NTNU
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USER INSIGHTS ON A CITY LEVEL IN TRONDHEIM, NORWAY

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User insights on a City level

Masteroppgave av Marthe Næss og Truls Johansen

Preface

Thank you!

This thesis was written as a the final course of the Master of Science program in Industrial Design at the Norwegian University of Science and Technology. The thesis is meant to be read by anyone interested in topics concerned with design and innovation in the public sector.

We would like to thank all those who have supported us through this thesis. First of all our supervisors, Matthjis Van Djik, Marikken Høiseth and Ida Nilstad Pettersen for suggestions and advice during the whole process and especially for joining us in being ambitious, as we were moving into the relatively unknown territory of strategic design within the public domain.

Additionally we would like to thank our partner within Trondheim municipality who continues to expose us to different areas of work and initiatives within the municipality, as well as giving us the space and support as design students to explore and take this master's thesis in unexpected directions.

Many thanks to the freshmen at Industrial Design at NTNU who helped us present futures scenarios in a workshop, our classmate Astrid Mogstad who helped document the very same workshop, Truls' friends in Oslo who ordered pizza to be delivered at the steps of the Institute of Design during the last few days of writing this thesis, to Camilla Dahlstrøm who helped us with illustrations, and lastly all the wonderful politicians and civil servants who gave of their time to help us out in interviews and workshops during this whole thesis.

Marthe Næss & Truls Johansen, June 8th 2018

Abstract

This is a master thesis detailing the development and design of a policy design model for the city of Trondheim, Norway. The purpose has been to improve policy making in Trondheim municipality toward more meaningful and future proof policies for the citizens. Trondheim municipality runs a city of more than 190.000 inhabitants, with a multitude of responsibilities for education, welfare, sanitation, infrastructure, city development, business and culture. In this thesis we have leveraged qualitative insights from interviews, workshops and obervations of the political process to explore how the political process and the citizens can be strategically integrated through futuring and prototyping. This resulted in a conceptual model for policy design with 5 steps, one of which has been tested with positive results in a workshop with 5 city council politicians.

Norwegian abstract

Sammendrag

Denne masteroppgaven beskriver utviklingen av en modell for design av politikk, med formål å tilrettelegge for mer meningsfylt og fremtidsrettet politikk for Trondheims innbyggere.
Trondheim kommune er en by med mer enn 190.000 innbyggere, med et bredt ansvar for utdanning, helse og velferd, bydrift og infrastruktur, kultur, by- og næringsutvikling. I denne oppgaven har vi fremskaffet og analyset kvalitativ innsikt fra intervju, observasjoner og kreative verksted for å utforske strategier for tettere integrasjon av innbyggerne og den politiske prosessen gjennom fremtidsstudier og prototyping. Resultatet er en konseptuell model for design av politikk med 5 steg, hvor ett har blitt testet sammen med 5 politikere med positive resultater.

Contents

Chapter 1:

Introduction

In this chapter we introduce the city, the users we have focused on in our project, and us as designers. Following that we present the problem description for our thesis, and discuss how the task list we set out solve developed during the project. Finally, we give a short presentation of the model.

Narrative Structure

Policy making redesigned

The master's thesis you are about to read describes our final design project at the Industrial Design Engineering programme, a design project which resulted in proposing a new model for policy making in the city of Trondheim, Norway. Immediately following this introductory chapter, we describe the design process leading up to the model, and consequently, this thesis.

We then go on to introduce the model itself, before we discuss its four major steps in more detail. Finally we explore how the model may be implemented in Trondheim, before we round off the thesis with a final discussion and conclusion.

References and appendices

There are several short form (name, year) references throughout the thesis, and you will find the full version in the reference list at the end. Due to the fact that we have been working with a Norwegian municipality, several of the references point to Norweigan documents. We encourage the reader to contact us or the authors of such sources directly for a translation.

There are also several appendices. Among them is a glossary of important terms, and some examples of artifacts of our work throughout the term.

Designers entering city hall... Illustration: Marthe

The City

Trondheim as our context

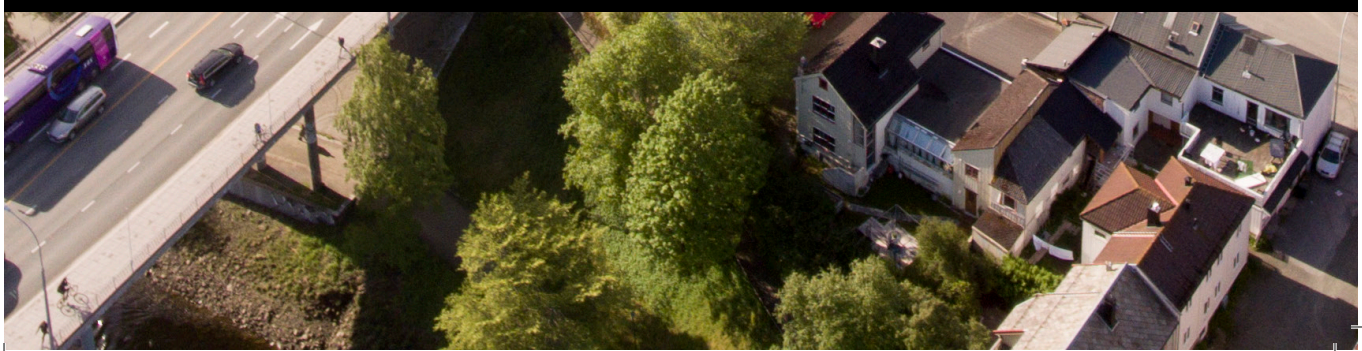
Trondheim is Norway's third largest city, situated almost at the geographical centre of the country (Hvor er Norges midtpunkt? 2012), with approximately 194.000 inhabitants. Norway's largest university, NTNU, has 34.000 students studying at their Trondheim campuses (NTNU in numbers june 5 2018).

Trondheim constitutes its own municipality, which is the lowest of the three levels of government. Municipalities in Norway have a large span of responsibilities. They run services like schools, kindergartens, and nursing homes. They give you water and take away your waste, they build and maintain roads, they run or sponsor cultural institutions, and they govern all use of land within their borders. To take care of all of this, Trondheim municipality employs more than 13.000 people*. They are organized in a hierarchy with the city chief executive officer on top. The CEO's title in Norwegian, "rådmann" refers both to the office as head of the city administration, and to the person who holds it. This office reports to the elected politicians on the city council.

The city council consists of 67 representatives from 10 different political parties. 10 of the politicians are paid to work full time, while the others are volunteers. While several matters have been delegated to the administration, the city council still deals with everything from long term strategy to building permits for contested pieces of land. Politicians and citizen groups may bring any matter before the city council, and if it gets a majority vote and is not deemed illegal, the city administration has to try and find a way to implement it.

** The statistics on this are not available online at the moment, but 13-14.000 has been used several times by our contacts in the city administration.*

Trondheim, looking south from the river. Photo: Trondheim municipality



The Users

Elected politicians

In this project we have put special emphasis on the role of the politicians. We have come to appreciate this role as an anchor point, and a tie between the citizens and the strategic level of the municipal administration. Politicians ultimately make the political decisions on behalf of the citizens in Trondheim, and they are voted on to promote a certain set of values, which became an important aspect of our concept. After some time conducting insight work and starting to formulate the first sketches for our concept, we chose politicians on the city council as our target users.

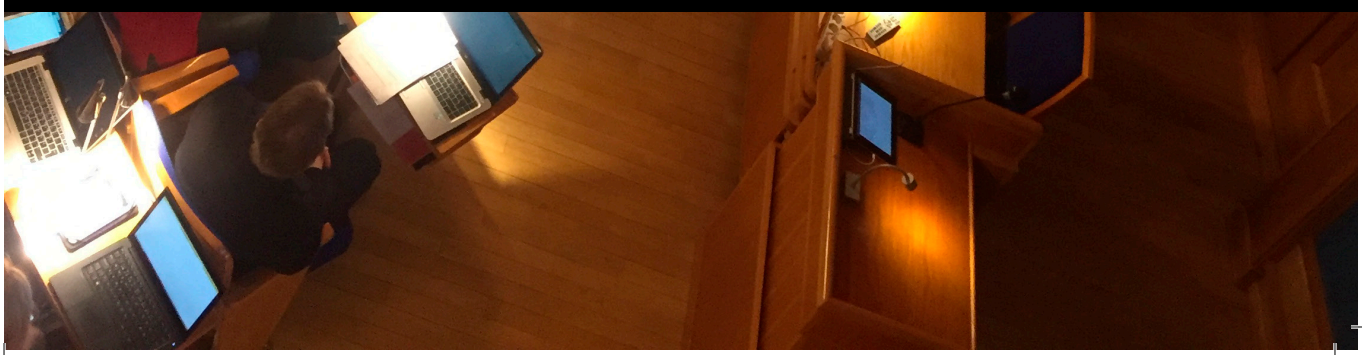
The secondary users of our project are the experts we envision working for the university municipality* to perform the administration's* activities in our concept, and to facilitate the politicians in theirs.

The choice of politicians as primary target users influenced both our decision to design a new model for policy design, as well as the choices we made while designing it. is for example reflected in the resolution at which we chose to visualize our model.

Elected politicians have an established role within our society and democracy. We propose that citizens, politicians, and civil servants will benefit from a way of working that ties their roles in Trondheim together, becoming part of a more coherent process of designing the city. And in the end, the whole project aims at enabling the design of more meaningful policies for the citizens of Trondheims, by creating instruments for politicians and experts.

** These terms can be found in the glossary*

Trondheim City Council. Photo: Truls



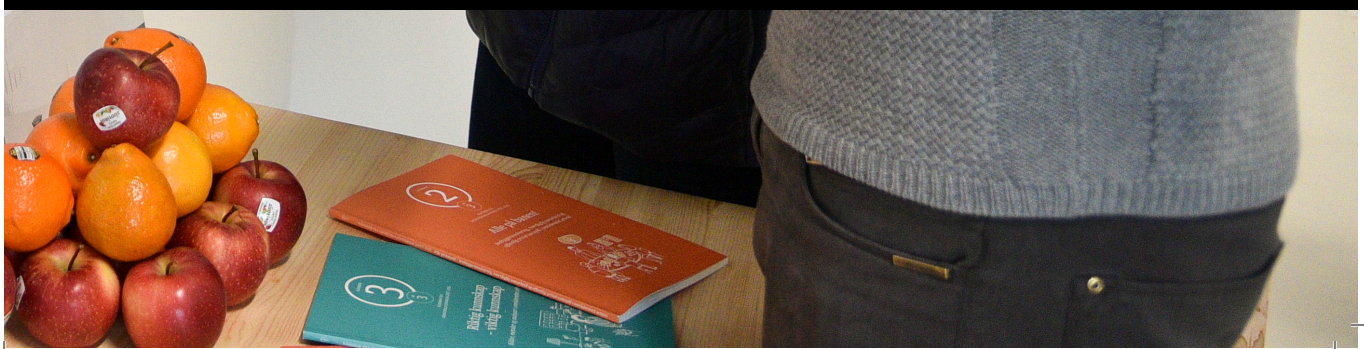
The Designers

Marthe Næss & Truls Johansen

We have studied alongside each other at the Department of Design at NTNU for the past four years. Our collaboration started in the spring of 2017, following a local event called Design EXPO. At this event there was a number of talks, one of which was about design in Trondheim municipality. In this talk Truls was one of the speakers together with an advisor to the CEO of Trondheim. Truls' efforts a year prior to this, to set in motion the "Big Design initiative" sparked an interest in Trondheim municipality, and would turn out to be the beginning of a collaborative relationship.

After listening to the EXPO talk, Marthe was intrigued by the open-mindedness of the municipality and the idea of Big Design. Consequently, we started working together. In 2017 we did a student project for the municipality called "Augmenting Democracy", before eventually deciding to write ou thesis together.

Marthe & Truls at Augmenting Democracy.. Photo: Trondheim municipality.



Problem Definition

The initial plan

The initial point of contact for our master's thesis was one of the city CEO's staff of advisors in Trondheim Municipality. Through the previously mentioned collaboration we had gotten to know each other and some of the work that the Municipality is doing. This led to the opportunity of writing this master's thesis, and an initial conversations about citizen participation as a topic.

These staff of advisors are about 150 people who broadly speaking assist the CEO and his team of executive directors both in answering orders from the politicians, and in developing and managing the organization. Both of us found the strategic work and the link between this work and the citizens of Trondheim interesting. With a basis in this interest and the conversations about citizen participation we started formulating a set of research items for our master's thesis.

We were motivated to find out how and on what premises the municipality makes strategic decisions. As design students we have explored a set of approaches for making strategic decisions in different projects, whether in product, service or interaction design. Thus, we were intrigued to find out whether the municipality uses similar approaches, and to what degree they may or may not benefit from techniques used in the design field.

The research tasks were listed as a part of our master's thesis problem description, which is on the next page. Following this we will go through the tasks, and give an outline of how we have handled each of them.

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Masteroppgave for Marthe Næss og Truls Johansen

USER INSIGHTS ON A CITY LEVEL IN TRONDHEIM, NORWAY

The overarching goal of this Master Thesis is to help the city of Trondheim meet its long term strategic goals: to be open and inclusive, with welfare and good quality of life for all inhabitants (Kommuneplanens samfunnsdel 2009-2020). Furthermore, we want Trondheim to be regarded internationally as a center of excellence for local democracy.

Toward this aim, we have chosen to focus the thesis on understanding user* needs at a city level** from the perspective of Trondheim municipality.

For our insight phase, it is necessary to consider how and at what level the municipality operates. We will:

- Analyze and visualize the current strategic decision making process of Trondheim municipality, creating categories/dimensions of roles and the decision types they make (for example role)
- For a limited selection of decision types and roles, discover how individual representatives of the role currently work with understanding user needs and how they relate user insight to their decision making. Describe what "city level" means in this context.
- Research relevant metrics for these decisions

To help Trondheim municipality find and develop methods to understand user needs on a city level, we will:

- Evaluate the insights about municipal operations from a design perspective - are they using design methods?
- Design a new Big Design way of gaining user insight for policy making.
- Suggest improvements to the ongoing development of user insight methods (as ordered by the city council - document reference to be provided) in cooperation with Trondheim Municipality.
- Prototype and test a proof of concept case (method or tool - for example conditions for working)

Marthe and Truls work together as a team without predefined roles, delivering one final report together in english.

** User: Whoever is affected by the municipality's decision making, usually citizen, maybe a corporation, often a citizen using municipal services*
*** City level: Strategic decisions for a city may affect a large group of users, composed differently from one decision to the next.*

Oppgaven utføres etter "Retningslinjer for masteroppgaver i Industriell design".

Ansvarlig faglærer (hovedveileder IPD): Matthijs van Dijk

Biveileder: Marikken Høyseth og Ida Nilstad Pettersen
Bedriftskontakt: Kristian Mjøen, Trondheim Kommune

Utleveringsdato: 12.01.2018
Innleveringsfrist: 08.06.2018

Trondheim, NTNU, 12.01.2018

Matthijs van Dijk
Faglig veileder

Ole Andreas Alsos
Instituttleder

1: Analyze and visualize the current strategic decision making process of Trondheim municipality, creating categories/dimensions of roles and the decision types they make.

This task was the starting point of our work. We describe later in the chapters about process and methodology how we conducted interviews and observations to gain an understanding of the formal decision making process in Trondheim municipality. The result of this part of the insight phase was a map showing the touchpoints of a political decision from initial need or inquiry from a citizen or politician to an adopted policy.

We planned to create an exhaustive matrix of roles, decision types, and user insights involved in those decision types. The idea was that this would help us choose the role with the most potential for using design methods to gain user insights.

During our insight phase we saw that the administrations' decision making process was not nearly well enough described to create an exhaustive matrix. At the same time, we were able to learn a lot about the politicians' decision making, and it became clear to us that matrix was not needed. Instead we mapped out only the politcians' decisions and saw that there was a lot of potential for better user insights in the city council, and we chose politicians as our primary target users. In the end, the policy design model is in itself an expression of our understanding of the different roles and decision types. In it, responsibilities, roles and decision types are linked.

2: For a limited selection of decision types and roles, discover how individual representatives of the role currently work with understanding user needs and how they relate user insight to their decision making. Describe what "city level" means in this context.

Our policy design model has a strong focus on the political role and its' decisions. We conducted in depth interviews to understand how a representative works and approach user needs in their decision making.

We have described "city level" as the level where decisions affect citizens or corporations across all parts of Trondheim. At this level different constellations of citizens will be affected from one decision to the next.

3: Research relevant metrics for these decisions.

Starting out we were hoping to find literature regarding metrics of political decision making, and use this to support our work. By metrics we mean standards of measurement by which efficiency, performance, progress, or quality of a plan, process, or product can be assessed. The term "evidence based policy making", which is described in the prototyping chapter, describes practices using such metrics.

The hope was that we could find a metric to measure the success of whatever we ended up designing. We did find metrics for quality of life for citizens, and quality of service for the municipality. The eventual product, the policy design model described in this thesis, has too large a scope, and the aspects we had to test first were too qualitative for these quality of life metrics to be used.

4: Evaluate the insights about municipal operations from a design perspective - are they using design methods?
We have touched upon this point already. This task became increasingly important to us, as we discovered that the municipality already uses approaches in different projects that has similarities with design methods, for example trial projects as a form of prototyping. We will get further into prototyping in particular in the "Prototyping" chapter.

5: Design a new Big Design way of gaining user insight for policy making.
For this task our answer is the policy design model as a whole. We believe that user (or citizen in this case) insights, gained both through "Futuring", brought forth by the politicians on the basis of citizens votes, and through prototyping, is what makes it at all relevant. "Futuring" is explained further in the "Futuring" chapter and prototyping in the "Prototyping" chapter.

6: Suggest improvements to the ongoing development of user insight methods (as ordered by the city council - document reference to be provided) in cooperation with Trondheim Municipality.
By choosing to look at the overall process of strategic decision making, it was not sensible to attempt to design or adapt a very specific user insights method. Instead the policy design model outlines when in the political decision making process to engage in different types of insight methods, such as "Futuring" and "Prototyping". Within the activity of prototyping one can use any number of methods to gain user insights when designing and iterating prototypes. This is explained in the "Prototyping" chapter, and the concept of futuring is explained in the "Futuring" chapter.

7: Prototype and test a proof of concept case (method or tool - for example conditions for working)

As a part of our design process we prototyped a part of the policy design model with a group of politicians by conducting a workshop to test the step of "Articulating a goal statement". The methods involved in this workshop will be described in the method chapter.

The Concept

Better strategic decision making based on user insights

Our concept is a model for policy design in Trondheim municipality. It depicts a process with five steps, four of which are detailed in this thesis. As an input it requires the selection of a policy domain and time frame, which could be a generic, sector specific topic like "education in 2028" or a cross-sector issue like "mental health in 2025".

The first step, "futuring", is the knowledge based creation of a depiction of the most likely future for the selected domain (as opposed to the future you would like to have). This image is created by the city administration in cooperation with the university. The second step, "articulating future goals", is a value-based statement articulated by the city council politicians. It expresses which citizens' concerns they want to address in that future. The third step, "prototyping", is any set of prototypes, situated in context, conducted by the administration to understand how to fulfill the statement. The fourth step, "debating & deciding", is the development of an appropriate policy, voted on by politicians. The policy is based upon explicit and tacit knowledge from the previous steps. Implementation is the fifth step, and just as today it is the responsibility of the administration.

We designed this model based on our insights from this project combined with our knowledge of design methods and their potential. The purpose of the model is to produce more meaningful policies for citizens in the future.

