

INSIGHT

Project Report

HOLISTIC DESIGN OF ENGINEERING SYSTEMS - 41639

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CLIENTS

Rudersdal Communication Center
and Hillerød Municipality

TEAM CONTRIBUTION

GROUP STATEMENT

We, the undersigned, confirm that this contribution table is accurate and reflects our individual contributions to the project.

	Sebastian	Oscar	Lucas	Rafael	Carlos	Pablo	Stefan
Desk Research	x	x	x	x	x	x	x
Interview with Karen from Hillerød CKU	x						x
Interview with Sara from Furesø Municipality	x	x					x
Interview with end users					x	x	
Workshop 1		x		x		x	x
Workshop 2	x	x	x			x	
Communication with clients						x	x
Coordination tasks			x			x	
Presenting Milestones	x					x	x
Presenting Pitch						x	x
Landing page					x		
Dashboard website					x		
Agents Simulation					x		
Visual styling					x	x	
Physical prototypes	x	x	x	x	x		
Abstract			x				x
Introduction			x			x	
Chapter 1							
First Draft			x				
Review	x	x					
Revise							
Chapter 2							
First Draft	x			x		x	
Review				x		x	x
Revise	x		x		x	x	x
Chapter 3							
First Draft		x					
Review	x						
Revise							
Chapter 4							
First Draft							x
Review	x	x	x	x			x
Revise						x	x
Chapter 5							
First Draft			x		x	x	
Review	x		x			x	x
Revise			x		x	x	
Chapter 6							
First Draft		x		x	x		
Review	x						x
Revise		x	x	x	x		
Chapter 7							
First Draft	x	x		x		x	
Review	x	x		x			x
Revise				x		x	
Conclusion							
First Draft							
Review	x		x	x	x		x
Revise				x			

Sebastian Bidstrup Lantz:

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Stefan Perovic:

GROUP ORGANIZATION

Our group structured the work in iterative phases, moving from initial desk research to field research, problem reframing, concept generation, prototyping, workshop testing, and final reflection. Each phase built directly on the findings of the previous one, ensuring an evidence driven progression throughout the project.

We worked with stakeholders (Karen, Christian, Louise, and Sarah) to validate our direction. This external input served to structure our decisions, as reframing was triggered by what we learned rather than solely through internal discussions.

Our collaboration with clients such as Hillerød Communication Center and Rudersdal Municipality was central and the stakeholders directly shaped our solution.

We used structured design methods including, reframing, Archaeology, the INVI model, and the N-Model to understand how we defined and evolved the problem. The N-Model also helped us set explicit design requirements across system levels, keeping the team aligned on what the solution needed to achieve. Prototyping was iterative and required many testing instances.

COMMUNICATION

Our group made design decisions collectively and transparently throughout the process, we had a shared ownership of the direction we took. We also grounded our decisions in the evidence we gathered collectively, which helped to create consensus.

On the external side, arranging meetings and workshops with municipalities proved considerably more difficult than initially expected due to their tight schedules and limited availability. We addressed this by remaining persistent and adapting our approach.

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ABSTRACT

InSight aimed at improving accessibility to assistive aids for visually impaired citizens in Denmark. The project addresses a systemic problem: the process of applying for state provided assistive aids is fragmented, unclear, and consistently far exceeds the legally required eight week processing deadline, often taking six to twelve months.

Through a user centered and system oriented methodology, the team did desk research, stakeholder interviews, cold calling of multiple municipalities and communication centers, and co-creation workshops. The investigation revealed that the core issue is not technological but organizational: poor coordination between municipalities, communication centers and doctors leads to administrative bottlenecks, unclear responsibility distribution, and prolonged delays.

Rather than designing a universal workflow or a new assistive technology, the team iteratively reframed the problem and developed InSight, a table design game that enables municipalities and communication centers to collaboratively map their own workflows, identify friction points, and co-create process improvements. The game was refined by playing with real stakeholders from Hillerød Communication Center (CKU Hillerød) and Rudersdal municipality. The game is also accompanied by a web page for open source distribution.

The solution functions as a boundary object that adapts to different municipal structures and helps with collaborative reflection.

INTRODUCTION

As a systems design consultancy team, we developed InSight as part of the course Holistic Design of Engineering Systems within the field of design engineering, with a focus on improving accessibility in public service systems. The project explores the challenges that visually impaired individuals in Denmark face when navigating the process of applying for assistive aids provided by the state. While the Danish welfare system is designed to support independent living, the pathways through which this support is accessed are often complex, time consuming, and difficult to navigate, particularly for individuals with visual impairments.

In many cases, what should be a relatively straightforward administrative process can take several months or even more than a year. These delays go beyond administrative inconvenience and have direct consequences for everyday life. Without timely access to assistive aids, visually impaired individuals may experience reduced independence and limited participation in daily activities. In some situations, the process itself becomes such a barrier that individuals choose not to apply at all. Long waiting times, repeated

documentation requirements, and unclear procedures contribute to a system that can feel overwhelming and inaccessible.

The challenge involves multiple stakeholders across different parts of the system. At the center are visually impaired citizens who rely on assistive aids to live independently. Surrounding them are municipalities and communication centers, which are responsible for assessing needs and approving support. In this project, our clients were Hillerød Communication Center, which conducts assessments, and Rudersdal Municipality, which makes final decisions for citizens in the Rudersdal area. Rather than responding to a predefined brief, we approached Hillerød Communication Center and Rudersdal Municipality with the proposal of mapping their existing case processing workflows and co-designing a tool to make these processes visible, discussable, and easier to improve.

Additional actors such as IBOS (Institute for the Blind and Partially Sighted) and the Danish Association for the Blind form part of the broader ecosystem. Together, these stakeholders create a complex network where coordination and communication play a crucial role in shaping the overall experience **(see Figure 0.1)**.

OUR PURPOSE

The purpose of InSight is to reduce processing time by identifying where and why delays occur. Rather than focusing only on the end user interface, we chose to examine the workflows and interactions between system actors. By doing so, we aim to support municipalities and communication centers in recognizing friction points in their processes and to create a foundation for more efficient and coordinated practices.

OUR APPROACH

To approach this challenge, we followed a user centered and system oriented design process. We began with desk research and exploratory interviews with both visually impaired users and municipal workers to understand lived experiences and institutional practices.

We continuously validated our findings with users to ensure that we focused on problems that were meaningful and relevant. As we realized the complexity of the system, we developed a mapping tool in the form of a game, which we used in workshops with municipal workers.

Through this co-creation approach, participants mapped their workflows, shared insights, and identified areas where delays and difficulties occur. The process has been iterative, with each step building on feedback and new understanding, and it considers multiple system levels, from individual experiences to interactions between organizations.

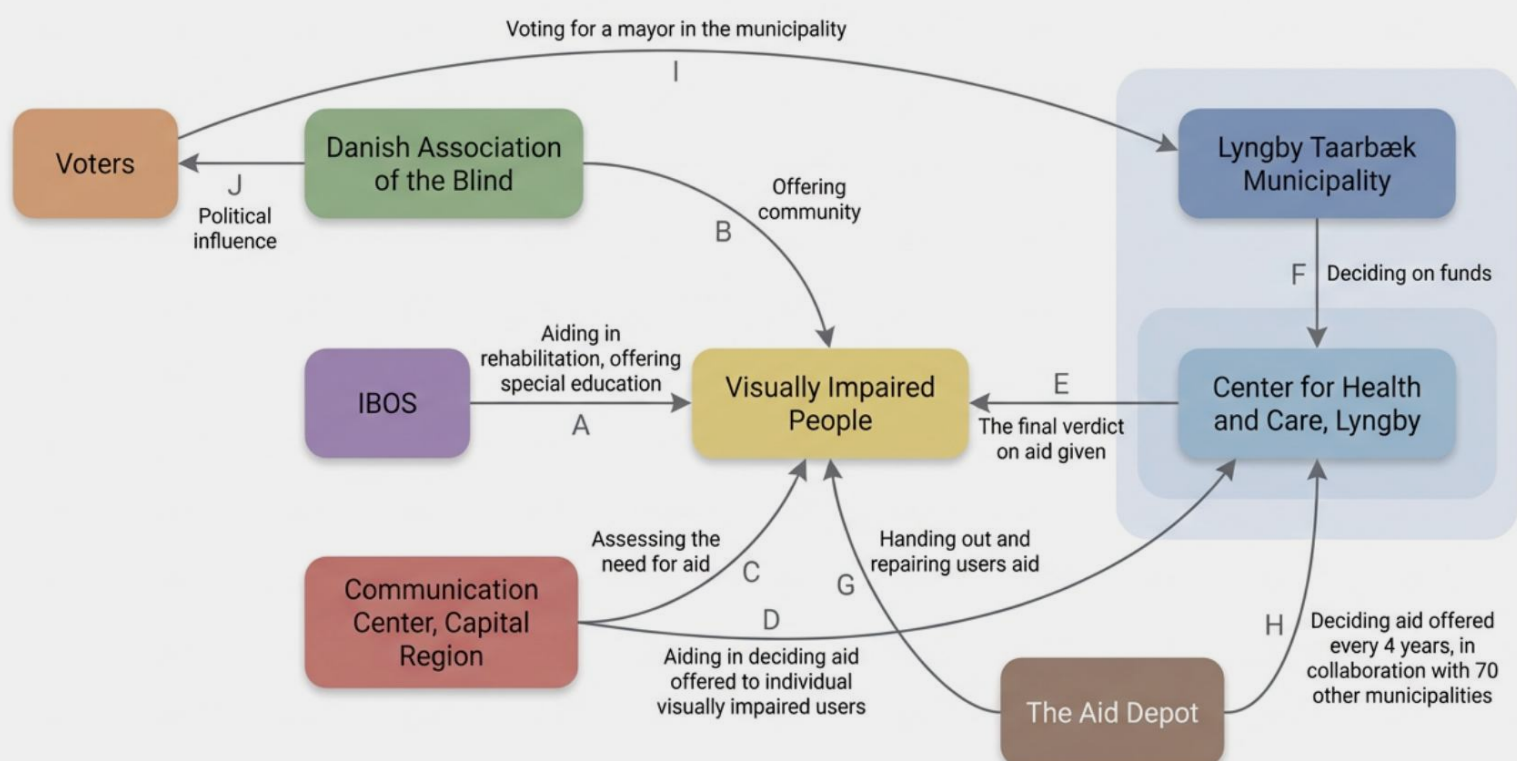


Figure 0.1 — Initial stakeholder map. Note that any other communications center or municipality could be used instead of Lyngby and Capital Region.

OUR TEAM

The team consists of Mechanical Engineering and Design and Innovation students, each contributing expertise in areas such as engineering, process optimization, product development, prototyping, facilitation, and AI implementation. With a shared focus on understanding end-user needs, the team structured itself to support effective collaboration and strong project outcomes.

In the early stages of the project, the team emphasized transparency and communication to ensure efficient collaboration. Leadership responsibilities were initially shared and rotated among members, including organizing meetings, coordinating tasks, facilitating teamwork, and tracking progress. As the project developed, certain members naturally took on more coordinating roles to support workflow and productivity.

