

Moving the Needle in Technical Development in the Nordic Welfare Systems



Estonia Ambitious Kratt AI Strategy – Enhancing AI Usages in the Public Sector

Norway AI for Early Cerebral Palsy Detection

Denmark AI in Breast cancer Mammography

Finland Democratizing the Access to Helathcare Through a Digital Platform

Sweden Cloud journey in a municipality

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Publisher: Louise Callenberg, Leadership ARTS

Summary and Positions

The Nordic countries are well known for their long history of well-developed welfare systems. These systems are relatively similar across borders and have functioned as one of the pillars of the Nordic societies. Furthermore, like with our welfare systems, we are also similar in that our populations are fairly tech-savvy. However, increasing stress on the welfare systems provide ever growing challenges across the Nordics.

Staff shortages, financial difficulties, citizens' requirements on the welfare services are all increasing. To be able to deliver improved welfare services given these increasing economic and demographic problems, new technological solutions are needed. Although technology is not the answer to all problems that the Nordic welfare systems face, it does provide significant opportunities to increase the quality of services, particularly in healthcare and public administration.

Currently, the adoption of such technologies is too slow, and differs too widely across the Nordics. The digital adoption and tech literacy are too low across the countries, and the current state of digitalization varies greatly. This position paper discusses these problems and presents case studies that highlight the potential of implementing AI in the welfare system in

Sweden, Norway, Denmark, Estonia and Finland. The respective cases discuss the problems faced by municipalities, hospitals, and governments and how AI, cloud technology and data sharing tools can contribute to creating more sustainable, accessible, and efficient public services across the Nordics.

The Bättre delat (Better Shared) Nordic network consists of several decision makers and experts across Sweden, Denmark, Norway, Finland, and Estonia, that together explore possibilities for digitalization of the public sector and how collaboration can be used to achieve it successfully. Together, we have formulated six positions describing what needs to be done to ensure that the Nordic welfare systems make the best use of the digital tools that are at our disposal:

1. Lead by empowering
2. Build a solid foundation for the use of data
3. Talk about how AI and data sharing can solve the welfare challenges
4. Put citizens and end users first
5. Make sure it is scalable
6. Ensure interoperability across the Nordics

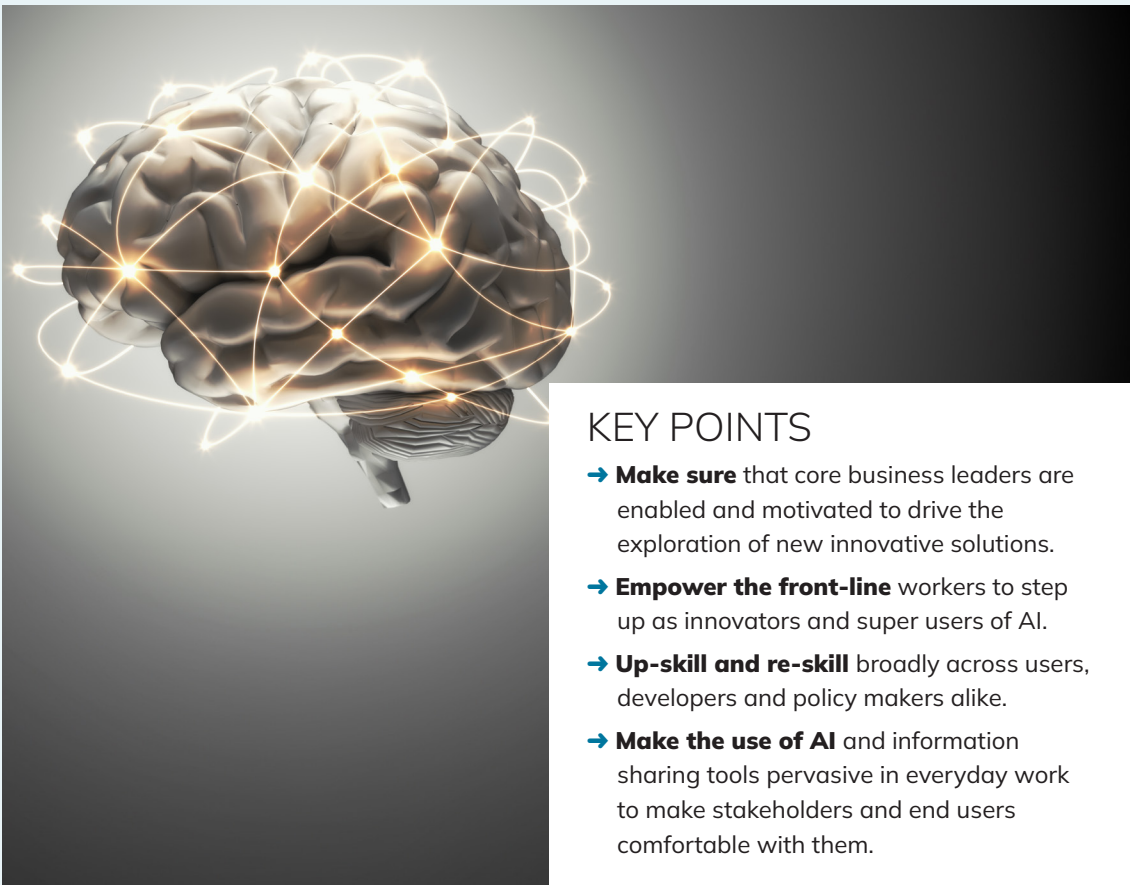
1. Lead by empowering

Digitalization in welfare systems is not about telling people what can be done with data sharing and AI, but rather empowering people *to do it*.

We need to ensure that people in core business roles – managers, doctors, teachers, case workers – have a good grasp of the opportunities and challenges associated with using AI and data sharing for the benefit of people and society. By using AI tools in our everyday work, we build the ability and confiden-

ce to utilize these technological solutions to tackle our biggest challenges.

