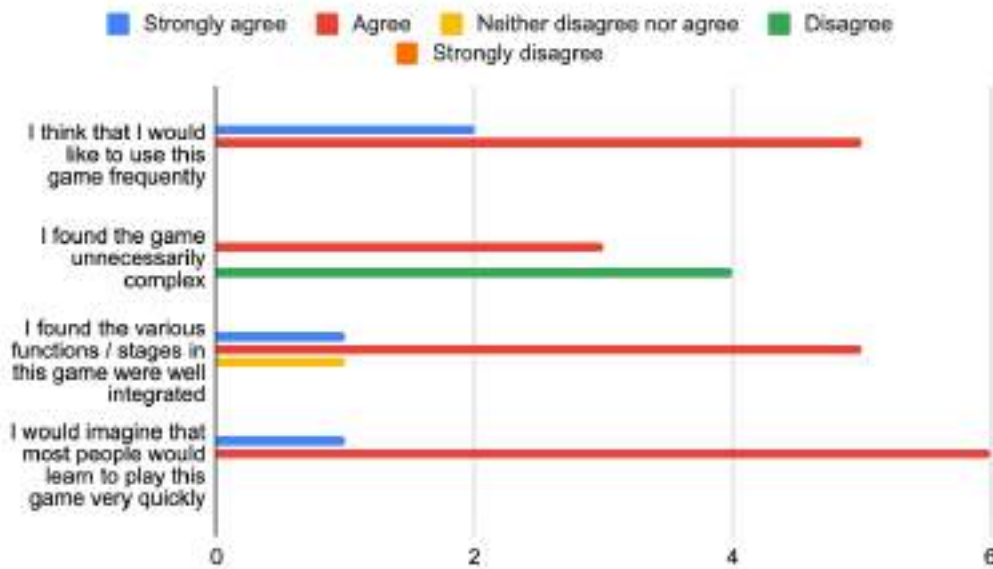
WEAKNESSES

- People were not successful in finishing the game
- The game could be more coherent
- Some felt discouraged by not being able to finish the game

