

CHRONICLES OF CAMUNIA

An Interactive Application for the Archeopark (Boario Terme, BS)

All things begin and end as stories – Vikings

As our faith in traditional ideologies diminishes, we turn to the source we still believe in: the art of story. – McKee

[...] l'objet de l'histoire est par nature l'homme. Disons mieux: les hommes. – Bloch

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Context of our project

The **Archeopark**¹ first opened its doors in 1999 in Darfo Boario Terme (Valle Camonica, in the province of Brescia). The project was born from the synergy of Dr. Ausilio Prili and the entrepreneur Walter Venturi. It was an **innovative** museology project offering an interactive insight into the reconstruction of the material and spiritual life of the man in prehistory and protohistory, based on the scientifical reconstruction of the archaeological site.

We will develop, referring to this institution, the **videogame** *Chronicles of Camunia* with the objective of enhancing the educational possibilities of this institution. This project will be discussed in this Design Brief.

As a starting point, we inquired about any available **Cultural Heritage** (CH) **assets** that we could use:

- Images (2D and 3D) of both the Archeopark and prehistoric objects.
- 3D models of stilt houses and caves.
- Footage of laboratories².
- Scientific literature on prehistoric archaeological sites in Northern Italy, especially focusing on rock carvings from Valle Camonica.

We decided to focus on these objects, especially on the relevant literature, to **accurately represent** and contextualise our **story**: this was especially crucial for videogame layouts and styles, which will require a thorough analysis of the material available. The artefacts and sites showed that our ancestors represented their tools, like the plough, as well as scenes of hunting and crafting of weapons and vases. There were prayers involving dancing for the sun-God or *Cerunnus* (deer god that was introduced by Celtic populations) but also chants for the dead (Priuli, 1977). In general, these carvings, as expression of past humans, needed to be kept in mind throughout our project; this is not an easy task and requires a wide application of subjects, from linguistics to neurosciences (Sansoni, 2012; Brusa-Zappellini, 2012). The chapters and maps will follow closely the historical evolution of men and allow the user to see the world through historical lenses, offering a peculiar perspective on daily life and on the development of human culture.

An application of these principles will be in the possibility for the **user** to **contribute** to the artworks inside the caves by introducing a laboratory and creating an interaction with other users for that but also by using elements of the carvings to create features of the distinct levels. As an example, we could use the labyrinth, a common figure represented especially in Valcamonica with a series of important traits throughout cultures (Gavaldo, 2012).

We will use these assets to create a Role-Playing Videogame (RPG). A detailed overview of the technical aspects and overall layout is in the following paragraphs.

Our application aims at giving to potential users studying prehistory access to Archeopark's laboratories without the constraints of the current epidemic situation. We will do that by removing physical distance from the equation: any child interested in such topic will be able to access the application on their own or with their friends. Thus, there are no geographical constraints to our CH asset, which is going to be available for download from anywhere in the world and must be used indoor (e.g., at home).

The project targets the actual **audience** of the **park** (mainly students under 13) who, for distinct reasons (distance, emergencies...), cannot visit it. Students are a sensible audience, and we thought that gamification of this part of history could be useful to help them connect to this time. Thus, our proposal is to make the videogame available on **PlayStation 4** since, considering our target, it is a widely used console, easy to use

¹ Archeopark https://www.archeopark.net/ Last accessed 04/21/2021

² As an example: https://www.youtube.com/watch?v=5Pl6ohwtfYg&ab channel=ArcheoparkRiviverelaPreistoria and https://www.youtube.com/watch?v=Tc2diJ48YJg&ab channel=maestraflu last accessed 7/06/2021

for young people. Moreover, it allows for local and online multiplayer, a feature that can be exploited to enhance the in-game experience. The PlayStation 5 is also backwards compatible with the games of the PS4, helping us with compatibility issues for the maintenance of the game. Based on the audience, we modelled the personas used in the UX design discussion below.

