



JRC Makers-in-Residence Programme

*The Saami snow box
an Arctic Dilemmas escape game*

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Abstract

The project described in this report refers to the development of an interactive story, in the form of an escape box, on Saami indigenous knowledge, more specifically on snow states and their specific properties.

An escape box is an interactive object. It is based on the concept of escape rooms – where you have to gather a team to solve some riddles and challenges in order to escape and accomplish your mission – but in a table-sized format. The escape box is locked with padlocks or various mechanisms, and players need to solve those in order to open the box.

The escape box developed for this project is also an interactive story, which means that you do not solve riddles just for the sake of the challenge, but you actually unravel chapters of a story, that contains indications to solve the next riddle to unravel the next chapter and so on.

The aim of this story is to involve participants in the process of snow identification and have them face some challenges Saami people have to face, until the last chapter where they encounter a new type of snow they won't be able to identify, based on real events related in an article from The Guardian (5).

In a context of climate change and its consequences, the need for quick action and sensibilisation is fundamental. We need to listen to those who have centuries long knowledge and experience on environmental stewardship - the Arctic Indigenous peoples who have been living in harmony with their natural environment for generations and whose knowledge is not taken into consideration enough today. I explored the concept of interactive storytelling and gamification are powerful tools to gather people around a mission, tell a story, and share knowledge through a shared experience.

Figure 1: The author of the project with the final prototype of the Saami snow box.



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Authors

Navid O'Lari

After studying filmmaking, I got interested in Interactive Storytelling as a powerful way to bring stories to life, through the medium of Escape Room, Treasure Hunt, Puzzle Box and other kind of games. Even though nowadays the escape rooms are mostly used for entertainment, I believe that gamification is a very rich tool to tell any kind of stories and knowledge.

1. Introduction

Context

Saami people, and in general Arctic indigenous peoples have a deep knowledge of their environment, often disregarded by western politicians and scientists.

In a context of reaffirmation of indigenous cultures but with the growth of “green colonialism”, it is important to put a focus on those who have centuries long experience and knowledge of governing their environments. The connection to nature is implied in the rich vocabulary of Saami about for example snow: the Saami have hundreds of different terms to identify snow states and their specific properties (4).

The idea behind this project was to build a bridge between Arctic indigenous knowledge and mainstream sciences. The proposal was for 'players' to experiment with a sample of indigenous knowledge, allowing them to experience current Saami people's livelihoods challenges, in face of climate change and its destructive effects on the environments their survival is dependent on.