At the same time, leadership needs the courage to lead experiments with new technologies as solutions to old problems. In synergy with the empowerment of the organisation, it allows employees to take initiative with the blessing from leadership. This way, data-driven decision making can be implemented without fear of lacking support from professionals or leadership.



KEY POINTS

- **Make sure** that core business leaders are enabled and motivated to drive the exploration of new innovative solutions.
- **Empower the front-line** workers to step up as innovators and super users of AI.
- **Up-skill and re-skill** broadly across users, developers and policy makers alike.
- **Make the use of AI** and information sharing tools pervasive in everyday work to make stakeholders and end users comfortable with them.

2. Build a solid foundation for the use of data

A sustainable welfare system requires data for innovation and efficiency. AI and other modern digital tools need large amounts of well-structured data to function. As the individual Nordic countries are too small, we need to cooperate to exploit its full potential. Without large volumes of available high-quality data there will be no large-scale AI implementation. Today, we have different ways of organizing and storing data, something that hinders adoption of new AI

solutions in health care and welfare. By supporting open data and supportive laws, we prepare for a future where data sharing goes beyond systems, creating a culture of transparency and re-usability. This makes data analysis more comprehensible, gives people knowledge and helps the welfare agenda with well-founded decisions. We want to format and manage data in the Nordic countries in a similar way. Data should be open and harmonized, and the laws should support this.



KEY POINTS

- **Enhance data** re-usability and accessible data storage solutions as the main strategy to enable widespread data utilization.
- **Scale up** through infrastructure, cloud, and health data sharing as the standard method.
- **Ensure that** data used for decision making is complete and representative of the population.
- **Harmonize the** terminology and definitions of data across the Nordic countries to ensure consistency and comparability.
- **Improve transparency** in machine learning applications to minimize “black box” issues.

3. Talk about how AI and data sharing can solve the welfare challenges

Digitalization and AI and data sharing can be a huge benefit to the Nordic welfare systems. The point of these technologies is to improve public services and healthcare for citizens, by reducing costs and freeing up time but also by improving the quality of services. We need to focus on the benefits of using them,

rather than the technology itself – that's just a tool to achieve the main goal. If we focus too much on the technology alone, it can slow down progress because it makes people less interested in change, especially those who don't have a tech background and don't see what the technology can do.



KEY POINTS

- **Work with civil** society and media to foster a lively public policy debate on AI and data that encourages innovation.
- **Stifle fear of** change through leading by practical example and sharing stories.
- **Cooperate on** solutions to shared social challenges rather than focusing on technologies that address a single local issue.
- **Explain to** the public how AI, digitalization and structured data can be used as a tool in the welfare systems – both to free up time and resources, and to improve the quality and security of services.

4. Put citizens and end users first

Digitalization is a collective endeavour. Citizens and end users need to be actively involved in prioritizing and finding the way forward. When implementing new technologies, leadership needs the support from users of the technologies that are being implemented, and the users need to be an active part in choosing the way forward. This way, change can be accelerated. If leaders have the support from the actual users, for example of health professionals, it

is much easier to take risks and achieve implementation.

Both inside and outside of the organisations, perception plays an important role in how these types of changes are perceived. One negative incident might weigh heavier than ten positive ones when it comes to how solutions are perceived in the public discourse. It is therefore important to highlight the human utility that these systems bring.



