Bundesministerium
Arbeit, Soziales, Gesundheit
und Konsumentenschutz

Final Report - The impact of digitalisation on labour market inclusion of people with disabilities

Lessons from two case studies on Austria and platform work

Contents

Executive Summary

Digitalisation is drastically changing labour markets, and some studies suggest that people with disabilities could be primary beneficiaries. One key example in this narrative is the growth of platform work – the matching of supply and demand for paid work through a digital platform. Anecdotal evidence suggests that platform work could offer people with disabilities flexible opportunities to participate in the labour market, such as working from home at their convenience. Contrarily, others caution that people with disabilities could be excluded from economic and social advances, and disparities may only increase.

In light of these points, this report investigates the effects of digitalisation – both opportunities and challenges – on the inclusion of people with disabilities in the labour market. The report is intended to provide brief, timely policy recommendations to stakeholders.

This report examines digitalisation through two complementary case studies. Case study one looks at the challenges and risks associated with digitalisation on people with disabilities in Austria, while case study two focuses on the challenges and risks of platform work for people with disabilities in the EU. Each case study relies on thorough desk research as well as stakeholder consultation, specifically through semi-structured interviews with a diverse group of experts and stakeholders. Furthermore, each case study presents two best practices to demonstrate exemplary organisations and ideas.

Case study one begins with an overview of the legal structures guiding inclusion policies in Austria. Generally Austria has strong support structures for the inclusion of people with disabilities in the labour market. At times, however, the realisation of benefits is difficult or inconsistent. Particular issues are discussed regarding the quota system (Austrian Disability Employment Act), differences between federal states, and data gathering practices for people with disabilities.

Case study one finds a number of points to be broadly true in Austria and beyond. First, digitalisation is changing the way that traditional jobs are performed. Specifically, digital competencies are becoming universally important, and many jobs are becoming more flexible with respect to location. Second, digitalisation is driving new and improved assistive technologies, which are leading to improved social and labour market inclusion for people with disabilities – for those who can access them. Third, digitalisation is driving labour market

shifts. In some cases, staple professions for specific groups of people with disabilities are becoming less prevalent, or simply outsourced.

Case study two begins with a discussion of the European inclusion framework, highlighting that platform work could be a digital tool to help realise European goals, including independent living, and social and economic inclusion for people with disabilities. Key treaties, directives, and other legal tools are discussed with attention to their concrete implications for people with disabilities, and connection to platform work.

Case study two finds that very little research covers platform work and people with disabilities. Nevertheless, people with disabilities seem to make up a disproportionate amount of workers on some platforms, such as Amazon Mechanical Turk (AMT). Experts largely agreed that platform work represents a chance for certain people with disabilities to increase participation in the labour market. However, this potential is not fully realised, largely due to a lack of awareness and digital competences. Moreover, platform work – particularly when performed from home – could exacerbate the risk of social exclusion.

A conclusion section brings together key points and raises policy recommendations for Austrian and EU policy-makers.

Background

One of the three main priorities of the Austrian EU-Presidency in the second semester of 2018 was "Securing prosperity and competitiveness through digitalisation". In the course of societal change and in view of new economic activities facilitated by the increasing use of digital technology, new forms of employment have emerged or become more established.

The Austrian Presidency focused on one of these new forms of employment, namely platform work, defined as an employment form in which organisations or individuals use an online platform to access other organisations or individuals to solve specific problems or to provide specific services in exchange for payment. These platforms, such as Uber or Clickworker, offer new employment opportunities but also present challenges concerning working conditions and access to social protections.

The issue was discussed at the informal meeting of employment and social policy ministers on 19-20 July 2018 and at a conference on "Digitalisation of Work" on 19 September 2018. In one workshop at the informal ministers' meeting, the potential of new forms of work for better labour market accessibility for people with disabilities was discussed. In preparation of these meetings, the Austrian Presidency cooperated with the European Foundation for the Improvement of Living and Working Conditions (Eurofound) in the study "Digital age - Employment and working conditions of selected types of platform work".[1]

In order to deepen the knowledge on the issue of the impact of digitalisation on labour market inclusion of people with disabilities, the present study was commissioned as a follow-up to the study mentioned above, which was also carried out by CEPS – the Centre for European Policy Studies.