Concept

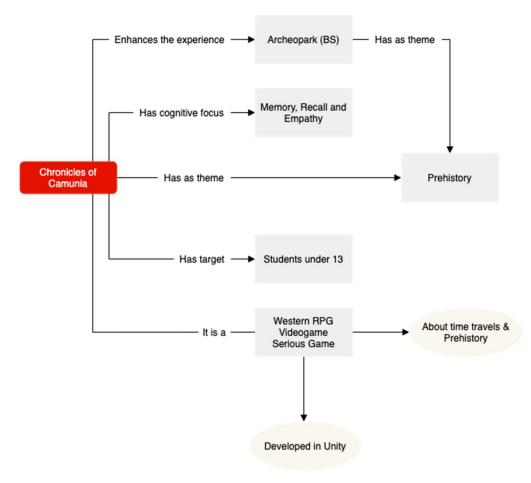


Diagram 1. Conceptual map

Museological approach

On the museological side, we can define our application as a **virtual museum** that enhances **education** (category B in the taxonomy defined in (Caraceni, 2014); see Table 1. On Table 2, the adaptation of our project to the taxonomy), through a **learn-by-doing approach**.

Need	Education
Interaction	Open
Space	Closed
Content	Selected objects
Virtual/Real	Virtual on real
Contributions	Allowed

Need	Education
Example	Videogame that contains the experiences of the archeopark
Technology	Videogame with reproductions of caves and assets of the park
Content	Digital images, audio, 3D models, reproductions of the site
Virtual/Real	Virtual on real
Experience	Devoted to learning, enhanching students' experiences

Table 1 (left) from (Caraceni 2014)

Table 2 (right), adapted from (Caraceni 2014)

The **laboratorial activities** that our museum proposes to its visitors are here masked as **tasks** during the main history, such as producing or handling prehistorical tools used by Camunians.

All 3D **models** of the archaeological finds must be **historically accurate** for what concerns structure, materials, and usage. They will also be displayed by the user in their **stilt house** that, under a museological point of view, acts as a **surrogate** of the real **museum**: a space for collecting and displaying CH items discovered during the gaming experience.

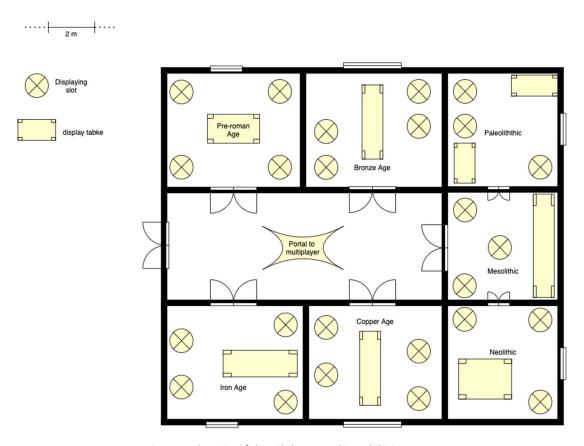


Figure 1. Blueprint of the stilt-house and its exhibition rooms

Experience design

Chronicles of Camunia consists in the direct translation of the content of the park into an interactive and educational experience, based on a learn-by-doing approach.

The experience is based on the laboratories available at Archeopark redesigned into tasks that the player must fulfil to make progresses in the videogame. We will make them highly interactive and contextualized into a **story** with a strong and **entertaining** narration (that is the main difference between the physical experience in Darfo Boario Terme and our project. More on this later).

The translation of the Archeopark experience into a videogame will give the user the opportunity to have a broader interaction with the CH items populating the park that cannot be manipulated or directly created in real-life experience such as the stilt-house itself. This will be done also thanks to a **reconstruction** of the Archeopark **environment** that will be extended to allow further exploration of the Prehistorical ecosystem in Valle Camonica.

By using this kind of approach, we aim at reaching an **elevated** level of **immersivity**, using metaphors (such as entropy), so that the user can **empathise** with **prehistorical societies** and get to know them as their peer, since characters have emotions, needs and a personality (an in-depth discussion of learn by doing and of teaching history through story in this CH context can be found later).



Diagram 2. Experience design

Prehistory

The CH topic of our application is **Prehistory**.

The idea of man at a primitive stage can shed new light on what humanity and human society³ truly are. Many philosophers became increasingly interested in this topic, from Hobbes to Locke and Rousseau, who gathered on the discussion of what they called the "state of nature" of humanity and on the development of a social contract at the start of human society (Laskar, 2013).

Although the topic is key to understanding our standing in the **societal ecosystem**, what is often **lacking** is a strong **connection** to the subject matter, and this comes from a twofold condition:

1. The absence of a **story**, a "narrative," that goes beyond the stereotypical representation of humanity in prehistory as simple-minded and incapable of high intellectual work.