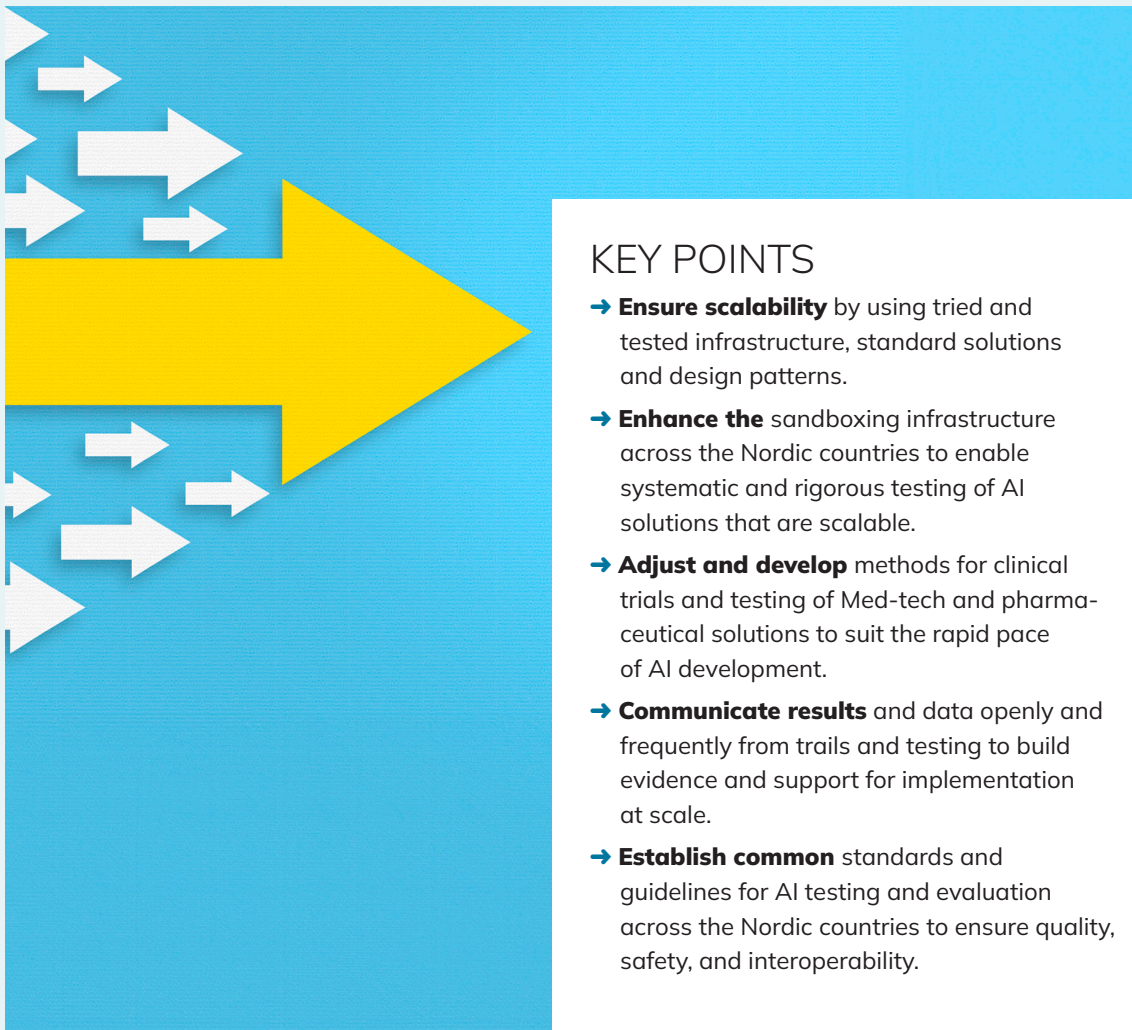
KEY POINTS

- **Create services** that enable citizens to decide on their welfare options and data management by involving citizens in beta testing and co-design, doing it with them, not to them.
- **Work closely** with citizens and other end users when designing new digital tools and services.
- **Create hybrid** digital-analogue solutions for those not as capable to use purely digital tools.
- **Engage civil** society and media in a lively public policy debate on AI and data that reflects the aspirations and concerns of the people - create the future now.

5. Make sure it is scalable

Pilots and proofs of concept are important but are not enough. To advance AI and digitalization in the Nordic welfare systems, we need to ensure that we are able to scale our solutions in a fast, safe, and secure way. To avoid creating a mess of hard to maintain “shadow IT”, we need to address the possibility to scale up already in the idea and pilot phase. Moving forward, we need to be

able to test solutions systematically and rigorously to build evidence and support, especially in healthcare where the standards are high. This necessitates good infrastructure to run tests and pilots. When we have this infrastructure, we can test and show the results of innovative solutions to leaders and professionals, making the case for implementation stronger.



KEY POINTS

- **Ensure scalability** by using tried and tested infrastructure, standard solutions and design patterns.
- **Enhance the** sandboxing infrastructure across the Nordic countries to enable systematic and rigorous testing of AI solutions that are scalable.
- **Adjust and develop** methods for clinical trials and testing of Med-tech and pharmaceutical solutions to suit the rapid pace of AI development.
- **Communicate results** and data openly and frequently from trials and testing to build evidence and support for implementation at scale.
- **Establish common** standards and guidelines for AI testing and evaluation across the Nordic countries to ensure quality, safety, and interoperability.

6. Ensure interoperability across the Nordics

The Nordic countries have different laws and legal interpretations regarding data sharing and AI. This, together with cultural and historical differences, affects how they use and implement these technologies. Having similar legal interpretations around data sharing and

AI would help the Nordics work together better and set a common standard. By ensuring interoperability across borders, the Nordics can achieve critical mass in using AI and data sharing technologies to improve welfare and society, and become a strong digital hub in Europe.



KEY POINTS

- **Set up a Nordic** interoperability centre to exchange policy, informatics and common standards.
- **Develop a common** Nordic smart cloud strategy.
- **Create a common** Nordic understanding of the EU regulation based on proportionality and risk versus benefit.
- **Establish a Nordic** common ground on AI ethics to foster responsible use of AI.

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Introduction

Despite extensive welfare programs, the Nordic countries are faced with challenges such as staff shortages, financial difficulties, and increasing demands on new services from citizens. There is a clear need to be able to offer a more personalized and more efficient service in healthcare, education, and social care.

This is where AI and other modern technologies come into play as a potential solution. Integrating AI and data sharing into welfare opens opportunities to optimize resource utilization, staff management, and personalized services to better meet each citizen's specific needs. This position paper, together with its case study collection, explores the possibilities of implementing AI and other modern digital tools in the welfare system and how it can contribute to creating a more sustainable, accessible, and efficient public service in Sweden, Norway, Denmark, Estonia and Finland.

The document uses several concepts. By "digitalization" we mean efficiencies that come from operational transformation in conjunction with increased use of modern IT, including AI, cloud service, data sharing et cetera.

The Nordic welfare systems are leading in the digitalization of social services, however, the transition to digitalized systems is too slow, which means that we are missing out on solutions that can improve our quality of life. The Nordic welfare systems need innovative solutions to meet growing challenges. Health care is a case in point. There is simply not enough available staff and expertise to meet the health care needs that exist in modern society, which is increasingly evident in the form of staff shortages in many areas. New technology in the form of cloud services and AI have been shown to be able to counteract staff shortages by providing not only more efficient, but also better care. However, despite the great potential of cloud services and AI, this

technology is generally not as widespread across the Nordic countries as one could expect. While some of the Nordic countries have come further than others, a common problem in those trailing behind seems to be an underlying scepticism with regards to data sharing and AI technology. Here, the focus tends to lean heavy on the risks rather than the benefits that the new technology can bring. In the debate, the legal risks have been well documented, while the benefits in terms of health and quality of life are not as established.