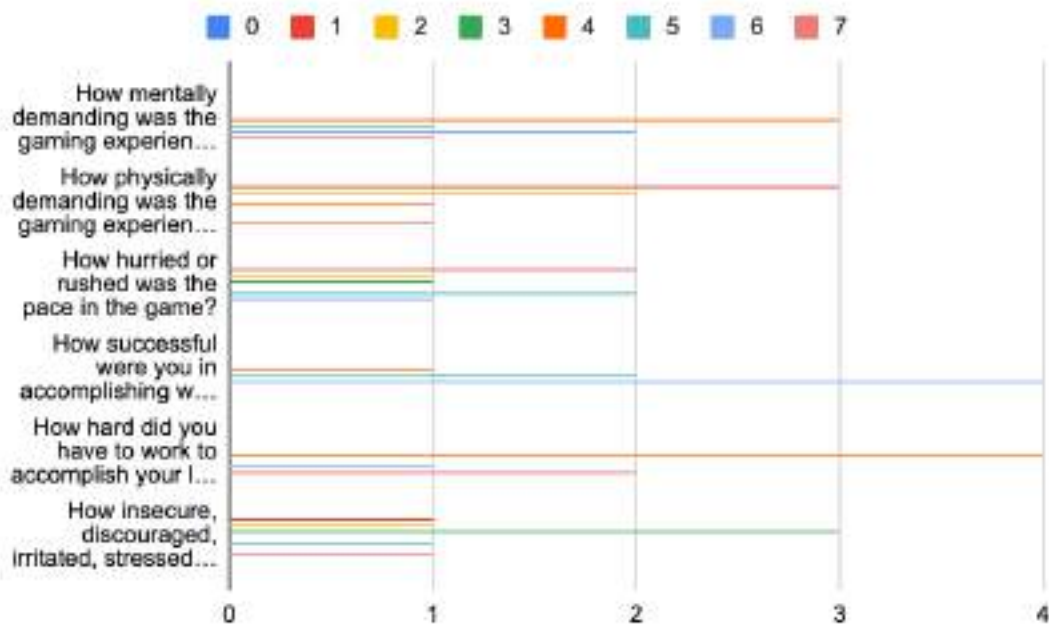
GAME CONCLUSION

The TripnTap game was well received by the players. It was found to be easy to learn and not too complex. It was also found to be attractive and provides nice surprises. However, it was also found to be not too coherent but tightly linked to the tourist site. Given that the game was inspired by Cluedo, it was natural for people to feel that it was not very original, and yet, most people felt they would like to play the game again and would recommend it to others.

Q.3.1 SUS (System Usability Scale)

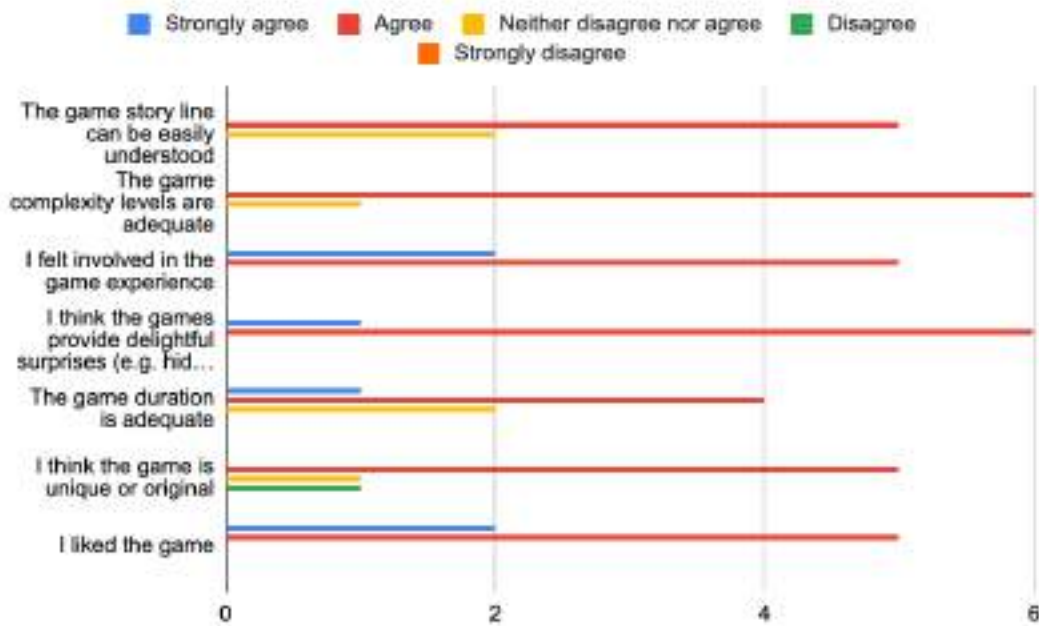
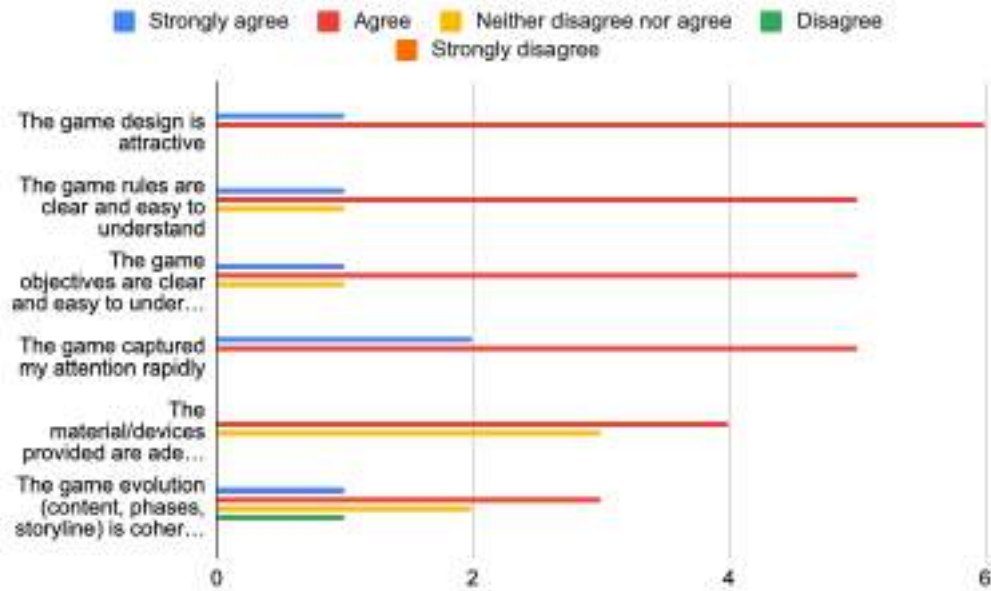