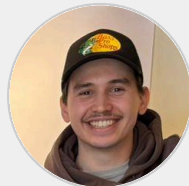
To improve efficiency, the team later divided into smaller groups focused on specific tasks such as stakeholder engagement, prototype development, reporting, and presentations. This structure strengthened collaboration and contributed to a stronger final outcome.



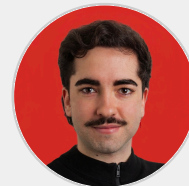
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01 · SCOPE OF THE PROJECT

The scope of the project is limited by a semester timeframe and focuses on Copenhagen and surrounding municipalities. Furthermore, we narrowed our focus to visually impaired individuals and their experience with bureaucratic processes related to obtaining assistive aids. Within this scope, differences between municipalities became evident. In some cases, where municipalities and communication centers are closely connected, processes can run smoothly and efficiently. In others, where collaboration depends on external

partners, a lack of shared knowledge and coordination can lead to significant delays and uncertainty.

Based on these insights, we define the core problem as follows: the current system for applying and receiving assistive aids for visually impaired individuals in Denmark is fragmented and difficult to navigate, resulting in long processing times and reduced accessibility, particularly due to challenges in coordination and communication between municipalities and communication centers.

02 • DESIGN METHODOLOGY

2.1 • PRINCIPLES & WORLDVIEWS

Our process was guided by systems thinking, co-creation, and scalability.

Systems thinking helped us understand the aid application process as a broad socio-technical system involving multiple actors and institutions, such as citizens, municipalities, communication centers, doctors, legislation, departments, and local workflows. From the beginning, we chose to involve both users and municipal workers, as we believed that understanding the perspectives of both those affected by the system and those operating within it would allow us to identify issues that could not be uncovered through desk research alone.

Involving stakeholders throughout the process also enabled us to continuously validate our assumptions and adapt our framing of the problem as our understanding evolved. Co-creation was therefore a key principle, as stakeholders are experts in their own processes. Rather than designing a fixed solution for them, we developed a toolbox to support their work.

Finally, the need for scalability shaped the solution. Because municipalities operate differently, the design needed to be adaptable across contexts rather than based on a single standardized workflow.

Regarding the worldviews underpinning our design process, a central assumption was that public systems are often perceived as inefficient, particularly when citizens experience long waiting times, repeated documentation, multiple handoffs, and unclear status updates. These challenges create hidden costs for both citizens and municipalities: citizens lose independence, while caseworkers spend time coordinating, clarifying, and correcting processes.

2.2 · INITIAL FRAMING

Our initial research phase consisted primarily of desk research focused on understanding the scale and structure of the system surrounding visual impairment in Denmark. We investigated how many people are visually impaired nationally and within local municipalities, as well as the legal framework surrounding aid applications. This included researching the legally accepted maximum processing times for municipalities when handling aid requests. We also mapped the assistive technologies and alternatives currently available for visually impaired people and investigated what types of aids municipalities typically offer. In parallel, we used the "Archaeology" method to analyze the history of the problem owners for instance by systematically reviewing stakeholder websites and public documentation. This allowed us to understand the evolution of the initial problem formulation, as well as earlier attempts to solve it (Dorst, 2015). Through this work, we formulated an initial client frame:

"We see the problem as a lack of budget and resources, meaning not enough money to pay for guide dogs or assistants, and not enough dogs or people willing to work as assistants."

Additionally, during this phase, we created a website to help us identify relevant stakeholders and gather contact information for organizations involved in visual impairment support and aid distribution. This website (**Figure 2.2.1**) serves as a foundational knowledge base designed to gather and synthesize key project information and insights. It was built using Antigravity, leveraging deep research AI agents to autonomously search, process, and integrate comprehensive data to act as the initial "brain" of the project.

Building on this early desk research, we defined a set of "Core Paradoxes" that made the problem difficult to solve (Dorst, 2015). One example was: "We want more governmental help for visually impaired people, because they want to be more independent; but they cannot have more help because the current system is too complex and the type of help too expensive." These Core Paradoxes helped us see that the challenge was not only technical or financial, but also systemic and relational.

From there, we formulated two generic frames for our project direction:

FRAME 1

"If we saw the problem as existing solutions for visually impaired people not being good enough, THEN we should try to create a better artefact (for instance, AI-based assistive glasses)".

FRAME 2

"If we saw the problem as the existing system being too bad and too complex, THEN we should analyze that system and try to make it better."

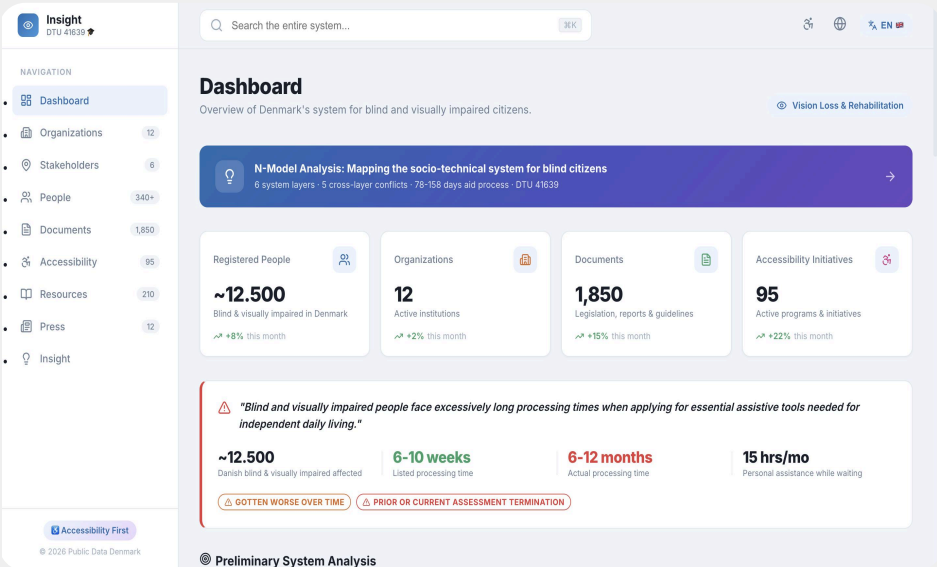


Figure 2.2.1: Insight Dashboard website.

2.3 · FIELD RESEARCH

At this point, we decided to complement our desk research with field research. To build a deeper understanding of the system, we conducted interviews with organizations, municipalities, communication centers, and visually impaired individuals.

One of our earliest interviews was with IBOS, where we aimed to understand what happens when a person becomes visually impaired and what support structures become available afterwards. Through this interview, we gained insight into the process of applying for aid and learned that municipal aid depots are responsible both for distributing assistive devices and maintaining them when technical issues occur. We also discovered that municipalities and aid depots collaborate every four years to negotiate agreements (SKI-aftale) regarding which assistive technologies are offered.

Because these agreements are often based on collective procurement strategies, the selected products frequently come from the cheapest available distributors rather than necessarily being the most suitable solutions for users.

In parallel, we interviewed visually impaired people to understand their experiences of becoming blind, what forms of support they received immediately afterwards, and how they experienced the municipal application process. These interviews helped us recognize the emotional and practical complexity of navigating the system as a citizen.

Alongside these interviews, we attempted to contact aid depots directly in order to better understand their role within the complex system and their influence on the process of granting assistive aids.

To further map the institutional structure, we cold-called fourteen municipalities and communication centers in an attempt to arrange meetings and better understand the full workflow behind aid approval processes. Through this effort, we secured interviews with Hillerød Communication Center and Furesø Municipality, including Sarah Rubin Buncke, who works as a caseworker responsible for aids and in-home modifications. These interviews became particularly important for the evolution of our project.

IBOS

INSTITUTE FOR THE BLIND
AND VISUALLY IMPAIRED

6

VISUALLY IMPAIRED PEOPLE
INTERVIEWED

14

MUNICIPALITIES & CENTERS
COLD-CALLED

2.4 · FROM ARTEFACT-FOCUSED SOLUTIONS TO SYSTEMIC FRAMES

At the beginning of the project, our focus was directed towards designing a physical assistive solution for visually impaired users, following the first of our two generic frames. Since we learned that visually impaired citizens often only receive around fifteen hours of in-person support per month, we initially considered developing a "better artefact," such as intelligent assistive glasses, to improve independence in everyday life.

However, after the meetings and interviews, we became aware of deeper structural problems in the processes. Because of this, our approach to problem solving also evolved over the course of the project. We moved away from thinking mainly in Double Diamond phases and instead used the N-model to divide the problem into three connected levels: the artefact level, the complex system level, and the engineering system level; and to treat our project as a systemic design challenge rather than a single product development task.

We therefore elaborated the second generic frame ("the existing system is too bad and too complex") into four more specific framings:

FRAME 2.1 · PROVISION

"IF we saw the problem as the government not being able to satisfy the demand for aids, THEN we should consider transferring part of the responsibility to a private foundation or company, assuming that increased competition might improve the quality of aids".

FRAME 2.2 · BUDGET

"IF we saw the problem as a lack of budget for providing assistive aids, THEN we should focus on solutions that persuade the government to invest more resources".

FRAME 2.3 · TIME

"IF we saw the problem as the process of applying for and obtaining assistive aids being too long, THEN we should dive into that process to shorten it.

FRAME 2.4 · COMPLEXITY

"IF we saw the problem as the process being too complex (because it involves too many stakeholders and decision makers) THEN we should create a tool to improve communication between stakeholders and reduce friction".

We saw frames 2.1 and 2.2 as more related to political and strategic decisions beyond our scope, and Frames 2.3 and 2.4 as more closely connected to the engineering and complex system levels. We therefore decided to focus on Frames 2.3 and 2.4 and use our design efforts on reducing processing times and improving workflow efficiency. At this stage, we still believed that a more optimised and possibly universal workflow could be designed for municipalities.

2.5 · FINAL REFRAMING

Our understanding evolved further after interviews with Furesø Municipality and other stakeholders. We learned that municipalities and communication centers do not interpret legislation regarding assistive aids in the same way. One consequence of these differing interpretations was that Furesø Municipality had stopped collaborating with Hillerød Communication Center and instead partnered with Gentofte Communication Center. We also discovered that the effectiveness of aid processing depended heavily on how individual municipalities were internally organized, as different municipalities used entirely different departmental structures and administrative approaches. An example of this can be seen in **Figure 2.5.1**, which shows the different departmental structures of Hillerød and Furesø Municipalities.



Figure 2.5.1: Different departmental structures.

This realization challenged our assumption that one universal workflow solution could improve the process everywhere. We recognized that **designing a single “ideal” workflow would likely fail** because municipalities operated under structurally different conditions and legal interpretations.

Shortly after this realization, we were introduced to the INVI model during a class session. The model helped us recognize that the problem we were addressing was a wicked problem characterized mainly by decentralized structures and lack of clarity on the route causes, and also by the lack of clarity on how to solve it (INVI, 2025).

As it can be seen in **Figure 2.5.2**, we compared our problem to the wicked problem of “Collective traffic” in order to fill out the INVI compass. We also used this model to make an estimation of how we would want our solution to make the current situation less wicked, in the “Causes” and “Solutions” axes.

