MyStoriesBAG: A Simplified Editor for Creating Interactive Stories and Games Inspired by Cultural Heritage

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Abstract. MyStoriesBag is a storytelling and game creation tool that aims to facilitate the sharing of cultural heritage by promoting a collaborative and participatory experience through user-generated content. The guided visual online editor allows users to actively create content and play the games they create. This emphasises the concept of sharing experiences, creating a sense of community, and strengthening the connection between users and their cultural heritage.

1   Introduction

From ancient Greece to today's serious games, play is seen as crucial element in the formation of the individuals. Platone emphasised that it is through play that one comes of age; Huizinga, in his 1938 book "Homo Ludens", argues that human beings play not only when they have time or nothing to do, but all the time (Pinotti, 2022). Even today, the game is the engine of civilisation, and the real subject of the game is not the players, but the game itself: the player "who faces" the challenge and tries is himself being tested. To play is to make a voluntary attempt to overcome unnecessary obstacles. (Suits, 2014). The game is free and voluntary, governed by pre-established rules, takes place outside everyday life, within precise space-time boundaries, and absorbs us entirely (Tekinbas & Zimmerman, 2003). The obstacles encountered are defined by rules, and there are precise mechanics that define the actions that can be performed, helping to create motivation, and triggering a cycle of challenge-satisfaction (Ciancia et al., 2024). Research in the field of human behaviour reveals that there are mechanisms behind the choices made in and out of games and highlights how the game experience can be a stimulus for change and motivation for people who play. The experience provided by the game remains memorable because it is personalised and lived in the first person,

enabling replay and replayability. The introduction of the game into the world of archives acts as an icebreaker to open up knowledge about the cultural heritage they contain, so the game becomes a translator of content: the archive has its own language, and the game translates it, becoming a technology for communication and learning (Bertolo & Mariani, 2014).

2   Related Works

Tangible and intangible cultural heritage has always been ideal for the creation of games and guided tours to involve and attract a greater number of users, since playing through objectives, rules, challenges, and interaction involves physical and mental stimulation (Viola, 2011). It is no coincidence that most major online museum sites have a section dedicated to games developed from their materials.

Among the game experiences carried out with archives and cultural heritage, to motivate, interest, raise awareness and inform, we can mention the State Archive of Agrigento (Italy) with the project 'Parchium, the archive tells', (*https://www.parchium.it/it/visitare-la-valle-dei-templi/scopri-il-parco-con-archi/*) which is a trivia game that unlocks puzzles as you guess the answers; the virtual museum of Ferrovie Nord (*https://museo.ferrovienord.it/it/*); the "TIPO – Industrial Tourism Prato", (*https://www.pratoturismo.it/it/cosa/tipo-turismo-industriale/*) a journey into the history, territory and contemporary excellence of the Prato textile district based on historical cartography; Father and Son (*http://www.fatherandsongame.com/*) a game developed by TuoMuseo in collaboration with the National Archaeological Museum of Naples, introduces a new form of storytelling: a new way of telling the story of the museum, its history and its collections, in which the player's choices during the experience influence the final outcome of the video game.

As regards web-based authoring tools and visual data storytelling frameworks we examined the approach of 'Story Maker', a tool designed to facilitate the creation of Interactive Digital Narratives (Vrettakis, et al., 2020) and 'Storygraphia', a system for editing an interactive story graph to create a graph-based narrative (Lombardo, 2022). The project of British Library for the creation of the Interactive Narrative collection (Clark et al., 2020) explored the use of different tools to collect and preserve digital outputs. The framework developed by Zhang et al. (2022) helps to organize the different components of a visual data storytelling content to communicate information to general non-professional viewers.

In this paper we present the design and initial implementation of a tool to facilitate and guide in the creation of games or storytelling experiences for people who are familiar with the content of a particular cultural heritage but have little or no knowledge about the technical realisation of games. The designed tool acts as a handbook for collecting and organising the data needed to create the games and provides a pre-packaged set of information as output, useful to produce video games using an engine such as Unity platform.

