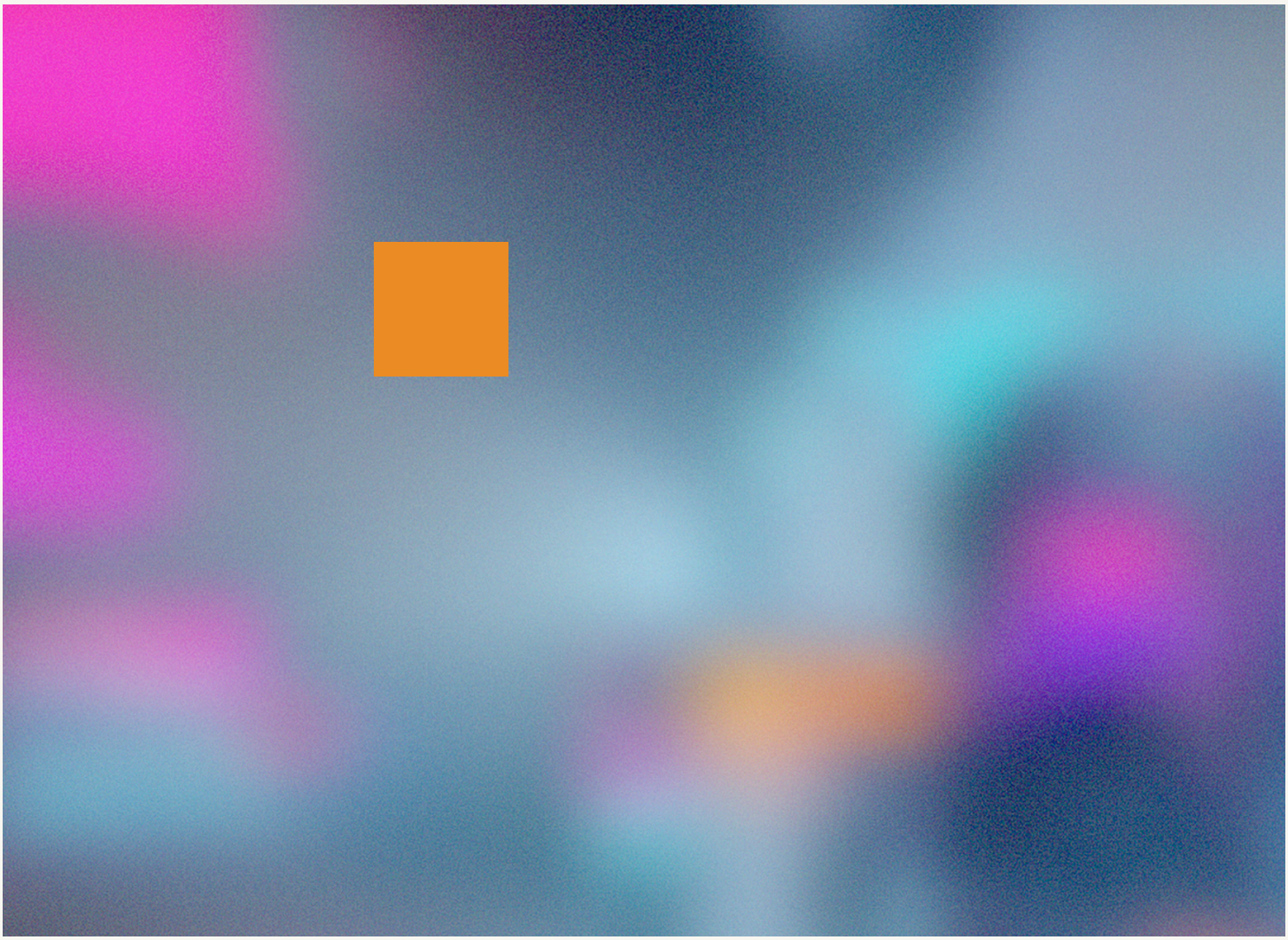


Helpful AI

A design project exploring citizen-centric AI in digital public service delivery.

Helpful AI

Field
Interaction design

Candidate
Christoffer Nydahl

Supervisor
Mosse Sjaastad

Illustrations by
Streamline

Photos
My own, unless otherwise noted

The Oslo School of Architecture and Design – Spring 2022

Executive summary

Helpful AI is a design project exploring citizen-centric AI in digital public service delivery.

The Norwegian Government's goal is an efficient public sector that provides good services for its citizens. However, in the near future, Norway will face challenges that threaten the sustainability of today's welfare society. Less economic room for manoeuvre, an aging population and environmental changes will require new ways of working.[1]

One of the answers to these challenges is very likely to be further digitalization of public services and the Norwegian Government is interested in taking advantage of the promising capabilities of Artificial Intelligence.

However, many may face new challenges when the services are digitalized, and demanding life circumstances often makes digital self service solutions difficult to complete.[2]

This diploma project will explore how Artificial Intelligence technologies can be used as a design material to enhance the user experience of digital services in the Norwegian public sector and to build citizen-centric services that enables more people to effectively communicate with public services online. The project uses the Norwegian Labour and Welfare Administration's (NAV) services as a case study when ideating and presenting possible concepts.

I approached this project by translating AI's technological capabilities into design opportunities, and then use them in an opportunity driven and citizen focused design process. This approach differs from most of the ongoing efforts involving AI in the Norwegian public sector, which are mostly both internal- and problem focused. This brings value in increased diversity and possibly new ways of talking about AI in public services.

The result is not a finished solution for applied AI in the public sector, but four recommended opportunity areas and four corresponding helpful AI-concepts: «The Controller», «The Advisor», «The Third Party» and «The Translator».

With this project, I want to introduce more people to what outcome the citizen-centric and opportunity driven approach might have when designing AI-driven services for the public sector.

Motivation

This project origins from a very personal motivation. I have always been interested in new technology and intrigued by the promises it brings. I have also had the opportunity to explore artificial intelligence in a few different projects the last couple of semesters. I find it super exciting to think about what new features and helpful tools might come of these specific set of technologies. It very much feels like we are at the beginning of a new era in digital product design.

Secondly, I am having the most fun when I am exploring new opportunities and playing with different ideas for new future services and products. I wanted to expand my capabilities within the space of ideation and opportunity mapping. Therefore, I have taken on some risk and moved away from the traditional problem-focused design process to a citizen-centric and opportunity-driven process.

The combination of these two interests resulted in this project exploring the possibilities of AI in the Norwegian Public sector. The reason I chose to work with public services is the incredible opportunity space and the amount of effort being focused on AI today.

All illustrations by: Streamline

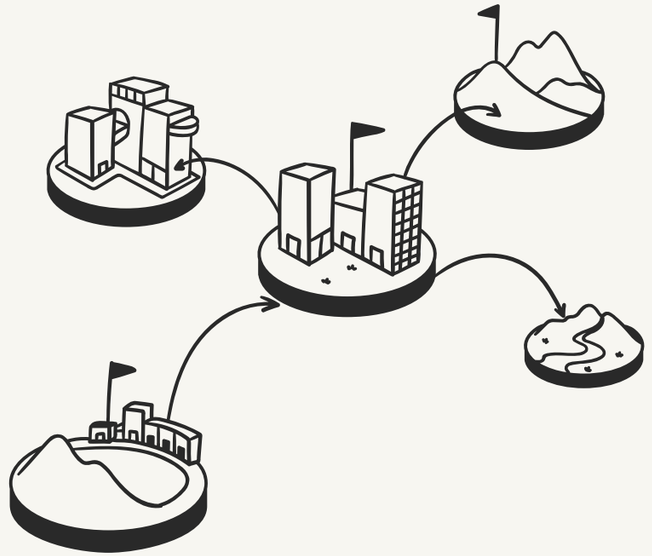
Context

The Norwegian Government's goal is an efficient public sector that provides good services for its citizens. However, in the near future, Norway will face challenges that threaten the sustainability of today's welfare society. Less economic room for manoeuvre, an aging population and environmental changes will require new ways of working.[1]

The Norwegian population will, however, continue to have high expectations and digitalization shall promote a more efficient public sector, more value creation in the business sector and, not least, a simpler everyday life for most people.[1] The Government further states that artificial intelligence will be a vital component in this work.[3]

Today there are few machine learning models in production in the Norwegian public sector. The ones that are, mostly do reporting and single analysis.[4] The current work on citizen-centric innovation has yet to go beyond defining underlying requirements.[5]

NAV, or the Norwegian Labour and Welfare Administration, administers a third of the national budget through schemes such as unemployment benefit, work assessment allowance, sickness benefit, pensions, child benefit and cash-for-care benefit. I have chosen to use NAV's services as a case study for this project because of their importance to the Norwegian welfare system and their willingness to experiment with AI.



Contents

Research

The research phase has been quite extensive and research activities have been recurrent throughout the project. The world of AI is moving very fast and new breakthroughs are sometimes happening on a weekly basis.

To give a quick overview over where I have gathered information and knowledge, I have listed the different sources here. I will go further into detail about some of the resources later in this chapter.

Peer reviewed papers

Government strategy

Lectures and presentations

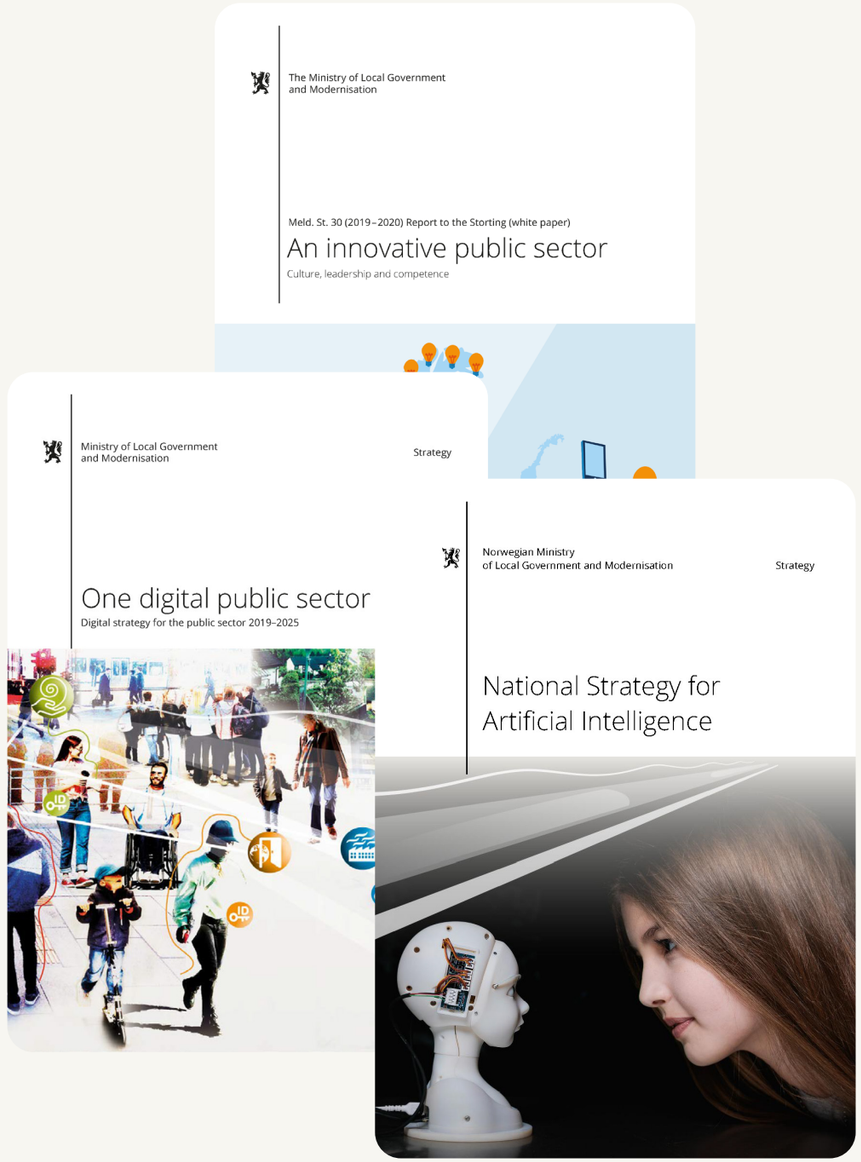
Articles

Online course

Literature

Expert panel interviews

National strategy



Official publications regarding innovation and digitalization in the public sector represents both a starting point and a way to reflect and evaluate the value of this project. I wanted to know the ambitions of the Norwegian government and how they wanted to achieve it.

