Digitalisation and digital transformation in Sweden

Implications for persons with disabilities

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Johanna Gustafsson

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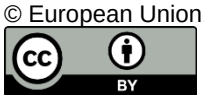

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Contents

1 Executive summary

The Swedish government have adopted a digitalisation strategy which includes five prioritized sub-goals on digital competence, digital security, digital innovation, digital management and digital infrastructure. This strategy does not address disability and neither what impact the strategy has for people with disabilities. The public sector is obliged to meet the requirements for accessibility set in the Act on Accessibility to Digital Public Services, which is a transposition of the Web accessibility directive. An authority for digital administration has been established with the task of supporting the digitalisation of public administration as well as supporting the government with data and analyses.

Government-led strategies on digitalisation and digital transformation most often address people with disabilities. In the areas of e-health, digitalisation in the education system, and digital administration the strategies include the situation of people with disabilities. The strategies for e-health and digitalisation in the education system mainly address the opportunities of digitalisation while the strategy for digital administration mainly address the risk for digital exclusion.

The Swedish Agency for Participation is commissioned by the government to make annual follow-ups of, for example, how municipalities, regions and authorities work with accessibility and participation for people with disabilities. The public sector is to comply with the law on digital public service as well as the web accessibility directive. Regarding digital accessibility, the last year´s follow-up shows that the situation has improved somewhat over time, but that there is still room for improvement in both authorities, regions and municipalities. Websites and e-services (that are meant for public use) are to a relatively high extent designed to be accessible for people with disabilities. Regarding internal platforms for work and communications (to be used by employees) the follow-up shows that accessibility is not as developed. Training and education on digital accessibility for professionals are often offered as shorter courses where the training material is available on, for example, a website provided by the employer or by a training company but it is difficult to get an overview of, as there is no comprehensive information.

The disability rights organisations present a double-sided perspective on digitalization and the digital transformation. At the positive side is improved opportunities for independent living and specialized care as well as tailor-made solutions in education. However, whether digitalisation is to become an opportunity or a barrier for people with different types of disabilities depends on accessibility. At the negative side is a risk of digital exclusion, which affect the right to citizenship and participation in society for people with disabilities. The digital divide is also a matter of socio-economic standards. Having a low financial standard is relatively common among people with disabilities, and the combination of having a disability, which can complicate the use of digital technology, and not having enough money to finance the technology needed, may lead to a double risk of digital exclusion for people with certain disabilities.

Good practices

- The Swedish Agency for Participation has gathered information for professionals regarding digitization and accessibility. This concern, for example, requirements on accessibility in procurement of services, for services and products to be

designed so that they become accessible and useful to as many people as possible.

- One authority, the Swedish Post and Telecom Agency (PTS) is responsible for ensuring that every citizen, including people with disabilities has access to digital communications, and they procure digital communication services that are considered to be of special importance for people with disabilities. PTS also organized innovation competitions and give funding to projects that contribute to long-term digital inclusion of people with disabilities as well as performs evaluations of existing commercial digital services and products, for people with disabilities.

Recommendations

- The principles of universal design need to be applied in the development of new products and services and may be achieved by involving people with disabilities in the design.
- There is a need for an increase in knowledge, which is aimed at users as well as contractors and suppliers of digital products and services. For users with disabilities training initiatives also need to be made accessible. For contractors and suppliers, collaboration is needed with people with disabilities, to increase knowledge about what accessibility means, and how it can be achieved, for end-users with disabilities.
- In the annual follow-ups of the disability politics, a follow-up of the digital transformation is also needed, and the extent to which people with disabilities experience central digital tools as accessible and useful to them.
- The intersection between disability and socio-economic factors, needs to be taken into account in the welfare systems. Disability benefits and other economical transfer system must recognize the needs for modern technology in order to not exclude in digitalisation, so that people with disabilities do not face double risks of digital exclusion.

2 Are government strategies and plans on digitalisation and digital transformation disability-inclusive?

2.1 Disability inclusion in generic strategies on digitalisation and digital transformation

2.1.1 National digitisation strategy

In 2017, the Swedish government adopted a new digitalisation strategy "For a sustainable digitalised Sweden".[1] The strategy includes five prioritized sub-goals on digital competence, digital security, digital innovation, digital management and digital infrastructure, which focus on the contribution of digitalisation to a societal development:[2]

"• Digital competence means that everyone must be familiar with digital tools and services and have the ability to follow and participate in digital development based on their capabilities.
• Through digital security, people, companies and organisations must feel trust and confidence in the use of digital services and that they are easy to use.
• Digital innovation means that conditions for new or better solutions that provide value for the environment, society, companies and individuals are created and disseminated.
• Digital management points to the importance of operations being streamlined, developed and given higher quality through control, measurement and follow-up.
• Digital infrastructure highlights the importance of so-called hard and soft infrastructure being improved and strengthened so that data can be transported as efficiently as possible."

However, this strategy does not address disability and neither what impact the strategy has for people with disabilities.

In 2018, a new authority for digital administration, DIGG, was established with the task of promoting and supporting the digitalisation of public administration as well as supporting the government with data and analyses in this area. The public sector is obliged to meet the requirements for accessibility set in the Act on Accessibility to Digital Public Services.[3] By digital service, the law refers to various services or information provided through the technical solutions specified in the Web accessibility Directive[4] and the EU Accessibility Act which is to be implemented by the Swedish Constitution by 28 June 2022.[5] Products and services released on the market must meet the requirements of the directive no later than June 2025 and a process will be started with the aim of deciding how Swedish constitution should be designed to comply with the directive's requirements.

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1 The Swedish Government´s digitalisation strategy in brief: https://www.regeringen.se/regeringens-politik/digitaliseringsstrategin/.
2 The Swedish Government´s digitalisation strategy, comprehensive form: https://digitaliseringsradet.se/media/1191/digitaliseringsstrategin_slutlig_170518-2.pdf.
3 The law on digital accessibility: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-20181937-om-tillganglighet-till-digital_sfs-2018-1937.
4 The European Accessibility Act: https://eur-lex.europa.eu/legal-content/SV/TXT/?uri=CELEX:32016L2102.
5 The European Accessibility Act, application in Sweden: https://www.mfd.se/verktyg/lagar-och-regler-om-tillganglighet/eus-tillganglighetsdirektiv/.