Policy design model

designing meaningful policies for society

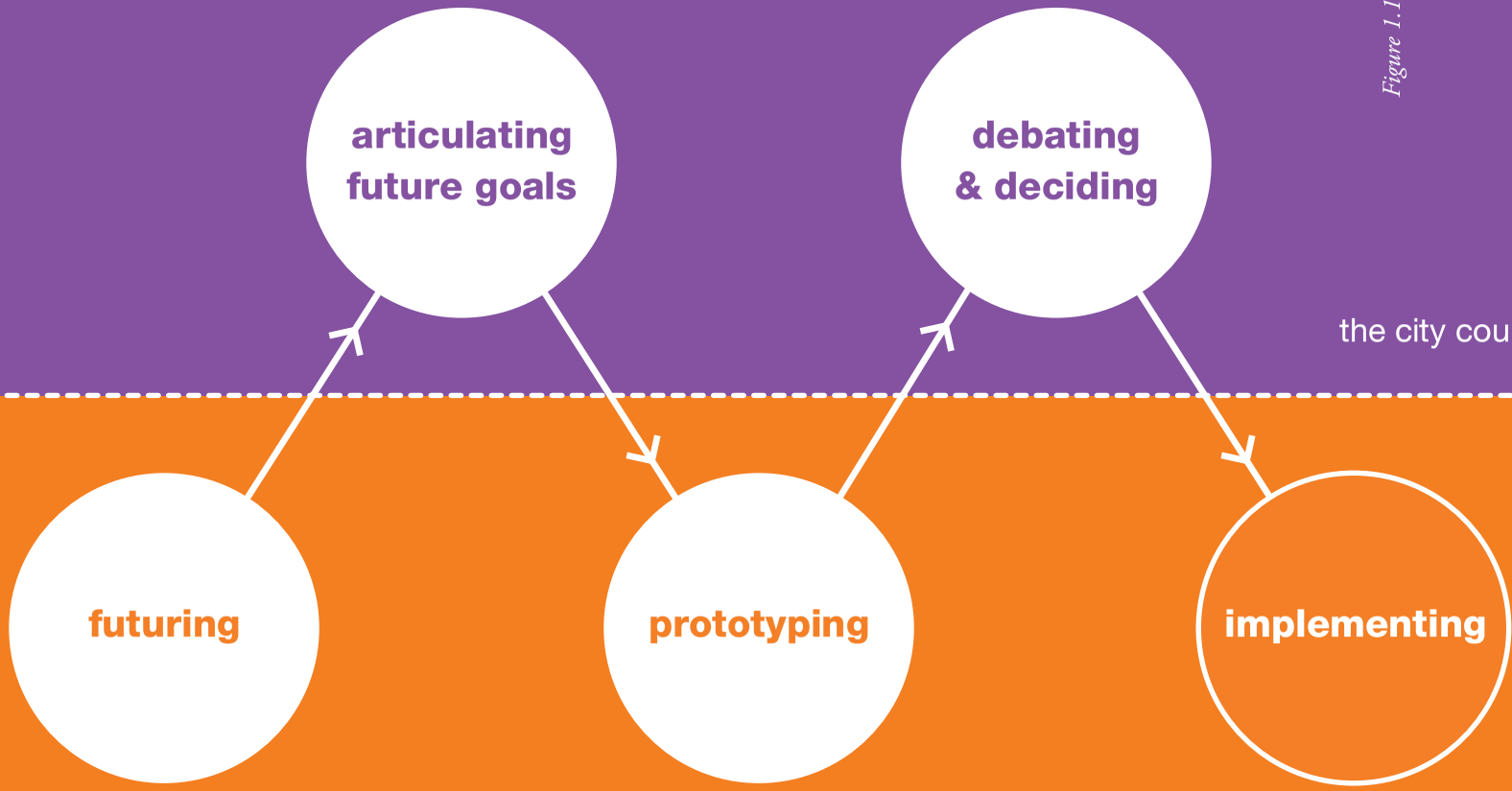


Figure 1.1: The Concept

Chapter 2:

Methodology and Methods

In this chapter we look deeper into the methods we have used in our project, and the overarching methodology that led us to use them. We start off by introducing our approach to methodology, which makes up the general strategy that outlines the way in which our work has been undertaken. Next is a short list of participants. From this we proceed to describe the different methods we used to solve our tasks. The methods are procedures or techniques that we used for obtaining or analysing findings, or synthesising ideas and solutions based on those findings. Our final concept is itself partly inspired by design methods, which we will present toward the end of this chapter. Finally we will discuss ethical considerations for the thesis.

Following this chapter we show a visual overview of our design process in the process chapter, before the insights chapter goes further into findings.

Methodology

A design project

On the nature of design methodology, welsh designer John Chris Jones said in his book "Design Methods":

Design methodology is not a fixed track to a fixed destination, but a conversation about everything that could be made to happen. The language of the conversation must bridge the logical gap between past and future, but in doing so it should not limit the variety of possible futures that are discussed nor should it force choice of a future that is unfree. (Jones, 1970, p. 73)

As designers we believe that this is one of the aspects that makes our profession interesting, and often a catalyst for change or transition. Through an exploratory and investigative approach, designers are trained to question problem statements directed by social norm, uncover new problem spaces and view these from different perspectives. In such a way designers perform "problem setting". Designers are also trained to tackle these problems in the light of overarching goals. Discovering the appropriate goal will often be a part of exploring the problem space. Thereafter a designer can start the process of conceptualizing activities or artifacts to manage or resolve these goals by navigating the problem space.

Designing for society

For us, design is a way of learning. There is never a final solution. In a world that is constantly changing we may get more knowledgeable, and more equipped to handle certain tasks, but society continues to shift. Thus, we believe that new problem

spaces will emerge continuously. As designers we can do valuable work by redefining problem spaces and helping people navigate through them. Through putting new designs into the world we can learn from how people make sense of them within their own lives. Knowing this, it seems more feasible to reach the goals that we, as a group of people, set for our own society.

Exploratory & qualitative approach

This thesis describes a design project, where the goal has been to design and test a concept based on insights from Trondheim Municipality, as laid out in the problem definition section of the introduction chapter. This has some important implications for the overarching methodology. The project had five months from initiation until the deadline for handing in the thesis. From previous experience in student projects of similar length, and an expectation of complexity in the field we had chosen, we knew that we would not be able to build our concept on an exhaustive, quantitative examination of the domain. Therefore, the choice of an exploratory and qualitative approach was made.

Triangulation with methods

Our insight work still had to provide us with a broad base of knowledge and understanding of the decision making processes within the municipality. Thus we chose to utilize qualitative methods set up to triangulate insights and potentials for improvement which could inform our development of a design concept. These considerations lead to an insight phase where we would conduct interviews with politicians and civil servants, observe their fora for decision making, and do literature studies around decision making in general, user insights, and Norwegian municipalities in particular.

Participants

Interviewees and workshop participants

We have been in continuous interaction with relevant actors in an attempt to understand the actors' roles and their meaning in their current context, in addition to how these actors would make sense of a change in context. We give a short anonymized resume of the participants here.

Getting to know the participants

Our partner in the municipality has helped us get in touch with his colleagues in the administration, as well as helped us understand and link up with innovation initiatives going on in Trondheim. The politicians were approached by us directly, and all but one of the participating politicians were unknown to us at the beginning of the project. Therefore, it was important to build trust and rapport with these participant, and we set aside time in all workshops and interviews for comfort building methods. All interviewees signed consent forms describing how we anonymized findings and that they may withdraw from the project at any time.

Person	Comments
Partner at the municipality	Helped initiate cooperation, initiate contact with other civil servants, students and innovators, and shared important info.
Politician 1	First politician interviewee
Politician 2	From different side of left-right spectrum than politician 1
Civil servant 1	Economy advisor
Civil servant 2	Senior economy advisor
City Planner	Experienced in bottom-up prototyping
Smart city project manager	
Workshop group	5 politicians including politician 1 and 2. 4 on the city council, of which 2 also on the executive committee.
City council secretary	A representative of the office of the same name
Committee	Sub-committee of the city council where we presented our concept.

Literature studies

Decision making theory

Early in our process we did literature studies of several fields relating to our problem definition. We were also advised by our contact in the municipality to look into articles regarding organizational psychology and innovation.

Examples of typical searches we did was "strategic decision making", "decision making", "decision making in the public domain", "strategic decision making within the public domain" or "within government" and "strategic design within the public domain". We looked into this to try to get an overview of the research that exists on these topics and perhaps get ideas from previous design work done in the public sector on a strategic level. We searched online engines such as the university library search engine oria.no, as google.scholar.com and researchgate.com.

The motivation for looking into these texts was learning from previous design practitioners working in the public sector, and to learn from research conducted in the fields of decision making. We found that articles describing decision making from a psychological standpoint were more useful to us than articles describing complex mathematical models of decision strategies.

The design field is increasingly adopted in the public domain, and we found the articles on this topic helpful. An example of what these articles describe is a shift in the designer's role, from the private sector where the design team activities have clear boundaries between the team and external stakeholders, to designing in the public domain where the boundaries between the team and the external world are much less clear.

Examples of articles we read are:

"A THEORY OF REQUISITE DECISION MODELS" by Lawrence D. Phillips (Phillips 1984)

"Heuristic Decision Making" by Gerd Gigerenzer and Wolfgang Gaissmaier (Gigerenzer and Gaissmaier 2011)

"A case for thinking without Consciousness" by Ap Dijksterhuis and Madelijn Strick (Dijksterhuis and Strick 2016)

"Complexity and Democracy, or the Seducements of Systems Theory" by Thomas McCarthy (McCarthy 1985)

"Comparing Public and Private Sector decision making practices" by Paul C. Nutt (Nutt 2006)

"Dealing with wicked problems, in messy contexts, through prototyping" by Bo Westerlund and Katarina Wetter-Edman (Westerlund and Wetter-Edman 2017)

"The power of trust and motivation in designing social system" a working paper by Dr. Mieke van der Bijl-Brouwer (van der Bijl-Brouwer 2017)

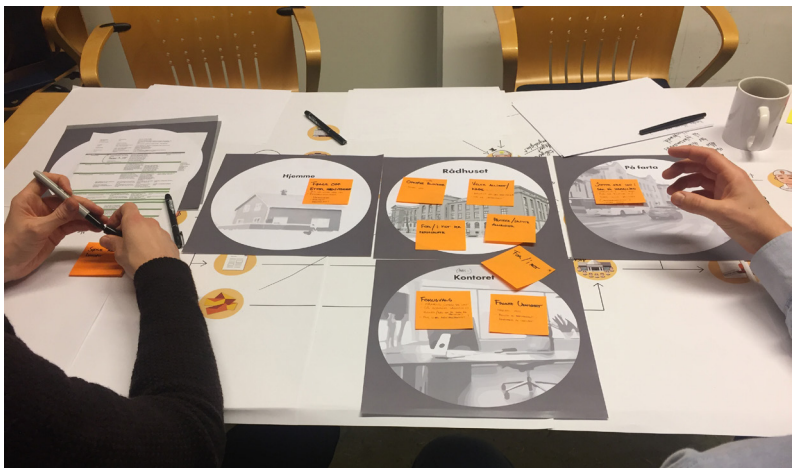
"Prototyping and the new spirit of policy-making" by Lucy Kimbell and Jocelyn Bailey (Kimbell and Bailey 2017)

"Design Futuring - Sustainability, Ethics and New Practice" by Tony Fry (Fry 2008)

Methods

Variations over qualitative methods

This section will give a general description of the different methods used. There are several books that present design methods. One, which has been on our curriculum, is "Universal methods of design" (Martin, Hanington, & Hanington, 2012). Another, based on curriculum from the Design education at Delft University (and picked up by Truls when he visited a friend there in 2015) is "Delft Design Guide" (van Boeijen, Daalhuizen, van der Schoor, & Zijlstra, 2014). Both of these have been used to inform how we practice design methods, but they are also quite superficial in their treatment of more complex methods. We believe there is no one way to practice these methods. We see design methods as tools, and they may be adapted, combined and layered to suit the circumstance, the designers and the participants.



Workshop with politician 1. Photo: Marthe

Interviews

All interviews were conducted with both of us, Marthe and Truls, present. They took between 60-150 minutes. Styles varied between conversational, prepared questions, prepared methods for reflection and ideation, and spontaneous use methods for ideation and clustering. This depended on the amount of time set to do the interview, balanced by the need to ensure an adequate amount of time, time constraints posed by the participants' and our schedules, and the need for energy and a positive experience.

We appointed one of us to be the main interviewer and one to be the main documenter for each interview. Some interviews were conducted in the interviewee's office, one in a cafe, and the remaining at the Department of Design (ID) at the Norwegian University of Science and Technology. For the interviews at ID we always prepared some snacks and beverages for the participants to make them feel welcome and more comfortable. For interviews containing creative exercises, timely breaks were a part of the interview.

Observations

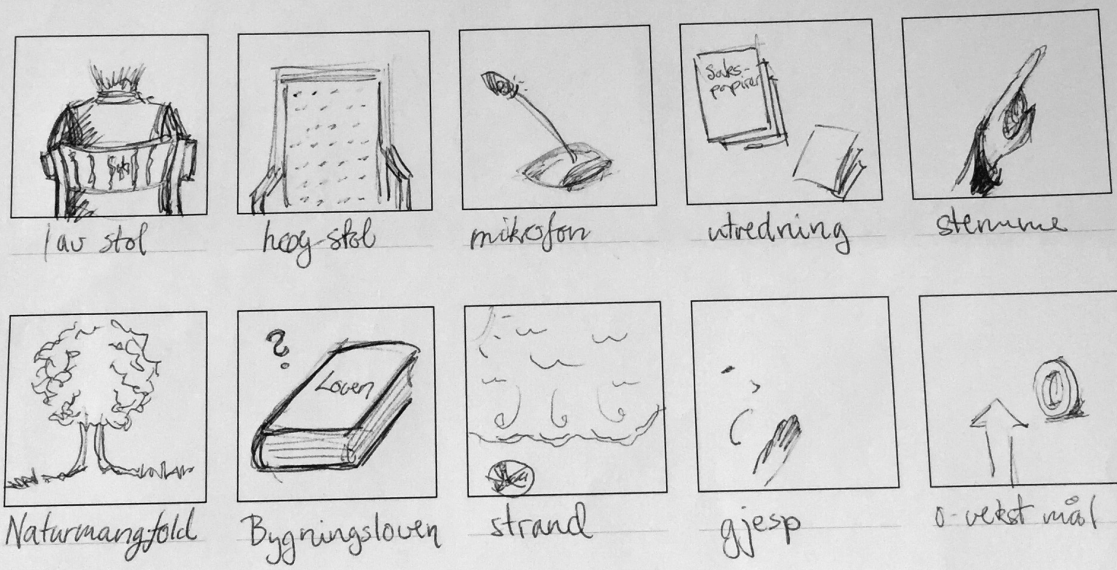
We observed several formal political meetings to understand the political decision making process, and get a feeling of the fora were politicians debate and decide. Political meetings of this nature, City Council, Committee meetings, Executive Committee meetings and the Building Council, are open to the public to sit and observe. Some political issues might be closed to the public to protect the privacy of employees or citizens. These will be "treated behind closed doors" ("Velkommen som folkevalgt," n.d.). During our observations we were asked to leave the room due to a sensitive issue once. Apart from this, we were able to observe the meetings in their entirety. In total we sat in at six meetings throughout the work of our master's.

O

Objects are the building blocks of the environment, key elements sometimes put to complex or even unintended uses, possibly changing their function, meaning and context. For example, what are the objects and devices people have in their environments, and how do these relate to their activities?

General Impressions of the Theme, Style, Materials & Atmosphere

Sketch Inventory of Key Objects



Example "O" sheet from the "AEIOUD" set recorded at building council

During the first observation we used a method called "AEIOU" ("AEIOU," n.d.) to guide us, and help interpret our observations. AEIOU is a sheet of sheet templates prompting the designer to make notes and drawings regarding "Activities", "Environments", "Interactions", "Objects" and "Users". By the second meeting we added our own letter, D for "decisions", making sure we would also bring a paper to capture impressions more directly related to the act of deciding. Thus we extended the framework to "AEIOUD", as this was relevant to our work. We continued to used this framework in all our following observations.

Workshops

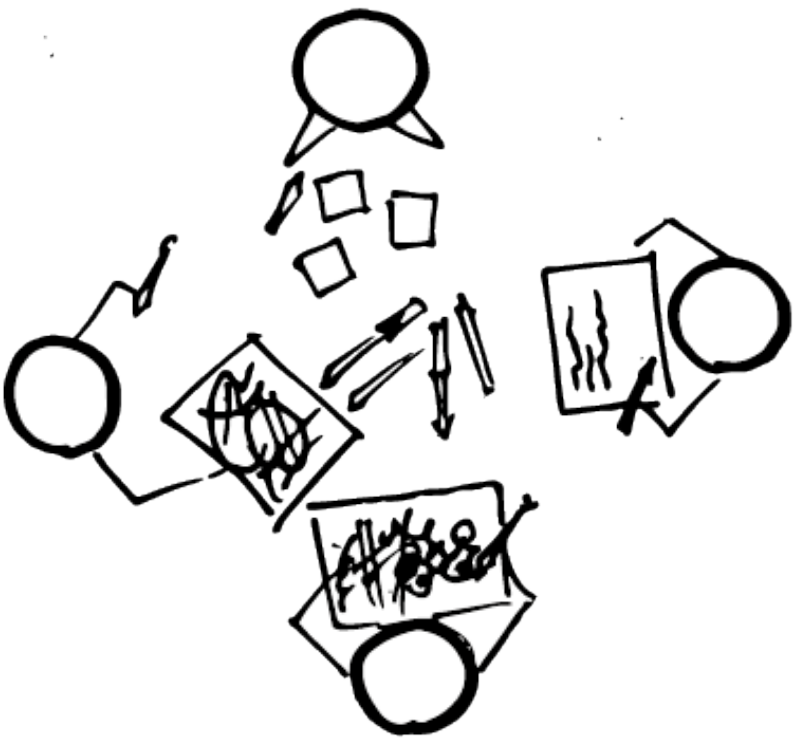
Throughout working with our master's we planned and conducted five workshops. Three with politicians, where the number of participants ranged from 1-5, and two internal workshops with us, Marthe and Truls, as a design team. These were used to align our insights and start working on the design concept. A design workshop is a work session that is planned out with one or more specific goals in mind. In all these five workshops, we conducted several design methods consecutively, guiding the participants from beginning to end (see A3 - workshop politician 1). The methods varied depending on the purpose of the workshop.

We used methods such as "sharing stories" (Design Kit), "creating insight statements" (Design Kit), clustering and reclustering statements to find themes (Design Kit), creating "how might we" questions (Design Kit), "creating a concept" (Design Kit) and a "prototype" (Design Kit) and "getting feedback" (Design Kit). We did these things as part of both internal workshops, as well as in the first two workshop interviews with politicians. And in our day to day work with this thesis, either through documentation or conversations. Especially sharing stories, discussing insights and themes of opportunity

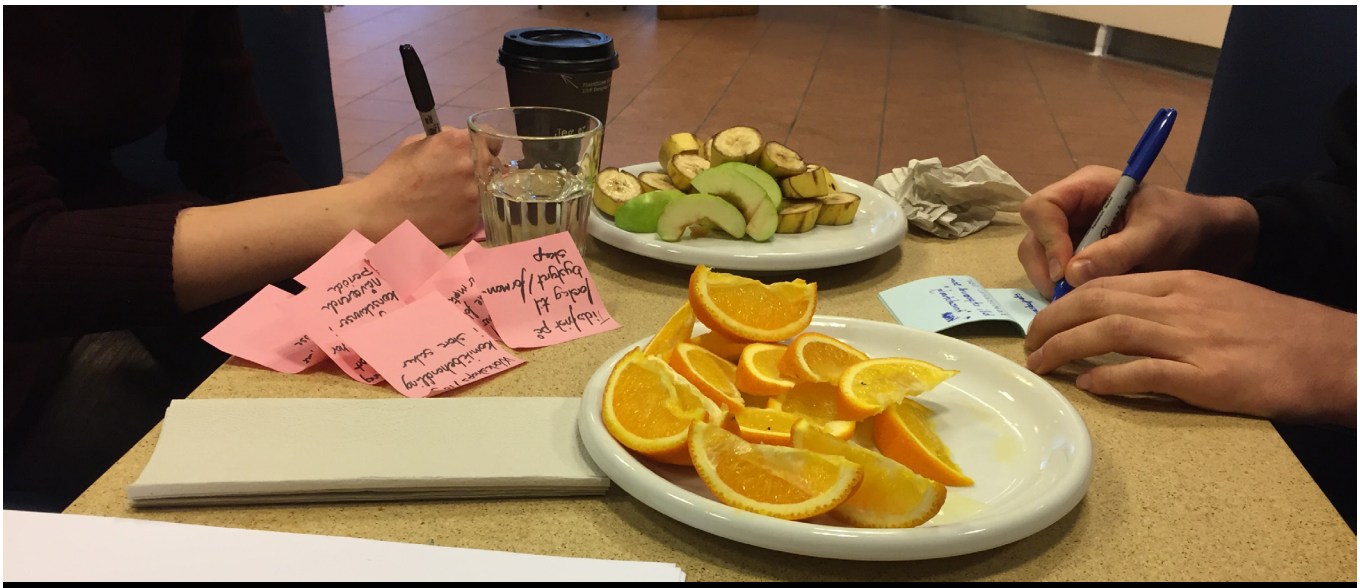
and problem spaces.

Some workshops required the preparation of different props (see appendix 4) to aid the method or exercise in the the specific workshops. We always started with exercises for creating comfort, before doing brainstorming exercises, clustering exercises, individual reflection and reflective discussion.