- Bundesministerium für Arbeit, Soziales, Gesundheit und Konsumentenschutz [Austrian Federal Ministry of Labour, Social Affairs, Health and Consumer Protection]

[1] See study here.

Introduction

> For people without disabilities, technology makes things easier.
> For people with disabilities, technology makes things possible.
>
> -IBM Training Manual (1991)

Digitalisation – the use of digital technologies to change business models and information structures – is drastically changing European labour markets. Policy-makers and academics have highlighted the potential for digitalisation to create new opportunities and reduce barriers for people facing marginalisation in the labour market. In this respect, people with disabilities deserve particular attention.

The inclusion of people with disabilities is one of the 20 core principles of the European Pillar of Social Rights. The Social Pillar requires that people with disabilities have the right to income support that ensures living with dignity, services that enable them to participate in the labour market and in society, and a work environment adapted to their needs. Building on the UN Convention on the Rights of Persons with Disabilities,[2] the EU and Member states each developed strategies and action plans.

In spite of these policy frameworks, inclusion for people with disabilities seems somewhat lower on the radar than other social issues. Although people with disabilities make up some 15% of the global population (WHO, 2011), they continue to face a range of barriers to full social inclusion. Regarding the labour market, people with disabilities remain employed at much lower rates than the general population.

New technologies have the potential to both widen and narrow the divide. Location and mobility are less relevant, and sensory impairments can be compensated for with assistive technologies. Moreover, new types of work are growing in importance, which drives labour market change. Platform work is a particular form associated with the potential for greater worker flexibility, but also diminished working conditions. In spite of a growing body of

[2] The Convention on the Rights of Persons with Disabilities, published 2006, promotes the importance of equal rights and social inclusion for all people with disabilities. It states that in order to increase employment, people with disabilities should have a free choice for their place of residence, have access to in-home, residential and community support services, and any other community services on an equal basis with all of society (United Nations, 2006).

literature on platform work, little is known about people with disabilities performing platform work, and the benefits or risks that may result.

Subject overview

Disability is not a singular concept, and recognising the heterogeneity of people with disabilities (PWD) is essential to informed policy-making. The notion of disability has also changed over time. Historically people with disabilities were greatly stigmatised and accused of moral shortcomings (Wasserman et al., 2015). Later conceptions see disability as a societal problem to be cured and normalised (Wolfensberger et al., 1972). This meant people with disabilities were accepted into the workplace, but needed to perform work equivalent with other colleagues (Gonzalez, 2015). Most recently, people with disabilities are recognised as deserving full inclusion in society and full labour market access, which requires workplaces to adapt (Asís and Barranco, 2010).

It is important to note that there are many definitions of disability, which creates a significant challenge to gather data on people with disabilities across countries (WHO, 2011; World Bank, 2011). What would be a disability in one nation may be considered a health condition in another. Beyond data, this significantly impacts the availability of services available for people with disabilities across European Union Member States (European Union Agency for Fundamental Rights, 2017).

When speaking of people with disabilities, this report relies on the UN's definition of disability contained in the UN Convention on the Rights of Persons with Disabilities. The Convention states that disability refers to two core concepts; the first is a person's impairment, which is a physical, mental, intellectual or sensory condition. The second is the interaction between a person's health condition with various barriers, which may hinder their full and effective participation in society on an equal basis with others.

Data difficulties notwithstanding, some **15% of the world's population has a disability, and this number is expected to increase** because of the aging population (Angeloni, 2013). The Council for Disease Awareness (CDA) finds that 25% of 20 year olds will face a disability before finishing their professional career (2013). This implies that **labour market inclusion for people with disabilities is not only an ethical, but also an economic imperative**.

