SPARKLE case

Digital Incubator for Museums

Who | Institutional Profile

Institution	The National Museum of Maps and Old Books
Location	Bucharest, Romania
Short Description	The Maps Museum is a small and active museum, with a unique collection of maps and graphic art dating from the 16th to the 20th century. The museum aims to be a relevant institution for the public, promoting research, interactivity, lifelong learning, creative engagement and inclusion. It is a place destined for learning experiences held in an experimental creative museum space.
Ownership	Public
Size	12 FTEs

Approach to Digital	***Input by Teodora Dumitrache and Ioana Marinescu*** The museum is no stranger to technology. Fortunately, it has a young team, curious enough and open to new ideas. Whether we are talking about digitising the museum's collection or the Augmented Reality inserts within our museum, we are constantly trying to find the proper means of teaching about maps, geography and history to our public. We know that it can be tricky at times, but we are not discouraged by it. We will never be, because we know the value that technology can bring.

What | Case

Project Title	Hands on the map! @ Maps Museum
Timeframe	November 2022 – September 2023

Concept & Approach	The approach in this scenario is to transform the Maps Museum into a learning tool that aligns with school curricula and supports teachers and parents in explaining concepts of various subjects to primary school pupils. Our manager identified a gap between the museum's collection and the content covered in school curricula, and she aims to bridge that gap through a new approach to museum education. The goal is to enhance the educational value of the Maps Museum and make it a valuable resource for teachers, parents and students. By incorporating concepts from Geography, History, Biology, Science, and other subjects, the museum aims to provide a comprehensive learning experience that complements classroom teachings. The ultimate objective is to help younger visitors better understand these subjects by offering interactive and engaging educational materials within the museum's exhibits and programs.

Context. Why did we do this?

- an extremely low rate of young museum visitors in Romania
- an almost non-existent connection between museums and schools
- a very low level of interactivity and digitalisation in Romanian museums

What did we do?

- An educational pilot project of digitalisation that aims to attract young museum visitors and diminish the gap between museums and schools.
- An educational application that would be used mainly in the museum, on smartphones or tablets, especially by young visitors of 10 to 14 years of age, during school trips, family visits or with friends, but not limited to them. All museum visitors interested in multimedia and technology are part of the target group, and also the school teachers, museum professionals, Maps Museum's staff etc.

How did we do it?

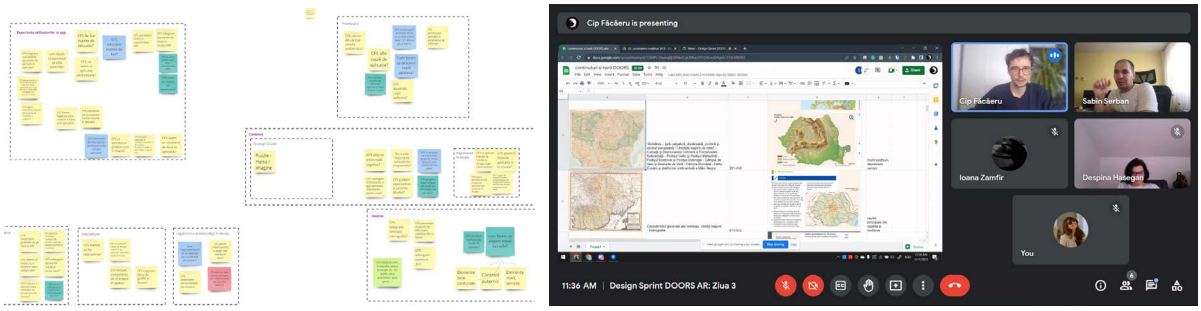
- Creating meaningful edutainment experiences related to school curricula, but outside of the conventional space of the class.
- In order to attain this result, an interdisciplinary team of museum specialists, school teachers and mobile augmented reality designers, creators and developers worked together.
- The app can stand as a base for RECAP and EVALUATION activities for teachers.