The Act on Accessibility to Digital Public Services[6] applies to all state or municipal authorities. Sweden also follows the legislation regarding web accessibility in other laws and regulations. The law and the regulation that mainly transpose into other national laws and regulations are the Discrimination Act (2008: 567)[7] and the Convention on the Rights of People with Disabilities (CRPD).[8]

2.2 Disability inclusion in focused or sector-specific strategies on digitalisation and digital transformation

2.2.1 E-health

The vision E-health 2025 has been in place since 2016. It is an agreement between the government and Sweden's Association of Local Authorities and Regions (SKR) that Sweden will be the best in the world at taking advantage of the opportunities for digitalisation in health care and social services by 2025.[9]

The strategy addresses people with disabilities regarding digital services for increased security and independence and writes “With new technology, care and other support and services can be provided outside the traditional environments, such as care centres, hospitals and special housing. Among other things, conditions need to be created for older people or people with disabilities to be able to live independently in their own home with digital support while maintaining security. For people with chronic illness, it can be a matter of measuring their own vital parameters, such as blood pressure and heart rate, and receiving support in maintaining health through digital solutions. For children and young people in vulnerable situations, digital solutions can provide opportunities for accessible and adapted information about support from society.”[10]

The Swedish Agency for Participation, which has the task of monitoring and analysing the development of policy in the field of disability, has in line with this task been monitoring the use and implementation of digital technology. When it comes to e-health, they point out that e-health and welfare technology can have a positive impact on the lives of people with disabilities if used properly, as it opens opportunities for accessible care and for a more independent life.[11] For example, they point to that welfare technology can strengthen the opportunities for improved personal integrity, for example by making it possible to take care of personal hygiene more independently. It can also give people a greater opportunity to control who is allowed to enter their home.

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6 The law on digital accessibility https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-20181937-om-tillganglighet-till-digital_sfs-2018-1937.

7 The Discrimination Act: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/diskrimineringslag-2008567_sfs-2008-567.

8 The Convention on the Rights of Persons with Disabilities https://www.regeringen.se/4ae1cb/globalassets/regeringen/dokument/socialdepartementet/funktionshinder/konvention-om-rattigheter-for-personer-med-funktionsnedsattning.pdf.

9 E-hälsomyndigheten, vision för e-hälsa: https://www.ehalsomyndigheten.se/om-e-halsa/vision-e-halsa-2025/.

10 E-health strategy: https://ehalsa2025.se/wp-content/uploads/2021/02/Strategin-for-genomforande-av-vision-ehalsa-for-2020-2022.pdf.

11 The Swedish Agency for Participation, welfare technology: https://www.mfd.se/verktyg/arbeta-med-digital-teknik/valfardsteknik-bade-arbetssatt-och-verktyg/.

In order for digitalisation in general to be accessible to people with disabilities, Swedish Agency for Participation provide information to professionals regarding, for example, requirements on accessibility in procurement of services, for services and products to be designed so that they become accessible and useful to as many people as possible. This may reduce the risk that adjustments need to be made afterwards.

2.2.2 National digitalisation strategy for the education system

In October 2017, the government adopted a national strategy for digitalisation of the education system.[12] The Government envisages the Swedish educational system to be a leader in using the opportunities of digitalisation in the best way possible, to achieve a high level of digital competence and to promote the development of knowledge and equality.

One purpose of the strategy is to contribute to the strategical, systematical, and cost-effective development within the entire educational system. The strategy extends until the year 2022, and contains three focus areas, all with intermediate goals.[13] The national digitalisation strategy addresses a disability perspective regarding accessibility in education and writes that: “The education, and the teaching in the educational system must be accessible to all. Adapted and functional tools based on different needs and conditions must be available where they are needed, which put demands on, among other, a disability perspective. Pupils, students, and staff need access to appropriate and accessible digital tools based on the needs of the business. In order for digitalisation to have an impact, it is important that the local principals are active in the development and e.g., develops local strategies that are linked to national strategies and goals."

The Government has given the National Agency for Education a special responsibility for developing support for increasing digital competence in the school system.[14] In a report, the National Agency for Education emphasizes the importance of the digitalisation issue affecting all levels, from political, to principal and teacher level.[15] They also point to the importance of having enough time and other resources for digitization. This includes financing for updates, new investments and skills development of staff. The teacher's digital competence is about being able to lead the schoolwork, integrate digital tools and resources in the teaching and give the students clear but achievable challenges. This presupposes that preschool teachers, teachers and other staff know how to use digital tools and choose digital teacher resources by assessing their pedagogical value based on the different needs and conditions of children and students. The special education school authority emphasizes that the digital learning resources in preschool and school make it possible to start from students' different needs, conditions, talents and development potentials in new ways[16]. However, they point out that if increased digitalisation in the school system is

[12] The Swedish Government, digitalization strategy education: https://www.regeringen.se/informationsmaterial/2017/10/regeringen-beslutar-om-nationell-digitaliseringsstrategi-for-skolvasendet/.

[13] The Swedish Government, digitalization strategy education: https://www.regeringen.se/4a9d9a/contentassets/00b3d9118b0144f6bb95302f3e08d11c/nationell-digitaliseringsstrategi-for-skolvasendet.pdf.

[14] The Swedish Government, digitalization responsibility in education: https://www.regeringen.se/debattartiklar/2019/12/skolverket-far-ansvar-for-digitaliseringen/.

[15] The National Education Agency https://www.skolverket.se/download/18.6bfaca41169863e6a65d438/1553968018488/pdf3971.pdf.

[16] The National Agency for Special Needs Education and Schools, SPSM

to work for everyone, there must be digital competence and the ability to develop accessible digital learning environments for children and students with disabilities.[17].

2.2.3 Sweden's digital administration 2020 - Digital service and inclusion

The report on Sweden's digital administration 2020[18] addresses people with "functional variation"[19], an expression that has become increasingly popular to use in Sweden, as a paraphrase for people with disabilities.

