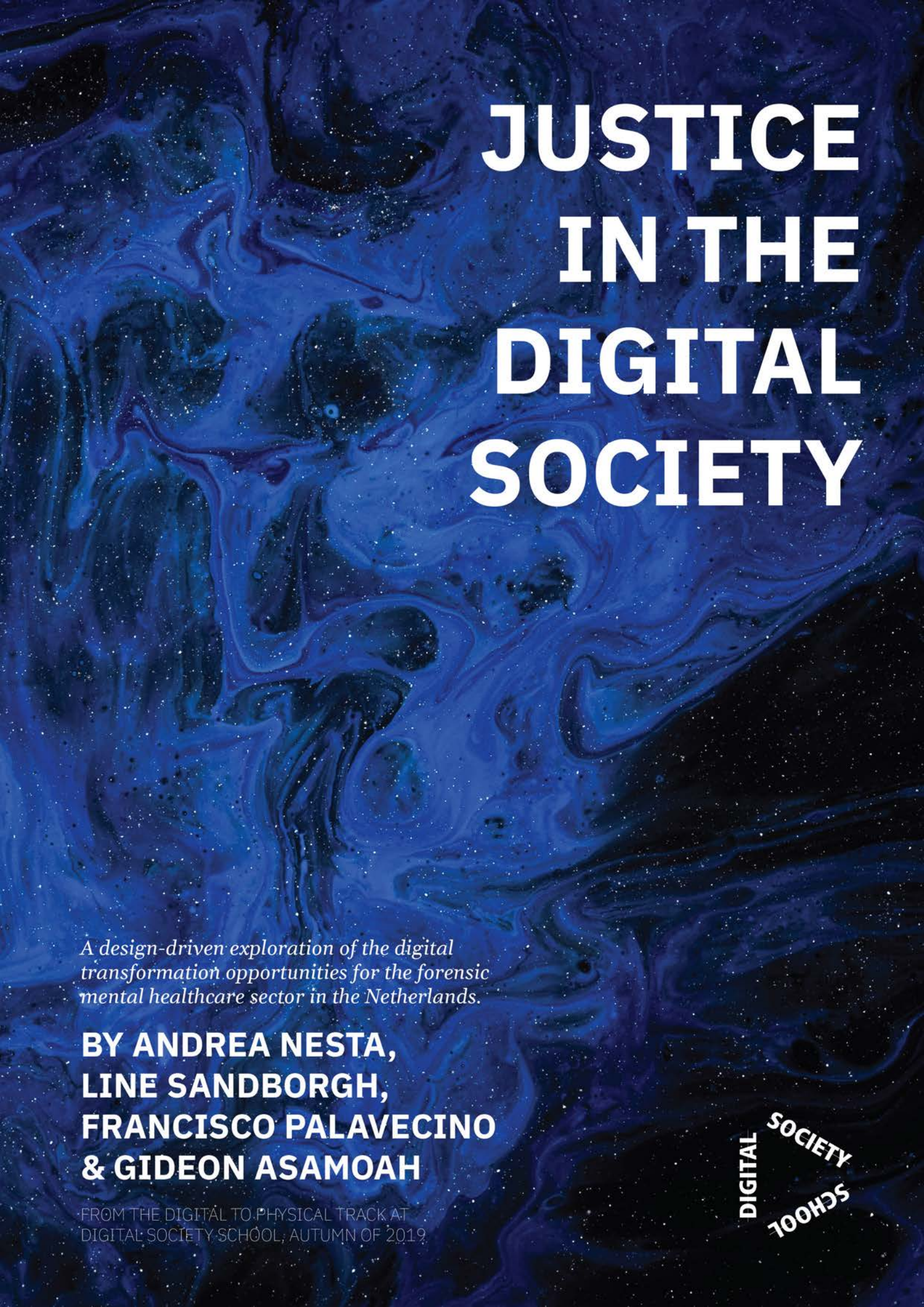

JUSTICE IN THE DIGITAL SOCIETY

A design-driven exploration of the digital transformation opportunities for the forensic mental healthcare sector in the Netherlands.

BY ANDREA NESTA, LINE SANDBORGH, FRANCISCO PALAVECINO & GIDEON ASAMOAH

FROM THE DIGITAL TO PHYSICAL TRACK AT DIGITAL SOCIETY SCHOOL, AUTUMN OF 2019

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Find out more about this project on the website:
https://justice.dss.cloud

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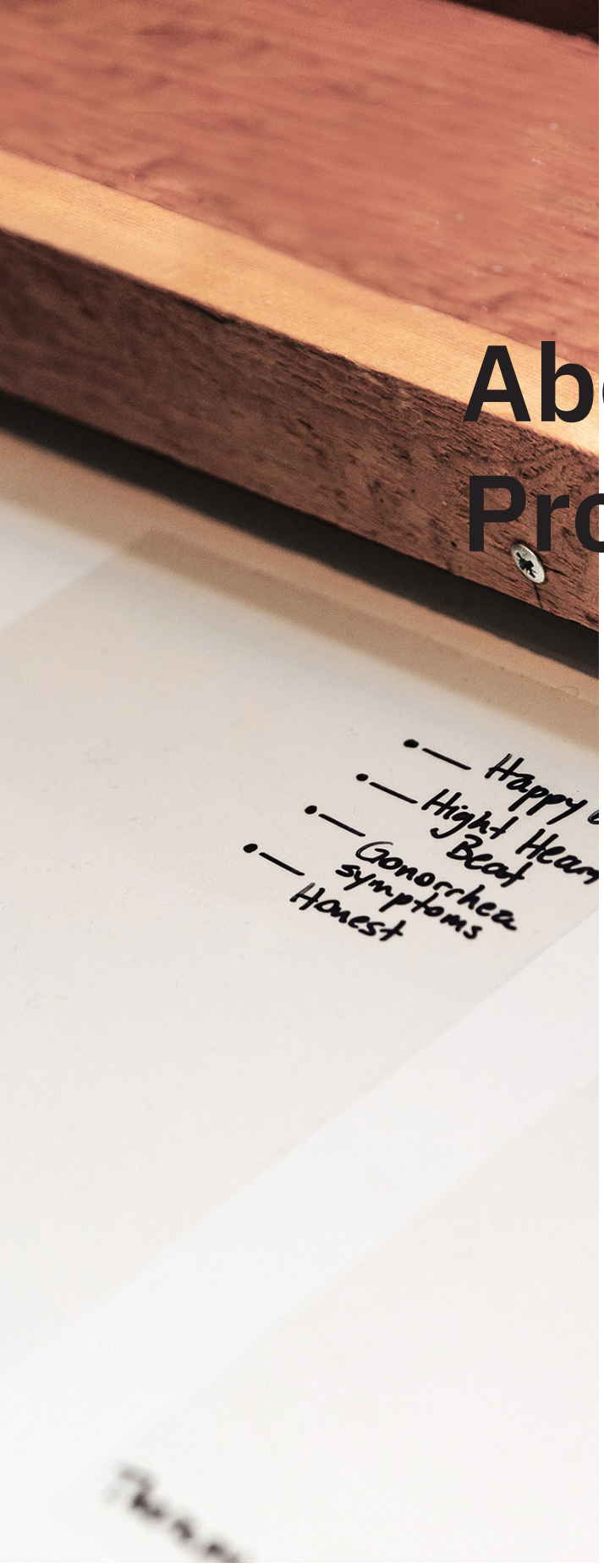
Introduction

“The process of stimulating the development of a technological innovation and exploring the mindset among caregivers at a forensic mental health care clinic”

↑ *Picture of our provocative prototype the "non-filter glasses" that was used in a workshop with caregivers at the Oostvaarderskliniek.*



About the Project

INTRODUCTION TO THE BRIEF AND COLLABORATION

The Ministry of Justice and Security (Ministerie van Justitie en Veiligheid, henceforth JenV) is committed to stimulate innovation in the practice of justice. The Custodial Institutions Agency (Dienst Justitiële Inrichtingen, henceforth DJI) is responsible for the detention, day-to-day care, and rehabilitation of convicted individuals in the Netherlands and operates under the ministry. In this project, DJI partnered with Digital Society School (DSS) to carry out a 20-week long research project in collaboration with the Oostvaarderskliniek (OVK). The project aimed at exploring the needs of the caregivers within the clinic and identifying opportunities for and potential positive effects of implementing technolgical innovations.

THE DIGITAL SOCIETY SCHOOL

Digital Society School is a professional

learning community for training and applied science, where learners train for the digital industry. Their aim is to create an inclusive and intelligent digital society, with a human-centered design approach. They seek to research the impact of technology on society, develop the skills necessary to guide the transformation and pass this knowledge and these skills to a new generation of professionals.

THE OOSTVAARDERSKLINIEK (OVK)

The Oostvarderskliniek is a forensic psychiatric center that practices terbeschikkingstelling (TBS) in Almere. The clinic aims at keeping society safe by providing ex-detainees with mental health treatment and ensures that these patients resocialize in a secure manner. A substantial part of the field research was done with caregivers of the OVK during the autumn of 2019.

SUSTAINABLE DEVELOPMENT GOALS

The project works towards four of the United Nations' Sustainable Development Goals:

#4. Quality Education
With this project we will learn from our collaboration with care professionals, ICT professionals, designers, researchers and programmers what cocreation means in justice and care. We will educate caregivers on technological implications in their work and on society.

#10. Reduced Inequalities
This project aims to reduce inequalities and work towards equal opportunity to all, empowering and promoting social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.

#16. Peace, Justice and Strong institutions
This project aims to support peace, justice and strong institutions by contributing to strengthening the DJI's position in a rapidly developing, and increasingly technology-driven world.

#17. Partnership for the Goals
We will be sharing our knowledge and make the technology we develop accessible to more broadly interested partners or makers, thus expanding the impact of this project.

INTRODUCTION TO THE DOCUMENT

This document is created to inform all the involved stakeholders of the process and findings this project has gone through. The document also intends to make visible the current gaps and future opportunities the OVK is facing within the next 5 years. The document can be used in several ways. It can provide you with guidance and inspiration of how to go about implementing new technologies within your clinic. It can clarify what the future may look like and how the OVK should prepare for this. The document can also be of interest to caregivers working within forensic care and for further insights about their workplace's challenges and opportunities. The main body of research is divided into two main sections which focus on different time frames for innovation:

Section 1 - The Present

The first part gives insights in and provides analyses of the initial research that was carried out at the OVK using various design methods such as interviewing, cultural probing, co-creating etc. A portrayal of the current state of the clinic in regard to the gaps and future opportunities within technological developments is presented.

Section 2 - The Future

This part informs about what future technologies and trends the field of forensic care can expect to see. A speculative method 'future cones' informs the reader of how various probable scenarios can affect the clinic in the future.

Key results and insights are documented in the blue section. You can read about the processes and methods used in the rest of the document.

The Present

"Insights from the clinic, exploration of mindsets, current gaps and future opportunities"

↑ *Image of the forensic mental healthcare clinic Oostvaarderskliniek (OVK) in Almere where most of the research was carried out.*

Insights about the Clinic

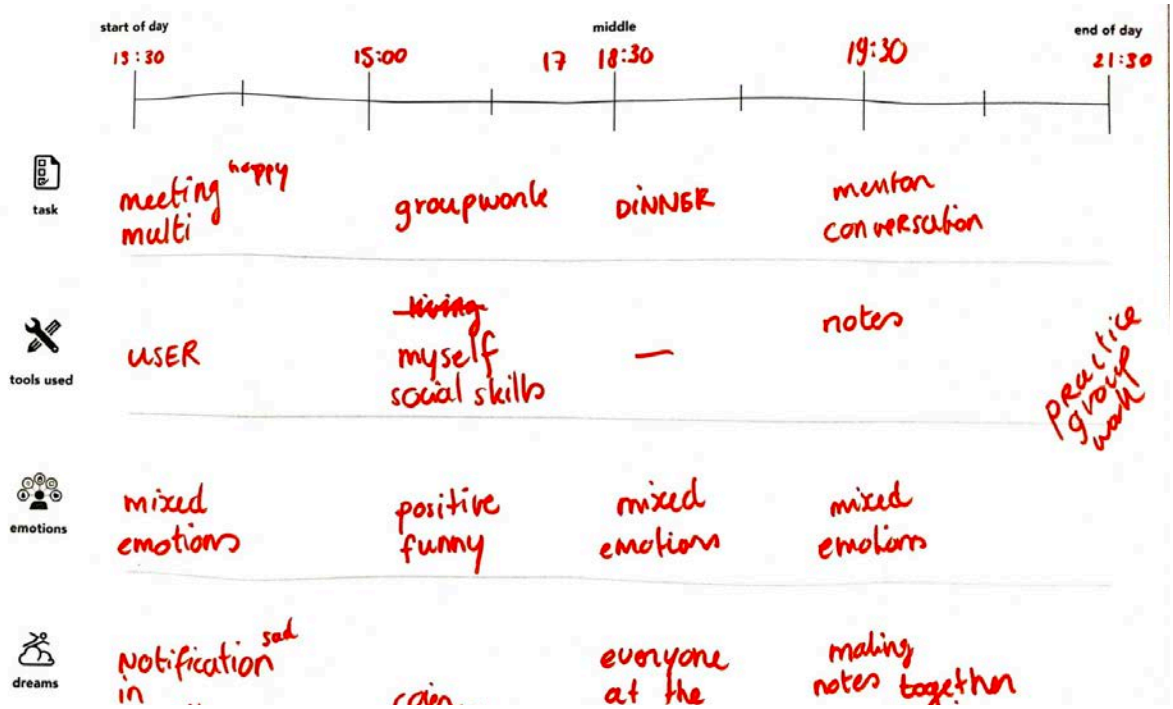
FIRST CONTACT WITH THE CLINIC

In order to conduct proper research and gain meaningful insights, it is of essence to attain an in-depth understanding of whomever the end result is intended for. This project is aimed at changing the mindset of caregivers of the OVK and therefore a thorough understanding of these stakeholders was fundamental. Field research was carried out by conducting interviews, cultural probes and co-creation sessions in order to gain an understanding of the caregivers' needs, challenges and aspirations.

INTERVIEWS WITH CAREGIVERS

Semi-structured interviews were carried out with 5 different caregivers. The caregivers ranged in professions from socio-therapists to labour coaches and teachers at the clinic. Our findings and main insights were summarized through infographics and user journeys. The participants were asked to tell us more about

their motives and then summarize for us their daily routine, including their main tasks and responsibilities and the stress points during the whole cycle. There was a specific focus on technology (of any kind, from advanced to very common), its presence in the clinic at the moment and places in and times at which the caregivers would interact with it.



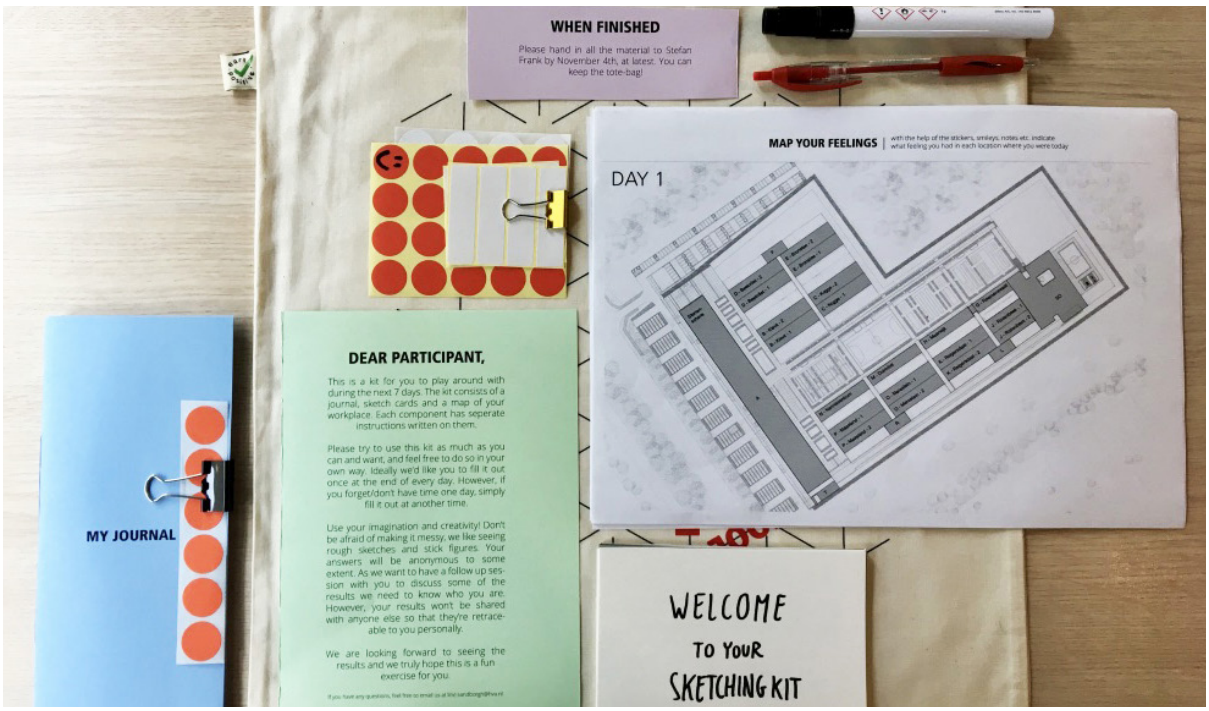
↑ *Scan of the everyday schedule of one of the interviewed caregivers at the clinic, as sketched during the interview session.*

→ *Picture of the complete kit of the Cultural Probes which was handed out to the caregivers.*

CULTURAL PROBES

One of the main objectives of this project is to create a mindset change among the caregivers at the OVK regarding the implementation of technology in their work. In order to do so we figured an understanding of the caregivers' current mindset would be appropriate to explore in the beginning of the project.

Beside this we also wished to gain a more complete picture of the activities in the clinic. To this end we researched everyday tasks and responsibilities among the caregivers. The caregivers



at the OVK have busy schedule and, therefore, time to participate in research is limited. With this in mind, traditional research methods, such as face-to-face interviews were less suitable to our purposes. Therefore, we opted to employ different research methods that would fit better with caregivers' schedules, in addition to the interviews.

One research method that tackles the issue of inaccessible users is "cultural probing". It is also a method that allows for a greater understanding of the users' lives where specific matters can be further explored. These "design probes" are constructed as a kit and handed out to the research subjects. Seven participants were asked to use the kit at their own disposal so we could gather more insights about their daily activities. Kits were collected after ten days of deployment. The kit was customized to our users and what we wished to research about them. We decided to incorporate a kit with three different methods: a journal, a sketching kit, and a map of the clinic (see below for each method in detail). The kit also included markers, pens, stickers, an instruction letter and a DSS-tote bag as a thank you. We aimed at developing a kit with a "low participation threshold" and playful design so the participants would feel comfortable about the tasks and encouraged to complete the kit. At the same time, we wanted to achieve a level of professionality and encourage the users to take the task seriously. The result was a kit consisting of varying colours with minimalistic design attributes. The fonts were kept simple, and instructions were brief so the users would feel free to interpret the questions in their own way.

JOURNALING

This method is constructed similar to a diary with daily prompts. The main objective of the journal was to get insight into the caregivers' personal motivations and drives. A small booklet with seven days of entries was designed with varying prompts for each day. The variation aimed at

keeping the participants on their toes so each day would entail a new, fun and interesting task. Tasks inlcude answering short questions, drawing comic strips, fill in the blanks, sketch and so on. Participants were also asked to use the stickers to indicate what their mood was on each day by drawing a symbolic smiley on them. Examples of prompts from the journal:

"What is something meaningful to you that happened today?"

"Try to think of a frustrating experience you had at work and make it into a comic strip (stick figures are more than welcome!)"

"Draw on/behind/around the person below in a way that describes your current job position."