The school curricula:

- The Romanian school curricula for History, Geography, Biology, Natural Science and IT lists competencies (a set of attitudes, knowledge and information that children are supposed to achieve, acquire and master) that are enriched with new content each year. School curricula tackle topics such as:
  - exploring relevant sources in order to understand facts from the past and present;
  - localisation in time and space of various historical moments;
  - relating real space and territory to its cartographic representation;
  - understanding the space around us through orientation in space;
  - understanding map scales, orientation on maps, drawing maps of various spaces;
  - problem solving etc.

Chronological steps & where are we now?

- Teachers have been involved in the configuration of the concept since the beginning and will continue to accompany the whole process of app creation.
- We designed the app based on a sprint design with the developing team (defining the problem and its solutions, objectives, indicators, success metrics, imagining the user's journey, narrative drafts etc.).
- We selected the VIP maps and objects linked with the school curricula and we designed tasks around them.
- To frame the tasks of each object, we designed a story around them, along with a character called Nova.
- The next step was to write the script and implement everything we imagined.
- In May we had the first prototype of the app, where children pre-tested the app at key points of development. We carefully gathered and analysed the feedback from the participants.
- A debriefing meeting with the developing team was held focusing on improvements to the app and storytelling, based on the received feedback.
- We completed the storyline.



Zoom call and Miroboard activities, The National Museum of Maps and Old Books

Next steps include

- organising the casting and recording the narration voice that needs to be integrated in the app;
- the final tests with school children and teachers;
- implementing the communication strategy and organising the launching event;
- the final step: App launching with our audience within the museum.

Some of the tools we used during our meetings: Miro, Google Hangout, ZOOM etc.

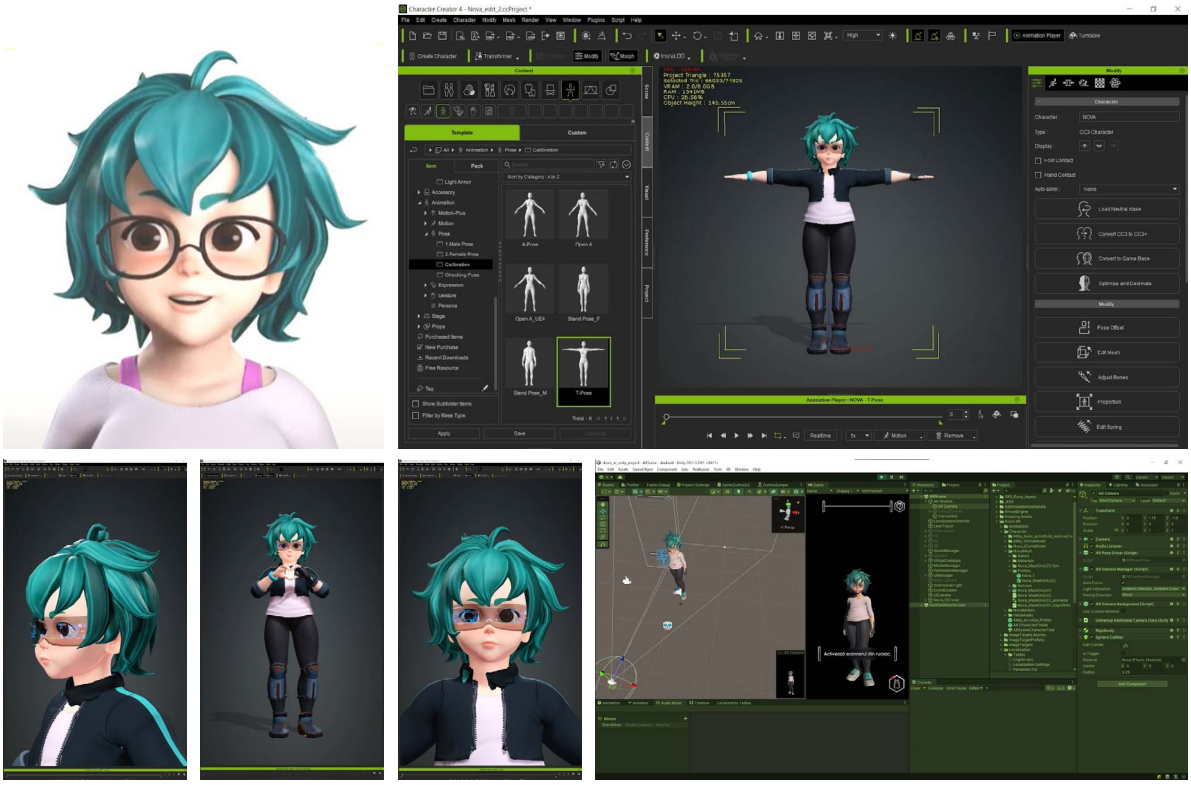
Testing the app with the target group, at The National Museum of Maps and Old Books

How about the character? Meet Nova!

