

## User-Centred Co-Design in the Pandemic - A Reindeer Case

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### Abstract

An innovative design process which has been conducted under the restrictions during the covid-19 pandemic is in focus in this study. Visits were banned so user-centred design activities were particularly challenged by the necessity to meet and work online. The purpose of the study is to present and reflect on how user-centred design was done under those conditions. The potential users, the reindeer herders, were merely contacted online, the user investigation were supported by for example using videos and storytelling. Also, the final concept is presented.

*Keywords: user experience, design thinking, co-design, collaborative design, human-centred design*

### 1. Introduction

The World Health Organisation, WHO, declared on March 11, 2020 Covid-19 as a pandemic. Now, more than 1.5 years after, we know that millions of people have died in this historically extreme pandemic. The time for societies to adjust to the situation was short, only a few months from the first signals that the virus was an international health concern to the fact of lockdown in many countries in March, 2020. Besides the tragic deaths, also businesses have been forced not only to find, but also to take a huge leap into digital ways of operating since neither international nor national travel were possible during lockdown. The Public Health Agency of Sweden has the national responsibility for regulations that organizations, companies and authorities have to follow. Wash your hands, keep your distance, and use a face mask are measures that were recommended to protect us from the virus. Sweden did not use lockdown as a measure, but most organizations decided to avoid travel and did not allow visitors, and most organisations also recommended employees to work from home when possible. Further, in line with the recommendation to work from home, higher education institutions switched to distance education. Basically, the pandemic resulted in a social and economic unsettling for businesses, education and made it challenging to conduct applied research projects.

This paper reports on a study done with reindeer herders in the Swedish Arctic area as a part of an applied research project. The design vision was to introduce IT technology in the collection and marking of the new reindeer calves. The design process challenge was to carry out a creative and user-oriented design task in the midst of the pandemic where no travels or visits were possible. The Sámi indigenous people have a long history of reindeer husbandry. Most reindeer herders have a strong connection to traditions that need to be preserved ([Sametinget, 2021](#)), simultaneously their business is exposed to modernization. The reindeer husbandry has gone through changes, for example reindeer herders today use different vehicles to gather the animals, and modern technologies such as GPS tracking is also used in some cases. Modernizations to some extent are done when a coming generation take over from their parents, and is necessary for future generations to want to take over. Hence, the reindeer husbandry changes over time, but a prerequisite has been and will be that such changes preserve and manage values to keep the culture alive across generations. Applying a user-

oriented approach in the design must thus ensure that new products and services for reindeer husbandry originates in real user needs and simultaneously respect tradition. It is not easy for a non-Sámi-designer to go into a design situation and familiarise themselves with the culture and the reindeer husbandry procedures, but it is absolutely necessary in order to succeed with a design task. Hence, conducting user investigations at distance is a core design challenge. The purpose in this paper is to describe how the user-oriented design task was conducted obeying the restrictions for the pandemic, and to reflect on the co-creative design process conducted via distance technologies.

First, we will describe the result of the user investigation, i.e., how the marking of calves currently is done. The description has been simplified to some extent in this paper to provide an understanding of the design task and how the user context and challenges were investigated. The simplifications are mainly related to issues about the nature, air temperature and the effects of insects, but also to the organisation of Sámi villages. Second, we will describe the activities in the user investigation and the creative work, which originates from human-centred design (Brown and Katz, 2009; Kelley, 2001), and a digital service design process (Löwgren and Stolterman, 2007; Arvola, 2010). Third, the concept for the digital service which was selected as best tailored to the reindeer case is presented. And, finally, a reflection on the design process concludes the paper.

## 2. Reindeer Husbandry - in Brief

The Swedish reindeer husbandry is organized in Sámi Villages, briefly this is a geographical area in which the villages' reindeers graze freely. A similarity between the different Sámi villages is that they have an organization consists of financial and administrative responsibility, and has its own board. The different types of Sámi villages are mountain Sámi villages, forest Sámi villages and concession Sámi villages (Sametinget, 2020). Typically, all members in a family are engaged in the herding, yet despite that 40% of the reindeer owners are females, only 18% of them are active in the husbandry (Sametinget, 2021). The contributor in this study is a concession Sámi village running its business in a north-east part of Sweden, and has an expressed vision of making the reindeer herding, in particular the marking of calves and keeping track of the herd, more efficient. The reindeer husbandry business is to produce meat of good quality, which is a challenge because the reindeer is a shy animal that easily gets stressed. Keeping records of the herd's composition is important to ensure quality, but also to make sure that the number of animals is somewhat correlating to the number of animals that are sent away for slaughter every year. This means that most reindeer females should have a calf every year, if giving birth to a calf the reindeer is called *vaja*. Those female reindeers that does not produce calves and those that are around 8-9 years old will be sent to slaughter. Thus, it is important to make a note of which year each calf is born and who owns it, this means that any calf also must be connected to its mother, the *vaja*. A (leader) *vaja* wears a cowbell around her neck and she holds the flock together when they graze in a large geographical area. These leader *vaja* sometimes also carry a GPS tracking, so the herd can be followed in a digital system (Figure 1).