SKETCH CARDS

To avoid limiting ourselves solely to words, we believed that incorporating a method that uses alternative means for communication could be useful. This resulted in a deck of "sketch cards" similar to postcards. Each card had a different prompt written on it. The participants were asked to use markers and to draw rough sketches. Examples of prompts from the sketch cards:

"A moment when I felt part of a team"

"A moment in which I felt loyalty"

"A moment that made me desire for more control"

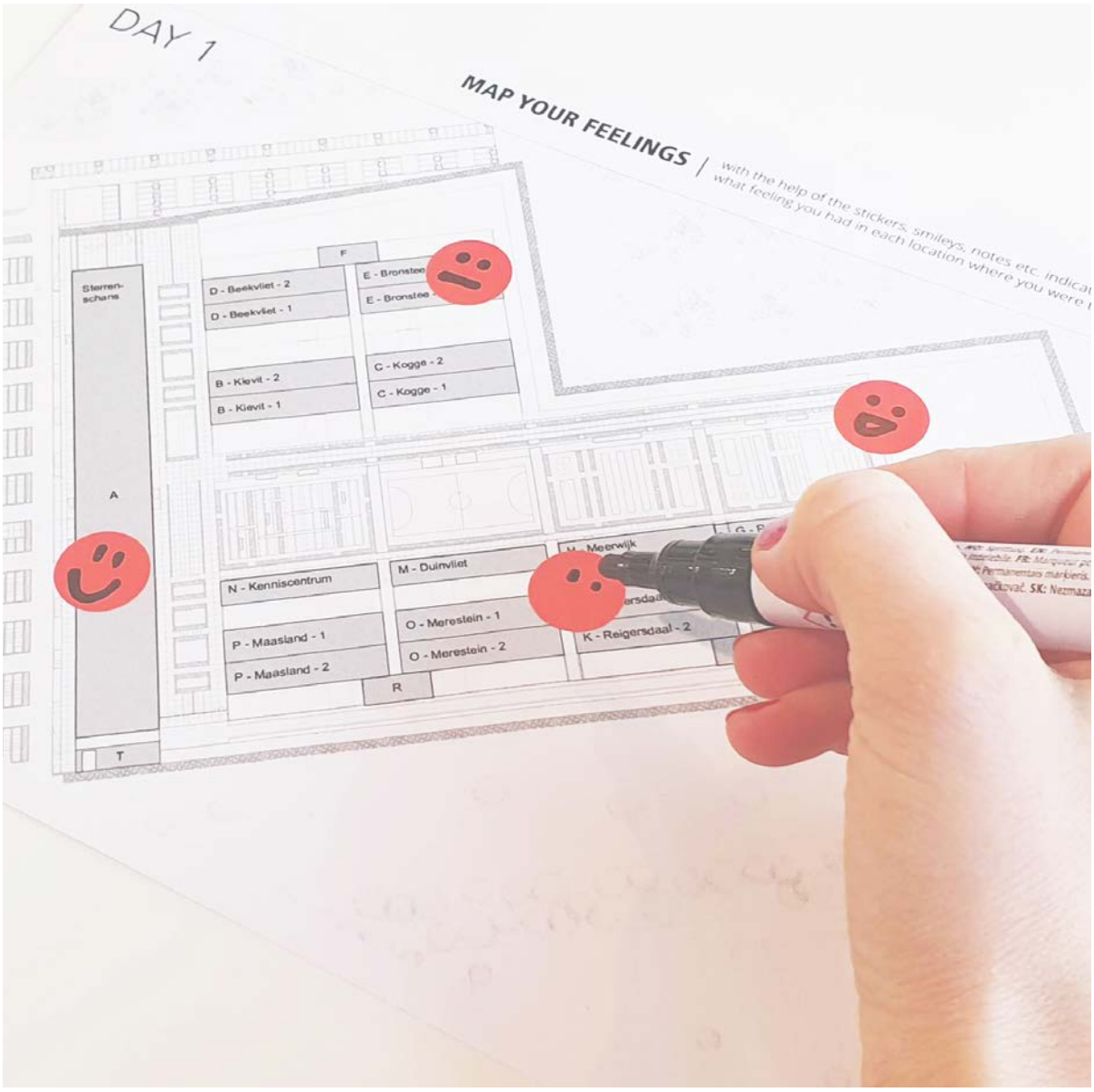
MAP OF WORKPLACE

What we noticed during our interviews was that when the participants were asked about specific feelings in different situations, a lot of them had difficulty recollecting specific examples. The map of their workplace was originally thought to act as a conversation starter. The participants were asked to fill out on a daily basis a mood/feeling in regard to different locations in the clinic. The idea was that this way the participants would

← *Picture of the "Sketching Cards" present in the kit, with prompts about the personal motivation and feelings of the caregivers.*

→ *Picture of the "Map of Workplace" present in the kit, provided with stickers to allow mapping emotions in different places.*

become more aware of their own feelings regarding various situations and connect them to the physical locations in the clinic. This would be useful in a potential follow up interview where we could ask them to elaborate on why they feel a certain way in a certain place.



CO-CREATION SESSION 1

After the first stage of research, we decided to bring awareness of future technology and innovation to the OVK, but also find out which digital technology the caregivers use and the hypothetical future scenario of five years.

To take a different approach, we designed a co-creation session in which six people from the OVK participated; two psychologists, two drama teachers, among other social workers. We divided it into two parts — the first aims to describe what tools, technology devices caregivers, use today. Moreover, we visualized five years ahead describing tools and devices related to technology that they will use.

We also created a "Technology Awareness Grid" with five different categories: VR, AI, Robots, Smart Environment, Body Implants. And three different answers: Never heard of it, Heard of it but don't know how to use it, Familiar with it. Participants filled out the matrix and had a discussion about their responses afterwards.

Insights from the Session

Overall, this co-creation session sparked fascinating conversations, constant debate, and even some controversy around some new tech that is already implemented in some other similar facilities around the globe. The whole group was divided in two, those who are sensitive about privacy and independence, and the others who want more control over the patients in the facility.

The majority of participants were very well informed about new tech trends; they follow tech blogs, having tech magazine subscriptions, and keep up-to-date with what it is out there. On many occasions, some of them brought up some technological innovations that they already use, such as VR aggression prevention training software. The engagement is high, and they are eager to try new tech to improve their day-to-day working life. Furthermore, participants were happy to be part of this project, wanted to be informed, and kept in the loop on the progress, and were curious about the outcomes. All this underlines their commitment to their work and highlights their willingness to improve their working situation.

After a short break, we started the session's second part. We divided the group into pairs and asked them to work together to imagine which technologies they would like to work with in the future. By the end of this second part, they have to create prototypes using different materials such as paper, pens, markers, and lego pieces.

In general, participants were collaborative during all exercises, especially in the LEGO session. Overall, participants were creative, open-minded regarding ideas for new tools and deivces, they did not hesitate to share what the yearned for, and they seemd to enjoy themselves even though some of them were out of their comfort zone.

After our first co-creation Session,it was clear that this session was a rich source of information even when compared to one-to-one interviews. We found that if you create a safe, casual, and playful space, participants are more confident, creative, and very comfortable to express what they cannot do with words. We believe that breaking the routine and doing something completely different helped the caregivers to come up with fresh ideas and suggestions for innovation regardless of their roles.

↑ *Picture of caregivers brainstorming ideas through Lego bricks as part of the workshop.*

← *Picture of facilitators Gideon and Francisco during the co-creation session one.*

CO-CREATION SESSION 2

After the caregivers' positive reaction to the first co-creation session. We designed a second session with a different approach, using an unusual method. We came up with a "provotype". To create a provocative method, we did an intense brainstorming where many ideas were suggested, in the end, we decided to build a "non-filter glasses."

We created four different scenarios where we tested the caregiver's reaction while they were wearing the "non-filter glasses," face-to-face playing some roleplay. On purpose, in each scenario, we put participants in extreme situations. Hypothetically, the new device was going to be implemented in the facility in about two weeks as a pilot project.

This roleplay exercise sparked an in-depth conversation about many topics such as privacy, useless data, equality, and transparency. Furthermore, we created the opportunity for the participants to interact with us about the device's future improvements, changes, and how it will be in an ideal scenario.

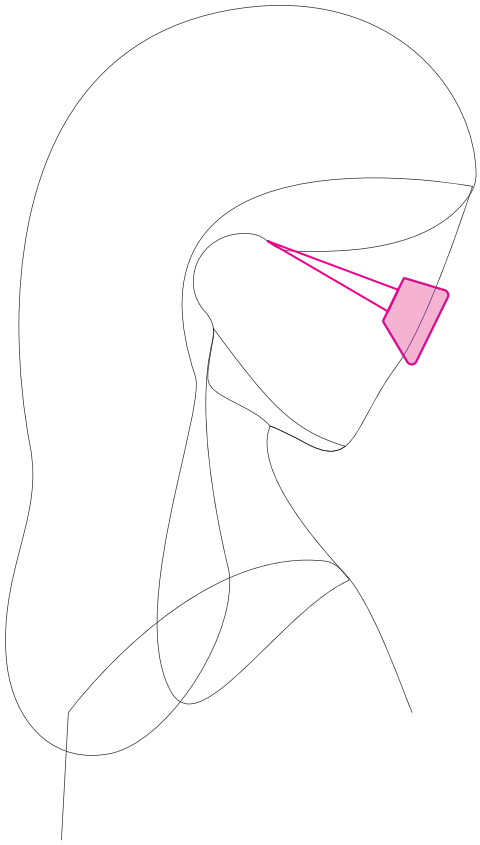
The two hours co-creation session two took place at the facility with four participants; one social therapist, one social culture worker, one member of the stakeholder board, and one representative from the administration team.

A "provocative prototype" is a design artefact used to spark a discussion among users and stakeholders. It is designed to stir up feelings and push emotional reactions from the participants

↑ *Picture of Francisco wearing the "Non-filter glasses" provotype.*

→ *Illustration of the "non-filter glasses" with its features as described to the caregivers during the co-creation session two.*

“The non-filter glasses”



features

HEALTH SENSING

blood pressure
heart rate
diseases

EMOTION RECOGNITION

happiness/sadness
calmness/nervousness
arousal

BEHAVIOR PREDICTION

violence
honesty/insincerity
confidence/doubt
trust/skepticism

EXTRA FEATURES

x-ray vision
face recognition
personal data information
voice recognition

“there is a human urge to help another person. Technology, in this case, makes it ‘cold’...”

- CAREGIVER FROM THE OVK

INSIGHTS FROM THE SESSION

We perceived skepticism and hostility towards the concept of "non-filter glasses" initially. Conflicts emerged between ethical concerns and new opportunities for digital innovation in the OVK. For the caregivers, the idea to know absolutely everything about the patients, having the power of the information, and putting the patients in a vulnerable, unequal and unfair position, according to a participant, was something that they would not be part of. In their discussion caregivers aimed for transparency and equal access to information on both sides.

Another valuable insight was how important the role of feelings and intuition is in caregivers' daily work. The relationship between caregivers and patients is crucial and must be preserved; the interaction builds a strong bond and reduces the gap among them. Therefore, using this hypothetical device made them feel like losing the beauty and core of their vocation, and this type of technology can become a barrier at times. A related insight came from discussions about AI & data vs. human interpretation. Even though caregivers were skeptical about the technology, they were very positive around the possibility of using this prototype in different departments for different purposes. Therefore, they firmly believe that technology can build a bridge in hard social situations. In conclusion, caregivers are not early adopters and would take time to get them familiar with new technologies. They do not close any for innovation; in fact, they are curious and eager to dive into the digital transformation. But nothing extremely radical or controversial.

"a lot of my motivation for work comes from my feelings. [...] a 'gut feeling' is essential to do my job"

"it would be helpful to me if I could share the data with my patient instead"

"I would not need to think anymore, where would I fit in this whole situation?"

- direct quotes of the caregivers from the co-creation session 2

Personas

“THE TRADITIONAL CAREGIVER”

45 years old,
teacher

“THE MO CAREG

53 yea
labor

WANTS

Better collegial teamwork.

To have control over patient.

Collegial workshops.

To see patients’ progress.

NEEDS

Flow in interaction with technology.

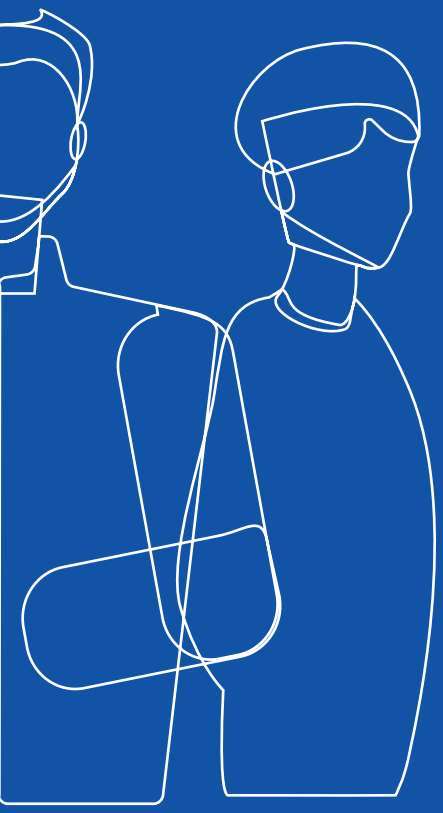
Updates from colleagues in other departments.

THOUGHTS

“New technologies need to clearly benefit me.”

Has a strong sense of “us vs. them” among departments in clinic.

Excited about digital transofmration, is personally “digitally updated”



TIVATED
IVER"
rs old,
coach

"THE UNAWARE CAREGIVER"
32 years old,
sociotherapist

CHALLENGES

Tech-illiteracy, internal communication, overwhelmed by workload

Safety issues regarding clinic and technology

MOTIVATIONS

When expertise is in use.

Getting together with colleagues.

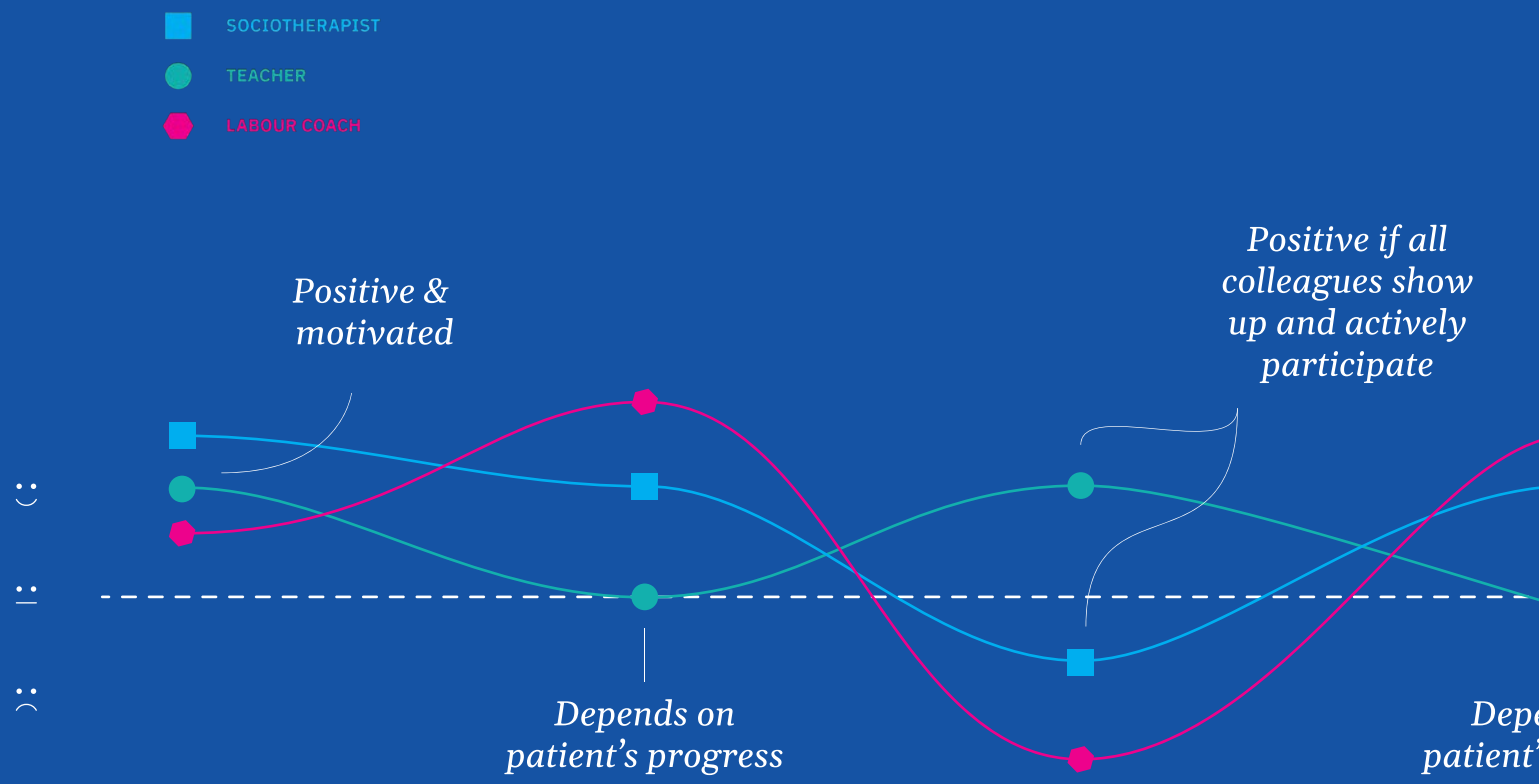
Human connection and interaction.

Seeing progress in patients.