Nova is a charismatic 13-year-old time traveller from the year 2103 who visits the present through advanced AR holographic technology.

With a passion and curiosity to discover the past, one of Nova's hobbies is to uncover stories and solve old mysteries.

TOV: enthusiastic, friendly, playful, in accordance with our main character.



Nova character, The National Museum of Maps and Old Books

Character traits

- Intelligent and determined: When Nova sets her mind on a goal, she will surely achieve it.
- Enthusiastic: Nova's passion for uncovering stories is infectious, and she strives to make her passion engaging and fun for museum visitors.
- Friendly: Nova is understanding and enjoys working in a team, easily forming bonds with visitors of all ages and backgrounds.
- Adventurous: Nova has a natural curiosity that prompts her to explore the museum and the historical events associated with the maps, creating an immersive experience for visitors.
- Resourceful: Equipped with her holographic gadgets and knowledge of our current present (her past), Nova can quickly adapt to situations and find creative solutions to challenges that arise during the tour.

Nova's mission is to inspire museum visitors and create an unforgettable AR experience.
It attracts many visitors, fostering an inclusive environment that encourages curiosity and exploration.

To give meaning to the tasks, we firstly had to think of a meta-narration, which means:

1. The story that justifies the presence of the main character.
2. The need for user involvement in the overall story.

This character is NOT a museum guide. She is a teammate, with whom the participant can carry out the tasks. The main focus is on these tasks - based on the knowledge learned from the subjects of grades 5-8, which are related to the objects in the museum.

The application does not have a traditional pathway. It can be started from any floor of the museum: there is an introduction of the user to the story, after which she/he/they can start solving the tasks with Nova's help.

So why is she here? The Meta-Narration.

Nova is contacting the user from the future because she needs his/her help. In her interdimensional exploration she got stuck in space and time due to a miscalculation, and the only portal that can be reactivated to continue the exploration is from the Map Museum in Bucharest.

She can't get there physically, but she can communicate through this AR app. Incidentally, with the user's help, she can holographically teleport and they can work together to decrypt the interdimensional portal. For this plan to work, the user must complete (with Nova's help) all the tasks in the app.

Benefits & Impact

Short-term impact (quantitative)

The metrics and analytics component included in the design of the app supplements our research and our reports on our target group, helping us improve our response to our audience's real needs.

Launching the app will have many benefits.

Outcomes - results

- a minimum of 5 meetings of the project team
- a minimum of 5 Facebook and Instagram posts about the project
- 1 announcement on the museum site
- 1 event for launching of the app
- an increase by 10% of children visiting the museum, comparing Aug - Sept 2023 with the same time frame a year earlier
- a minimum of 40 downloads of the app by the ending of the project
- a minimum of 50 children of 10 to 14 years old using the app
- a minimum of 4 teachers using the app
- a minimum of 4 different schools visiting the museum within the project by the end of Sept 2023

Outcomes - products

- 1 free multimedia AR app for smartphones and tablets, Android and iOS
- 10 tablets purchased for the use of the app inside the museum
- 50 stickers with the app
- 1 Fb & museum site visual for the project
- at least 2 press releases about the project

Increased visitor engagement

The digital application will attract more visitors to the museum, leading to higher footfall and increased visitor engagement. We expect an increase of 10% of the number of teenagers visiting the museum that download the app.

Increased usage of the application

In the initial stage we addressed the project for children and teenagers of 10 - 14 years of age, and also school teachers and parents. In 2022 the statistics show that 15% of our visitors are children, compared with 35% before the pandemic. In 2023 we already registered an increasing number of visitors, which also means a higher number of children visiting the Museum. Our communication strategy for the DOORS Project already planted the seeds for promoting the app and we will continue to promote the app.