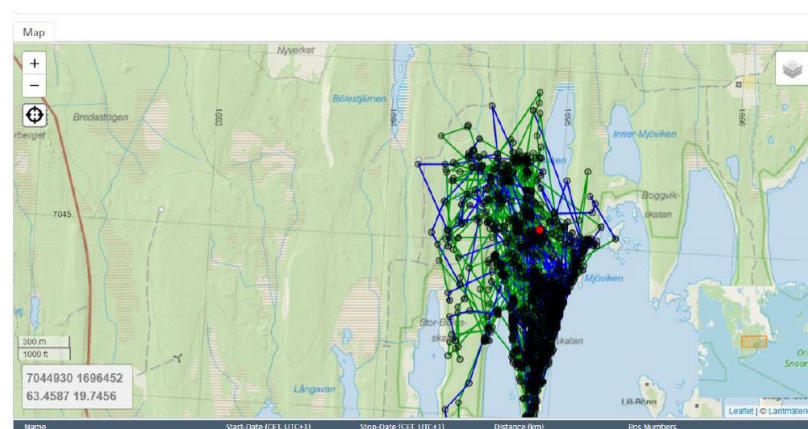
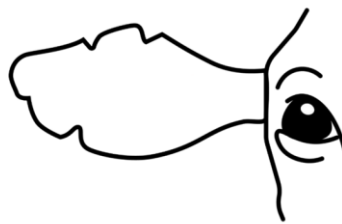


Figure 1. Tracking of a leader *vaja* and her herd moving around and grazing over a geographical area (source VRAM database)

Yet, keeping track of the herd is found useful, but considered as not very critical for the reindeer owners. It is natural for the herd to migrate to a marsh area in the spring, thus the herd gathers naturally in a geographical area. The Sámi village use these natural habits of the animals to gather the whole herd to mark the ownership of calves and keep track of which calves belong to which *vaja*.

## 2.1. Marking of Calves

The place for marking the calves is carefully selected on the herd's natural movements, and has been used by the Sámi village for that purpose for many years. The nature and the conditions on the site are important. Even though the herd gathers naturally (due to warm weather and mosquitos), there is a need to drive the herd into a fenced area to make catching and marking of calves possible. The fencing to keep the whole herd at the place follows a certain pattern, how to build the fences is a knowledge that has been inherited across generation, as is also the experience of marking calves. Therefore, children and youths are, in this Sámi village, assigned the specific task to capture the calves for temporary numbering, i.e., with a necklace and a number tag. Two key responsibilities during the marking of calves are assigned to a "Marker" and to a "Book Keeper". Traditionally, each reindeer is marked by cuts in their ears, a reindeer mark, to identify who the owner is, see Figure 2. How the reindeer mark looks like and who's mark it is, is described in a book. All animals that belong to a certain reindeer owner in the Sámi village are accounted for in that book, some reindeer herders also keep personal notes of their herd. The marker is the one that is skilled at quickly and precisely cutting the marks into the animal's ears.



**Figure 2. Reindeer owner's mark: cuts in the ear**

The reindeers are in the morning first gathered in a larger paddock, where they can calm down, drink water and rest. The whole procedure takes careful considerations of the conditions for the calves, since they become very tired during the day. Later in the afternoon, when the temperature is getting lower, the herd starts to move within the paddock. A smaller inner paddock has been built inside the main paddock, and now it is time to drive the herd into this smaller paddock. Here all calves can be captured and temporary marked. So, as a first step in the marking procedure, the calves will get a rubber band necklace with a number tag around their neck. Placing the necklace around the neck is possible since calves do not have horns, still the capture put additional stress on the animals. There are approximately 350-400 calves in a heard of approximately 1000 animals.