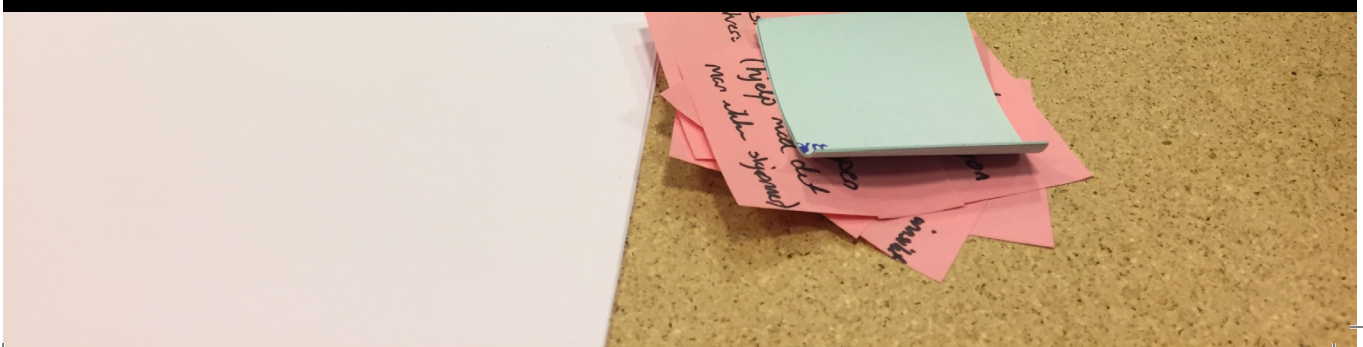
Comfort exercises are meant to make the participants of the workshop more comfortable with the context, to apply themselves more and to be an active participant, easing them into the rest of the workshop. Thus, they do not directly develop insights to inform the design process.



Brainstorming is an activity were participants spontaneously contribute ideas, ideally without any reservation concerning a given topic or open question ("Design Kit," n.d.). Clustering, similar to "Affinity Diagram", is a technique where one organizes ideas or other data into groups or themes based on their relationships. Then one draws connections between these individual elements to join the dots and develop new and deeper insights. This activity is meant to help define the problem(s) and develop potential concept ideas. In other words, one goes from analysis to synthesis (Dam & Siang, n.d.).



Brainstorming with politicians



The final workshop

Testing of articulating a goal statement

The final workshop, which was the one with the most participants (5), was also the most comprehensive both in preparation and execution. Comparing to the first three workshops where the purpose was to gain insights and explore ideas in an open minded manner, the last workshop was conducted at a time when we were converging on a solution, which means it had a more explicit purpose. The purpose of this workshop was to explore and test how politicians could work with the "Goal Statement" step in our mode. The step itself and the purpose of it will be described in more detail in the chapter called "Goal Statement". However, in the next paragraphs we would like to go through the workshop we conducted relating to this step more specifically.

Testing the important goal statement decision point

Half way through our master's we had a rough draft of the policy design model. How we worked to develop it is described in the process and model chapters. From this we planned a rough prototype workshop to test the ideas we had this far on our two politician interviewees. This workshop was intended to generate different ideas related to the "Goal Statement" step, in addition to further brainstorming and discussion on the topic of being a politician on Trondheim city council. When refining our overall concept for the policy design model, in particular the the "Goal Statement" step we were able to use these insights. One of those was that the mock-up future images we presented lacked data to understand how many people were in the different future situations we described. This was one of the things we managed

to take out of the equation by introducing actors to represent the future behaviours of the future image.

From the schedule of that rough prototype workshop, we designed the last workshop. It would be a first test run of a facilitated session with the purpose of articulating a goal statement, similar to the "Articulating Goal Statement" step as depicted in the policy design model.

Three characters in a role play

An important requisite for the goal statement is for the politicians to consider a future scenario with a variety of human behaviors. Thus, in preparation for the final workshop we crafted three artificial, yet plausible, possible futures scenarios. These scenarios were made from insights gathered during a strategic design course the previous year*. In this course, the reframing method (Hekkert & Van Dijk, 2011) was used to design solutions for Trondheim in 2030, and Truls' group worked on the topic of education. Using the insights and end result of this process we authored three different stories. Each story had a main character and depicted the person's life situation, motivations and frustrations, set to the context of Trondheim in 2030. Three freshmen from the ID institute were recruited to pose as the main characters, and rehearsed them prior to the workshop.

3 actors, three characters

The participants in this workshop were 5 politicians, where 1 has been on the county council for several years, 2 are on the city council, and the last 2 serve both in the city council and on the executive committee. The participants were welcomed to the Institute of Design, where the workshop took place, with coffee and a guided tour of the facilities. This also acted as a type of comfort exercise. To start off the workshop itself we introduced ourselves, and our master's work and went through the plan for the workshop. Then we put on an inspirational video, meant to set the frame for the workshop. This lead up to the part of the workshop where we presented the participants with the three possible future scenarios from the domain of education.

Left to right:
The one who studies to be the best
The one who studies because he doesn't know what to do
The one who studies to make a difference

All drawn by Camilla Dahlstrøm, 2018

The three actors stepped in, in turns, to an open space in front of all the participants, where they were accessible and easy to see for everyone. Each of them told their stories as rehearsed, and stepped back, before we allowed for questions.

Self-reflecting

During the presentation of the three futures scenarios the participants were given sheets of paper with a few prompt questions (see Appendix 5 - reflection sheets), for them to write down their initial reactions and reflections about the scenarios. These reflection sheets were mean to help the participants focus on the stories, as well as helping them express what they might find unclear regarding the stories. In the questions section of the workshop the participants were able to ask the actors any question, to clarify the stories or gain additional information about how the actors role experienced their life situation.

Empathizing

Putting faces on the futures scenarios, and giving careful thought into crafting their stories helped imaging the context and make them relatable. Following the questions part of the workshop the politicians were asked to choose individually one of the futures scenarios that they wanted to address and act upon in any way, without having them reflect or discuss how or what actions might be taken. One futures scenario got three “votes”, and another ended up with two “votes”.

Checking their values

After this we had scheduled a half hour lunch break with home made food, before going into the second half of the workshop. This next part was concerned with formulating the Goal Statement.

After lunch the participants sat back down and wrote on a second sheet of paper with a new set of reflective questions. This reflection sheet was concerned with which set of human values their choice of futures scenario might be based on. In preparation we had gathered and printed out the values of each of the participants' respective parties, for them to refer to in this exercise. The participants commented that they knew these values very well. Our motivation for bringing a print out of these values was to test how the following discussion, between a group of politicians from different parties, about a Goal Statement might be informed by their varying values.

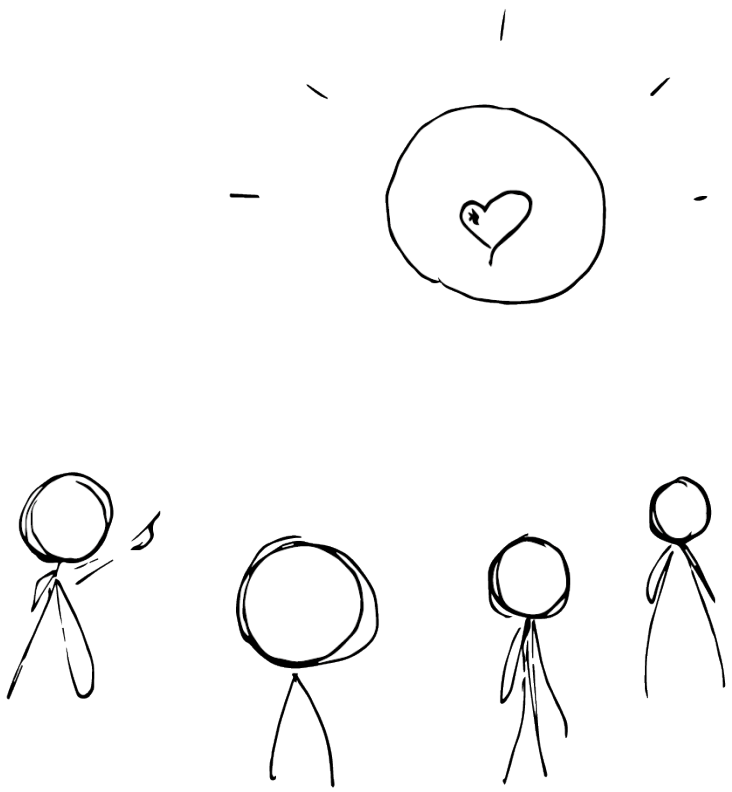
Articulating the goal statement

Consecutively, after the above mentioned reflective exercise, the participants were asked to discuss the futures scenario that had received the most amount of votes, and through this discussion articulate a goal statement. To guide this process we had prepared three sets of cards and a placemat with graphics.

One card from each deck was meant to be placed on an assigned space on the placemat. One deck represented the different futures scenarios, another was concerned with "human goals" on an individual level and the third was related to "human goals" on a group level. These "human goals" are derived from the taxonomy of human goals (Chulef, Read, & Walsh, 2001), which are addressed in further detail in the chapter about the Goal Statement.

After agreeing where the different cards should go, the participants would end up with a complete Goal Statement. For this workshop our goal was for the participants to produce one goal statement. This number was based on time assumptions. However we were able to generate three different goal statements, each addressing the three different futures scenarios.

As such we were able to explore the concept of presenting futures scenarios and from these forming a goal statement, amongst a group of politicians from different parties.



Methods used in designing the model

Bringing new design methods into policy making

In our Policy Design Model, we have injected elements of several design methods. How we do this, and why, is described in the chapter on the policy design model, but we also wish to introduce the original methods here. These are all methods we know, but they are also the methods we found that best matched the needs of the municipality.

Vision in Design

This is a method for strategic design containing several stages with a starting point of a problem, domain and timescope. From this starting point running through the stages of the method the designer ends up a new service of product. This method is complex and is described in the book "Vision in Design" (Hekkert & Van Dijk, 2011), as well as treated briefly, in a new book on strategic design (Calabretta, Gemser, & Karpen, 2016). We have prepared a short example walk-through of this process, which can be found in appendix 1.

Prototyping

This design method is becoming more recognized even in arenas outside of design (Sanderson 2002). It has its own step in our model, where we discuss the potential relationship between the designerly practice and evidence based policy making.

Backcasting

This is the act of taking a future vision and bringing it closer to the present, potentially a major contributor to making prototypes that work today but are relevant tomorrow (Holmberg and Robert 2000).

Futuring

Future studies, or futuring, may not be entirely new in the field of politics, but we attempt to introduce it as a necessary step on the way toward successful policy (Berkhout and Hertin 2002). The Vision in Design framework also deals with futuring, giving some tips for how it can be done (Hekkert & Van Dijk, 2011).

Ethical considerations

As mentioned under the section on participants, all participants reported their written consent to participate in the activities through a signed consent form. The aim of this form was to reassure participants that their participation in the work is voluntary and that they were free to withdraw from it at any point and for any reason.

Next to this, participants were fully informed regarding the objectives of our master's, and that they would be anonymized. The participants in the final workshop, however, agreed that they could be identified if needed.

We would also like to clarity that this master's thesis does not promote any political agenda. We have worked mainly with politicians that are currently in opposition to the majority party coalition. Yet, we have made sure that the participants are from both the right and left sides of the political spectrum.

Chapter 3:

Process

This master's thesis project started in the beginning of january 2018, and the thesis was handed in on june 8th. We show the chronology of the most notable activities, divided into four phases. The methods and methodology chapter, together with the actionable insights chapter, give a more in-depth understanding of these activities. We would like to remark that this process chapter should not be confused with the model we have designed for policy making in Trondheim.

Chronology

Our process in four phases

For the sake of clarity, we have divide the timeline of our project this semester in four phases. We can relate these to the classic double diamond model of design. ("The Design Process: What is the Double Diamond?," n.d.) In phase 1, we diverged from the initial problem definition to understand the context, before we developed the context-awareness to converge upon a new understanding of the problem of user insights. Phase 3 saw us exploring ways to tackle the problem, before we decided to design a model for policy design and prototype it. Furthermore, we revisited and reiterated upon earlier phases, for example when we needed to understand how committee meetings work, or late in may when we improved the visual representation of the model.

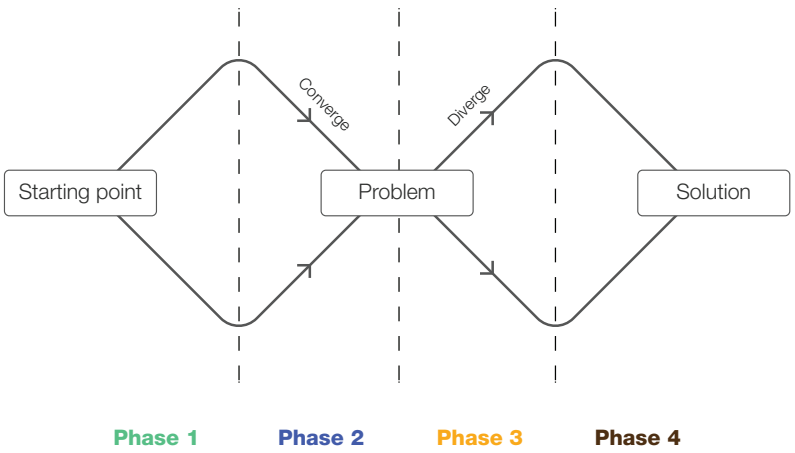


Figure 3.1: The Double Diamond model as it relates to our process

Figure 3.2: Phases

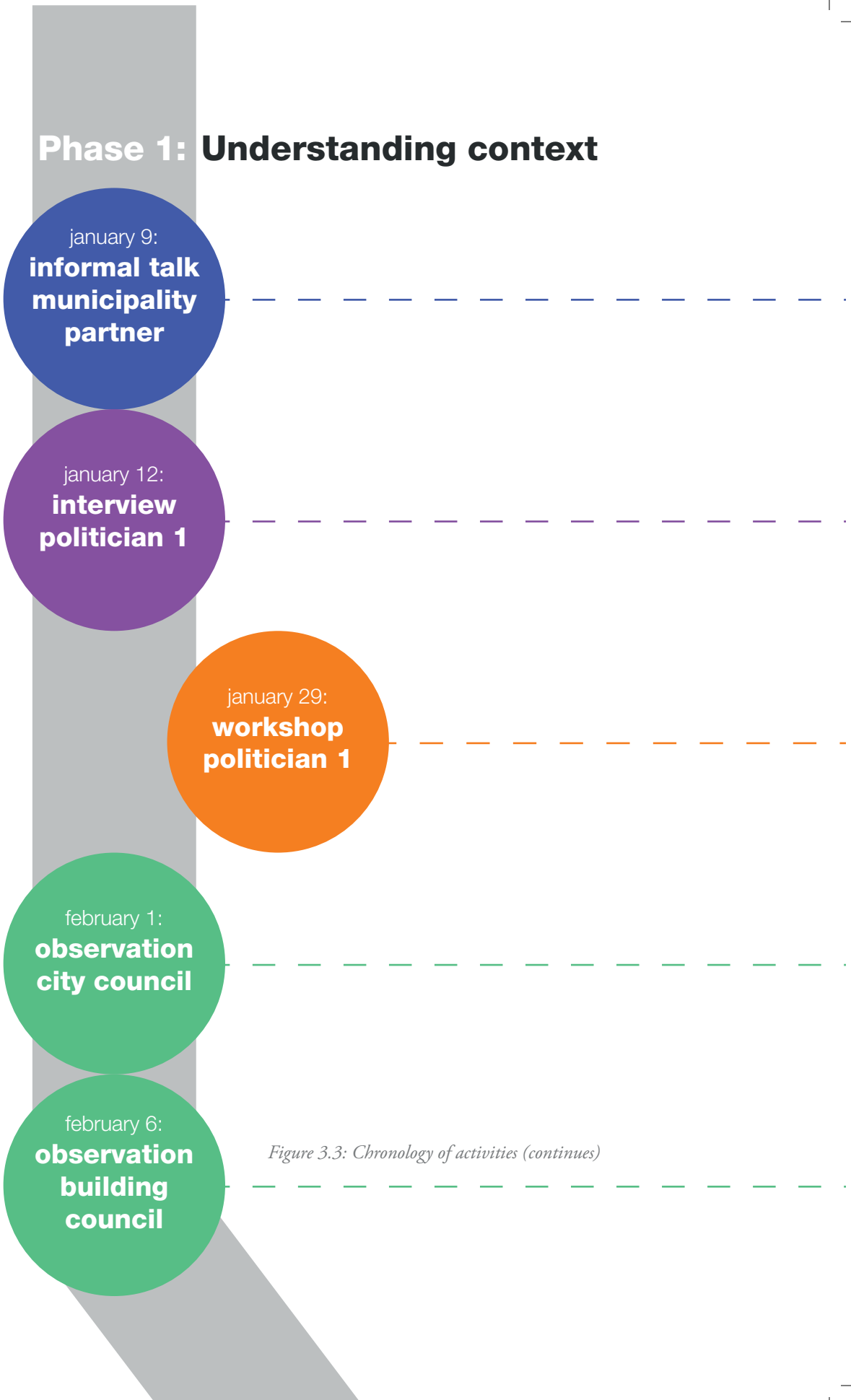


Figure 3.3: Chronology of activities (continues)

A Research assignment

Our partner at Trondheim Municipality mentioned his new assignent: to research new citizen participation initiatives. We were asked to contribute, and he suggested a working title for our thesis: “User Insights on a City Level”. An additional concern was expressed: how can we make sure our politicians are able to cope with increasing complexity and innovation tempo?

Political decision making

This interview with one of the politicians on the city council was prepared by reading municipal law. The interviewee described how the local democracy works in practice. The question of how to understand citizens needs was also discussed and examples were given.

Deliberative and intuitive decision making - Insight 4

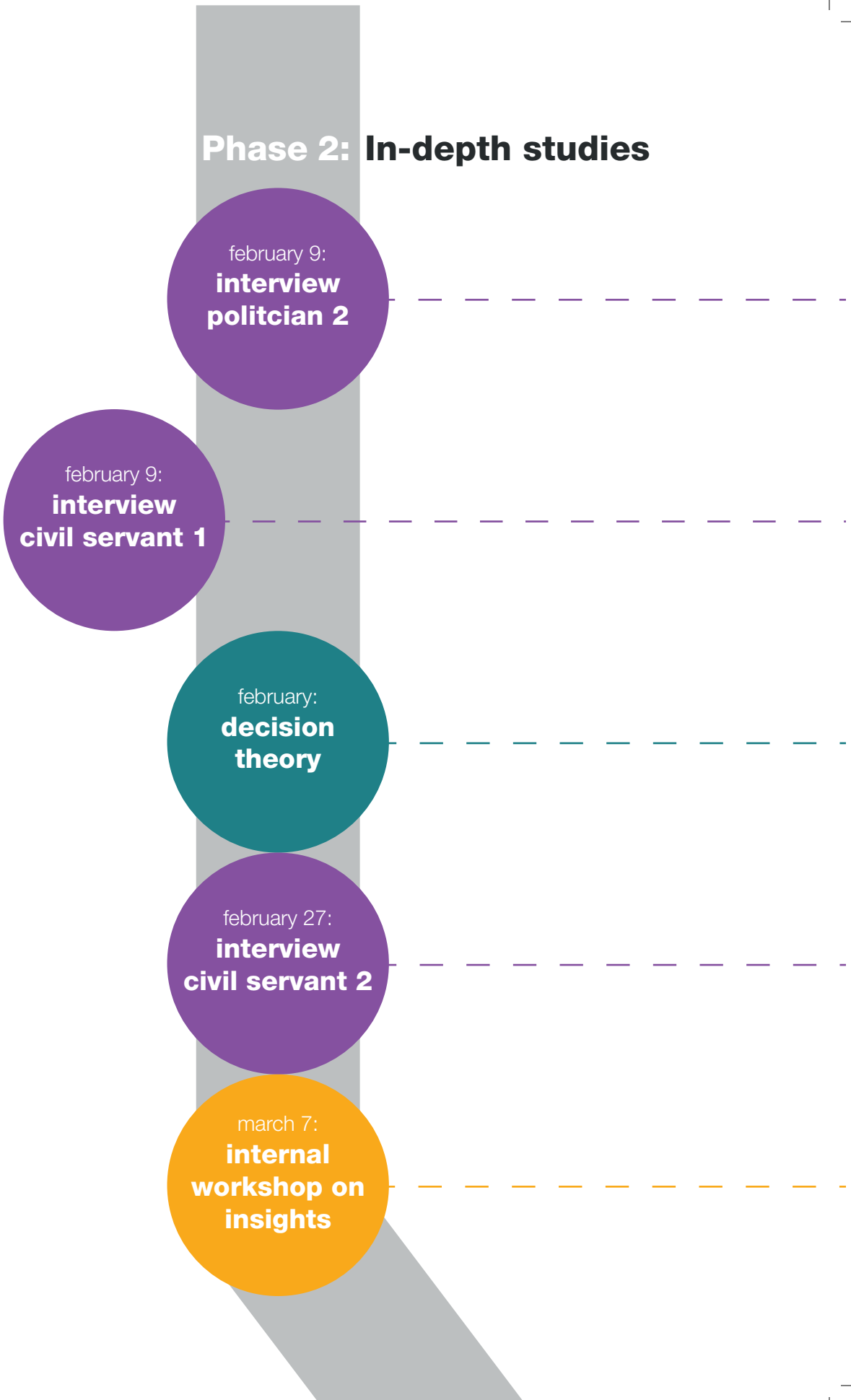
In this workshop session a map of the political procedure drafted after the previous interview was reviewed. See appendix X. The politician was asked to brainstorm and cluster decisions from his political practice. See appendix 5 and 6. **See insight 4.**

Complexity

To observe this City Council meeting, the AEIOU tool was used to draw and record impressions. There was a large amount of cases and diversity of topics. The meeting took five hours, with intricate voting on different propositions and subsidiary propositions for some of the issues. **See insight 1.**