The report states, however, that it is people with disabilities that are referred to, and the report writes that: “More and more people will use digital community services in 2020, even in groups that have not used digital services before. In the wake of the COVID-19 pandemic, e-commerce and the number of digital doctor visits have increased sharply, while many workplaces have allowed their employees to start working full-time remotely. However, many are, for various reasons, still unable to access the digital services now offered in the community. This may be due to a lack of competence, to a lack of technology, but also to different types of "functional variations". This means that many people have been completely excluded from community service during the pandemic. It is important to counteract digital exclusion by, for example, taking active measures to make digital services accessible.”

https://www.spsm.se/stod/specialpedagogiskt-stod/digitalt-larande/.

17 The National Agency for Special Needs Education and Schools, SPSM https://webbutiken.spsm.se/digitalt-larande-for-att-na-malen/.

18 Agency for Digital Government https://www.digg.se/4aefd7/globalassets/dokument/publicerat/publikationer/sveriges-digitala-forvaltning-2020.pdf.

19 There is a good thought behind the change in the concept of disability in that it does not allow categorization - everyone has a functional variation - but at the same time it makes it difficult to identify people with disabilities and their situation in society, related to other groups and to the total population.

3 Do disability strategies address the potential of and challenges pertaining to digitalisation and digital transformation?

3.1 How digitalisation and digital transformation are addressed in the national disability strategy

The national goal of disability policy is, with the UN Convention on the Rights of Persons with Disabilities as a starting point, to achieve equality in living conditions and full participation of people with disabilities, in a society based on diversity.[20]

The national disability strategy addresses digitalisation and writes that: “The overall IT policy goal is for Sweden to be the best in the world at using the opportunities of digitalisation. This means i.e., that everyone who wants to, can use the opportunities that digitalisation offers, regardless of personal conditions such as age, disability and level of knowledge or other conditions that can be described as economic, cultural and ethnic. According to the UN Convention on the Rights of Persons with Disabilities, States Parties shall take appropriate measures to ensure that persons with disabilities have access to information and communication on equal terms with others, including information and communication technologies and such systems” (Chapter 7: 3).

The Swedish Post and Telecom Agency (PTS) is responsible for ensuring that everyone, including people with disabilities, has access to digital communications.[21] The authority therefore procures electronic communication services that are considered to be of special importance for people with disabilities. PTS has organized innovation competitions since 2010 and thus contributes to innovation and development in the field of digital communication for people with disabilities. They can also finance other development projects in addition to innovation competitions in the field of electronic communications. The prerequisite for receiving funding is that the projects are suitable and contribute to long-term digital inclusion of people with disabilities. PTS also performs evaluations of existing commercial IT services and products, regarding, for example, accessibility for people with disabilities. They shall also provide expert support and consult with the relevant authorities and take the initiative for ongoing knowledge transfer and exchange of information between the authorities on issues relating to disability policy and digital inclusion. In addition, the authority must be unifying, supportive and proactive in relation to other interested parties, in issues related to digital inclusion.

3.2 How digitalisation and digital transformation are addressed in specific disability-related strategies

3.2.1 Digital public service and administration

The Swedish Agency for Participation is commissioned by the government to make annual follow-ups of the application of disability policy.[22] The follow-up focuses on how municipalities, regions and authorities work with accessibility and participation for people with disabilities. The public sector is to comply with the law on digital public

[20] The Swedish Government: https://www.regeringen.se/regeringens-politik/funktionshinder/mal-for-funktionshinderspolitiken/.
[21] The Swedish Government: https://www.regeringen.se/49aa12/contentassets/0571a7504d49428292a6ab114e4b0263/nationellt-mal-och-inriktning-for-funktionshinderspolitiken-prop-2016-17_188.pdf.
[22] The Swedish Agency for Participation: https://www.mfd.se/vart-uppdrag/.

service, which contains provisions that mean that digital service must meet the requirements of being perceivable, operable, understandable and robust, and implemented based on the EU's so-called web accessibility directive. The follow-ups focus on, among other things, digitization, and digital transformation of the public sector. The 2020 follow-up describe, regarding digital accessibility, that the situation has improved somewhat over time, but that there is still room for improvement in both authorities and regions and municipalities.[23]

3.2.1.1 State Authorities

Ordinance 2001:526[24] on the state authorities' responsibility for the implementation of disability policy states that the authorities will ensure that their information and communication is accessible to people with disabilities. These include ensuring that websites, e-services, mobile apps and audio and video productions are accessible, that decisions concerning individuals are accessible and that meetings and conferences organized by authorities should be accessible to everyone. This is not yet fully fulfilled, as the annual follow-up by the Swedish Agency for Participation[25] shows that just over half (60 per cent) of the authorities' state that they, to a large extent, have designed the external website, e-services, and mobile applications in an accessible way. Just over a third (37 per cent) of the authorities' state that they, to some extent, have designed the external website, e-services and mobile applications in an accessible way, while a small proportion (3 per cent) of the authorities state that they have not done so.

On the other hand, when it comes to the in-house (internal) platforms for work and communication, used by the authorities, the follow-up shows that accessibility is not as developed. Only 14 per cent of the authorities' state that they have to a large extent designed the in-house work and communication platforms, such as work systems and intranets, in an accessible way.[26] However, two thirds (70 %) of the authorities' state that they have to some extent designed these platforms in an accessible way. A relatively high proportion (16 per cent) of the authorities' state that they have not designed the in-house platforms in an accessible way. The follow-up also addresses that computer systems and software that are not accessible are an obstacle in everyday life for many. By ensuring accessibility in the in-house work and communication platforms, authorities can create a workplace where as many people as possible can contribute fully.

3.2.1.2 Regions

With regard to the regions' (e.g., health and medical care and transportation services) work with digital accessibility, the follow-up by the Swedish Agency for Participation shows that there are opportunities for improvement for the regions in terms of

[23] The Swedish Agency for Participation: https://www.mfd.se/contentassets/04e6c14a7d7a4fec896d755a7d723e95/2021-3-uppfoljning-av-myndigheter-2020.pdf.