The inner smallest paddock is removed when all the calves have a necklace with a number tag. The herd will move around in the paddock, as soon as the temperature is lower (+15 degrees Celsius, or less) and the calves start to follow its *vaja*. If it is warmer the calves will just lay down and rest, and it will not be possible to see which calf that belongs to which *vaja*. The reindeer herders walk around in the paddock and observes which calf that follows (connects to) which *vaja*. Since the calf has a number tag, the *vaja*'s ear marks are identified and a note that "*calf no [...]*" follows the *vaja* of "*[name of the reindeer owner]*", thus the calf belongs to *[owner's name]*. The Book Keeper is consulted to ensure that the observation is correct. To actually see a calf connecting to a *vaja* is something that requires experience, for an outsider the flock is more or less '*a wall of reindeers moving around*'. The marking of calves is a unique possibility to get acquainted with reindeer husbandry, and the marking is often visited by tourists. It also gathers many people from the Sámi village, not only because people are involved in the procedure, but also because it is a time for socializing.

After a calf's number and a reindeer owner is noted in the book, all calves must be captured once again. The smaller inner paddock is built up again to keep the reindeers tighter together, which makes it easier

to capture the calves. After that the captured calves are carried to the Marker's place inside the paddock. The Book Keeper check the number tag and the observation note who is the owner, but also check-up how the owners mark looks like so that the correct cuts can be done in the calf's ear. The Marker cuts ear marks, the necklace is removed and the calf is let loose again. The whole herd is let loose outside the fenced area when all calves are marked. The complete procedure takes approximately 24 hours without interruption. An overview of the steps in the procedure can be seen in Figure 3.

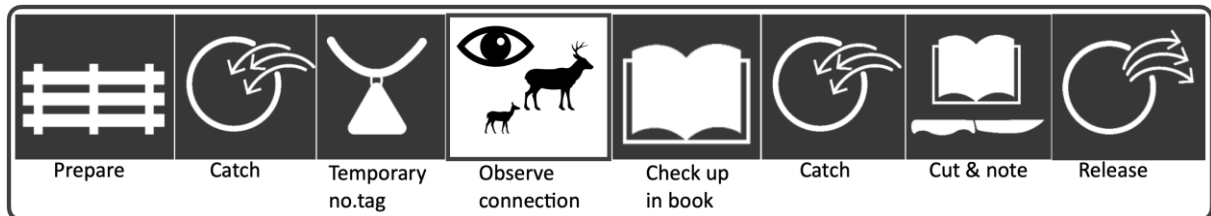


Figure 3. A graphic overview of the current marking of calves procedure

## 2.2. User Investigation: On Distance

Online meetings were set up with representatives, the client, from a Sámi village. The first meeting had the agenda to describe reindeer husbandry in general and the procedure for marking the calves in particular. The design team had no previous experience, and lacked also a general understanding of reindeer herding. The reindeer owner has an educational background from software programming. His experience with IT and programs was, as it seemed, crucial for a visual description. And, his skills in storytelling and step-by-step descriptions were also important to understand the procedure. The online meeting was enabled by using zoom.us, and the client used a free satellite map resource which provide sketching possibilities (eniro.se). The map function provides more details for the northern parts of Sweden than other map resources, and the sketching tools were used to describe in detail how the fencing were done and how the reindeers moved around during the procedure, see Figure 4.

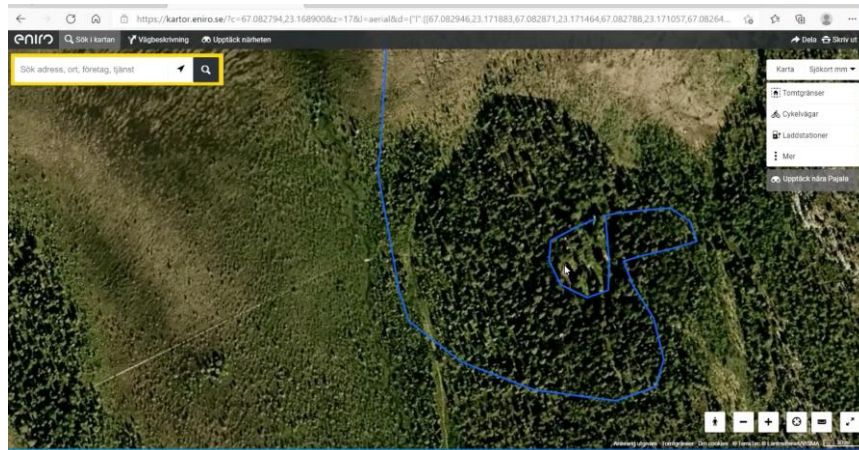


Figure 4. Description of fences (sketched line) by using drawing tools (screenshot from meeting)

During the meeting, the client from the Sámi village also used videos available at YouTube to support his description. The videos supported a storytelling approach describing details that would probably otherwise have been too difficult to imagine. And, in turn, the story and the videos gave rise to informed and more detailed questions about the procedure.