This collection of case studies aims to balance the discussion by exemplifying how data sharing cloud solutions, and AI have been used in different Nordic countries to improve welfare for citizens. By showing this across countries and at the operational and strategic level we aim to showcase its full potential. The need to protect citizens' sensitive data must be seen in relation to the missed opportunities for improved and less resource-intensive welfare services that arise when the best available technology is not applied on a large scale. The balance between the theoretical risk of citizen's data being disclosed, and the actual risk of deterioration of welfare services because of the non-use of available technology, requires an active stance based on the full picture of what is at stake. The increasing welfare problems manifested in citizens' lacking access to care and welfare are gradually creating an increasingly critical situation that requires a more nuanced view on the implementation of AI-systems and data sharing principles.

Case Studies

Background and Context

Each case study shows how welfare and healthcare has been improved locally in each country with the help of data sharing and AI. The case studies have been identified and researched by the #BättreDelat (BetterShared) team, and subsequently discussed in the Nordic network as a part of sharing of best practices regarding how AI can be used to improve welfare.

The need to drive the Nordic dialogue stems from the observation that despite positive advances, cloud services and AI technology are still not commonplace in the welfare sector in the Nordics. Although advances are being made, and in some countries at a rapid pace, the Nordic public sectors are still at a relatively early stage. Re-inventing the public sector using AI is a complex task, so the Nordic countries can benefit from sharing best practices to create a welfare sector that is even more efficient, accessible, and focused on meeting the needs of its citizens in the best possible way. As the case studies show, AI technology has the potential to have a fundamental impact on the welfare system, from schools to elderly care. Once scaled, it has effects throughout the country where it is implemented, contributing to improved quality of life for citizens regardless of location and age. It is therefore of

great importance to achieve scalability, as one-off local solutions cannot provide the economies of scale needed to reach the full potential in welfare improvement. Sharing experiences across countries is a powerful mechanism in overcoming local barriers to scalability.

On a contextual note, a common barrier to data sharing in the Nordics, and one of the reasons for the differences in progress in the different countries, is data protection legislation. Opinions on data privacy and cloud services vary between countries and regions, as legal interpretation of how cloud technology affects data sharing and citizens' data are crucial in this context. Given current legislation, there are complex trade-offs between the use of cloud services versus citizens' data privacy. This can create obstacles to the implementation of this technology on a broader scale, as can be seen in Sweden, where many authorities have been very restrictive when it comes to data sharing and cloud technologies (the latter largely due to the Schrems II judgement). Some Nordic countries have however come further in this area, as can be seen in Finland where they have recently taken the step to legislate for shared patient data by default (unless someone actively opts out).

Case Study Collection

The following collection of case studies paints the whole picture through examples of the direct benefits available from using data sha-

ring and AI technology, as well as the stances required thereby.

Estonia

Kratt – an ambitious strategy for driving AI usage in the public sector



Since 2019 the Estonian government has been implementing its ambitious AI strategy – Kratt. The goal of the strategy is to enhance and advance Estonia’s AI adoption through implementation in various sectors across the country¹.

Kratt has a particular focus on public services, where the goal is to enhance efficiency and effectiveness by leveraging the power of AI systems². The strategy also involves developing current practises in governmental work, ultimately, increasing the transparency and effectiveness of the Estonian democracy.

The use cases are broad, and many. Some interesting examples include the Estonian Information System Authority using machine learning algorithms to detect anomalous activity and accidents in traffic. The Estonian Police Department using predictive analysis methods to optimally allocate resources in traffic regulation, and The Estonian Unemployment Insurance Fund using AI to develop their job matching functions to be able to assist unemployed Estonians with better personalized job matching.

Other more niched use cases have been developed. One such example is HANS; an AI tool developed to simplify and streamline parliamentary sessions. It utilizes speech recognizing technologies to transcribe sessions, increasing the accuracy and speed at which the parliamentary sessions are transcribed. Another similar example is the Bürokratt project. Bürokratt is a digital assistant tool which is aimed to simplify bureaucracy for Estonians³. Tasks such as apply-

ing for fishing permits or renewing identification are made simpler through digital application processes. This helps those who are ill equipped to easily access necessary bureaucracy without having to go to a physical office or fill out hard-to-grasp paperwork. In addition, these initiatives, who are enabled through the Kratt strategy, all contribute to a more accurate and transparent democracy, available to all.

One of the questions that arise when hearing about this project is; why is this type of strategy not in place in other countries? One of many potential answers lies in the Estonian governments awareness to mitigate risks

that come with AI, that if not dealt with might halt processes due to ethical concerns or misuse of sensitive data. One such mitigating action is to regularly hold panel discussions on topics such as those mentioned above, or discussing how to ensure that AI implementation does not harm democracy or undermine trust in digitalization⁴.

All in all, the Kratt strategy allows the Estonian government to systematically advance the nation’s use of AI systems to ensure a more effective and accessible democracy for all. It deals with risks in a manner that accelerates implementation, where it otherwise might stall due to ethical and legal concerns, or fears of diminishing trust in democracy or digital society.