[24] The Swedish Government, Law on governmental bodies execution of disability policies.https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/forordning-2001526-om-de-statliga_sfs-2001-526.

[25] The Swedish Agency for Participation: https://www.mfd.se/contentassets/04e6c14a7d7a4fec896d755a7d723e95/2021-3-uppfoljning-av-myndigheter-2020.pdf.

[26] The Swedish Agency for Participation: https://www.mfd.se/contentassets/04e6c14a7d7a4fec896d755a7d723e95/2021-3-uppfoljning-av-myndigheter-2020.pdf.

designing e-services and mobile applications in an accessible way.[27] The regions handle many different types of e-services and mobile applications, such as reporting errors, booking a doctor's appointment, reading medical records, booking travel services or planning travel in public transport. Regarding e-services and mobile applications, only 1 in 18 regions state that they have to a large extent designed these in an accessible way, while the rest state that they have to a certain extent designed e-services and mobile applications in an accessible way. In the case of websites where residents can get in touch and access the regions' information digitally, just under half (7 of 18) of the regions state that they have to a large extent designed the external website in an accessible way. Just over half (10 of 18) state that they have to some extent designed the external website in an accessible way, while one of the regions states that they have not done so.

With regard to the in-house work and communication platforms, a third (6 of 18) of the regions state that they have to a large extent designed their in-house platforms, such as work systems and intranets, in an accessible way. Two thirds state that they have to some extent designed their platforms in an accessible way.

3.2.1.3 Municipalities

Regarding the municipalities' work with digital accessibility, the follow-up by the Swedish Agency for Participation shows that the municipalities work to a relatively large extent with designing their websites so that they are accessible to people with disabilities.[28] Just over half of the municipalities (55 per cent) state that they have to a large extent designed the external website in an accessible way, while just under half (44 per cent) state that they have to some extent designed the external website in an accessible way. Only 1 percent of the municipalities state that they have not designed the external website in an accessible way.

On the other hand, the follow-up shows that the municipalities do not work as hard to design their e-services and mobile applications so that they become accessible to more people. Examples of e-services and mobile applications are school platforms, services for applying to preschool, making error reports, applying for a building permit, or making a booking of some municipal activity. Just over one-fifth (22 per cent) of the municipalities state that they have to a large extent designed e-services and mobile applications in an accessible way. Just over two thirds of the municipalities (68 per cent) state that they have to some extent designed e-services and mobile applications in an accessible way, while 10 per cent of the municipalities state that they have not designed e-services and mobile applications in an accessible way.

Concerning the in-house´s work and communication platforms, the follow-up shows similar results as for e-services and mobile applications. One-fifth (20 per cent) of the municipalities state that they have to a large extent designed these platforms, such as work systems and intranets, in an accessible way. Just over two thirds (70 per cent) of the municipalities state that they have to some extent designed these platforms in an accessible way, while 10 per cent of the municipalities state that they have not designed the platforms in an accessible way.

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[27] The Swedish Agency for Participation: https://www.mfd.se/contentassets/4f92d834794c4011a9489cf19810d9e1/2021-2-uppfoljning-av-regioner-2020.pdf.

[28] The Swedish Agency for Participation: https://www.mfd.se/contentassets/535a4861ae2443c98993317585c6140f/2021-1-uppfoljning-av-kommuner-2020.pdf.

4 Promoting disability inclusion through funding, education and training

4.1 How funding promotes disability-inclusive digitalisation and digital transformation

In 2017, the innovation authority Vinnova was commissioned by the government to carry out special calls in the area of accessibility design.[29] The assignment aimed to contribute to activities, environments and services being designed universally so that they are accessible and useful to all people, regardless of disability, gender, age and background. A study carried out by the research institute RISE[30] within the framework of this assignment, however, shows that the various frameworks and requirements that affect the area have a double focus throughout. With regard to needs, the importance of meeting needs linked to disabilities is emphasized, but they also state, that accessibility should also be about gender, age and background. RISE points to the risk that if the investment does not prioritize needs related to disabilities exclusively and not only as a part of several social statuses, there is a risk that needs related to disabilities will be downgraded in the future for reasons that may have to do with lower status and interest of disability-related needs in comparison to other needs of the individual.

The Swedish Post and Telecom Agency, PTS, has been commissioned by the government to ensure that important services in the areas of electronic communications and mail are accessible to people with disabilities.[31] A central starting point in the work is to start from the needs of the target groups and to identify shortcomings in accessibility as well as to work for companies and organisations to include accessibility as a natural part of the work with the development of services and products. PTS has grants for procurement of services in this area for people with disabilities.

Since 2010, PTS has been organizing innovation competitions where companies and organisations receive funding for service and product development of up to SEK 3 million.[32] To date, PTS has supported 177 projects with a total of SEK 256 million, where the aim has been to develop new opportunities and increased quality of life for people who risk ending up outside the digital society such as people with disabilities or older people.

4.2 How disability inclusion is promoted through the education and training of digital professionals

Regarding web design, this type of education is given at several different levels, from shorter courses to university educations. What emerges when reading the content of several university level courses, is that digital accessibility is a concept that is used as well as universal design. For example, the course Graphic Design GR (A), Universal Design of Digital Accessibility, 15 credits at Mid University is about "*web design and apps with the aim of designing content so that it becomes accessible and useful for*

[29] RISE, projects: https://www.ri.se/sv/vad-vi-gor/projekt/uppfoljning-och-samverkansstod-inom-vinnovas-program-universell-utformning.

[30] RISE, report on universal design: https://www.ri.se/sites/default/files/2019-03/vinnova_rapport_studie_av_tillganglighetsdesign.pdf.

[31] The Swedish Post and Telecom Authority**:** https://pts.se/sv/om-pts/verksamhet/.

[32] The Swedish Post and Telecom Authority**:** https://pts.se/sv/bransch/internet/anvandbarhet-och-tillganglighet/finansiering-av-utvecklingprojekt-och-innovativa-lasningar/pts-innovationstavling/.

everyone /… / digital accessibility and usability. What we can do for different functional variations and disabilities. How should websites and apps be designed, how easy-to-understand texts are written, design methodology with user tests to get the desired result faster".[33]

However, it is difficult to get an idea of the course content without reading the course description for each individual course, so without an accurate inventory of the individual course syllabi, it is difficult to get an overview of the area.