Q.3.2 NASA TLX (Task Load Index)



Q.3.3 IPQ (IGroup Presence Questionnaire) - Optional

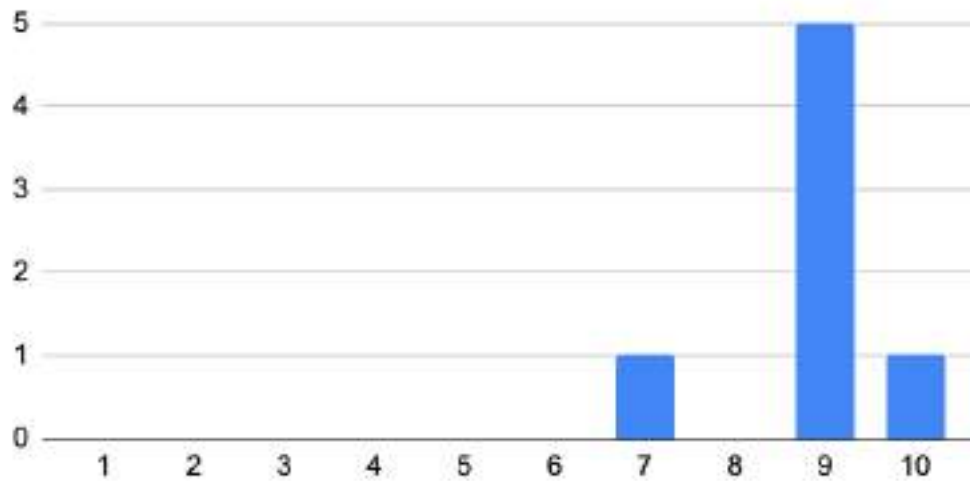
Q.3.4 Ad-hoc Game Experience



Q.3.5 Specific Ad-Hoc Questions

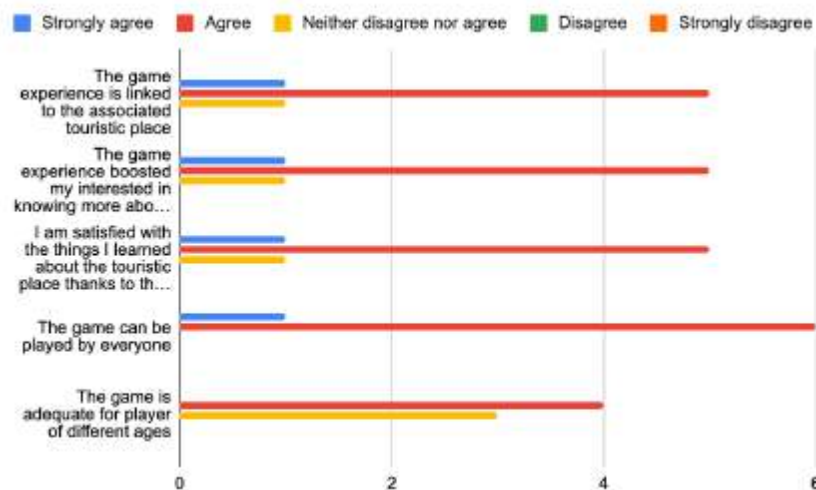
Q.3.6 NPS (Net Promoter Score)