FEELINGS

Overwhelmed
Important
Stressed
Unknowledgeable
Responsible
Meaningfulness

User journey

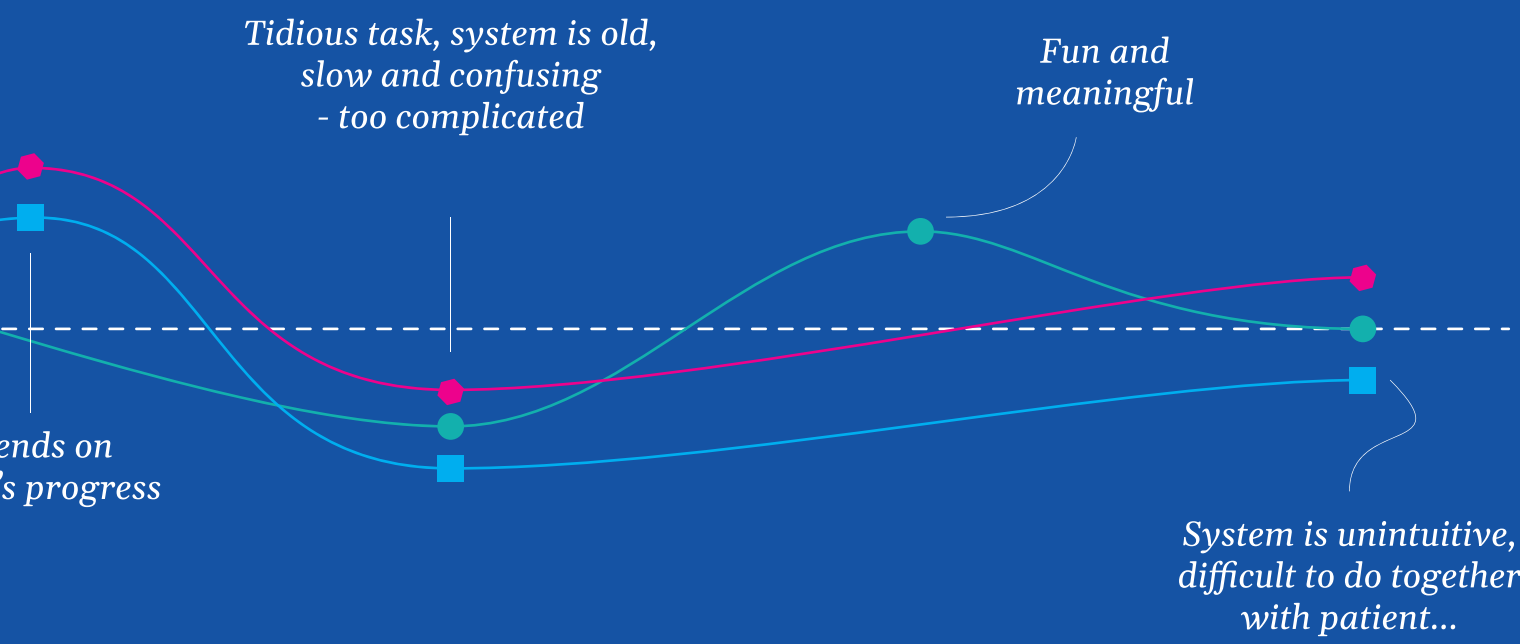


SOCIALIZING WITH PATIENTS

SUPERVISING PATIENT'S WORK & PROGRESS

MEETING WITH COLLEAGUES

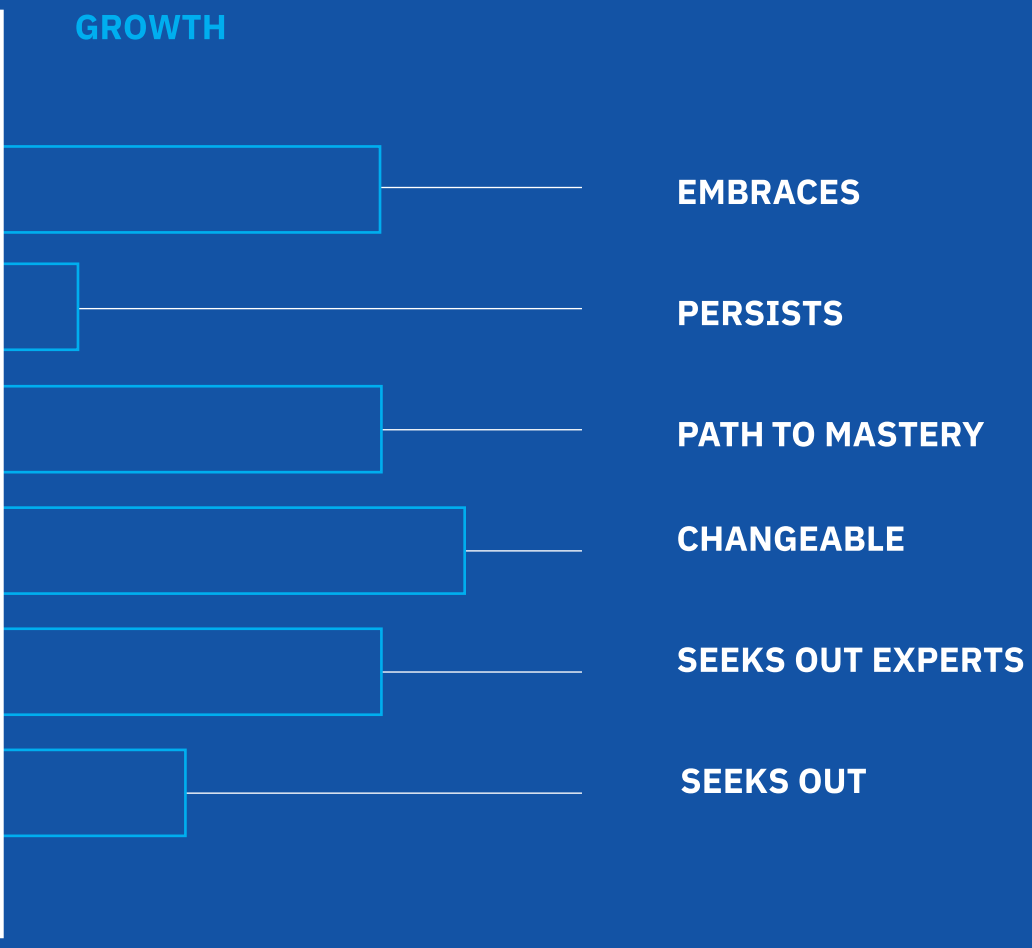
N CONV



MENTOR VERSATIONS | **ADMINISTRATIVE WORK** | **TEACHES PATIENT** | **WRITES & READS REPORTS**

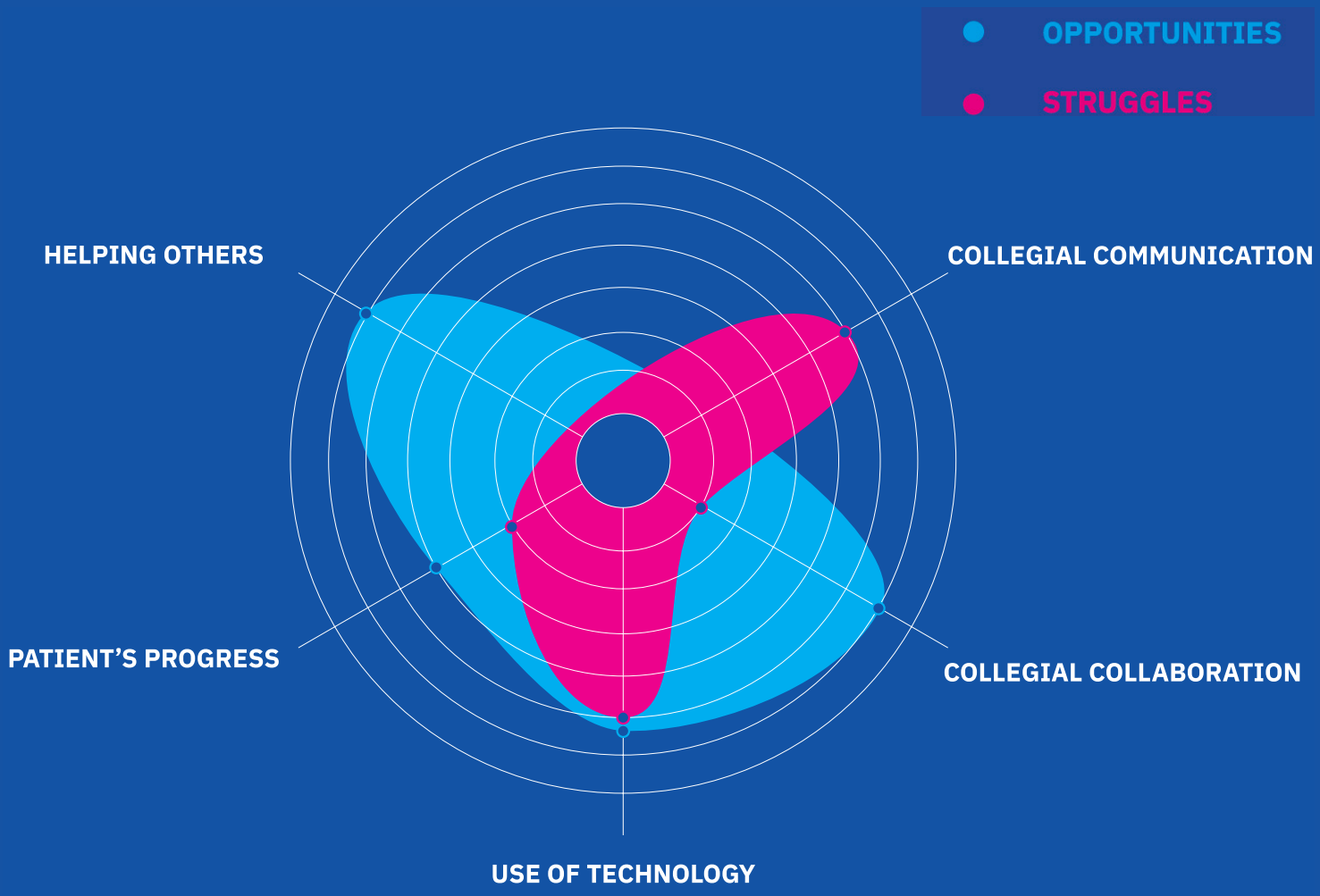
Mindset shift

Through our collected data from interviews and cultural probes we could analyze whether the caregivers of the OVK had a 'fixed' or 'growth' mindset. A 'fixed mindset' appears among people who believe qualities and events are set and unchangeable. A 'growth mindset' shows in people who believe that everything can be changed through actions, for example, personal improvement can occur through effort.



The caregivers of the OVK appear to be mostly in a 'growth state of mind' which improves their chances of adapting to the implementation of new technologies, for example.

Main insights



Our results suggest that the main causes of frustration in caregivers' daily work are the tedious administrative tasks such as filing requests, and logging patient activities as well as lack of communication with other colleagues. With the tendency of digitizing information, for instance, the adoption of electronic patient files and email communication, there are opportunities to improve the efficiency of these systems by using intelligent software systems to pre-process incoming information, streamline repetitive tasks, advice priorities, automatized responses and support better-informed planning. By reducing the time spent on administration, caregivers can focus on improving the treatment methods and interactions with the patients, in which they found meaning and value of what they do. Besides increasing the caregivers' job satisfaction, more positive human contacts that make patients feel valued, respected and cared for can increase their self-esteem and play a key role in their recovery, especially for the inpatients who have few opportunities to develop relationships outside of the clinic. Enhanced connections between caregivers and patients, between caregivers and other staff members and among caregivers themselves can contribute to the efficiency and effectiveness of the treatment which are core values of OVK and DJI.

Since caregivers cannot keep track of patients 24 hours per day, one of the salient benefits of using eHealth interventions is to provide basic support and advice instantly when patients are in need. Similarly, the connectivity supported by telecommunication tools is also valued by caregivers, in cases where caregivers cannot co-locate with patients, these applications allow patients to reach out and seek help. Encouraging patients to make decisions and actively take actions in the treatment process require them to reflect on their emotions and consequences of their own behaviours, which help them to be more autonomous and develop a better sense of self. As technological advancements are rapidly taking place in the world outside of the clinic, including more digital tools in the treatment allows patients to keep up with the changes in society. Remote monitoring systems can provide a constant overview of patients' emotional states, locations, and activities can reduce the need for physical confinement to gather such information. Meanwhile, the negative psychological impacts and ethical concerns of these digital control systems are still up for debate. The implementation of digital monitoring technologies such as physiological sensors and GPS tracking systems make huge quantities of data and real-time information about patients available to caregivers. Although not all caregivers would appreciate algorithmic judgements, the quantitative insights of patients physiological responses could help better inform psychologists in judging patients' mental states, especially for those patients who have difficulties expressing their feelings and emotions. These sensing techniques in conjunction with simulations of real-life situations in VR would allow the clinical team to study the patients' reactions to realistic triggers with more focus and acquire new insights into patients' risk factors, which contribute to more reliable risk assessment and responsive treatment of the individual patient.

As mentioned before, although some tasks of caregivers can be automatized by intelligent software systems, human contacts are essential for patients' recovery. When designing eHealth systems for forensic mental health care, they should support the practice of caregivers instead of replacing them, as well as support patients' autonomy and informed consent. With the use of mobile devices for logging electronic patient files, caregivers are no longer constraint in doing this tasks within the office. Especially in forensic mental health care facilities where the use of electronic technologies are highly restricted, the before solitude office task can now be turned into a co-activity with the patient together. Considering the complex pathology of the patients and often multidisciplinary components of the treatment, we suggested that the eHealth systems should respect the end-users' agency to configure and appropriate the digital systems. When it comes to providing quantitative measures, such as statistical classifications of sensor data, the system should give caregivers insights into the calculation process and allow them to interpret the results with their expertise to avoid algorithmic biases and mistakes.

Exploring the System

DESIGN FICTIONS

At this stage of the project, we created design fiction to generate insights through a speculative narrative of a possible future. The reason for this was to converge our insights from the co-creation workshops, the interviews, the cultural probes, and the desk research we have done. In this case, it was an effective tool to use because we had multiple points of innovation we could tackle.

This conclusion was taken from the insights we have gotten. The way we converged this was by creating speculative fiction for the three main insights we got.

We have created small video prototypes for every main insight to give a clear vision of what the speculative future of the clinic would look like. (This was divided into the restriction for patients, an AI for caregivers and an AI for patients).

We created three hypothetical extreme situations where we tested the stakeholders' reactions while they watching those videos, but also how they would feel if those situations were implanted on the facility helping either caregivers and patients.

DESIGN FICTION 1: THE TOTAL CONTROL SKELETON

The first video shows a patient who has been treated for pedophilia who is walking towards a playground full of children during his temporary leave. Since he is wearing this fictional device, the total control of his body is overridden, he immediately stops and turns around blocking any further approach to the danger zone.

We wanted to address the question: "how will tracking and control technologies in the future affect the balance between a safe society and trust in the patient?".

This scenario shows a clash between personal values like integrity and ethical treatment of patients, and boundaries in security. However, it also raises questions about how much the end justifies the means, and the way our perception of what is right and wrong can change in the future.

DESIGN FICTION 2: EFFICIENCY OR SOCIAL INTERACTION?

For the second video, we imagined an AI device which is connected with all workers at the facility. Every morning, the mind of each person is scanned when they arrive at work. Schedules, activities and general information are managed through this AI device, therefore there is no agenda or other project management tool needed. Everything is checked and confirmed immediately in real-time.

The example shows how a colleague tries to book conference attendance for two other colleagues, Line and Gideon. Immediately, the AI decides what is best for these two coworkers in terms of the state of mind, self-development, and availability. For Line, the device rejects the invite; this conference doesn't give her any value and would be a waste of time. Moreover, she is not physically in great condition to travel abroad. On the other hand, the AI decides that the conference would give Gideon great value for his career and he could expand his knowledge and expertise on the subject matter.

With this fiction we wanted to address the difficult relationships between coworkers at the clinic, forcing to think about the added value of a personal interaction by completely removing it in exchange for perfect automation. This scenario sees an effortless and ideal flow of information within the clinic thanks to technology. Despite this technology drastically reduces input for administrative tasks, the trade off is an almost complete lack of personal interaction between colleagues.

↑ *Screen captures from the Design Fiction 1 video.*

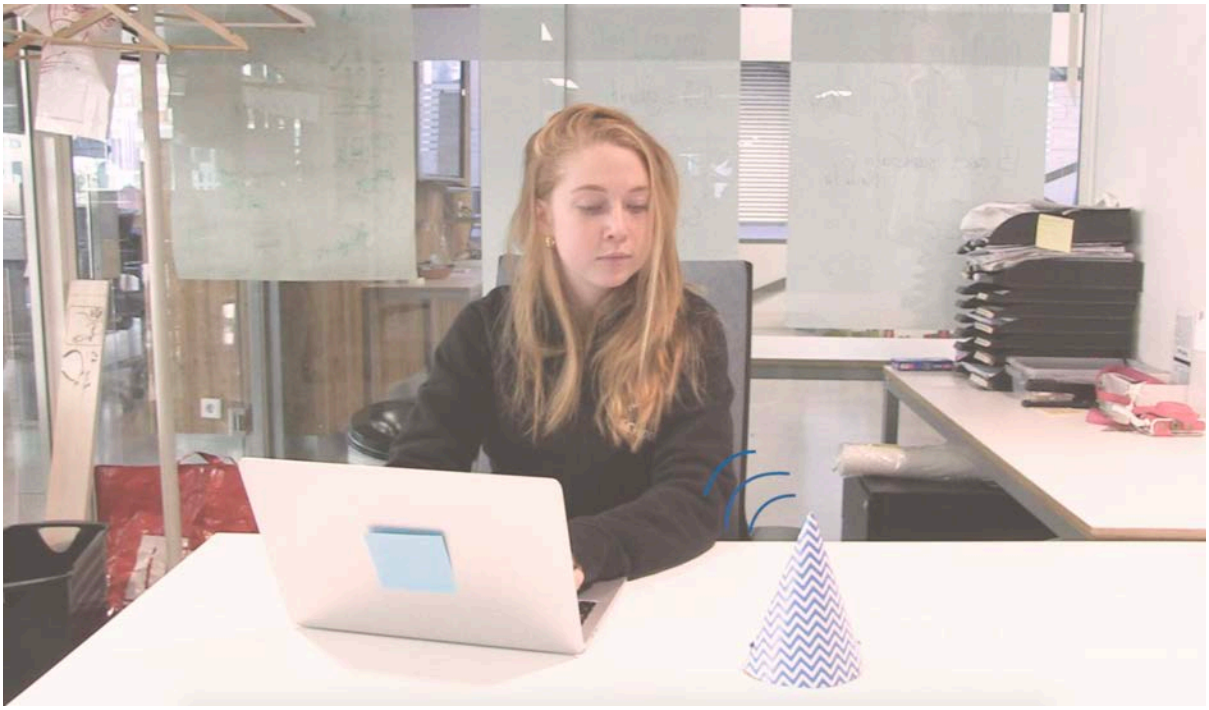
DESIGN FICTION 3: REPLACED BY TECHNOLOGY

One of the issues signaled by the caregivers was the lack of access to on-demand care for patients, especially during certain times of the day. In this fiction we imagined a technology that would take care of the individual 24/7, no matter when or where. Furthermore, it would replace, at some point, caregivers' attention.

The video shows a patient in bed at 4 am with some sleeping problems and some signs of depression. Automatically, his Avatar appears and gives him some comfort and assistance. In another scene, the patient is bored. There are no extra activities at the clinic that motivates him; the Avatar comes in and suggests to teach him something useful or interesting, fitting his own interests and whishes.

This scenario tackles different issues. How much can we expect technology to replace human interaction in the future? What would be the advantages or issues with this replacement? On the other hand, we wanted to address the question: "could education and self-empowerment be the way for a faster and more solid patient improvement?".

↓ *Screen captures from the Design Fiction 3 video: the patient.*



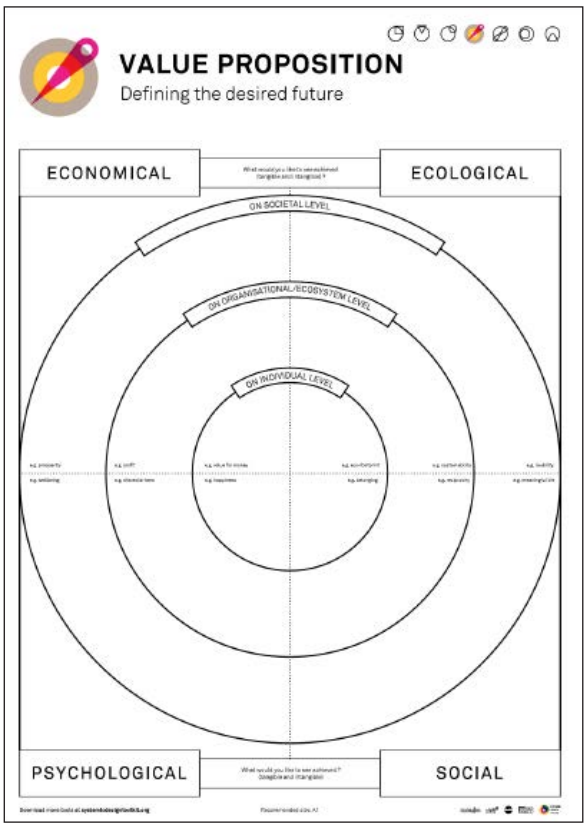
↑ *Screen captures from the Design Fiction 2 video: the virtual assistant.*

↓ *Screen captures from the Design Fiction 3 video: the personal avatar.*

VALUE PROPOSITION MAPS

After developing the design fictions in the form of short videos, a "Value Proposition" map has been designed for each narrative during a collaborative session with the project partners. This method is originally part of the "Systemic Design Toolkit" and has been adapted to this session as a structured approach to the analysis of positive impact coming from innovation.

This circular graph allows for defining consequences on different layers (individual, organizational, and societal level) and areas (economical, ecological, social, and psychological impact). As the presented concepts were fictional and only developed for the purpose of triggering deep and meaningful conversation, we asked the partners to focus on assessing with us how how the presented scenarios could affect their system only with a positive impact. In this way, we shifted the attention away from the struggles of transformation to make space for an awareness of the value drivers which make innovation relevant and meaningful. This is of particular relevance to a sensitive and complex context as forensic mental healthcare, where drawbacks from systemic challenges can often limit drastically the vision of a better future.



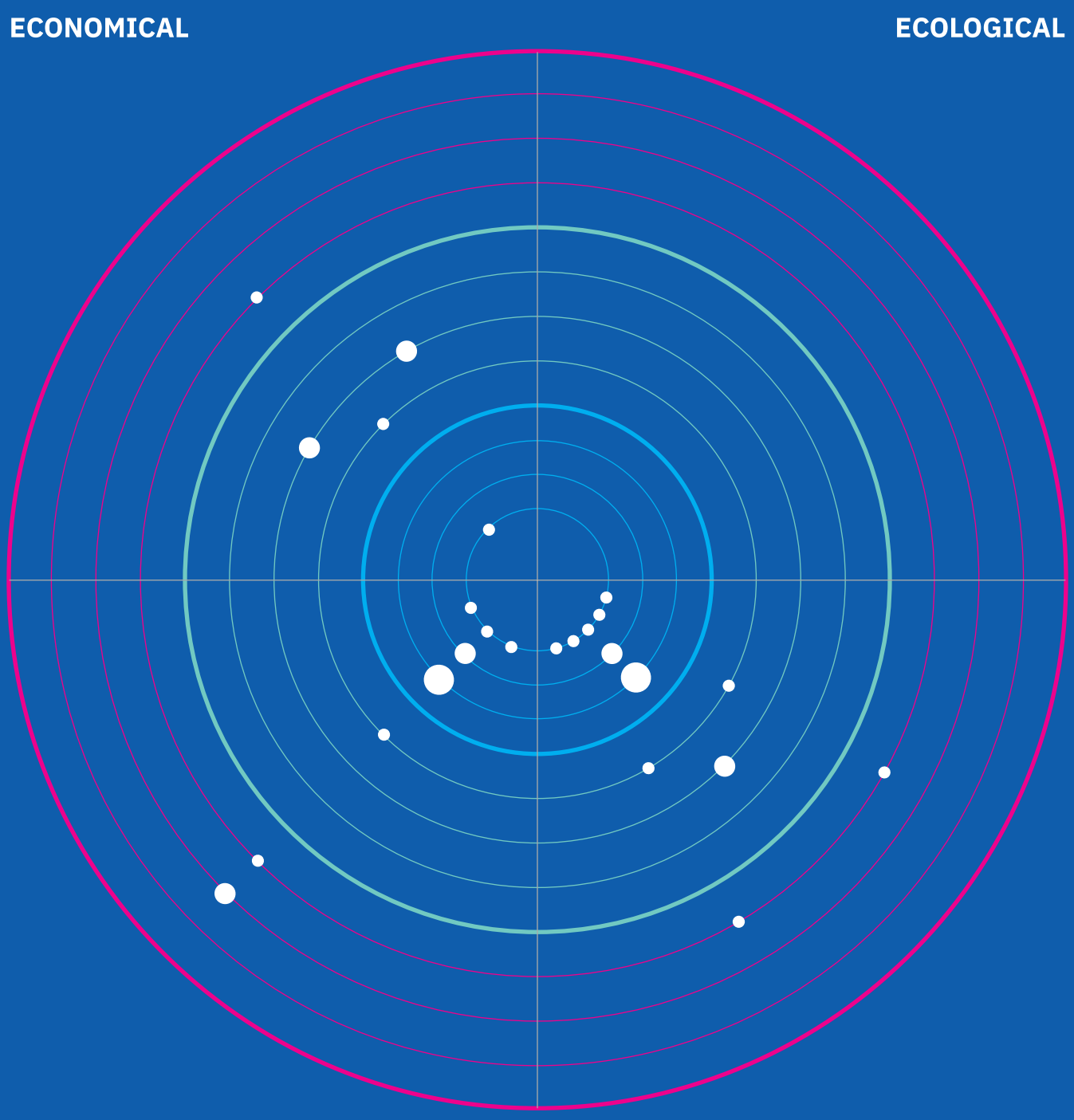
↑ *The original Value Proposition from the Systemic Design Toolkit.*

→ *Picture of the facilitator Andrea filling out the Value Proposition Map.*


ECOLOGICAL
ON ORGANISATIONAL/ECOSYSTEM LEVEL
INDIVIDUAL LEVEL
e.g. livability
e.g. meaningful life
PSYCHOLOGICAL

VALUE PROPOSITION I

“The Total Control Skeleton”



scale of impact

level of impact: INDIVIDUAL ORGANIZATIONAL SOCIETAL

Insights for Innovation

ON INDIVIDUAL LEVEL:

I While posing ethical and medical concerns, there would be notable upsides for patients who behave in accordance to their treatment plan and resocialization process.

II By removing the risks associated with relapse and temptations coming from the outside world, the patients could be allowed to go on leave earlier in the process.

III This would open possibilities for more effective treatment in real life situations and potentially speed up the whole process.

IV Having access to the outside society sooner and more frequently would ease the feeling of being detained for the patients.

V Making the technology invisible would also allow to make the patient feel more comfortable integrating with society.

VI By removing the danger for patient of making mistakes, there would be also less negative consequences on the long term treatment and on legal level.

The "Value Proposition Map" is part of the "Systemic Design Toolkit" available at https://www.systemicdesigntoolkit.org/

VALUE PROPOSITION I

“The Total Control Skeleton”

ON ORGANIZATIONAL LEVEL:

I By increasing the safety of patient leave, the treatment process can be made more effective, impacting the costs and structure of the organization. The lower need for surveillance of the patients would also result in needing less security staff.

II By making incidents and relapse not possible for the patient, it would be possible to completely restructure the TBS process. There would be almost no need for detention, making the clinic into a treatment facility.

III The role and expertise of the caregivers would change, incorporating more technical skills for controlling and operating the new systems and technologies.

IV There would be minimum to none accidents, avoiding bad media coverage for TBS and improving its perception in society.