³ For a specific discussion about the evolution of the perception of Prehistory, see (Joglekar, 2014)

2. The absence of a **history** of prehistoric people themselves; not much is left from prehistoric times beyond small archeologic tokens which only hint at what the various communities were. (Stone, 1992)

These conditions, as well as the role of education as a vehicle of ideology (see the recent debate in US media about the perspective with which to teach history⁴), often make this era an **uninteresting** and **underappreciated** subject for most history programs worldwide, even if it could represent an opportunity for teachers and students to engage with provocative topics, e.g., to challenge gender stereotypes (See Serafini, 2019).

However, these difficulties we just outlined could in fact be turned into clear-cut benefits for the study of such a realm. Stone (2019) identifies the so-called "Magnificent Seven" reasons for teaching prehistory:

- 1. The evidence of prehistory can be presented in a form that does not oversimplify the subject to the extent of falsifying it;
- 2. While actual prehistoric evidence is by its very nature site-specific, the interpretation of such evidence is frequently wide-ranging and can focus on broad issues and generalized human needs;
- 3. The study of prehistory always provokes the discussion of change;
- 4. Interpretation of the evidence of prehistory is always reliant only on partial data;
- 5. The nature of prehistoric evidence facilitates cross-curricular work;
- 6. Visiting the physical remains of the prehistoric past should lead to the discussion of environmental and conservational matters reaching far beyond the physical preservation of prehistoric sites;
- 7. The History Working Group stressed that the study of the past should be an enjoyable exercise that children will want to continue in their adult life.

Overall, we could say that teaching and learning prehistory strongly encourages the application of critical thinking. Hands-on interactive sessions represent an excellent way to teach prehistory and experiment life in a different time and context (M. Basse, 2019). More on this below.

Cognitive focus: Memory and Recall

Our cognitive focus for the development of the project is **Memory** and **Recall** through **Empathy**.

A big problem in the way history is taught, at all levels, is the focus on lecturing. Rather than teaching history with a focus on the active creation of knowledge, the focus is mostly on the creation of content knowledge (Kelly, 2013). Focusing on just teaching facts that might not be understood is not an effective strategy and at the same time teachers are tasked with the act of bridging the past to the present in a way that does not alienate children. A good strategy especially with children is teaching **history through stories** (Bage, 1999); while this needs to be done in a historically conscious way, it speaks directly especially to children whose primary way to connect with distant worlds is through narratives. These, in fact, are **primary knowledge** rather than derivative. We hope that by playing our videogame and immersing themselves in the said context children will be able to develop an historical empathy that will reinforce their understanding and knowledge of the past (Yilmaz, 2007); we will do it by creating an immersive story and environment that, we believe,

⁴ This discussion started from the creation of the 1619 project

⁽https://www.nytimes.com/interactive/2019/08/14/magazine/1619-america-slavery.html, Last accessed 04/20/2021), an initiative endorsed by the New York Times to reframe American history from the perspective of the beginning of American slavery, and caught flame with the operates of the 1776 Commission, backed by then POTUS Donald Trump, that replied with a highly nationalist curriculum (https://trumpwhitehouse.archives.gov/briefings-statements/1776-commission-takes-historic-scholarly-step-restore-understanding-greatness-american-founding/, Last accessed 04/20/2021) that was widely mocked by historians. The Commission was disbanded by POTUS Biden few days after his inauguration.

will help them **make sense** of the **prehistorical past**. Another element of connection are hands on **laboratories**, which are a fundamental part of the Archeopark and thus of our application. The concrete requirements for the realisation of this focus are outlined in the relative section.

Goal and Requirements

Our goal is to enhance the **educational possibilities** within this CH context. We aim to channel the interest of kids towards Prehistory, exploiting innovative technologies which are appealing to our target, such as videogames, in synergy with a thorough scientifical research (working as a backbone to our application structure).