The same applies to other higher education such as engineering and robotics.

4.3 How digital inclusion and accessibility is addressed in the education and training of accessibility and inclusion professionals

For professionals in different professional areas such as health care services or authorities, shorter courses in the field are often offered (often in the form of self-study), where the training material is available on, for example, a website provided by the employer or by a training company. What is offered around digital accessibility and to what extent, it is difficult to get an overview of, as there is no comprehensive information.

Concerning accessibility and inclusion professionals, in the case when professionals have an assignment of working with accessibility, for example in transportation, they may have a more comprehensive education in this field, either from the university or from professional courses, provided by their employer. It is, however, hard to find information without entering into each individual case.

Digitalisation has attracted attention in the wake of the COVID-19 epidemic. For example, the website Digital care (https://www.digitalvardochomsorg.se/om/) has been set up, which is an integrated information and support portal that provides clear support during the Corona pandemic in the digital transformation of municipal care and social services. The site is maintained by several authorities and research institutes in collaboration and is co-financed by the Ministry of Social Affairs.

The Swedish Agency for Participation has a mandate to monitor the use and implementation of digital technology. They have collected tips on tools and working methods to get the most and best out of welfare technology that is aimed at the businesses involved, and which offers shorter educations or information about various parts that concern digitisation.[34]

4.4 How digital inclusion is addressed via the training of people with disabilities

It is difficult to get an overview of whether training is offered to improve knowledge and understanding of using digitalisation, and what type of training is offered to people with disabilities related to digitalisation and digital inclusion. It is probable that a certain part of training takes place within the ordinary education system, at primary or secondary school level, and by this reach some students with disabilities.

[33] Mälardalens university: https://www.miun.se/utbildning/kurser/medier-och-design/grafisk-design/grafisk-design-gr-a-universell-utformning-av-digital-tillganglighet-15-hp/om-kursen/.

[34] The Swedish Agency for Participation: https://www.mfd.se/verktyg/arbeta-med-digital-teknik/valfardsteknik-bade-arbetssatt-och-verktyg/.

There are also examples of projects aimed at the target group, such as the "Adapted IT - path to digital participation", a project that was financed by the Swedish Inheritance Fund and aimed to give young adults with developmental disabilities the opportunity to increase their digital participation and independence.[35] The goal was to create a two-year distance education at Mora Folk High School, and the course is now given as an education in the folk high school's regular programme.[36] Through the project, it has also developed a digital school and life platform for people with intellectual disabilities - DigiJag - where users receive support for using functions on the internet and support functions for, for example, time management.[37]

[35] The Swedish Inheritance Fund: https://www.arvsfonden.se/projekt/alla-projekt/projektsidor/anpassad-it-vagen-till-digital-delaktighet.
[36] Mora Folkhögskola: https://www.morafolkhogskola.se/kurs/anpassad-it-2020/.
[37] Digijag: https://www.digijag.se/#/.

5 The opportunities and challenges presented by digitalisation and digital transformation to the rights of persons with disabilities

5.1 The most significant opportunities presented by digitalisation and digital transformation for persons with disabilities

Several of the Swedish disability rights organisations raise issues concerning digitization for their members. With regard to the possibilities of digitalisation, *Funktionsrätt Stockholm* sees that digitalisation can be an opportunity if accessible solutions in the digital transformation are offered by societal actors.[38] They thus believe that whether digitalisation is to become an opportunity, or become an obstacle, for people with different types of disabilities depends on its accessibility. Their call is to start from a universal design, and already in the planning phase assume that different people face different conditions, in the digital transformation. To achieve the ideas of universal design, the disability rights movement believes that it is important that people with disabilities are involved already when digital services are planned, and that the societal actors offers, for example, user tests with inexperienced users which can contribute to better services for everyone.

When it comes to opportunities in healthcare, for example, *Funktionsrätt Stockholm* describes that digitalized healthcare "can be a great advantage when it comes to healthcare areas where there is a shortage of specialists.[39] Instead of traveling around, remote care can be a solution, with robotic surgeries or remote consultations. The National Board of Health and Welfare shows that the digitalisation of recent years has led to increased opportunities for many people with disabilities, for example when it comes to communicating with authorities or health care services. For example, just over 80 per cent of the habilitation services for children and adults with disabilities have switched to digital activities as a result of the pandemic. Several of these services emphasize that the digital transition has been advantageous for certain groups, both during the pandemic and earlier. This applies, for example, to young people with neuropsychiatric disabilities. The digital transition has also made it easier to have follow-up meetings of, for example, certain assistive technology testing and for patients living further away.[40] *Funktionsrätt Sverige* also expresses great hope that preventive measures can be developed with digital self-monitoring and self-care. When the artificial intelligence, AI technology, gets better at doing the "hard work", the care staff can have more time for the patients".[41]

With regard to the education sector, the Funktionsrätt Sverige (an umbrella-organization for disability rights organisations) emphasizes, for example, that "digitalisation can be good for students with autism spectrum disorders if there is knowledge among teachers and staff at the school about how and why digital tools should be used. However, good knowledge of autism, skilled educators, relevant pedagogy and almost always tailor-made solutions for the individual student is

[38] Funktionsrätt Stockholm: https://funktionsrattstockholmslan.se/wp-content/uploads/2019/05/Vi-revolutionerar-digitaliseringen.pdf.
[39] Funktionsrätt Stockholm: https://funktionsrattstockholmslan.se/wp-content/uploads/2019/05/Vi-revolutionerar-digitaliseringen.pdf.
[40] The National Board of Health and Welfare: https://www.socialstyrelsen.se/globalassets/sharepoint-dokument/artikelkatalog/ovrigt/2021-3-7327.pdf.
[41] Funktionsrätt Stockholm: https://funktionsrattstockholmslan.se/wp-content/uploads/2019/05/Vi-revolutionerar-digitaliseringen.pdf.

required".[42] If this is met, digitization enables individual solutions that can benefit individuals with disabilities.