The three documents “An innovative public sector”[1], “National Strategy for Artificial Intelligence”[3], and “One digital public sector”[6] all describes how the Norwegian government envision both efficient and user-friendly public services enabled by innovation and new technology.

The dedicated National Strategy for Artificial Intelligence highlight the importance that the government thinks this technologies will have on the future of digital public services.[2]

Artificial Intelligence

«Artificial intelligence (AI) represents vast opportunities for us as individuals and for society at large. AI can lead to new, more … **user-centric services** in the public sector.»

National strategy for Artificial Intelligence p.5

Digitalization

Goals towards 2025:

- → The public sector shall be digitalised in a transparent, **inclusive** and trustworthy way.
- → **More tasks shall be performed digitally**, and as seamless services.
- → All citizens, businesses and voluntary organisations that have the ability to do so, shall **communicate digitally** with the public sector.
- → The public sector shall exploit the potential of sharing and using data to **create user-friendly services**, and to promote value creation in the business sector.
- → Local and central government agencies shall develop their services based on a common digital ecosystem for collaboration.
- → Local and central government agencies shall realise benefits from digitalisation in a systematic manner.

One digital public sector -
Digital strategy for the public sector 2019-2025 p.8

Peer reviewed papers

There are quite a few available research projects investigating different aspects of digitalization of public services. Through reading some of these, I have gained valuable insight about how digitalization affects different users and about what has happened when the number of physical meetings decline and the focus shifts towards self service.

Most of the research I have read describes a digital public service offering that provides a more equal treatment of citizens, but also one that sometimes not allow cases to be treated individually and at discretion according to situation and context.

Lastly I want to highlight the finding that different life circumstances (e.g. divorce, unemployed, and health issues) may strongly affect how able citizens are to handle simple issues in any form. This may lead to individuals not receiving the help they need when the service is digital and not face-to-face.[2]

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Vol. **, No. **, ** 2016, pp. **–**

Digitalization, Street-Level Bureaucracy and Welfare Users' Experiences

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[b]Uni Research, Rokkan Centre, Bergen, Norway

Abstract

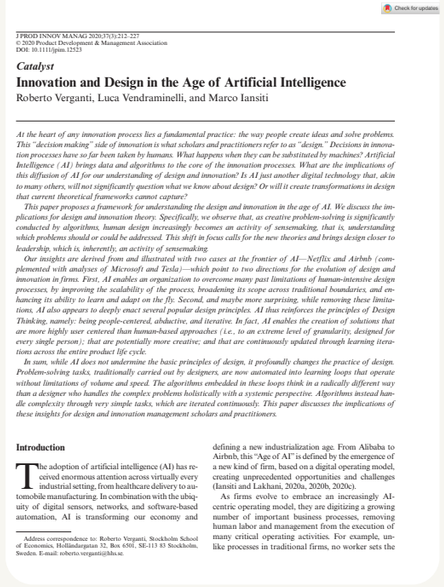
Internet/web-based forms of communication have increasingly been implemented by welfare agencies. However, there have been few studies of the experiences of welfare service users and the consequences of new technology for welfare service users. To what extent is the new technology adopted by the Norwegian Welfare and Labour Organization (NAV) used, and how do the users apply and experience the new possibilities? Do screen-to-screen encounters replace face-to-face encounters, and is this trend affected by age, gender, education or type of benefit? To answer these questions, we combine survey data, short-term fieldwork in welfare reception areas and qualitative interviews with people receiving health and work-related benefits. Our study indicates that screen-to-screen interaction in general does not replace face-to-face encounters, as many face-to-face encounters are related to screen communication. However, digital competence combined with life circumstances appears to be the source of a new divide between welfare service users.

Keywords

Information and communication technology (ICT); Street-level bureaucracy; Screen-level bureaucracy; Norway; Service users

Introduction

Despite the increasing use of information and communication technology (ICT) by welfare agencies, there have been relatively few studies on service user experiences with ICT and whether and in what manner this transforms the relationship between citizens and the welfare state. According to Pollitt (2011), one reason for this situation is that ICT has often been understood as a neutral tool. In contrast to this view, the literature on modernity sees new ICT as a revolutionary force that leads to a more rational and efficient



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Catalyst

Innovation and Design in the Age of Artificial Intelligence

Roberto Verganti, Luca Vendraminelli, and Marco Iansiti

At the heart of any innovation process lies a fundamental practice: the way people create ideas and solve problems. This "decision making" side of innovation is what scholars and practitioners refer to as "design." Decisions in innovation processes have so far been taken by humans. What happens when they can be substituted by machines? Artificial Intelligence (AI) brings data and algorithms to the core of the innovation processes. What are the implications of this diffusion of AI for our understanding of design and innovation? Is AI just another digital technology that, akin to many others, will not significantly question what we know about design? Or will it create transformations in design that current theoretical frameworks cannot capture?

This paper proposes a framework for understanding the design and innovation in the age of AI. We discuss the implications for design and innovation theory. Specifically, we observe that, as creative problem-solving is significantly conducted by algorithms, human design increasingly becomes an activity of sensemaking, that is, understanding which problems should or could be addressed. This shift in focus calls for the new theories and brings design closer to leadership, which is, inherently, an activity of sensemaking.

Our insights are derived from and illustrated with two cases at the frontier of AI—Netflix and Airbnb (complemented with analyses of Microsoft and Tesla)—which point to two directions for the evolution of design and innovation in firms. First, AI enables an organization to overcome many past limitations of human-intensive design processes, by improving the scalability of the process, broadening its scope across traditional boundaries, and enhancing its ability to learn and adapt on the fly. Second, and maybe more surprising, while removing these limitations, AI also appears to deeply enact several popular design principles. AI thus reinforces the principles of Design Thinking, namely: being people-centered, abductive, and iterative. In fact, AI enables the creation of solutions that are more highly user centered than human-based approaches (i.e., to an extreme level of granularity, designed for every single person); that are potentially more creative; and that are continuously updated through learning iterations across the entire product life cycle.

In sum, while AI does not undermine the basic principles of design, it profoundly changes the practice of design. Problem-solving tasks, traditionally carried out by designers, are now automated into learning loops that operate without limitations of volume and speed. The algorithms embedded in these loops think in a radically different way than a designer who handles the complex problems holistically with a systemic perspective. Algorithms instead handle complexity through very simple tasks, which are iterated continuously. This paper discusses the implications of these insights for design and innovation management scholars and practitioners.

Introduction

The adoption of artificial intelligence (AI) has received enormous attention across virtually every industrial setting, from healthcare delivery to automobile manufacturing. In combination with the ubiquity of digital sensors, networks, and software-based automation, AI is transforming our economy and defining a new industrialization age. From Alibaba to Airbnb, this "Age of AI" is defined by the emergence of a new kind of firm, based on a digital operating model, creating unprecedented opportunities and challenges (Iansiti and Lakhani, 2020a, 2020b, 2020c).

As firms evolve to embrace an increasingly AI-centric operating model, they are digitizing a growing number of important business processes, removing human labor and management from the execution of many critical operating activities. For example, unlike processes in traditional firms, no worker sets the

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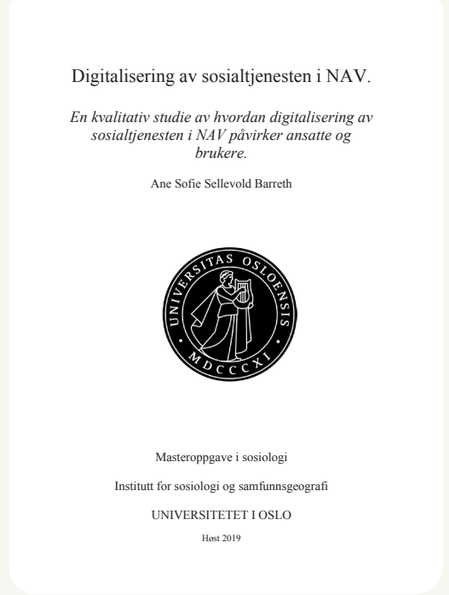

Digitalisering av sosialtjenesten i NAV.

En kvalitativ studie av hvordan digitalisering av sosialtjenesten i NAV påvirker ansatte og brukere.

Ane Sofie Sellevold Barreth

Masteroppgave i sosiologi

Institutt for sosiologi og samfunnsgeografi

UNIVERSITETET I OSLO

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'You get a completely different feeling' – an empirical exploration of emotions and their functions in digital frontline work

'Du får en helt annen feeling' – en empirisk undersøkelse av følelser og deres funksjon i digitalt førstelinjearbeid

Ida Bring Løberg and Cathrine Egeland

Work Research Institute, Oslo Metropolitan University, Oslo, Norway

ABSTRACT
In this study of how counsellors in the Norwegian Labour and Welfare Administration (NAV) experience digital frontline work, most informants agreed that digital interaction with clients produces a 'different feeling' – but what is this feeling? Based on interviews with frontline workers, the study unpacks this 'different feeling' as a form of alienation that occurs when digital interaction causes information to fragment, leaving counsellors working on segments of a case rather than 'the entire client'. The study findings indicate that emotions can influence the use of digital technologies and, conversely, that digital information can influence emotions in face-to-face interactions. Drawing a parallel between the literatures on emotional labour and street-level bureaucracies, emotions can create work pressures that frontline workers must cope with. However, the present findings show that emotions are not always a source of pressure, and that *both* emotions and their absence can create pressure at work. Digital interaction offers new forms of emotional support, and workers can use emotions to establish connections as potential resources in digital work.

KEYWORDS
Digitalisation; feelings; emotional labour; street-level bureaucracies; resources

NØKKELORD
Digitalisering; følelser; emosjonelt arbeid; bakkebyråkrati; ressurser

SAMMENDRAG
I denne artikkelen undersøker vi hvordan veiledere i den norske Arbeids- og velferdsforvaltningen (NAV) forstår det digitale førstelinjearbeidet i form av følelser og hvilke funksjoner følelser har i deres digitale arbeid. Veilederne ser ut til å være enige om at digital interaksjon med brukere gir 'en annen følelse.' Men hva er denne følelsen? På bakgrunn av intervjuer med medarbeidere i førstelinjen, definerer vi følelsen som en form for fremmedgjøring. Følelsen oppstår når digital interaksjon fragmenterer informasjon, hvilket innebærer at veilederne arbeider med segmenter av en sak fremfor 'hele brukeren.' Vi finner at følelser kan påvirke bruken av digitale teknologier, men også omvendt, at digital informasjon kan påvirke veilederens følelser i den tradisjonelle interaksjonen. Ved å trekke paralleller mellom emosjonelt arbeid og bakkebyråkratilitteraturen, kan følelser tolkes som ulike former for arbeidspress som førstelinjen må mestre. Våre funn viser imidlertid at *både* tilstedeværelsen av og mangel på følelser kan utgjøre et arbeidspress. Følelser kan dessuten være mer enn kun et arbeidspress.

«(...) **digital competence** combined with **life circumstances** appears to be the source of a new divide between welfare service users.»

Hansen et al. (2016)

«Several of the users who are not ethnic Norwegians also state that they find it **difficult to read or write**, and that they often **need help to read letters** from NAV to **understand** what is written.»