Voting for today’s concerns

This meeting was less complex and could be observed more in depth. Special interests and values were represented by the politicians and audience. The politicians mostly voted on details based on an understanding of the world today. **See insight 6.**


Phase 2: In-depth studies
february 9:
interview politcian 2
february 9:
interview civil servant 1
february:
decision theory
february 27:
interview civil servant 2
march 7:
internal workshop on insights

Triangulating politicians' perspectives

Politican 2 was from the opposite side of the "left-right" axis. Interview topics were her perspective on decisions, how she gained user insights, and how she made meaning in her political practice. Based on both politicians inputs, a list of decisions was compiled and categorized. See appendix 9. **See insight 5.**

Spectacular issues matter more

The interviewee is an economy advisor in the administration, and the purpose was to understand the civil servants' side of political decision making. This proved hard to grasp, the work is individual and not very regulated. A take-away was that tacit knowledge, experience and networks are important to delegate and deliver on political issues. **See insight 1.**

Literature study into decision theory

Decision theory was studied to see if it could show how good decisions are made and how they can be facilitated. Normative decision theory was concerned with utility, while later critiques deal more with human factors. How can politicians understand what utility an outcome has for others? **See insight 4.**

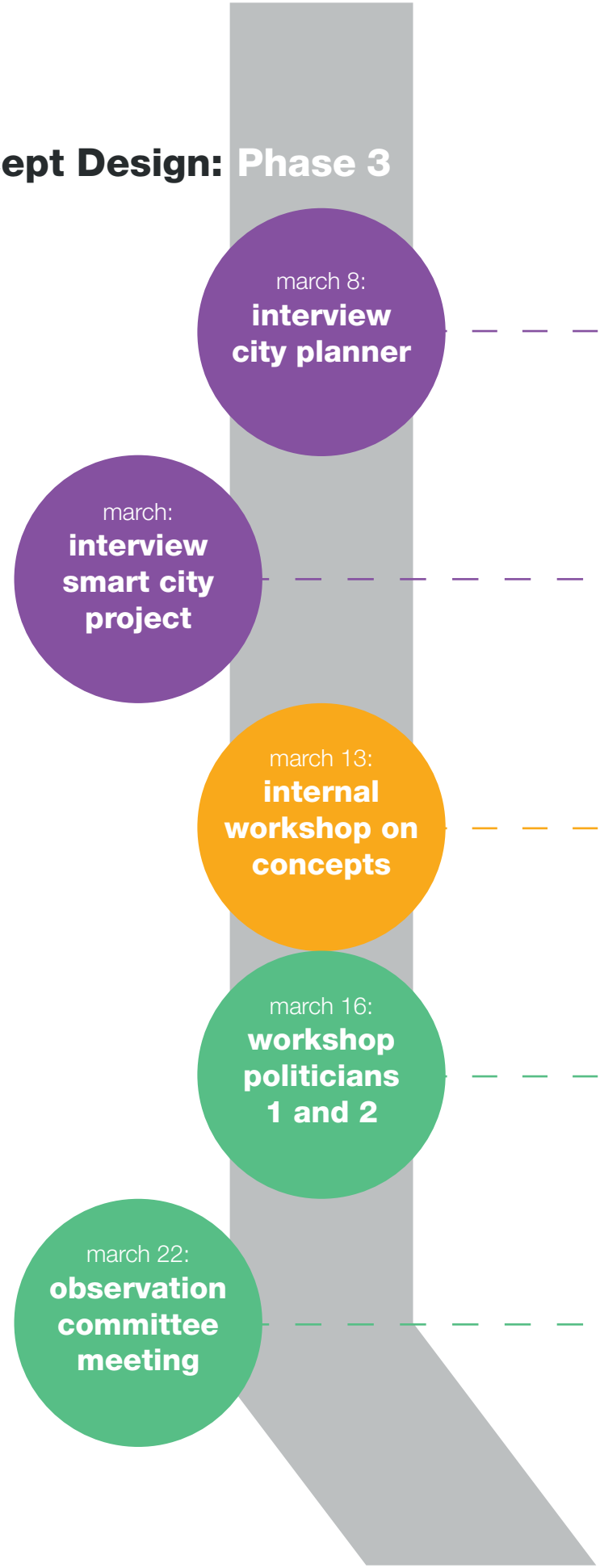
Under bureaucratic craftsmanship

Civil servant 2 is a senior economy advisor in the administration, who often handles the more complex political issues to avoid unnecessary cost or liability. Facilitating politicians to do a good job while avoiding strain on the administration is an advanced skill requiring experience.

Connecting minds

In the first major internal workshop, the insights were reviewed. Tacit knowledge and experience seemed to be a large part of good policy making, and the understanding of citizens' needs varied a lot. Looking ahead seemed to be mostly an excercise for the administration. Why wasn't local politics more strategic?

Concept Design: Phase 3



Prototyping is gaining momentum

This city planner with prototyping experience told of a disconnect between the strategic and operational levels. Bottom-up initiatives have lacked support and top-down initiatives have been too visionary. Cross-referencing information from other sources, we saw that this is adressed with formidable investments in leadership capacity and competency. **See insight 7.**

Going under the democratic radar

Looked at how participation prototypes are being included in the application for a large EU smart city grant. Trondheim applies together with several other cities and private enterprises, and promises to launch several initiatives if they win. Participation and representation was drawn into the application, but there seemed to be little political oversight. **See insight 9.**

Starting to develop the model

At this point it was time to start developing a concept. How could tacit and explicit knowledge be leveraged to enable an innovative municipality, while at the same time ensuring that this did not happen at the expense of democracy?

First test run

The politicians were asked how they want the city council to develop, and they expressed a strong need for more understanding and control over large projects. They also tested an early prototype. They were concerned about the quality of future images - where were the numbers? **See insights 5 and 9.**

A large potential

In this city development committe, 1,5 hours were spent on presentations, leaving little time and energy for official political issues. Of more than 300 pages everyone should have read, only 60 were the object of any debate. There was also no overall picture of city planning capacity or status. **See insight 10.**

Prototyping & presenting: Phase 4

april 13:
informal talk city council secretary

may 3:
workshop politicians

may 11:
presentation municipality partner

may 16:
presentation committee

may:
complete the model

Preparing to expose the model

The city council secretary was approached to see if one component of the model could be prototyped in a committee meeting. That was not practical, so we instead "cold called" several politicians with invitations. The city council secretary insisted that we made sure to inspire the politicians. **See insight 10.**

Prototyping how to articulate future goals

The future images were presented as roleplays, asking 5 politicians, as a group, to articulate goal statements for the different roles. They seemed to have a real affinity for this type of dicussion. One participant said: "I studied political science, which deals with perfect decisions. You deal with how people really work." **See insight 11.**

The model fits in

With a sketch of the concept complete, and a succesful workshop done, the results so far were to our partner and two of the other interviewees from the administration. The administration is experimenting with some of the same methods, and were very interested in receiving a guide for how to facilitate politicians.

How can politicians focus on values?

The concept was presented at a meeting in the city development committee. One of the take-aways was that politicians need to make sure values are interesting to their voters - how can election programmes talk less about popular solutions - the how - and more about the why?

Reiterating the visual representation of the model

Before completing the thesis for final delivery, the model was revisited based on the feedback so far. The viuals were strengthened and the implementation step was introduced to anchor it in the actual implementation of policy. After that, we the booklet you are reading was compiled.

Chapter 4:

Insights

In this chapter, we discuss the insights from the first phases of our project, which informed the development of our concept. We used the initial part of the insight phase to understand the political decision making process in Trondheim municipality. Therefore this is what we will talk about first in this chapter. We hope that this will give the reader a contextual understanding of our work. Further we will describe a number of insights that we discovered in the interviews, observations and the workshops that we conducted with politicians and civil servants as participants.

Insight 1

The complexity of municipal business

As mentioned in the introduction, the city council is responsible for many of the public services people use throughout their lives in Trondheim, and it has power over building and business permits that can be both enabling and dramatic for the citizens. Curiously, while the municipality is required by law to offer several services, the politicians are free to decide that the municipality can venture into other fields, providing new services or even starting commercial enterprises. When this happens, the scope of municipal business widens, and consequently so does the responsibility of the city council.

The city of Trondheim is in a good financial situation at the the time of writing. However, looking ahead, there might be some wicked problems (Rittel & Webber, 1973) on the horizon. The demographic is changing in a way that will lead to a larger group of elderly living longer lives, and less people of working age relative to the population. The nation has thrived in the oil economy, but the oil industry is in uncertain transition, and this brings uncertain transitions to the Norwegian economy as well. Additionally the global threats of climate change, ecological collapse and limited resources are issues Trondheim has to deal with (Mer ekstremvær gjør oss sårbare, også...).

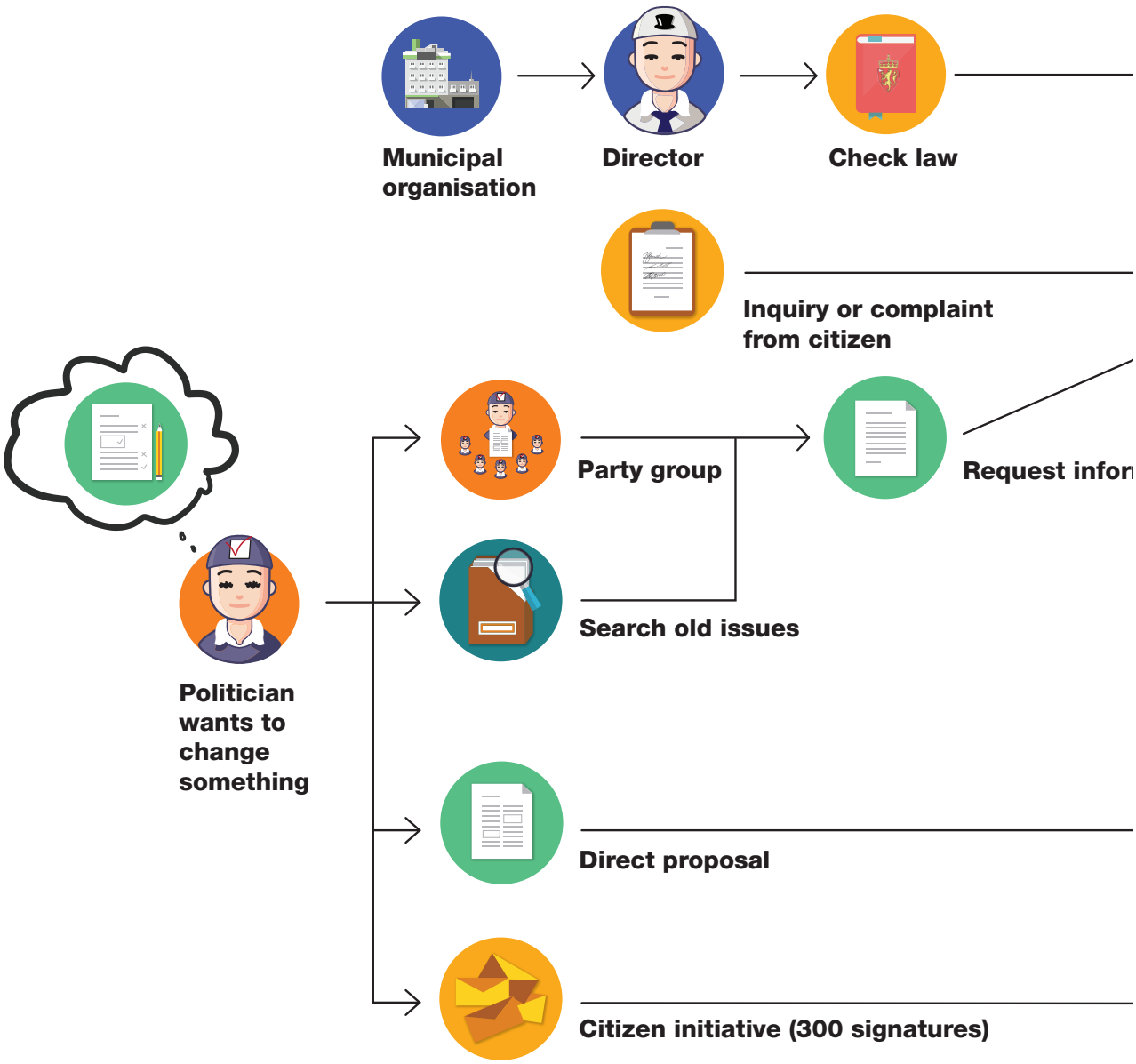
Political model

While virtually all political authority in a municipality lies with the city (municipal) council, they are free to delegate some of the authority, for example by establishing a sub-committee, or by delegating authority to the administration. They are also

required by law to elect an executive committee to prepare proposals on financial matters, because Trondheim operates according to the executive municipal model, this is opposed to the he parliamentary model (see the glossary). The concept we have designed, which will be introduced in the next chapter is designed to work for a municipality that has the "executive model", and will have to be adapted should it be used in a "parliament model" municipality.

Politicians in Trondheim have a considerable support system in the administration. They are trained in writing assessments of political issues. The figure depicting political case processing shows how political issues can take many paths before they are decided upon by the city council. For example, citizen initiatives with more than 300 signatures, must be formally processed by the city council. Whenever a politician decides to bring an issue to the council (this could be on behalf of any group of citizens), he or she may do so directly, or indirectly by lobbying for other politicians or committees to bring the issue forward. The administration may also propose issues. Some are regular issues like the annual budget or other mandatory plans, and some are based on specific needs in the organization or the city community. The politicians may, and regularly do, formally inquire about decisions that have been delayed in the administration. Especially for investments, there is a constant "backlog" or queue, and the priority varies and can be changed by political pressure.

Finally there is "fylkesmannen", or the national governments representative, who has the power to override municipal decisions. In practice this power is often exercised in building permit cases when individual citizens or organizations claim that a municipal decision is unlawful.


Municipal organisation
Director
Check law
Inquiry or complaint from citizen
Party group
Request infor
Search old issues
Politician wants to change something
Direct proposal
Citizen initiative (300 signatures)

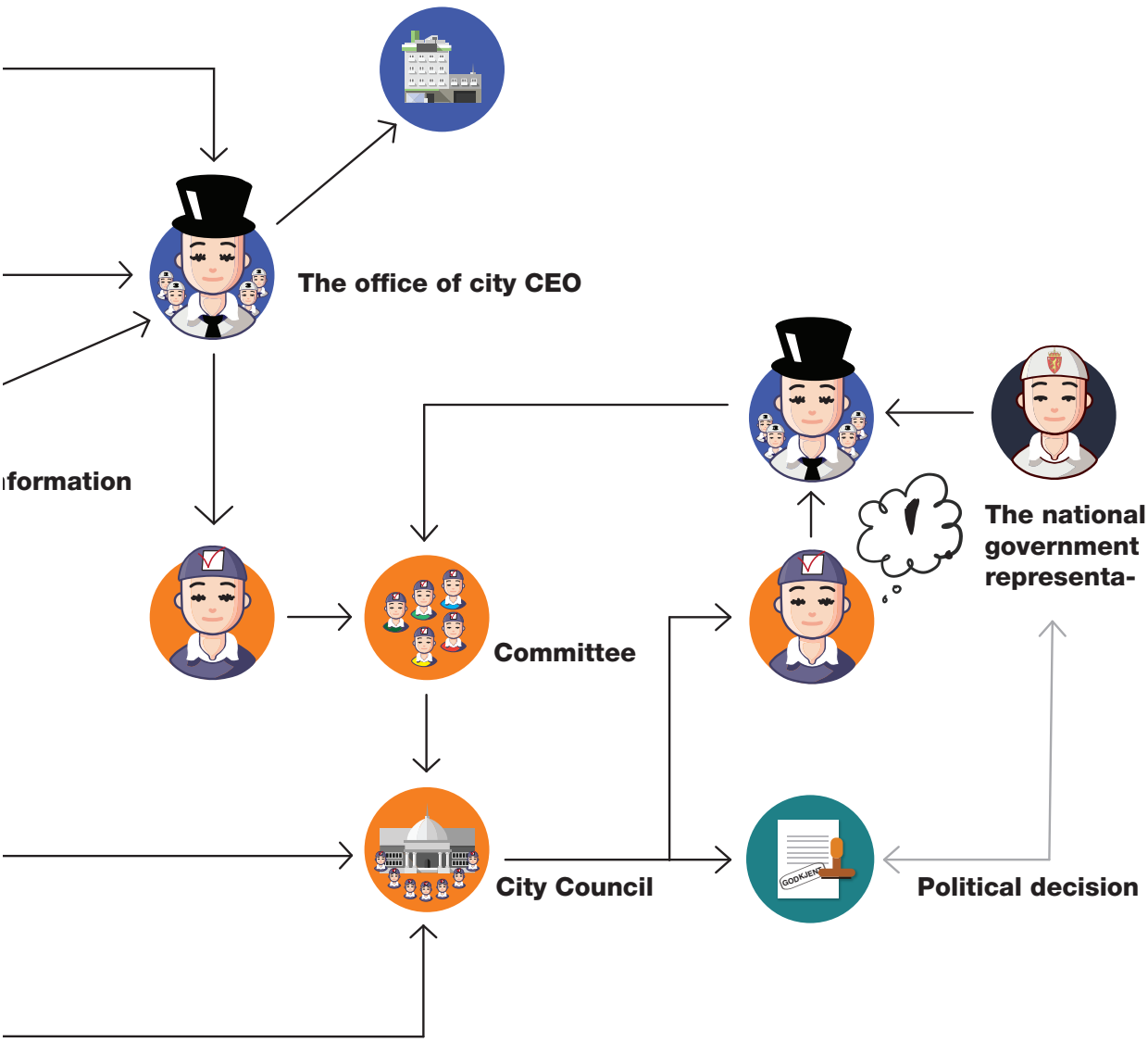


Figure 4.1: The flow of political issues

Insight 2

A university municipality

Last year, the municipality decided to enter a formal agreement with NTNU, the Norwegian University of Science and Technology, which has the majority of its activity situated in Trondheim. The university city cooperation, as it is called, is based on a vision of making the city a laboratory for the university, and making the university a source of knowledge and competency for the municipality ("Nå er Trondheim kommune en universitetskommune," n.d.). The article mentions "test projects" as a goal, stating that the threshold to initiate test projects should be low and that they should be monitored, evaluated and easily scrapped if proven ineffective. The university municipality agreement also establishes meeting forums where executive directors meet the deans on a regular basis.

Insight 3

An arena to be understood

Traditional citizen partizipation practices include surveys and public hearings, as well as user involvement forums at all municipal education and health/welfare institutions. Through these activities a citizen has the opportunity to voice their opinion on an issue. The hearings are meant for the citizen to partake in the political decision making, and lets them object to political proposals. These hearings often become a formality necessary by law in certain political issues, for example in building permits, with little influence on the final decision. In other issues the politicians actively ask for a hearing because they are interested in additional information about the public opinion.

A hearing is an arena for the citizen to protest. Would it not be an idea to have an arena for the citizen to be understood? And where the citizen could actively partake in informing political proposals before they are formulated, as opposed to after the fact?

Insight 4

A system for concerns

Politicians expressed that it is hard for them to understand what people actually care about. They rely on their party programs, and regard this as a strong representation of the people who voted for their party.

"It is very hard to know what people actually care about," - politician 1.

The politicians have limited time and resources to gain the information and insights that they need to make informed political decisions. From time to time they are directly confronted by citizens expressing their opinions. The politicians greatly appreciated that any citizen can freely contact them, as they view it as an important part of their role to be accessible for the citizens in Trondheim. However, when being contacted about an ongoing or potential political issue the politicians need to do a number of considerations. Examples of these are whether this citizen is expressing a need that is currently unmet by the municipality, or whether there are services in place that the citizen is unaware of. They may begin considering how to solve this need for this citizen, and thereafter how they can make a proposal to the City Council about this issue. Additionally, who does this citizen represent? Is this something that others also need?

"It's hard to distinguish the oddballs (the ones with the loudest voice), from people with a real case," -politician 1.

One way for a politician to tackle this matter is to forward a question to the administration, asking them to investigate the inquiry.

How might we anticipate and map the concerns of the citizens?

Insight 5

The committee as workshop

During an interview with politician 2 it was stated that the committee meetings are meant to be a workshop for politics and policy making. This was an intriguing statement. As citizens we often see politicians in debates or staged interviews talking in a way that does not convey any doubts in their own opinions. They have also learned techniques to redirect the conversation if anyone asks a question they might not be prepared to answer. Thus, this new knowledge that politicians had a space where they could be questioning things as a group of people from varying parties was very interesting. The politicians also felt that it was nice to be able to come into the meeting and be in a state of wondering when discussing different policies. They are also allowed to change their vote after the committee meeting. This gives them a chance to learn more before making a final decision in the City Council.

"Committee meetings are more like a thought process," - politician 2.

Through further observations and interviews we found that committee meetings are very far from what we as designers think of as a workshop. They may go through a number of proposals for political issues, and it is difficult to have a clear vision of the bigger picture.

"There are so many small political issues concerning the project as a whole, and it is very difficult to keep track,"
-politician about a big metro bus project in Trondheim.