Internet use is also something that is highlighted in various arenas, as an opportunity for increased participation in society. A research study by Mohlin, Sorbring & Löfgren-Mårtenson examined how young people (16-20 years) with mild intellectual disabilities interact and participate on the internet.[43] They found that the opportunities with the internet that the young people themselves mention are mainly about developing new friendships and partner relationships. Parents and staff also believe that the internet can offer opportunities to both initiate new relationships and maintain already established relationships. The staff also believe that the internet means relational opportunities, especially since many young people with intellectual disabilities may be perceived as shy, insecure and have low self-esteem due to their limited social skills in "real life". Making a contact via the internet makes them feel like "everyone else", partly because they are at a safe distance, and partly because most other young people also initiate contacts via the internet. The study also shows that independent participation as such on the internet can be difficult, as the majority of the young people with intellectual disabilities participate to varying degrees in online activities, but independent online participation may be more limited than for other youths due to need of support and transparency in light of family control of those young people's lives. There may thus be doubts how many de facto experiences an independent online participation. Their relatives see great potential with digital technology, but that the presence in digital contexts is double-edged and even though the internet offers great opportunities for young people with intellectual disabilities, they believe that their young relatives are more at risk than young people without intellectual disabilities.

Regarding digitalisation in working life and its opportunities for people with disabilities, a review recently came from the Nordic Welfare Centre on new technology and digital solutions for increased inclusion in working life.[44] It highlights some specific opportunities related to working life, such as Technology-Enabled Prosthetic Environments, which aim to create reactive and adaptive environments", as a design concept for integrating assistive technology to create accessible workplaces. In these environments, the focus is on using a combination of technical and human assistance to create a work environment that functions well for people with different types of disabilities, such as autism. This type of technology could, for example, monitor and adapt sound and light environments, as well as control the technology so that it can be adapted to the individual's needs.

There is thus some description of both non-governmental and governmental actors about the opportunities of digitalisation, but it is significantly less than what is published and highlighted about the barriers and risks for people with disabilities.

[42] Funktionsrätt Sverige: http://funktionsratt.se/wp-content/uploads/2014/06/Remissvar-en-digital-agenda.pdf, p. 4.

[43] Mohlin, Sorbring & Löfgren-Mårtenson (2019) Del@ktighetens digitalisering. Om identitetsskapande aktiviteter på internet bland unga med intellektuell funktionsnedsättning. [The digitalisation of participation. About identity-creating activities on the internet among young people with intellectual disabilities] Rapport nr 2019:5 Högskolan Väst. http://www.diva-portal.org/smash/get/diva2:1379223/FULLTEXT01.pdf.

[44] Nordic Welfare Organisation: https://nordicwelfare.org/publikationer/ny-teknik-och-digitala-losningar-for-okad-inkludering-i-arbetslivet/.

5.2 The most significant challenges faced by persons with disabilities in relation to digitalisation and digital transformation

The annual survey Swedes and the Internet shows that among those who use the Internet rarely or not at all, the proportion of people with disabilities is twice as large as among the general population.[45] Of those who use the internet rarely or not at all, many states that complicated technology is an obstacle to internet use. A report from a workshop that *Funktionsrätt Stockholm* conducted with its member associations in the spring of 2019 points out that exclusion as a result of digitization can occur for many reasons.[46] The report writes that

> "People have different prior knowledge and financial conditions - but also different conditions for what kind of technology and communication they can handle. People with functional variation (another concept for disabilities, the authors remark) often have poorer finances than the rest of the population and live more often without any financial buffer. Buying a new computer or mobile phone can then be an obstacle when apps place high demands on performance or only work on a certain platform. When it comes to technical safety, there are risks with using older technology. Old software that is no longer updated by the manufacturer or operator is more susceptible to cybercrime. For those who cannot afford their own wifi, an open network can be attractive, but security is worse. The "cashless society" can also contribute to exclusion when demands for payment cards or digital payment methods become increasingly common. This affects people who for various reasons have no opportunity to use anything other than cash".

With regard to digitalisation in general, the follow-ups by the Swedish Agency for Participation of the situation for people with disabilities show that people with disabilities have access to the Internet at their home to a lesser extent compared with the rest of the population.[47] The differences are large between people of different ages and there are also differences between genders, where women with disabilities have to a somewhat lesser extent access to the internet at home, than men. In the general population, there are no such significant differences. People with disabilities also use the internet in their spare time to a lesser extent than the general population. Among people with disabilities, over 40 percent state that they would like to use digital services more if they were given the opportunity and that the largest obstacles are low digital knowledge of the user, that the services are not accessible and that the services are too expensive.[48]

The National Board of Health and Welfare's annual overview of measures and support for people with disabilities shows that digital exclusion has been increased in 2020 among people with certain disabilities.[49] It is partly about access to care linked to

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45 Begripsam: https://svenskarnaochinternet.se/rapporter/digitalt-utanforskap-2020/.

46 Funktionsrätt Stockholm: https://funktionsrattstockholmslan.se/wp-content/uploads/2019/05/Vi-revolutionerar-digitaliseringen.pdf.

47 The Swedish Agency for Participation: https://www.mfd.se/contentassets/2ecc7f42c99a48ef9d40162481d4a8f0/2021-8-uppfoljning-av-funktionshinderspolitiken-2020-del-ii.pdf.

48 The Swedish Agency for Participation: https://www.mfd.se/vart-uppdrag/publikationer/rapport/rivkraft-21--bristande-tillganglighet/ and https://www.mfd.se/resultat-och-uppfoljning/undersokningspanel/.

49 https://www.socialstyrelsen.se/globalassets/sharepoint-dokument/artikelkatalog/ovrigt/2021-3-7327.pdf.

COVID-19-pandemia, and partly about social interactions on digital platforms, and indicate challenges in the digital transition. They also show that the digitalisation of recent years has led to increased opportunities for many people with disabilities, for example when it comes to communicating with authorities.[50] This could be due to lack of a mobile bank ID, lack of digital knowledge or that guardians to children over 13 years cannot host digital visits.