Specifically, we require the implementation of a **Serious Game** (SG): "The main feature of a SG is its objective of supporting the player to achieve **learning targets through** a **fun experience**" (Mortara, et al., 2014). SGs vary in terms of learning objectives, genre, and implementation; following the above cited paper, our project would be contextualised as:

- 1. **Learning Objective**: *Historical Reconstruction*: we want to create a game in which we try to adapt the game to history, rather than the other way around (as described in Pescarin, 2020, pp.55-59)
- 2. **Genre**: Western-style RPG Adventure: RPGs can represent a context in which players can express themselves, creating their own selves and immersing in a new world freely. While RPGs appear in a variety of forms⁵, we believe that in this case a Western style RPG, that places emphasis on the individual player's expression of itself and enactment of the laboratories. Finally, Adventure Videogames represent a good opportunity for the players to experience an historical context in an engaging way.
- 3. **Implementation**: *Standalone Application*: What we will develop is a standalone application that could be played at home or at school; and we would prefer it to be open source. For now, we will create a single player game, but we will also implement a multiplayer mode.

SGs have a big problem in that they tend to focus too much on the "Serious" side, without considering the psychological needs of the user; as a videogame, our application would need to be fun and engaging (Garcia-Fernandez & Medeiros, 2019). More discussion about these below.

UX Design

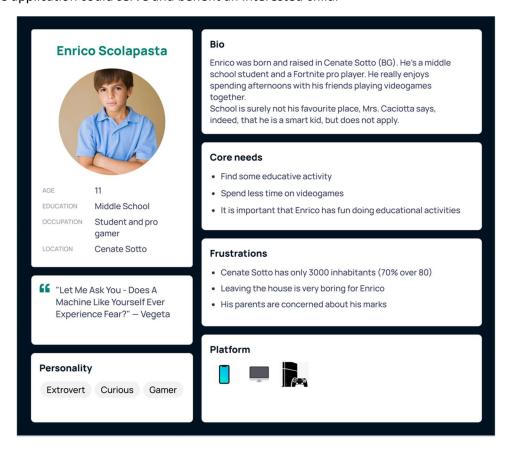
We followed a widely used UX design paradigm **Design Thinking**, to make sure that our expectations and vision for the application would translate into a real-world project. Design thinking seemed like a fitting choice, since its starting point is **empathy**, a crucial point for designing interfaces aimed at young students. After being in the target audience's shoes, we could understand the **goal**, simultaneously addressing our user's frustrations. In the **idea** stage we drafted the first concepts and through brainstorming, brainwriting and worst-possible idea approaches: coupled with intense research, this was certainly the most fruitful moment of the whole project.

We briefly examine the steps that brought our vision to the final stage:

1. **Informal interviews**. Since we knew from the beginning that the target of our application would be kids aged 8-13, we had the opportunity to talk to some children and gather our thoughts about what

⁵ Just to give a general overview of the (many) possible genres within the RPG world, see RPG Museum Genre https://rpgmuseum.fandom.com/wiki/Genre last accessed 04/22/2021

- could be expected and what was necessary for our videogame. This phase directly led us to the next point.
- 2. **Benchmarks**. We turned to the Web to gather insights into the gaming community and gaming industry: we were particularly interested in what could be considered a Minimum Viable Product to understand and outline the required steps, timeline, and roles. At this stage we were able to describe our vision more clearly, and we started using jam boards to design our interface.
- 3. **Personas**. This was an essential step in the design of our project. Crafting two Personas allowed us to really delve into the thinking and expectations of our target audience. Several considerations arose from this new perspective and triggered conversations between the project's team members about how the application could serve and benefit an interested child.



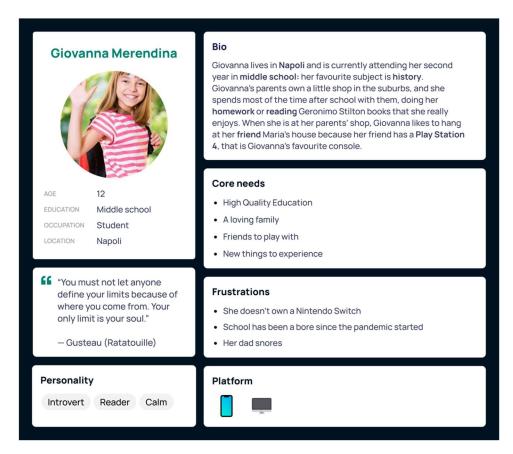


Figure 1 Our two personas. Created with Figma

4. **Journey map**. An essential step in any UX study is the customer journey map: after crafting two personas it was only fitting to try and imagine how these fictional users could interact and feel about the project we were designing. The insights that sparked from the journey map led us to key discoveries about necessary aspects for the game, such as team play, a real learning environment and the distribution media.