How can utilize this space, which is meant to be a place for articulating questions, concerns, and engaging in explorative approaches for policy making?

Insight 6

The future's strained relationship with details

Some political decisions are routine issues required to have a political decision by law, these are political proposals which are typically approved without debate. Other proposals leave more room for adjustments, modifications or near rewriting. When there is more room to change the proposal, a politician likely feels a higher sense of responsibility regarding the final decision concerning this proposal. This often naturally leads politicians into detailed debates about how to best craft this into a political decision. This might cause the focus of the discussion to lose sight of the overarching goals of the policy.

"We craft some decision with very minute details. But then they strike back, when reality does not fit perfectly,"
- a politician expressing their frustration at a building council meeting.

In some cases very detailed political decisions do not fit the reality where and they are eventually carried out. This makes the politicians feel frustrated, and the public often bewildered. These policies are not open for the future, but instead incur a sort of political debt, where future council meetings have to deal with unwanted restrictions that make it harder to craft appropriate policies.

What does very politically detailed decisions mean for the long term development of the city?

Insight 7

Prototyping capacity

On the administrative side of Trondheim municipality there has been a disconnect between the strategic and the operational level. Visionary innovation projects initiated at the strategic level often do not manage to bring the operational level into the context of their projects.
Conversely, advocates for prototyping or experimenting on the operational level have had little systemic support allowing them to take the learnings of their prototypes further to improve the organisation, even if they have been able to initiate prototypes. The tacit knowledge gained by the people working on these types of projects is often lost. The advocates end up feeling dissatisfied, and alone.

Currently Trondheim is conducting leadership development. In learning about this we found that 2 new levels of leadership are being introduced going from 3 formally responsible levels of leadership to 5. Trondheim municipality has around 13.000 employees. Additionally, every leader will take part in a comprehensive leadership training programme ("Prosjekt helhetlig ledelse," n.d.), focusing on how they lead, how they interact with others, how they ensure compliance in daily operations, and how they innovate. Design thinking and prototyping as a practice are part of this training. Considering these substantial efforts to increase leadership capacity and competence in Trondheim, we believe the concerns about the disconnect between the strategic level and the operational level are being addressed.

How might we ensure that learnings from prototyping activities can be acted upon within the larger organization of Trondheim municipality? How might we ensure that valuable tacit knowledge is passed on?

Insight 8

Municipality as facilitator

From an interview with the project manager of an international innovation project conducted in the municipality, we obtained insights into how the municipality cooperated with relevant industry partners and research fellows at the Norwegian University of Science and Technology and in partner cities. In this project the municipality representatives felt that their role was that of a facilitator. As they were in a position to link people, places, research and resources together. The experience of this for the civil servant was thrilling, as they felt that this was a meaningful job, and very suitable for Trondheim municipality as an institution.

Is it meaningful for the citizens of Trondheim that the municipality facilitates innovation by linking people, resources and research? If so, can these relationship inform innovative policy making?

Insight 9

Paved with good intentions

The international innovation project involves an application for EU grants that, if approved, binds the city to initiate projects the politicians might have never heard about. The major emissions programme that sees the city receiving substantial state funding to improve its transportation infrastructure will remove funding if the city does not fulfill its obligations to the programme. And finally, the administration knows that the politicians will never approve issues that look bad or wasteful in the media, even though they may be completely necessary, so they dress them up to look good. These are issues where the politicians might be left out of the loop or where an agreement at one point in time becomes a democratic problem later.

How can we ensure that what we put into the world is both both meaningful for the citizens, and a part of a democratic process?

Insight 10

Facilitating the city council

"The politician are just people too, they need inspiration."

This was an advice we received from the city council secretary prior to our final workshop, where, as mentioned, the purpose was to explore the concept of presenting futures scenarios and form a goal statement, amongst a group of politicians from different parties. We answered this by making an inspirational video, and trying to set a positive and a possibilities minded tone for the workshop.

How might we keep the politicians inspired?

Insight 11

Empathic design

Through the workshop the politicians quickly empathized with the actors posing as futures scenarios. Much like a professional designer engaging in "empathic design" insight exercises.

What we mean with "empathic design" (Koskinen & Battarbee, 2003), is the attempt to get closer to the lives and experiences of (putative, potential or future) users, in order to increase the likelihood that the product or service designed meets the user's needs. Empathy supports the design process as design considerations move "from rational and practical issues to personal experiences and private contexts" (Mattelmäki & Battarbee, 2002).

McDonagh (McDonagh, 2006) defines empathy as "the intuitive ability to identify with other people's thoughts and feelings – their motivations, emotional and mental models,
values, priorities, preferences, and inner conflicts". And similar to politicians, the design field is concerned with the questions of making appropriate design choices for others who are unlike themselves. To this end, designers engage in various activities to emphasize with this user group. Examples of these activities are described in the method chapter.

With this in mind we would like to make the connection between empathic design and policy making, because at the other end of most policies there are people. We have also discovered how politicians make efforts to understand the citizens, through for example field trips. This training became apparent during our last workshop, where the politicians were presented with the

three possible futures scenarios. During the presentation the politicians were handed worksheets to make their own reflective notes. Looking through and documenting these notes at the end of the workshop we discovered what first popped into the politician's heads when meeting the futures actors. This was a list of "how might we..?" questions, regarding how to help these futures images.

If you are a designer reading this, you might recognize this as a design method ("Design Kit," n.d.), which describes a particular way of framing a problem. In order to formulate such questions the designer must prime themselves to be open, and understand the user's challenges. As stated in IDEOs Design Kit, a properly framed "how might we" does not suggest a particular solution, but provides a frame for innovative thinking. ("Design Kit," n.d.). For any politician reading this, this insight might not be very surprising. But what does it mean? We have framed this insight into an "how might we.." question:

How might we create a space where politicians' own "how might we.." questions can be explored in an innovative way?

Chapter 5:

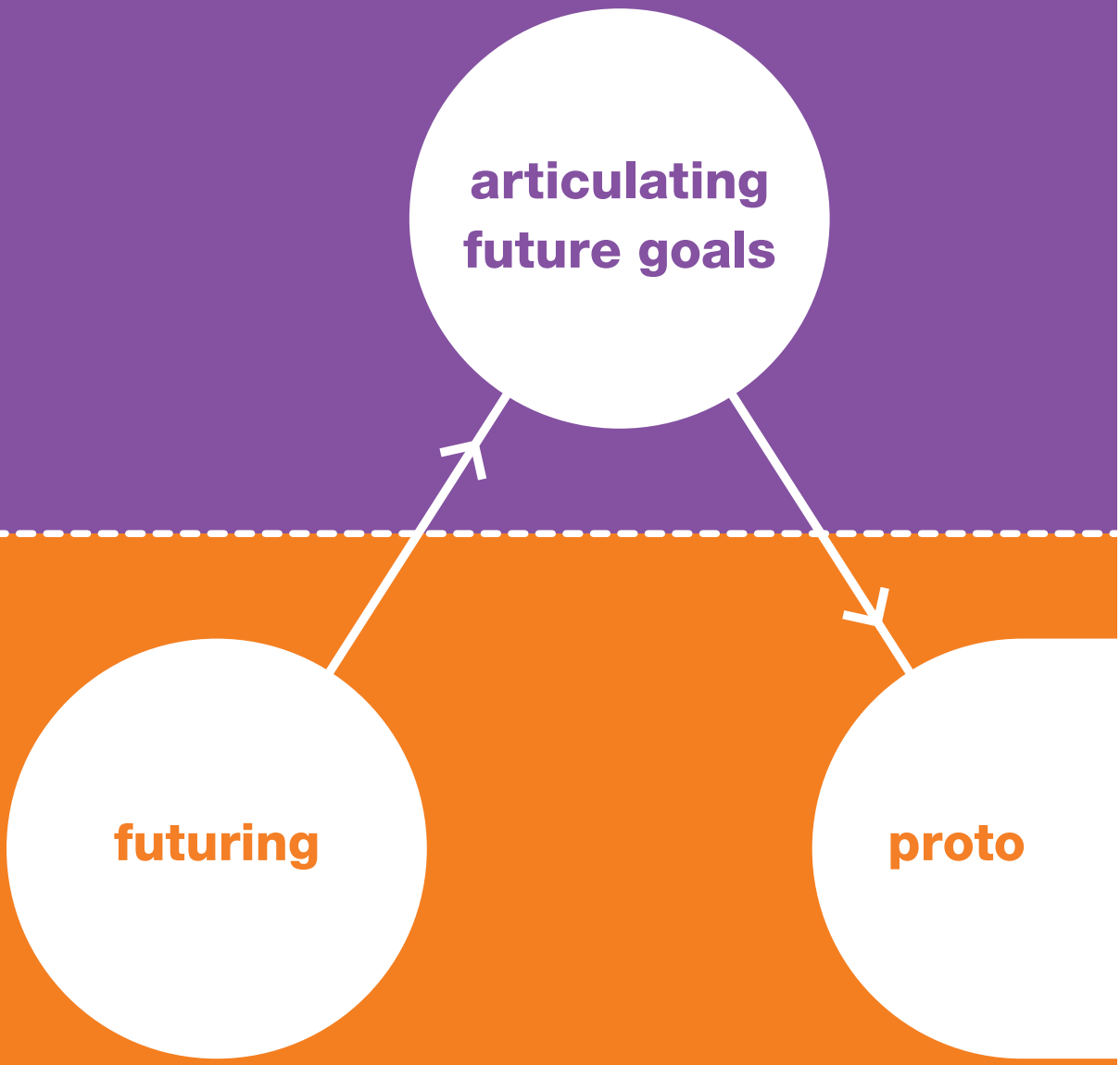
The Model

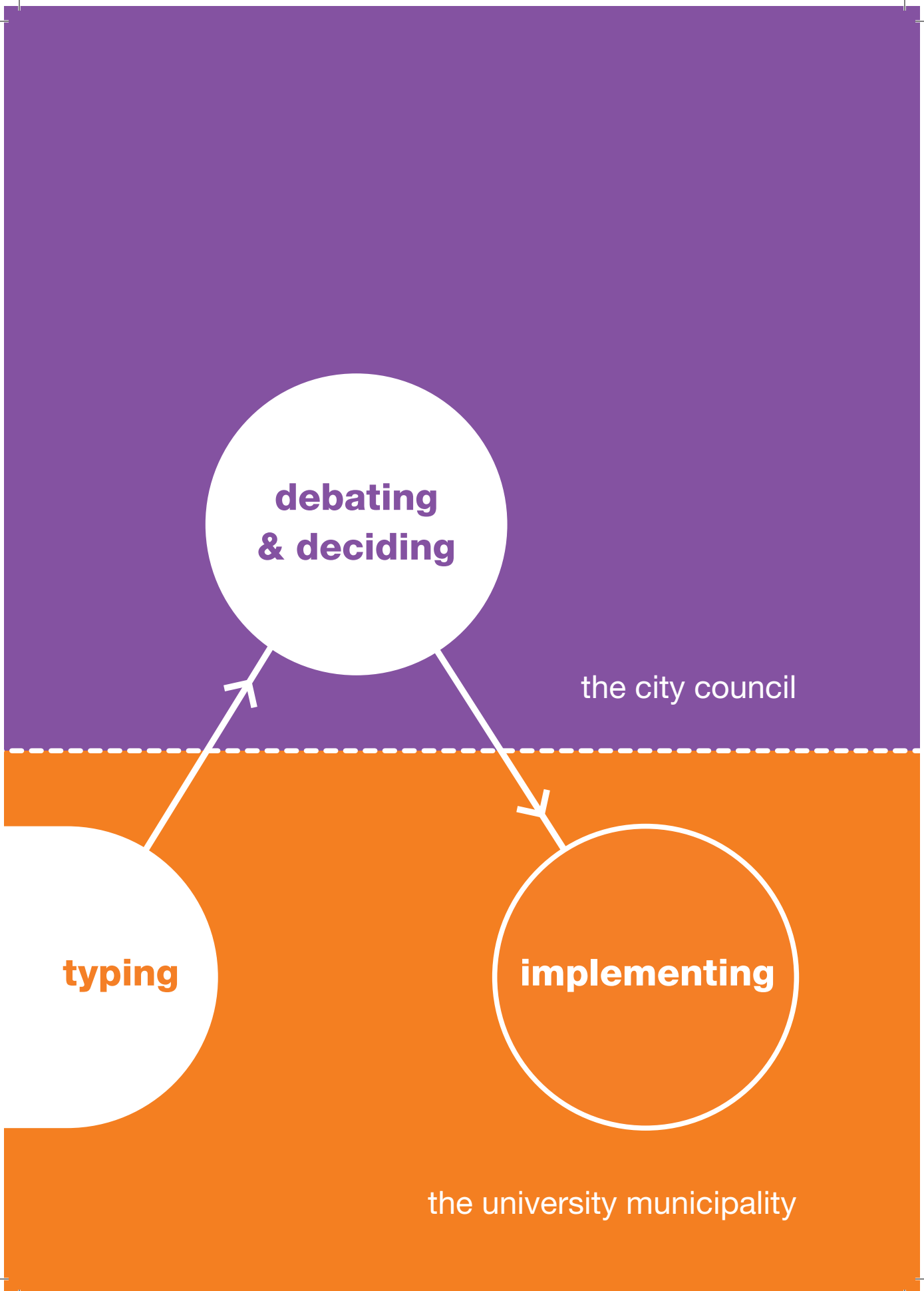
In this chapter we present and give a full overview of the design concept of our master's thesis. Based on the insights we described in the previous chapter, combined with our knowledge of design practice and strategic design, we designed a conceptual model for policy design in Trondheim. In this chapter we present the it, how it came to be, and how we envision its usage in conjunction with different political issues.

The policy design model has four different steps, and in the following chapters we go more in depth on the how and why of these steps.

Policy design model

designing meaningful policies for society




debating
& deciding
the city council
typing
implementing
the university municipality

A process for policy design

Four steps toward more meaningful policies

The policy design model as we present it in this thesis is a concept, that corresponds to task 5 in our problem definition of the master's thesis: "Design a new Big Design way of gaining user insight for policy making."
While it is at the concept stage, and far from being validated, we have prototyped one of its four steps. This was in the form of a prototyping workshop that is described in the method and insight chapters. The model has been designed to appropriately address most of the insights from the insight phase, and it does this partially through an adaptation of design methods, while also bearing in mind that it should leverage the strengths of the main users and the political system in Trondheim.
As mentioned the model has four steps, which we present together with a schematic in this section.

Futuring
In this step, the city administration makes use of university resources to create an image of the most likely future for a selected policy domain and time scope. A policy designed in a given moment will always be acted out in the future, relative to that moment. Through future study methods an image of the most likely future can be synthesized, to help understand the future context of the policy. This requires up-to-date scientific insights about the context, requiring broad cross-disciplinary

research. It is necessary to research both expected developments as well as principles that will remain as they are. An example of an expected development could be the projected increase of inhabitants in a city. An example of a remaining principle could be that we as humans learn better by engaging multiple of our senses in a learning experience. A mix of these types of insights helps create a more grounded and probable future image.

Articulate future goals

In this step, the city council articulates and votes on goal statements based on the futures images and the values they promote as politicians. In Norway, political parties present an election programme before every election. The programme typically promotes a combination of values and specific solutions to political challenges. It is our opinion that promoting solutions in an election programme is problematic if the goal is to create a better society and meaningful services for the citizens. Selecting a solution should rather be done as late in the policy design process as possible, to ensure the most appropriate solution. Therefore, our model seeks to put the emphasis on encourage value considerations over solutions. In the goal statement step, the city council committees undergo a facilitated process to produce a set of goal statements for the selected domain. They start off with an objective image of the future and produce a statement about how they want to address citizens' concerns in that future.

Prototyping

Within this step prototypes are developed based on knowledge from futures images, a goal statement and a backcasting (Holmberg and Robert 2000) process. The prototyping step begins with the design of concepts that address the future goals

from the previous step. These are created within the university municipality, and the design process of these is lead by a design team. For long time-scopes, the concepts may not be applicable to the present, as they are meant for a future context. If this is the case, a strategic plan for the developmental steps leading up to this future is achieved through backcasting. As quickly as possible, the concepts or developmental steps should be prototyped, and the prototypes are put into the city for the citizens to experience and generate user insights. The prototypes may be iterated upon, and may exist within a period of time that is appropriate. These considerations must be made for each case of prototyping activity. Within the model the prototypes are meant to inform policy making, but they may have many other positive effects and purposes based on the concept and the domain.

Debating & Deciding

In this step, the politicians debate and develop policies. Guided by the learning opportunity presented by prototypes the politicians can create a common understanding of risk, reward and consequences of their policies. By seeking to understand the future and the behaviours that emerge within it, politicians can create more meaningful policies for its citizens.

Policy Implementation

We have not included policy implementation in the scope of the model as presented in this thesis, so we will not attempt a general description of how policy is implemented. And for individual policies specifically, the actual activities and content involved in implementation will depend entirely on the nature of the policy. Therefore, we do not have a chapter on this topic specifically.
However, real policies affecting real people in a city of more than

190.000 inhabitants are the intended output of our model. This has had important implications for how we designed the model and how it may be used. These are described in the individual chapters, like the challenges with prototyping something that will be implemented for an entire city.

But overall, since the model is designed to create more meaningful and appropriate policies, whatever the municipality is asked to implement should be in better shape, and more tested, than it would have been without the policy design model. And in reality, both implementation and policy design are part of a continuum. We would argue that Trondheim will learn more from the full implementation of of a policy than from its' prototype, lessons which may again lead to re-iterating the policy design process. In fact, most political decisions are already concerned with adding to or changing existing municipal services or plans ("Innsyn - Velkommen" n.d.).

Using the model

Adaptability is key

The policy design model is visualized in this thesis as a step by step narrative. This is a depiction of how the different steps interrelate. However the model is not meant to be restricted to a linear process of policy making that requires several steps to get to a decision. If we want the model to be sustainable, it has to work in practice for both the primary users, the politicians, and the secondary users, the municipal administration and university, who should be enabled and supported by the model to create higher quality decision material than without it.

Political decisions concerning different types of policies may take different routes through the model. Examples of different types of political issues could be a four year strategic planning and a decision to set up charging points for electric vehicles downtown. The first could have wide and long term implications for citizens and affect many other decisions over the next four years. The last probably has a more narrow effect, and while potentially valuable for citizens, may not affect as many other political issues down the line.

The strategic planning process might start with creating new futures images, as such plans would benefit from futures images and are meant to set the strategic goals for the municipality for the following years. But it might also stop at the step of articulating goals, to become a platform for later issues. The charging points issue for electric vehicles might have been the result of starting with a prototype based on an existing goal, maybe even a prototype initiated and executed outside of the municipal organization. It is still within the model, from our

perspective.

The model has to be scalable to be sustainable. We do not prescribe that the full policy design process be run through for every political issue, we simply say that there should always be a relevant and knowledge based goal statement in place to govern the administration's prototyping activities, but this goal may be re-used between issues within the same domain. In this way a new political issue may be attached to already existing goal statements. By having these goal statements articulated, and based on futures images (which are explained in the "Futuring" chapter), politicians have a way of understanding what citizens will need in the future.

Developing the Policy Design Model

How futures thinking and design methods converged on Trondheim

As shown in the process chapter, we had two large internal workshops, first to structure our insights, and later to ideate and decide on a concept. In the concept workshop, we sketched out similarities between design methods and what we had learned about the current process of policy making and its challenges. We also looked at what Trondheim is already doing that relates to our insights, with the university municipality cooperation and the leadership development initiatives as the two major factors. How these can be leveraged is explored in the chapter on implementation, and the ideas presented there also impacted the design of the model.

Prototyping for better user insights

As design students we have become familiar with the method of prototyping and testing through conducting projects and engaging in innovation design processes. We have found that it is a useful tool to discover what works, and how, and for whom. Especially on the last point, prototyping and user testing have opened so many good discussions with potential users about what is of meaning for them. Because of this, the idea of testing and prototyping within Trondheim municipality as a means to acquire user insights became a part of the initial conceptualization of the policy design model.

Mapping to strategic design and futuring

Through our insight work we uncovered how different decisions are made within the political process, and how the interface between the politicians and the administration works. With these findings we were able to map and compare this process to our understanding of a strategic design and decision making process. With this conceptual map in mind we drew upon theoretical knowledge of futuring within futures studies, our experience with the method from Vision in Design (Hekkert and Van Dijk 2011) and backcasting, to further develop the model.

Focusing on the right decision points

The process described in Vision in Design had some particularly interesting parallels to how local democracy is supposed to work, in that it has three small but very powerful points of decision. A client in this process can start by defining a problem area, or domain, and a time scope. The designer would then do all the research and synthesis necessary to produce an image of the most likely future and how people behave in that future. The client comes in again to take a stand and decide how they want to address or awaken people's goals in that future. Finally, to address these goals, the designer develops concepts, does backcasting to make short term versions of the concepts, and lets the client choose which concepts to prototype. Based on our knowledge of the political process and the workload on politicians, and feedback from two politicians, we adapted these decision points and dropped the one about deciding on prototypes - this would be up to the administration and the university.