Insights for Innovation

ON SOCIETAL LEVEL:

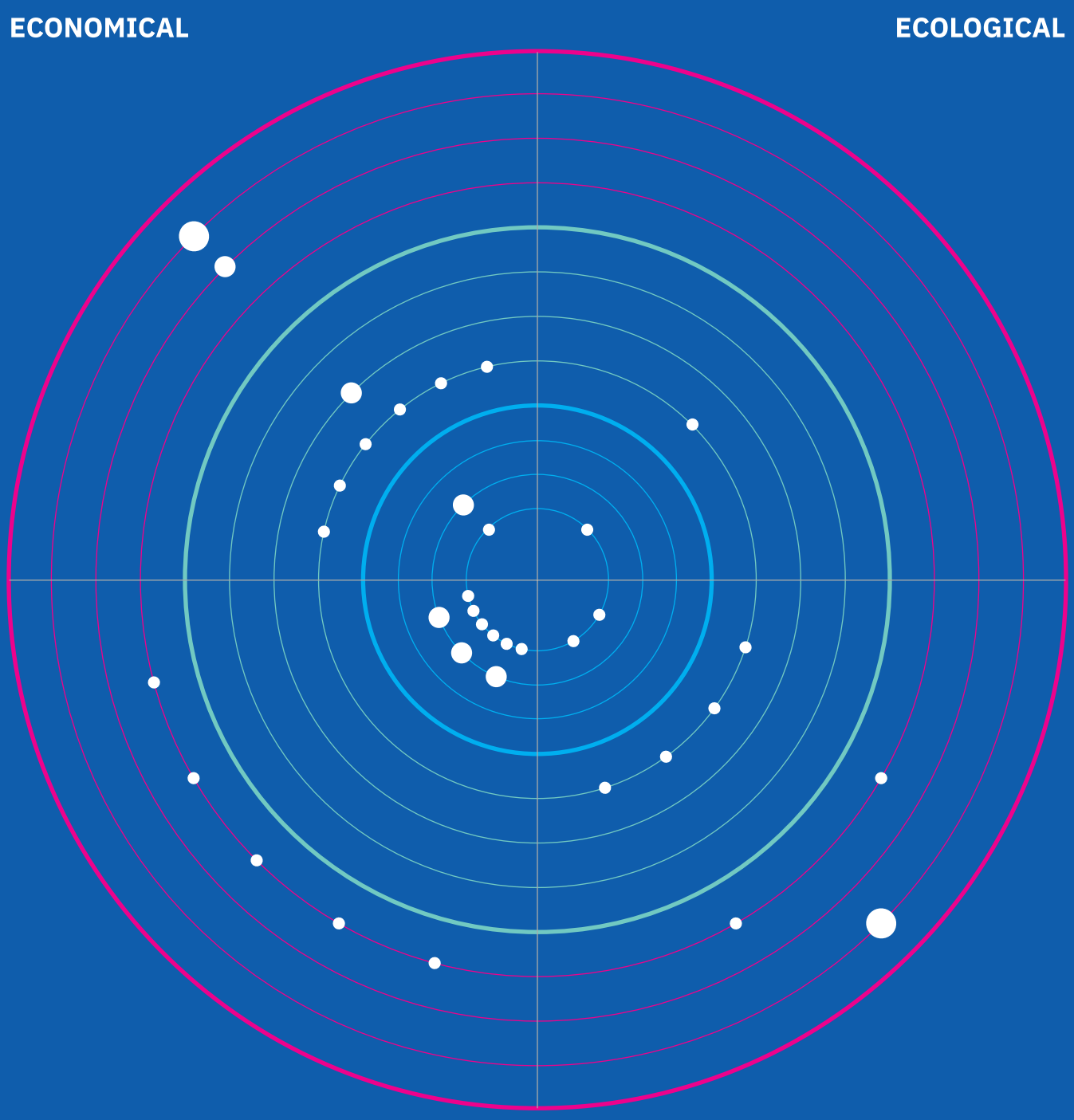
I **Making the treatment process faster, safer and more effective will decrease the high costs associated with every patient's permanence in TBS for day-to-day detention and treatment.**

II **Removing the risks of relapse for the patients and making the resocialization more effective contribute to a perception of safety for the outside society.**

III **An invisible technology and a lower perception of risk can decrease the stigma towards patients and ex-patients, aiding them into coming back to a regular life and being part of a community.**

VALUE PROPOSITION II

“Efficiency or social interactions?”



scale of impact

level of impact: INDIVIDUAL ORGANIZATIONAL SOCIETAL

Insights for Innovation

ON INDIVIDUAL LEVEL:

I The caregivers feel very motivated to spend time with the patients and on practical treatment activities. By removing the burden of administrative tasks they could spend more quality time with the patients, increasing the effectiveness of treatment and their own job satisfaction.

II An external and objective input can ease the social relationship between colleagues, partially externalizing the fault in small decision-making and aiding in politely accepting or declining offers with good arguments.

III Having a device that can address daily administration and organization with small to none input from the user means the cognitive load on the caregivers can be significantly reduced, avoiding distractions from the core activities of their profession and freeing them of some trivial daily tasks.

The "Value Proposition Map" is part of the "Systemic Design Toolkit" available at https://www.systemicdesigntoolkit.org/

VALUE PROPOSITION II

“Efficiency or social interactions?”

ON ORGANIZATIONAL LEVEL:

I On the long-term, putting effort in registration of patient progress and making sure that all the information is synced, correct and accessible has a valuable impact on the quality and speed of the treatment and overall resocialization process

II By introducing an external non-human input in the decision process it is possible to keep a fairer and more objective judgment towards the patient, filtering out individual emotions and supporting the assessments made by the caregivers

III Supporting the caregivers’ work with a digital assistant would have multiple positive outcomes for the economy of the organization, making daily administration smoother, saving money from extra staff and letting the clinic deliver an increased amount of care overall.

IV AI on clinic scale would allow for data-powered strategies in the long run, continuously collecting valuable data that can be interpreted and used to power decisions on the organizational scale.

Insights for Innovation

ON SOCIETAL LEVEL:

I **A well-functioning and streamlined TBS process can attract more positive attention from society, as well as taking a more relevant spot in the agenda of the whole organization strategically and financially.**

II **Interpreting the collected big data would empower targeted and effective policy changes and financial planning for the Ministry of Justice.**

III **Decreasing the cognitive load on the caregivers and streamlining their employment of time would aid them in maintaining a balanced life and healthier relationship with work.**

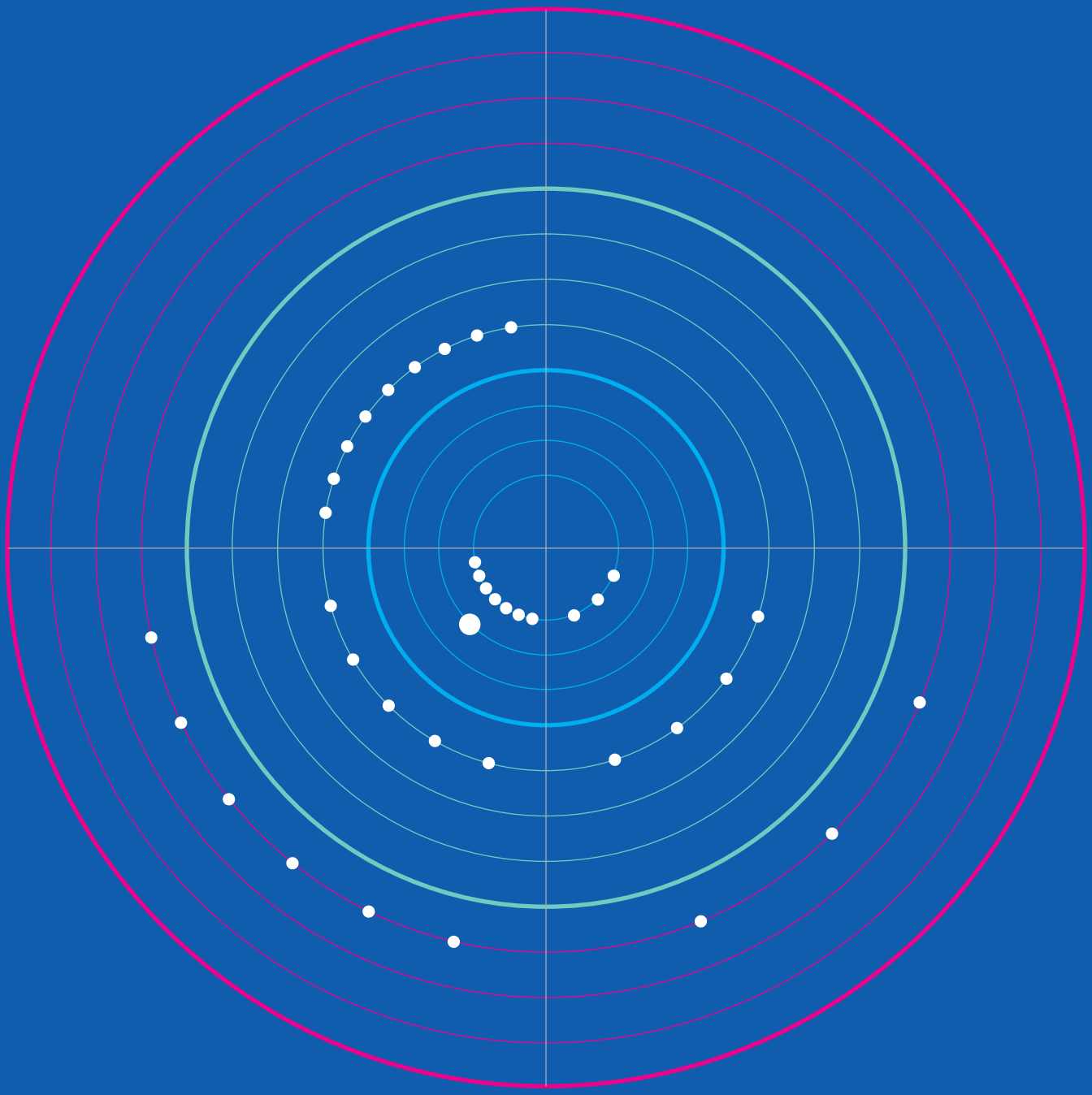
IV **A more effective TBS has a positive impact on the safety of society, while concurrently making life conditions better for the patients after they finish their treatment process.**

VALUE PROPOSITION III

“Replaced by Technology”

ECONOMICAL

ECOLOGICAL



PSYCHOLOGICAL

SOCIAL

scale of impact

level of impact: INDIVIDUAL ORGANIZATIONAL SOCIETAL

Insights for Innovation

ON INDIVIDUAL LEVEL:

I Every patient is very different and it's difficult to introduce technologies and solutions which are helpful or effective with a majority of users. By employing hyper customization, it is possible to tailor treatment for the needs and issues of individual patients in real time as a person would do.

II The availability of an on-demand solution gives patients the possibility to access treatment in any moment of the day, helping them cope with unpredictable or constant issues they experience even when a caregiver is not available to help them.

III Conversational agents can offer a way for patients to build routine, reinforce positive behaviors and be more self-aware, aiding in the treatment process that the caregivers supply in person.

IV By outsourcing smaller or less important tasks to a digital twin, the caregivers release an important part of the pressure of handling multiple patients at different times. Conversely, patients have a quicker and more available access to help, while knowing they can resort to a caregiver in person if the situation demands it.

V This digital agent would give the caregivers access to a more complete overview of what happens to the patient when they're not there, easing their judgment and decision-making

VI This technology would allow for experimenting new treatment techniques (e.g. reversal of roles, making the patient understand more of its own situation by making him into his own caregiver)

The "Value Proposition Map" is part of the "Systemic Design Toolkit" available at https://www.systemicdesigntoolkit.org/

VALUE PROPOSITION III

“Replaced by Technology”

ON ORGANIZATIONAL LEVEL:

I

The technology would sense and interact with the patient at any moment, generating a vast amount of data about individuals and processes in the clinic. Elaborating this data and making it visible would have a strong impact on the understanding and improvement of the facility.

II

Through an intelligent use of automation, tasks that are trivial or less urgent can be directed to the digital counterparts while the caregivers can use all their time on activities that make a valuable use of their skills and expertise. On organizational level, the clinic would need less staff and be able to deliver more care.

III

This kind of technology would allow for a digital treatment that accompanies the patient even outside of the clinic when he gets back in society. This emotional and psychological support could impact the well-being of the patient as well as the effectiveness of its resocialization, lowering the risk of recidivism.

IV

Through the power of AI it would be possible to achieve a digital treatment customized to the needs of the individual patient. This would enable a better treatment outcome for the caregivers as well, as they would get access to the inputs and issues gathered by the AI, while helping the patients feel more valuable and understood through a personalized approach.

V

The situation of the patient would be available at all times, allowing for the detection of early warning signals and the monitoring of treatment effectiveness.
The patient would have to face less loneliness and get access to growth opportunities aiding in its treatment and well being.

Insights for Innovation

ON SOCIETAL LEVEL:

I **The continuous availability to social interaction in a friendly and safe space while in the clinic would impact positively the ability of the patients to be part of a community when outside, allowing for a safer and more inclusive society.**

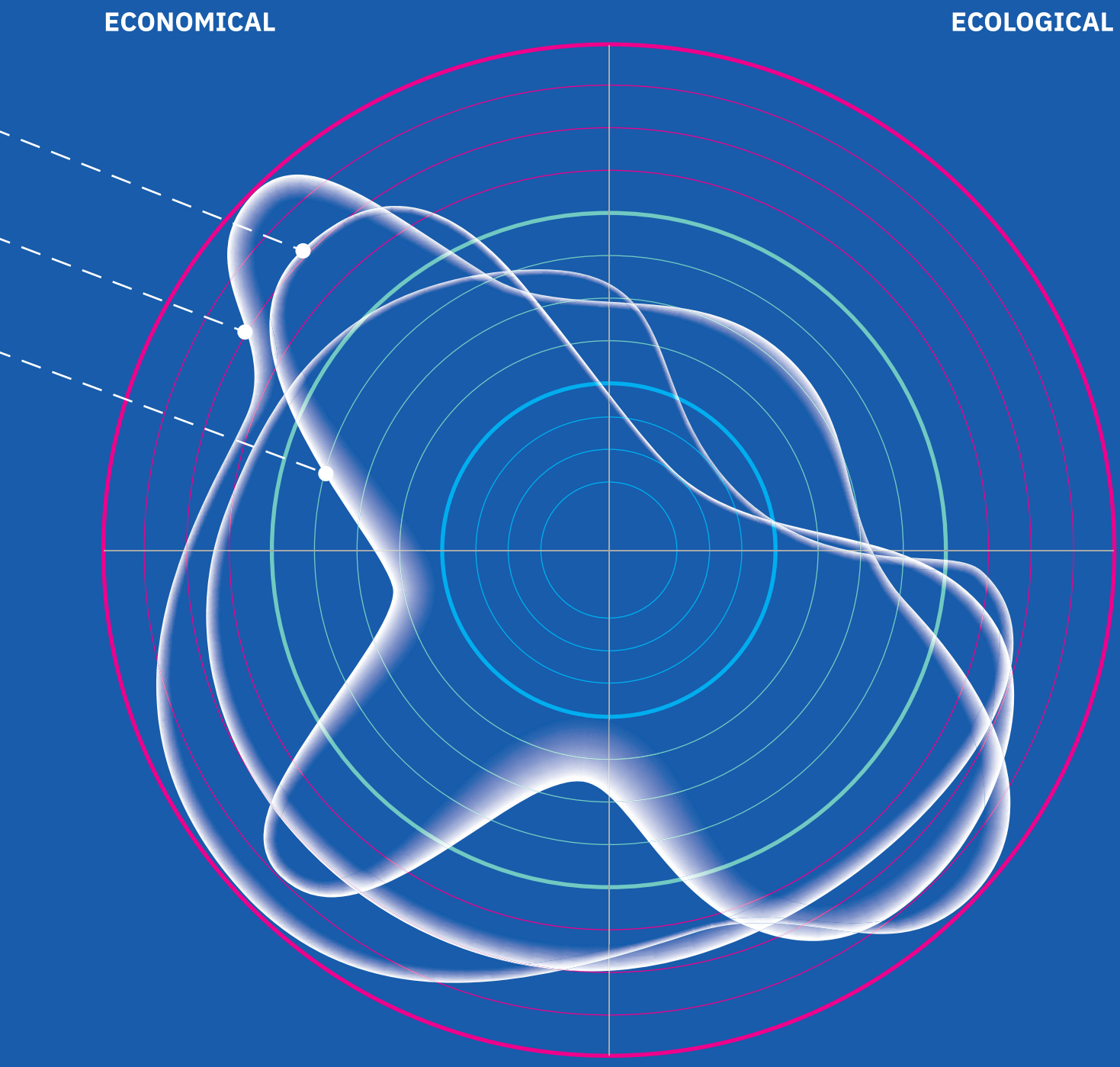
II **The vast amount of data collected could allow for an open access database, allowing for a great impact on research and improvement of treatment on a global scale.**

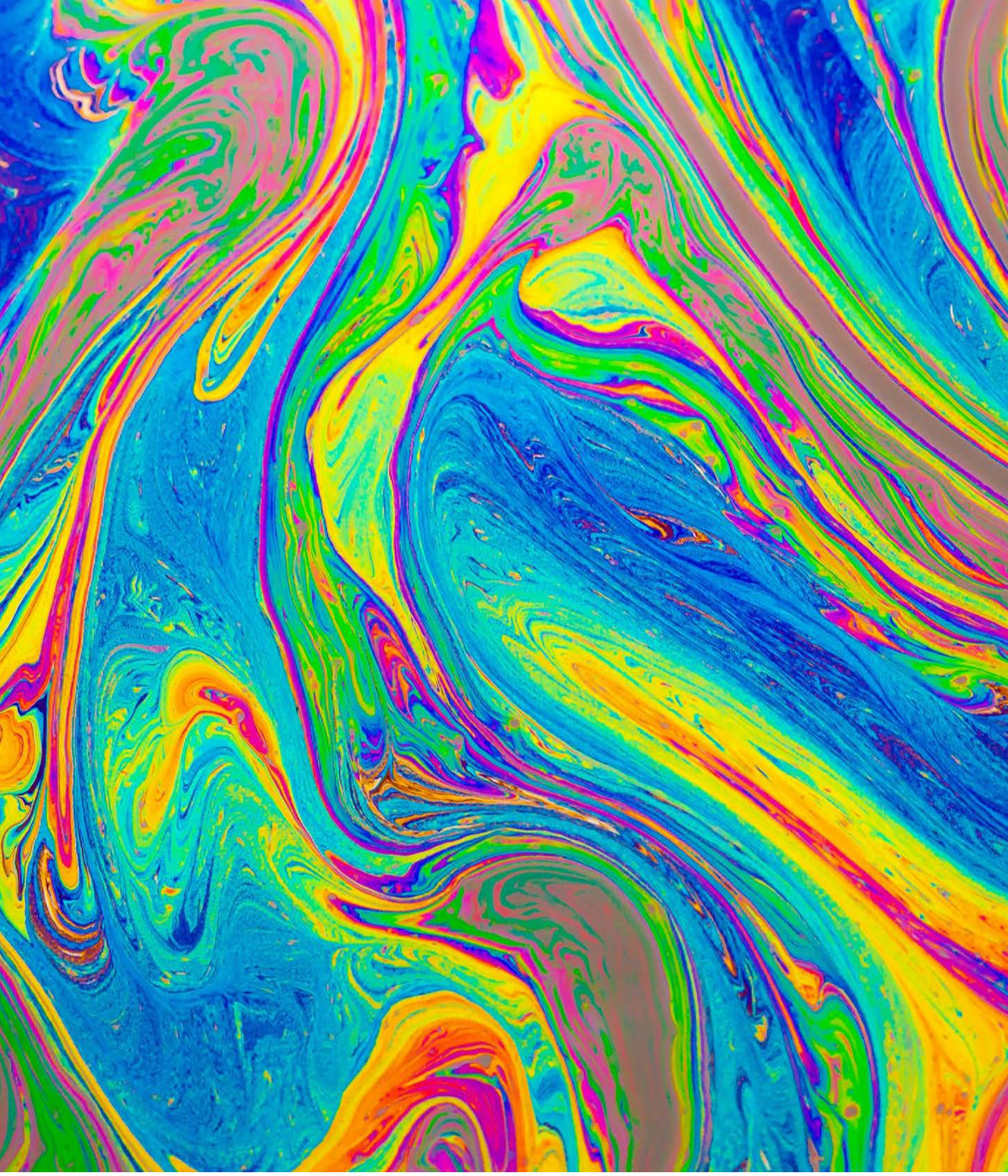
Comparison of Impact Levels

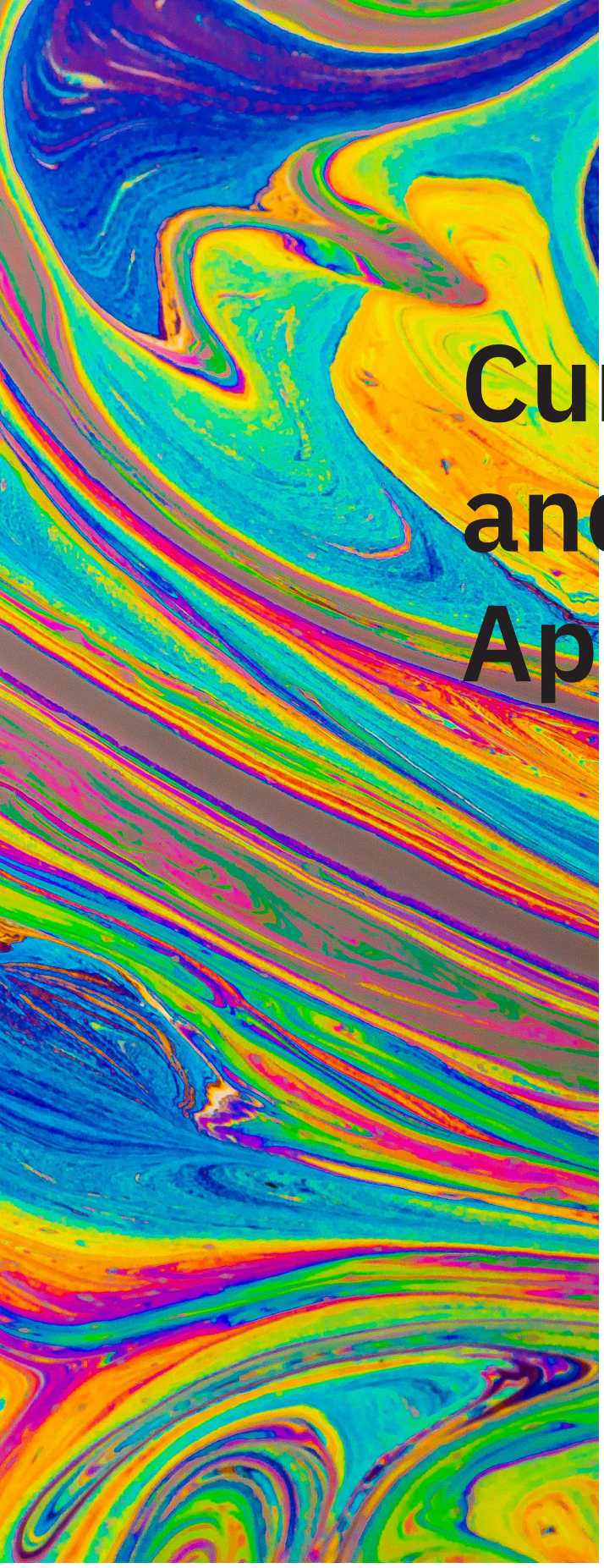
From the analysis of the Value Proposition maps, it was possible to collect important insights about the approach to innovation in this complex system. The visual representation of this impact highlights the areas which benefit more from the concepts presented in the different scenarios.