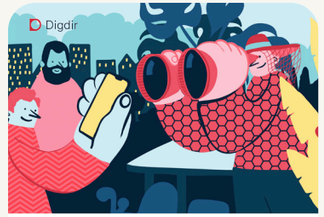
Sellevold Barreth (2019)

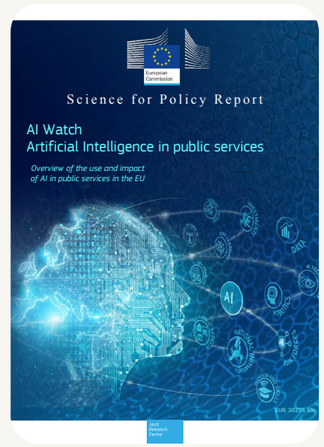
Reports

Reports have been an important source of information during this project. I have read reports, surveys, concept sketches and situation analysis to get an overview of ongoing AI-related projects in Norway as well as information regarding the current situation in Norwegian public services.

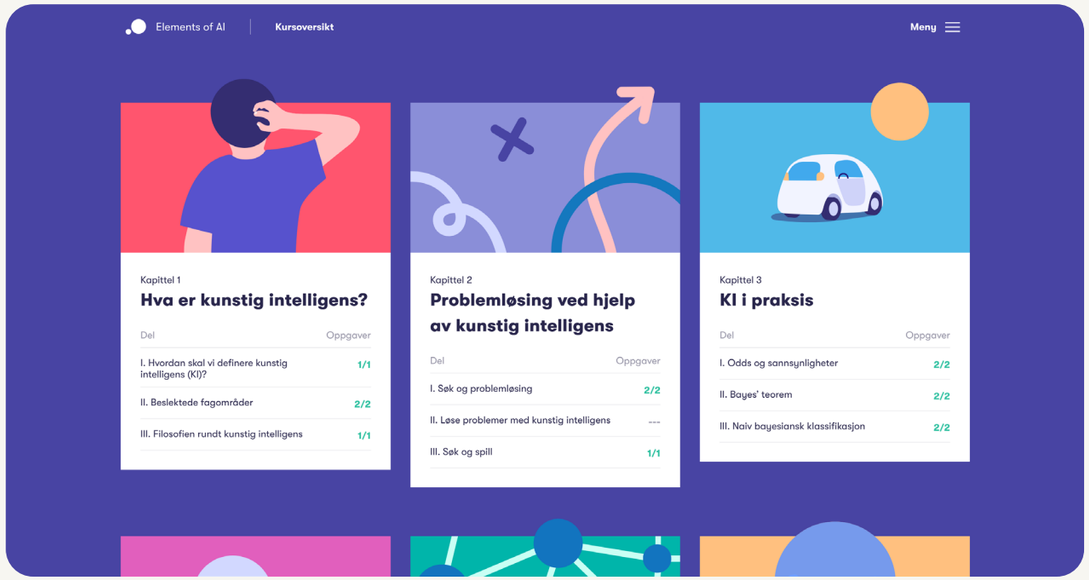
It has been interesting for me to look at what sort of projects are ongoing in the public sector and what problems they address. I found that there are few machine learning models in production in Norwegian public sector and that artificial intelligence is mostly used to do reports and analysis.

The work that has been done on citizen-centric AI have resulted in a concept sketch that address the basics that need to be in place to get digital assistants; and does not specifically mention what the user experience of a digital assistant should be.





Elements of AI



Elements of AI is an online course developed by Reaktor, The University of Helsinki and Feed with the aim of helping people to be empowered, not threatened, by artificial intelligence.

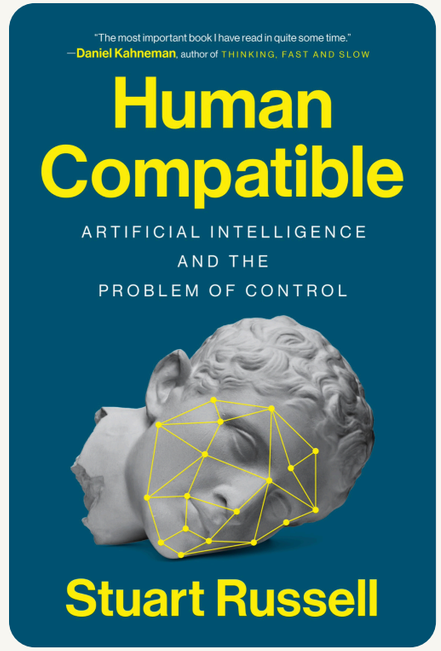
I completed the first part of the course, «Introduction to AI», in the beginning of this project to strengthen my understanding of the technology and to better be able to identify opportunities.

The course helped me getting an understanding of the technological capabilities, which I in turn used to define the five main design opportunities explained later in this report.

Literature

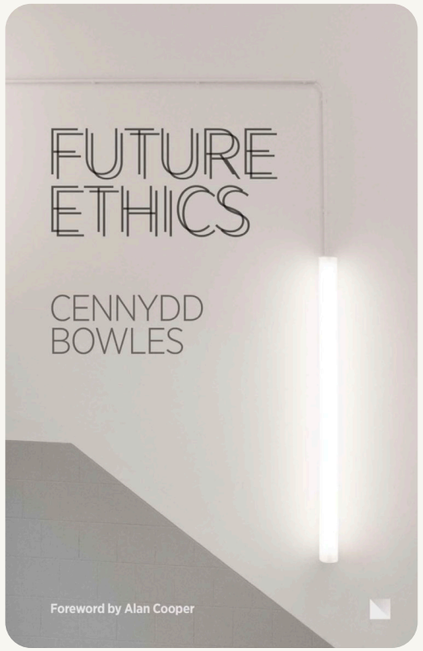
Wanting to learn more about Artificial Intelligence as a design material, I decided to read a few books that cover more than just the technical capabilities. This gave me valuable input to start thinking in broader terms of opportunities and what to be thoughtful of when designing AI-enabled products and services.

These books go in depth on questions regarding control, intent, ethics, and economics and have helped me to think critically about both existing AI-solutions and my own ideas. More specifically, I have used this insight when determining the objective of my design proposal, whether to automate entire processes or augment human capabilities, and when considering ethical aspects of implementing the proposal.



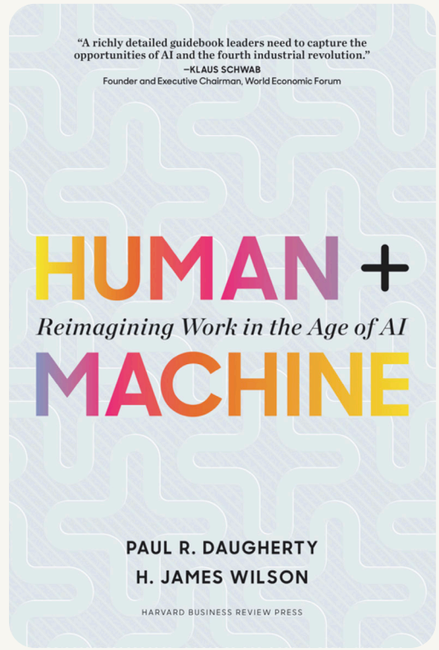
«Machines are **beneficial** to the extent that **their** actions can be expected to achieve **our** objectives.»

(p.14)



«The social contract relies on reciprocity: a contract only works if we all agree to its terms. **Designing for coexistence** is therefore, in part, **designing for trust** and **mutual gain**.»

(p.142)



«(...), but what we've found in our research is that, although AI can be deployed to automate certain functions, the technology's greater power is in complementing and **augmenting human capabilities**.»

(p.13)

Summary

In this phase of the project I learned that there is a great desire in the Norwegian government to take advantage of the promising capabilities of AI when more of the interaction between the citizens and public services is going to be in the digital space.

Secondly, I learned that many may face new challenges when the services are digitalized and that, among other things, a demanding life circumstance often makes digital self service solutions difficult to complete.

Lastly, the literature I read on this subject provided even more perspectives including ethics, the problem of controlling the AI and to be thoughtful on what processes to automate instead of augmenting human capabilities.

→ Ambitious goals for digitalization and AI in public sector

→ Few models in production today

→ Most ongoing projects are not citizen-centric

→ Digitalization may cause new divides between welfare service users

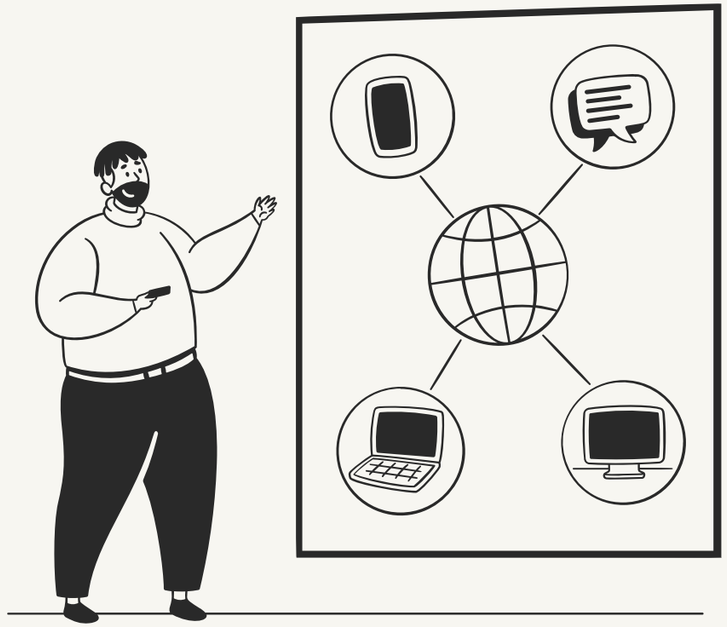
AI as
design material

→ From tech capabilities to
AI design opportunities

→ Automate or Augment?

→ A note on ethics

From tech capabilities to AI design opportunities



To better use the knowledge from my research in further work and to communicate AI's affordances more effectively to project participants without a technical background, I decided to synthesize AI's technical capabilities and translate them into more human and understandable design opportunities.

On the following pages I will present the following five technical capabilities and their corresponding design opportunity: pattern recognition, prediction, personalization, natural language, and object identification.

Tech capability

Pattern recognition

Automatically recognize patterns and regularities in data. When something breaks a recognized pattern, it is an anomaly.

Design opportunity

To detect

Design a product that can alert the user when something seems to be out of the ordinary.

Photo: Apple

Example:

The Apple Watch will monitor your hear rate and recognize a pattern . If it detects something out of the ordinary, it can alert the user.

Tech capability

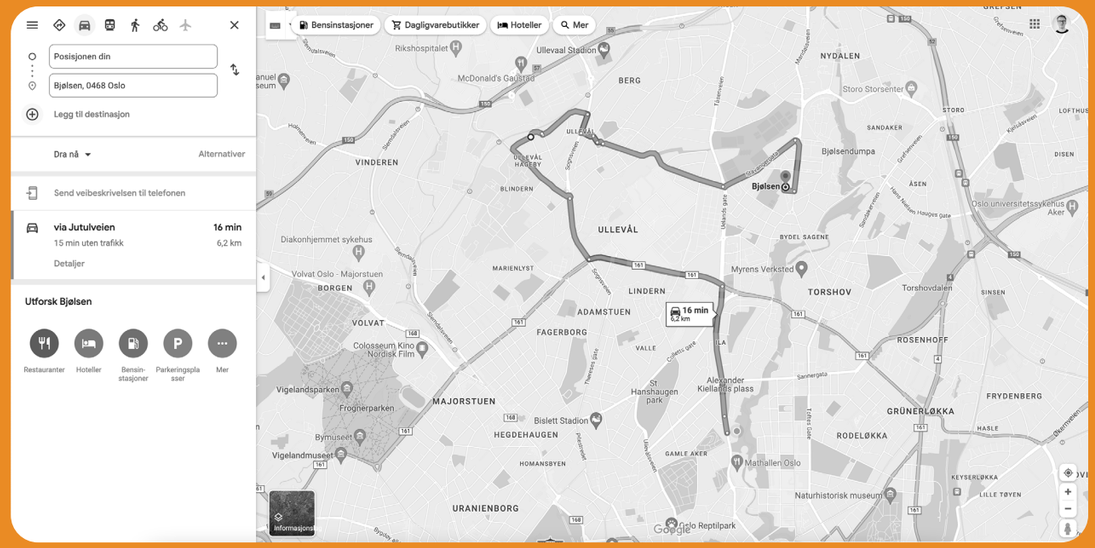
Prediction

A value that expresses the confidence in a prediction, how related things are, or a number. Often based on several historical data.