How the insights are addressed in the model

The model is meant as a holistic concept to address our insights. Some steps address specific insights, as shown in the following table. To give an example, insight 4, "how might we anticipate and map the concerns of the citizens" has two connections. First, the futuring step is about understanding what is of meaning for citizens in the future, based on knowledge. This knowledge should include insights into human behaviour and how we function as a society. When it gets to prototyping, the theoretical future image has become something real, perhaps even tangible, and maybe something the politicians can experience together with citizens, in whatever role they might have or want to have in the context.

Another example is insight 7, which is about ensuring that tacit knowledge and valuable learnings are passed on the municipal organization. We argue that the future goals can be of value. Through articulating them, the politicians send a signal to the administration about what should be explored, meaning that even bottom-up prototypes can be seen in relation to the overarching goals, giving people on the operational level a means to show the value of their prototype, get more funding or get help to do a proper hand-over.

Insights	Futuring	
1: Complexity of municipal business		
2: University municipality	X	
3: A hearing is an arena for the citizen to protest. Would it not be an idea to have an arena for the citizen to be understood? And where the citizen could actively partake in informing political proposals before they are formulated, as opposed to after the fact?		
4: How might we anticipate and map the concerns of the citizens?	X	
5: How can utilize this space, which is meant to be a place for articulating questions, concerns, and engaging in explorative approaches for policy making?		
6: What does very politically detailed decisions mean for the long term development of the city?	X	
7: How might we ensure that learnings from prototyping activities can be acted upon within the larger organization of Trondheim municipality? How might we ensure that valuable tacit knowledge is passed on?		
8: Is it meaningful for the citizens of Trondheim that the municipality facilitates innovation by linking people, resources and research? If so, can these relationship inform innovative policy making	X	

	Articulate Goal	Prototyping	Debating & Deciding
		X	
		X	
		X	X
		X	
	X		
	X		
	X		
		X	

Insights	Futuring	
9: How can we ensure that what we put into the world is both both meaningful for the citizens, and a part of a democratic process?	X	
10: How might we keep the politicans inspired?	X	
11: How might we create a space where politicians' own "how might we.." questions can be explored in an innovative way?		

	Articulate Goal	Prototyping	Debating & Deciding
	X	X	X
	X		X

Chapter 5:

Futuring

In this chapter we will talk about creating futures images, and we will give a theoretical argumentation for the role and purpose of this step. We start by talking about why we need futures images, by describing how society is in transition and how decision making are affected by how we, as humans, perceive the future. Then we show what futures images can be, and give an introduction to the method we have used for creating them. Finally we introduce the reader to the field of futures studies. As an example, we refer to how a Finnish network of universities is concerned with creating futures scenarios and advising the finish government. In the next chapter we will explain how these images are meant to be used in the policy design model.

Futures Images

Futures Studies

Futures studies is the study of inventing, evaluating and suggesting possible and probable futures, and to help people evaluate different options (Futures Studies). Future researchers make use of results and findings gained in different scientific fields, and propose what different possible, probable and preferable states of the future we face. Researchers use these findings and propositions to then advice people, amongst them politicians, to help them focus their decisions for their desired future.

At the Finland Futures Research Centre they state that we can research the alternative development paths, as long as we bear in mind that the different end results have different levels of probability. Since it is possible to affect the quality of the future through single choices, it naturally is important to define what kinds of choices can lead to the best and most acceptable future. This why values and value discussions are so important in regards to Futures Studies. (Rubin, n.d.)

Why do we need futures images?

We are living in a period of transformation. Technological, ecological, social, economic change, and while we can not know exactly what the future holds, neither can we assume that today's choices and assumptions will still be relevant tomorrow.

Anita Rubin, a late researcher at the Finland Futures Research Centre, writes about how the change itself has changed in an article titled "Giving Images a Chance - Images of the Future as a tool for Sociology". We are in a period of socioeconomic and cultural transition, which means that many things that used to

be stable and permanent do not seem to be so anymore. Many long-prevailing beliefs and models of explanation are no longer valid or able to explain the world and its quickening change. The character of change itself has changed. People feel that because the world has changed, coping and adjustment require different actions, capabilities, and readiness from what worked before. (Rubin, 1998)

The future is not empty

"The future is not empty. The future is full of all the things that we have thrown in to it, and getting to the future is a question of negotiating a pathway through those things."

These are the words of the australian designer and professor of design futures at Griffith University, Queensland College of Art, as well as the author if the book "Design as Politics", Tony Fry, during a lecture at the Urban Institute of Contemporary Arts (Tony Fry: Penny W. Stamps Lecture at UICA, 2012)Anita Rubin also explains how futures images are involved in a reasoning in which question-answer approach is used, that has a lot to do with coping in the present: Whereas our present situation gives the tone to our general image and understanding of the future, our ideas and visions of the future actually more or less determine our present state of mind. They also then determine our present decision making and actions (Rubin, 1998).

Our perception of the future affect our decision making. Based on this knowledge it, it is arguably beneficial to be proactive and reflective about how we view the future. The futures images step is a means to facilitate and direct this perception, making sure these are realistic, and in the best interest for quality policy making.

What do futures images look like?

futures images are a presentation of what could be. In the final workshop we did during the work with this thesis, we presented futures images through actors telling a story. There are no definite requirements of how they should look.

They are carefully constructed snapshots of the future and the possible ways a domain might develop. Examples of domains are "education", "health" or "work". These images help focus attention to the most important factors driving change in this particular domain.

Images for exploring

The images do not predict the future, they are tools to help explore different ways the future might unfold. From this we, as people, may form a shared vision, develop strategies, and create high-impact policies to be implemented today. Images for a given domain, such as health care, should depict what each of the major stakeholders could expect in a certain set of circumstances, so that decision makers on many levels find the images useful. In the case of of health a futures images should give an account of the basic structure of healthcare in the future, as well as the attitudes of private and public sectors, different health professionals, health care recipients towards health care. Are the doctors full-time professionals, or experts with short term contracts? How do the nursers fit into this futures images? Do they still do routine check ups manually or do they spend some time taking and interacting with patients as a part of the care routine? Are the health care systems of the future focused on treating or on acting as recreational health promoting facilities for all, or perhaps a mix of the two?

Well constructed futures images must include enough detail to be useful for strategic planning, but not so much as

to become overly specific and irrelevant to the issues of interest (WHAT are scenarios? - OECD).

Hence, the futures images should describe the type of human behaviours that will possibly emerge, and give a depiction of the possible future contexts.

How are futures images made?

The future can not be studied directly. It does not exist in the present in the same way as the present and the past. Instead, it exists in the present as intentions that can be studied. We can also study such principles, states, developments and trends that bear an influence on the future.

Futures images can range from rather simple to quite complex pictures of the future, but they must always be plausible and challenging. To keys to producing useful to producing useful and challenging futures images are broad participation of stakeholders and careful analysis of driving factors and trends (HOW are scenarios made? - OECD).

Domain, broad participation and drivers

The most common way to build futures images is to first chose a focus area, such as the domain of health care, and a target year. Then, combining broad participation and trend analysis. Involve people with marginal stakes as well as those with central stakes in the issue. Invite these actors to brainstorm key factors driving change and development in the relevant domain. For health care, participants may point to the level of government funding in medical research, the market size for private health care, the population age, the salaries and working conditions of health professional, and public views on health in general and on health care. These drivers are then consolidated into a manageable number of generic categories, such as public and

private attitudes to health care, health care professional profiles, health care organization and structure.

Relevant trends

Participants then discuss relevant trends within these categories (for example, is nurses pay increasing? How much more involved is the private sector becoming?) thereby generating a picture of the status quo and possible directions of change. Analysing the relationships between different categories and trends gives a picture of the most important factors underlying change.

Staying with the example of health care, participants might conclude that health care structure affect several other factors, like doctors and nurses' working conditions and public opinions regarding health care, while the size of the market for private care might affect private-sector attitudes, nursing home structures and nurses' salaries.

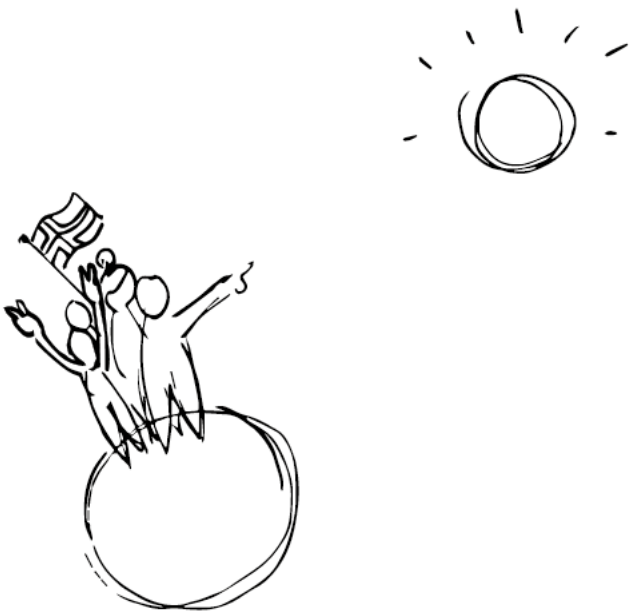
Understanding how change works

By considering the complex interactions between the factors, we can improve our understanding of how change works, and what we can do to guide it. The development of futures images itself is an important part of strategic planning. By focusing reflections and thinking about what the future may hold, improvement of awareness of the relative importance of current trends and issues, and generate an understanding of how various courses of action may unfold and interact in the short-, medium- and long-term (HOW are scenarios made? - OECD).

Futures images made by the University Municipality

In the policy design model the university municipality has the responsibility to produce these. This work needs to be done by an appointed team, these are the experts pointed to as secondary

users. This draws on the insight of the municipality working well as a facilitator and connector of different stakeholders. The team within the municipality that may conduct the work of producing futures images together with different stakeholders, will benefit from the futures perspective and understanding of different trends and driving factors. Arguably this team should later work on the prototypes regarding the same domains later on in the prototyping step.



Chapter 7:

Articulating Future Goals

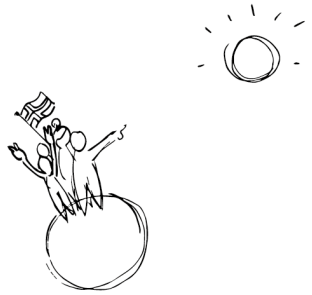
This chapter is about articulating futures goals. This entails taking the futures images, understanding the possible futures behaviours and contexts, and from this creating a future vision. This future vision is what the goal statement is meant to express. The statement is the bridge between the futures images and the prototyping step. The design of this step is based on experience from a strategy design course, and testing while working on this thesis. We will start this chapter by explaining what the goal statement is. We will also explain how politicians can articulate this goal statement. Lastly we will touch upon how the vision or desired future that the goal statement is mean to address works as an intermediary.

A depiction of how we facilitated forming these types of goal statement together with a group of politicians can be found the "Methodology and Methods" chapter.

What does a goal statement look like?

Taking a stand in the future

In the previous step of futures images, possible futures images where designed. In this step these images are presented to a body of politicians, who, based on their political value systems and representative power formulate a goal statement. This statement consists of four different aspects; a future behaviour, human goals (Chulef et al. 2001), and a specific year and domain. The two latter parts, year and domain, of the goal statement are taken from the futures images step.



An example of a goal statement, which is derived from the previously mentioned workshop concerning the formulation of goal statements, is "We want to people who studiy to make a difference to have the goal of security addressed during their studies, and a sense of belonging addressed by the community in the year 2030."

The goal statement needs to address the goals of people. An example of a goal that the municipality might have is to reduce emissions in order to reach the 2°C of the Paris agreement on climate change (The Paris Agreement | UNFCCC). But in order for this to make an effective goal statement in this policy design model, it is necessary to explore what this might mean for citizens. An example of this is "We want to people who start businesses to make a positive impact for sustainable development gets the motive of understanding addressed by building their business venture, and a generousness addressed by the community in the year 2030." In this example a domain, which a politician may have asked the administration to look into, and design futures images within, could have been "sustainable development". Another futures images domain that conceivable could have lead to this same goal statement is "entrepreneurship".

How is the Goal Statement made?

The process of creating a goal statement needs to be facilitated by someone who can ensure the appropriate formulation of the statement. We would suggest the committee meeting as the best arena to make these statements, and the committee leader as the facilitator. During the meeting the representative from the administration must assist and ensure that the statement is of such a quality that the administration can use it as a means to conduct appropriate prototyping.

By focusing on individuals' goals or motivations researchers have learned much about the reasons why individuals choose to engage or disengage in different activities, which will be expressed through behaviors (Eccles and Wigfield 2002). This is why considering specific future behaviours makes it possible to recognize the needs and underlying concerns of this behaviour. By formulating a goal statement that expresses that it

is a goal that these needs and concerns are to be addressed future behaviors can be supported or mediated.

The politicians also bring their beliefs and values into the goal statement. Any desirable future will contain a multitude of values, which arguably will be meaningful to the different people living in this future. In a sociological sense, idealism emphasizes how human ideas, especially beliefs and values, shape society (Macionis, 2012). Because beliefs and values shape our society, this has become a part of the design schema of the policy design model. By giving value considerations an intentional role in the policy design model, these may have an intentional role, as opposed to an incidental role in the shaping of society.

The desired future as an intermediary

This statement allows the detailed characteristics of a desired future to be intermediate. By doing so it can be an emergent property of the process of engaging with citizens and partners. In this sense backcasting contributes to a process of social learning about possible and desirable futures (Robinson 2003). We will address the aspect of social learning further in the next section about "prototyping". This step seeks to resolve the insights regarding policies that do not fit reality due to their high level of detailing. The level of detailing that has been observed in a number of policies is problematic because they force the choice of a future that is unfree. Meaning that the policy will not be able to cope with impending, and thus no longer be sensible in a future context. If we turn this trend around and seek to formulate policies that are open to different possible impacts, they must also open up for different solutions. And encourage the city to develop test arenas where these solutions can be discovered. That is why the goal statement is solution free, and instead value based and focused towards a goal.

Chapter 8:

Prototyping

This step of the model is about designing and prototyping concepts to meet the future goals. We discuss how a concept for the future can be brought into the present as a prototype, and how these prototypes can become an important source of user insights and a tool to create more meaningful policies. In doing so we will introduce the practice of backcasting, which is a method of planning that starts with defining a desirable future and then works backwards to identify policies and programs that will connect that specified future to the present (Brandes & Brooks, 2011). By using this method appropriate prototypes and advancements of the prototypes can be accounted for. In the next chapter, we discuss how the political debate and decision making may be changed by the other activities in our model.

The Prototyping step

Crafting Appropriate Interventions

Following the goal statement are the prototypes. Prototypes may be early versions of a product or service. They can be anything from temporarily changing the traffic in a street to running flipped classrooms in a school. Or perhaps cooperating with the national government to change laws in a limited area for a limited time to test a new social policy.

The purpose of this step in the policy design model is to enable evidence based policy making by informing the debate and decide step for the politicians through learnings from prototyping. Prototypes enable everyone involved in the policy design process to have shared experiences of possible future services, interactions or products, together with other citizens. Second, the prototypes can be designed with metrics that will enable a more scientifically based evidence of effect.

From a design perspective, the prototype is where user needs can play out and be understood in a practical sense, meaning that the politicians are not just informed by a theoretical understanding of the prototyping and its impacts, but by a multi-sensory and social experience. In addition to informing the policy design process, the prototypes will lead to learning for the municipal organization, the citizens, and the scientific community.

In practice, this step first requires the university municipality to design appropriate concepts to achieve the goal statement. The prototypes are then designed to explore features or characteristics of the concepts. If the timeline is too long, the concepts may have to be translated to the short term future

by a process known as backcasting. After the design phase, the prototypes can be executed and finally evaluated. At the end of this chapter we discuss our recommendation for all these phases.

Our recommendation

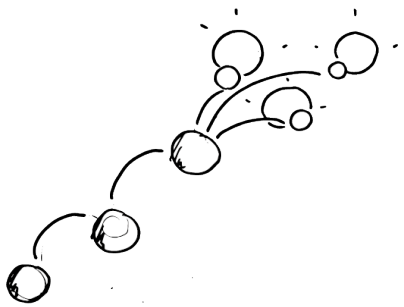
Performing the prototyping step for Trondheim municipality

Designing future concept

To ensure appropriateness it is fundamental to design concepts based on the politicians' goal statements. The research for the futures images can be utilized to understand opportunities and risks for the prototypes. Appropriateness is about exploring the problem and solution space relating to the goal statement in the future context, but also about the interests of stakeholders, ethical and legal considerations.

Backcasting to a short term intervention

Backcasting as a method is a way of designing back from the



future. It can start future goal directly, or an idea for a future concept that is not yet conceivable. By using the goal statement together with probable futures images, it is possible to describe a desired future that is conceivable. From this desired future one can instigate a process of backcasting. The fundamental question

of backcasting asks: ”if we want to attain a certain goal, what actions must be taken to get there?” (Lerner et al. 1997)

Typically backcasting is applied on long-term complex issues, involving many aspects of society as well as technological innovations and change (Dreborg 1996). Thus, this approach will not be necessary in any political decision, but will be useful in overarching strategic policy making. For example it is central to a strategic approach for sustainable development (Backcasting 2008).

Backcasting is a counterpart to forecasting. By using forecasting to make plans, the actions taken because on an account of this plan tend to turn the predictions into reality, however desirable these predictions are.

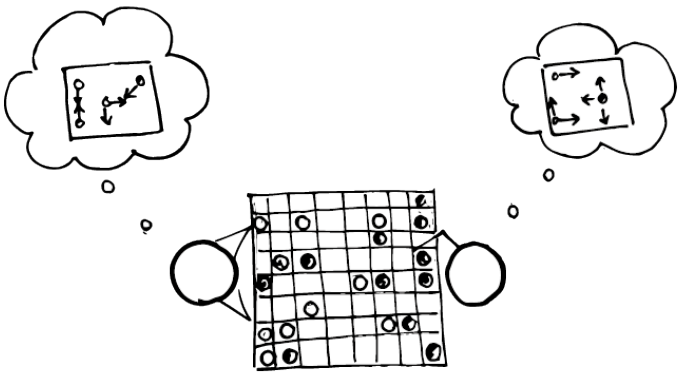
For example a government might look at data for the growth in road traffic. Using the growth rate, the decision makers might reach the conclusion to predict a future increase of 70% over the next 10 years. This conclusion then leads to the decision to build more capacity for the road network, to meet the predicted demand. However, what if instead the government set a goal of reducing road traffic by 15% and used that goal to shape its policy and decisions.

The latter is what it means to use backcasting instead for forecasting, as a means to shape the future. It is about beginning with a desired end in mind, which in this model will be the goal statement. Backcasting is dynamic and strategic. The principles defining success are fixed, as opposed to a jigsaw puzzle for the future, it might be thought more of as a game of chess. You know when you have won, when your opponent can no longer move their king without being taken. But in obtaining this outcome, strategy and an ability to take actions that can adapt to changing circumstances. Each move is evaluated against the goal. It allows predetermined strategies to be adapted and changed, depending

on how well they are working, or to respond to a new situation (Backcasting from principles vs. Scena...).

The initial plan for how to reach the goal is backcasting, and the steps taken towards this goal can be adaptable prototypes, that are subject to evaluation.

Designing the prototypes



To ensure the prototypes have added value and can provide learning outside the city borders, we propose that NTNU university, through the university municipality cooperation, has a role in designing the prototypes. It is important to have access to information about prototypes and experiments executed elsewhere in the world. This could inform the design and selection of prototypes in Trondheim, making sure to keep building upon existing knowledge. Additionally, the prototypes could be set up in a way that makes it possible to measure its' effects scientifically, as we discuss in the section on evidence based policy making. A university ideally has more research competency than a municipality. This was confirmed in our

interview with the project manager from the international innovation project, and was stated to be valuable to this project and for the municipality.

For the municipal organization, a good overview of existing activities and knowledge of municipal operations is important when prototypes are designed. By avoiding to repeat, and making sure to making known prototypes that are already going on elsewhere in the municipality, costs will be saved and innovative employees will be given credit. In addition to internal activities, relevant prototypes may happen as private initiatives in different constellations outside the municipal organization itself. These may be just as relevant for learning opportunities, in which case the university municipality could be involved in the appropriate phases of design, execution and/or evaluation.

In designing prototypes there may also be ethical and legal considerations. One example is the issue of fairness and equal opportunity when prototypes are run on only a portion of the city population. The municipality already has competency on evaluating the legality of political decisions, but some experiments may actually require specific legislation to be approved by the Norwegian parliament. The cost of such a process means it is probably only possible for high value prototypes. A recent international example of a policy experiment that required passing a legislative bill is the basic income experiment in Finland. In fact, limited law-drafting capacity at the Finnish Tax Administration was one reason why this experiment could not be performed as originally envisioned. (Kangas & Pulkka, 2016)

Executing the prototypes

Prototype execution will depend on the nature of the prototype, but we will give some general recommendations here based on the purpose of the prototype step in the policy design process. To inform the last step in our model, debate and decide, the prototype should preferably be executed in a way and in a place where it is visible to citizens, politicians, and the media. Ideally they should be able to have a shared experience of the prototype, and it should be possible to relate it to the human goals expressed in the goal statement. To ensure learning in the municipal organization, it is also important that the prototype is executed close to the line organization, with regular employees in regular units. We believe it is important to start seeing prototypes as a part of everyday operations, minimizing project organization and increasing internal commitment. To enable learning in the community at large, communication about the why, how, what, when and where is important. Some of this can be handled by the municipal organization, but the prototype designers will also need to be involved in this communication work.