Proposal

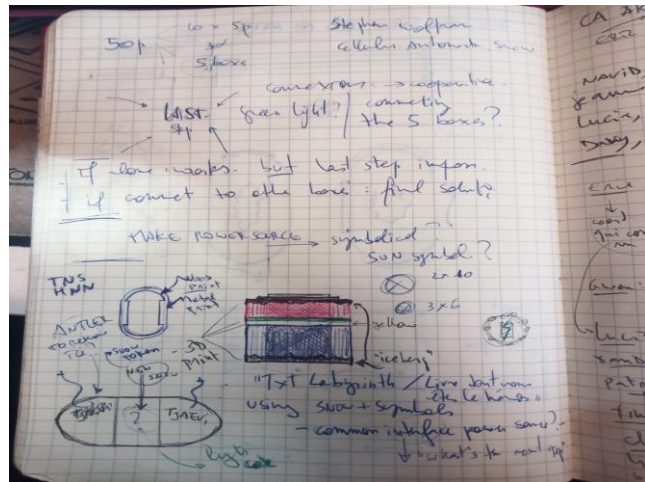
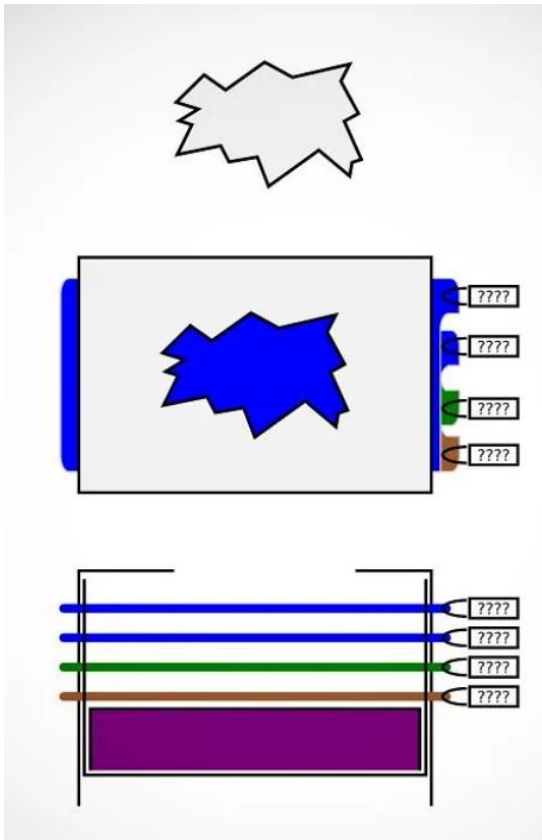
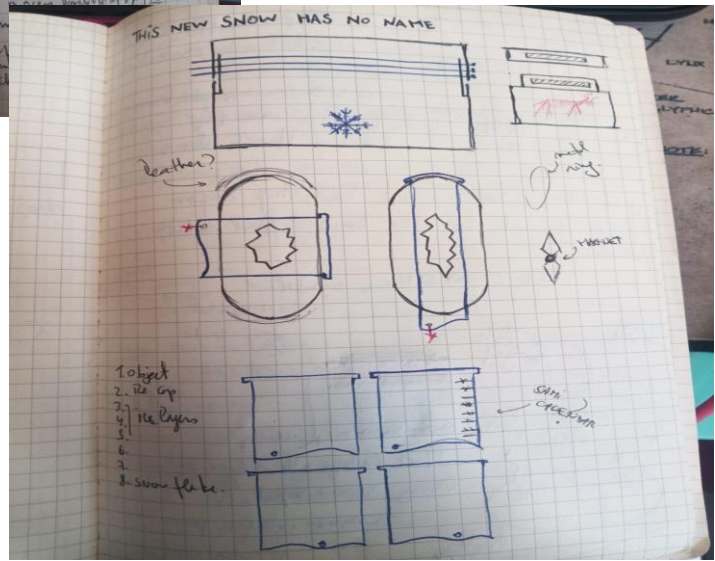
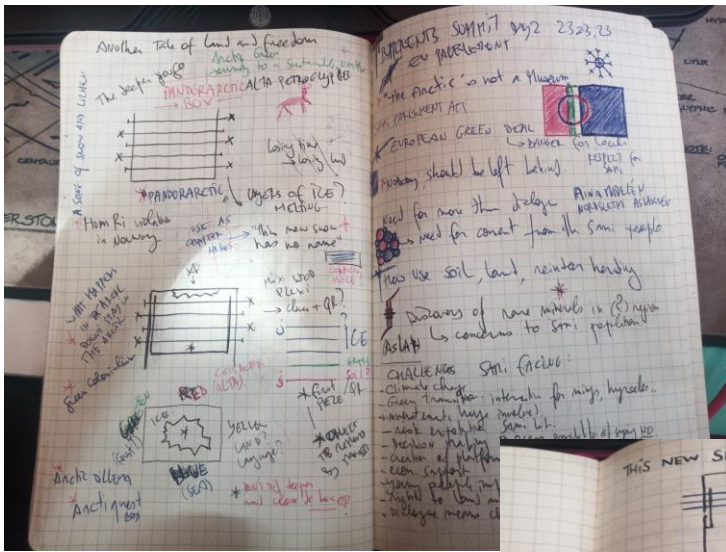
The project consisted of the development of an interactive story, in the form of an escape box. An escape box is an interactive object. It is based on the concept of escape rooms – where you have to gather a team to solve some riddles and challenges in order to escape and accomplish your mission – but in a table-sized format. The escape box is locked with padlocks or various mechanisms, and players need to solve those in order to open the box.

The escape box developed for this project is also an interactive story, which means that you do not solve riddles just for the sake of the challenge, but you actually unravel chapters of a story, that contains indications to solve the next riddle to unravel the next chapter and so on.

The interactive story was tailored, approximately, for a 30-minute experience, for teams of 1 up to 4 people. The story was divided in six chapters, with each chapter having a challenge/riddle that needed to be solved in order to unlock the subsequent chapter. Challenges are based on snow identification: recognizing the snow types gives you a code that unlocks the next chapter. The last challenge was designed as being an impossible challenge: identifying a type of snow that doesn't show on the reference sheet that accompanies the escape box and serves as guidance to the interactive story. The end aim was to put users in a related situation to that the Saami people had to face recently (5), that this new snow has no name.

Six copies of this project have been made to be presented at the following workshop in Ispra on 26/05/23
“Curating matters of care in the Arctic: what does knowledge co-creation look like for policymaking?” (2)

Figure 2: Some preparatory sketches and notes.



2. Design process

There were several stages in the design process: research and documentation; storytelling; technical drawings; construction; copies - each with their own challenges.