In most cases, the Psychological, Economic and Social areas received the biggest influence from a technological implementation. It's also possible to see how some solutions had a subtler but very wide impact (more circular and thinner graph line) while others had a focused but deeper one (more angular and thicker graph line).

It's important to notice how this tool has been used with an explorative mindset to identify the key drivers for meaningful innovation in this system. However, this methodology is also very effective at establishing positive and negative consequences of project proposals that are being considered for real implementation or to define the vision of the organization even before the concept stage. It is thus suggested to be employed consistently in the innovation process of the clinic.


ECONOMICAL
ECOLOGICAL
PSYCHOLOGICAL
SOCIAL





Current Gaps and Suggested Approaches

CURRENT TECHNOLOGIES AND SOLUTIONS AT THE CLINIC

The Oostvaarderskliniek had adopted a handful of ICT solutions to make processes more automated and effective.

The Electronic Patient Dossier system is employed to keep track of essential data about the patients, such as their background, sentences, medication intake, treatment, and test results. This technology allows for a comprehensive collection of information about the patients to be accessed by the clinic staff and Dutch healthcare system. The clinic makes use of an intranet named "Infoland" which allows for the storage of documents, communications, forms, process mapping, etcetera. Additionally, an evaluation system called Routine Outcome Measurement (ROM) allows allows the collection of feedback feedback about different parts of the process and therapy, by the users of the clinic, with the purpose of establishing a framework for continuous improvement.

Within the therapy sector, the clinic has recently tested some technologies in a pilot stage. For example, a virtual reality headset (VR) is used in treatment with patients for simulating exposure therapy with the help of a caregiver. This technology allows the patients to be confronted with challenging real-life situations in a safe and controlled environment, helping them to practice and prepare for their return in society. This type of therapy can also allow the caregiver to test the progress of the patient, for example aiding in the risk assessments when allowing transmural leave.

In order to understand at what level the OVK is at regarding their implementation of technology and solutions, the clinic can be compared to other facilities within similar fields.

A LOOK AT TECHNOLOGIES THAT ARE CURRENTLY AVAILABLE

The area of forensic mental health care is flourishing with promising technological developments. E-health entails services and information within health care being carried out through the Internet and digital devices. The DJI can expect to see growing opportunities and innovations within this segment in the next years through the growing use of apps, web-based interventions, wearables and virtual reality. This development depicts an improvement within health care through external means, meanwhile it's also a matter of creating a positive mindset change within the industry and society towards information and communication technology (ICT).

↑ *Image depicting the use of VR glasses, a popular innovation in the healthcare field.*

Within forensic care, technological developments will allow for better monitoring, more efficient coaching, faster treatment processes and lowered costs due to smaller number of staff needed. Looking at technological innovations within this field, it is possible to categorize most of the advancements currently growing or being implemented within the main areas of security, staff aids, patient autonomy, and mental health treatment.

currently available technologies within

Security

Correctional institutions and mental health clinics aim at keeping society safe and therefore obtaining a highly secure institution is of top priority. Technologies within security include intelligent cameras, identification systems, tracking etc.

BIOMETRIC TECHNOLOGIES

What it is Using physical attributes to identify inmates, patients and/or staff (using fingerprints, iris detection).
The benefit A higher level of security, it will be easier and faster to identify the correct person during transportation. Improves speed, security and reliability of prisons.
Implemented at HMP Isle of Wight (Prison in the UK).

RFID TRACKING

What it is *Inmates wear a bracelet/wristband that signals to security when prisoner is out of the appropriate perimeter (through radio frequency)*
The benefit *Less need for security, physical search for inmates, more trust in and control over patients.*
Implemented at *Lancester Co. (Prison in the U.S.)*

GE SENSOR DETECTING VITAL SIGNS

What it is *A wall mounted sensor allows officers to monitor prisoner/patients's vital signs such as breathing, heart rate, movements to prevent suicide and/or self-harm.*
The benefit *Decreased levels of self-harm, suicides*
Implemented at *Zaanstad prison*

SPEECH RECOGNITION

What it is *AI in technology is able to transcribe and analyse what is being said over the phone,*
The benefit *Higher level of security, less risk of unwanted behavior among prisoners/external contacts for inmates, more trust in and control over patients.*
Implemented at *U.S prisons and jails*

currently available technologies within

Patient Autonomy

Patients within mental health clinics often suffer from a lowered self-esteem. It is therefore of importance to encourage them to take responsibility in their own treatment and involve them in self-empowering activities as this can reduce the risk of recidivism and improve the resocialization process.

SECURE TABLETS (SOCRATES)

What it is Electronic tablets installed with a highly secure software
The benefit Prisoners are able to feel more self-empowerment, responsibility, get easier access to the outside world, education etc.
Implemented at Prisons in Maine

PRISON CLOUD

What it is *IT platform for inmates where information is easily distributed and accessed. Platform involves information about the inmate's labor, education, healthcare, finances.*
The benefit *Allows for greater responsibility and active part in their own process. Helps with resocialization as it resembles life out in society.*

INDIVIDUAL RFID CARD

What it is *Each inmate is given a card with an RFID chip so they can perform independent tasks such as operating lighting, equipment, showers, phones, schedule visits etc. The card allows them to access certain areas of the building at set out hours. monitor prisoner/patients's vital signs such as breathing, heart rate, movements to prevent suicide and/or self-harm.*
The benefit *Prisoners are able to feel more self-empowerment, responsibility.*
Implemented at *Zaanstad prison*

PHONES IN PRISON CELL

What it is *Each inmate has a stationary phone installed in their cells*
The benefit *benefit Is believed to reduce violence, suicide, self-harm, smuggling in of mobile phones as inmates get to be closer with the outside world.*
Implemented at *Prisons in France.*

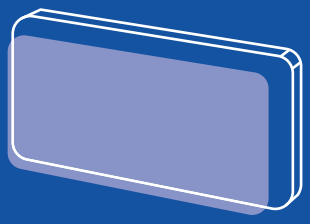
currently available technologies within

Treatment Focused

The field is seeing the development of many new technologies aiding with a safe resocialization process and mental health treatment. For example, VR technology is emerging and helping patients in getting used to being back in society.

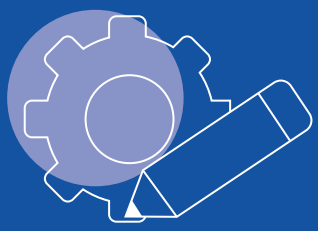
VR GLASSES

What it is VR glasses allows for a more practical approach to treatment where the patient can experience situations that he/she needs to train and get used to, such as being outside in society where challenging situations may arise.
The benefit benefit Reduced risk of recidivism, faster resocialization process
Implemented at OVK, Almere



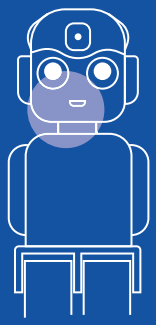
TOUCHSCREEN TERMINAL

What it is *Inmates receive addiction treatment through touchscreen terminals in their cells*
The benefit *Less demand for staff (psychiatrists etc.), easier and faster access to treatment*
Implemented at prisons in New South Wales



PERSONALIZED PLATFORM

What it is *A platform that customizes the patient's treatment*
The benefit *Personalized treatment for each individual, listens to their needs and personal desires*
Implemented at *GGZ Noord-Holland-Noord*



SOCIAL ROBOT 'MAATJE'

What it is *A social robot acts as a companion and provides inmate/patient with company, reminders, guidance etc.*
The benefit *Easier resocialization process*
Implemented at *OVK, Almere*

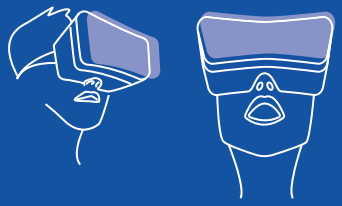
currently available technologies within

Aiding Staff

Technologies have the ability to make processes more efficient and easier. This can alleviate burdening tasks from ordinary staff and allow them to focus their time and energy on other activities, such as socializing with patients.

SMART LOCKERS

What it is Caregivers have access to a personal smart locker where they store a card that gives them access to wherever they need it
The benefit No need for keys, more secure
Implemented at Zaanstad Prison



VR TRAINING FOR STAFF

What it is *Caregivers get to train through VR, by testing different disorders for example.*
The benefit *Caregivers get insight into patient's daily struggles*
Implemented at OVK (Almere) and Zaanstad Prison

IN-REAL-TIME TRANSLATOR

What it is *A device allows caregivers to translate in real time with the person they speak to*
The benefit *benefit Faster and better communication*
Implemented at *Zaanstad prison*

ROBOTIC PROCESS AUTOMATION

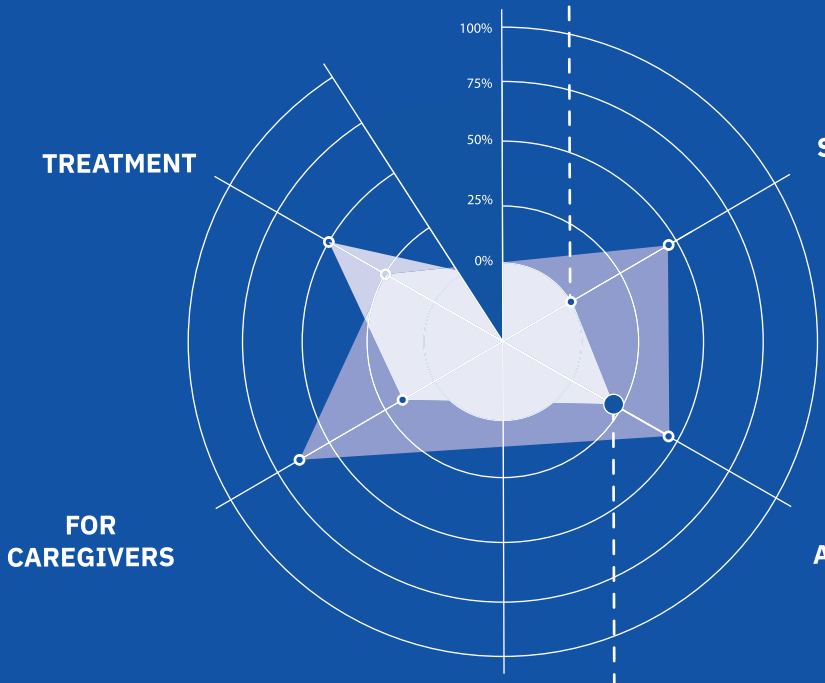
What it is *RPA is "the application of technology that allows to configure computer software or a 'robot' to use existing applications for processing a transaction, manipulating data, triggering responses and communicating with other digital systems".*
The benefit *Caregivers can spend less time documenting and doing administrative work which allows them to spend more time with patients*
Implemented at *HUS, hospital in Finland*

comparison graph

OOSTVAARDERSKLINIEK AND ZAANSTAD PRISON

Zaanstad Prison

Oostvaarderskliniek



0%

of the researched technologies within security are implemented at the OVK.

20%

of the researched technologies within patient autonomy are implemented at the OVK.

IN COMPARISON

The level of autonomy and responsibility the inmates take on improves their self-esteem at the same time as they experience a greater level of freedom. Above, the previously discussed technologies are compared between the Zaanstad Prison and the Oostvaarderskliniek to visualize the differences.The facilities are compared according to the four categories; security, patient autonomy, treatment and staff. The Oostvaarderskliniek (OVK) could implement many of the technologies from Zaanstad to reach the same level of security and autonomy in a more efficient manner.

“Zaanstad Prison Complex is considered to be one of the most technologically advanced correctional institutions in the world”

CASE STUDIES FROM DIFFERENT FACILITIES

Zaanstad Prison

This newly built correctional facility, located outside of Amsterdam in the city of Zaanstad, has the capacity of housing up to 1000 inmates. The facility is considered to be the most technologically advanced correctional institution in the world. The facility uses technology that allows the staff to carry out their work in a more efficient and safe manner. For example, staff doesn't handle single keys for opening doors which reduces the risk of them being lost or stolen. Each inmate cell is equipped with individual screens and devices that monitors the inmates' behavior and can detect suspicious behavior such as self-harm to reduce the risk of suicides. Implemented innovations, such as RFID cards, allows inmates to move "freely" around the properties in a safe manner. The same card enables the inmates to buy groceries, schedule visits, and make personal phone calls on communal touchscreens. The level of autonomy and responsibility the inmates take on improves their self-esteem at the same time as they experience a greater level of freedom. The previously discussed technologies are compared between the Zaanstad Prison and the OVK to visualize the differences. The OVK could implement many of the technologies from Zaanstad to reach the same level of security and autonomy in a more efficient manner.

Secure Inmate Tablets

As society is advancing at a rapid speed through technological developments, it is difficult to keep up with this shift if one is incarcerated over a longer period of time. Patients at the OVK are in treatment ranging from 2 years up to a lifetime. Tasks considered to be simple and ordinary such as buying a bus ticket or using a vending machine might be close to impossible for someone who hasn't been out in society since a time when most services were still carried out through human-human interaction. This lack of technological confidence, or "tech-illiteracy", can create a strong

← Image depicting RFID systems being used within healthcare facilities

← (previous page) image depicting an inmate using a personal secure tablet.

sense of alienation and and can result in recidivism. Many facilities have understood that a safe resocialization process doesn't only entail treatment of a mental disorder, but also a preparation for what today's society looks like. At Pima County Sheriff's Department in Arizona, inmates receive personal tablets where they can practice using technology in preparation for when they're back in society. The successfully implemented tablets let the inmates make personal phone calls, get access to educational services, anger management programs and employment training.

Besides seeing a reduced rate of recidivism, the correctional facility is also experiencing a lower level of self-harm, suicides and assaults among inmates. This is believed to result from the increased access to family and friends and thereby cause less stress and anger among inmates. Additionally, less staff is needed at the facility as they don't need people manually looking through mail for contraband as incoming communication with inmates can be carried out digitally. The tablets are equipped with a secure on-site server without internet access so there is no risk of the technology being misused. A similar tablet was invested in and expected to be provided to about 1,8 million inmates in the U.S for the rough cost of 280 million USD (equivalent to approximately 250 million euros). Is this investment, landing at 140 euros per inmate, worth the costs and efforts in order to keep up with society's technological advancements? From 2010-2014 the OVK had an 18,8% risk of recidivism and experienced 10 suicides during another 4-year period. Perhaps the costs and efforts associated with these risks could be reduced by implementing stress-relieving and self-empowering technology like secure tablets?

CURRENT EXPLICIT GAPS TO ADDRESS IN THE CLINIC

Successful product implementation
Implementing new technologies may seem easier said than done. A successful implementation can take 2-3 years and the stages involved require thorough testing, evaluation, planning and development. A successful product implementation entails a positive impact of the product implementation and thereby satisfied end-users. Researcher Hanneke Kip has investigated the development process of new technologies and found that there's often a mismatch between the desired technology and the users' needs (Kip et al., 2019).

More involvement of the users in the innovation process
The process of implementing new technologies into health care requires large resources such as product developers, testers, staff, material, time, money etc. As Kip states, it is of essence to understand the end-users, so these resources don't go to waste. Clinics with a better understanding of their 'users' and who apply this knowledge into technology implementations have a bigger chance of experiencing a more successful

First steps to bridge the gaps

IMPLEMENTATION OF NEWER TECHNOLOGIES

The OVK has implemented 4 out of the 19 researched technologies whereas the Zaanstad prison has implemented 8. Neither one is perfect, however more technologies could be tested for implementation in order to reach a higher level of efficiency in the OVK's treatments and results.

INTERNAL COMMUNICATION SYSTEM

Caregivers of the OVK use several internal systems to register patient information and for communication among colleagues. The systems are lacking in efficiency and intuitiveness which causes frustration among staff. Caregivers experience that this problem limits their quality time with the patients as they must focus on administrative tasks.

implementation. There are various methods within design thinking that allows for a deep understanding of the users' needs, desires and motivations.

PATIENTS TECHNOLOGY ILLITERACY

Patients are not up to date with technology once returned to society. This 'technology-illiteracy' causes a lowered self-esteem and insecurity about being independent in society which may lead to recidivism. A safer resocialization process can include more technological education and exposure during treatment.

PERSONALIZE(ABLE) TECHNOLOGY

Patients within forensic care suffer from such a large variety of disorders that no technology is a 'one size fits all'. It's important to strive for implementing technological advancements which allow for customization for each individual patient, as well as the staff.

How to improve the chances of a successful implementation.

THE WHY

Understand why you're implementing a new technology. Is it because of a trend or because your clinic is in need of a technological renaissance? Ideally, the technology is implemented to have a positive impact on a current issue and improve the users' workflow.

THE NEEDS

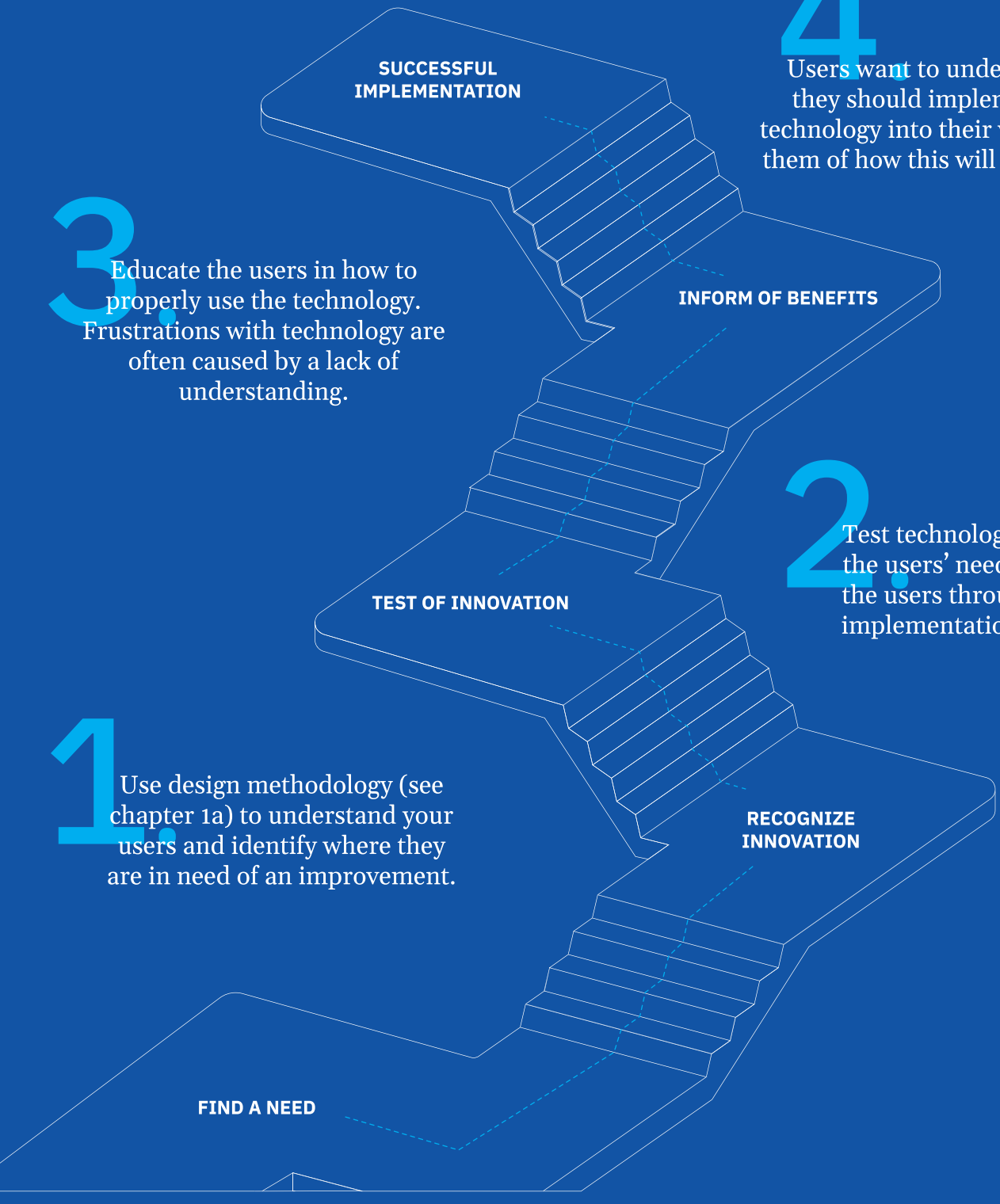
Understand the needs of the end-users – how can these coordinate with the clinic's vision and motivate the users to use the desired technology?

THE DISADVANTAGES

Understand the disadvantages the technology will bring with it. Be aware and prepared of the frustrations the new implementation might cause to the users.

STEPS TO TAKE

Ask yourselves the questions; why does my clinic need this technology? Will it improve the lives of the users? Will it have a positive impact in the field? Ínstead of starting with a technology, start with finding a need of the users.