Persona: Enrico Scenario: Educational - Learn Prehistory in an efficient way - Have fun while learning - Make a social experience - Make a social experience - Make a social experience - Phase - Needs - N

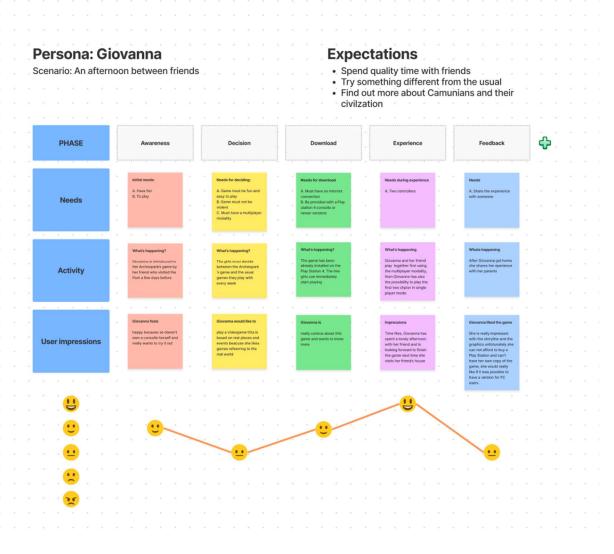


Figure 2 The journey of our personas

You can find the diagram of the persona here.

Game structure

By dividing the story into **four chapters** we avoid the video game being too long; in fact, we have envisioned that it should take around 4 hours to complete each level for a **total** of **16 gaming hours**. By doing this we are aware that our game duration is below average, i.e., 20 hours for completing the game the first time. But it is necessary to reduce costs and there will also be a **multiplayer modality** that has no limit if time to be played.

Here is the link to a presentation of the story and the levels of the game.

The levels

Each level represents one of the four main styles of the Camunian art:

• First style corresponds to the period covering the centuries from **Palaeolithic** to **late Neolithic**. The level will only focus on the latter.

- Second style reefers to Copper Age
- Third style is the one that is collocated from the **first Bronze** age in 18th century B.C, and has its ending point around the 13th century B.C.
- The fourth style, the last one, lasts until the **pre-roman age** when the Camunian civilization encounters its forfeiture.

By using this subdivision, it is possible to focus on those periods on which we have more information and, by using additional features (see next paragraph), the game will also provide useful information about the **Mesolithic**, and **Palaeolithic** periods.

The game ends when the main tasks of each level have been fulfilled and our main character can travel back home.

Additional Features: Multiplayer and Museum Mode

Besides the levels corresponding to main storyline, the game is also characterized by two different typologies **multiplayer modalities:**

- **On-line:** to enhance **social** features with **leader boards** and the possibility to **collaborate** with friends by adding them using their *player-ID* (provided when beginning a new game).
- Off-line: to allow an additional user to play the game as the supporter (I.e., the AI character) during tasks

Multiplayer can be accessed from the **stilt house** that is the home of our main character. The same house can also be decorated with **objects collected** in each level. Objects can be found dislocated in periods that are not their original ones; this happens due to the **time-fractures**, one of the crucial issues in the game, and those must be **solved** by the **user** by placing each **object** in the **right room** of the stilt house.

Each room is indeed dedicated to one of the 7 ages covered by Archeopark (from Palaeolithic to Pre-roman Age) (Anati, 1961) and by filling them with the right object the player acquires more points in the leader board they share with on-line friends. One can receive additional points by displaying rare object.

The **cave** is another **extra feature** we decided to add to keep **track** of the overall **progress** in the game (e.g., player statistics, a Minecraft-like recipe book for keeping track of which technologies have been unlocked by the player, tutorials archive, finally it also works as a station from which the player can travel from one level to the other when necessary if they need/want to play it differently)

User interaction is device controlled, through **joy pads** or **Oculus Touch Controllers**® and alternates interactive moments with narrative ones, consisting in brief videos introducing parts of the plot.