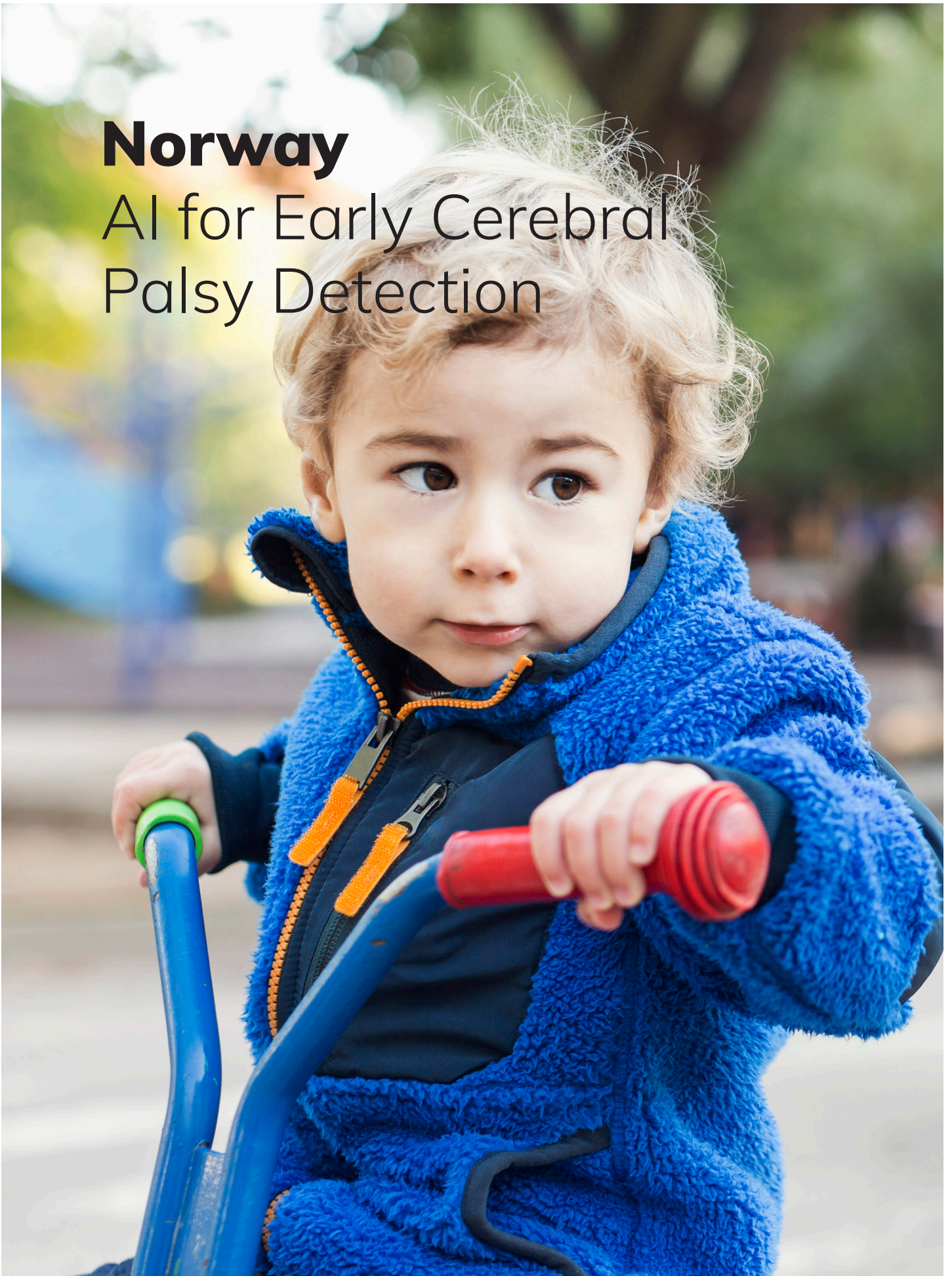
»These initiatives all contribute to a more accurate and transparent democracy, available to all.«

1. e-Estonia, 2020
2. e-Estonia, 2024

3. e-Estonia, 2024
4. e-Estonia, 2024

Norway

AI for Early Cerebral Palsy Detection



The most common reason for physical disabilities during childhood is cerebral palsy (CP)⁵. A disease which in many cases leads to the need for life-long special care and services. In early born children one out of ten develop cerebral palsy, yearly in Norway there are around 120-150 new cases⁶.

In Norway the CP diagnosis is usually set between the ages of one and two⁷. However, the brain damage that causes CP occurs at an early state of infant development, during or, closely after birth. Early treatment of the brain damage, ideally, before 5 months of age, which is when the brain is in its most adaptable period in infants allows for early treatment to mitigate further damage. Further, late intervention for children with CP is also associated with increased risk of developing muscle and neurological issues, such as scoliosis, which 25% of CP diagnosed children develop due to a lack of early medical interference⁸.

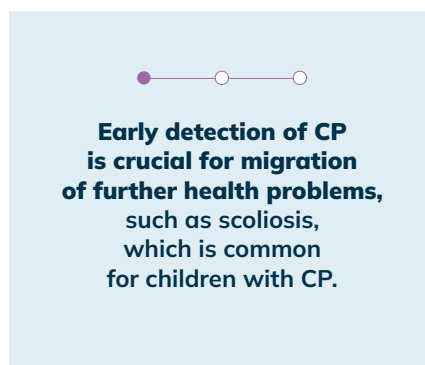
The current detection process relies on highly skilled clinicians in special clinics using a subjective and qualitative expert-based approach where the experts monitor the children's movements and interactions. This relies on the long-experienced professionals, that may not be available, and has resulted in inconsistent in the follow-up of sick newborns with problems, as the access to experts is limited.

Departments at two of Norway's leading hospitals, in collaboration with other actors, have

developed a new method to detect CP during pregnancies, between the weeks of 12-18, which is an indicator of later development of CP. This method utilizes an AI system to analyse an international video database of high-risk infants' move-

ment data. It involves using machine learning algorithms to analyse the data, which is then used to recognize cerebral palsy, providing care givers and clinicians with an improved tool. The other part of the project is the development of an app in which parents can conduct an initial assessment for CP in young children.

This is not only a case of increased treatment success from earlier treatment, but also a way to democratise the access to healthcare, making it more equal using modern analysis methods, which is not as labour intense as the current methodology. In doing so it could prevent and ease suffering, such as scoliosis, that otherwise would bring permanent physical disabilities. If this were to scale across Norway it would improve the availability of CP detection for those who do not have access to the expert care easily. Prioritizing accessible technologies like this is thus imperative to minimise suffering in children where it can be mitigated.