As long as there is an appropriate work environment and adequate social inclusion measures, people with disabilities can perform most type of jobs and work tasks. Labour market statistics show, however, that this potential is not realised. One study by the Organization of

Economic Co-operation and Development (OECD) found that of 27 researched countries, the employment level for people with disabilities is half that of people without disabilities (OECD, 2009). Additionally, people with disabilities had an average inactivity[3] level of 49% compared to 20% for people without disabilities, indicating that **a large portion of people with disabilities dropped out from or never entered the labour market** (World Health Organization and World Bank, 2011).[4]

Many reasons affect low labour market participation for people with disabilities. Entering the labour market can become challenging for people with disabilities due to **limited financial, educational and training opportunities**. Additionally, **stigmatisation in schools and workplaces** can discourage people with disabilities from participation (Braithwaite and Mont, 2008).

In part due to lower labour market inclusion, **disability remains a significant determinant of poverty** (Laparra et al, 2007; Martinez, 2013). The relationship is not only due to health limitations on working life, but also because people with disabilities usually hold worse positions (Jiménez-Lara and Huete García, 2011). Regardless of position, people with disabilities have lower income than the general population (Brown and Emery, 2008). Moreover, people with disabilities **have additional expenses** such as care-taking, medicine, and assistive devices for the home. Beyond financial costs, disabilities bring personal and opportunity costs not only for people with disabilities, but their families. Many people, particularly women, must give up their careers to assist in caring for family members (CERMI, 2012; Adecco, 2014). In the EU-28, people with "some or severe" activity limitations are at 30.1% risk of poverty or social exclusion, versus 20.9% risk for the total population.[5]

Digital inclusion

In response, stakeholders recommend different strategies for greater inclusion of people with disabilities, and in this regard **digitalisation has an important role**. The "Disability Inclusion Strategy 2014 – 17" from the International Labour Organisation (ILO) is an example of efforts that organisations can consider to become more inclusive for people with disabilities. The

[3] Economically inactive refers to a person who is not in education or training, employed, or registered as searching for employment. An unemployed person is still economically active.

[4] More recent data were not available for the EU-28. In 2011 in the EU-28, the employment rate of people with basic activity difficulties was 47.3%, while the employment rate of people limited in work due to a longstanding health problem and/or a basic activity difficulty (LHPAD) was 38.1%. See Eurostat here.

[5] These data are for 2016. See Eurostat data on "People at risk of poverty or social exclusion by level of activity limitation, sex and age", available here.

strategy indicates that governments, worker and employer organisations can implement certain principles to promote non-discrimination, accessibility and involvement of people with disabilities. This strategy argues that stakeholders must take action to increase decent work[6] opportunities for people with disabilities through changes to the hiring processes and accessible work environments (ILO, 2015).

Information networks are another important piece of the inclusion strategy. Grönlund et al. (2010) argue for greater coordination between professional networks, experts, ministries and NGOs, in order to provide better advice on implementing disability policies. In this case, activation and monitoring of inclusion programs would be more effective and attractive for employers.

Moreover, **information and communication technologies (ICT)** have significantly impacted the world of work. The types of available jobs, the way work is carried out, and even the process of acquiring job positions is changing (Raja et al., 2013). Digitalisation and automation improve the efficiency and reduce costs of production and services. As supply chains grow more global and outsourcing becomes easier, labour markets see **greater competition**. Lastly, new internet platforms are developing, intermediating supply and demand in new ways (Eichhorst et al., 2017).

Digitalisation has both **positive and negative effects on the labour market**. Technological innovation is leading manual labour to be less prevalent, and therefore creating social inequalities – a process often known as dualisation. However, new creative jobs and social prosperity are expected to create more prosperity (Eichhorst et al., 2017). Along the continuous job positions that ICT has created, online work and platform work[7] creates incentives for entrepreneurship and self-employment (Raja, 2016). Increasingly flexible forms of work break down employment into projects or tasks – meaning work can adapt to individual needs, time and location (Dobson, 2017).