The science community should have researchers following the prototype to observe and record quantitative and qualitative metrics. Of concern there is the potential trade-off between scientific rigour and continuous improvement and learning during the execution stage. Running the prototype in a way where the design is adapted to real world experience, may increase the quality of the experience and increase the quality delivered in the policy design process.

Evidence based policy making

Prototyping for evidence

In his article for the Design Theory course, Truls did a literature review to see if the designerly practice of prototyping could improve the capacity of a government to create more evidence based policies. On the topic of prototyping for evidence based policy making, Ian Sanderson wrote an illuminating article in 2002 (Sanderson 2002), in which he points at some major challenges with evidence based policy making.

Sanderson talks about pilot projects, which we could compare to the idea of prototypes in that they are a limited implementation of a solution. His main challenges are connected to the quality of the evidence. He critiques research competency in the social sciences (in 2002 in the UK), claiming that there is a low ability to generate transferable knowledge, and he cautions that political prestige will interfere with the ability to act on the evidence, should there be any. Furthermore, the complexity of the field makes it hard and time-consuming to measure and generate any effect with policy pilots. Our stance on this is that yes, we would also like the evidence to be scientifically sound, but that this is more of a challenge for the university municipality and the relevant fields of study to actually increase their capacity to isolate and generate useful knowledge. The potential problem is if the need for scientific rigour raises the bar and makes prototyping harder than it is today - this issue needs to be considered moving forward.

Secondary effects

Effects of prototyping on the individual and group

We have also looked into the potential for secondary effects of prototyping, to see if there are benefits that could happen regardless of the success of the prototype in relation to the future goal. Here are some of the findings, including a new one concerning how people involved in design can share their conceptualizations of the design, or their design schema.

Effect on individuals

For the effect on the individual, an article by Gerber and Carroll on the psychological effect of prototyping, mentioned the effect prototyping had on self-efficacy, interpreted by us in the context as the confidence in one's abilities to solve problems (Gerber and Carroll 2012). Furthermore, the authors cited Kolb's experiential learning theory (Kolb 2014), in which the iterative process of design, experience, abstraction and reflection helps increase competency from one prototype to the next. Both of these point to the potential of prototyping to help everyone involved develop as individuals.

Effect on groups

In 1990 John S. Gero asked "How is it that designers can begin designing with incomplete information and before all the relevant information is available?" He went on to answer his own question, stating that it is because design is an exploration process, what is relevant only manifests itself as the design proceeds and varies with the decisions taken (John S. Gero, 1990).

Through prototyping designers form their individual design experiences into generalized concepts or groups of concepts at many different levels of abstraction; that is, they

schematize their knowledge. Shema here means an underlying organizational pattern or structure, a conceptual framework. A schema provides the basis by which someone relates to the events he or she experiences. Such schemas consist of knowledge generalized from a set of alike design cases from which individuals can derive reasoning. In design, any schema must at least be able to incorporate function, structure, behaviour, and design description and be accessed by elements within these components.

From our experience designers document this type of schema in varying degrees. However, a designer will always have a mental image comparable to the schema described by John S. Gero. Trondheim municipality could see prototypes as a way to communicate these schema efficiently between different stakeholders, especially between the civil servants, the politicians and the citizens.

Another effect of prototyping is suggested by the author of the leadership philosophy called "Theory U", Otto Scharmer. In his book about Theory U, he considers prototyping crucial if a group is to be able to move from the present into the future. (Otto Scharmer 2011, page 25, 38)

Chapter 9:

Debating & Deciding

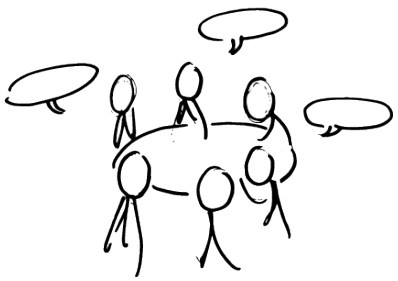
This chapter is about debating and deciding. It is the final step of the policy design model. We will explain how the step of prototyping can inform the political debate and finally lead to a new policy.

A policy is a deliberate system of guiding principles. It is a statement of intent, and is implemented as a procedure or protocol ("Jusinfo.no: Vedtak," n.d.). In Trondheim policies are adopted by the municipality administration.

The final political decision may be based on the learnings from all previous steps. In this section we will describe how debating will occur both before and after the prototyping. We will explain how the discussion will vary in character in each of these cases. And lastly how a policy may be derived from the latter of these debate events.

From prototyping to implemented policy

It is important to understand how the differences between a prototype and a full solution challenge the way politicians debate and decide. What is different in the implementation step, and sets it apart from the prototyping step, is the deployment into a larger system to take care of operations of the policy. Prototypes have to be re-designed into larger interventions, meant to operate for long periods of time compared to the prototypes. They may



affect a large number of peoples' lives, who may not easily choose to leave the impact area of these decisions.

Traditional debating

Political debates in Trondheim are carried out in a number of places. Examples of these are in committee and party meetings,

in high schools and at university, organized by voluntary organizations, in youth camps and at other public events. In the policy design model we envision that the structure, organization and execution of these debates will remain as they are. Unless they are subject to change by other forces.

Traditionally we turn to politicians for answers and opinions of what the best solutions are. We also expect well articulated arguments to back these opinions. Thus, political debates are shaped accordingly, opinions and putative preferable solutions, expressed back and forth depending on whose turn it is to speak. In the event that someone asks a question the political representatives are uncomfortable with, they are well trained in art of turning the conversation over onto a topic or a message that is important for their party to bring forth.

A new dialogue

As the toolbox of investigative techniques, which the design of Futures Images and the activity of prototyping are, it calls for a slight change in the rhetoric discourse of political debates. Solutions will be unclear until the learnings from prototyping activities have been harnessed.

When new challenges hits the agenda the debate needs to address whether it is important to learn more about these issues, and then instigate the design of futures images.

Talking about learnings

Following the prototyping step is another type of debate. As mentioned earlier in the prototyping step, the knowledge from the prototyping should be made explicit and known after the prototyping activity has been active for a suitable amount of time. Thus, this is where we talk about what we have learned so far, together with the citizens. The politicians may at any point decide that they would like to learn more or are satisfied before they make any resulting policies. It is natural to think that initiatives by citizens or other organizations might spring out of the prototyping. This might result in no need for a policy, or a completely different one policy then first anticipated. Through any debate concerning a prototyping activity these twists and turns are important to express. The city will be learning collectively and there needs to be an official arena to reflect and talk about these learnings, to bring as many as possible along.

The learnings will be in a number of different formats. Researchers might be involved to make objective observations

and measurements of the effect of the prototyping. Did its intervention manage to lower the use of plastic, of the ossisions of CO2 for example. But there will also be subjective and collective experiences that needs to be addressed, understood and talked about. Did the citizens find the experience meaningful for example, in what way and why?

More appropriate policies

These are the objectives politicians concern themselves with when making policies. This practice will not change. However, the policy design model are designed to help answers these question in a future oriented manner, which arguably will lead to better and more appropriate policies.

Chapter 10:

Exploring Implementation

We set out to design the concept so that it could become reality. In this chapter we explore what the municipality needs to start working according to our concept. We look at what it could mean in practice, and how it connects to other emerging initiatives in policy design and innovation in Trondheim municipality.

What the model requires

Resources, challenges and enablers

If we are to do what the model prescribes, who is going to do it? What are their tools, and which hurdles have to be cleared away?

People and competency

Before we get to competency and people within the municipality, it is important to mention that one of the most important resources moving forward will be citizens themselves. Prototyping is an activity within the model, but the everyday prototypes, small and large, of citizens will be just as important as those initiated from within the municipal organization. Such prototypes can use other instruments and have a different profile of social and economic sustainability than the municipality can achieve. For the model to work, though, the municipality needs to be competent in evaluating such external prototypes. How do they meet the future goals?

In our model, if we disregard the highly variable cost of prototyping, the most resource intensive aspect is creating the future images and designing concepts to be prototyped. While the futures images should be based on knowledge and the best available numeric predictions, the clustering and interpretation of driving forces will be a work requiring design competency, as will the reduction and communication these images to politicians, the public and the media. We do not yet have a good enough of idea of how many hours are needed to use the model

for different types of political issues, but this can be found out with a combination of prototyping and researching the cost of using future research consultancies.
On the politicians' side, what is mainly needed is resources to facilitate good presentation of future images and good involvement in the prototypes, as well as facilitating the workshops on articulating future goals. In a sustainable model, this competency should be part of the organization, and this is an opportunity to try and leverage the competency of senior advisors from the administration.

Legislation

We have not yet seen any legal hurdles in implementing our model, but we are quite sure they will come up once the municipality starts wanting to prototype, and to have other forms of interaction between politicians and the administration than today. We propose therefore that the communication of future images and future goals, and anything dealing with a "most likely future" also clearly identifies that it is not a given, and that the future goals are formulated in a way that is not imperative - that would defeat its purpose.

Adapting political forums

The forums are already there both for articulating future goals and for debating and deciding. However, the committee meetings need to be more a workshop arena to allow the politicians to relate to the future images and each others impressions and stand on these future images. The hurdle in doing this is more about behaviours and culture than economy, so if we are to succeed, it is of crucial importance that the leaders among the politicians are on board and want the model themselves. Our impression so far is that the model is interesting to different people for different

reasons, so it has to be communicated as both economically and socially valuable.

Systems and things

The previous chapters discussed methodological tools for the different steps of the model. To implement the model, no new piece of expensive equipment is needed. It can be done with current technology. That says nothing about the things Trondheim may want to prototype, of course, but that is not what we are discussing here.

To keep track of what is going on from an overall perspective, all stakeholders need some way to keep track of issues in process and how they connect and make up a larger picture. This can be done manually, even in a shared spreadsheet, but what is important is that presentation and communication is thought through, allowing the politicians to spend their energy on the questions that matter.

Perhaps the most important system outside of the municipality itself, is the university, and the university municipality as an integrated system. We have not looked at the particulars here, but the quality of future images, the

Media

The model is about letting the politicians be more as designers, to thrive more in uncertainty (dealing with futures images), and to express more certainty about why we do something (future goals) and less certainty about how we should do it (prototyping). How can the media be a part of this? This is something we recommend paying special attention to if the model is to be prototyped and implemented.

Already on our way

Leveraging other initiatives

Through our insight work, we have learned of many interesting initiatives already underway in the municipality. One of the advantages of working at the strategic level of an organization is that you have the opportunity to leverage different initiatives in support of each other. Here we look at some of these opportunities. We are not saying that the policy design model should be implemented at all costs, rather we want to point ot opportunities for prototyping, implementing or strengthening it.

Potential initial projects

We have learned that the municipality is considering to prototype the vision in design method on climate gas emissions. Here the future goal is already set, and although it is of a technical sort, it could still be translated to concern human goals. Since our concept has been inspired by the vision in design method, this could be a very valuable step on the way.

Another and much more comprehensive potential initial project is the next 10 year plan, called "kommuneplanens samfunnsdel". This is the main document concerning human goals and values on the strategic level across all sectors for the municipaliteis. Municipalities are required to make this plans and update them, and the process of making a new plan starts this year. While it is unrealistic to be able to use the full model for all sectors at once at this time, the fact that the document should cover so much and have such a long time frame gives many opportunities for testing components of the model or

maybe even testing the full model for a limited domain/topic.

Leadership development

The comprehensive leadership training of 800 leaders, including training in design thinking and innovation, is promising for the prototyping capacity of the organization, and the same goes for the introduction of 2 more levels of leadership. One of the goals for the municipality with these investments was originally to reduce sick leave (Brennås 2017). Now the focus is also to increase creativity and availability of leaders to support and not least help make visible the inventions and prototypes of their employees. This bottom-up prototyping can, just like citizens' prototyping outside the municipality, be a great asset. To help employees and leaders learn from colleagues and the world at large, and to help politicians and executives learn from the prototypes, our concept could deliver important competencies.

Innovation in participation

The majority coalition has asked the administration to recommend innovative citizen participation initiatives. While this, to us at least, has connotations of "bottom up" initiatives, we believe that innovation in representation should be included in the discussion. Our concept is an attempt at this. The policy design model would also be strengthened by more bottom-up participation initiatives, because they bring citizens closer to the decision makers, ultimately improving their access to user insights.

Another potential for better user insights, and an increased focus on meaning and human goals, lies with new technology. One such tool being tested by the municipality now is the SenseMaker suite (SenseMaker® - Cognitive Edge), a type of technology that removes a layer of interpretation from the

typical survey, and adds more possibilities for expression. We think it could be valuable even for political parties in developing more value-based election programs.

Municipality merger and politician training

Trondheim will soon be merging with the nearby municipality of Klæbu. While the increase in population is very small, just about 6000, the consequences for the city council may be more substantial. At the very minimum, its format and way of working is being re-thought, which means some trial and error, and a good time to test new ways of working in the committee meetings. Another opportunity for change is in the training of politicians. All new politicians are trained in proper procedure, and at one of the committee meetings a politician asked for more frequent refresher courses during their tenure in the city council.

University municipality

The idea that the university is a source of knowledge for the city (futures images) and that the city is a laboratory for the university (prototyping) is not just an opportunity, it is at the heart of the model. We believe that it is in leveraging this cooperation that the municipality, by extension through the university, becomes an organization truly capable of learning and innovation.

Trondheim - the design city

Through an increasingly forward looking design education programme, and an increasing number of highly competent designers operating in the city, the competency to create and communicate the future images, concepts and prototypes the model prescribes is increasingly available. These designers are not just working at consultancies, they are working in-house in corporations such as Evry and research and innovation

organisations such as Sintef and Innovasjon Norge. Thus, it should be possible to assemble the expert team, which has been referred to as the secondary users of the policy design model, which preferably consists of professional designers working together with the administration in Trondheim municipality.

Business case

How to approach cost and benefit

Eventually, an implementation discussion will come down to an analysis of financial cost and benefit. How many hours are needed to create futures images? How does the choice of domain and timeframe influence this? And how can the benefits be valued? What is the probability of success? We do not argue against doing this type of cost/benefit estimation, in fact we stand with the authors of a new Strategic Design book (Calabretta, Gemser, & Karpen, 2016) in that developing a business case is an essential task in preparing for implementation of a design concept. Instead, we would argue that it should not be done prematurely, and we would argue that there are important secondary effects (besides that of more meaningful policies) that should calculated into the benefit, and that there are smart ways to reduce the costs and risks.

Prototyping before calculating

The policy design model needs to be tested. Prototyping should improve the quality of the business case by giving more certainty in the estimated costs of implementation, and a better understanding of the potential benefits. Additionally, prototyping can give an understanding of the probability of actually achieving a successful implementation regardless of the money spent.

Secondary effects add value

We would argue that the model gives politicians more control over the effectiveness of municipal investments, while also

increasing project efficiency. Through early goal-setting, back-casting and prototyping, there will be more awareness of whether an investment has a chance of being effective in taking the city toward the goal or not, and more opportunities to change direction if not. This is also about efficiency of resources. Some hours and money spent early to prototype and change direction if needed, saves a lot later. See for instance Barry Boehms old table about cost of change in IT projects (Boehm & Others, 1981, p. 40).

Perhaps more importantly than investment costs, the model affords a re-thinking and innovation for municipal operations - utilizing the goals, backcasting and the design competency to work on creating a more efficient and goal-oriented organization

Finally, if the benefit is shared with other organizations, it can add value to society and even decrease the cost of operating according to the model. The model is aligned with the idea of the university municipality, and the idea that the city is a lab for the university. The same idea translated to partnerships between the municipality and private enterprises is part of the eu grant project we looked into in our project.

Reducing cost and risk

Perhaps the best way to reduce cost and risk is already mentioned, that the model should be prototyped. Further, the policy design model should be implemented in tune with the organization, preferably strengthening and being strengthened by other initiatives. It reduces the risk, and spreads the cost. Another important point to reiterate here is how our concept should not come in addition to today's way of working. The competency to facilitate the articulation of future goals, for example, should be taught to city council secretary and the

politicians. The competency to disseminate knowledge in a way that helps create future images could be taught to professors at the university, saving work hours in the municipality. Likewise, prototyping should not just be something projects do, it should be a line activity in the municipality. These things are not just about reducing risk and cost in the business case, they are what is needed to make the implementation sustainable.

Chapter 11:

Discussion

The purpose of this master's thesis was to learn about Trondheim municipality as an organization, and explore the possibilities for design practices within this organization. Our motivations were to find out whether the municipality engage in practices similar to design methods to inform their decision making. We chose to focus on the use of "user insights" in decision making. This is because "user insights" are an import part of a design process, and designer use these type of insights to inform their decision making in the development of a design outcome.

The Starting Point

User insights on a city level

We started our work by looking for "user insight" processes in Trondheim municipality. Our intention was to understand whether methods and practices from the design field might be of benefit to Trondheim municipality. Our rationale was that if we found that the municipality is engaged in practices that are carried out to find "user insights"or could benefit from "user insights", there would be a possibility for improvements in this area, where designer might be able to be of help. Thus, also benefit from methods and practices used in the design field with the intentions of discovering and utilizing "user insights".

At the beginning of our thesis work we were not certain whether design practices, or design professionals as such, could contribute to Trondheim municipality as an organization.

We found that the municipality works in ways that are similar to design practices. They use trial projects and have started to use prototyping, as an activity for improvement. The administration is also motivated and working towards becoming a more innovative organization, who is better equipped to deal with transitions and can provide the citizens with meaningful services, as well as work more as a platform and support for citizens' innovation.

Topics of innovation, services and platforms are areas that designers increasingly concern themselves with. Emerging topics in the design field, like transition design, align with current concerns of Trondheim municipality.

Advantages and disadvantages of the concept

Adapted to Trondheim municipality

Throughout this master's thesis a policy design model was designed, a model that is still at a conceptual stage. It has many elements from the design field.
Within the the policy design model, there are different actors at different stages, and they all take part in one design process. This is an adaption to the organization of Trondheim municipality. The idea of the model is for each of the steps to allow innovative actions in the next step, all the way up to the political decision. We believe that this is valuable to Trondheim municipality.

Embedded in the political process

The way the model is designed, it is embedded in the political process. We see this quality as a means to tie innovative processes in the municipality to the democratic process of the city. The intention is for the whole city to be a part of more innovative way of policy making.

However, accomplishing to anchor the process of innovative policy making into the political process will require significant time and resources. We recognize that there will be resistance because of this. A desire to start the implementation of aspects of the model from several stakeholders within the

municipality might be necessary. How to garner this interest is not something we have looked into in this thesis.

Producing futures images

Developing the relationships and setting Trondheim up to be able to produce futures images will also be a resource-intensive process. These are developmental and organisational aspects that we have not had the capacity to examine when developing the model. We have attempted to answer why the different steps of the model makes for opportunities of better policy making, and kept our work confined to this as we designed it.

Working and dealing with futures images may be challenging for both the administration and the politicians. The forums of the City council and the Committee meetings in combination with traditional channels of communication between the administration and the politicians are well suited for the exchange of information concerning these images. However, the administration needs to develop ways of designing them and presenting them that works in a political context. The process of getting used to futures images within the political arena will require a challenging phase of adoption, as these are new and unfamiliar.

Managing the workload

Another challenge is managing the workload for the administration and the politicians. Simply adding the activity of futuring, without looking into how one can transition from traditional ways of working with policy making into more futures based policy making, will prove too much.

Adapting to using futuring and prototyping will not only challenge the politicians and the municipality administration, it will be challenging for the public and media. These methods will

bring with it a level of uncertainty in policy making that either of these groups are accustomed to. The intention is that in time they will trust the process itself, and take part in the exploration of new policies.

We are also concerned that the different emphasis on values between political parties may make the future goal step more attractive to some parties than others, and that this could hinder adoption of the model.

One potential issue with prototyping and evidence based policy making is if, as stated in the chapter on prototyping, the need for scientific rigour makes prototyping harder to initiate. If the university municipality is to have a stake in the prototyping, it could be an issue. But it remains to be seen how the balance will be - perhaps the university will use day to day municipal operations as its lab, and focus less on the innovations.

Contribution

Designing to improve policies

This thesis contributes to the area of design within the public domain, and especially for policy making. In recent years government initiated design labs has been established. These include the MindLab in Denmark (Meike et al. 1988), Helsinki Design Lab in Finland (HDL Blog - Helsinki Design Lab) and the Policy Lab in the United Kingdom (Policy set for lab survey 1978). These labs where set up to test how design principles and methods could improve the "pace", quality and deliverability of policy in the Civil Service' (UK Cabinet Office launches new polic...)