5. Norges teknisk-naturvitenskapelige universitet

6. Cerebral Parese-foreningen

7. Norges teknisk-naturvitenskapelige universitet

8. Rodby Bousquet- Neurologi i Sverige (2016)



Denmark

AI in Breast cancer Mammography

In Denmark breast cancer is among the most common types of cancer⁹ with around 4900 new cases per year and around 1050 fatalities¹⁰ and the highest mortality rate after lung cancer¹¹.

In the current standard process for detecting breast cancer a screening process is the central component, it is offered every two years for women between the ages of 50 and 69¹². The screening is performed by two radiologists who review scans of the patient breasts independently. Annually the number of screenings is estimated to 275 000 across Denmark. If a concern of a potential anomaly (potential cancer) is raised by any of the two radiologists, the patient is escalated to further investigation. Early detection is essential for better prognosis for survival, and it is therefore, crucial for this process to be accurate and effective¹³.

In the fight against breast cancer there is a need for a renewed approach to the screening process, which currently is resource intense and requires the work of at least two radiologists. Here, AI offers an innovative approach to how the screening process is constructed, which has large potential of improving resource efficiency, and, importantly, keep or even improve accuracy. Previous research has shown that being diagnosed with a false-positive cancer is linked to heavy psychological stress and suffering, as these patients believe that they are sick in cancer when they are in fact healthy. This is especially the case for younger women¹⁴. To mitigate the unnecessary suffering caused by false-positive diagnosis, AI can help improve the screening process both for those who are ill and those who are not.

In one of Denmark's largest regions the AI solution has been implemented since November 2021. The technology is used as a first assessor for the low-risk patient group, which make up about 70% of the screening population. The AI offers large scale resource efficiency through its ability to act as the first of two assessors, and as the low-risk group is large, the use of the AI is also large. Upon disagreement between the AI assessor and radiologist

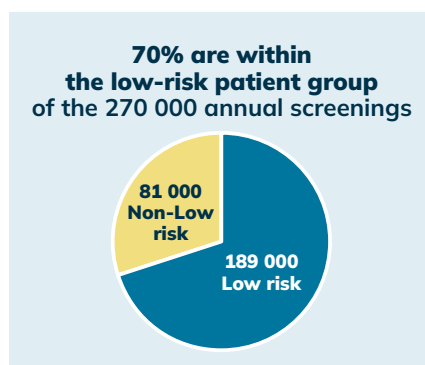
the screening is sent for a consensus conference, as in the normal process where one or two human radiologists investigate screening further.

Ultimately, the potential of AI in breast cancer lays in its potential to increase the number of available resources - comparative research on this topic has suggested that replacing one of the assessors with an AI system can reduce radiologist's workload with up to 50%¹⁵. From a human perspective the reduction of false positive cases can be seen as even more important. The ability to lower false positives not only means a decrease in the resources and time used by radiologist, but importantly also a decrease in the stress and suffering from patients that would otherwise receive a false positive diagnosis. In a similar study in Sweden, the use of AI systems has been shown not only to increase

efficiency but also to reduce the number of false positive cases¹⁶.

Now, the question is: Given that this technology can reduce suffering and improve resource efficiency, why is this not used everywhere? Interviews with clinicians in Sweden show that this is partly a question of buy-in from the side of hospitals and

if health professionals feel comfortable to trust the AI systems in treatment. Medicine is based on experience and can as such, be hesitant to implement technologies that replace human professionals, without sufficient evidence. It should also be noted that there are ethical and legal concerns to consider when dealing with AI, which are also some of the main reasons for the lack of its spread. Interviews with clinicians in Sweden also show that personal data security is a top issue, which is the case for most AI related technologies. There is utility in this sceptic view, however, it should be noted that when the skepticism is different between regions it can lead to unequal access to these technologies, and in turn create unnecessary suffering among patients.



9. Danmarks Statistik, 202
10. Cancer.dk, 2023
11. Ugeskriftet.dk, 2020

12. Center for Innovativ Medicinsk Teknologi
13. Center for Innovativ Medicinsk Teknologi
14. Lindfors, O'Connor & Parker, 2001

15. Ugeskriftet.dk, 2020
16. Dembrower et al, 2023

Finland

Democratizing the Access to Healthcare Through a Digital Platform



The lack of reliable access to healthcare in Finland has recently been recognized by Amnesty International in a report published in 2023, titled *Tiedän etten saa apua* (Finnish for “I know I won’t receive help”)¹⁷. Problems such as long waiting times, availability of healthcare facilities, and economic conditions are highlighted as problem areas that prohibit equal access to healthcare for all. In the light of this report the need for an easy access alternative becomes increasingly clear.

Helsinki University Hospital (HUS) and some of Finland’s leading university hospitals have, in collaboration with public services, developed a digital platform. One of the main goals of the platform is to democratise the access to healthcare, particularly for those in remote areas who might not otherwise be able to access it. This is accomplished by spreading reliable health care information to the Finnish people¹⁸ using a digital platform. It should be noted that this digital platform cannot take the burden off hospitals in cases that require specialist intervention, such as surgeries or MRI scans. But it can serve as a place where people and patients can find relevant information and get help for other issues, thus relieving the burden on the hospitals and other health facilities¹⁹ in such areas, and this innovative solution has shown positive results.

The platform consists of more than 100 hubs, which are all focused on different health-care themes for diagnosed patients. Topics such as mental health, chronic diseases, administrative tasks, and more, are all covered in their separate settings within the hubs. The platform provides patients with information as well as access to diagnosis and treatment²⁰. It further provides the ability for health professional to design their own care pathways, based on their expertise areas. One popular example is a wound navigator. The service assists professional with recommended

treatments by asking increasingly specific questions, that are based on a “branching tree approach”. In this way, it allows health professional to produce their own material rather than having to depend on an IT-function at their hospital to be able to make their material available.