The number of users accessing the digital application can be measured, providing insights into its popularity and adoption among museum visitors. In order to achieve our KPIs, we will give free museum visits for two weeks to the people downloading the app.

We expect

- at least 50% of the teenagers visiting the museum in the following 6 months will have used/downloaded the app;
- an increased use of application by 25% in the next 12 months;

- an increased number of young visitors by 20% in the next 12 months;
- a minimum of 4 different schools visiting the museum within the project by the end of Sept 2023

Long-term impacts (quantitative and qualitative)

- Digital confidence

By actively engaging in the development of the digital application, the team members will have the opportunity to enhance their digital confidence and knowledge. They will be more proficient in understanding the process of designing apps, of using multimedia tools, and other digital technologies relevant to the project. As their technical knowledge grows, so does their digital confidence.

- Improved educational outcomes

Over time, the use of the digital application may contribute to improved educational outcomes among students and visitors. It provides a valuable learning resource that reinforces concepts covered in school curricula, leading to better understanding and retention of knowledge.

- Enhanced reputation and visibility

The development of an innovative digital application demonstrates the museum's commitment to embracing technology and providing cutting-edge experiences. This can enhance the organisation's reputation, attract media attention, and increase its visibility within the cultural and educational sectors.

- Research and development insights

The project may provide valuable insights into visitor preferences, engagement patterns and the effectiveness of digital tools in enhancing the museum experience. These insights can inform future research and development initiatives, leading to continuous improvement in educational offerings. The insights will also help us develop new projects in the area of education and technology. Increased usage of the application: The number of users accessing the digital application can be measured, providing insights into its popularity and adoption among museum visitors. We will give free museum visits for two weeks to those who download the app.

- Increased collaborations and partnerships

The success of the digital application project may attract partnerships and collaborations with other institutions, organisations or technology providers. This can open up new opportunities for knowledge sharing, funding and joint projects, further enhancing the organisation's impact and influence.

- Enhanced educational experience

The digital application will likely contribute to a more immersive and educational experience for visitors, allowing them to learn and understand maps in a dynamic and interactive manner. They will make a better link between school curricula and the museum's collection.

Limits & Drawbacks

While the development of the digital application for the museum has its benefits, it is essential to acknowledge the limits and drawbacks that we encountered during the project. Here are some internal and external limitations and challenges that the team has faced:

Internal

- Resource constraints

Developing a digital application requires adequate resources, including skilled personnel, time, budget and technological infrastructure. Despite having digital competences, creating a digital app can still be a challenging endeavour.
In the beginning, not all of us could clearly see the outcomes of the final product. Sometimes we imagined things that could not be translated into AR technology and had to adjust and think about new solutions / ideas.

- Skill gaps

Even though we are a small team, members may occasionally have encountered skill gaps in specific areas, such as storytelling (game narration), challenges in the collaboration between museum specialists and developer teams. This was due to the difference in language and terminology used by each group, and digital content creation. Also the different backgrounds and experiences that each of us had. These skill gaps can hinder the progress of the project and require additional training or collaboration with external experts. All the mentoring

sessions within this project helped us discover what we are good at, but also what we must improve. This also gave us a clearer vision of the direction in which we wanted to go.

- Team coordination

Collaboration and effective communication among team members are crucial for the success of a digital project. Challenges related to team coordination, different priorities, or conflicting schedules can impact workflow and hinder progress. It was difficult for us sometimes to adjust the DOORS programme and meetings during the Orthodox Holy Easter, because we had to be present at an important, mandatory meeting during our most important religious celebration and during our free time/holiday.

Furthermore, as far as the online meetings scheduled by the DOORS team are concerned, some of these would have been best scheduled at the beginning of the project, not towards the end, especially the mentoring sessions or other workshops.