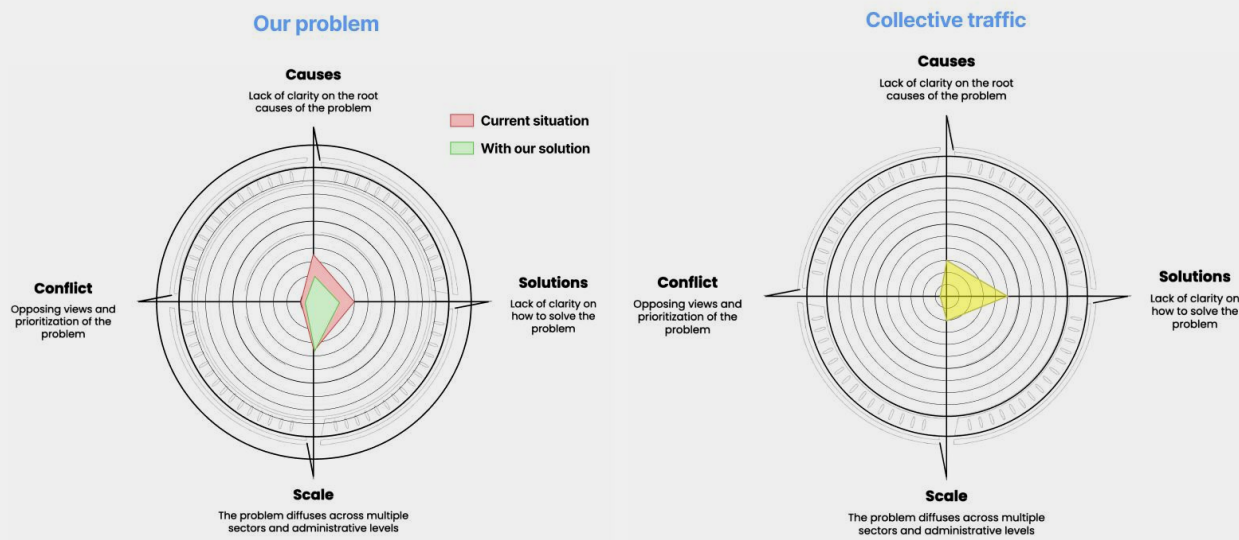


Figure 2.5.2: INVI model applied to our problem.

Based on this, we did a final reframing that combined **the complexity of the process** with the **diversity of municipal structures**:

FINAL FRAME:

“IF we see the problem as the process of applying for and getting assistive aids being too complex because it involves many stakeholders and decision makers while every municipality structures this process differently, THEN we must design a tool that enables stakeholders to understand and reduce friction points in their own processes internally.”

This reframing shifted our focus away from designing a fixed workflow and towards designing a flexible tool that municipalities could adapt to their own structures and processes.

03 · IDENTIFYING & DEFINING THE PROBLEM

The initial problem exploration combined desk research with interviews conducted with municipality workers, communication centers, and stakeholders involved in the assessment process for visually impaired citizens applying for assistive aids. Through this process, several recurring challenges were identified, particularly concerning delays, fragmented responsibilities, and communication barriers between stakeholders.

One of the first problems identified was the excessive length of the assessment process. According to Danish legislation, municipalities are expected to complete assessments and provide a decision within eight weeks from the creation of a case. However, interviews revealed that the actual process often takes between six and twelve months. These delays occur because municipalities rely heavily on information and evaluations from external stakeholders such as doctors and communication centers. Since these stakeholders often operate in different systems, municipal caseworkers frequently need to manually request information from external actors or other departments, significantly slowing down the process.

Another major issue concerns the unclear distribution of responsibilities within municipalities. Cases are often transferred between departments because it is not always evident which unit is responsible for handling applications related to

visual impairment. This lack of organizational clarity creates additional waiting time and contributes to prolonged case processing.

During the research process, some initially assumed problems proved less relevant than expected. At first, it was believed that assistive devices for visually impaired citizens were governed by the nationwide SKI procurement agreement used for many municipal aids such as wheelchairs, rollators, and medical equipment. However, after interviewing Sarah, a visitator from Furesø Municipality, it became clear that visual aids are handled differently. Instead of being part of a fixed national procurement agreement, municipalities allocate assistive devices for visually impaired citizens through individual budget assessments based on what is considered the best, cheapest, and most durable solution for the applicant's needs. This insight shifted the focus away from procurement limitations and toward organizational and procedural challenges.

The interviews also validated that delays in the assessment process represent one of the most significant issues experienced by both citizens and municipality workers. Although the legal timeframe is eight weeks, stakeholders consistently described much longer waiting periods caused by administrative bottlenecks, staff shortages, and dependency on external documentation.

THE CITIZEN PERSPECTIVE

From the perspective of visually impaired citizens, applying for assistive aids involves navigating a highly complex and fragmented system. Rather than simply requesting a device, applicants enter a multi step process involving municipalities, communication centers, doctors, and specialists. Citizens are often redirected between institutions depending on where they initially seek help. Early in the process, applicants must provide extensive medical and personal documentation, while simultaneously remaining engaged throughout the assessment process.

Several barriers make this process especially difficult for visually impaired applicants. Completing application forms can itself be challenging due to accessibility limitations. Many applicants rely on family members or partners for assistance, while others require direct support from municipality workers. In addition, applicants often struggle to identify the correct department responsible for their case. Applications submitted to the wrong department may be returned, requiring the applicant to restart parts of the process. In some cases, even municipality employees are uncertain about the correct departmental placement of cases related to visual impairment.

Communication delays between stakeholders further contribute to the complexity of the process. Municipal caseworkers frequently depend on information from doctors or communication centers before they can continue assessments. While communication between

municipalities and communication centers generally functions adequately through many shared systems and phone calls, the overall workload of caseworkers and long response times from external stakeholders create significant delays.

The research also revealed considerable variation between municipalities. Some municipalities operate with relatively simple organizational structures involving only a few departments, while others manage applications through multiple specialized units. Municipalities also differ in the extent to which they rely on external stakeholders, contributing to inconsistent experiences for applicants across Denmark.

Overall, the system is difficult to optimize because it depends on coordination between multiple independent stakeholders operating across different organizational structures, workflows, and digital systems. The absence of shared infrastructure and clear ownership creates repeated back and forth communication, unclear accountability, and prolonged processing times. Combined with legal requirements and local municipal differences, these factors make the system highly fragmented and resistant to change.

Understanding these interconnected challenges is critical because they cannot be solved by optimizing a single workflow or department. The problem requires a systemic intervention that helps municipalities and communication centers work together more effectively across their existing structures.

04 · FROM INSIGHTS TO CONCEPTS

After mapping the problem space, we realized that creating a meaningful solution required clearer definitions: Which specific challenges should we address? What requirements should guide the solution? And which users and system levels should we design for?

4.1 · UNDERSTANDING THE PROBLEM ACROSS SYSTEM LEVELS

To answer these questions, we established a set of requirements, explored alternative design directions, generated a broad range of concepts, and evaluated them based on feasibility and expected impact. To structure our analysis, we examined the problem across three interconnected system levels: the artefact level, the complex system level, and the engineering system level.

At the artefact level, the process relies on a fragmented set of physical and digital tools, including municipal case-management systems, communication platforms, and application forms. Many administrative steps remain manual, the digital systems stakeholders depend on are disconnected from one another, and application forms and documentation requirements are often difficult to navigate.

At the complex system level, the process involves a wide network of actors: municipalities, communication centers, doctors, visually impaired citizens, caseworkers, consultants, leadership representatives, aid depots, and organizations such as IBOS and the Danish Association for the Blind. Across this network,

communication is fragmented, responsibilities between departments are frequently unclear, and stakeholders are often dependent on external actors before they can move a case forward. This creates recurring bottlenecks and delays, compounded by the fact that workflows vary significantly between departments.

At the engineering system level, the challenges are structural and institutional. Danish legislation on assistive aid allocation is interpreted differently across municipalities, and since municipalities are self-governing, they organize their workflows and departmental structures independently. There are no standardized national frameworks for how assistive aid processes should be structured, which means inefficiencies are deeply embedded in the system and difficult to address through localized solutions alone.

Together, these three levels paint a picture of a system where fragmentation and lack of coordination, rather than any single technical or financial shortcoming, are the root causes of the problem.

4.2 · N-MODEL REQUIREMENTS

Based on prior research with the stakeholders, there were a range of criteria that needed to be met for the concepts generated. All Municipalities and Communication Centers fall under the same legislations, and all have different ways of going through their processes, as well as different structures. Additionally, within just a single Municipality or Communication Center, there are various departments, each with their own variations of processes. Therefore, the concepts need to be viably implemented in their current structures, needing adaptability, and simplicity so that it's easy to get started with and use.

These criteria are structured below, based on each level in the N-Model. An important additional note from Karen, the Head of Departments at Hillerød Communications Center was, that any process changes had to be made internally. This means that the stakeholders themselves need to be in charge of making and implementing the change, due to many layers of depth across both the engineering and complex system levels.

REQUIREMENTS ACROSS SYSTEM LEVELS

ENGINEERING	COMPLEX	ARTEFACT
The design must follow the legislation upon the Municipalities.	The design must support cross department collaboration.	The design must be cheap.
The design should work regardless of how Municipalities interpret the legislation.	The design must improve the total processing time.	The design must be easy to use.
The design solution must remain applicable despite differences in Municipality structure.	The design must be usable by stakeholders with different professional backgrounds.	
	The design must work independently in the municipalities without external experts.	
	The design must be easily implementable in a municipality structure.	

4.3 · TWO DIRECTIONS TO EXPLORE

There were two main directions for the solution space. Either, provide a clear and simple way for any, especially new visually impaired people, to seek the help they need, start a reimbursement process and get the help they need. Currently, even starting the process can be unclear to some, and even if they get a visitation from a Sight Consultant that writes a recommendation for what help they would need, to actually apply for said help is a manual action needed to be taken by the user. While this is a very real issue for some, and based on insights gathered from Hillerød Communications Center, starting the process is often an issue, given the user has to do it themselves which can be overwhelming, it doesn't change the fact that the process remains very slow.

The other direction instead explores, how can a solution impact both the time it takes to finish a process, as well as the quality of help. This direction involves a much more thorough understanding and handling of the many issues that can occur, for either the case worker, their department, the individual organization or on a much larger engineering level. While it is much more complex to work with this direction, the potential impact is substantial. Therefore we chose it as our main direction.