The user investigation resulted in a design purpose, i.e., the design of a solution that streamlines the owner identification and documentation of calves because it was found too time-consuming in one and the same day. Also, constraints for the design problem were formulated. Each family's herd consists of approximately 200-350 reindeers, and it was found that a technical solution cannot cost more than 3-4 Euros per animal. The procedure was also found having too many "manual" steps, each one of the steps causing unwanted stress on the herd.

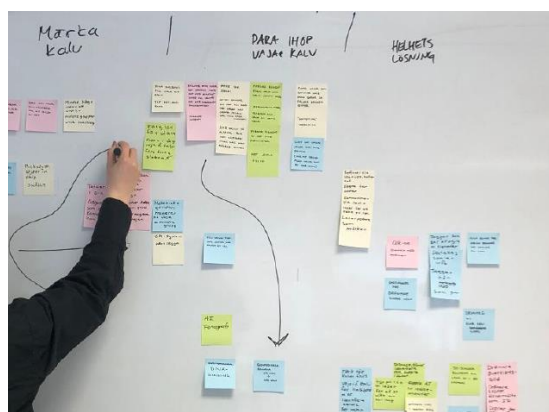


### 3. Concept Generation: Online

The design activities followed in general a design thinking framework (Brown and Katz, 2009; Kelley, 2001; Shanks, n.d). The suggested design modes are Empathize, Define, Ideate, Prototype and Test, but it should also be noted that the design modes can come in various order and that there are several different design approaches with which to work in the respective mode (Shanks, n.d.). Design thinking, as is also suggested for digital service design, was applied by combining activities from user experience design (Löwgren and Stolterman, 2007; Arvola, 2010). Previous to the Ideate phase where concepts were generated the design modes Empathize, or user investigation, and Define, or problem definition inclusive constraints, were carefully conducted as described above. These two user-investigative design modes included (Shanks, n.d):

- Empathize with the users - observe, engage, watch and listen. This mode is central, as the name human-centred or user-centred design entails. Good, and therefore sustainable, designs rest upon the designers' understanding of the users' beliefs and values. Observe and watch the users are normally recommended to be 'in situ', at the users' place, yet engage and listen are equally important.
- Define is the phase where the designers bring clarity to what they have learnt in the previous step. These analysis and synthesis are grounded in the gathered material and clarifies the design task, i.e., make it concrete, but not too broad or too narrow.

Design thinking is, as described by its advocates (e.g., Brown and Katz, 2009; Kelley, 2001; Shanks, n.d.) not linear, nor a settled process, but rather a design mode framework. Generally, the visualization of steps leads to an assumption that completing the steps in solitude fulfils a good design effort. However, as described by Shanks, (n.d) the transition activities from one mode to another are utterly important, mainly to avoid jumping into ungrounded assumptions about the users' needs, values and beliefs (Patnaik and Becker, 1999; Patnaik, 2004). The jumping, which in some situations actually imply that the user investigation is totally forgotten already in the Define mode, has been noted as common in previous studies of innovation practices (e.g., Leifer and Steinert, 2015; Ericson, Wenngren, Holmqvist, and Hammarberg, 2016). The grounding in the reindeer culture, values and beliefs were critical for a acceptable design in this case. Hence, the transition from Empathize to Define activities included transparent analyses and visualization of the reindeer calves' marking procedure including interpretations of the design task, in particular making constraints concrete. Since this activity is done within the design team the analyses were done in a physical meeting, see Figure 5. To ensure the inclusion of, and to maintain a user-centred approach, 'personas' (Cooper, 2004; Pruitt and Grudin, 2003) for a reindeer owner, a Marker and a Book Keeper were developed. As were also customer journey maps describing each personas' activities before, during and after the traditional marking of calves.