The digital transformation of administration presupposes, for example, a mobile bank ID, which is a digital identification that has been increasingly used in Sweden. It is needed, for example, to be able to do banking matters digitally as well as for matters within health and medical care (such as the digital care portal 1177). Among people with disabilities, 74 % used mobile bankID in 2019, with large differences within the group/[51] Among people without disabilities, the proportion was significantly higher, 94 percent. A digital mailbox is also needed in the digital administration. According to PTS, half (51 %) of Sweden's population (16+ years) state that they use a digital mailbox.[52] However, digital mailboxes are not used to the same extent by people with disabilities and studies show that the most common obstacles that users encounter when using digital mailboxes are lack of accessibility in the mailboxes' function and interface and compatibility with aids.[53] Other obstacles highlighted are lack of information about what a digital mailbox is and lack of support for learning to use the service.

The National Board of Health and Welfare's overview also shows that many visits cannot be replaced by digital visits.[54] These visits have had to be postponed or replaced with telephone meetings. Another barrier is when the technology does not support various aids. These include difficulties in communicating through the digital care portal 1177 for people with severe hearing loss or speech difficulties. The National Board of Health and Welfare believes that this reinforces the importance of authorities and other activities always having alternative contact routes and adapted information in different formats.

In the area of employment and employment services is an on-going digitalization of the services. For some years now, the Swedish Public Employment Service has been conducting reform work which, among other things, means that the authority expands the range of digital services and offers more digital meetings for jobseekers.[55] Digital self-registration is the entrance to the authority for people who register as jobseekers. A development is underway around a self-assessment tool where the jobseeker, already in the digital enrolment, will be given the opportunity to inform the Swedish Public Employment Service about the support needs they have due to ill health or

50 https://www.socialstyrelsen.se/globalassets/sharepoint-dokument/artikelkatalog/ovrigt/2021-3-7327.pdf.

51 https://www.mfd.se/contentassets/2ecc7f42c99a48ef9d40162481d4a8f0/2021-8-uppfoljning-av-funktionshinderspolitiken-2020-del-ii.pdf.

52 https://pts.se/globalassets/startpage/dokument/icke-legala-dokument/rapporter/2021/internet/tillgangligheten-i-digitala-brevlador---en-anvandarundersokning.pdf.

53 https://pts.se/globalassets/startpage/dokument/icke-legala-dokument/rapporter/2021/internet/tillgangligheten-i-digitala-brevlador---en-anvandarundersokning.pdf.

54 The National Board of Health and Welfare: https://www.socialstyrelsen.se/globalassets/sharepoint-dokument/artikelkatalog/ovrigt/2021-3-7327.pdf.

55 The Public Employment Services: https://arbetsformedlingen.se/statistik/analyser-och-prognoser/analys-och-utvardering/arbetsformedlingens-lokala-narvaro.

disability.[56] The digital enrolment is followed by a planning meeting via a personal digital meeting, where the officer makes a labour market policy assessment and starts the preparation of an action plan. Personal digital meeting handles just over 80 % of all new registrations of jobseekers.[57] It includes everyone who registers via the web, has an e-identification and who does not need an interpreter. Other jobseekers receive support in the registration of the local employment service (physical meeting). The jobseekers who are not initially judged to need in-depth support run their own process via self-service. If a need for support is discovered, support is offered primarily in a personal digital meeting with employment officers with expertise in vocational rehabilitation.

The Swedish Public Employment Service describes that they strive to make it easy for all jobseekers to find information about support and initiatives that are available to people in need of this, and that their website therefore has been adapted to make it easier for visitors to find information about the agency's initiatives for support.[58] Ongoing work aims to give jobseekers greater opportunities to apply for certain grants on their own via digital channels and the Swedish Public Employment Service describes that this “is in line with the individual owning their case and being able to access information and support more quickly. The individual must then be able to take the initiative to seek the support he or she needs”.[59]

With the consequences of the ongoing pandemic and the rising unemployment levels, the use of digital services and distance meetings has increased significantly. The Public employment services expresses a concern that the transition of the business to more digital may lead to “a risk that individuals feel that the meeting with the authority has been made more difficult given that the entrance to the authority now mainly takes place via self-service and remote service without access to an individual officer”.[60] The employment service also sees a potential danger in that the need for support for people with disabilities does not appear properly in digitized services and writes that “There is a risk that the jobseeker's support needs are not identified during the time the jobseeker participates in self-service services or digital meetings”.[61] The solutions that the Public Employment Services proposes are to develop signals in their increasingly automated labour market policy assessments that draw the administrator's attention to potential support needs that did not emerge earlier during the enrolment period, such as the need for more support in job search or contact with the authority's vocational rehabilitation department. The jobseeker shall also be informed about the opportunities

[56] The Public Employment Services: https://arbetsformedlingen.se/download/18.3563c7d6172c13113cb6d6c/sakerstalla-kompetens-for-ett-fungerande-stod.pdf.
[57] The Public Employment Services: https://arbetsformedlingen.se/download/18.3563c7d6172c13113cb6d6c/sakerstalla-kompetens-for-ett-fungerande-stod.pdf.
[58] The Public Employment Services: https://arbetsformedlingen.se/download/18.3563c7d6172c13113cb6d6c/sakerstalla-kompetens-for-ett-fungerande-stod.pdf.
[59] The Public Employment Services: https://arbetsformedlingen.se/download/18.3563c7d6172c13113cb6d6c/sakerstalla-kompetens-for-ett-fungerande-stod.pdf.
[60] The Public Employment Services: https://arbetsformedlingen.se/download/18.3563c7d6172c13113cb6d6c/sakerstalla-kompetens-for-ett-fungerande-stod.pdf.
[61] The Public Employment Services: https://arbetsformedlingen.se/download/18.3563c7d6172c13113cb6d6c/sakerstalla-kompetens-for-ett-fungerande-stod.pdf.

of receiving support and being able to signal the need for support in digital contacts with the authority.