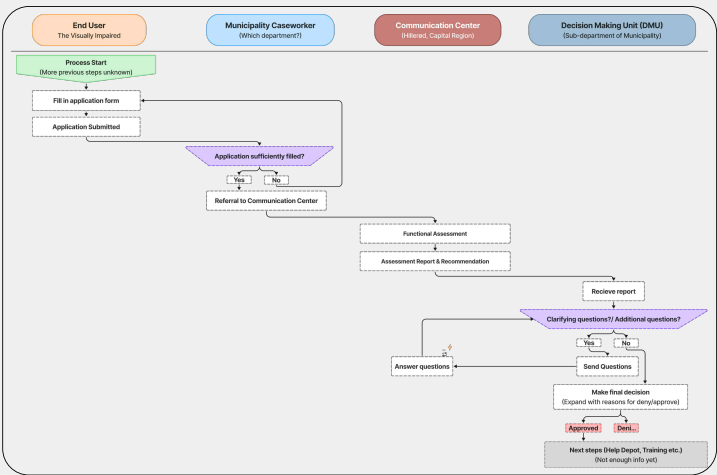
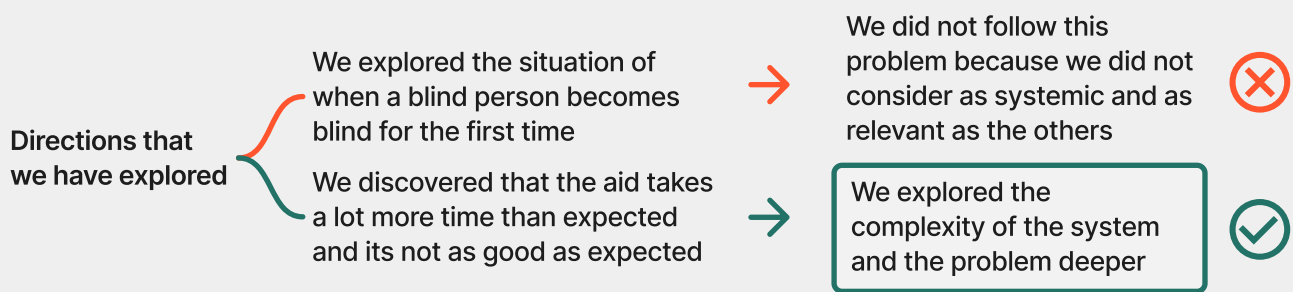


Figure 4.3.1: Flow chart overview of problem

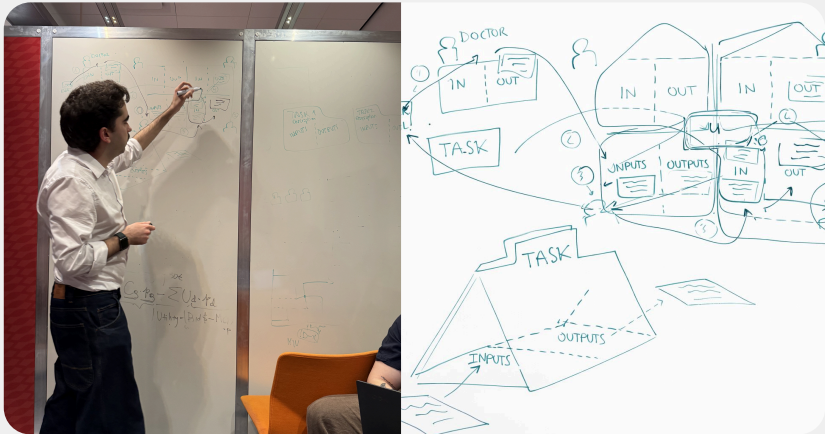


Figure 4.3.2: Brainstorming and defining the game concept.

4.4 · METHODS OF CONCEPT GENERATION

With the requirements set up, and a direction chosen, the first method used was the KJ Technique, followed by Brainstorming, specifically Brainstorming Webs and Flow Charts (Martin & Hanington, 2019, p. 28-29, 140-141). The KJ Technique allowed for unbiased initial idea generation from everyone, parallelly. The teams different background and experiences, created many unique types of solutions, later explored further in the brainstorming webs.

Using the KJ Technique, a few different solution types occurred: Digital solutions and platforms, like web dashboards of various functionality, loose concepts of board and card games that they could play with design engineer consultants, to come up with solutions, and lastly structural and legislative changes that would radically change the entire

engineering system and stakeholders, proposing centralizing various departments to one specialised unit and similar. Some concepts were also process changes, but as Karen mentioned, the change had to be made internally.

Afterwards, the types were further explored upon together, through webs. Flow Charts were also used for defining and scoping the problem, and was helpful to visualize and get a simple overview of where the current processes had friction points. Brainstorming Webs were used with the central concept being the solution, then drawing out the various "types" of solutions that could be viable. From there we explored sub-types of each solutions and tried to define a singular concept within each type, and finally ended up with three final concepts.

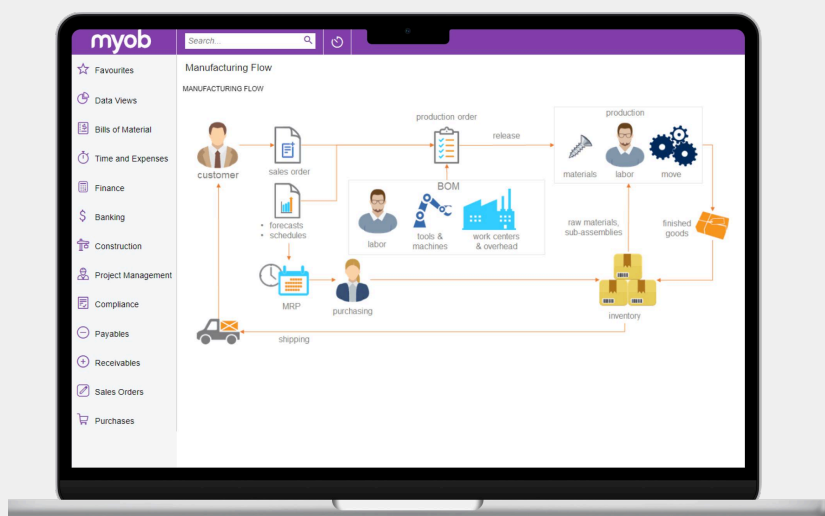


Figure 4.4.1: Digital Dashboard for Stakeholders.



Figure 4.4.3: Game for optimizing processes.



Figure 4.4.2: Change legislation and organisation structure.

4.5 · CHOOSING THE FINAL CONCEPT

01 DIGITAL DASHBOARD FOR STAKEHOLDERS

The first concept is the digital dashboard for various stakeholders. The dashboard serves as a centralised database and overview for each stakeholder on a case, to see their cases, and tasks within. Additionally, being able to work on a case, and have all the work being done on it be send digitally to the next person in the process, ensures everyone has access to everything. It would also allow for some features that can speed up the process. For example, should a case be stuck at waiting for a specific stakeholder, say the doctor who needs to provide a journal, the doctor would be a user in this system.

This solution serves as a work interface, information hub and overview of all cases a stakeholder would work with. **It falls short on adaptation**, as doctors, and various departments even within a single municipality often use different platforms. Just convincing one stakeholder to use this platform would be very difficult, on top of integrating it with every other digital system various stakeholders may use, likely resulting in the software term called "Integration hell". This is further made difficult, as municipality structures and workflows vary as well, needing the platform would need to accommodate local customization. Therefore this concept was not pursued further.

02 CHANGE LEGISLATION & ORGANISATION STRUCTURE

The second concept is working on the engineering system level. Instead of every organisation having their own workflows and interpretations of the legislation, centralise the ones responsible for working the cases into fewer, more specialised units. This would create a uniform, more streamlined and specialized unit to process cases, also taking away the responsibility for each municipality, who have various motivations within their communication centers. This would require us to map processes of all different application types, get a deep understand of the legislations responsible for allocating the responsibility of the processes, and evaluate those against each other, in order to design a better system, which then should be implemented across many different municipality sizes.

03 GAME FOR OPTIMIZING PROCESSES — CHOSEN

Finally, the design game emerged as the most promising concept. Unlike the digital dashboard, which faced integration challenges across multiple municipal systems, or the systemic restructuring approach, which would require legislative change, the game offers a flexible, self contained intervention.

This concept empowers stakeholders themselves to drive improvements rather than imposing a solution. Given that municipalities operate under different structures and interpretations of legislation, a reusable framework that can be adapted to local contexts has significantly greater scalability potential. Additionally, the game can be continuously redeployed across different cases and workflows, creating long term value rather than serving as a one time analysis. For these reasons, the design game was chosen as our final concept to develop further.

05 · REFRAMING THE ROLE OF THE SOLUTION

As detailed in our design methodology (section 2.4 - 2.5), our initial assumption that visually impaired citizens needed better assistive technology proved to be incomplete. Through the stakeholder research, we discovered that the real barrier was organizational fragmentation, not technological capability.

This realization fundamentally changed our design strategy. Rather than creating a tool for end users, we pivoted toward creating a tool for the system

actors, municipalities and communication centers who control the workflow.

The solution needed to be flexible enough to work across different municipal structures and legal interpretations, yet empowering enough that the stakeholders could drive their own improvements. This led us to develop the game as a participatory intervention: a tool that helps organizations visualize complexity, identify friction, and collaboratively redesign their own processes without imposing a standardized workflow.

5.1 · DESIGNING THE GAME

Based on the reframing of the project, the purpose of the game became to help stakeholders visualize, reflect and analyze complex workflows in order to gather insights about how to improve them.

The game asks participants to choose a specific process, such as applying for and receiving a cane, and collaboratively map the workflow from beginning to end. Actors, departments, tasks, and dependencies are represented visually using icons, arrows, and task sheets. Participants also identify bottlenecks and friction points throughout the process.

This tabletop game format was chosen because the identified problems involved many different

actors working across departments and municipalities. The format encouraged participation and dialogue while creating a shared space for discussion. Instead of relying only on interviews or written analysis, stakeholders could collaboratively externalize and visualize their workflows together.

Visualization became an important part of the intervention because many participants only understood parts of the overall process. By physically mapping workflows, hidden dependencies and delays became easier to identify and discuss. The visual mapping also functioned as a boundary object, helping different stakeholders align their understanding of the system.

THE GAME MATERIALS

The game board was designed with a modular structure so it could adapt to different municipalities and workflows. Since each municipality operated differently, flexibility was prioritized over standardization. This made the tool reusable across different organizational contexts.

The intervention also included simplified design methods cards that supported idea generation and process improvement. The cards translated design thinking methods into simple prompts that non designers could easily use during workshops.

Participants described the cards as useful and thought provoking because they helped structure discussions around possible improvements.

The Holistic design cards meant to help the players improve the process flow conceptually was inspired by Dagný Valgeirsdóttir's Ability prompt cards, while the content of the cards were inspired by the literature of the course. The cards are made to simplify some of the principles and methods, using aspects of behavioral Design, Systems engineering and Lean theory.