Research and Documentation

The work carried out was based both on desk research (e.g., material published in reports and similar documents and relevant websites) but also a number of in-person and online discussions and meetings. Saami culture is a rich culture that one cannot learn only from papers.

This project could have benefitted from a real field research in Sapmi, but given the duration and location of the residency it was not feasible and thus other sources for knowledge had to be identified. A key element for the research and documentation was attending the Summit of Barents at the European Parliament on 22-24 March 2023 and meeting several Saami people and hearing their advice prior to the residency in Ispra. The two main outcomes of my participation in this Summit in relation to this project were:

1) the understanding of the relation Saami people do between their knowledge and their culture, and therefore the attachment Saami people have to be involved in projects that concern them and their livelihoods.

2) the contact made with a specific Saami person, Heaika Guttorm, with whom I had a long and enlightening online meeting that gave me a most important insight of Saami culture and traditions, some design ideas and important points to focus on.

From the desk research conducted, two sources played a crucial role in the design of the escape box and storytelling: a report on Saami snow terminology (4) and an article from the Guardian titled "This new snow has no name"(5) as developed in the following paragraph.

Story

When addressing the storytelling element, the questions I faced were: What to tell? How to tell it? And, what points of view should be used? I ended up taking the tone of an Adventure book, putting the players in the role of a Saami reindeer herder. It was a risky stance as I did not know what the reaction of the Saami community could be. The players unlock each chapter of the story by solving snow identification challenges: which are the types of snow on which you can walk? Which ones are good to dig for food? The last challenge leads to identifying one last snow that doesn't exist, thus placing the players in the same situation as the Saami reindeer herders, that this new snow has no name; it is an unknown situation for all. Despite the hundreds of words in Saami language, even Saami people cannot identify and hence, name this new type of snow which results from the effects of climate change. Many sources have been used to write that story, based on discussions with Saami people and different written sources (see references 8,9,10,11).

Technical drawings

Following the discussions I had with Heaika Guttorm, I decided to build the box on the model of a Giisa, a traditional Saami wooden coffin. I used an online box generator (1) to generate the general shape of the box that I modified on Inkscape. The 3D printed structures were designed on Tinkercad (7). I also designed other elements of the interactive story based on Saami culture: a dress hook and the reindeer engravings.

The other drawing challenge was the design of the snowflakes: I had to select a couple of snow states among the ones listed in the Saami Snow Terminology report, making an attempt at drawing a snowflake for each 13 of them. For that purpose, I used another report, the International Classification of Seasonal Snow on the Ground (ICSSG) and the symbols they use for each type of snow.

Construction

The Saami snow box, accompanying objects and instruction sheets were manufactured entirely at the JRC Makerspace using different Fablab technologies and equipment:

- The main structure of the box and accompanying objects (hook, book, and interface) were laser cut from a birch plywood sheet with 3mm of thickness.
- The 3 snow layers that formed the first set of challenges of the box and the last snow layer inside the box were manufactured from transparent acrylic, with a 3mm thickness, using a laser cutter.
- Inner and outer support structures of the box were 3D printed using a wood-looking filament to match the wood.
- Basic electronics were created for the last challenge and the interface box (the power source needed at the end of the interactive experience). A type of electrical wire with a rope-like look was used to mimic the Saami Lasso, to make a narrative connection.
- An assortment of magnets were used for different purposes, in particular to connect different elements of the box that required to be taken apart.

Copies

At the end of the residency, one box was manufactured and ready to be used. For the purpose of the workshop *"Curating matters of care in the Arctic: what does knowledge co-creation look like for policymaking?"*, at least 5 to 6 boxes were required. This additional production work was made by Paulo Rosa, the manager of the JRC Makerspace. The assembly of the boxes was done with the JRC Competence Centre on Participatory and Deliberative Democracy team, the day prior to the workshop. The main challenges in this phase were the exceptionally long 3D printing times and the many elements that had to be assembled.



Figure 3: The five final versions of the Saami snow box.

3. Results

The Saami snow box presents as following:

- a wooden box based on the traditional Giisa engraved with snowflake symbols and reindeers based on the Alta petroglyphs; the box is locked with three layers of engraved ice and three 3 digits padlocks.
- the layers of ice are laser cut and laser engraved acrylic sheet of 3mm. The engravings are snow symbols, they form the three different challenges to open the box.
- inside the box there is a final challenge, giving you two cables based on the Saami lasso.
- those 2 lassos must be connected to the power source (the Arctic Interface) to light up the last code and unravel the concluding chapter of the story.
- the box comes with a threefold laser engraved document inspired by the Saami wooden calendar, it contains information about the snow, the seasons, and the general functioning of the game.
- in addition, there is also a Saami dress hook, which is the starting object of the adventure. It contains magnets and allows to break the first layer of ice and see inside the box.
- a website with the different chapters, each one being unlocked with a code found on different pieces

Figure 4: Final version of the Saami snow box with the “game” instructions and the Arctic interface.