3   MyStoriesBAG Editor Design

The creation of narrative and cultural games and content requires in-depth technical knowledge of programming systems for video games and storytelling. As shown by the platforms consulted, there is a need for close collaboration between experts in the cultural sector for which a game or story is to be created and companies specialising in the creation of video games and gamification. The aim of our study is precisely to fill this gap by defining a tool aimed at professionals in the various cultural sectors, museum workers, teachers, and curators of archives, which can help them to define games and disseminate their materials and knowledge. The main goal is to facilitate and enable the sharing of cultural heritage and to promote a community and participatory experience through user-generated content (UGC). User-Generated Content (UGC) is the possibility, in a game, to create one's own levels/maps/experiences and share them with others.

The purpose of the designed platform, MyStoriesBAG Editor Tool: *Tell a Story, Build A Game*, is to facilitate and guide the collection of useful materials for the creation of games and storytelling paths, organising and structuring them to achieve the production of a complete package of information that allows, in simple steps, the creation of the desired video game.

MyStoriesBag is a tool designed in the context of the "Cleverness" project, which aims to deploy cognitive technologies and educational tools for social support in order to create services dedicated to the elderly and associations that support them, promoting active ageing and more active social participation, also exploring alternative forms such as serious games. The target users of the project are therefore the elderly and the type of service addressed is the creation of simple games and storytelling paths in the field of tangible and intangible cultural heritage.

The tool designed is a guided and interactive online editor. It enables operators and users to actively create content for the creation of games and then play with them. As this project is centered on the sharing of experiences, the development of an editor that allows for the creation of new experiences promotes a sense of community and strengthens the connection between people and their cultural heritage.

MyStoriesBag focuses on simplicity, clearness, and visual comprehension, providing guidance and automation in various aspects such as game structure, database management, exporting, loading and navigating content. This is facilitated by the availability of game templates and an intuitive multi-user online visual dashboard. It also solves the problem of finding high quality graphical material for characters and stages.

The design and construction phases of the MyStoriesBAG platform include:
- the analysis of the different types of games suitable for the target users identified by the project, and how they work, as well as the graphic materials involved;
- the identification of the different types of tangible and intangible cultural heritage suitable for becoming a playground and in line with the type of target users;
- the study of the data structure needed to collect and organise the necessary information;
- the definition of a simple, interactive, and intuitive tool for the actual cataloguing of the materials that make up the games;

- the creation of a communication template with the Unity engine that realises the final game.

Considering the target audience of the project, we decided to use 2D Scrolling and Point and Click Games mode (*https://en.wikipedia.org/wiki/Side-scrolling_video_game*), in which a character moves around an environment where there are points of interest to visit and from which he learns the necessary information to answer any quizzes or challenges, requiring players' ability of analysis and reasoning (Zhang S. , 2023). The games created should be easy to use and run on any computer and smart TV with a browser, without the need for installation, and require interaction with simple movements of a remote control.

3.1   The Organization of the Data

From the analysis and evaluation of different games and guided tours, a metadata set has been developed and tested to collect the necessary and sufficient information to produce different types of games. In our case, the application environment is cultural heritage, and the game is designed as an information and dissemination tool for cultural content, both tangible and intangible, some of which are more suitable for storytelling, while others allow the setting of quizzes or challenges.
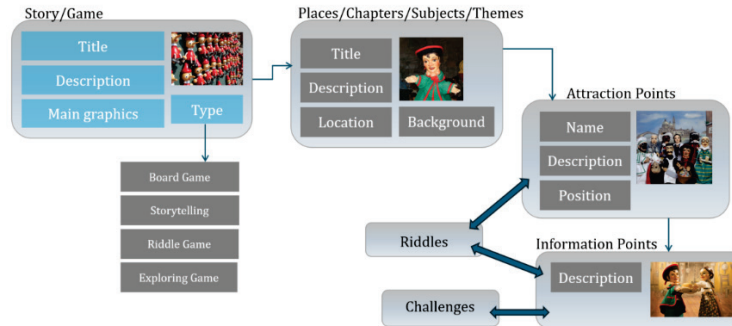
The types of games for which MyStoriesBAG is designed are as follows:
- *Board game*: a map with several numbered squares, reached by rolling a die; at each square a riddle must be answered; if the answer is correct, the player scores points and can stay in the place reached, otherwise they must return to their previous position.
- *Exploring game*: itinerary in stages where the player explores the proposed topics through the wheel of senses connected to each sensitive point and must fulfil a "find the objects" quest proposed at the beginning of the game.
- *Riddle path*: the player travels through the suggested subjects and learns new content; each section has quizzes to be answered correctly in order to gain points and move on.
- *Storytelling*: interactive tour with information points and hands-on multimedia materials for a playful approach to themes, stories and materials.