SOURCES OF INSPIRATION FOR THE CONTENT OF THE CARDS

01 · LEAN & WASTE REDUCTION

de Weck et al., 2011

02 · PRINCIPLE 8 · INTEGRATION

"Core processes should be integrated" — Clegg, 2000

03 · CONTROL AT SOURCE

Principle 12: "Problems should be controlled at source" — Clegg, 2000

04 · SYSTEM 1 / 2 THINKING

Nielsen et al., 2021

05 · TIMING & MOTIVATION

Nielsen et al., 2021

06 · COM-B

Nielsen et al., 2021

07 · FASTER BIKE OR BETTER ROUTE

"Broadening of the system boundaries and asking if the need could be met by another function or system." — de Weck et al., 2011

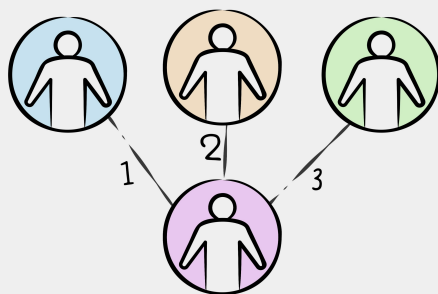
5.2 • HOW THE GAME IS PLAYED

Four steps structure each round of play, from naming who is involved, to identifying where the process breaks down, and finally generating solutions together.

STEP [1]

IDENTIFY STAKEHOLDERS

Start from one stakeholder and map their interactions with other stakeholders. Mark each connection with a number (*Task Number*).



STEP [2]

DESCRIBE CONNECTIONS

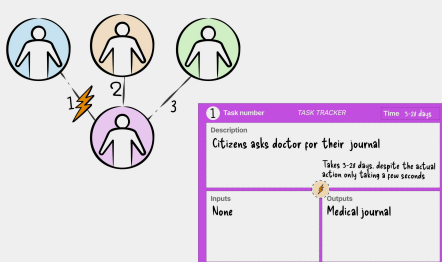
For each *Task Number*, fill a *Task Tracker*, describing the relation between the two stakeholders. Shortly explain the relation, the inputs and outputs, and how long it takes.

1 Task number TASK TRACKER Time 5-20 days	
Description Citizens asks doctor for their journal	
Inputs None	Outputs Medical journal

STEP [3]

IDENTIFY FRICTION

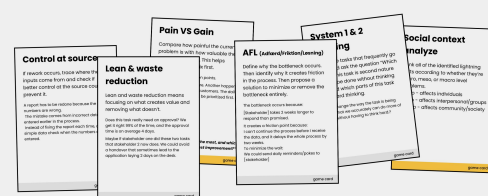
Discuss whether a connection creates any *Friction* for any stakeholder, and identify the friction point. Note it down anywhere on the *Task Tracker* and mark both the *Task Tracker* and the connection with a *Lightning Bolt*.



STEP [4]

FINALLY, BRAINSTORM SOLUTIONS

At the very end, for each *Friction* point, take a Game Card and follow the instructions on it to come up with possible solutions to the various problems identified.



Repeat steps 1, 2 & 3. Repeat the steps for as many rounds as you want or as time allows for, gradually making a big stakeholder and interactions map with identified *Friction* points.

5.3 · THE WORKSHOP AS CO-CREATION TOOL

During the workshops, both municipalities and communication centers were directly involved since they represented the main actors shaping accessibility related processes. They became a central part of the project because they allowed us to evaluate the experience of the stakeholders while using the tools collaboratively.

Unlike interviews, where participants usually describe only their own responsibilities, the workshops allowed the stakeholders to reconstruct workflows together. This was important because no single participant fully understood the entire system or all of its dependencies. **Tacit knowledge that had become normalized in everyday work was revealed.** Participants explained how many processes depended on informal coordination, repeated reminders, or knowing which person to contact directly. The participants were surprised by how many steps and dependencies existed within relatively simple workflows once they saw them mapped visually.

The workshops generated reflection, dialogue, and shared understanding. They functioned both as a research method and as a test of an intervention by helping stakeholders recognize and discuss the complexity of the system.



Figure 5.4.1: The testing and refining process

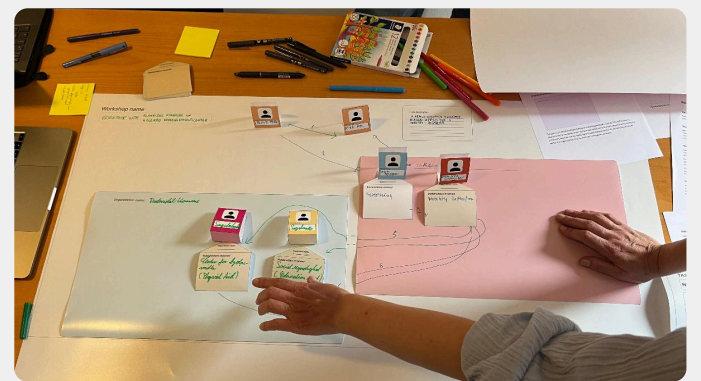


Figure 5.4.2: First workshop experience

5.4 · ITERATION AND REFINEMENT

The development of the Insight game was iterative and refined multiple times through testing with the stakeholders involved in assistive technology cases. The game was tested in co-creation workshops where they used it to discuss real workflows. After each workshop, the rules, materials, and facilitation were adjusted based on participant feedback and observed challenges (**see Figure 5.4.1**).

The first workshop (**see Figure 5.4.2**) involved Karen, head of department at the communication center in Hillerød, and Christian, an assistive devices caseworker from Rudersdal Municipality, mainly working with wheelchairs, rollators, and vision related aids. The second workshop included Karen and Christian again, together with Louise, an administrative caseworker from CKU Hillerød responsible for routing applications and approving assistive devices.

Several **usability challenges** emerged during the first workshop. Participants often needed clarification regarding the rules and materials; this showed that the structure and rules were not intuitive. Completing the task tracker also created downtime, as participants did not know if they should write while the others waited. Certain sections required additional explanation, and some game elements, such as the lightning bolts were occasionally forgotten during play.

Based on these observations (**see Figure 5.4.3**), the game **structure was redesigned**. The rules and templates were simplified, a video guide was added, and the task tracker was separated from the mapping canvas. In the updated format, the workflow map was placed on the wall while one participant acted as a dedicated note taker. This reduced visual clutter and allowed the other participants to focus more actively on discussion and collaboration.

OUTCOMES OF REFINEMENT

Participant feedback directly shaped these changes. In the second workshop, stakeholders found the new setup easier to use and said the wall based format improved workshop flow (see Figure 5.4.4).

The added method cards also helped participants discuss problems and improvements more easily, increasing engagement and understanding of the system. Participants identified more bottlenecks and gained a better overview of the workflow. Louise noted that the game improved her understanding of other actors’ responsibilities and challenges. Although usability improved significantly, some challenges remained. Parts of the task tracker still required facilitator guidance, and participants occasionally forgot to use all game elements.

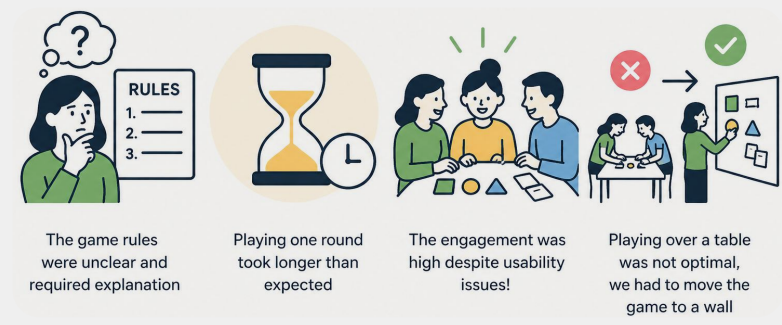


Figure 5.4.3: Learnings from the testing process



Figure 5.4.4: Testing the gameplay

5.5 · LANDING PAGE & TOOLKIT DISTRIBUTION

AI-ASSISTED WEB ARCHITECTURE

The web platform was built to facilitate the adoption of the system by any enterprise, providing a clear explanation of its concept and mechanics, and serving as a centralized hub for downloading the resources required for to run it. The site was constructed by integrating AI-driven design workflows using Claude Code. This approach enabled a rapid and efficient structuring of the web platform.

RAPID COMPONENT GENERATION

Utilizing Claude Code accelerated the drafting of the interface code, allowing complex game rules and physical components to be translated into clear, interactive, and modular web sections.

DEPLOYMENT INFRASTRUCTURE

The page is deployed via Vercel, providing a server less hosting infrastructure. This ensures continuous integration, high availability, and optimal loading times for visitors without the need to manage backend servers.

GAME CONCEPT & MECHANICS

The webpage acts as the primary presentation manual, structuring the reading experience so corporate teams can quickly grasp the value of the system.

VALUE PROPOSITION

The core concept of the simulation kit is explained, focusing on visualizing complex workflows to identify bottlenecks and map processes through a structured representation.

OPERATIONAL RULES

The platform visually details the phases of the game. This includes configuring participant roles, the step by step process for navigating organizational scenarios, and instructions for using mechanics to pinpoint friction points and propose solutions.



PLATFORM
QR

DISTRIBUTION & DOWNLOADABLE RESOURCES

IMPLEMENTATION TOOLKIT

Users are provided with dedicated sections featuring direct download options for all necessary files to run the game in their own offices. This encompasses components such as game boards, facilitation manuals, stakeholder cards, organization cards, department cards, task trackers, conclusion sheets and friction markers.

AUTONOMOUS ADOPTION

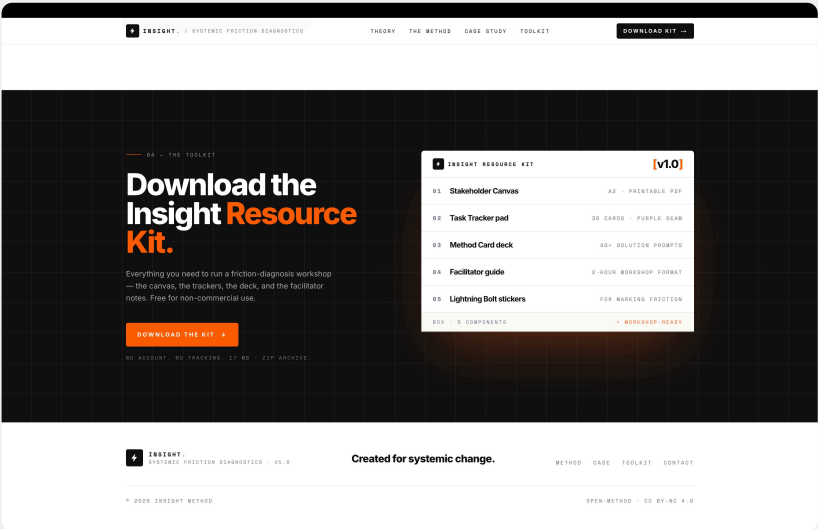
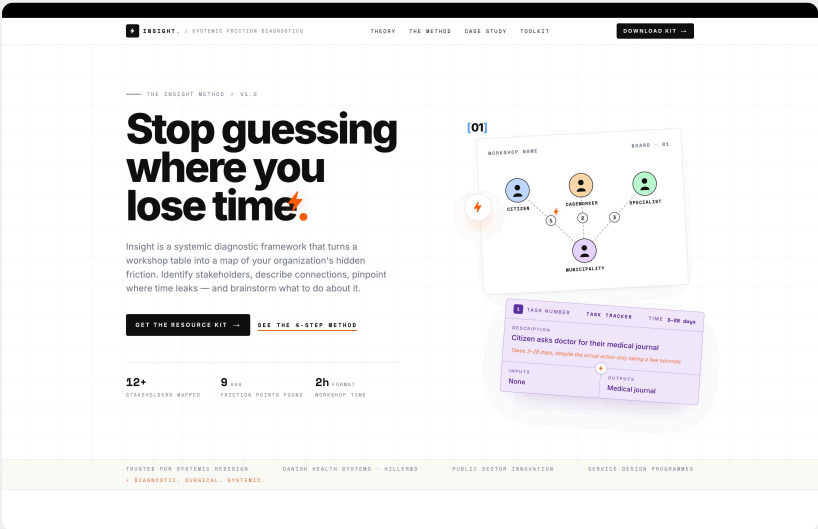
By centralizing instructions and packaging resources into a plug and play format, the page eliminates the need for intermediaries. This empowers internal facilitators within any company to download the materials and conduct the workshop independently.