Design opportunity

To anticipate

Design a product that can provide the user with useful information about what option is the most likely to give a wanted outcome.



Screenshot: Google Maps

Example:

Google Maps will use several features (i.e. speed limits, intersections and traffic information) to predict the best route to follow to get from A to B.

Tech capability

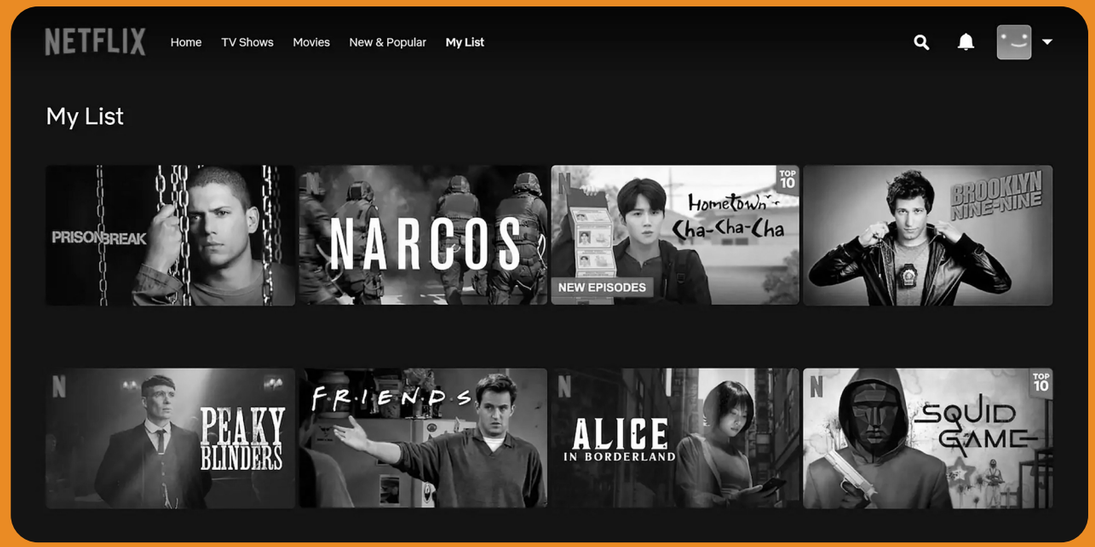
Personalization

Collect data points and convert them into a number that represents the probability of a user taking certain actions.

Design opportunity

Be personal

Get to know each unique users' habits and preferences and design a personal experience.



Screenshot: Netflix

Example:

Netflix uses data about what customer view, search history, ratings as well as time, date and the kind of device a user uses to predict what should be recommended to them.

Natural language

Natural language processing (NLP) use rule based modelling of human language combined with machine learning models to enable computers to process human language in the form of text or voice data and to ‘understand’ its full meaning.

To listen and speak

Let the user communicate with your product using written or spoken language.

Photo: Google

Example:

The Google Assistant application recognizes what the user say and translate that into actions in the interface.

Tech capability

Object identification

Object identification, often referred to as computer vision, tries to mimic the way humans distinguish objects apart. It does this by applying algorithmic models that enable a computer to teach itself about the context of visual data.

Design opportunity

To see and understand

Design a product that can understand and take action based on what it sees.

Photo: crospotter13 (YouTube)

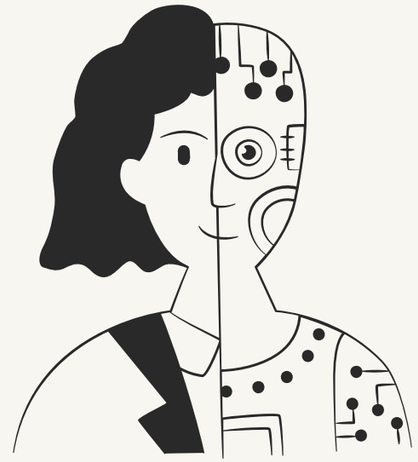
Example:

Mercedes Benz uses object identification to place augmented navigation graphics in their head-up display.

Automate or Augment?

In the book «Human + Machine» (2018) the authors Wilson and Daugherty take a normative stance on the question of whether to use AI to augment or automate processes. They argue that the technology's greater power lies in augmentation.[8] Raisch and Krakowski (2020), however, argue that augmentation and automation cannot be neatly separated from each other. They urge organizations to adopt a broader perspective comprising both automation and augmentation.[9]

In this project I have decided not to work with completely automated processes, but rather try to ideate around how AI can help the citizens with bits and pieces of the process where difficulties and errors easily occur. I will not adopt the normative stance not to include automation, but I think it is important for a designer to be aware of what level of automation the service should be, and that certain functions may be automated while others remain under human control.



«**Automation** implies that **machines take over** a human task, **augmentation** means that humans **collaborate** closely with machines to perform a task.»

Raisch, Sebastian & Krakowski, Sebastian. (2020)

A note on ethics

The diagram on the right shows us a simplified process for creating AI-driven services. Throughout the process, the people involved must make conscious decisions about what data to collect, what models to process the data, and how the outcome is presented or used in other ways.[10]

Once you start working on AI-driven products and services, you quickly get confronted with ethical considerations and dilemmas. This is certainly the case when you are working on AI for public service.

Although I fully recognize the importance of this subject, it is such a large topic to cover that I have had to scope that part down to this acknowledgement and to consciously reflect on the ethical implications of the ideas I evaluate.

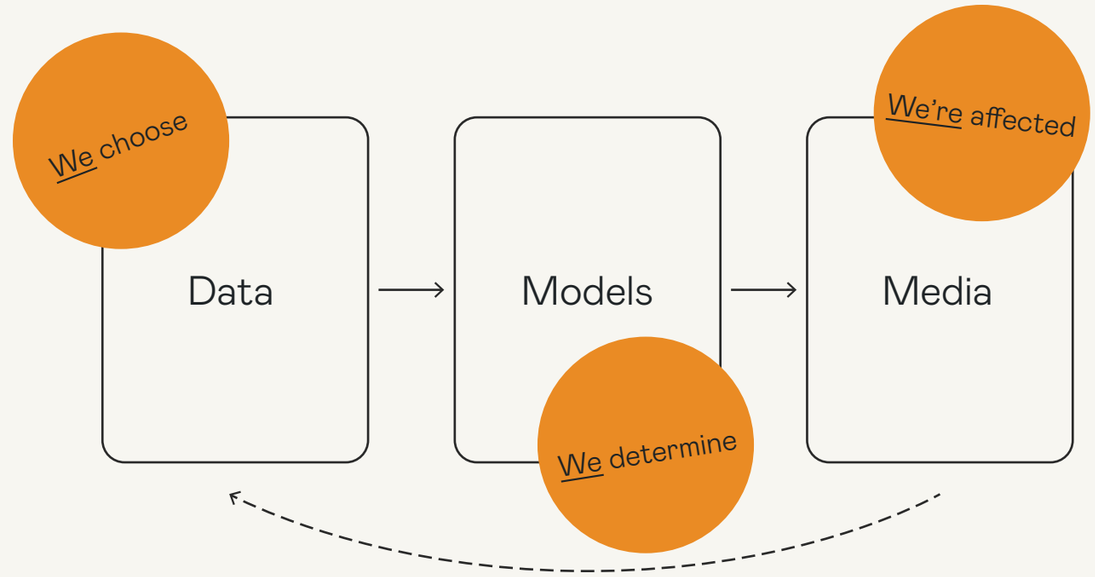


Diagram: Google

Summary

In this phase of the project I got a deeper understanding of AI as a design material by translating technical capabilities into human actions that represent opportunities for designers to make AI-driven products and services.

Secondly, I learned more about the difference of automation and augmentation and I got to reflect on what approach to take when developing this project. Moving forward I have chosen not to design for fully automated processes, but working to develop helpful services augmenting human capabilities.

→ Translating technical capabilities to design opportunity

→ Automation and augmentation cannot be neatly separated

→ Data and models are not inherently neutral

→ Ethical due diligence is necessary when designing AI for public sector

Approach

→ Key methods

→ Citizen focused +
Opportunity driven

→ Process

Key methods

I have used several methods during the work on this project. Desktop research has been key to gain knowledge about AI technologies from a wide array of sources. There is a wave of new material being published every week and it has been quite the task trying to stay up to date about new advancements and projects happening during this relatively short period.

I would also like to highlight the importance of the expert panel in this project. AI-driven products and features are notoriously difficult to prototype and test, so a lot of my focus has been directed towards discussing the ideas with a broad set of “stakeholders”. It has been interesting and valuable to have these conversations and it has made me aware of the difficult questions arising when trying to design an AI-driven solutions for public services.

Desktop research

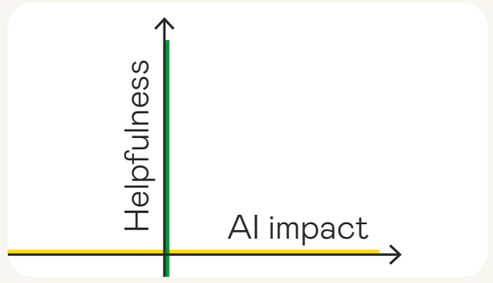
Reports, strategy documents, research papers, articles, online AI course, talks by designers and technologists, books about the relationship between humans and technology, and Facebook groups for people needing help in dealing with NAV.

Expert Panel

To get the insight and evaluation needed for this type of explorative project, I have spent a lot of effort assembling an expert panel consisting of people with a wide set of competencies and background.

Ideation

Frameworks for self-ideation (e.g. crazy 8, forced relations and jobs-to-be-done) and one ideation workshop with two fellow design students.



Mapping

Several mapping methods has helped me make priorities and choosing ideas to include in further work.

Citizen focused + Opportunity driven

When deciding on how to approach this diploma, I decided to move somewhat away from the traditional problem-focused design process. Instead of starting with uncovering the citizens problems and asking them what they need, I chose to start uncovering as many opportunities and ideas as I could with few limitations, all the while maintaining an exclusive focus on the citizen-facing side of the service.

This approach differs from most of the ongoing efforts involving AI in the Norwegian public sector, which are mostly both internal- and problem focused. This brings value in increased diversity and possibly new ways of talking about AI in public services.