As a positive outcome it has been shown that patients who follow the digital care pathways for treatment of severe obesity, are significantly less likely to seek emergency care or take up hospital nights after having followed the hub’s recom-

mendations. The service has developed to a standard where it has been granted CE-marking and distribution of the service to Europe has subsequently been discussed²¹.

Now, if this readily available solution exists, how come

Amnesty still reports significant challenges relating to unequal access to healthcare in Finland? As we have described there are several technologies available to help with issues relating to mental health, chronic diseases, and administration, as well as, the opportunity for professional to develop their own material. However, the usage of this digital platform has not scaled to the rest of the Nordics, nor outside of Finland’s university hospitals. In an interview with a project manager the lack of jurisdiction and digital infrastructure, such as cloud technologies, is brought forward as a key reason for the lack of scalability. Further, Finland’s unique approach to healthcare data usage has enabled the establishment of such a platform.

»The platform consists of **more than 100 hubs**, which are all focused on different health-care themes for diagnosed patients.«

17. Amnesty International, 2023
18. Terveyskyla
19. Health Capital Helsinki, 2023

20. Health Capital Helsinki, 2023
21. Health Capital Helsinki, 2023



Sweden

Cloud Journey in a Municipality

In many small Swedish municipalities, staff shortages are a major challenge. According to forecasts the problem is expected to grow continuously until 2031, as the proportion of people over the age of 80 in Sweden is expected to increase by 50%, while the proportion of people of working age will increase by 4% during the same period²².

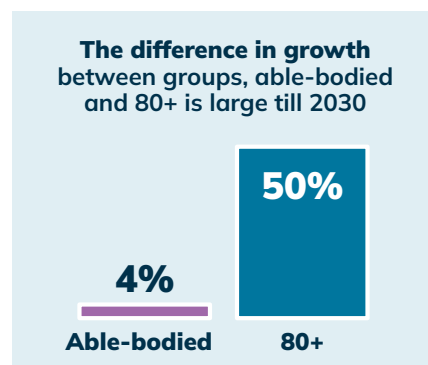
Saving resources will become increasingly important given that the shortage of staff in health and social care is expected to persist until 2035, and that all 21 regions in the National Board of Health and Welfare's latest survey report a shortage of nurses²³. In order to manage the business with fewer resources, it becomes important to free up human resources for the parts of the business that require interpersonal contact. This can be done by using technology to streamline other parts of the business.

A municipality that has succeeded in this has used data sharing and AI technology to automate parts of the municipality's operations.

The municipality has been working on the automation of administrative processes. Among other things, they have introduced robotic fee management, digital secretaries, and an application for digital reference checking. Another area that has been streamlined with the help of AI is routine work in the municipality's nursing homes. Here, the municipality has introduced medical robots that provide residents with medication dosage several times a day. In a hypothetical home with 30 people who need medication on average 5 times a day, the robot can save the municipality's nurses up to 150 care rounds per day. The time that is freed up can then instead be used for the care of patients who require more interpersonal contact. For the individual, medicine robots also provide increased independence as users do not have to rely on others to manage their daily medication.

In total, the municipality's work with automation and AI has resulted in freeing up 500 working hours per year. The overall goal is for digital services to free up 200,000 working hours per year by 2026²⁴, which is equivalent to 125 full time employees. This is especially important as it is currently difficult to recruit specialist nurses and health and social care staff, which is a situation that is predicted to continue at least until 2035.

Through these innovations, the municipality can counteract the problem of staff shortages while at the same time being able to prioritize the existing staff's time for tasks where the importance of interpersonal contact is high. Although, 500 man-hours might not seem like a lot at first glance, it showcases the potential that digitalization of municipal tasks holds, by saving



time on simple tasks.

In order for a municipality to be able to introduce automation of processes, targeted efforts are of course required. There are some lessons to be learned from this case. The municipality in question has actively focused on expanding the organization's digital competence. This has been done, among other things, by recruiting developers who can work with the municipality's data and digital solutions. The municipal management has also actively worked to combine people with technical competence and people with operational expertise in teams. By combining different skills, the advantages offered by the technology have been fully exploited by reaping benefits in

22. SKR, 2023

23. Socialstyrelsen, 2023

24. According to an interview with the manager of the municipality in question



several different areas in parallel. Furthermore, it has made it easier to get the entire business on board and overcome the fear that is often associated with this type of change. At management level, the municipality has also benefited from the fact that they have managers with technical expertise who have been able to design and plan the digitization work. Taken together, these factors have enabled the municipality to carry out several automation projects based on cloud technology and AI.

As this case study shows, automation of administration and repetitive processes is an area with great potential to streamline health and social care as well as the public sector in general. On a national level, technology can really make a difference. For example, introducing medical robots in more of Sweden's municipalities would have a major impact on resource consumption nationally. The population over the age of 80 has an average of five daily medications, and in nursing homes the same figure is an average of ten²⁵. Although not all of these require assistance from healthcare professionals, medical robots would free up large parts of the resources that are currently needed for nurses to be able to medicate manually. With this in mind, we are talking about millions of medication sessions daily that have great potential to be highly automated. Medical robots can also strengthen the inde-

pendence of the elderly as they do not become dependent on healthcare professionals for daily medication.