USER INTERFACE & EXPERIENCE

The landing page prioritizes a Swiss minimalist aesthetic and International Typographic Style, utilizing clean typography and structured grid systems. It is focused on information clarity, guiding visitors logically from concept discovery to file download.

INTUITIVE NAVIGATION

The layout relies on a clean typographic hierarchy and well-defined sections. This facilitates the comprehension of analytical methodologies that might otherwise feel dense, so users understand exactly how the tool can audit and improve their corporate workflows before initiating the download.



06 · IMPLEMENTATION

6.1 · DISTRIBUTION OF THE GAME

Initially, the solution should be distributed through a dedicated website where municipalities and communication centers can freely download the game materials and print them locally. This approach minimizes logistical barriers and reduces implementation costs, making the solution accessible even for departments with limited budgets or resources.

By avoiding dependency on physical distribution, municipalities can quickly access and test the game internally without long onboarding processes or expensive procurement procedures. The website would also function as a central knowledge hub containing instructional materials, facilitation guides, printable templates, and explanatory videos that demonstrate how the game should be used in practice. These supporting materials are particularly important in reducing the learning curve and making the solution easier to implement without direct involvement from the original development team.

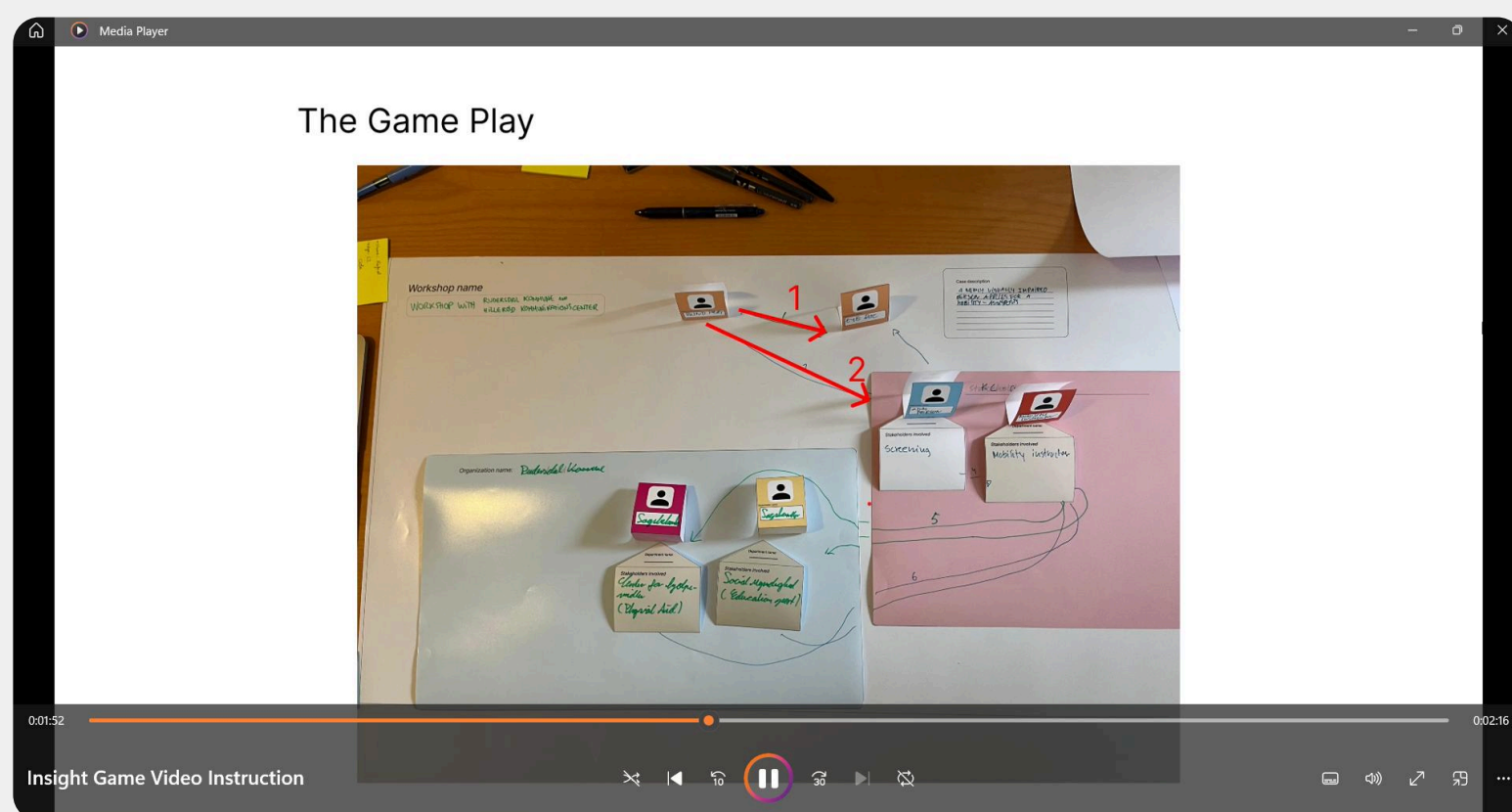


Figure 6.2.1: Video instruction of how to play the game

6.2 · INTRODUCTION OF THE GAME

The game is best introduced through workshops where multiple stakeholders involved in the same workflow are present simultaneously.

The workshop participants are introduced to the rules of the game through the website where they can watch a video instruction guiding them through.

6.3 • THE VALUE IT BRINGS STAKEHOLDERS

The frequency of use depends on the goals and maturity of the organization implementing the solution. During the initial implementation phase, the game should ideally be used regularly as part of workshops, process optimization initiatives, or lean activities. Frequent use during the early stages allows organizations to familiarize themselves with the framework while continuously refining workflows and identifying new friction points.

Over time, the solution can evolve into a recurring tool used periodically whenever organizational restructuring, new workflows, or recurring case-processing challenges emerge. The game may also become useful during onboarding of new employees, allowing them to gain a better understanding of stakeholder interactions and administrative workflows across departments.

6.4 • INTEGRATION INTO EXISTING PROCESSES

The solution is particularly well suited for integration into existing lean processes and continuous improvement initiatives already present in municipalities and communication centers. Rather than replacing current methods, the game complements existing workflow optimization activities by providing a more interactive and collaborative approach to process mapping. For example, it can be used during process review sessions to simulate real citizen cases, identify information gaps, visualize handovers between stakeholders, and discuss how delays propagate throughout the system.

Interviews and workshops with stakeholders support this integration pathway. Karen, Head of Department at CKU Hillerød, explained that the organization is already actively evaluating internal workflows related to assistive aid cases and searching for ways to optimize operations. This demonstrates a clear opportunity for the game to become part of ongoing lean initiatives and organizational development activities.

CKU Hillerød and Rudersdal Municipality are particularly suitable organizations to anchor and further develop the solution because they represent central actors within the existing administrative ecosystem. Together, the communication center and municipality cover large portions of the

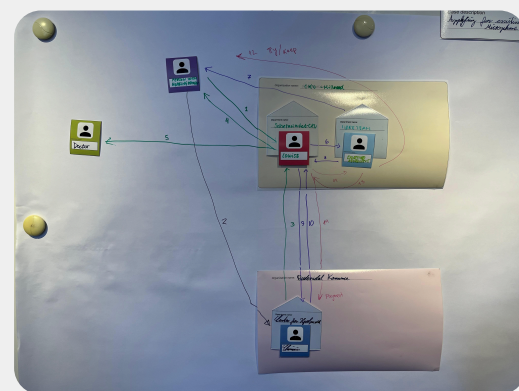


Figure 6.3.1: Visualization of a process from workshop 2

workflow involved in assistive aid cases, giving them direct access to the practical challenges, stakeholders, and communication structures the solution aims to improve. Both organizations also demonstrated strong engagement during interviews and workshops, showing openness toward process innovation and cross-organizational collaboration. Their participation provides valuable opportunities for iterative testing, validation, and refinement of the solution under realistic conditions.

These organizations also have strong incentives to continue developing and implementing the solution. One major incentive is the potential to reduce delays in case processing by identifying bottlenecks and improving coordination between stakeholders. Since municipalities are legally expected to process cases within certain timeframes, improving workflow efficiency could help them better meet deadlines while simultaneously improving the citizen experience. More efficient workflows may also reduce stress and workload pressure among caseworkers by clarifying responsibilities, reducing unnecessary back-and-forth communication, and improving coordination across departments. In this sense, the solution creates value not only for citizens applying for aid, but also for employees working within the system.

6.5 • SUCCESSFUL IMPLEMENTATION & CHALLENGES

Successful implementation depends heavily on the involvement and engagement of several key stakeholders. Municipalities, communication centers, caseworkers, consultants, and leadership representatives all play critical roles in ensuring adoption and long-term use of the solution. Caseworkers and consultants possess the practical knowledge necessary to identify real operational challenges, while leadership support is required to allocate time, resources, and organizational attention toward workshops and improvement initiatives.

Without buy-in from management, the solution risks being deprioritized in favor of immediate operational tasks. Municipalities themselves can also become key drivers of future implementation because they manage highly complex administrative systems involving numerous departments, stakeholders, and workflows operating under strict budget constraints.