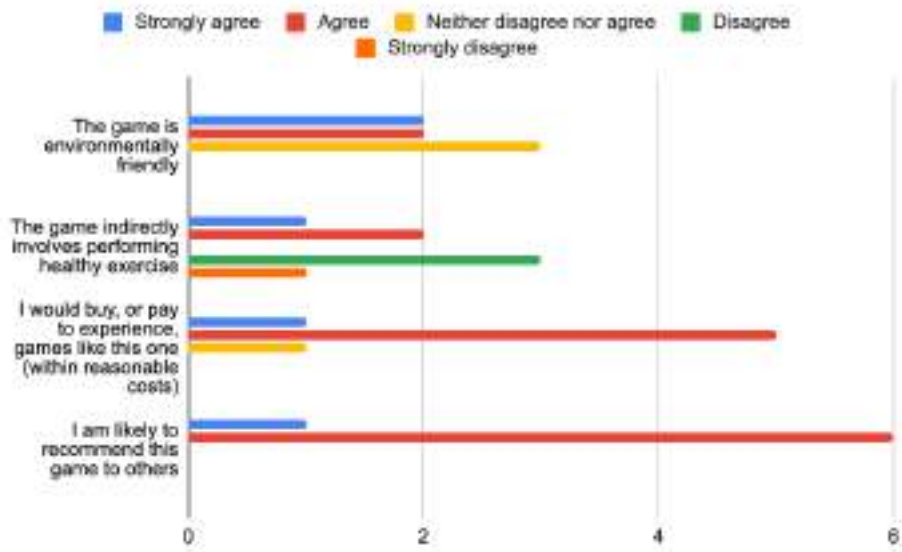
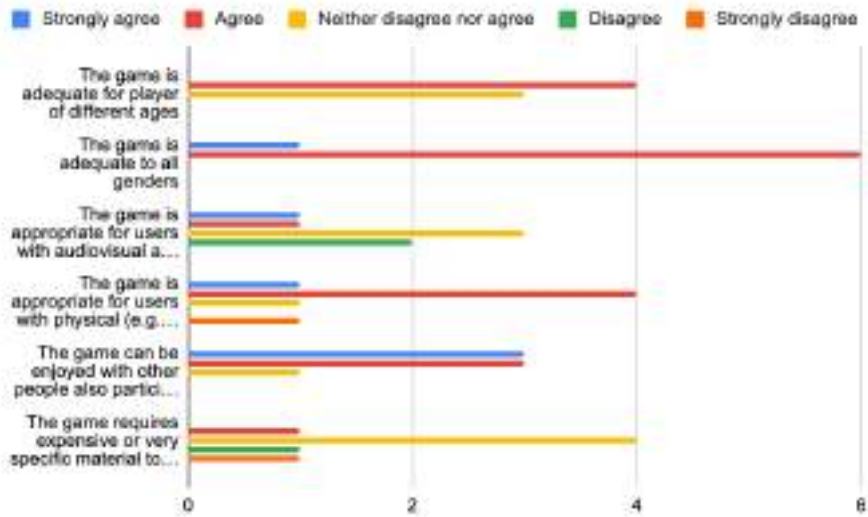
To what degree would you recommend this game to someone else



Q.3.7 GDD (Game Design Document) Evaluation

Q.3.8 Socio-Economic aspects







GAME 4 - Time Machine

Based on the charts presented below summarizing the responses of surveyed people who played the 'Time Machine' game, the following can be stated about this game:

STRENGTHS

- People would like to play it again
- Not too complex
- Well integrated
- People were well immersed in the VR world
- The game is attractive
- The game makes one learn more about the site