Exploiting Videogame Mechanics to reach the Cognitive Focus

Among the many possibilities for our project, we opted to create a **videogame**. This decision stems on one hand from our target **audience**; on the other, videogames represent a moment in which a user deeply **connects** with a subject. In fact, videogames are not just a hypnotic mechanism but a complex phenomenon in dialogue with the mind; moreover, the game is not just a *iocus*, just for **fun**, but it is also a *ludus*, making a user develop parallel abilities and, in our case, it represents an opportunity to **develop** the user's cognition and abilities and educates them to the complexity of reality (Triberti & Argenton, 2019). It is an occasion for learning by doing, as in Kolb's theory (Kolb, 2007). In fact, for the **creation** of **memory**, which is our cognitive focus, stimulating an active creation of memory is our objective.

We need to make our user **connect** with our topic. We will do that in multiple ways, like with through the story, as it was already pointed out. As an example, our application will need the user to create an **avatar**.

An avatar can be summed up as a **mediator** for a human in the context of a videogame; in fact, an avatar, its **personalisation**, and its acts are a behaviour first and a cultural artefact second (Triberti & Argenton, 2019). Within the spectrum of avatars, ours would be an **agent** (it would perform actions) and it would be an **extension** of the **user** rather than being an alter ego.

While designing a videogame as a SG, one needs to be aware of the **traps of edutainment**. It needs to be implemented in a context where a **traditional teaching**, aware of the nature of the game, **complements** what is learnt; the user needs to be actively involved and the level of entertainment functional to **educative aspects** must be maximised (Triberti & Argenton, 2019). Creating a **connection with** the **real world** is important to effectively transmit knowledge that can be used by a user, but it is also important not to be overly zealous with details as it might make the user lose track of the context and make the knowledge overly contextualised (Jaakkola & Veermans, 2019).

In summary, to reach our cognitive focus:

- 1. We will create a videogame that gives a significant learn-by-doing experience.
- 2. We will create a videogame that employs strategies for **meaningfulness** and to make users **connect** with the **world** and between them.
- 3. We will create a **Serious Game** that rests on the fine line of good **edutainment**, not too detailed and boring and with mechanics functional to the educative aspect.

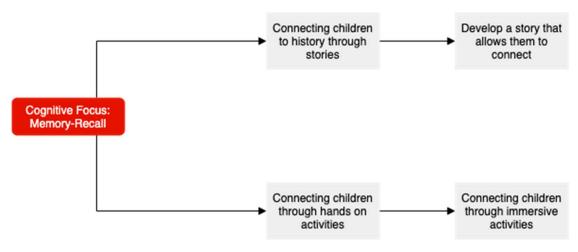


Diagram 3. Cognitive focus

Foreseen Workflow, Further Development and Maintenance

Here is the foreseen workflow:

- 1. Historical **research**: create the documentation for the work. Help from the institution is needed to create the laboratories.
 - a. Part of it was already made by us. After our study on the Camunian civilization, we were able to set the main structure of the game.
- 2. **Design** Documentation: define the User Experience.
- 3. Game modelling:
 - a. Game sketch.
 - b. Create the mechanics of the game.

- c. Create models and levels.
- 4. **Alpha** release (Prototype Creation). Get feedback.
- 5. **Beta** creation: completing the game. Get feedback.
- 6. Creating the **definitive version** (disc + downloadable image). Get feedback.
- 7. Communication and promotion strategy.
- 8. Maintenance

To complete the game, we will need both some **professionals** to help us and some **hardware** and **software**. On the professionals' part, we will need a **game designer** to complete the game with the laboratories and ideate the structure of the different chapters. Along with this person, we will need a **graphic designer** or 3D **modeler** to create the models of the caves and of the objects, a **developer** for implementing the multiplayer and a **project manager** for overviewing the project. The estimate length of the videogame creation process is of **9 months**.

A key factor to consider for the further development of data is collecting and analyzing data about users to develop the application efficiently; since for us data is not yet available, we would need to collect it and see what the needs of possible users are (Jaakkola & Veermans, 2019). In general, we will need a **marketing** or **communication specialist** to design a good strategy for popularizing the game. More discussion in the marketing section below.

On the **maintenance** side, we would like our application to be available not just for this generation of console, but we would like it to be adapted to the **future**. This means that we will leave some instructions that describe our game and how it has been thought by us (possibly following a notation like MANS) (Rinehart & Ippolito 2014). Maintenance will be a **cyclical process**, with periodical revisions and upgrades. An important aspect will also be to make the game available for future consoles, meaning that remastered versions will need to be implemented.