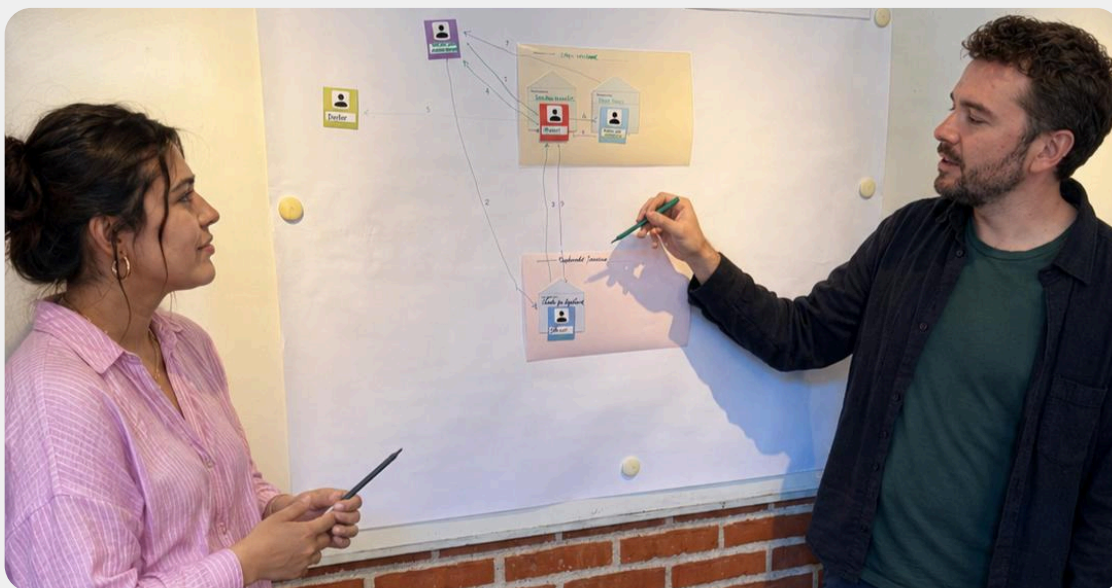


Figure 6.4.1: CKU and RM stakeholders mapping out a process

BARRIERS TO ADOPTION

Despite its potential value, several barriers could hinder successful implementation. One challenge is that some municipalities or employees may perceive the game as overly complicated or difficult to understand, which could reduce willingness to adopt it. If the purpose, structure, or rules are unclear, stakeholders may not invest the time required to properly engage with the solution. High workloads and limited time among caseworkers represent another significant barrier. Even if employees recognize the value of the game, operational demands may cause process optimization activities to receive lower priority compared to immediate case handling responsibilities.

Another challenge involves organizational resistance and deeply embedded routines. Municipal processes are often institutionalized and resistant to change, especially when employees feel that new tools may indirectly evaluate or monitor their performance. This concern was identified as one of the most important implementation risks. Because the game visualizes workflows and friction points, some employees may perceive it as an auditing mechanism rather than a collaborative improvement tool. Overcoming this challenge requires careful facilitation and communication that emphasizes the purpose of the game as a supportive, blame-free framework for organizational learning and process improvement.

THE HOLISTIC DESIGN METHOD CARDS

At its current stage, the card-based component of the solution, the holistic design method cards, is the easiest element to implement immediately. After workflows and stakeholder interactions have been mapped, the cards can be used to identify root causes of bottlenecks and stimulate collaborative discussions about potential improvements.

One major advantage is that the cards can function independently of the full game, making them easy to integrate into existing workshops and lean activities without requiring full adoption of the entire framework. This practical value was validated during workshops where Karen from CKU repeatedly expressed interest in using the cards independently within ongoing process optimization work.

FURTHER DEVELOPMENT REQUIRED

Although the current prototype has already demonstrated value during workshops, the solution still requires significant further development, iteration, and testing before broader implementation becomes realistic. During workshops with CKU Hillerød and Rudersdal Municipality, the development team played an active role in guiding participants and explaining how to use the game correctly.

Before national implementation becomes feasible, the game must become intuitive enough to function

independently without direct facilitation from the creators. This requires refinement of instructions, terminology, game mechanics, workshop structures, and supporting materials. Additional user testing with new municipalities and stakeholder groups is also necessary to validate usability and adaptability across different organizational contexts. Financial resources may further be required to support continued testing, workshop facilitation, design improvements, and development of instructional content such as guides and explanatory videos.

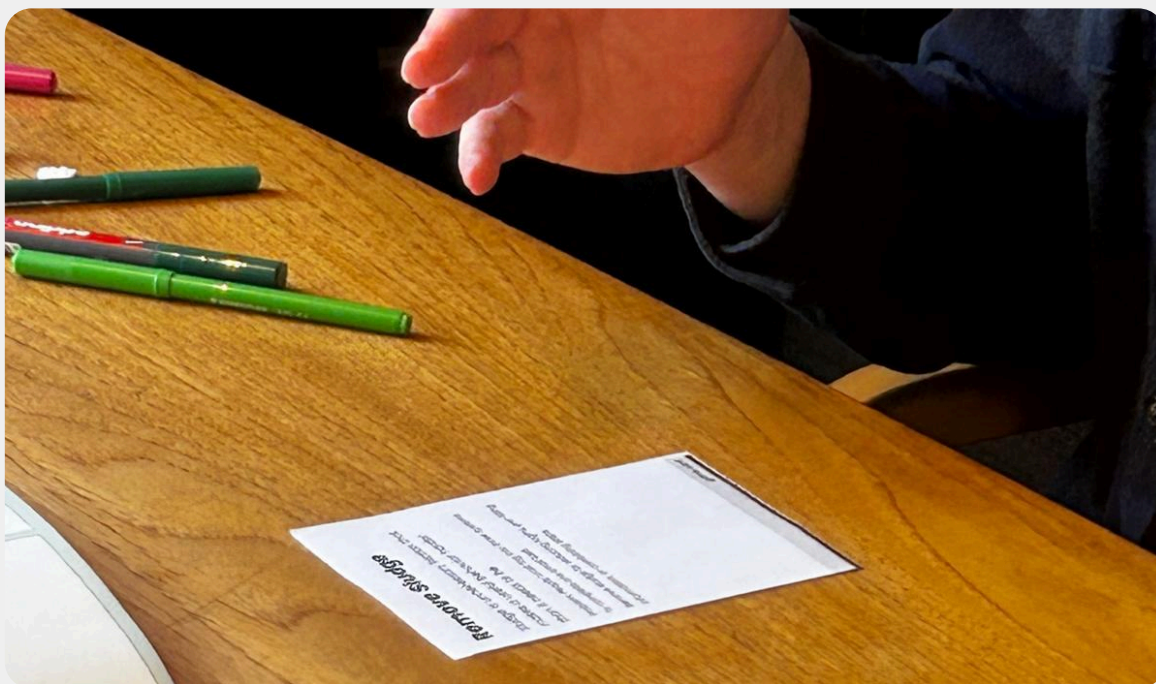


Figure 6.5.1: The holistic design method cards in use

6.6 · FUTURE DIGITALIZATION

In the future, the solution could be transformed into a digital platform to improve scalability, accessibility, and long-term integration into municipal workflows. A digital version would allow stakeholders from different organizations to participate remotely in collaborative workshops when physical meetings are impractical. Such a platform could support real-time stakeholder mapping, workflow visualization, and bottleneck identification across municipalities and communication centers.

Additionally, a digital platform could integrate AI-supported note-taking functionality capable of documenting discussions, generating summaries, and automatically filling out task trackers. This directly addresses feedback received during workshops, where participants explained that manual note-taking disrupted the natural flow of discussions and reduced workshop efficiency. Digitalization could therefore improve usability while also enabling easier scaling across municipalities and organizations.

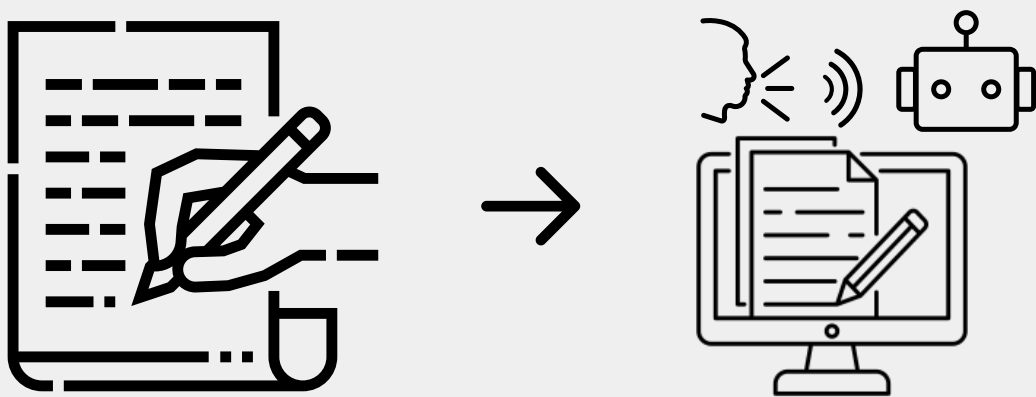


Figure 6.6.1: Possible future elimination of physical note-taking

6.7 · ACCESSIBILITY & EFFECTIVENESS

Accessibility considerations are also central to implementation. The solution is intentionally designed to create a democratized and psychologically safe environment where caseworkers, specialists, consultants, and leadership representatives can openly discuss systemic challenges without feeling personally criticized or evaluated. By externalizing the process into a shared object, participants can discuss difficult operational issues more constructively and collaboratively.

To evaluate the effectiveness of the solution after implementation, pilot studies involving multiple

municipalities should be conducted. These pilots could involve role play based on hypothetical cases, allowing participants to simulate realistic workflows while identifying bottlenecks and inefficiencies. During the first implementation phase, realistic KPIs include the number of friction points identified, the number of actionable workflow improvements co-created during workshops, and the percentage of stakeholders capable of using the solution independently without external facilitation. Future iterations may require additional cards, adaptable mechanics, or municipality specific modifications.

6.8 · FUTURE CONSIDERATIONS

Although Danish municipalities are self-governing and operate within fragmented IT ecosystems, the solution still holds strong national implementation potential because it functions as a flexible framework rather than a rigid standardized system. The concept may also inspire similar solutions within other healthcare, welfare, and administrative systems where siloed departments, fragmented communication, and organizational "blame cultures" create comparable challenges. While originally designed around assistive aid cases, the underlying principles of collaborative workflow mapping and friction-point identification are broadly transferable to many complex administrative systems.

Five years from now, successful implementation would involve widespread recognition of the game as an effective framework for workflow optimization and cross-stakeholder collaboration within Danish municipalities. Quantitatively, success would be reflected through measurable reductions in case-processing delays and improved operational efficiency. Success would involve having the players of the game focus on collaborative, transparent, and proactive problem solving of systematic prob, while avoiding trying to point the blame. Ultimately, the long-term goal is to create an environment where municipalities and stakeholders continuously work together to identify friction points and co-create more efficient, citizen-centered workflows.

6.9 · SOCIOTECHNICAL SYSTEM SIMULATION

REPOSITORY · [GITHUB.COM/LUCCAR-GH/CREWAI](https://github.com/luccar-gh/crewai)

This report evaluates the technical architecture and strategic outcomes of the AI-driven friction mapping simulation. The system utilizes autonomous agents to replicate a workshop environment designed to identify systemic barriers in the Danish municipal aid assessment process for visually impaired citizens.

1. CREWAI SIMULATION ARCHITECTURE

The simulation is built in Python using the CrewAI framework to orchestrate a multi-agent environment. The system is designed to simulate complex social interactions through a sequential task process.

Agent Profiling: The environment instantiates five distinct roles — a Game Facilitator, a Municipal Caseworker, a Communication Center Specialist, a Visually Impaired Citizen, and an Eye doctor. Each agent operates with a detailed backstory that dictates their behavior, for example, the caseworker manages high volumes and rarely meets deadlines, while the citizen representative shares the frustration of 6 to 12-month waiting periods.