**Figure 5. Visualization, analyses and syntheses based on the user investigation (picture from meeting)**

Personas are representations of users describing personal traits, values etc. and are used in both product and service design. Thereby, the transition from Define to the Ideate mode brought with it a base

consisting of user-investigation in form of personas and customer journeys describing the change that the designed new solution should enable. This groundwork was providing a user point-of-view for the concept idea generation activities. The following idea and concept generation was done online and in collaboration with a client from the Sámi village. For the Ideate mode a software for creative teamwork was used, i.e., miro.com, but to enable discussions zoom.us had to also be used, see Figure 6.



**Figure 6. Set up for an online brainstorming session (picture from meeting)**

The brainstorming sessions resulted in a total of 69 ideas, which were analysed and resulted in a revised design specification, i.e. the connection between a vaja and its calf should be 'automated', so that observations and the first check-up and note in the book become unnecessary. The continued creative sessions resulted in 7 basic concepts, that were further evaluated based on how well they matched the criteria from the user investigation, i.e., personas and customer journeys, but also based on a technical benchmark to assess the applicability of each concept. The 7 basic concepts were by this reduced to 3 concepts which were prototyped and tested. This is in line with the design thinking recommendation to bring multiple concepts in the transition from Ideate to Prototype, mainly because not risking a loss of the innovation potential (Shanks, n.d.; Ericson and Törlind, 2013). Further, recommended by design thinking (Shanks, n.d.), as well as user experience design for digital services (Löwgren and Stolterman, 2007; Arvola, 2010), is to combine prototyping and test as an intertwined effort bringing in the users into the concept generation activities. Visualizing different scenarios/solutions, asking your clients to compare and evaluate them, listen to learn more to about your clients and to refine your solutions, is a cornerstone in the testing mode of user experience design.

The low-fidelity prototyping activities included e.g., sketches and wireframes/mock-ups of the mobile application incl. database. Visual scenarios for how to use RFID (Radio Frequency Identification) technology and receiver/detection units in the paddock was incorporated in the concept generation. The receiver/detection units per se were not prototyped, since existing technology was benchmarked. The scenario visualisation simulated those parts in the prototyping activities. Hence, the prototyping for the mobile application addressed the probability of each concepts' impact on the marking of calves procedure, but not the technical function per se. By discussing alternative scenarios (see figure 7) and the mock-ups (see figure 8) with the client, the suggested solutions could be analysed and assessed.



**Figure 7. Scenario visualizing receiver/detection areas in the paddock**

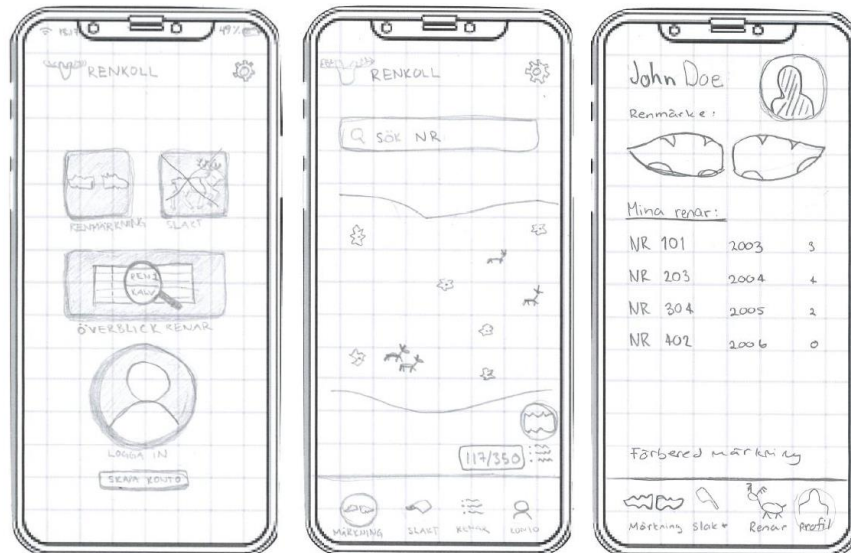


Figure 8. Mock-ups (lo-fi wireframes): to prototype and test the mobile app interface