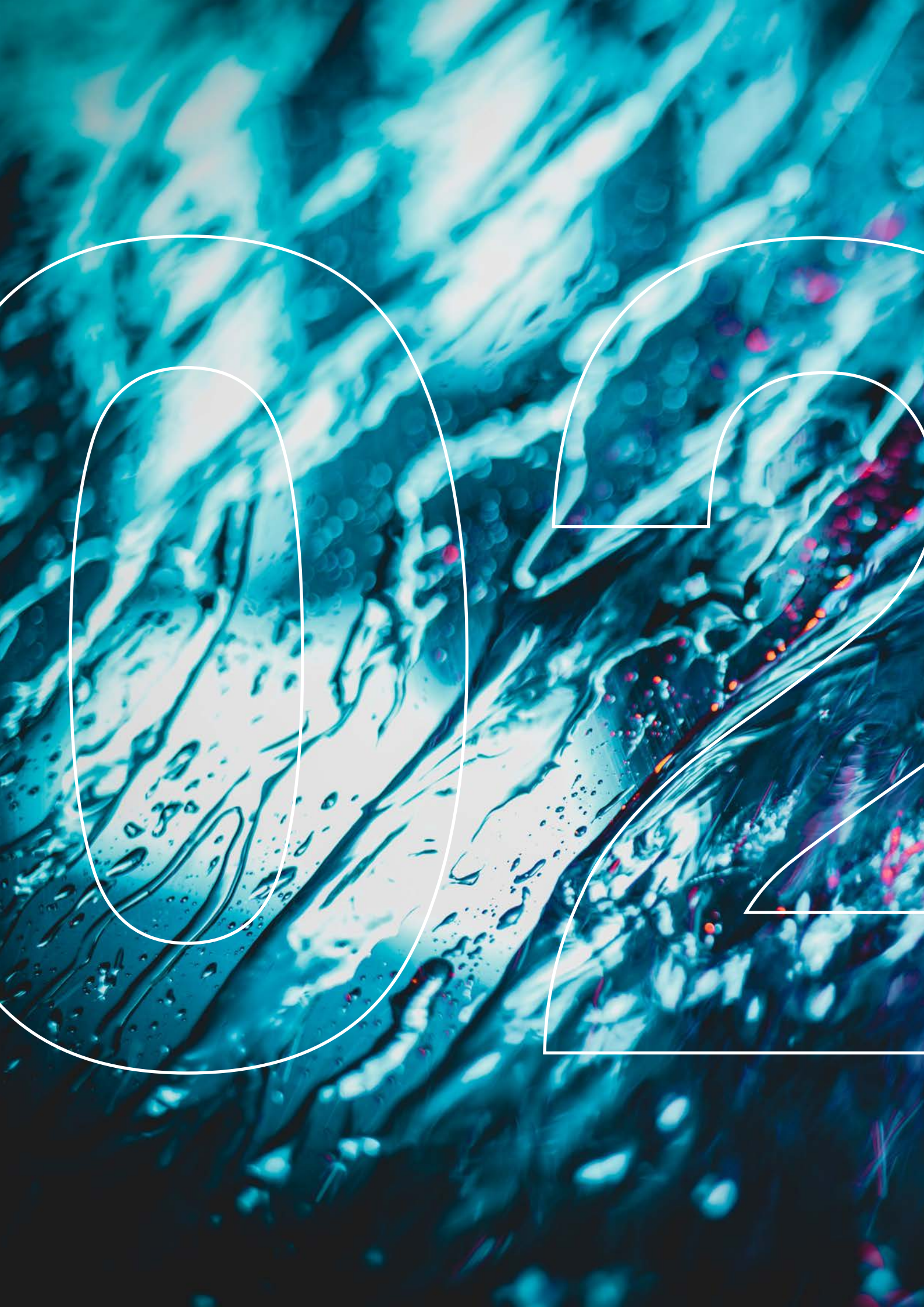


4. Users want to understand why they should implement a new technology into their work - inform them of how this will benefit them.

3. Educate the users in how to properly use the technology. Frustrations with technology are often caused by a lack of understanding.

2. Test technologies that fit the users' needs. Involve the users throughout the implementation process.

1. Use design methodology (see chapter 1a) to understand your users and identify where they are in need of an improvement.


02

The Future

"Trends and technologies up-and-coming and visualising the future through scenarios"

Trends and Technologies

OVERVIEW OF POSSIBLE FUTURE DEVELOPMENTS AT THE CLINIC

Violent crime is expected to continue to decrease as the future can expect more organized and digital crimes, often not conducted by mentally ill people. Additionally, cities will grow in their infrastructure and have an improved connectivity which can reduce crime rates and improve the way crimes are addressed. The OVK can expect to see a smaller amount of patients admitted to TBS however, as we're expecting an aging population, patients are expected to stay longer in treatment. An aging population will also entail a higher demand for the quality of healthcare provided by the clinic as patients will experience more diseases on top of their mental disorders. The OVK must therefore provide patients with additional healthcare such as providing them with more medicines and visits to doctors for example. As another implication of an aging population we can expect to see a decline in the available working population. Staff will therefore not be

as easily accessible and the OVK can benefit from implementing automated processes within the clinic to be able to keep up with a greater workload.

Technological developments will allow the DFZ's processes to run more automatically and efficiently in terms of cost and time. Processes at the DFZ can make use of advancements within robotic process automation in administration, AI in security, and VR and social robots in treatment/ resocialization. Day-to-day activities will be affected by seeing a bigger involvement and replacement of technologies in many aspects. Patients can expect to get more responsibility of their own treatment which can decrease the workload for caregivers. This will also empower patients and help them feel more confident in themselves. This can make the treatment process run faster as patients could become more confident in the use of technology and in themselves personally. Through eHealth for example, patients can get constant access to treatment, help, guidance which will improve their treatment experience and decrease the risk of unwanted behavior. Wearables for patients and caregivers can allow for data to be analyzed in a more effective manner and translated into meaningful and actionable formats. Virtual reality can bridge the gap between the clinic and the real outside world which can decrease the risk of recidivism as patients will be more prepared when resocialized (Kip et al., 2019). Social robots can be used by patients post clinic and/or during the transmural leave which can replace the need for caregivers checking up on the patient. This technology can aid the patient in resocializing in a safe and responsible manner which reduces the risk of recidivism. Internal communication issues among caregivers may be resolved because of improved flow of information within the clinic. This will cause less friction among caregivers and an improved workflow due to their improved feelings towards colleagues/ clinic. Caregivers can expect less administrative work as this can be automated with the help of AI and/ or robotics. Caregivers will therefore have more time to focus on the patient's treatment and spend more time with the patients. Technological advancements can allow for a safer risk assessment which can decrease the risk of recidivism and negative media for the DFZ. Additionally, there will be a rise of AI within security which decreases the risk of human error.

Glossary from the “futuro” cards

TRENDS & TECHNOLOGIES

Trends

AUTOMATION OF WORK
Use of automation technologies such as robotics or AI significantly impact the job market, rendering many of the occupations obsolete. This has also serious implications for education and welfare.

RADICAL TRANSPARENCY
There is a growing expectation for institutions and brands to be open about their inner processes. This includes fair working conditions, environmental impact, compliance with the law and ethical standards.

GIG ECONOMY
Today, we are more likely to move jobs and to have a shorter job tenure than ever before. This is partially due to new business models, a shift towards more service jobs and more “non-standard” jobs in some countries.

HYPERPERSONALIZATION
The growing demand for products or services that are as personalized as possible. It can be achieved through the use of technologies, such as AI, as it can tailor the content of the product based on our usage of data.

ALWAYS CONNECTED
The ubiquity of global communication technologies drives the development of new services and products, the transformation of inefficient economic models and increased inclusivity.

GENERATION AWARE
Includes both Millennials and Generation Z. Their commonly assigned characteristics include digital nativity and relatively high consciousness of environmental, political or health-related issues.

NEW EDUCATION PARADIGM
A general term that refers to educational paradigms that answer the needs of the rapidly changing, globalized and automated job market. It includes Soft Skills Education, Lifelong Learning, e-Learning.

DIGITAL ECOLOGY
Refers to the practice of building electronic devices, networks and digital products (e.g. websites, apps) in a way that takes into account their environmental impact.

INCLUSIVITY
About including marginalized people in the main stream of society. This can refer to disabled, minorities or those without access to the essential infrastructure and services (e.g. banking, Internet)

DECENTRALISATION
Better access to information provided by the Internet and events like 2007 financial crisis made people question established authorities and look for alternatives.

Technologies

AMBIENT INTERFACES
Interfaces that allow controlling electronics in a way that requires as little interaction as possible. They gather data of different type to predict the needs of their users without the necessity of formulating commands.

PREDICTIVE MACHINE VISION
A paradigm for machine learning that employs the use of visual stimuli to allow the algorithm to predict events. This will someday help intelligent devices to more easily navigate in the real world.

REAL TIME MACHINE LEARNING
A type of machine learning technology that processes information in real-time and uses it to retrain itself, thus constantly developing its algorithm, without need for human interaction.

INTELLIGENT VIRTUAL ASSITANT
An intelligent virtual assistant is an engineered entity residing in software that interacts with humans in a natural way. The main purpose of an intelligent virtual assistant is to answer users' questions.

FACEPRINT
Biometric software application capable of uniquely identifying or verifying a person by comparing and analyzing patterns based on the person's facial features. It is mostly used for security purposes.

VOICEPRINT
Type of security authentication that relies on a person's unique voice patterns for identification in order to gain access. Voiceprint should not be confused with speech recognition.

GESTURE RECOGNITION
Allows computers to understand human body language. This helps to build a more potent link between humans and machines, rather than just the basic text or graphic user interfaces.

GENOME EDITING
Reading of human genome in the 1990s and the recent invention of CRISPR gene modification method provides myriad of opportunities for programming reality and solving pressing issues.

BIOCHIPS
Microchips designed to function inside of a biological environment, especially for living organism. They can be used for monitoring and diagnosis.

PERFECT DIGITAL HUMAN
AKA Hologram, an image created by a photographic projection of a recording of a light field, rather than an image formed by some sort of lens.

EXOSKELETONS
Specific type of wearable device that is used to enhance a person's motion and/or physical abilities. Some models can help individuals to walk for example.

INTERNET OF THINGS
Computing concept that describes the idea of everyday physical objects being connected to the internet and being able to identify themselves to other devices

5G CONNECTION
Networking architecture built on the wireless higher networking standard, which aims to increase data communication speeds by up to three times as we know it now.

SMART FABRICS
Also known as e-Textiles, are fabrics that allow for digital components to be embedded into them.

TATTOABLES
Temporary, conductive surfaces that can be embedded into human skin in a manner similar to tattoos.

BRAIN TO COMPUTER INTERFACES
Technology that allows communication between a human or animal brain and external technology.

BLOCKCHAIN (SMART CONTRACTS)
Computer protocol that facilitates the transfer of digital assets between parties under the agreed-upon stipulations of terms, without the need for centralized, controlling body.

REAL TIME LANGUAGE TRANSLATION
Technologies that instantly translate speech or text into a different language.

↑ *Image of the "futuro" cards, designed by Radicalzz studio. The decks are a toolkit to envision the impact of technologies on future sustainable societies.*

↑ *Picture of facilitator, Line, explaining the 'futures cone' to a visitor during project exhibition at the Digital Society School Showcase.*

Envisioning the Future

THE “FUTURE SCOPE”

The Future Scope is a methodology developed by the Extrapolation Factory to guide the process of future visioning. It consist of different phases which gradually transform an input from the present into an hypothetical future.

The futures cone is a diagram that allows us to visualize the likelihood of a course of events happening over time. At the center is a context, which is interpreted through different perspectives. The result is a selection of the infinite conceivable futures, sorted by their likelihood: possible, plausible or probable. They can further be filtered subjectively as preferable or not, depending on individual values and wishes.

These visions of the future go through a set of “lenses”, filter which allow to better analyze and comprehend the impact of transformation in each scenario. By finding out the points of interaction in each lens, a more specific

future narrative is constructed. At the end of the process the output are different hypothetical future visions.

PERSPECTIVES

To envision the future of our current scenario in different ways, we employed the "four arcs" as a mean to imagine separate and concrete developments:

Growth
A future where everything continues to build as it does in our current world

Collapse
A future where the conditions we are familiar with right now fail and dissolve

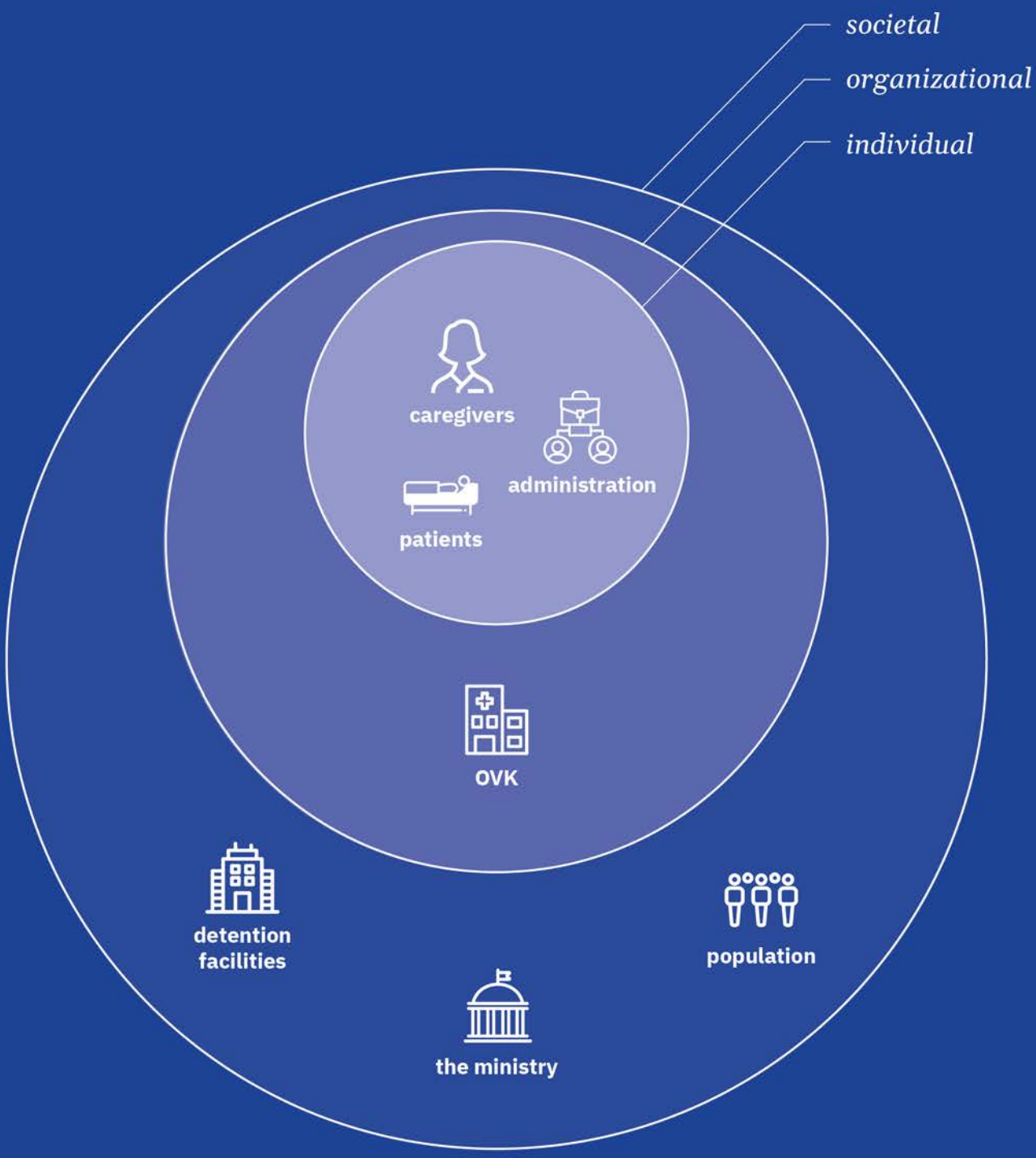
Discipline
A future that is carefully managed, either by a top-down entity or an ethos of collaboration

Transform
A future where an unexpected occurence changes the world in an unforeseeable way

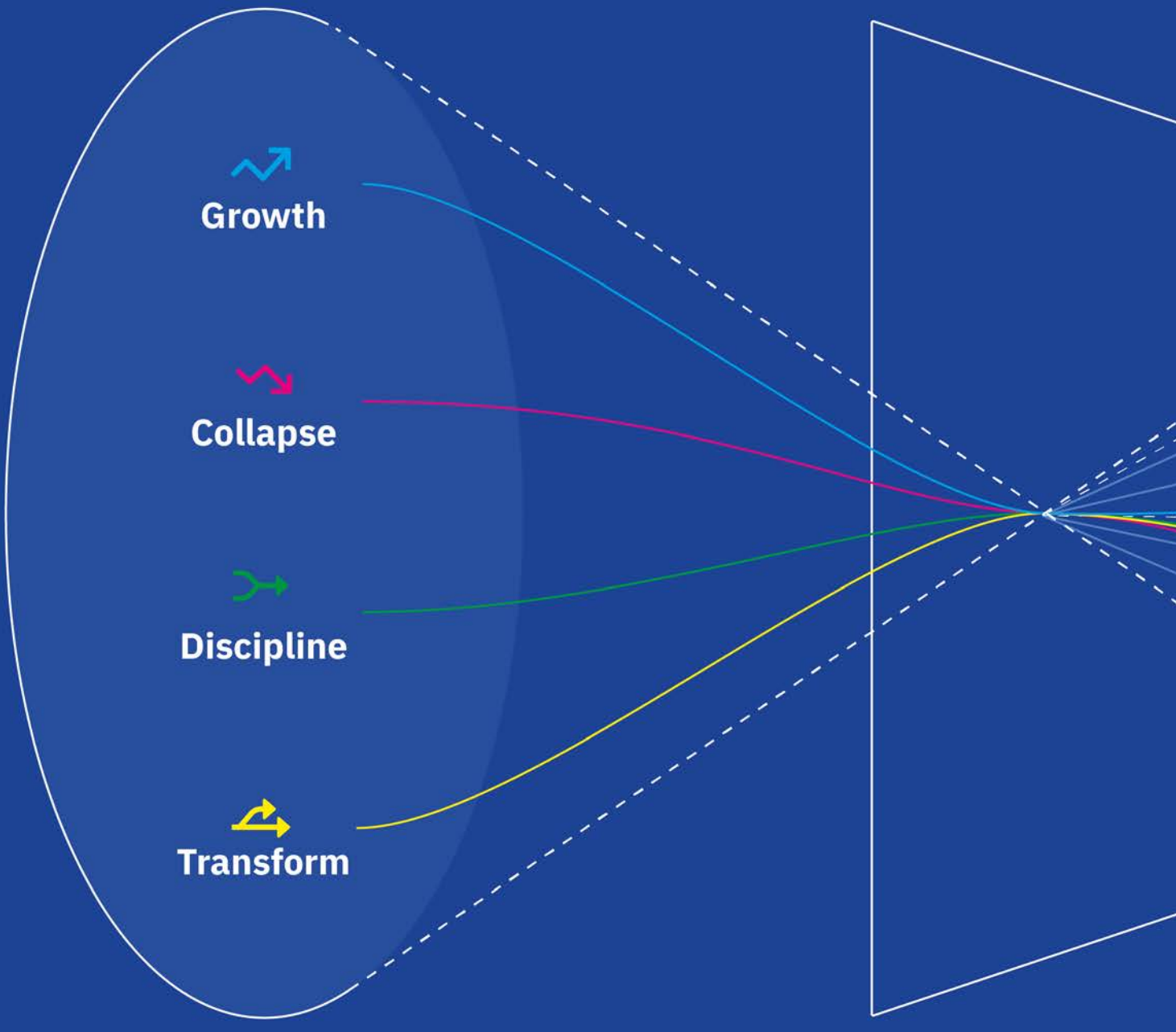
THE FUTURES CONE

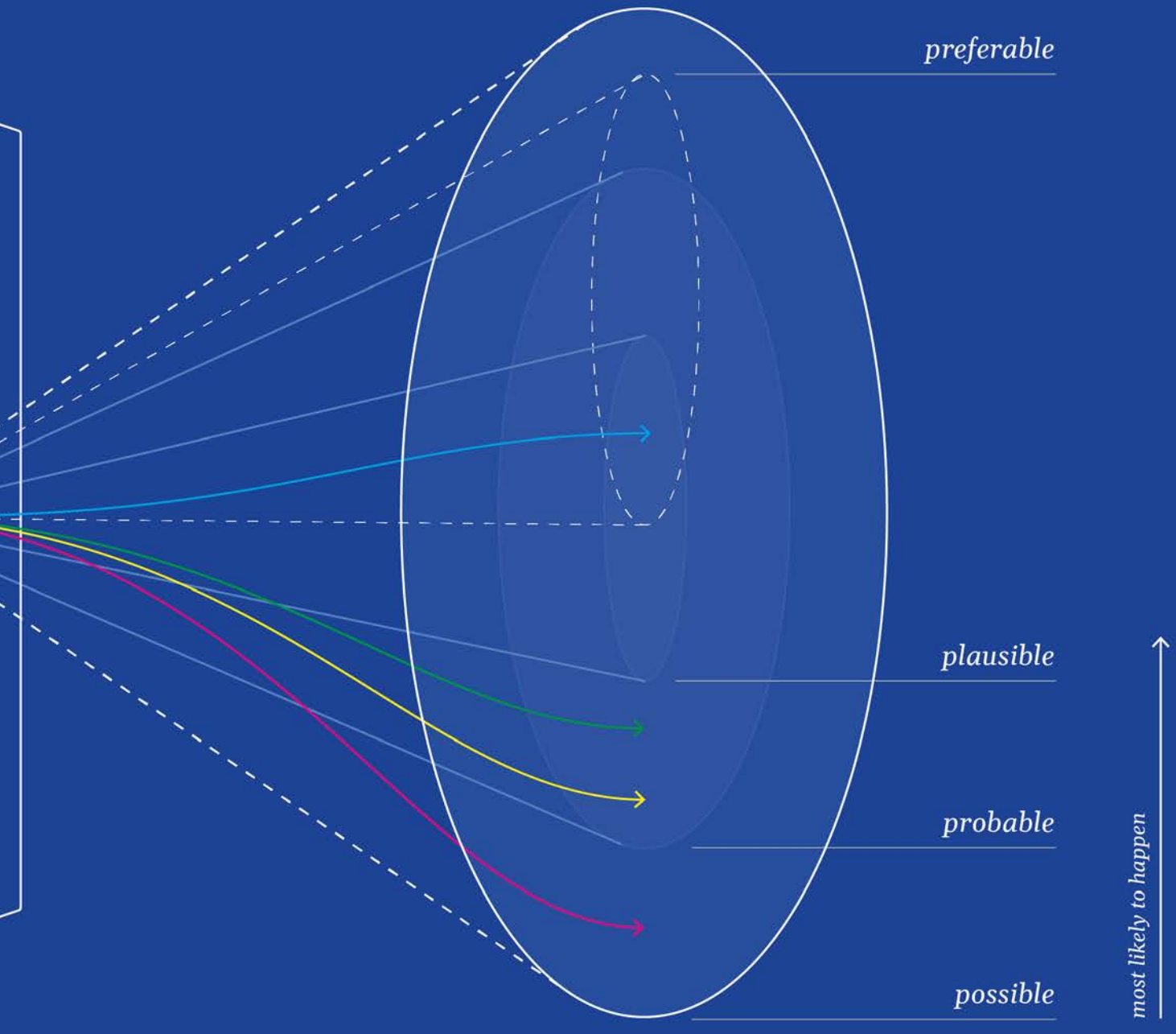
This diagram is used to visualize the probability of each scenario to occur in the future. Each of the imagined "futures" belongs to one of these concentric cones. It's important to note how this diagram denotes the intrinsic unpredictability of future development and shifts from the idea of a "time-line" to a "time cone", a three dimensional shape which is made by infinite different timelines.