Operational Phases: The workflow is executed in two consolidated tasks. Phase 1 involves stakeholder mapping and a scenario walkthrough where agents identify friction points using "Lightning Bolt" markers. Phase 2 focuses on evaluating "Method Cards" to propose solutions and gathering feedback on the game's usability.

2. SIMULATION FINDINGS & INSIGHTS

The simulation successfully generated a consolidated report identifying high-impact friction points and potential systemic remedies.

Prioritized Solutions: Three primary solutions — eliminating handoffs through combined steps (caseworkers, specialists), implementing a single point of contact (citizens, doctors), and standardizing input requirements.

70%

STAKEHOLDERS FOUND INSTRUCTIONS CLEAR

90%

LIGHTNING BOLT EFFECTIVENESS

85%

METHOD CARDS UNDERSTANDABLE

3 • COMPUTATIONAL INFRASTRUCTURE

To run the agents within CrewAI, the setup utilized a local language model, specifically Llama 3.1 8B (ollama/llama3.1:8b) accessed via a local Ollama API endpoint. Forcing a local model to maintain the context of multiple agent profiles, track game rules, and process extensive interaction histories created a massive computational load.

As a result, simulation processing times were slow. The limitations of the local model's context window and reasoning capabilities also led to several hallucinations during testing, where agents occasionally lost track of their specific roles or invented non-existent game mechanics.

Despite these hardware and performance limitations, the experiment established a solid framework for auditing organizational processes. It proved that autonomous agents can be effectively orchestrated using Python and CrewAI to extract deep sociotechnical insights.

4 • USER INTERFACE & CONCLUSION

The backend simulation is integrated with a minimalist Streamlit dashboard (app.py), which allows for real-time monitoring of agent interactions and the direct export of the final findings as a Markdown report.

In conclusion, the current insights are not usable due to the hallucinations characteristic of smaller

models, however, the project successfully established a critical framework for future experimentation. While larger models could have improved reasoning, their high token usage and local resource demands made them impractical for this specific phase. Ultimately, this experiment provides a solid, tested blueprint ready to be scaled with more robust models in the future.

07 • REFLECTION & DISCUSSION

Throughout the project, we continuously reflected on both the strengths and limitations of the chosen solution. One of the most important reflections concerns the tradeoff between creating a highly-specialized solution for a single workflow versus developing a broader framework that empowers organizations to improve workflows themselves.

7.1 • SPECIALIZED SOLUTION VS. ADAPTABLE FRAMEWORK

Initially, we considered whether a more direct intervention could have created greater short-term impact. For example, instead of developing a workshop game, we could have focused on analyzing a specific process in detail and proposing concrete workflow improvements ourselves. Such an approach may have generated significant value for a particular municipality by creating a highly optimized workflow with measurable efficiency gains. However, we quickly realized that the delays and bottlenecks identified during our research are systemic challenges that exist across municipalities in Denmark. Since municipalities are self-governing and operate with different organizational structures, workflows, and interpretations of legislation, a standardized workflow designed for one municipality would likely not function effectively in another.

The chosen solution instead focuses on creating an adaptable framework that empowers stakeholders to collaboratively identify and solve workflow challenges themselves. Rather than delivering a top-down solution, the game functions as a shared "boundary object" that allows municipalities, communication centers, and other

stakeholders to collectively map workflows, identify friction points, and discuss improvements without creating a "blame game" between departments or organizations. This creates stronger long-term scalability because the framework can continuously adapt to different municipal structures and evolving organizational needs.

At the same time, this approach introduces important challenges and risks. By transferring responsibility for process improvement to the stakeholders themselves, the quality or radicality of the resulting improvements may vary significantly depending on how effectively participants use the game. External consultants might potentially create more immediate and technically optimized improvements in certain workflows. Furthermore, the solution depends heavily on organizational engagement and willingness to dedicate time toward workshops and reflection activities. This presents a major challenge because municipalities and communication centers already operate under high workloads and frequently struggle to meet legislatively required processing deadlines.

7.2 · REFLECTION ON THE WORKSHOP OUTCOMES

Another important reflection emerged during our workshops regarding where the actual value of the game lies. In some cases, the workflow mapping component itself did not create significant new insights because experienced caseworkers already possessed a strong understanding of their own daily workflows. However, the reflection-based elements of the game, particularly the holistic design method cards, consistently generated valuable discussions and deeper reflections.

The workshops highlighted the risk of "tunnel vision" within organizations. Stakeholders often become highly focused on optimizing specific tasks or bottlenecks within a workflow without stepping back to question whether the structure of the overall process itself still makes sense. During the project, this was compared to traveling to France using a bicycle. Tunnel vision would encourage building a faster bicycle, while a broader perspective might reveal that taking a train or

airplane is the fundamentally better solution. Similarly, municipalities may spend significant effort improving individual administrative tasks while overlooking opportunities for more fundamental process redesigns.

The Holistic Design Method Cards were a huge success. Once they came into play, every stakeholders' interest peaked, and got them very excited. They thought the simplification of many design methods they haven't used (or otherwise wouldn't be able to get into) brought tons of value. By the end of the workshop, they asked if they could take the cards with them back home. We therefore deem it a very correct choice to have implemented a second layer to the design game, as they are experts on the problem while we are experts on improvement. Consequently, observing the significant value these cards provided to the stakeholders strongly validates our decision to integrate them into the game.

7.3 · IMPLEMENTATION

Implementation and stakeholder engagement also became a major area of reflection throughout the project. Arranging interviews, meetings, and workshops with municipalities proved significantly more difficult than initially expected. Municipalities and communication centers often operate under tight schedules and limited resources, making it difficult to secure time for process optimization activities. However, once workshops were established and the game was physically introduced, participants generally became much more engaged and positive toward the concept.

This experience led us to reflect on future implementation strategies. Rather than approaching municipalities independently, a more effective strategy may involve collaborating with trusted intermediary organizations such as IBOS or communication centers. These organizations already maintain established relationships and credibility within municipal networks and may therefore be better positioned to introduce and promote the solution.

38 · WORKSHOP REFLECTION

We also discussed different approaches for distributing the solution in the future. One approach is to maintain the game as an open-source and highly adaptable framework that municipalities can download, print, and customize themselves through a dedicated website. This strategy aligns well with the flexible nature of the concept and lowers financial barriers to adoption. However, the printable approach also requires municipalities to invest time and resources into preparing workshops and facilitating the sessions themselves.

As an alternative, we discussed the possibility of developing a more polished and pre-packaged board-game version with higher-fidelity cards and physical materials shipped directly to organizations. Such a physical artefact may lower the threshold for getting started and act as a visible reminder within office spaces to continuously work with process optimization. At the same time, a more fixed physical format could reduce flexibility and adaptability, which are currently among the solution's greatest strengths.

7.4 · BROADER VALUE & REMAINING LIMITATIONS

Another limitation of the current project is the relatively small amount of testing conducted so far. The workshops were only carried out in collaboration with a limited number of municipalities and communication centers, meaning it remains uncertain how well the game would function across broader municipal contexts. While feedback from participants has been highly positive, additional testing is necessary to validate whether the solution consistently creates value across municipalities with different structures, cultures, and workflows.

Finally, we reflected on the broader value of the prototype despite its current limitations. In the context of holistic design, the prototype functions as a boundary object that facilitates difficult conversations between stakeholders with different backgrounds, responsibilities, and perspectives. The current prototype needs more testing, but as of now it succeeds in creating a safe and effective environment where stakeholders can collaboratively identify friction points and discuss process challenges without focusing on individual blame, and provide useful inputs for process improvements.

7.5 · KEY INSIGHTS AND LEARNINGS

Throughout the project, we learned several important things about our design process and how we work with stakeholders, which are useful beyond this specific case. These learnings have shaped how we would approach future projects involving complex public-sector systems.

First, we learned that reframing is a crucial part of the design process, and that the whole understanding of the problem can change once the broader system is mapped out. Our initial interviews gave us useful input, but it was only when we mapped the engineering and organizational system that we discovered the different municipal structures that shape the workflows. This deeper understanding changed the direction of the project and showed us the importance of not stopping at the first problem definition, even when it seems complete.

Second, we realized that contacting the right stakeholders is more difficult and time-consuming than expected, especially when working with

government stakeholders. Finding out who actually has decision-making power or relevant practical knowledge required a lot of background work and trial and error, and even after identifying key stakeholders, arranging meetings and workshops demanded careful planning and persistence. This showed that collaboration with public organizations is not only a design challenge, but also a practical and relationship-based one that depends on trust and strong communication skills.

Third, we experienced a significant knowledge gap between our team and the stakeholders, which made it harder than expected to communicate our ideas clearly. Concepts and methods that felt obvious to us often had to be explained in much more detail to make sense to people outside the project, especially those without a design or technical background. This highlighted the importance of spending time translating ideas into simple language, using concrete examples, and supporting them with visual or tangible materials.

08 · CONCLUSION

InSight set out to address a concrete and consequential problem: the excessive delays that visually impaired citizens in Denmark face when applying for assistive aids. What began as an exploration of assistive technology quickly became an investigation into systemic dysfunction, fragmented workflows, unclear responsibilities, and poor coordination between municipalities, communication centers, and external specialists. Through iterative field research and participatory workshops, the project arrived at a solution that reflects the nature of the problem itself: not a fixed artefact, but a flexible framework.

Since no municipalities operate identically, we chose a strategy of systemic empowerment over specialized optimization. While acting as traditional consultants to perfectly optimize one specific municipal process could have provided immediate value, it would have only solved a microscopic fraction of the national problem. The InSight game is a co-creation tool that enables stakeholders to collaboratively map their own workflows, surface hidden bottlenecks, and generate improvements suited to their specific organizational context.

The workshops conducted with CKU Hillerød and Rudersdal Municipality validated this concept, while also revealing where the tool's true value lies. Interestingly, the physical mapping of the process did not always provide the primary revelation, as experienced caseworkers already knew their daily workflows intimately. The profound value emerged during the reflection phase, driven by the holistic design method cards.

Operating within a highly bureaucratic system often induces "tunnel vision" and a bias toward the status quo. InSight asks the stakeholders to step back, break their biases, and ask critical questions like, "Why are we doing it this way?".

Despite its promise, the solution faces clear implementation barriers. Arranging initial workshops proved difficult due to tight schedules and institutional defensiveness. However, once the game was on the table, participants highly appreciated the framework. To overcome the initial barrier to entry, our future implementation strategy shifts away from approaching municipalities directly. Instead, we propose partnering with trusted, central institutions like IBOS or regional Communication Centers to endorse and push the toolkit out to municipalities. Broader adoption will also require testing optimal distribution models, weighing the adaptability of a "print-it-yourself" open source platform against the immediate readiness of a pre-packaged physical board game.

Ultimately, in a system characterized by siloed knowledge and institutionalized routines, InSight provides a shared space where different stakeholders can speak honestly about process failures without assigning blame. With continued iteration, expanded testing, and potential digitalization, InSight has the foundation to become a highly effective, scalable tool for improvement of workflows across Danish municipalities and potentially across other complex administrative systems where fragmented coordination produces similar challenges for the citizens they serve.

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