### 3.1. User Experience Design - Digital Solution

Today, digitalization, is included in many products and services, in turn shape and reshape our social behaviours in instances and interactions. Design of products, discrete objects, rests upon a set of engineering design principles, but when moving from stand-alone products to the dominance of digital and social services of products there is a need to reconsider additional, and for some disciplines new, principles (Norman, 2008; Vargo and Lusch, 2004; Lugnet, Ericson and Larsson, 2020). The principles from interaction design (Löwgren and Stolterman, 2007) and user experience design (Arvola, 2010) align in the elements of emotions, perception and behaviour (e.g. Swallow, Blythe and Wright, 2005). The design of digital solutions and graphical user interfaces have a history of focus on usability (Löwgren and Stolterman, 2007), but the design of digital services encompasses today, among others, the dimensions of (Patnaik, 2004; Arvola, 2010; Norman, 2008; Service, et al., 2014):

- Being practical; *useful* to give applied benefits, and *usable* to fulfil expectations, the designed tool itself should not attract users' attention, but should if it has been designed successfully stay in the background.
- Being social; wanted, available and communicative for the targeted audience, signs/signifiers provide clues to the service and give trails for how it has been used by others.
- Being aesthetic; searchable, simple to navigate, functional for the actual problematic situation by fulfilling known and unknown user needs.
- Being ethical; valuable, sustainable, instil trust and support the user to change their behaviour in a positive way that they desire.

The dimensions should not be considered in solitude, but as a holistic design approach (Arvola, 2010). The final digital solution for the reindeer case considered the dimensions as central in design thinking (e.g., Brown and Katz, 2009). Also, social sustainability was used as a perspective building on the Sámi culture and tradition to enable user acceptance. Economical sustainability guided the solution's capability to attract coming generations of reindeer herders, and ecological sustainability is considered in terms of keeping the reindeer husbandry alive for the future. The production of reindeer meat needs no arable land and no pesticides are used for game meat.

The mobile app which is a major service feature of the final solution, was designed supported by experiences in perception and cognition from an industrial design point of view (e.g., Osvalder and Ulfvengren, 2015). The app was also designed with considerations to a graphical user interface including symbols and colours (McKay, 2013), see figure 9. The background colours were chosen to not attract too much attention and to put the app itself into the background. Accent colours, red, green and yellow were used to draw attention to, for example how the marking procedure progressed.



Figure 9. Mobile app user interface prototype

The concept for the app further addressed the aesthetic dimension; easy navigation, but in particular the complete suggestion was presented in a holistic and logic overview (see figure 10). The visualization of how to navigate in the app enabled the presentation and discussion with the client on the topic of how the suggested solution actually improves the marking of calves procedure.

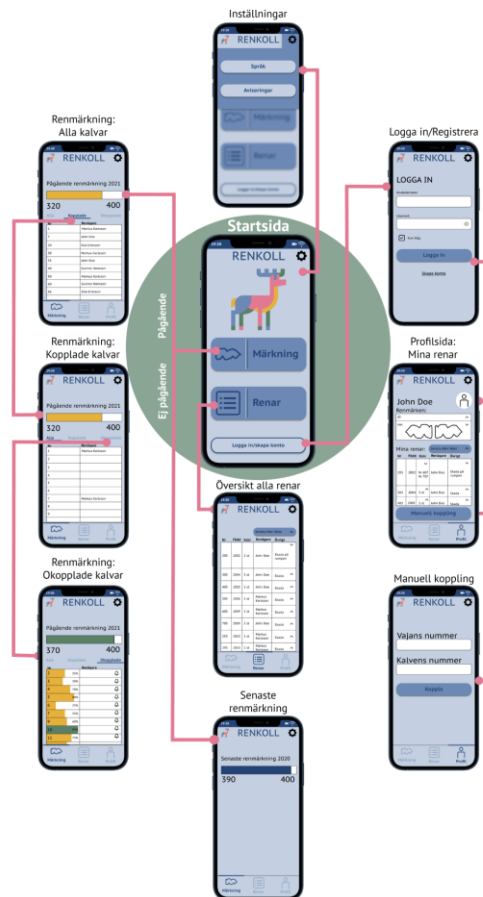
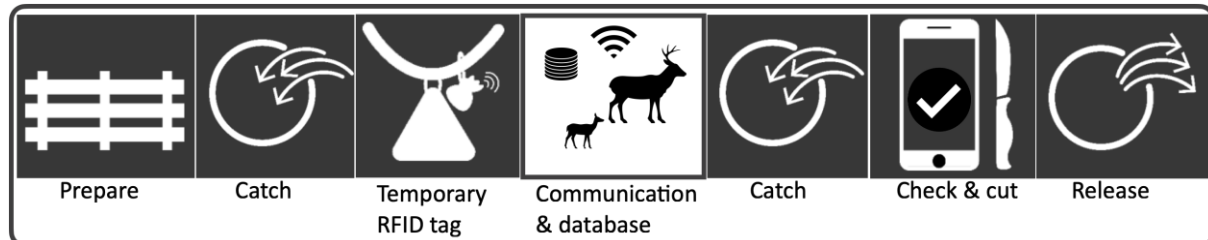