Technological innovation through digitalisation has already made a great impact on everyday life for people with disabilities. Cell phones can support diverse types of impairments through apps and assistance functions that address problems of hearing, speech and sight. Information on the internet can support people with disabilities in everyday life and in finding

[6] Decent work means "work that is productive and delivers a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for people to express their concerns, organize and participate in the decisions that affect their lives and equality of opportunity and treatment for all women and men". See the ILO.

[7] Platform work has many meanings. In this context, it refers to the use of digital platforms to exchange services for payment. See Eurofound (2018).

employment, thereby improving social inclusion (United Nations, 2016). **Innovative technologies can minimise or remove barriers in a number of ways**, allowing more people to take part in the labour market (Migliaccio, 2016).

Telework is an important opportunity for people with disabilities to access the labour market (Baker et al., 2005). In the United States, telework programs were created to improve labour market inclusion for people with significant disabilities. Work arrangements for jobs like customer service or call centre operators allow workers to carry out their work in the office, while travelling, or from home. In one study, however, several companies indicated that the potential of telework is not yet fully realised and many companies are reluctant to implement teleworking (Anderson et al, 2009).

Similarly, **new forms of work** in the platform economy, and increased rates of self-employment, may **represent greater flexibility and lower entry barriers for people with disabilities seeking employment**. Platform work – also called 'crowdwork' or 'gig work' and a variety of other terms – can offer a source of income for many people with disabilities that experience health problems and cannot fully carry out tasks in a regular job. However, the flexibility of these jobs often comes with low security and additional risk for workers (Berg, 2016).

One significant risk is that a **"technical divide" will increase economic and social inequalities.** While digitalisation creates opportunities for many, for others it can create even greater separation from society (Owuor et al., 2017). Furthermore, because people with disabilities have lower than average income, accessing new products and assistive technologies can be challenging (Atkinson et al., 2008).

Borg et al. also emphasise evidence for effective inclusion practices (2011). Well-organised development **strategies must consider not only employment programs, but also take stock of health, education and training**. Connecting people with disabilities with necessary assistive technology is a key step in skill acquisition, labour market participation, and financial independence.

Methodology

This section describes the research questions and strategies used to answer them. In order to ensure adequate representation of different viewpoints, the research team reached out to a large number of stakeholders for interviews. The research team also relied on extensive desk research.

Project overview

To better understand how digitalisation is impacting people with disabilities, the Centre for European Policy Studies (CEPS) and the Austrian Federal Ministry of Labour, Social Affairs, Health and Consumer Protection (Social Ministry), in the context of the Austrian Presidency of the Council of the European Union in the second of half of 2018, have collaborated on the present research paper.

A monitoring group under the supervision of the Social Ministry, consisting of members of NGOs representing people with disabilities, guided the research team of CEPS. The monitoring group's assistance included conceptual support beginning with the project's kick-off on 25 September 2018, and practical support in finding qualified interviewees. This research seeks to better understand the primary research question: **How is digitalisation impacting labour market participation for people with disabilities?**

The primary research question is quite complex and nuanced. In order to address the topic within a relatively short timeline and limited budget, and without compromising quality, the research team needed to be focused and selective. Thus, this report consists of two interrelated case studies.

Case Study 1 seeks to answer the primary research question, but is limited in geographic scope to Austria. Case Study 2 seeks to answer a more specific question – **How is platform work impacting labour market participation for people with disabilities?** – but on a Europe-wide geographic scope. Beyond these general focuses, the case studies address the following specific research questions.

Case Study 1 (Austria-focused):

1) What is the relationship between digitalisation and inclusion for people with disabilities?
2) What risks and challenges does digitalisation create for inclusion of people with disabilities in the labour market?
3) What policy pointers can be identified?