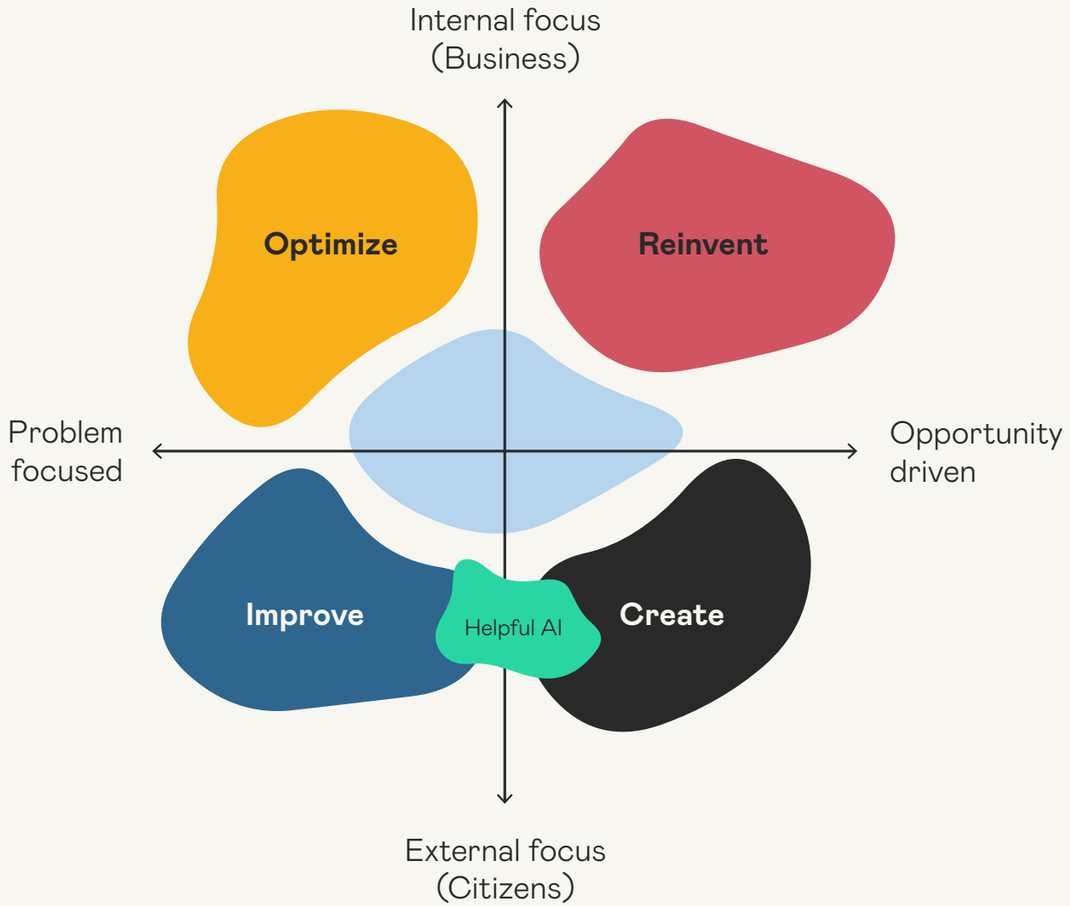


Diagram: innovate-strategy.com

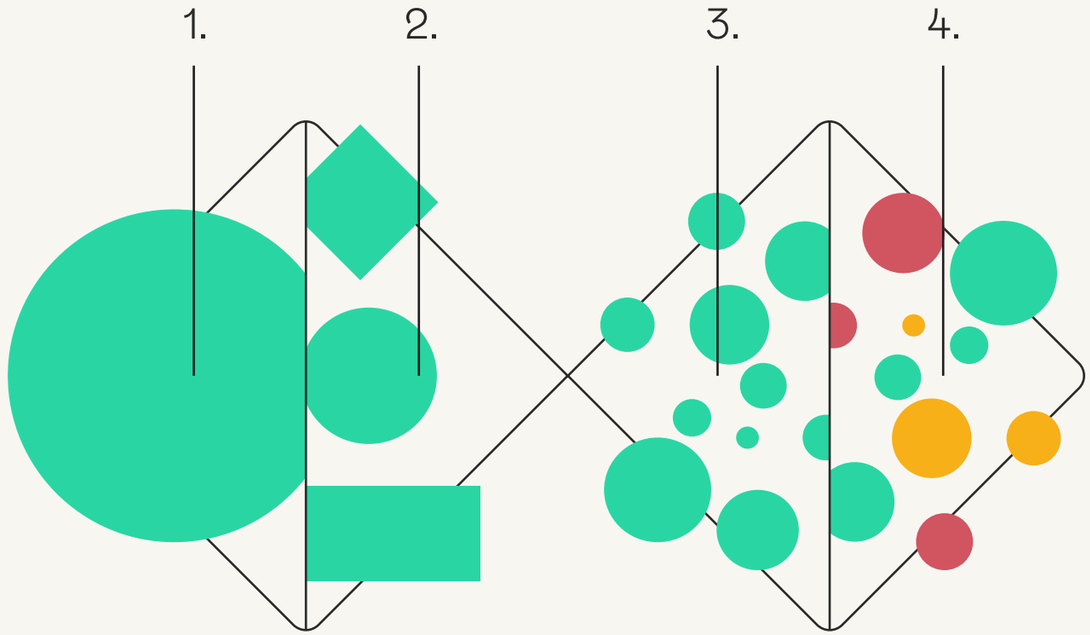
Process

1. Immerse myself in the topic of AI and Public Services
A significant part of this project has been spent on learning more about AI. I have done this by attending an online course, and reading reports, articles, newsletters and books. I have also listened to a number of podcasts, lectures and talks on the subject of AI and design.

2. Define AI design opportunities
I have defined five core design opportunities to use in my work to explore opportunities. The opportunities were defined by «translating» core technical capabilities of AI to more human traits.

3. Uncover opportunities
I have worked to uncover as many opportunities/ideas as I'm able to do in this given time frame. I have done this using different methods.

4. Evaluate ideas
I have evaluated a selection of the ideas with the help of an expert panel. The panel consists of people with a diverse set of competencies and experiences to reflect the many stakeholders and subject areas that becomes important when AI is to be implemented in the public sector.



Summary

In this project I have moved somewhat away from the usual problem focused approach and worked to move towards an opportunity driven one. This does not mean, however, that the needs and problems of the citizens are unimportant. In this project it simply means that I have explored the opportunities made possible by newly available AI technologies before evaluating the ideas and determining if some can solve an identified problem in a unique way.

This way of conducting a design project has been new to me and has challenged me to ideate broadly and to evaluate the opportunities in a new way compared to what I have done in previous projects.

The projects process also ends at an earlier stage than what an interaction design project typically do. Because implementing AI-driven solutions in the public sector entails many questions and opinions, I have focused on what to design, instead of how to design it. I have relied on feedback from experts in a wide range of subject areas to evaluate the ideas and to have discussions about the implications the ideas might have.

→ Opportunity driven approach

→ Deliberately steering the outcome towards AI-technologies

→ Ideated broadly and evaluated with an expert panel

Uncovering opportunities

→ Forced connections

→ Idea workshop

→ Structuring ideas

→ Forced relations

→ Documenting ideas

Forced connections

Design opportunity + user task

To get started exploring ideas for how AI could improve user experience, I created a cross tabulation framework matching my defined AI design opportunities with a rough set of user tasks when using online public services. This gave me some constraints while still being able to ideate broadly.

Idea workshop

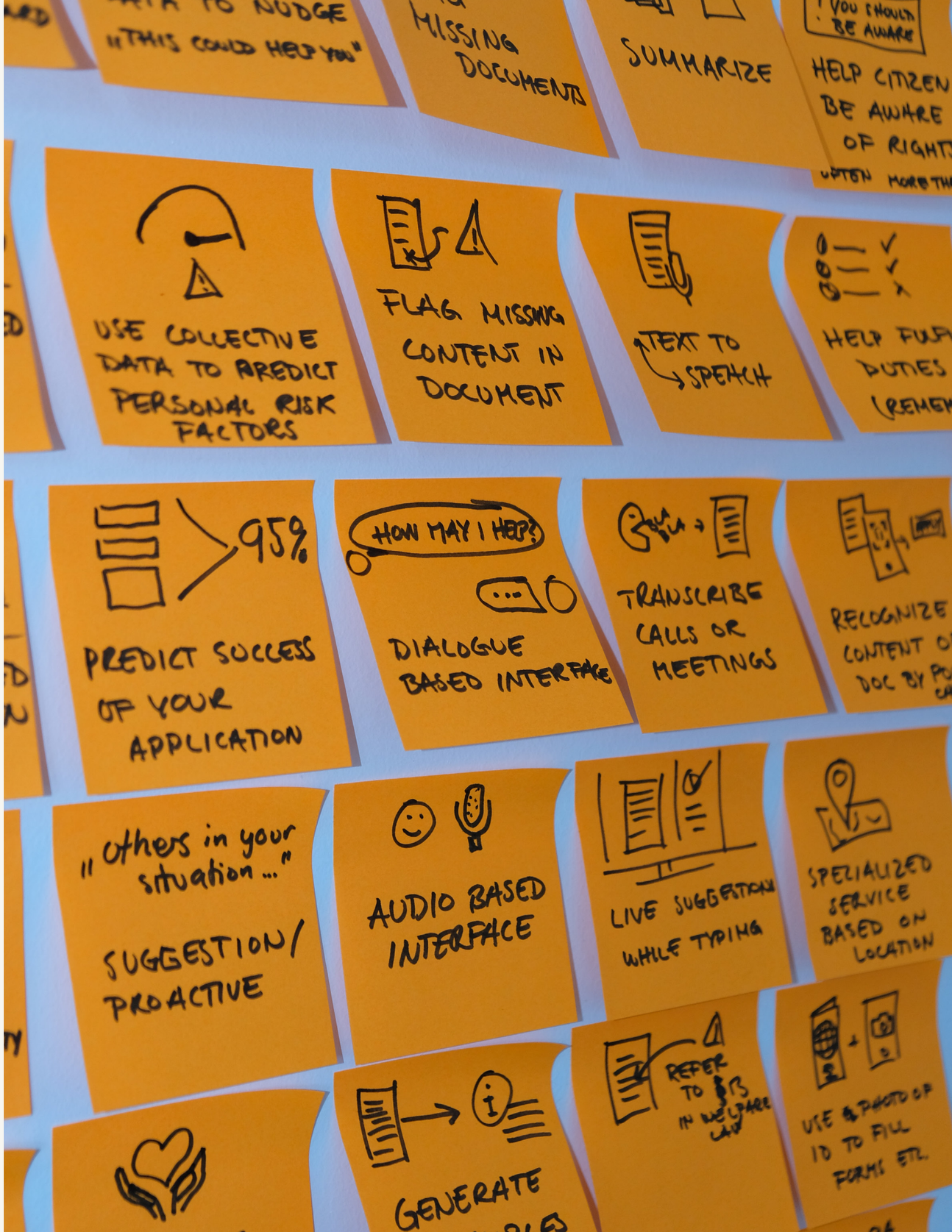
I arranged an ideation workshop to get more and varied ideas on the subject. The workshop was structured around user tasks and a set of What-if-questions formed based on the design opportunities.

The outcome was a fun and interesting workshop that gave an injection of energy and creativity into the project. The ideas ranged from the probable and conventional, to the unusual and quirky like the «Bureaucratic Bot» that needs coffee brakes during the day.

Structuring ideas

The first two ideation activities generated more than 70 ideas on how AI could be helpful in the digital meeting point between citizens and public services.

To reduce the amount of ideas to work with and sharpen them some, I did a grouping exercise to eliminate duplicates and focus the ideas with a more precise description and a little sketch.