The System


societal
organizational
individual
caregivers
administration
patients
OVK
detention facilities
population
the ministry

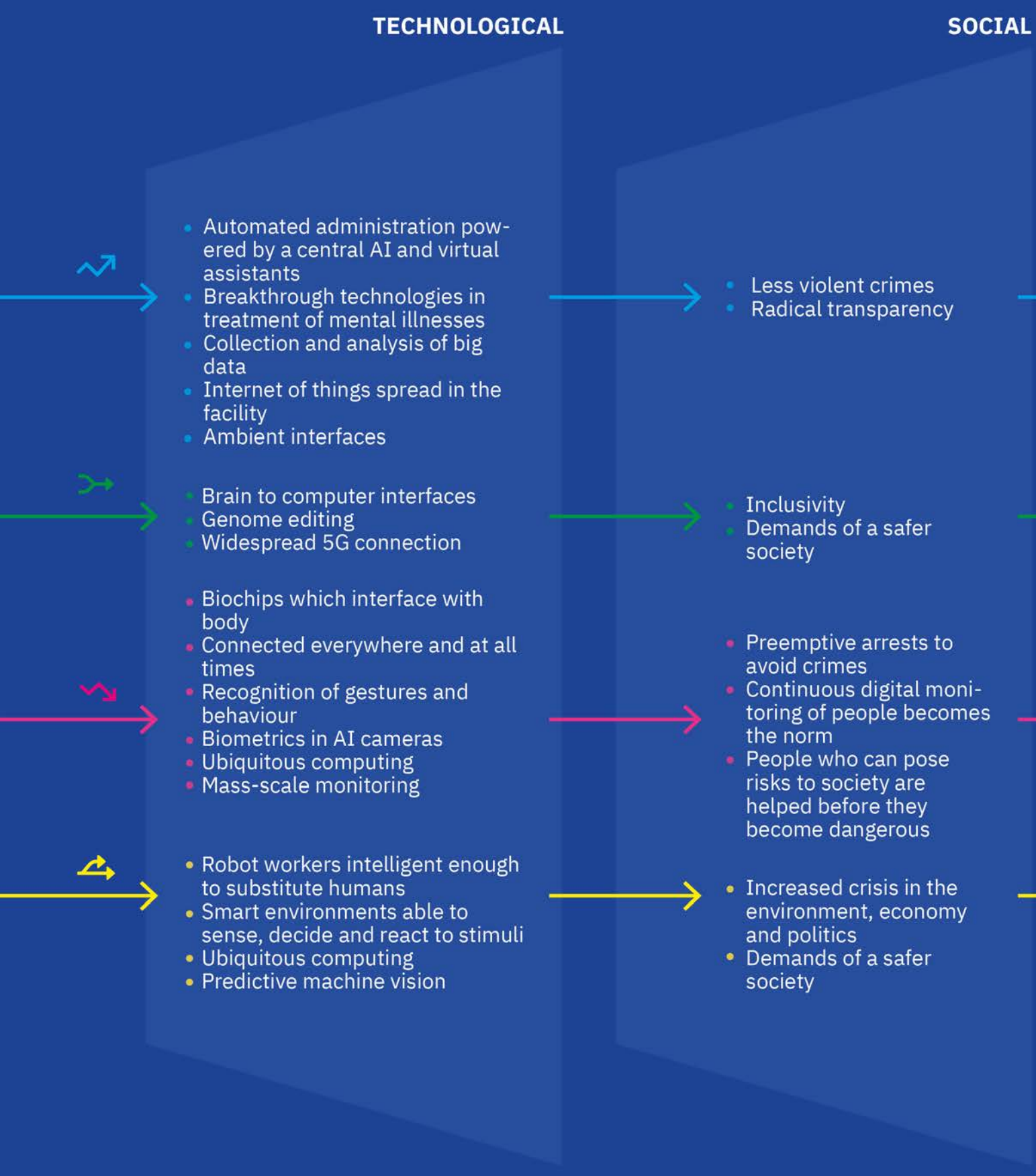
Futures Cone

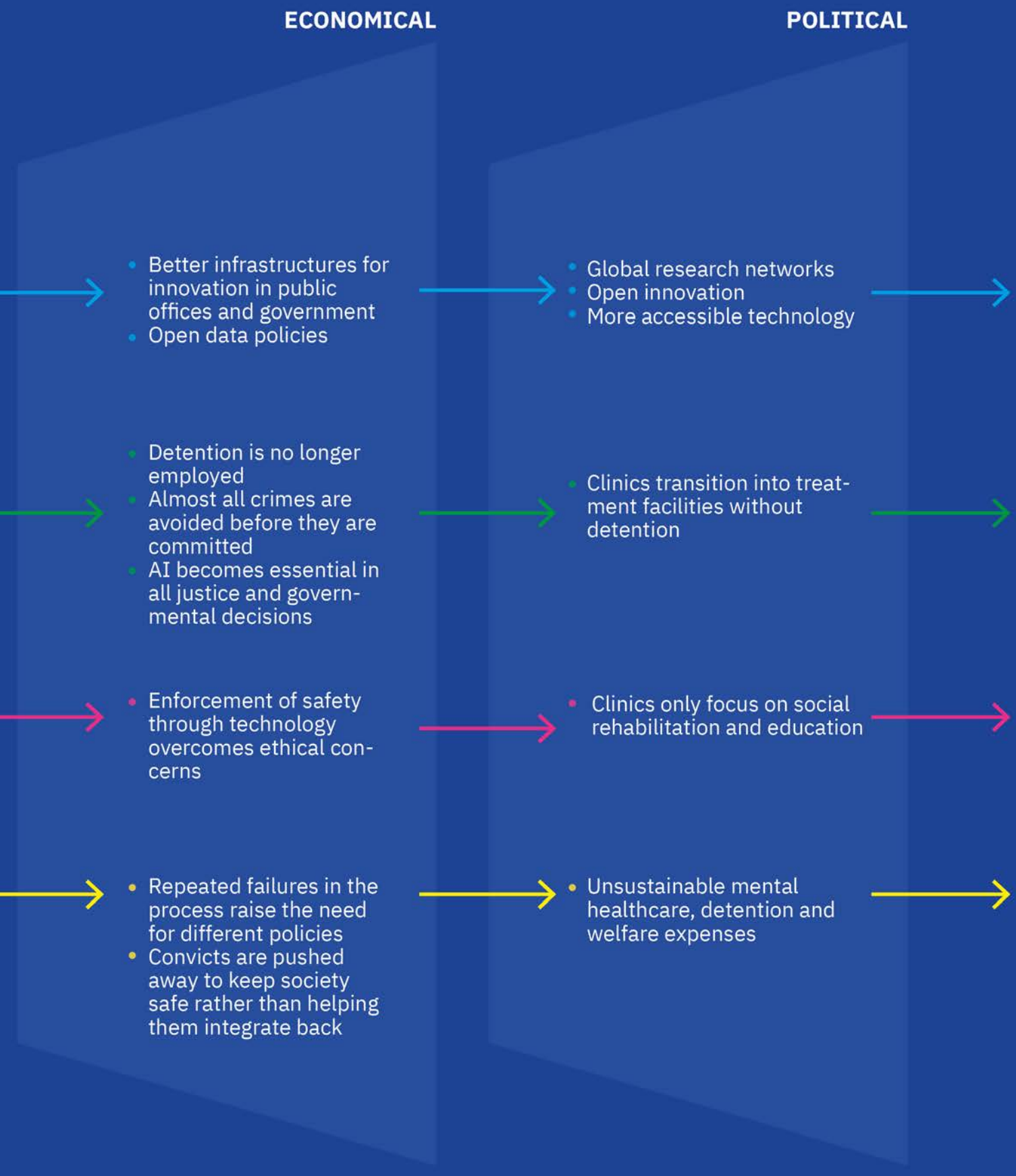



preferable
plausible
probable
possible
most likely to happen

FUTURES

Lenses


TECHNOLOGICAL
SOCIAL
• Automated administration powered by a central AI and virtual assistants
• Breakthrough technologies in treatment of mental illnesses
• Collection and analysis of big data
• Internet of things spread in the facility
• Ambient interfaces
• Less violent crimes
• Radical transparency
• Brain to computer interfaces
• Genome editing
• Widespread 5G connection
• Inclusivity
• Demands of a safer society
• Biochips which interface with body
• Connected everywhere and at all times
• Recognition of gestures and behaviour
• Biometrics in AI cameras
• Ubiquitous computing
• Mass-scale monitoring
• Preemptive arrests to avoid crimes
• Continuous digital monitoring of people becomes the norm
• People who can pose risks to society are helped before they become dangerous
• Robot workers intelligent enough to substitute humans
• Smart environments able to sense, decide and react to stimuli
• Ubiquitous computing
• Predictive machine vision
• Increased crisis in the environment, economy and politics
• Demands of a safer society


ECONOMICAL
POLITICAL
Better infrastructures for innovation in public offices and government
Open data policies
Global research networks
Open innovation
More accessible technology
Detention is no longer employed
Almost all crimes are avoided before they are committed
AI becomes essential in all justice and governmental decisions
Clinics transition into treatment facilities without detention
Enforcement of safety through technology overcomes ethical concerns
Clinics only focus on social rehabilitation and education
Repeated failures in the process raise the need for different policies
Convicts are pushed away to keep society safe rather than helping them integrate back
Unsustainable mental healthcare, detention and welfare expenses

Scenarios

THE HIGH-TECH CLINIC

In the future, the advances in society, welfare and better overall living conditions will significantly decrease the rate of severe crimes. Forensic mental healthcare clinics will still be present and helping ex-convicts with mental illnesses reintegrate into society safely and successfully.

The organisation of the clinic will be smoother and more effective thanks to intelligent technological infrastructures leading the administration through AI and data analysis, ensuring a constant improvement and optimization. Virtual assistants will aid all caregivers in real-time during their work.

New technologies in therapy will enable a faster, highly customized and more effective treatment for each patient. Caregivers will be highly proficient in the use of technology and blend direct social contact with the patient with an always accessible digital treatment. The resocialization process reaches an all-time high in success rate, making incidents or recidivism almost impossible to happen. The facilities will also become centers for advanced research, taking part in a global network of open knowledge and innovation.

- **CRIMES ARE FEWER BUT STILL PRESENT IN SOCIETY**
- **REHABILITATION OF EX-CONVICTS IS ALMOST FLAWLESS**
- **USE OF ADVANCED TECHNOLOGY IN THE TREATMENT OF PATIENTS**
- **TECHNOLOGY SUPPORTS AND IMPROVES THE CURRENT PROCESS**

THE NO-CRIME SOCIETY

The rise of a system of ubiquitous monitoring and analysis of people and their behaviour makes possible to almost completely prevent crime. A central AI powered justice system will be available to monitor all people in real time and take decisions on justice matters in a preemptive way.

Rather than arresting people who commit a crime, authorities will take custody of people who risk posing a danger for society before any damage is done. Thus, jail and detention as currently know are substituted with a rehabilitation process that ensures the safety of people in the community.

Clinics won't be dealing with ex-convicts anymore but providing treatment and assitance to people who are required to go through this process. In order to do so, the facilities will be equipped with latest technology able to integrate and communicate with the central decision system. Caregivers will be provided with high-tech diagnosis and treatment tools which allow to stabilise the mental conditions of patients and reintegrate them safely into society.

- **THERE ARE ALMOST NO CRIMES HAPPENING**
- **PEOPLE ARE HELPED BEFORE THEY BECOME A THREAT TO OTHERS**
- **ALL PEOPLE ARE REQUIRED TO BE CONSTANTLY MONITORED**
- **JUSTICE IS ENTRUSTED TO A "SUPERIOR" ARTIFICIAL ENTITY**

Scenarios

THE ISOLATION CENTER

The failure to adapt to new technological and social demands, along with an increased crime rate due to political and environmental issues, brings TBS effectiveness to an all-time low. As the government becomes unable to respond to the expectations about safety of the process and to justify the increasing expenses of the clinics, TBS is in the end declared an unsustainable practice.

The part of society who resisted the crisis takes distance from the practice of resocialization. New policies see the rehabilitation institutions dismantled in favor of long-term tech-enabled detention centers which are more cost-effective due to being completely automated and run by robotics and AI. People who come to this centers are not treated at all and just spend their time in detention, never hoping to come out.

- **CRIMES INCREASE DUE TO UNSTABLE LIVING CONDITIONS**
- **IT'S IMPOSSIBLE FOR EX-CONVICTS TO BE DANGEROUS ANYMORE**
- **A LARGE DECREASE OF THE EXPENSES DUE TO LESS PERSONNEL**
- **NO DIRECT CONTACT BETWEEN CONVICTS AND OTHER HUMANS**

THE PATIENT FIXER

As enabling technologies provide the possibility to achieve a drastically safer reintegration of ex-convicts in society, the expectations of the public on the results of resocialization increase the demand of greater control on the patients. By employing technologies which interface directly with the human brain, it becomes possible to remotely monitor and treat the patients while also conditioning ther thought and action patterns, restricting them form posing any harm.

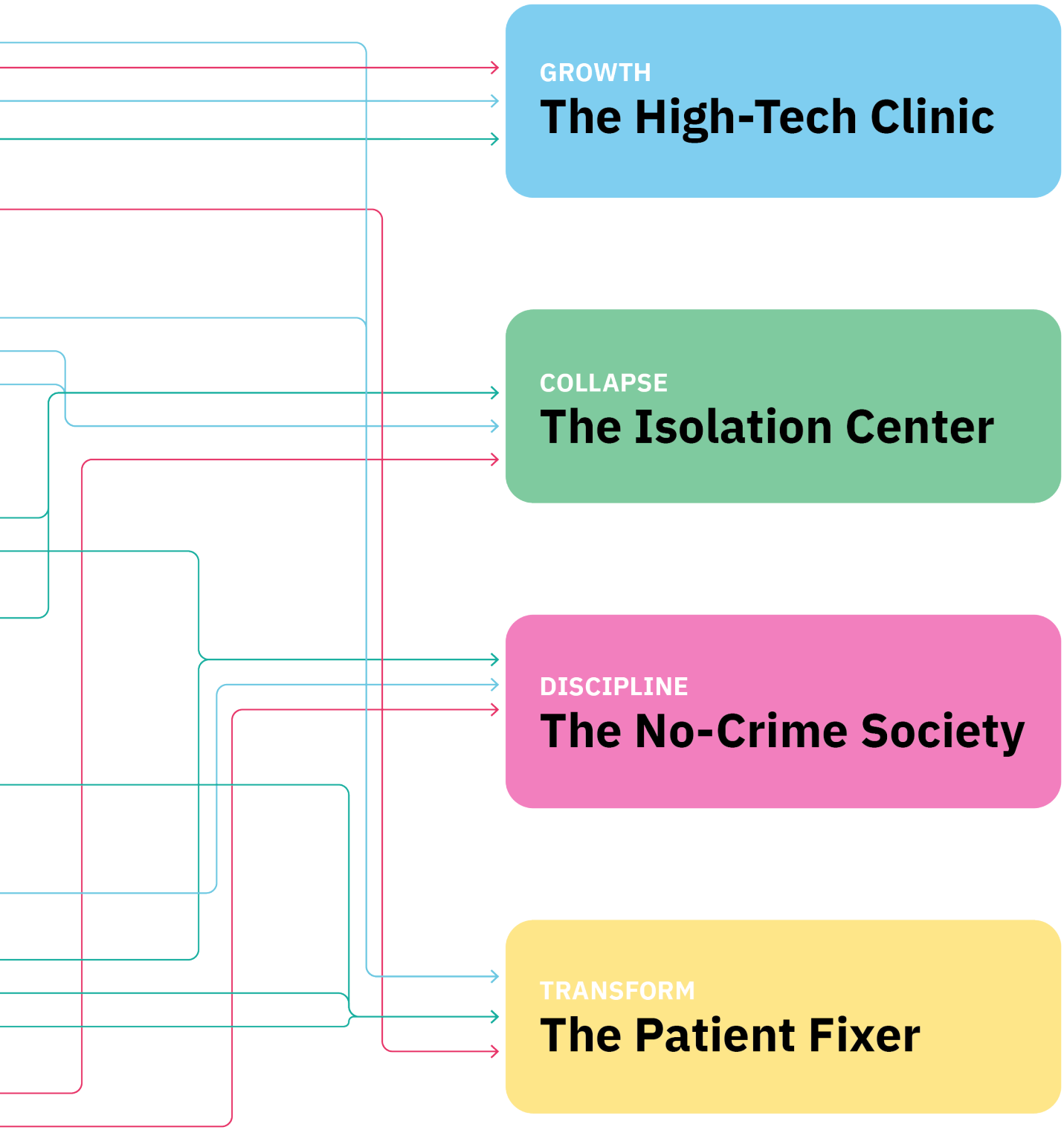
As the patients are hardwired into not being threats to anyone, they can safely live in their own homes and interact with other people. As the device that controls the patients also provides the assumption of medicals and direct treating of the brain, the patients only need to see the clinic for social mentoring by therapists and scheduled checkups.

Patients who are not willing to get better are thus directly "fixed" by this technology, while thos whose mental condition still cannot be solved can be automatically "piloted" for an indefinite time to ensure their safe conduct.

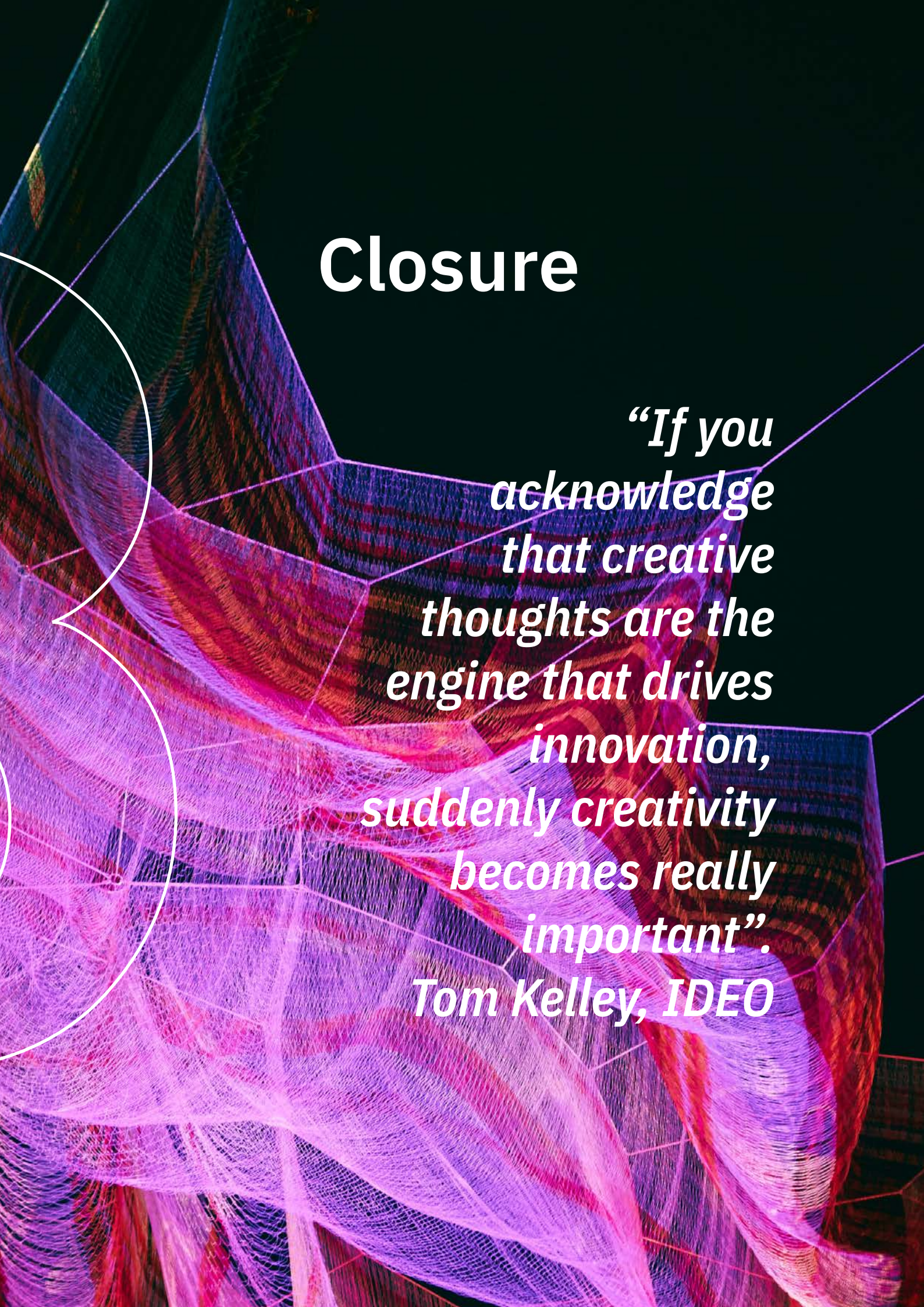
- **CRIMES ARE FEWER BUT STILL PRESENT IN SOCIETY**
- **IT'S IMPOSSIBLE FOR EX-CONVICTS TO BE DANGEROUS ANYMORE**
- **ONLY PATIENTS NEED TO USE A DEVICE, BUT IT'S POSSIBLY FOREVER**
- **TECHNOLOGY CAN CONTROL MIND AND BODY IN FAVOR OF SAFETY**

Connecting Trends & Scenarios

The future


GROWTH
The High-Tech Clinic
COLLAPSE
The Isolation Center
DISCIPLINE
The No-Crime Society
TRANSFORM
The Patient Fixer


02



Closure

“If you acknowledge that creative thoughts are the engine that drives innovation, suddenly creativity becomes really important”.
Tom Kelley, IDEO

ENDNOTE

This project has shown how alternative design methods can be applied in the participatory innovation activities within a forensic mental healthcare settings. The collaborative sessions with the OVK were appreciated by the participants and showed that this type of research can contribute meaningful insights about professional and personal struggles and prospects. Although more research on the clinic, caregivers and patients is needed, the project did the groundwork for revealing what challenges and opportunities the clinic is and will be facing in the future.