Much like the work of these labs we hope that our thesis can contribute to the conversation about how to embed learning in policy making and a conceptual model of how and when strategic design methods adds value to policy development. More evidence of impact and clear examples are still needed.

Politicians as users

In addition to this our thesis adds a body of insights and considerations of how to involve politicians into this process of utilizing design methods. We believe that this is an area that has been overlooked, and that the way we have worked to put politicians in the "user" role of our design is a contribution. The politicians are important actors in making innovative policy making work.

In the UK for example a large amount of design training work has taken place in central government amongst civil

servants, but little is mentioned about politicians (UK Cabinet Office launches new polic...).

Our thesis adds to the design literature that describes design work in the public space as an integrative process concerned with both more and less visible stakeholders, and where the designer role is distributed across different groups and professionals both in and outside of the municipality organization.

Reflection

A unique opportunity

The whole process of working with this thesis has been a lot of fun. We spent quite some time setting up rules for how to work and testing several ways to cooperate in the beginning, and adapted as got to know each other better. We have been able to work with some very interesting people, processes and institutions, and feel that we have contributed, and are building a platform to keep on contributing in a meaningful way. We would have liked to test the entire model, but we feel confident about currently presenting it as a concept.

Working directly with politicians

Our partner in the municipality recognizes valuable aspects of our concept, but also the challenges. The administration is, as mentioned previously, working from the inside to create spaces and processes allowing for more innovative initiatives within the municipality. Due to the characteristics of their formal relationship, civil servants, at least below the executive level, have a limited opportunity to work with and investigate how the politicians make decisions. As students, we have been able to bypass this hurdle, and work directly with politicians to design a concept based on unique insights into their needs.

Unknown territory

We have been, and are still, extremely ambitious on behalf of our field. At the same time, we were humble in approaching the field of policy making. To explain, we can draw a parallel to how the field of interaction design has developed. Designers

have contributed greatly to making technology meaningful and usable for people. But designers are not hired to program computers. And it took quite some time before designers became good interaction designers! We were entering unknown territory, not just as designers, but as individuals. Sometimes this has been hard, like when we tried to find support in the design literature. It was hard to find literature about design for politics that was not entangled in ideology ("more co-creation!") or specific goals like ecological sustainability. We have little against co-creation, but the citizens might! And we want sustainability, but in this project we have been more concerned with empowering politicians to get us to whatever goals their voters are concerned with.

And when we finally had to write a thesis about our work, the world of academic writing was also unknown territory! We would have loved to report some statistically significant proof for the value of designers in the political arena, but we cannot, and we never set out to do so. Still, in the end, we are confident that the story about our concept and how the politicians took to working with it should be valuable for anyone trying to take design into politics in general, and for Trondheim municipality in particular.

Working as a team

It has been invaluable to be two people who work well together. Especially for this project, where the complexity meant we constantly had to keep several variables in mind and go through a lot of deliberative decision making. Articulating a question or an idea is a valuable exercise in itself, and being able to do so to a fellow designer who is concerned with the same project has helped our work.

Chapter 5:

Conclusion

In this master's thesis we have designed a model for policy making - which we have called the "Policy Design Model". The motivations behind making this model was to investigate whether design principles and methods could help improve the quality of policies in Trondheim municipality.

Contribution to Trondheim

A starting point for Trondheim municipality

This work gives a starting point for Trondheim municipality to explore a more future proof and value based way of designing policies, and a suggestion for how to connect this with existing and emerging processes and initiatives within the municipality.

For the citizens, more prototypes situated in the city will offer more opportunities to make meaning of the city and the municipal services, and to make their concerns and ideas known to the politicians and civil servants of Trondheim.

Our concept shows how design practices can contribute to the broader process of designing a city to be meaningful for its citizens. The role of the designer within the municipality could be that of a facilitator, futures researcher, concept designer, or perhaps a teacher of design methods, much like the units described in the discussion, for example MindLab in Denmark.

Future work

Starting to use the model in Trondheim municipality

Further work needs to be done in understanding how futuring can work in Trondheim municipality. There needs to be more prototyping on different scales connected to political goals to see how the work as instruments of learning. We would also like to see testing done within Trondheim of the different steps in the model in order to reiterate and refine it.

Understanding the complex processes of policy design

For the design community at large, working on understanding the complex processes of designing and implementing public policies is needed. The utilization of design practices and design methods in relation to public policies is gaining momentum, but it is still a fairly new territory for the design field. It would be interesting to see how the design field might cope with and develop while working with policy design and implementation processes that grow over long periods of time, and may deal with a very large number of stakeholders with different interests, who come and go throughout the process.

We would also like to see politicians actively involved in innovative initiatives and design projects in the pubic domain, as there is potentially much work to do here in understanding their role in society moving forward.

Last, the question of how design within the public space might contribute to meaningful policies for citizens needs further looking into.

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Appendices

A1: Glossary
A2: Vision in Design walkthrough
A3: Workshop politician 1
A4: Workshop props
A5: Reflection sheets

A1: Glossary

Here we present a short list of terms used in the thesis, to clarify the difference between the thesis and the project, and to give a bit more information about the political bodies of Trondheim municipality.

Administration
The administration is the body of civil servants that manages the different divisions of the municipality and reports to the politicians. Their duties are governed by several national laws about everything from worker rights and sector-specific regulations of quality of for instance care for the elderly, to overarching laws about municipal operations and public planning procedures. Additionally, they are governed by the decisions passed by the city council.

Building Council
The building council consists of the same members as the executive committee, and it is the first political touch point for zoning plans. They also have authority to decide on complaints over building permits, and they decide what should go into new zoning plans.

The Project
In referring to "the project" we refer to our masters' thesis project, which resulted in the concept and the thesis you are reading now.

City CEO
The head of the entire municipal organization, who reports to the politicians. His title in Norwegian is the same as the title

of his office - "rådmannen". Formally, politicians titulate his representatives as "rådmannen" in meetings. The city CEO heads up a team of executive directors.

City Council
The City Council ("Bystyret" in Norwegian) is the governing body of the municipality, meeting once every month, and currently consisting of 67 elected representatives from 10 different parties. Most are volunteers, and some have a 10-20% position to ensure they have time to do their duty. Only the 10 who serve on the executive committee have paid full time positions.

Civil Servants
The civil servants are the employees of the municipality. In this thesis we mostly talk about civil servants in the administration, but we use the term also to describe teachers, nurses and gardeners working on the operational level.

Committees
The city council has a number of committees who meet the week before every city council meeting to discuss and vote on suggestions for the city council. There is one committee for every major division of the municipality, with one exception. Additionally, there is a youth city council, and councils for students, elderly, the disabled and one council on diversity. These are constituted to advise the city council on matters of relevance for the different councils.

Executive Committee
This committee consists of the 10 full time politicians of the city council, and they meet every week to address matters of economy and matters too urgent to wait until the next city council meeting.

Executive Model
This is the governance model implemented in Trondheim. Norwegian law has two models, the other being the parliamentary model where a politician is in charge of every municipal division, with no central CEO or CEO office.

The Model
The model refers to the new model for policy design in Trondheim Municipality as presented in this thesis.

Partner (in the municipality)
Our partner was our closest contact with the municipal administration, helping us to set up the project, understand and follow their innovation work, and get access to other civil servants.

Political issue
In this thesis, the term political issue usually means a uniquely identifiable issue that has been brought before the city council to vote on. There are several ways to do this, see appendix 8 for a visual overview. The council is free to formulate the decision they vote on, meaning that an issue can start as a question and end as a detailed statement.

Parliament model
See executive model.

Politicians
These are our primary users. With one exception, the politicians we worked with in our project were all on the City Council of Trondheim Municipality in the current term (2015 - 2019). The one exception is the advisor for the conservative party's representatives on the city council (see the text about him in the next section), who also serves on the regional council.

Staff of advisors
All executive directors in the municipality them have a staff of advisors, all of our civil servant interviewees, as well as our partner in the municipality, were part of the staff of one of the directors.

Thesis
The thesis refers to this document.

University Municipality
Trondheim has signed a contract with NTNU to become a university municipality, giving the city access to the knowledge and network of the university, while giving the university access to the city as a laboratory. ("Nå Er Trondheim Kommune En Universitetskommune" n.d.) The contract includes the co-financing of several research positions, and a programme to implement the contract has been initiated. Our contact in the municipality serves as programme director for the municipality, and directors and deans serve on sector-specific steering groups.

A2: Vision in Design walkthrough

The vision in design method has inspired the design of our concept, but unlike many other design methods there is not a free design kit or similar online to introduce it. Therefore, we take the reader through a simple example here. It is constructed to be explained quickly, and not at all knowledge-based, so the reader should keep this in mind. For a more thorough understanding, we refer to the book. (Hekkert and Van Dijk 2011)

Vision in Design and knowledge

In the Vision in Design process, clients come to the designers with a problem, from which the designers deduce a context. A hypothetical example may be that a producer of liquid soap for the EU market is losing market share and wants to innovate to stay relevant in the future. From this, the designers may deduce that the context is "domestic personal hygiene in the EU". The process requires such a context, as well as a time scope as the starting point for the design process. The future context could then be defined as "domestic personal hygiene in the EU in 2030". On that basis, the designers go to work researching any factors that have influence on this domain.

By asking questions such as "what is personal hygiene", "what is a home", and "how will the EU evolve over the next 12 years", the designers already have some starting points for research. The factors are either principles (things that will always remain the same), states (situations that have come to be and most probably will remain so for the time scope), developments (things that are changing) and trends (behavioural responses to

developments). Additionally, the factors should can be sorted by field of study. These two dimensions will say something about the coverage of the research.

A principle of biology relevant to this context may for example have the title "Bacteria grow exponentially", and a description that details the conditions for bacteria growth. Similarly, a development in biology may be "Bacteria are becoming increasingly resistant to anti-biotics". And a relevant trend in architecture may be "it is increasingly common to live in high-rise buildings".

By researching literature and interviewing experts, factors are gathered to illuminate the domain from several angles. Depending on the time scope and complexity of the subject matter, this could mean between a hundred factors and two hundred factors. The limiting factors would be the budget, and the methods used to cluster and understand the factors - this comes next.

Vision in Design and futuring

The next question is how the domain develops, based on the factors. To understand that, the designers cluster the factors to find the driving forces of the future domain. Already here, interesting insights may develop. Perhaps anti-biotics resistance clustered with factors about a trend to move into eco-villages and a state of poor health services in rural areas to create a driving force the designers named "a lethal cold", or perhaps the high-rise trend combined with an economy trend about subscribing to groceries and the physics principle of "gravity is not the strongest force" to a cluster about airborne groceries? To go from this to future images, the interrelations between the clusters are explored. How do they map out? A system of axis or other type of relations is drawn up. For simplicity's sake, maybe one of the axis

became living close versus living far apart, and another became "health conscious lifestyle versus "time conscious lifestyle". The next question is how people behave in these four quadrants relating to the quadrants? What is important to them? For the health conscious person living close, perhaps the behaviour is like that of a cat patrolling its territory, constantly trying to ensure as large a clean area as possible, making sure others' markings remain as short as possible?

Vision in Design and future goals

The client's next formal decision would then be after the designers have presented the future image as an image of future behaviours. On that basis, the client has to decide, and articulate, which behaviours they want to target with their new product/service, and which human goals they want to address in people adhering to that behaviour. This becomes a goal statement. For the patrolling cat person, maybe the client wants to address the human goal of bodily sensations, awakening the pleasure of bodily contact? (see appendix X - taxonomy of human goals).

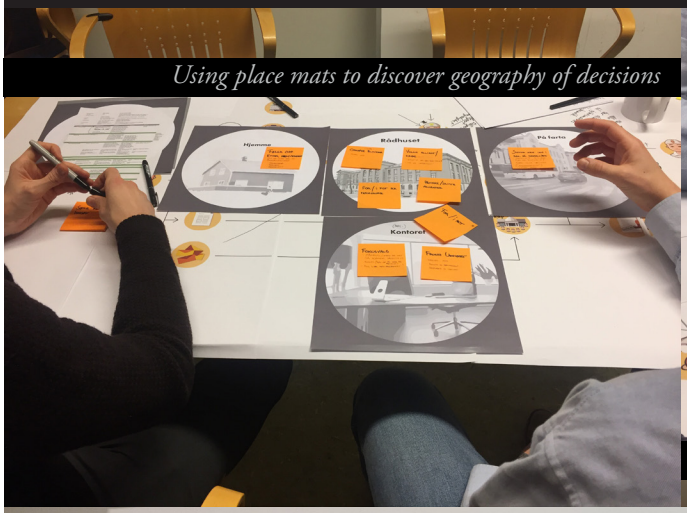
Working backwards from the goal

The designers use the goal statement to guide the rest of the design process. Based on the goal statement for the different future behaviours, they try to understand which characteristics a product or service would need to have in order to meet the goal. The book recommends that designers first understand the interactions between the users and the still undefined products or services, before they finally design concepts for the products or services. The client may then choose which concepts to prototype and/or implement.

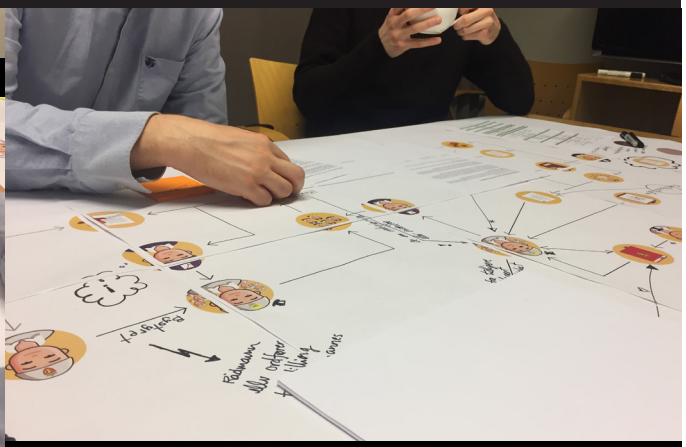
A3 - workshop politician 1

	Background	**Description**	23 nov, 13:00-14:30h		
	Purpose	Why	Explore decicion types		
	Success criteria	What to achieve	Discover decicions that matters (and how they matter), for the citiens of Trondheim. And find criteria to categorize them.		
	Context	Part of a process?	User (elected politician) insight phase - 2nd interview		
	Team	who, how many, which types, roles, responsibilities	Truls (facilitators), Marthe (co-facilitator/main documenter)		
	Participants	who, how many, which types, roles, responsibilities	*******		
	Environment	place, atmosphere	IPD video rom		
	Form	Process methods, areas of attention	A mix of **business origami** and **behavioural mapping** (bring "Universal Methods of Design")		
10:00	**Stage**	Desired output	Facilitation	Exercise	Material
	Introduction	Provide info about the Master Thesis, facilitators, plan for the session	Introducuction of the Master team and the Master theme, describe where in the process we find ourselves, what we are going to do today, and how this can help us further		Tangible overview of the session
		Share agenda	Explain purpose and give overview of exercises		
		Get to know participants	Say nice to see you again!		
10:05					
	Warm up	Priming	Let ***** sit down and think about being a politician, ask some questions that gets him into his role and thinking about his responsibilities. Maybe there is some case he has prepared for the next City Council meeting.	Priming: Tenk på hva som gjør deg stolt over å være politiker, hva ville Trondheims befolkning (om de hadde visst alt du foretar deg for de) satt pris på. Skriv ned noen stikkord på Post-Its.	PRIMING: https://www.fenwicksoftware.com.au/blog/using-priming-activities-to-improve-workshop-outcomes/
10:10					
	Find decision points	Probe a significant story	"Let us go through the decisions you make while preparing to vote on a matter." We listen, maybe start putting out props that we have prepared for the mapping	Tell us about a recent trip with your comitee or a case you have been preparing for for the upcoming City Council meeting (add new *spaces* for decicion making if needed)	Pens, paper, props ("house base/underlay" card etc.)
		Start getting into the decicions that led from A to B	Ask investigative questions - let ******* say what he needs to say	Put a marker on decicion points that allow for writing	post-its or prepared markers, pens
		Get to the underlying intentions/motivations/level of decicions	Ask investigative questions - let ******* say what he needs to say	Write keywords on the markers, if ******* is comfortable doing it himself, let him do it also	postits or prepared markers, pens
	BREAK				
	How do the decicions matter	Find out where (if any) the bases of decicions comes from	Ask investigative questions - let ******* say what he needs to say	Write and draw on the borad, make new representations if needed	postits or prepared markers, pens
		Find out what outcomes each decicion led to	Ask investigative questions - let ******* say what he needs to say	Write and draw on the borad, make new representations if needed	postits or prepared markers, pens
	Energizer				
	Present results				
			Ask ****** for feedback, explain that we might want to do this with others, and that we want to improve		
	Wrap up	Conclusion	Thank everyone, summarize what we have done, and what we will use it for (categorizing; which will be useful when we.. etc)		
12:00					
	Feedback	Get feedback	Ask ******** for feedback, explain that we might want to do this with others, and that we want to improve		feedback sheets, pen, or write ourselves

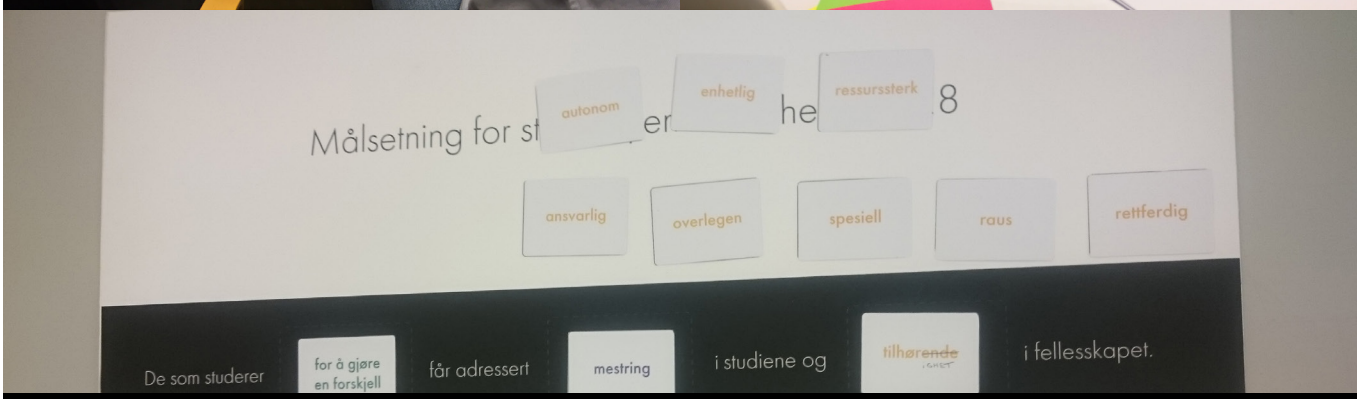
A4 - workshop props



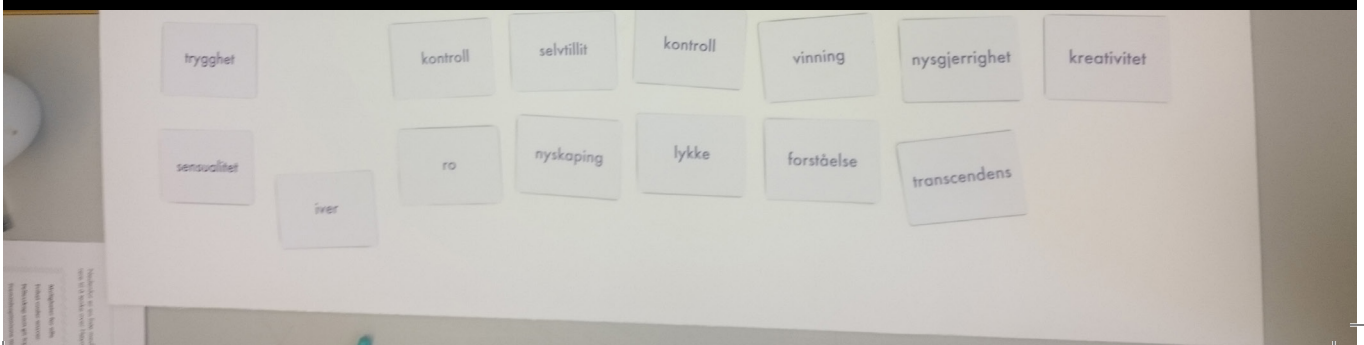
Using place mats to discover geography of decisions



Discussing and correcting visualization of political process



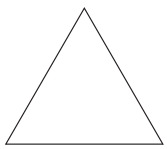
Articulating goal statement in final workshop



A5 - reflection sheets

Fremtidig adferd 1, 2, 3

Er det noe du **biter deg merke** i ved de forskjellige livssituasjonene og adferdene? Hvordan er det å være disse menneskene?
Eller noe du ønsker å **spørre om**?



Fremtidig adferd

Hvilken fremtidige adferd har du valgt?

Beskriv adferden:

Noe som gjorde **spesielt inntrykk** på meg:

Hvilke **prinsipper** og **menneskelige verdier** ligger til grunn for at jeg valgte å støtte opp om - eller søke å endre omfanget av denne framtidige adferden?