The entities which comprise the data structure are (Fig. 1):

Story/Game. For each type of story or game, it is necessary to provide some basic information, such as the name and the description of the particular heritage in question. In order to facilitate the definition of the materials, the system provides a set of pre-installed basic graphics for the selection of the main map, the character that moves in the game (avatar) and the means of transport.

Places/Chapters/Subjects/Themes. For each game, several locations can be specified, depending on the topic of the game itself. Locations are defined by the title, description, location data, location scenery, which can be chosen from those proposed by the system, and the cover page, which is intended be uploaded by the operator.

Fig. 1. The organization of a game/story.

Attraction Points. For each location, several points of interest can be defined for exploration. The player can learn new knowledge and enjoy audio/video related to the exploration. Each point is defined by its name, description, location data and a cover page uploaded by the operator.

Information Points. Each attraction point is linked to several information points where different types of information and multimedia material can be defined. In the case of Storytelling and Riddle Path, the points can be up to 6, numbered progressively and useful to solve riddles, while in the case of Exploration, these information points are linked to a wheel of the senses (hearing, sight, smell, taste, touch) and are suitable for carrying out specific actions through the avatar to face the challenges proposed. In the case of the board game, however, these points are not necessary.

Challenges and Riddles. Each attraction can be completed with challenges or puzzles. In the case of Storytelling they are not required, in the other cases multiple questions can be added. For the Riddle Path, these will be multi-answer riddles that give a score for each correct answer. For exploration games, they will be challenges to be solved by wandering around the various points of interest, e.g. objects to be found or characters to be recognised and the gamer will earn points for correct completion. For board games, each riddle defined becomes a stage of the circuit game and is directly linked to the point of interest, which is used as help point for the answers, to be shown on request.

3.2   The Editor Tool

The MyStoriesBAG dashboard allows the creation of new games/stories and the checking of the materials that have been entered to proceed with the creation of the output "package" that will communicate with the Unity engine. In this way, each game published by MyStoriesBAG becomes a "cassette", a "card" on which the materials needed to create the actual two-dimensional game are stored, ready to feed the Unity engine and automatically generate the game (Artese et al., 2023).

The platform is multi-user and allows multiple users to create their own games. They can keep them private or make them public by sharing them with others. By connecting to the system, it is possible to access the management of your own games or stories, or continue to create new ones. Fig. 2 shows a part of the input form that guides the step-by-step collection and organisation of materials in a simple and intuitive manner.

Fig. 2. A part of the form editor of MyStoriesBAG.

Attraction points can be described and illustrated with images, and up to six information points can be added to each of them to provide more details. Finally, several questions or riddles can be specified, also giving the link with the proper information point related to the question. For materials related to graphic backgrounds, characters and means of locomotion, the system provides pre-loaded objects (Fig. 3) shared by the editor and the Unity engine, to simplify the use of basic graphics.
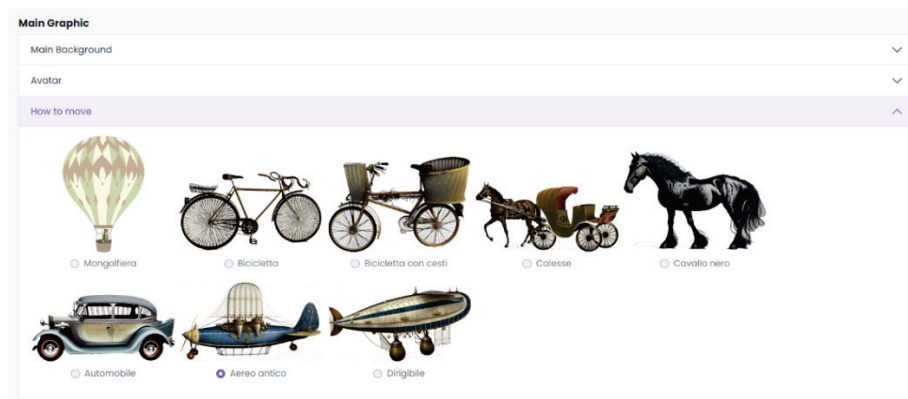

Fig. 3. The pre-loaded graphics provided by the system.