Case Study 2 (Europe-focused):

1) To what extent does platform work impact people with disabilities' access to labour markets?
2) Is platform work a form of work that should be promoted for people with disabilities?
3) What policy pointers can be identified?

Desk research

The desk research included a review of legal texts, strategy plans, and other official documents from governments and intergovernmental bodies. Additionally, the desk research included a detailed review of academic literature and "grey literature", such as position statements from NGOs or other stakeholder groups. The full list of consulted literature appears in the References.

Stakeholder consultation

Stakeholder consultation included semi-structured interviews conducted face-to-face or via telephone. The research team prepared separate questionnaires for each case study based on important policy issues and gaps in knowledge identified in the desk research. All interviews were conducted anonymously.

The strategies for identifying interviewees were slightly different between the two case studies. For CS1, the Austrian Social Ministry provided a list of individuals and organisations of relevance to the research. These individuals have significant expertise in their fields, which include 1) experts specialised in inclusion for people with specific disabilities; 2) experts of particular strategies for labour market inclusion of people with disabilities; and 3) experts in assistive technologies and other technological means of labour market inclusion of people with disabilities. For CS2, the research team identified all interviewees. This included representatives of platforms, people with disabilities working on platforms, and labour market experts specialised in inclusion of people with disabilities.

The research team then prepared summaries of interviews in order to validate findings with one another, and with the desk research. In total, the research team conducted 18 interviews for CS1 and 16 for CS2 as summarised below.

Table 1: Summary of interviews conducted

Organisation	Relevance	
	CS1	CS2
Arbeit plus – Soziale Unternehmen Österreich	✓	
Arbeitsmarktservice (AMS)	✓	
atempo Group (individual 1)	✓	✓
atempo Group (individual 2)	✓	✓
BeMyEyes (individual 1)		✓
BeMyEyes (individual 2)		✓
Blinden- und Sehbehindertenverband Wien	✓	
BusinessEurope		✓
Diakonie Österreich	✓	
Dublin City University		✓
European Association of Service Providers for Persons with Disabilities (EASPD)		✓
Equalizent (individual 1)	✓	
Equalizent (individual 2)	✓	
Essl Foundation, c/o Haus der Philanthropie	✓	
European Disability Forum		✓
European Trade Union Confederation (ETUC) (individual 1)		✓
European Trade Union Confederation (ETUC) (individual 2)		✓
Foodora		✓
Hilfsgemeinschaft der Blinden und Sehschwachen Österreichs	✓	
Ilunion		✓
myAbility Social Enterprise GmbH	✓	✓
Österreichischer Behindertenrat	✓	
Schulungseinrichtung für blinde und sehbehinderte Menschen (SEBUS) (individual 1)	✓	
Schulungseinrichtung für blinde und sehbehinderte Menschen (SEBUS) (individual 2)	✓	
Specialisterne	✓	✓
Speed of Sight		✓
Uber		✓
Wert:Arbeit	✓	
WITAF - Sozialberatung	✓	
World Wide Web Consortium (W3C)'s Web Accessibility Initiative (WAI)	✓	
Total	**18**	**16**

Note: three interviews were conducted with questions for both case studies.

Each interview began with a brief introduction in which the interviewer defined key terms and explained how the interview would be used. Next, the interviews consisted of a first section with general questions about people with disabilities in the labour market and main difficulties encountered, then sections that asked about opportunities of digitalisation (Case Study 1) or platform work (Case Study 2) to overcome these difficulties, as well as possible obstacles, barriers and risks to consider in the unfolding of such opportunities. Finally, a conclusion section asked about best practices and any additional remarks and information available on the topic.

Challenges and limitations of the research

A few challenges and limitations are noteworthy. First, the literature base for both case studies (but particularly Case Study 2) is quite small. This is challenging for a few reasons: 1) most existing literature is only tangentially relevant; 2) much evidence is anecdotal; and 3) the research team must rely substantially on expert interviewees. Given the reliance on expert interviews, Case Study 2 is written with more emphasis on interviews (and the legal basis of inclusion) than Case Study 1. Furthermore, this report does not include a dedicated literature review section, but has discussed some relevant literature in the introduction and in the case studies.