Figure 10. A schematic overview of the app to support useful/usable analysis with the client

The user investigation set up the design purpose to address a solution to make the owner identification and the documentation of calves 'automated'. The suggested solution with RFID, marking procedure, receiver/detection units, a database, and a mobile app as a user interface make three steps abundant, i.e., the one where the reindeer owners have to observe which calf that connects/follows which vaja, the one where the owner must check-up with the Book Keeper that the observation is correct, and the



step where the Marker must check the book that the connection/owner is noted in the book (see figure 11). The new procedure of marking of the calves includes the traditional ear cuts, but also a RFID ear tag. The constraint regarding costs per animal can be fulfilled, even when the implementation of the solution demands that all *vaja* also have a RFID tag in their ear to enable communication with the calf's temporary tag during the first steps in the marking procedure.



**Figure 11.** A graphic overview of the new 'automated' connection in the marking of calves procedure

#### 4. Concluding Remark

The paper presents a user-oriented approach that was conducted under the restrictions of the pandemic. The normal recommendations for designers doing user investigations are to (1) visit the client's place, (2) immerse in the activities done by the client, and (3) gain valuable first-hand experiences. None of those recommendations were possible to follow during the restrictions, instead all activities were 'forced' to be online. The purpose of this paper was to describe how the online user-oriented investigation was conducted, and to reflect on a co-creative design process on distance. The design task was found in the marking of reindeer calves, and within the context of a Sámi tradition which are important to sustain the uniqueness of the Sámi culture. Due to this, the user investigation and the designers' understanding and the grounding of the suggested solution into the tradition were critical, for example to progressing the procedure as such to attract younger generations to uphold the reindeer husbandry.

The client's own experiences and skills related to the marking procedure, but also to the capability to easily use a variety of online resources to visualize how it was done had a positive impact on the user investigation. The requirements on the online resources to be realistic and interactive, as in using the satellite map software, and to be visual, as in using videos to strengthen the oral descriptions seemed significant in this case. Also, the capability to describe the Sámi tradition as an inspiring story, adding interruptions to reflect on the described activities contributed to the investigation. Finally, the client was also contributing to the idea generation, or the co-creative design process, here the client's educational background in software development did matter, and also some awareness and capability to cope with the fact that design thinking integrates 'thinking outside the box'. The design team was trained in design thinking, and was also grounded in industrial design, but did not have previous experience in the design of mobile applications or user experience design. The design thinking 'philosophy' to carefully listen to the client, to view the client as a resource and not a problem to be fixed, and importantly to be intrigued by the investigated situation and stay close to the user's own words (e.g., [Kelley, 2001](#)) were thus guiding the user investigation. In this study, it seemed like these abilities of both the client and the designers had a very positive impact on the user investigation on distance. It is questionable if it is possible to on beforehand ensure that the client possesses the necessary skills and experiences, and also, to question when that is the case, will the client 'take over' and direct the design process too much? If so, the design activities might end up in so-called 'business-as-usual' rather than innovative solutions. The possibility for the design team to meet physically to analyse and synthesise the results from the user-investigation to find direction and constraints was, as it seemed, important for the progress of the co-creative and following activities with the client.