In general, we estimate the **aggregate cost** of the professionals and hardware for the project to be about **100.000** €.

Marketing, promo, and comms

After studying the playing field and defining what we expect from our product, it was time for us to understand how to successfully market and promote *Chronicles of Camunia*. We had to take into account that traditional considerations about communication in the **gaming industry** did not adhere perfectly to our product, since our target audience and the aim of the application are very specific. Our promotion strategy instead must take advantage of the application's strengths: it is profoundly linked to a somewhat popular **real-world business** which sells a unique **experience** mixed with **education**; on the other side the videogame itself can be its own virtual experience which enables **relationship-making** as well as education, thus widening the audience from the park's.

Starting from these considerations, our marketing plan was devised as a **dynamic schedule** allowing for some fine-tuning during its implementation. The main phases we foresee are:

1. Planning. This phase precedes the actual campaign, but it is important nonetheless. In the month before the start of the campaign a thorough plan should be set up, following the guidelines of this document and integrating any input from the communications manager. A fundamental aspect of the planning phase is the decision of what the Key Success Metrics are: what the communication strategy aims to do (e.g. new users per week / single users per day / number of active-regular users / increase in park visits).

- 2. Awareness. This is a crucial first step: attention should be brought to the Archeopark as well as our new Interactive Application. This phase should take advantage of the existing popularity of the park to attract attention to the new digital experience: the museum's shop is an ideal place to distribute the game as it is a forced stop for any visitors and kids love to look at gadgets on their way out. At the same time, the campaign's targets are at least three: parents, teachers, students. The adult section of the audience should be reached with a traditional media campaign through on-site installations (banners, pamphlets, depliants, signs in the park) about the new videogame experience. Concurrently, some resources could be spent in a mix of social media ads, ranging from TikTok, YouTube and Instagram, widely popular social network with our young target base.
- 3. **Initial feedback**. After a couple of months, some **data** should be gathered to assess the status of the campaign. This is the time to reflect on the established Key Success Metrics in order to assess the real **outcome** of the first phase. If the first phase is successful the next step can be taken, otherwise a re-planning phase is required.
- 4. **Push**. At this time the Archeopark's users more or less know about the videogame: this is the moment to push the boundaries and make the game a independent asset, running parallelly as the park. Gaming conventions, fairs, digital console store ads as well as a crafted mix of social media should **push the game** out of the perimeter of the archeopark. At this stage a new campaign should be targeted at elementary school teachers to make the game a truly educational experience, maybe bringing it into classrooms. This is the moment when any contributions from the EU or local authorities' culture funds can be very fruitful.
- 5. Additional feedback. At this stage the communications specialist can assess the validity of the steps taken. All inexpensive investments can be turned into long-term communication (on-site installations, pamphlets, distributing the game in the museum's shop); all other campaigns are to be re-evaluated or refreshed or cancelled based on their relative success.

Team roles:

Brembilla Davide – Documentation, Historical Research, Unity 3D movements

Davide has a bachelor's degree in Lettere from the Università degli Studi di Bergamo and is currently studying Digital Humanities and Digital Knowledge in Bologna. He has a passion for history and is curious about what technologies can bring to the table for enhancing the humanities, especially for teaching and for research. He has visited the Archeopark when he was 11.

Cagnola Federico – Blender modelling, UX Design, Marketing & Comms

Federico, who graduated in Communication Sciences for the Liberal Arts at the University of Milan, is currently attending the Digital Humanities and Digital Knowledge Master's degree in Bologna. Technology enthusiast and Conversational Designer he's mainly interested in web technologies and the relationship between man and machine.

Catizone Chiara – Historical Research, Characters and story creation, User Journey Map creation, 3D environment creation

Chiara comes from artistic studies, graduated in Drama, Art and Music Studies at the University of Bologna. She is currently attending in Bologna the Master course in Digital Humanities and Digital Knowledge and also has an educational background in graphic design, that is one of her main interests, along with videogames. She is a visual arts enthusiast spacing from ancient art to contemporary and digital art.

Supporting material - Demo

You can find the videos and other documentation of our application here:

2D demo - VIDEO

3D demo - VIDEO

Online Documentation - Twine

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