Generally speaking, forensic mental healthcare services face challenges such as high costs, risk avoidance and ethical considerations of detaining patients. Meanwhile, the advances in ICTs like wearables, mobile applications and virtual companions are increasingly transforming the healthcare services. However, technological innovations in forensic mental healthcare services are usually slow and lack bottom-up involvement. We conclude that digital technologies have the potential to overcome some barriers for the treatment of TBS patients and can further contribute to a more inclusive and safer society. However, we should remain critical about these potential 'solutions' and incorporate multiple views during the design and development process, to avoid technology-driven solutions that ignore the complex interplay between the technology and the socio-political factors in these environments. We hope our work can serve as an onset for more in-depth and inclusive future studies into how digital technology can transform forensic mental health care services.

WHAT'S NEXT?

We hope this report can be used as a reference for when future research- and innovation projects are to be conducted within forensic mental healthcare or any similar field. As the report shows, the Oostvaarderskliniek is currently facing internal struggles and future technologies may enhance or diminish these. It is therefore important that the clinic prepares themselves for this and ensures that only the most appropriate and needed innovations are implemented in a correct manner. We advise the clinic to use participatory design methods, such as cultural probes or co-creation sessions, to gain a deeper understanding of the caregivers' and patients' mindsets. An understanding of the end user is the foundation for any successful innovation implementation process.

↑ *Picture of the team (from left): Andrea Nesta, Francisco Palavecino, Line Sandborgh & Gideon Assamoah.*

The Team

We are the creators of this report. We are a multidisciplinary and international group consisting of one business developer, one systemic designer, one product designer and one UX-designer. Our project, “Justice in the Digital Society” was one out of 9 projects that was carried out at the DSS during the autumn of 2019.

Andrea Nesta

Systemic Designer - from Italy

“I believe the most challenging situations have the potential for the best innovation to happen.”

Francisco Palavecino

Business Developer - from Chile

“Regardless of my role, I can always contribute to a visionary mindset, creating purpose-driven solutions with a high social impact.”

Line Sandborgh

Product Designer - from Sweden

“I chose this project because it tackles a very complex challenge allowing to use a human-centered-design methodology to create a meaningful and positive impact.”

Gideon Asamoah

UX Designer - from Netherlands

“Bringing a small but effective social impact on sustainable development goals is one of the reasons I choose to work on this project. Human interaction interested me the most.”

Team coach

DAN XU, is a creative researcher from China and is currently working as a digital transformation designer at Digital Society School in Amsterdam. Dan has been the coach of this project and provided us with guidance and feedback throughout the process.

Track owner

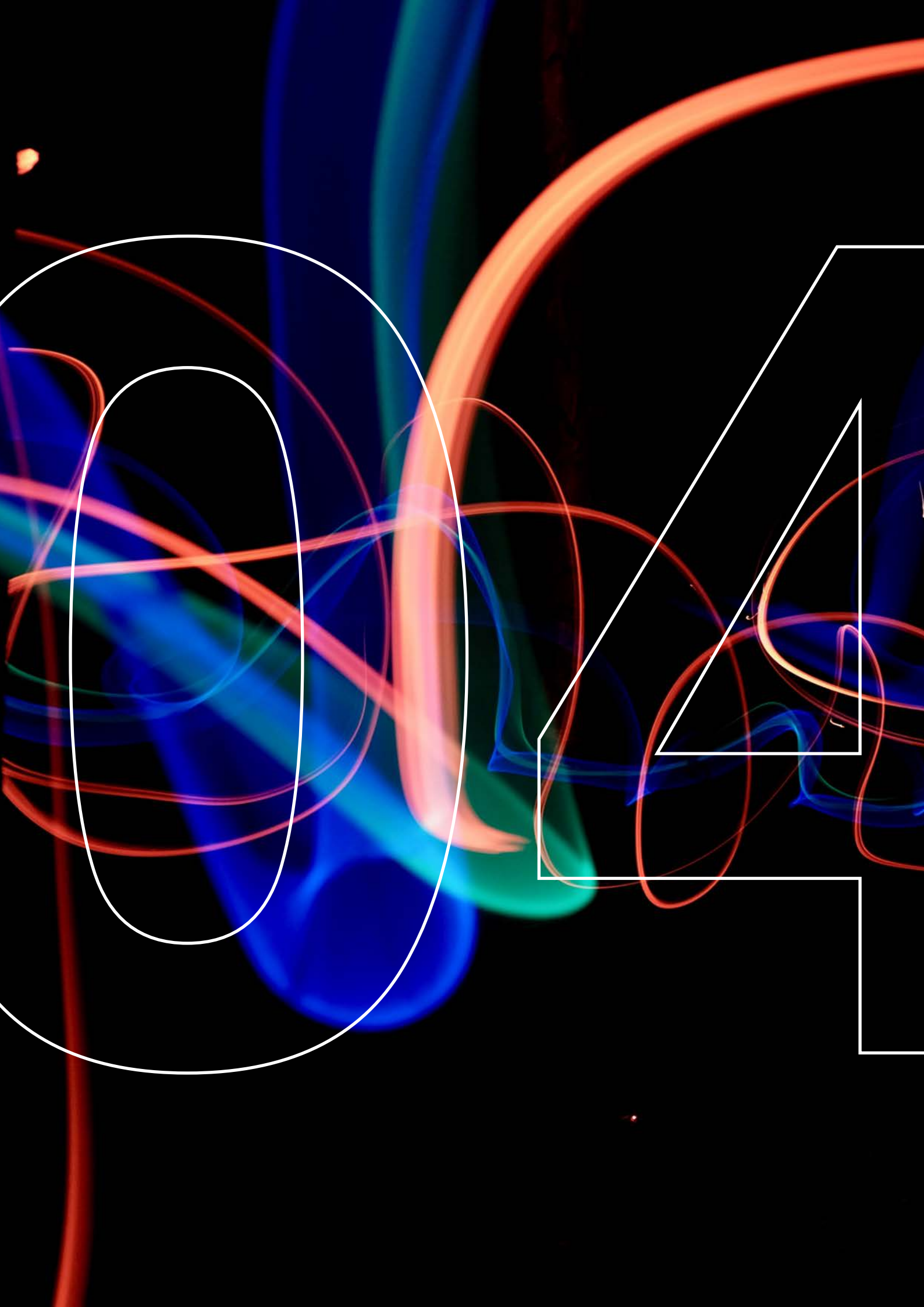
ASSIA KRAAN, is a program manager and track owner of the 'Digital to Physical' track at digital society school. Assia has contributed to the project with her skillsets as a digital transformation designer and provided us with support and supervision.

If you're interested in finding out more about this project or have any questions, you can contact Assia at a.kraan@hva.nl

Senior Track Associate

GIJS HUISMAN, is a senior researcher from the Netherlands and is working as a digital transformation designer at Digital Society School. In this project, Gijs has participated as a senior track associate and aided the project with his expertise and advise.

We would like to thank all the involved stakeholders in this project; **Thessa Belt** and **Erik Ruijters** from the Dutch Ministry of Justice and Security and **Stefan Frank** from the Oostvaarderskliniek. Thank you for providing us with access to clinics and users as well as for your guidance and constructive feedback throughout this project. Also a big thank you to the caregivers of the Oostvaarderskliniek who participated in the research and provided us with meaningful insights which made this project possible.


2024

Annex

ANSWERS TO THE BRIEF'S QUESTIONS

1. WHAT DO CAREGIVERS AT DFZ SEE AS THE MAIN CHALLENGES IN THE WORK IN THE COMING FIVE YEARS?

1a. How will the DFZ's products and services change due to technological developments?

The DFZ can expect to see technological developments within the area of eHealth impacting the core services of the organization thanks to the increasing reliability and accessibility of a diverse array of digital tools. eHealth will make use of apps, web-based interventions, wearables and virtual/mixed reality, which will aid the professionals of the clinic in the improvement of the conditions and results of their work.

These technological advancements can allow for better monitoring and coaching of patients. For example, risky situations can be predicted and taken care of in realtime thanks to advancements in wearables. These improvements will make treatment more accessible and effective for patients while easing the stress and workload of the caregivers. In the long run this can improve the efficiency of the TBS process, possibly diminishing the odds of the DFZ receiving negative media coverage (Bouman et. al., 2018).

We suggest that many of these technologies can be implemented successfully in the clinic by closely and continually involving staff and patients in the design- and development process. Decision-makers and the technical developers should be supported by a participatory and human-centered design approach. This will allow for a successful definition of the needs and requirements related to the new tools and their deployment in the clinic. The approach ensures a fruitful and effective adoption by the users involved.

1b. How will the DFZ's clients and customers change due to technological advancements?

The DFZ's clients and customers can expect to see a faster paced and more efficient treatment process due to technological advancements within the field of forensic care and intelligent digital assistance for employees. Through the adoption of updated tools and infrastructures, clinics can expect to reduce the average length of treatment, thus reducing the costs associated with the patient's duration in the clinic. An increase of the delivered care capacity can be expected in the clinic, thanks to the more efficient and targeted use of the caregivers' efforts and expertise.

The increase of eHealth and blended care practices in the clinic can allow for more efficient work for the therapists and more treatment opportunities for the patients. Through the use of wearable technologies, the status of the patients

can be registered and monitored closely, collecting valuable physiological data which can also aid in diagnosis and assessment. However, this field will require new expertise to be introduced in the process, as data analysis thus becomes increasingly important in the clinic and ethical concerns about the collection, storage and use of personal data require to act in accordance with safety and privacy regulations (Greer et. al, 2918).

Technological advancements can enable a greater engagement and motivation of patients with their own treatment. Customized technologies can help deal with issues like the patient's various disorders or poor literacy skills. More innovative, customizable, and state-of-the-art technologies will appear more attractive to the patient because of the new and unconventional experiences that these technologies will create. Additionally, the patient's loved ones will be able to be more up to date with the patient's progress.

Among the difficulties of introducing such technological advancements in the clinic lies finding the correct type of tool for each individual patient. Since patients vary greatly in their predispositions and disorders, not all of them will be suitable for a productive use of future technologies. For each use case, a guided assessment of patient's needs and limitations will be essential to define which innovations could bring the most benefit. It should also be taken into account the risk of the patients misusing technologies if they are not ready to take this responsibility upon themselves (Kip et. al., 2018).

Caregivers will need to find a good balance between the use of technologies and human interactions. A decreased in-person contact between patients and caregivers can result in a loss of opportunities for social interactions which are an essential part of the resocialization process. Innovative tools should thus be framed as aids rather than substitutions of the therapeutic relationship that is at the foundation of the treatment process.

1c. What impact will technological developments have on the DFZ's processes?

Technological developments will allow the DFZ's processes to run more automatically and efficiently in terms of cost and time. Processes at the DFZ can make use of advancements within robotic process automation in administration, AI in security, and VR and social robots in treatment/resocialization. Day-to-day activities will be affected by bigger involvement and replacement of technologies in many aspects:

Patients can expect to take more responsibility of their own treatment process. Through eHealth, for example, patients can get on-demand access to treatment, emotional support and guidance in their routines. This will improve their treatment experience, their mood and decrease the risk of unwanted behavior

due to loneliness or lack of social interaction. Conversely, the caregivers will release part of the workload and responsibility from dealing with a large number of patients in the limited time of their shifts. The introduction of wearables for patients and their analysis for caregivers can allow for data to be collected and synthesized in a more effective manner and translated into meaningful and actionable formats. Having more access to up-to-date technology and digital tools will also empower patients and help them feel more confident in themselves and in their interaction with the surrounding world when reintroduced in society.

Treatment methods aided by virtual reality can bridge the gap between the inside environment of the clinic and the outside world in a safe and controlled manner. This solution can decrease the risk of recidivism as patients will be more prepared when reintegrated in society (Kip et. al., 2019). Tools like social robots could be employed by patients also after their time at the clinic and/or during the transmural leave to help them get back in society safely which can partially reduce the need for caregivers frequently checking up on patients. This technology can aid the patient in resocializing in a safe and responsible manner which reduces the risk of recidivism.

Internal communication issues among caregivers may be resolved with an improved flow of information within the clinic. This will cause less friction among caregivers and an overall smoother workflow due to their improved feelings towards colleagues and the organization in general. Caregivers can expect less administrative work in their daily routine as this can be automated with the help of AI and/or robotics. Caregivers will therefore have more time to focus on the patient's treatment and spend more time with the patients, which makes a more effective use of their time and skills and improves their job satisfaction.

Technological advancements such as data analytics and AI can allow for more informed, objective and safer diagnoses and risk assessments at the clinic. This can decrease the risk of recidivism, allowing for a safer society and improving the perception of DFZ by media and society at large. Additionally, there will be a rise of AI within security which will decrease the risk of human error and increase safety regarding the patient's risky behavior.

1d. What impact will technological developments have on the DFZ's organizational structure?

In order to respond to the need for an updated technological infrastructure and successfully making use of the benefits by available and upcoming technological innovation, the organizational structure must be reflected upon in its relationship with change and implementation of innovative tools. A long-term plan is in this regard essential for directing the practical efforts and the necessary financial investments towards meaningful improvements powered

by technology. Decisions concerning the future developments in technology and digital tools should be rooted in insightful data gathered directly from the interested facility. To achieve a positive transformation in the clinic it is therefore essential to involve the people who will be interacting with these new technologies in their daily activities.

Since caregivers are aware of the practical issues within the clinic and have a positive mindset about the opportunities offered by new tools and infrastructures, these stakeholders should be made part of any design and implementation process at the clinic. Establishing a fruitful collaboration with the staff in the development of these strategies should be given the proper attention, avoiding relying on participation tools which usually elicit very low engagement from the user (e.g. questionnaires). There are plenty of methods to create direct user involvement in the design process, using effective and often non-conventional manners. These methods allow to collect more creative and valuable input. The co-creation workshops held at the Oostvaarderskliniek from the Digital Society School are examples of how design methods from create process can voice the users' needs and desires. Additionally, it gives the participants a feeling of ownership in the transformation process rather than being passive receptors.

Looking further into the changes from upcoming innovations, completely new scenarios could arise in the future, powered by technologies such as AI, ubiquitous computing, 5G connection and robotics, and growing societal and economic trends regarding work and service dematerialization. A new paradigm of safety and surveillance less reliant on detention could result in the digital treatment moving away from the clinic into the homes of patients or regular hospital services. The clinic itself would then become increasingly focused on medical intervention, from diagnosis to psychiatric treatment, and on the social rehabilitation of patients. This would also drastically impact the skillsets relevant to the facility, as new technical skills and proficiency with new technologies become increasingly important for the staff members.

1e. To what extent are current ICT's sufficient for meeting current challenges?

Currently the Oostvaarderskliniek is using a few ICTs for making processes more efficient and automated. The clinic keeps track of a patient's diagnosis, background, medication, treatment, test results etc. through an Electronic Patient Dossier (EPD). The digital dossier allows for quick and efficient exchange and flow of information about patients within the clinic and the Dutch healthcare system. The intranet the clinic is using 'Infoland' allows for document storage, communication, forms, process mapping etc. A process and task experienced as tedious and cumbersome by caregivers as this takes time from their main responsibility, namely, to give 'care' to patients. To continuously improve the clinics treatment processes, the Oostvaarderskliniek makes use of an evaluation

system, Routine Outcome Measurement (ROM). The system allows for receiving feedback from the users of the treatment, for example therapy, so improvements can be made. Within therapy treatment, the clinic has recently implemented the use of virtual-reality (VR). VR-glasses can simulate challenging situations to the patient for practice and preparation, but this is also a good way for the caregiver to see at what progress level the patient is at. This technology can enable the patient to experience and practice being out in society again. The feedback from users of these implemented technologies vary. Caregivers of the Oostvaarderskliniek often experience difficulties and frustrations during interactions with technologies meant for alleviation. For example, the intranet, EPD, and the surplus amount of systems cause overwhelming feelings of stress and confusion among caregivers. A wish is to have a more fluid, unified and intuitive system that allows for all data collection in one place. Additionally, caregivers lack the possibility to use many of these technological systems in collaboration with patients as the technology might not be allowed at patients' premises in the clinic.

The Oostvaarderskliniek has implemented several technologies to advance their processes. However, looking at newer technologies implemented in other facilities these are rarely seen at the Oostvaarderskliniek. The clinic shows a lower rate of implementation of advanced technologies in comparison to similar clinics within forensic and mental health care. For example, available technologies within administration using 'Robotic Process Automation' could allow for less administrative work for caregivers and thereby allow more 'social interactions' with patients.

Another challenge the Oostvaarderskliniek is facing is the 'tech-illiteracy' of patients. As society is developing at a rapid speed in technological advancements the contrast and gap between the clinic and society is also increasing. This is because the clinic is not up to date with society's advancements and this pitfall causes suffering on patients once they are let back into society. In order to meet this challenge, the clinic needs to implement newer technologies that correspond with the societal level of technologies. For example, some forensic clinics and prisons have implemented the use of tablets for prisoners/patients to use. This allows the users to feel empowered and knowledgeable of new technologies which increases the chances of a safe resocialization process once back in society

2. WHAT WOULD CAREGIVERS OF THE DFZ LIKE THEIR WORK TO BE IN 2024?

Multiple caregivers at the Oostvaarderskliniek have been involved in different applied design research during the project, with the aim of getting a better understanding of their roles and responsibilities as well as giving them a chance to constructively express their challenges and desires. By manner of conducting personal interviews, hosting participatory design workshops and providing

them with cultural probes, most caregivers communicated a strong wish for a more collaborative and transparent work environment across departments and colleagues. On top of having a more beneficial work relationship with other personnel, the caregivers wish for critical information flowing in the clinic (e.g. about patients, meetings, treatment sessions) to be communicated in a smoother, reliable and more timely fashion, ideally having all information synced and available between different departments at all times.

At the essence of their activity, caregivers wish to be able to provide a higher quality care by focusing their attention on fewer patients. Conversely, they reported the need for patients to have more access to personal help while dealing with difficult situations or unexpected events. As mentioned previously (1b, 1c), technology could allow for both wishes to be addressed thanks to a more efficient distribution of workload. They observed patients often severely lacking knowledge of modern-day technology that is commonly used and available in the rest of society, giving them a harder time reconciliating with a community that employs a technology-oriented lifestyle. The caregivers would therefore like to see in the future more access to means that make the patients up-to-date with the outside society, increasing their chances for a successful resocialization.

3. WHICH SPECIFIC CHALLENGES NEED TO BE ADDRESSED FIRST FROM THE PERSPECTIVE OF CAREGIVERS OF THE DFZ?

Caregivers struggle frequently with internal communication at the clinic. Factors like differences in individual shift schedules, restrictions on the use of smart devices, long distances between personal offices, often disrupt the flow of important information. This can cause the caregiver to be stuck with their work because of the unavailability of a critical input, practical information or update about the patients. This issue is more prominent while dealing with different professionals, such as the communication between social workers and psychologists, rather than between coworkers in the same field. This further accentuates the distress of the employees and contributes to a negative narrative of “us versus them” which can severely damage teamwork, a collaborative mindset and overall the productivity and work culture of the clinic.

Regarding their mindset towards the patients, caregivers differ concretely in what they wish to be addressed. A main concern is the issue of balancing safety and trust while dealing with patients, especially when imagining how technology can support their work. Some caregivers desire to feel more in control of the patients at all times, restricting them in their ability to cause damage or manifest unsafe behavior. On the other hand, other caregivers believe that nourishing a trusting relationship with the patients should be the way to make them more responsible for their own progress and well-being. These concerns also become relevant on an ethical perspective while dealing with technological advancements which can track, monitor or control the patient, rising questions

about personal integrity and respect of the patient from the caregiver's point of view. Although, different caregivers also believe that the will to push further than the current ethical boundaries can open up for valuable opportunities of treatment which would benefit the patient directly.

The differences in opinion can have an important impact on the successful implementation of new technologies and should therefore be addressed directly before the design process to build a more in-depth perspective. At the root of the problem, might be the different roles of the caregivers, for example between psychologists and social workers, and therefore the different relationships they have with the patients. As the therapeutic relationship is a key factor in the treatment process, the implementation of new tools and methods should take into account how the social interaction and the roles of caregivers and patients would be positively influenced, e.g. removing barriers in communication, or negatively affected, e.g. decreasing the trust of patients in their caregivers.

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The Dutch Ministry of Justice and Security is responsible to stimulate innovation in the practice of justice and therefore asked the DSS to carry out this 20-week long research project in collaboration with the Oostvaarderskliniek. The project aimed at exploring the needs of the caregivers within the clinic and see where there are opportunities and the potential effects of implementing new technological innovations.

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