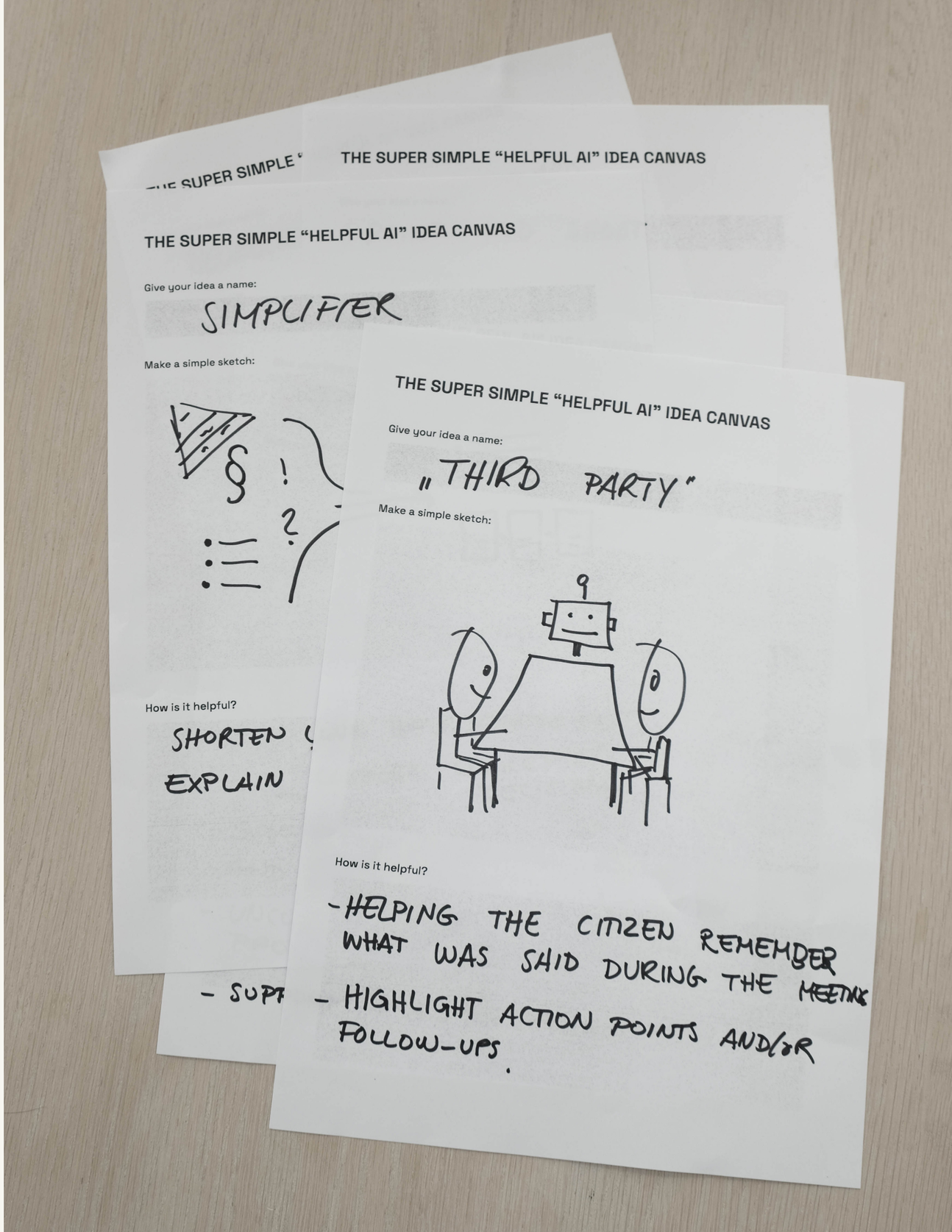


Forced relations

Forcing ideas in sequence

Forced relations is a method we learned while attending a industrial design course earlier in the education at AHO. By trying to place different ideas in a sequence, it became very helpful imagining more complex AI-driven services consisting of several functions.

Documenting ideas



After using different methods for ideating, I made a very simple canvas to help document and preserve the ideas for before moving on to the evaluation. The canvas simply consisted of a name for the product, a very quick sketch, and a short description on how the product is helpful.

Summary

This part of the process gave me good practice in running the ideation phase of a project. It has been a good educational experience to use design methods combined with the project's defined design opportunities somewhat strictly. It has ensured progress and has given the project a clear direction.

→ Forced connections – combining user tasks and design opportunities

→ Idea workshop to broaden the ideation with people outside the project

→ Forced relations – place ideas in sequence to build more complex services

→ Structure and document ideas for further evaluation and development

Evaluating ideas

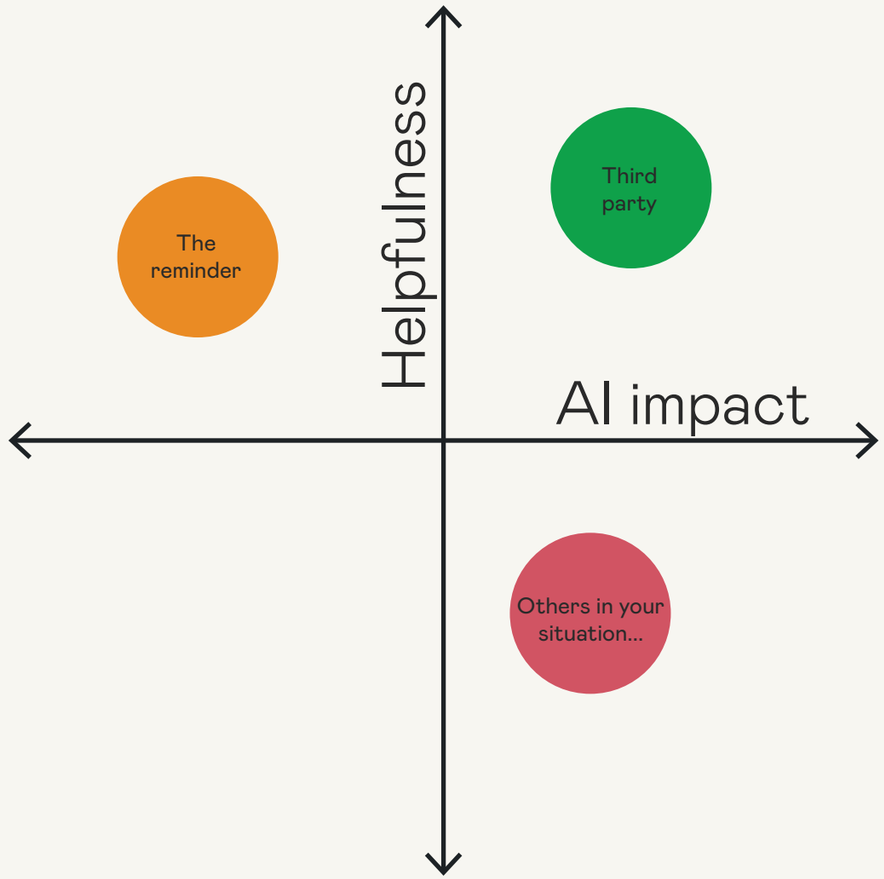
→ Mapping helpfulness

→ Material for discussion

→ Expert panel

Mapping helpfulness

Decision matrix



According to the Collins dictionary, If you describe someone as helpful, you mean that they help you in some way, such as doing part of your job for you or by giving you advice or information.

To select the ideas I would bring with me into evaluation, I performed a mapping exercise based on a 2x2 by Google's People + AI team.[11] I did this to assess the helpfulness of the idea and if AI would address the problem in a unique way. I took eight of the most promising ideas with me to the next phase of the project.

Material for discussion

After the helpfulness-mapping exercise I started designing the material to stimulate conversations about the subject of AI in public services.

I started by formulating five what-if questions by using the design opportunities presented earlier in this report. Secondly, I started sketching AI-driven tools to exemplify one or two possibilities per question. The design was really a balance between not being too detailed, so that my specific design became the subject of discussion, and to still give enough context to be able to talk about the different implications of using AI in that kind of tool. It took some iterations to get this balance right.

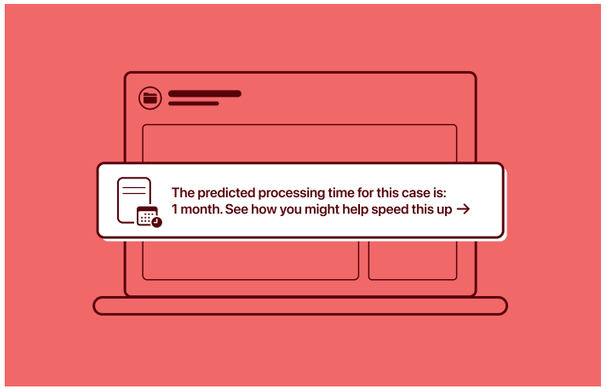
I was very pleased to experience the effect the material ended up having. They seem to balance detail and room for interpretation quite good and helped steer the conversation towards the subjects I wanted to get feedback and new perspectives on.

1

What if the AI could detect missing documents and present the consequence?

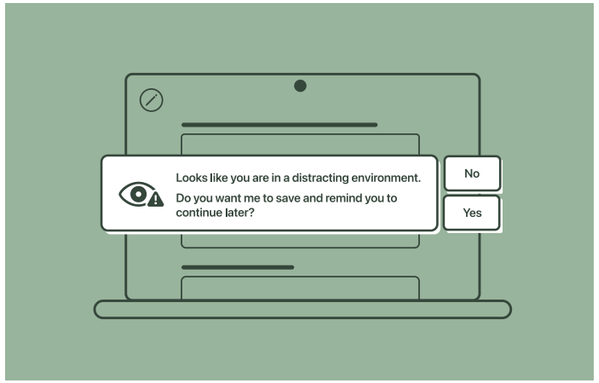
2

What if the AI could accurately predict processing time?



3

What if the AI could understand and take action based on what it sees?



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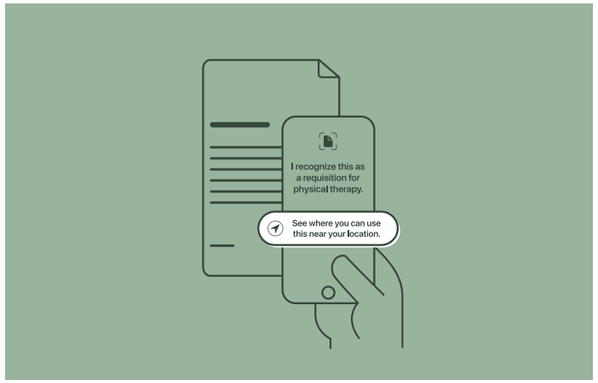
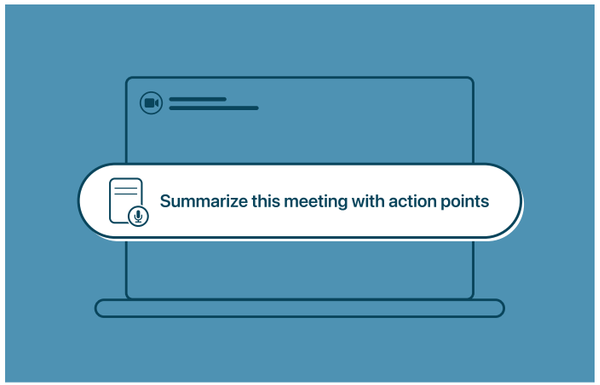
What if the AI could understand and take action based on what it sees?



4

What if the AI could listen in on meetings and conversations?



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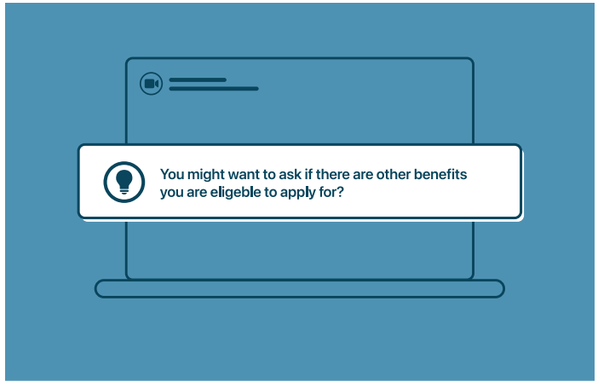
What if the AI could listen in on meetings and conversations?

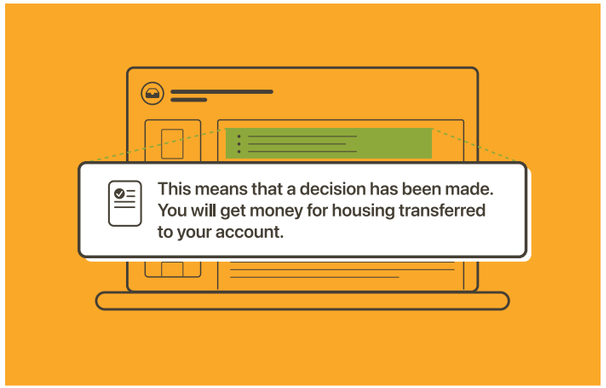


5

What if the AI could understand the content and context of a document?