In the case of the Riddle Path in Figure 2, each quiz has a link to a pre-defined information point to which the game can refer in the event of a request for help, whereas in the case of the Exploration Game, each defined challenge has a link to the right point on the sense wheel to define the correct answer. If the challenge is "Who are the Balari?" it is only when the player reaches the 'sight' point on the wheel of senses of the right attraction point (The Balari) of the right carnival (Bagolino) that he will win the challenge. All in the allowed number of moves.
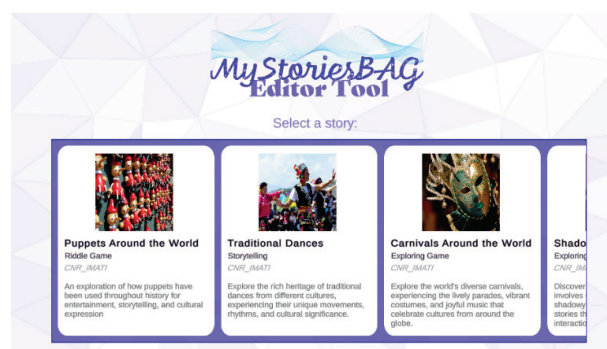

Fig. 4. The game selection screen.

A summary panel allows selection of the games produced (Fig. 4). The selected game will be displayed with the graphics selected for the world base and any places/chapters/subjects created, together with the avatar selected and the means of transport selected (Fig. 5). Players can move to any location and get a preview of the story to decide which location they want to play in.

Each location presents different points of interest with information and multimedia, between which the player moves and learns about the heritage presented (Fig. 6).

Fig. 5. The map of "Puppets around the world" game with places/chapters defined.

Fig. 6. An attraction point with information and multimedia.

To earn points, players must answer questions. In case of Riddle path, they have to visit the puzzle section and solve riddles, in case of Exploring game the challenge is displayed at the beginning of the game and the player has to find the right point where the solution is. (Fig. 7).
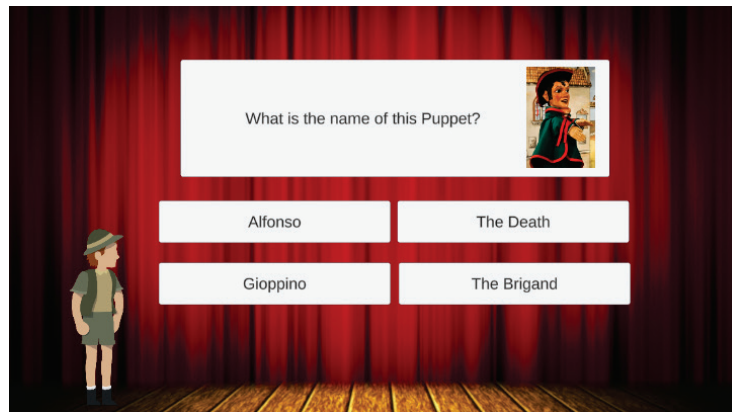

Fig. 7. The riddle question with multiple answers.

Players can go back and forth with the proposed materials, ensuring the replayability and revenge characteristics that are typical of the game.

4 Conclusions

The game is seen as a language to translate content and as a vehicle to disseminate cultural heritage through immersive storytelling. In this way it becomes engaging, and the player becomes an 'active' participant. The involvement achieved through the tools of the game, focused on the personalised experience, becomes a way to generate positive emotions, also through the rewarding aspects that allow people to feel satisfied and involved in what they are doing. (Viola & Cassone, 2017). MyStoriesBag is a tool to facilitate the creation of storytelling and games, designed and addressed to those involved in cultural heritage management, teachers, those working in the entertainment sector, and those working in the third age sector. It allows the creation of content in a guided manner and produces the necessary material to interface with the Unity platform, specialised in game creation, leading to the creation of the actual video game.

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