Disability rights organisations highlight how digitalisation specifically affects their members. For example, the Aphasia Association recognizes that there are major problems regarding an increasingly expanded digitalisation of society. They point out that “it can also be reminded that existing standards have only exceptionally been based on the needs of people with communicative and cognitive disabilities. There is still a lack of large user studies on people with aphasia, language disorders and other communicative and cognitive disabilities. There are also large differences within the group. People with aphasia and congenital language disorder are among those who have by far the lowest access to various digital solutions, government websites and mobile apps. Digital participation is extremely limited. These member groups are generally in a great digital exclusion which also increases more and more when more societal functions are digitized. Many with aphasia and congenital language disorder are referred to someone to perform digital services for them. Various representative functions (i.e., "ombudsman") have assumed that someone should "help" or sit next to them when in fact the situation is such that the person who is not able to get an overview of what the digital services mean or how they should be used is entirely in the hands of the person providing the support. A ruling by the Supreme Administrative Court (HFD 2017 ref. 67)62 has drawn attention to this and put an end to ombudsman functions with regard to e-health with reference to the fact that it is contrary to what is expressed in the Patient Act".63

The digital divide affects citizenship, something that the Nordic Welfare Center draws attention to in a study that aims to, among other things, map out which technical solutions are already used around the Nordic region to increase accessibility. In their report, “the right to access the city” both challenges and opportunities to an inclusive city are in focus, and the report writes

> “Modern society places great hope in digital solutions in the provision of public and commercial services and as a tool in people everyday lives. The ‘smart city’ is one where we have mobile apps and computerized systems to assist, not only with communication but with orientation, budgeting, exercise, information, citizen participation, deliveries, shopping, and other activities. ‘Smart’ solutions can be helpful for people with disabilities, but they also highlight the diversity of this group. People with disabilities include those whose lives are improved by digitalization and those who are further excluded owing to inability to push a small button, read or understand instructions on a screen or hear automatic spoken messages. There is consequently a need to practice inclusion and universal design in the digital and ‘smart’ city as well”.[64]

A research overview of digital exclusion, commissioned by the Digitalisation Council points out that the digital divide is perhaps primarily a matter of socio-economic standards because:

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62 The Supreme Court: https://www.domstol.se/globalassets/filer/domstol/hogstaforvaltningsdomstolen/avgoranden-2008-2018/2017/hfd-2017-ref.-67.pdf.

63 Afasiförbundet: http://www.afasi.se/wp-content/uploads/2018/02/Yttrande-promemorian-Genomf%C3%B6randet-av-webbtillg%C3%A4nglighetsdirektivet.pdf.

64 Nordregio: http://pub.nordregio.org/the-right-to-access-the-city/#35736.

"without access to broadband or digital systems, one ends up in exclusion in the digital society, and access to broadband and digital technologies costs money. People who for various reasons are in a vulnerable financial situation find it difficult to pay for expensive digital equipment, software, and subscriptions. At the same time, one's life and subsistence can depend on contact with authorities in the form of, for example, education, the Swedish Public Employment Service, the Swedish Social Insurance Agency, and the Social Services. If you cannot support yourself in any other way or meet the standards for a reasonable standard of living, you will receive financial assistance in Sweden, which according to the national standard for financial assistance designed by the National Board of Health and Welfare includes newspaper and telephone. However, it is unclear whether it is a smartphone with an Internet connection, and whether a computer and Internet connection are also included. There are also those who are just above, but still close to, the limit of a reasonable standard of living, and here it can be associated with hard work and difficult priorities in life to be able to afford digital equipment. At the same time, low socio-economic status is often combined with being in a vulnerable position in other ways as well, such as being retired, having low education, being a immigrant, having mental illness or being on long-term sick leave. They also point to significant societal factors for digital exclusion, such as administrative systems that create digital divides for those who do not have enough knowledge to use them or who do not have the right digital equipment".[65]

[65] Digitaliseringsrådet: https://digitaliseringsradet.se/media/1317/bilaga-1-digitalt-utanfoerskap-en-forskningsoeversikt_liu_slutversion.pdf.

6 Conclusions and recommendations

6.1 Conclusions

Sweden has come a long way in fulfilling visions of a far-reaching digitalisation of society. What has not yet come as far is to make sure that everyone is involved in the digital transformation and can enjoy the benefits of digitalisation. What constitutes a barrier for people with disabilities is that digital tools and services may not be accessible as they are not designed according to the principles of universal design. Accessibility depends thus on the fit between the design and the needs of the individual but also on financial opportunities as digitalisation requires modern technology, which is not possible for people living with a low financial standard (a reality for many people with disabilities). Accessibility for people with disabilities in the digital transformation thus intersects with socio-economic factors, which is something that needs to be taken into account in the welfare systems so that people with disabilities do not face double risks of digital exclusion.

6.2 Recommendations

Since accessibility is based on the design of digital tools and services, principles of universal design need to be applied in the development of new products and services by the government bodies. A useful way to get a broad perspective on usability is to involve people with disabilities in the design, based on the motto that if it suits those who have the greatest need, it will suit everyone. A recommendation is to follow the accessibility standards described in the *Tillgänglighetsdirektivet* [the Accessibility Directive] (SOU 2021:44[66]).

With digitalisation, there is a need for an increase in knowledge, which is aimed at users as well as contractors and suppliers of digital products and services. For users with disabilities, it needs to be taken into account that training initiatives also need to be made accessible, so that they match the needs of the person to be trained. For contractors and suppliers, knowledge needs to be directed towards how the products and services are to be made accessible for people with different needs. In this area, as well, collaboration is needed with people with disabilities, to increase knowledge about what accessibility means, and how it can be achieved, for end-users with disabilities.

In the annual follow-ups made by the Swedish Agency for Participation regarding various authorities, regions and municipalities from a disability perspective, a follow-up of the digital transformation is also needed, and the extent to which people with disabilities experience central digital tools as accessible and useful to them.

As accessibility for people with disabilities in the digital transformation intersects with socio-economic factors, this is something that needs to be taken into account in the welfare systems. Disability benefits and other economical transfer system must recognize the needs for modern technology in order not to exclude people with disabilities and they do not face double risks of digital exclusion.

[66] The Swedish government. https://www.regeringen.se/rattsliga-dokument/statens-offentligautredningar/2021/05/sou-202144/

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