5

What if the AI could understand the content and context of a document?

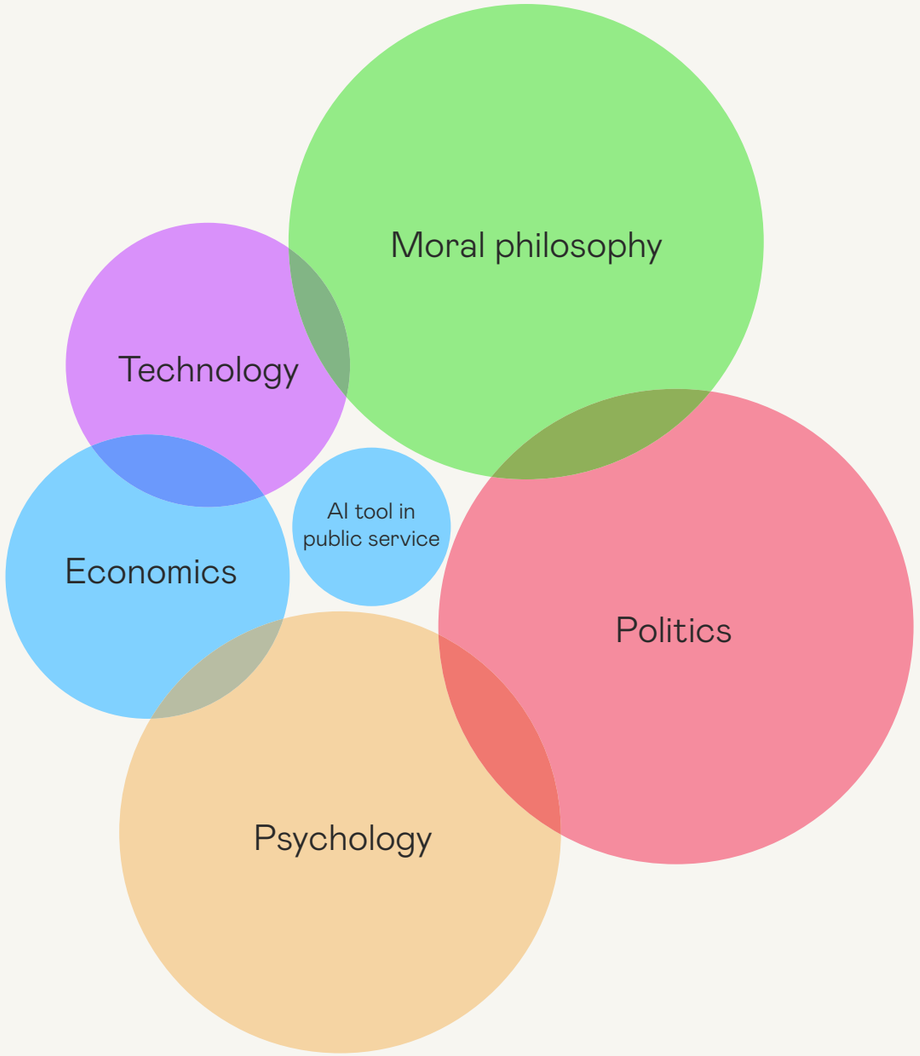


Expert panel

Implementing AI in the public sector will affect many. An artificial intelligence that makes decisions with potentially high stakes will require the involvement of many disciplines. To reflect the breadth of stakeholders I wanted to gather an expert panel consisting of people with a wide set of competencies and different backgrounds.

The expert panel plays a very important role in this project. Since this project is about designing the right thing, and not about designing it right, they have helped me evaluate the ideas as well as providing me with valuable insights and provoked new thoughts based on the project material.

On the following pages you will be introduced to six people with very different approaches to the subject of AI. You can also read a little about the discussions we had.



Relevant subjects areas when implementing AI.

Matt Webb

Technologist, Independent

«This sounds like a **helpful** secretary taking responsibility.»

Matt Webb is a technologist based in London. To designers, he might be best known for co-founding the design studio BERG. Since 2020, as a consultant, he has been working with the Google AI group, bridging the research and product organisations.

I met with Matt on a Monday afternoon through his experiment «Unoffice Hours» where anybody can book a 30 minute meeting regarding any topic.

We discussed existing products and services that might be of interest and inspiration. The fact that there are analogue services offering help to people to navigate public services, told him that there was an need for these types of tools.

Matt urged me to continue to think in terms of augmentation rather than of total automation, and to consider the context and environment that the AI-tool was to exist and function in.

Inga Tollerud

Project Manager, Oslo City Council

«People in **difficult situations** are often having **trouble understanding** and **remembering**.»

Inga Tollerud is a passionate advocate for citizen-centric service development in Oslo Municipality. Inga had a leading role initiating and developing a popular service called LINK that helped the citizens of Tøyen in Oslo navigate and communicate with public services.

Inga and I had our meeting in a coffee shop close to Oslo City Hall where the project sparked an engaged conversation about the problems people living under difficult life circumstances might face and how to design a service that helps them maintaining dignity and a sense of control over their own life.

Inga talked about how they co-created the LINK-service with the local community and how that resulted in designing for needs they never would have known about otherwise. The solution included among other things a discreet area for discussing sensitive matters and a drop-in appointment system instead of pre-booking.

It was truly motivating to hear that my ideas responded well to several of the problems that the LINK-service used to help its visitors with.

Dirk Lammering

Director Innovation, Digdir

Leo Sande Gasnier

Senior Advisor, Digdir

«Always ask yourself: are **machines** able to do this **better than humans**?»

Dirk Lammering and Leo Sande Gasnier have both been involved in the Norwegian Digitalization Agency's work on the future of digital assistants.

I met online with Dirk and Leo for what turned out to be a very dense and interactive session on AI assistants and of the many aspects of such a project.

During the meeting we got to talk about how many of the ideas felt like treating the symptoms instead of the cause, and how implementing these tools might remove the motivation to improve the service on the service provider side.

Another interesting discussion we had was regarding the illusion that it exists unbiased data and algorithms and how to be extra aware of this regarding public services.

Both Dirk and Leo thought the ideas was interesting and relevant to their work. They asked me to consider what implications it might lead to if the ideas were to be developed and implemented.

Daniel Hasan

Interaction designer, Netlife

«Advances in **speach recognition** might make such tools **more inclusive**.»

Daniel Hasan is an experienced interaction designer working with NAV as a client. Daniel is passionate about user-centric design, inclusiveness and delightful user experiences.

I met with Daniel in the Netlife offices and we used the idea sketches as a vantage point for a discussion about advanced control mechanisms in forms using AI, how AI could include more citizens in the digital public service offering, and how AI might help NAV achieve a more consistent form of communication with citizens.

Daniel also urged me to think about how these tools could help build more trust in the system and to avoid giving the citizen unrealistic expectations and confidence in the level of information sharing between public organisations.

Robindra Prabhu

Data Scientist, NAV

«Some of these tools could be **helpful** for NAV to use internally.»

Robindra Prabhu holds a PhD in high energy physics and has, among other things, worked with data analysis at CERN, before becoming a Data Scientist at NAV where he is working to leverage data and machine learning innovatively and responsibly to improve the delivery of public welfare services.

AI is named one of the technology trends of particular importance to NAV and I was thankful to have the chance to talk to Robindra about this project.

Our talk revolved mostly around privacy and legality, both complex and important topics when working with AI.

Robindra was especially intrigued by the tools to help simplify communication and transcribe meetings and thought they could be good tools to use internally as well.

For further work I was encouraged to design for uncertainty and to safeguard information about both the citizens rights and duties.

Summary

The evaluation has been one of the project's most important and insightful phases as this project did not include prototyping or user testing. The evaluation was done with a mix of mapping exercises and conversations with a panel of experts in a wide range of subject areas and with a very different set of expertise.

To facilitate an informative and explorative discussion I needed to balance between the detailed and clear, and the general and obscure, in the material I brought with me into the sessions.

This way of evaluating has given me both answers, in form of validations regarding ideas corresponding to known user needs, as well as new questions about the implications of implementing AI in public service.

→ Mapping helpfulness and AI-impact as a decision matrix

→ Designing material to stimulate conversation about citizen-centric AI in the public sector

→ Evaluating and iterating through interaction with expert panel

Final delivery

→ Areas of opportunity

→ Helpful AI concepts

Areas of opportunity

These are the four areas of opportunity that I, through this process, have defined as most attractive to start working on citizen-centric AI for NAV. The relevant findings for each of these will be presented on the following pages.

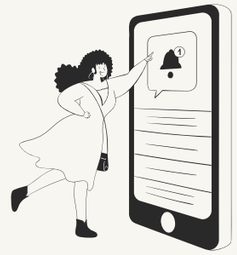
Before meeting → During meeting → After meeting

1

How might we help the citizen getting the application correct the first time?

2

How might we give advice and support the citizen during the meeting?



3

How might we help the citizen remember what was said and agreed in the meeting?

4

How might we help the citizen understand communication from NAV?

Areas of opportunity

1. Help citizens getting the application right

Relevant findings:

→ Today, there is a hard control when applications are submitted to NAV. The system only perform a check whether a document is submitted or not.

→ Missing information in the application is followed up by the NAV office in dialogue with the applicant.[12] This may lead to extra work, longer processing times, frustration, and in worst case people not having money for basic necessities.

→ Life circumstances can make the difficulty completing forms considerable.[2]

Areas of opportunity

2. Give advice and support the citizen during a meeting

Relevant findings:

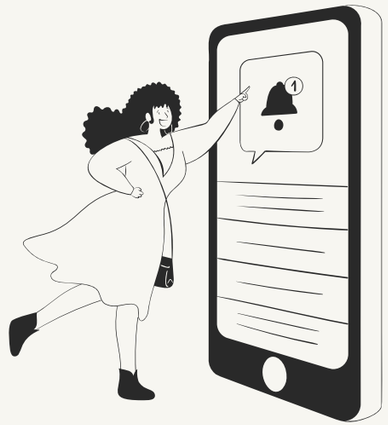
→ When you have a case with NAV, you have the right to be guided about the regulations and practices that are important for your case. NAV must provide information about everything that may have an impact on the outcome of your case, such as marital status or living situation.[13]

→ Many feel small when meeting with the huge NAV system and do not get the answers or advice they feel they need.[14]

→ There is a considerable perceived difference in power between the NAV consultant and the applicant.[15]

Areas of opportunity

3. Help citizens remember



Relevant findings:

→ Unless otherwise agreed, NAV shall summarize the meeting in a summary. It is an aim that the participants in the meeting agree on the way forward, who will do what afterwards and further schedule.[16]

→ The job of writing summaries are time consuming and the form and quality of these depend on the individual supervisor.

→ The summary represents the perspective of one side and can in some cases be perceived differently from what was said and agreed in the meeting.

Areas of opportunity

4. Help citizens understand communication from NAV

Relevant findings:

→ To ensure legal compliance and the fulfilment of the duty to inform, NAV communicates with the citizens in a extensive and complicated manner.[15]

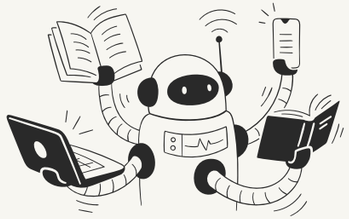
→ The user needs a coherent service, not an overwhelming amount of information that does not make sense.[15]

→ Not understanding letters from NAV is extremely common and there are Facebook groups with thousands of members just serving the purpose of translating letters from NAV to common and easily understandable language.