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## References

- Arvola, M. (2010), "Interaction design qualities: Theory and practice", *Proceedings of the 6th Nordic conference on human-computer interaction*, ACM Press, USA. <https://doi.org/10.1145/1868914.1868982>
- Brown, T. and Katz, B. (2009), *Change by design: how design thinking transforms organizations and inspires innovation*. HarperCollins, USA.
- Cooper, A. (2004), *The inmates are running the asylum*, Sams Publishing, USA.
- Eliasson, L. and Silawiang, H. (2021), *Märkbara renar: En digitaliserad och effektiv renmärkning* (in Swedish), [Bachelor of Science Thesis], Luleå University of Technology. Available at: <https://bit.ly/3HhoONN> (accessed 12.11.2021).
- Eniro.se (n.d), Available at: <https://eniro.se> (accessed 22.10.2021).
- Ericson, Å., Wenngren, J., Holmqvist, J. and Hammarberg, K. (2016). "The case of an innovation contest: participatory design in a social context", *Proceedings of the DESIGN 2016 / 14th International Design Conference, Dubrovnik, Croatia, May, 16-19, 2016*, Faculty of Mechanical Engineering and Naval Architecture, pp. 967-974.
- Ericson, Å. and Törlind, P. (2013), "A deep dive into creative thinking: the now-wow-how framework", *Proceedings of ICED 13, the 19th International Conference on Engineering, Design Research Society*, 2013, Vol. 7, pp. 337-346.
- Kelley, T. (2001), *The art of innovation*, Currency Doubleday, USA.
- Leifer, L. and Steinert, M. (2015), "Dancing with ambiguity: causality behaviour, design thinking, and triple-loop-learning", *Information Knowledge Systems Management*, Vol. 10, No. 1-4, pp. 151-173.
- Lugnet, J., Ericson, Å. and Larsson, T. (2020), "Design of product-service systems: toward an updated discourse", *Systems*, Vol. 8, No. 4, <https://doi.org/10.3390/systems8040045>
- Löwgren, J. and Stolterman, E. (2007), *Thoughtful Interaction Design*, The MIT Press, USA.
- McKay, E.N. (2013), *UI is communication: How to design intuitive, user centered interfaces by focusing on effective communication*, Elsevier Inc, USA.
- Miro.com (n.d), Available at: <https://miro.com> (accessed 17.10.2021).
- Norman, D. (2008), "Signifiers, not affordances", *Interactions*, Vol. 15, No.6. <https://doi-org.proxy.lib.ltu.se/10.1145/1409040.1409044>
- Osvelder, A-L. and Ulfvengren, P. (2015), "Människa-tekniksystem", In: Editors, Bohgard, M., Karlsson, S., Lovén, E., Mikaelsson, L-Å., Mårtensson, A-L., et al, *Arbete och teknik på människans villkor* (in Swedish), Prevent, Stockholm, pp. 353-438.
- Patnaik, D. and Becker, R. (1999), "Needfinding: The Why and How of Uncovering People's Needs", *Design Management Journal*, Vol. 10, No. 2, pp. 37-43.
- Patnaik, D. (2004), "System Logics: Organising Your Offerings to Solve People's Big Needs", *Design Management Review*, Summer, pp. 50-57.
- Pruitt, J. and Grudin, J. (2003). "Personas: practice and theory", *Proceedings of the 2003 Conference on Designing for User Experiences / DUX '03. San Francisco, California*, <https://doi.org/10.1145/997078.997089>
- Sametinget (2020), Får bara samer äga renar? (in Swedish: Can only Sámi people own reindeers?), Available at: <https://www.sametinget.se/123060>. (accessed 22.10.2021).
- Sametinget (2021), Rennaringen i Sverige (in Swedish: Reindeer husbandry in Sweden), Available at: [https://www.sametinget.se/rennaring\\_sverige](https://www.sametinget.se/rennaring_sverige). (accessed 22.10.2021).
- Service, O., Hallsworth, M., Halpern, D., Algate, F., Gallager, R., et al. (2014), EAST, foru simple ways to apply behavioural insights, Available at: <https://bit.ly/3orbSw2> (accessed 17.10.2021).
- Shanks, M. (n.d), An introduction to design thinking, process guide, d.school, Hasso Plattner, Institute of Design at Stanford, Available at: <https://web.stanford.edu/~mshanks/MichaelShanks/files/509554.pdf> (accessed 22.10.2021)
- Swallow, D., Blythe, M. and Wright, D. (2005), "Grounding Experience: Relating Theory and Method to Evaluate the User Experience of Smartphones", *EACE '05: Proceedings of the 2005 annual conference on European association of cognitive ergonomics*, pp. 91-98.
- Vargo, S.L. and Lusch, R.F. (2004), "Evolving to a new dominant logic for marketing", *Journal of Marketing*, Vol. 68, pp 1-17.
- YouTube.com (n.d), Available at: <https://www.youtube.com> (accessed 17.10.2021).
- Zoom.us (n.d.), Available at: <https://zoom.us> (accessed 17.10.2021).