External

- User feedback and expectations:

The digital application aims to cater the needs and preferences of museum visitors. Gathering user feedback and aligning it with the project's objectives can be challenging. Balancing diverse expectations and incorporating user suggestions while maintaining the project's scope and feasibility can be a complex task. In the first session for testing the prototype of the app, some children felt bored by some tasks that the app proposed. This could be discouraging to us, but we tried to integrate the feedback received and see things from their perspective.

- Technological compatibility

The digital landscape encompasses a wide range of devices, operating systems and browsers. Ensuring the compatibility and optimal performance of the application across different platforms can be a technical challenge, especially considering the rapid evolution of technology. However, not all children have the latest devices for personal use. This is why we

Future Prospects

- Interactive learning experiences

The digital app that we created can serve as a foundation for developing more interactive learning experiences within the museum. By incorporating additional educational content, interactive quizzes, or augmented reality features, we can further engage visitors and deepen their understanding of the exhibits.

- Multilingual support

Consider expanding the app's language options to cater to a diverse range of visitors. Providing multilingual support can enhance accessibility and inclusivity, enabling a wider audience to engage with the museum's content and exhibits.

- Expanding our project into the realm of virtual reality (VR)

Is an exciting prospect that can further enhance the visitor experience and open up new possibilities for engagement. Adapting the app to VR can offer a more immersive and interactive environment, allowing visitors to explore the museum and its exhibits in a unique and captivating way. We can take things even further, if the technology allows it, using smart glasses and adapting the app to this medium.

- Integration with online platforms

Extend the reach of the museum's content by integrating the app with online platforms. This could involve sharing curated content, virtual tours, or interactive experiences on the museum's website or social media channels, allowing a broader audience to engage with the museum's offerings remotely.

- Data analysis and insights

Utilise the data collected through the app to gain insights into visitor behaviour, preferences, and engagement. This data can inform decision-making processes, helping the museum to refine its exhibits, tailor educational programs, and continuously improve the visitor experience.

- Collaboration with other museums

Consider collaborating with other museums or cultural institutions to share the app's technology and best practices. By fostering partnerships and knowledge exchange, we can contribute to the development of innovative digital solutions within the broader museum sector.

By exploring these prospects, we can extend the impact of our project beyond the current museum context. The app's features and concepts can be adapted and applied to various other museums, cultural heritage sites, or educational institutions, creating engaging and immersive experiences for visitors worldwide.

Key Take-Aways

The Sparkles - the good, the bad and the funny

Making an app could be challenging, especially when all the team members have something to say and have strong personalities :) But we aim to present our stories as successful and shining examples. Interestingly, failure often plays a crucial role in achieving this outcome. Our small team experienced a challenging period where, despite extensive research, questionnaires, and inquiries, we desired additional time to comprehend the app's direction and the development process. However, circumstances did not allow us this luxury. We wanted more contemplation time, while the time constraints demanded immediate action. This led to a negotiation process between us and the developing team, where we accelerated our decision-making processes and embraced the opportunity to learn how to make quicker decisions and adapt on the spot.

Furthermore:

The good:

- We created a gamified app from scratch which will be amazing to use for our visitors.
- We gained digital confidence and started using new tools in the digital world.
- We started learning new ways of talking and presenting heritage and the maps of the museum.
- We started accepting and integrating the perspective of others - teachers, children, partners. We also wanted to interact more with their perspectives.
- Team cohesion - this project worked as a team building exercise, we learned to trust each other and how to swap tasks from one to another.

The bad:

- We acknowledged the fact that teenagers don't like to read as much as we liked back in the day, and that the attention span is shorter than ever, which led us to leave a lot of important information out, as it may be tedious for our target audience.
- The budget and the app are tight, meaning we couldn't do all the animation and fun graphics and designs that we had thought up.
- In order for the app to function properly, we aren't supposed to move anything from the VIP objects that appear in the app. This can be, from a conservation perspective, quite exasperating, especially since the main medium of our museum is paper, which is more prone to degradation. This will limit our moves.

The funny:

- We learned a lot from the children testing the app.
- We had fun exploring the museum collection through their eyes.

Involved Parties

Andreia Petcu – science teacher in primary school, museum educator and a friend of the Maps Museum.

Augmented Space Agency - an AR company, the DSP part of the project.