Helpful AI concepts

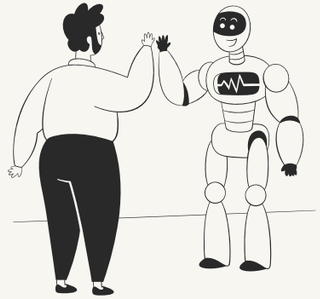
These are four helpful AI concepts that the project has uncovered and recommends for further development and testing. Each of these concepts will be presented in the following pages.

Before meeting — During meeting — After meeting →



1

The Controller



2

The Advisor

3

The Third Party

4

The Translator

How might we help citizens getting the application right?

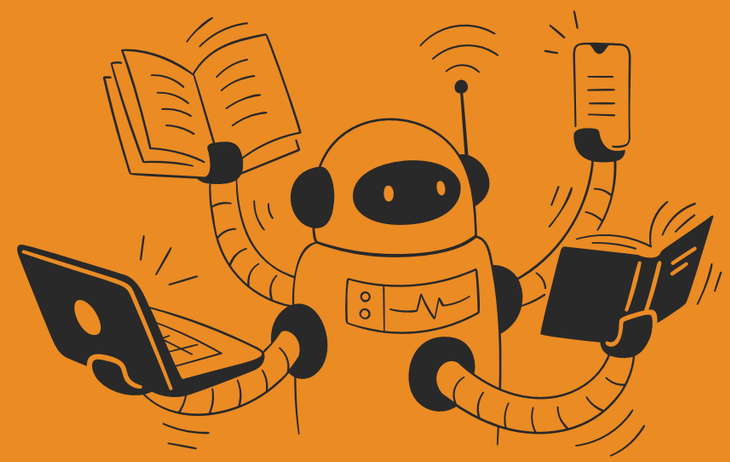
1. The Controller

The Controller understands the context of a document and detects things that seem out of the ordinary, all in a millisecond. It can notify you if the doctor has forgotten to sign a document or warn you about a phrase in the text that might exclude you from the benefit you're applying for.

For the citizen this can help completing an application and catching errors before submitting, that previously had not been detected. The help might be especially important for citizens in difficult life circumstances or citizens struggling with the Norwegian language.

For NAV this could mean that with more applications arriving complete, fewer hours is spent chasing down missing documentation and conducting follow-ups.

The solution raises interesting questions, among other things, about who is responsible for errors and if the intent of the algorithm might contradict some political views about how easy it should be to get benefits.



How might we give advice and support the citizen during the meeting?

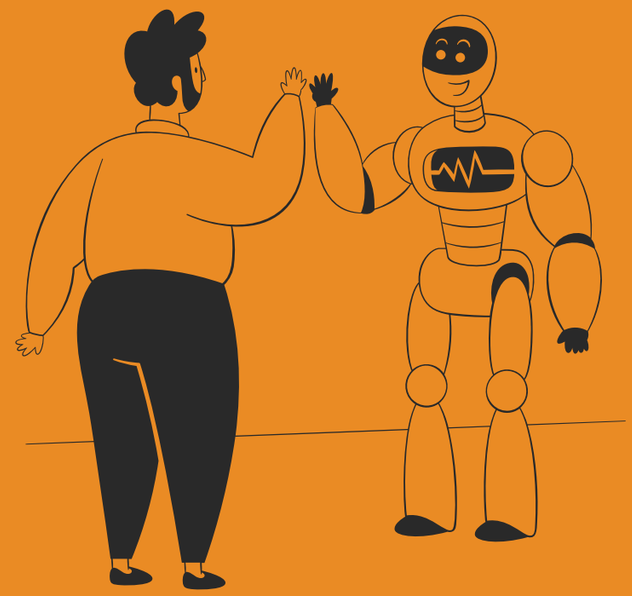
2. The Advisor

Inspired by the McKenzie friend[17] in the UK, The Advisor can listen in on a meeting or a call, understand the context, take notes, prompt you, and quietly give advice.

If you have forgotten to ask important questions or forget to object to something that might be unreasonable to be demanded of you, this helpful AI can advise you.

For the citizen this solution may help making the perceived difference in power smaller and empower them.

For NAV the views on this solution might be divided. On the one hand The Advisor could be seen as an active decision support tool, making it easier to inform the citizen about all their rights and duties. On the other hand, a citizen getting advice that they might not fully understand may feel frustrating.



How might we help the citizen remember what was said and agreed in the meeting?

3. The Third Party

The Third Party is an AI that can listen in on a meeting or a call and understand the context of what is being said. This helpful AI transcribes the whole meeting word for word, summarizes it according to your personal preferences and highlights any action points that was agreed on during the meeting.

After the meeting the citizens can interact with this information in different ways. They might ask questions about the meeting or use the information to set alarms or reminders.

There is an obvious issue with personal and sensitive data. In summaries written by NAV, sensitive data is never included. It might also feel quite intrusive to have everything you say transcribed and stored, but it might also contribute to a more fair case handling process.

How might we help the citizen understand communication from NAV?

4. The Translator

The Translator reads documents and other forms of communication and understands their context. It can detect and highlight specific parts of a text.

The citizens can use this helpful AI for several things. One example may be to find and highlight the resolution text in a long letter packed with legal language. If that resolution is difficult to understand, The Translator may translate that concept into practical examples that are easier to understand. It may also generate graphics, a cartoon perhaps, to explain certain concepts.

This solution has brought up a lot of interesting discussion points during evaluation. Firstly, there is a notion that this type of AI can have normative consequence. Can this tool remove the motivation to improve the service at the provider level? Secondly, may oversimplifying hurt the credibility of the decision being made? Lastly, the simplification cannot be allowed to degrade the legal validity of the text.

Reflections

→ Final evaluation

→ Final reflections

→ Thank you

Elisabeth Thoresen

Leader, AAP-aksjonen

«This solution could help **weed out** some **prejudices** in **NAV**»

With about two weeks left of this project period I reached out to Elisabeth Thoresen and asked if she would consider meeting me to evaluate the final project delivery. She kindly agreed, and I would like to include some notes from our meeting in this chapter for reflections.

Elisabeth was very skeptical towards AI from the beginning of our meeting, and we struggled a bit to get the conversation going. Towards the end of our meeting, it became clear that the skepticism was rooted in always hearing about digitalization when processes was being automated and the human-to-human aspect of the service reduced. After we had talked a bit more about the project's approach towards the citizen-centric services, she warmed up to some of the ideas. She could especially see The Third Party being helpful and «weed out some prejudices in NAV», as she put it.

One thing that was made clear to me during our talk was that NAV and other public service providers could profit from taking a citizen-centric approach when digitalization of public services moves further.

Photo: AAP-aksjonen/Linda Kristiansen

Final reflections

This was an approach to a design project that I was not too familiar with. To start off with a technology, like AI, and identify opportunities before even considering the citizens problems and needs felt somewhat risky. I wanted a learning experience and a challenge for this diploma, and I got what I asked for.

Another thing that comes to mind as unfamiliar with this process, was the fact that I didn't have the opportunity to make quick prototypes or sketches to test my assumptions or findings. The experience and implications of a helpful AI-driven service is hard to replicate in a user test. It's not impossible, but it's not within the reach in a one-person diploma project. Instead, I had to design material to inspire experts with various personal interests to speak with me about the subject. The discussions with the expert panel proved to be very informative and creative, and enough to drive the progress of the project.

Lastly, I want to highlight how interesting and fun this project has been to me. I have loved every second of working on it and I hope it shows in the result. The approach to make front-end citizen-centric helpful AI felt like a refreshing one in the space of public service, and I hope to inspire someone to take this approach in their own projects.

Thank you

Mosse Sjaastad for taking time from your busy schedule to give me thorough feedback and supervision during this project. To the expert panel: Matt Webb; Inga Tollerud, Oslo City Council for Education and Child Services; Dirk Lammering and Leo Sande Gasnier, Norwegian Digitalisation Agency; Daniel Hasan, Netlife; Robindra Prabhu, NAV; Elisabeth Thoresen, AAP-aksjonen; for all your valuable contributions. To my fellow students for the company, laughter, and support.

I would also like to extend a special thank you to my family for all their love, encouragement, and support. ♡

References

1 The Ministry of Local Government and Modernisation (2019) Meld. St. 30 (2019 – 2020) Report to the Storting (white paper) *An innovative public sector*.

2 Hansen, H., Lundberg, K., & Syltevik, L. (2016). *Digitalization, Street-Level Bureaucracy and Welfare Users' Experiences*. Social Policy &Amp; Administration, 52(1), 67-90. https://doi.org/10.1111/spol.12283

3 Norwegian Ministry of Local Government and Modernisation. (2020). *National Strategy for Artificial Intelligence*

4 Broomfield, H., & Reutter, L. (2019). *KUNSTIG INTELLIGENS/DATA SCIENCE: EN KARTLEGGING AV STATUS,UTFORDRINGER OG BEHOV I NORSK OFFENTLIG SEKTOR Første resultater:.*

5 The Norwegian Digitalisation Agency. (2021). *Konseptskisse for realisering av en innbyggerorientert digital assistent*. Retrieved from https://www.digdir.no/samhandling/konseptskisse-realisering-av-en-innbyggerorientert-digital-assistent/2949

6 Norwegian Ministry of Local Government and Modernisation. (2019). *One digital public sector*

7 Sellevold Barreth, A. (2019). Digitalisering av sosialtjenesten i NAV. En kvalitativ studie av hvordan digitalisering av sosialtjenesten i NAV påvirker ansatte og brukere. (Master). The University of Oslo.

8 Wilson, H., & Daugherty, P. (2018). *Human + Machine: Reimagining Work in the Age of AI.* Harvard Business Review.

9 Raisch, Sebastian & Krakowski, Sebastian. (2020). Artificial Intelligence and Management: The Automation-Augmentation Paradox. Academy of Management Review. 10.5465/2018.0072

10 Holbrook, J., & Lovejoy, J. (2022). *Design Is [Smart]* [Video]. Google.

11 Holbrook, J. (2017). *Human-Centered Machine Learning* [Blog]. Retrieved 8 March 2022, from https://medium.com/google-design/human-centered-machine-learning-a770d10562cd.

12 *Informasjon om digital søknad for økonomisk sosialhjelp. nav.no.* (2019). Retrieved 17 May 2022, from https://www.nav.no/no/nav-og-samfunn/samarbeid/for-kommunen/digisos/sporsmal-og-svar-digital-soknad-sosialhjelp.

13 Jussbuss - University of Oslo. *NAVs veiledningsplikt* [Ebook]. Retrieved 17 May 2022, from https://foreninger.uio.no/jussbuss/saksomrader/trygderett/brosjyrer/veiledningsplikt.pdf.

14 Sørdal, K. (2022). *Slutt for Nav-hjelp. Det er kroken på døra for tjenesten «Hjelp med Nav», som ga gratis, uavhengig hjelp med Nav-spørsmål*. Vi.No. Retrieved 16 May 2022, from https://www.vi.no/okonomi/slutt-for-nav-hjelp/75889062.

15 NAV. (2021). *Nåsituasjonsanalyse.* Retrieved from https://www.nav.no/_/attachment/download/9210833c-135e-4b0d-8405-48fa4f50fd5b:20d2c64c6e89f2a4289a82f6a584b0769c21ba7b/2021018_N%C3%A5situasjonsanalyse_versjon%201.1.pdf

16 Dialogmøte 2 og 3 - NAV - nav.no. nav.no. (2022). Retrieved 16 May 2022, from https://www.nav.no/no/bedrift/oppfolging/sykmeldt-arbeidstaker/relatert-informasjon/slik-folger-du-opp-sykmeldte/dialogmote-2-og-3-nav_kap.

17 *McKenzie friend - Wikipedia*. En.wikipedia.org. (2022). Retrieved 7 March 2022, from https://en.wikipedia.org/wiki/McKenzie_friend.