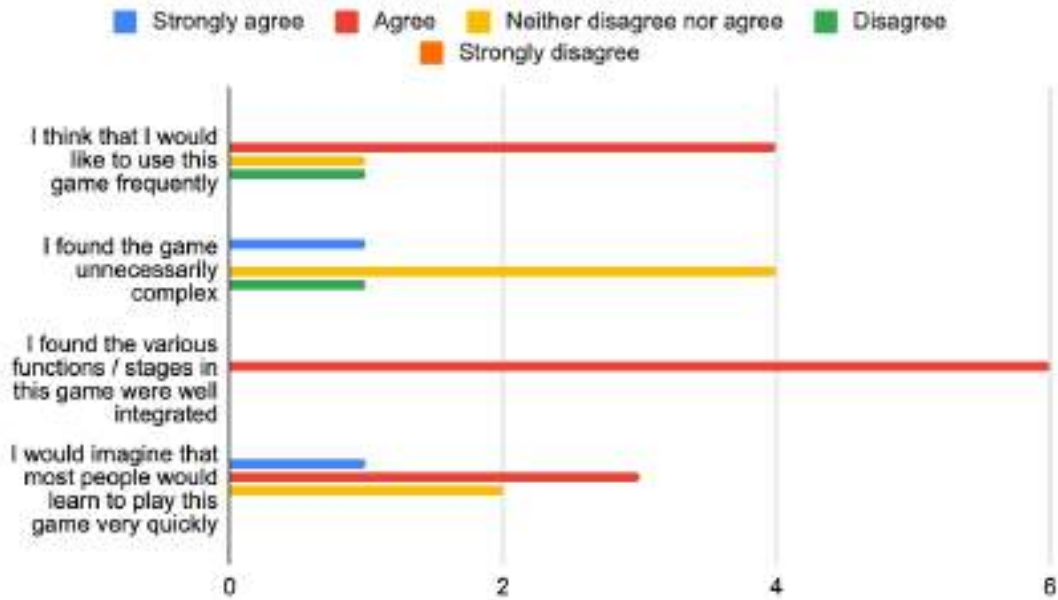
WEAKNESSES

- The game was found to be complex
- The game was rushed
- Most were not able to complete it
- The game requires expensive material