Figure 5: Layers of "ice" with snow symbols engraved. Each layer is a different challenge to be solved in order to open the Saami snow box.



4. Reflections

Main challenges

I faced several challenges during the different steps of this project:

Finding contacts and information: being a very specific topic (the Snow states) and treated in a very specific way (an escape room) it wasn't an easy task to explain to people I contacted what I was trying to do and what I needed. I needed tangible information on Saami knowledge, but concrete enough to be turned into game material, and I needed someone to follow the project who would understand both sides of the problem: the Saami insight and the gamification. I also had to make sure I was treating Saami culture with respect and including Saami people in the development of the project. There have been many cases of misuse and of cultural reappropriation (e.g. the recent Final Fantasy Saami outfit case in February 2023 (6)), and it was important not do the same mistakes. Also, for the sake of the project, the approval of the Saami Council was important.

Finding the right approach for the story: whose point of view are we shedding light on? What's the mission? What's the conclusion? What tone should I give to the narrative? I settled for an "Adventure book" approach, and used different reports and articles and references to compile a text that I then embroidered to give it a homogeneous style.

The chapters were supposed to be accessible through a QRcode that players had to scan every time they would unlock a new piece. However, this meant having the exact URL of the pages ready before laser cutting, the QRcode reading is not always an optimal method and it takes a lot of time to make sure the laser cutting of the Qrcodes actually work (sometimes it needs to be painted by hand on top of the laser engraving). I found another system, the different chapters were accessible through a password found on each unlocked piece, password that can be input on the website. This meant that people could peek through the box and see the passwords they were not supposed to have yet, but eventually it had no real incidence on the development of the adventure since they still had to unlock the piece.

The design of the box and snowflakes: The design of the box itself was tricky because it had to be thought as to be copied easily. It had to be ready to assemble once out of the different machines (laser cutter, 3Dprinter) with no need of handmade corrections and adjustments, or as few as possible.

Regarding the snowflakes, even if it was based on ICSSG symbols (3), was a specific challenge as some of the snow I needed had no equivalence in the ICSSG. Also, all of the snow state identification – which is the core of the whole adventure – had to be challenging and accurate enough to be truthful to the topic, but in the meantime be accessible to the many and be playable in a limited time of 30 min max.

What could be done next

Six copies of the Saami Snowbox exist today, two of which are at the JRC Makerspace in Ispra. The others are going on a hopefully wonderful journey in the North. Indeed, they were distributed to 4 different people from 4 different regions:

- a member of the Saami council, in Northern Norway.
- a researcher in Finland
- the coordinator of the H2020 Arctic Passion project in Germany
- a Danish artist who works in Greenland.

More boxes can be built, either at the JRC Makerspace and then sent to other places, or by people with access to a Fablab/Makerspace. Files will be made available at a later stage.

Interactive storytelling, escape room and game design are powerful tools to tell and share any kind of stories. This box can be used in schools, universities, fairs and conferences.

I hope those boxes are not going to be used as decoration but will be effectively used to spread awareness and contribute on a small scale to the sharing of Arctic Indigenous knowledge.

Figure 6: The final five owners of the Saami snow boxes produced.



5. Conclusions

The receptivity of the project by the audience of researchers, artists, Saami person and other participants of the Arctic workshop in Ispra was quite good; very positive feedbacks, and probably the most important feedback was from the (only) Saami participant, who said she actually related to the story and challenges.

The enthusiasm of people who wanted to bring back a box also contributed to my deep relief, as it was a stressful project, for many reasons: short time with a strict deadline and for immediate deployment, difficult scientific topic and culturally sensitive.

I believe that this kind of projects need a real field research, more time and human contact: indigenous knowledge is an empirical knowledge, meeting field actors is of essence when working on such topics, I learned more from a single video call than by reading two reports.

However, in the context of this residency programme, I think in collaboration with the JRC team, we did our best to produce an interactive story that's truthful to its subject, and respectful of the Saami people.

When I started working on this project, I was walking on eggshells. Or rather, on thin ice.

I'm glad I eventually found my way in the Saami snow covered fields.

Figure 7: Reindeer drawing used in the Saami snow box.



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Additional information

Daily steps of the work can be seen on the Instagram profile of the author, on publications starting April 8th :

<https://www.instagram.com/escap.orium/>

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