Unfortunately, this type of technological solutions does not seem to be widely spread across the country's municipalities. There are certainly a number of reasons for this, not least that Sweden's municipalities have very different conditions when it comes to this type of investment in their operations. A key factor, however, seems to be whether the municipal leadership understands and believes in the technology in question. Among other things, it may be a matter of limited technical competence that makes it difficult to understand how the technology should be implemented and what the benefit realization can look like. This can make it difficult to believe in the feasibility of such an investment. The same lack of technical competence is often found at other levels of the municipalities' operations, which in turn can lead to skepticism among the municipality's employees. On the whole, this contributes to hindering change and the stagnation of technological development. As this case study shows, there are very large potential gains to be gained from helping Sweden's municipalities and the public sector in general to overcome this initial barrier. Ultimately, it is an investment in people's well-being, where steps need to be taken to meet the demands of the future.

25. Elm. 2010

Examining the Case Studies

The following sections contain insights from the case studies and a discussion of what can be learned, thus providing a lens for cross-case examination of benefits, success factors, challenges, and drivers in reaching scalability.

Benefits of AI and Data Sharing

As the case studies demonstrate, AI and data sharing possess the potential to fundamentally change ways of working across the Nordic welfare systems. Ranging from how citizens can now interact with public authorities via streamlined digital services, as discussed in the Estonian case, to how diseases such as cancer and cerebral palsy can now be detected in a more effective way, as discussed in the Danish and Norwegian cases.

It is evident that AI can free up a lot of time and resources in the welfare system. For example, automating routine time-consuming tasks can free up valuable resources that can be invested in creating a more empathetic and personalized welfare and care environment, which is done by providing citizens with interpersonal interaction and patient care where it matters most. This paves the way for more individualized health and social care services, improved use of resources and increased independence for the elderly and sick.

The case studies also show how technology can serve as a catalyst to bring about a more accessible and just welfare system. In Finnish healthcare, this is achieved through digital platforms where patients can seek information and treatment for diagnosed conditions. In Estonia, AI contributes to enhancing democratic transparency by accurately transcribing parliamentary sessions. Giving citizens access to digital tools also provides them with a greater autonomy and means of preparation, as shown in the Finnish case using digital care pathways, and in the Nor-

wegian case using an app to get a preliminary diagnostic information on the risk of developing Cerebral Palsy. Ultimately, this drives democratization of the access to welfare and medical expertise, as it is now codified in digital platforms. Whereas the old medical system relied on patients having to physically visit hospitals and caregivers, new digital systems allow patients to assume a more active role in their care process. It also makes health care more accessible to those ill fitted to visit the hospital, due to physical restraints or simply a lack of nearby facilities, which have been shown to be a problem in the Finnish context.

The Swedish case demonstrates how change can be achieved at the local level, by leveraging technological solutions. This has been made possible by achieving buy-in from the leadership in the municipality and by leveraging technology-competent leadership. This example also highlights the importance of quantifying progress to create an environment where progress in using technology for citizens' benefit is promoted and celebrated.

Challenges and Drivers in Reaching Scalability

Despite all the benefits, the integration of AI and data sharing in the Nordic welfare systems is not risk free. Concerns regarding misuse of sensitive data, and citizens' data security, are common among legislators and welfare professionals. In healthcare there are also concerns regarding lack of medical evidence when it comes to AI usage, since medical evidence is always a cornerstone of ensuring patient safety.

Further, questions arise regarding accountability when things go wrong. For example, what happens if an AI system fails at a certain task, who is responsible? Is it the welfare service provider? The provider of the AI system? Or those who authorized the use of the technology? Unresolved questions such as these can have a hindering effect on the willingness to use innovative technology such as AI, thus limiting its spread.

To achieve scale in the use of AI and data sharing in welfare there are a few main points these case studies have highlighted. Firstly, the need for digital infrastructure such as cloud technologies are essential for scalability. There are instances where local one-off builds of AI or data sharing are viable, however, to reach scale, more rigorous and shareable solutions are needed. In many cases these questions boil down to how legislation is constructed, especially regarding how information can be lawfully used and spread (e.g., GDPR). But legislation can be changed, as we have recently seen in how Finland shares medical data, where the new default is that medical data is shared, whilst still giving citizens the opportunity to revoke the access to their data.

The case studies also show that transforma-

tion using AI requires availability of the right resources. What the right resources are differ between countries and contexts, but the cases highlight the areas of money, competence, personnel, as well as buy-in from management and leadership teams. In the Estonian case we have showcased a situation where buy-in comes from the side of the Estonian government and has been transferred downstream to agencies and other actors. In a similar vein, the Swedish case showcases how buy-in for data sharing technology (despite challenging jurisdiction) can be created at the municipal level from leaders with tech-competence who can readily understand how to apply it.

The Danish, Norwegian and Finnish cases show how hospitals can create changes in established medical practises, such as AI systems for breast cancer screening in Denmark, early detection of Cerebral Palsy in Norway, and how creating a digital health platform in Finland can improve citizens' care pathways through involvement and allowing for more autonomy. Nonetheless, several pre-requisites such as buy-in from management, digital competence and digital infrastructure are necessary to enable these changes.

Concluding remarks

The need for digitalization of the Nordic welfare systems is large and growing across country borders.

If not adequately dealt with, citizens will suffer the consequences through technologically under-developed institutions, ineffective public services, and ineffective healthcare. Although data sharing and AI are not risk free, these technologies can in many cases provide the possibility of handling the increasing pressure put on the Nordic welfare systems. In this position paper we have showcased examples in all countries where digitalization in the form of data analytics, AI, cloud services, and infrastructure is used to improve people's

lives. The positions that we have presented above reflect what needs to happen for change to be possible across the Nordics to support the development needs in all countries. No matter the current situation, the potential gains are huge, and the losses, both monetary and in terms of human lives are too high to be ignored. We are calling on policymakers to act to ensure that we realize these potentials, in accordance with the positions presented in this position paper.



#Bättreделat

is an initiative within Govtech Sweden and consists of a coalition of organizations and individuals from the public sector across the Nordics.

The coalition wants to contribute to the region making the best use of the possibilities of technology to save lives.