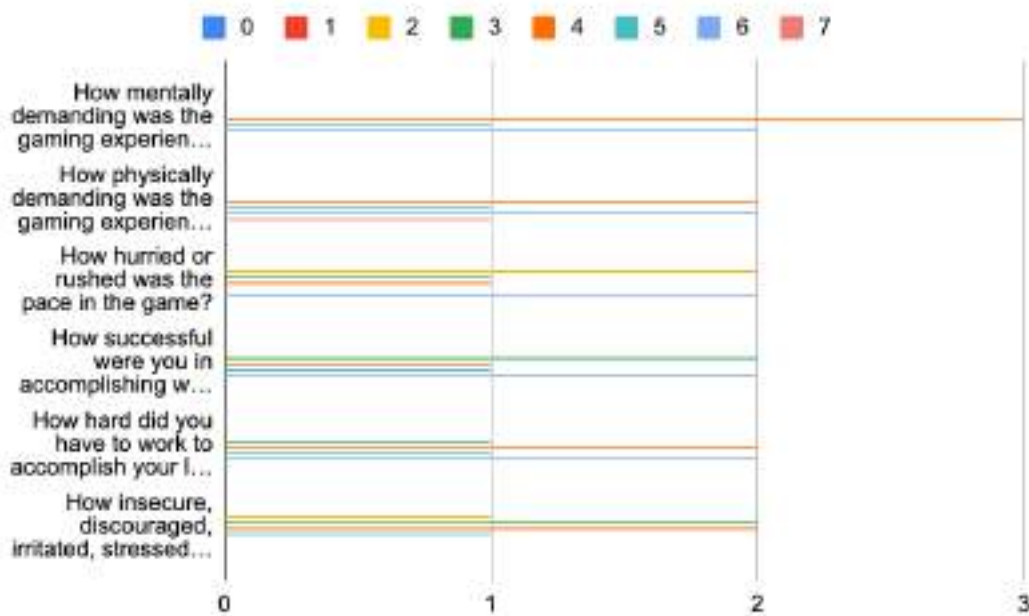
GAME CONCLUSION

The Time Machine game was well received with most people feeling they would like to frequently use the game. The game was found to be attractive, well integrated, and objectives are clear. Nevertheless, given that the game was a VR game, people found it complex (probably due to the controls), rushed, and most people were not able to complete it. The VR effect was successful with most people feeling themselves well immersed in the extended reality world. The game requires expensive material, but in fact we will be provided the goggles for visitors so no need to worry about that. The majority of visitors found the game tightly linked to the tourist site and that people would learn about the site by playing the game. Finally, most people felt the game was attractive and that they would want to play it again as well as recommend it to others to play.

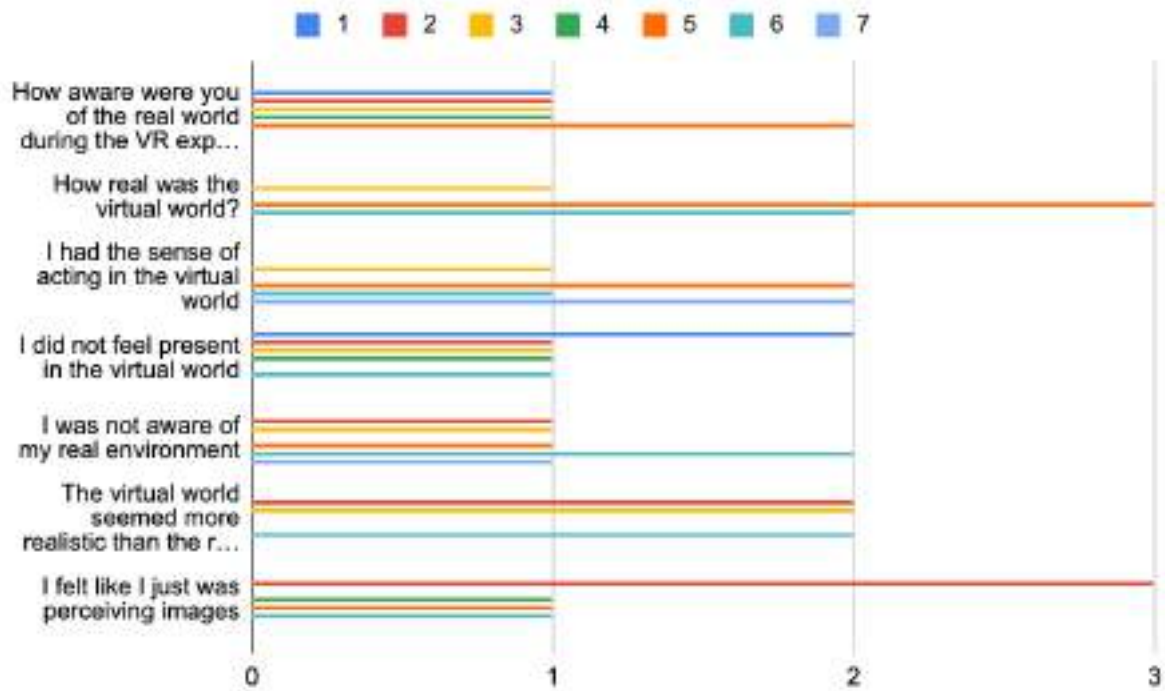
Q.3.1 SUS (System Usability Scale)



Q.3.2 NASA TLX (Task Load Index)



Q.3.3 IPQ (IGroup Presence Questionnaire) - Optional



Q.3.4 Ad-hoc Game Experience