Second, identifying people with disabilities working for platforms presented quite a challenge. The literature on platform workers has already confirmed the difficulty of reaching platform workers (Eurofound, 2018). For example, administrative data on platform workers is lacking, many platform workers consider their activities a hobby rather than a job, platform workers are disbursed over a large area, and platform work is associated with very high turnover. However, these difficulties are even more pronounced for people with disabilities. Platforms typically do not ask workers if they have any disabilities, so most platforms involved in the study[8] could not provide any contact of workers with disability in the platform. Moreover, many people with disabilities may prefer not to disclose their disabilities out of concern for discrimination from platforms or customers. Thus, Case Study 2 consisted of fewer worker interviews than ideal.

[8] Out of 12 platforms contacted, only seven replied to the invitation to participate in the study. Of these, three claimed to have no specific policy or insight on the topic. In the end, representatives of four platforms were interviewed.

Third, disabilities are highly nuanced. They are not singular, unchanging, or exclusive concepts. This means that addressing issues for people with all types of disabilities is not possible, given the multitude of ways that disabilities affect people, and the intersection of different types of disabilities. The case studies, therefore, will necessarily simplify the hurdles that different people with disabilities face. Focus will be on people with disabilities identified as frequently facing labour market barriers by the experts interviewed. This includes persons who: 1) are blind or seeing-impaired; 2) are deaf or hearing-impaired; 3) are mobility-impaired or have another physical disability; 4) are intellectually impaired or have a learning disability; or 5) have a mental illness or personality disorder.[9]

Fourth, platform work is very diverse in terms of work performed, working conditions, remuneration, etc. This means the benefits and disadvantages of platform work for people with disabilities vary a great deal depending on the type of work performed, as well as disability considered. Therefore, the research team has carefully considered the impact of common types of platform work, for people with a range of disabilities, as indicated above.

Fifth, both case studies cover topics with broad implications, which means that differentiating issues can present a challenge. For example, assistive technologies can aid people with disabilities in labour market inclusion, but also help inclusion in daily life. Differentiating the two is not always clear cut, meaning **labour market inclusion is not always distinguishable from general social inclusion**.

Thus, the effects of digitalisation on labour market inclusion for people with disabilities are a complicated and interwoven issue. The research team has attempted to recognise the issue's complexity while keeping analysis as specific as possible, offering brief, practical, and timely policy advice.

[9] These categories are not intended to be comprehensive.

Case study 1: Digitalisation and labour market inclusion for people with disabilities in Austria

With regards to digital inclusion and people with disabilities, Austria is an appropriate country to research for a few reasons. First, Austria's government has supported significant dialogue and research on the effects of digitalisation on labour markets. Second, Austria's federal statutes of labour market policies provide a country-wide consistent legal framework for labour market inclusion for people with disabilities, even as Austrian federal states vary in implementing some measures (and thus provide natural laboratories for policy). Third, Austria's system of representation is quite comprehensive. This ensures that people with disabilities and relevant advocacy organisations have a voice, and can inform the research. Lastly, Austria is an active proponent of disability mainstreaming and rights of people with disabilities, as indicated by early support for the UN Convention on Disability Rights (ratified 2008), active support for people with disabilities in the UN Human Rights Council, and other international and European forums.

Case Study 1 investigates Austria, meaning certain policies are mostly relevant to Austria and its particular legal and labour landscape. Even so, many findings are more broadly relevant. Extensive expert interviews and desk research reveal that many trends in Austria reflect more general realities emerging from digitalisation.

Overview

The most recent and comprehensive statistics of employment for people with disabilities in Austria are from Statistik Austria, which conducted a supplementary micro-census for individuals over 15 years old in the fourth quarter 2015 (Sozialministerium, 2017). In descending order of frequency, the main statistics for individuals over 15 years old are as follows:

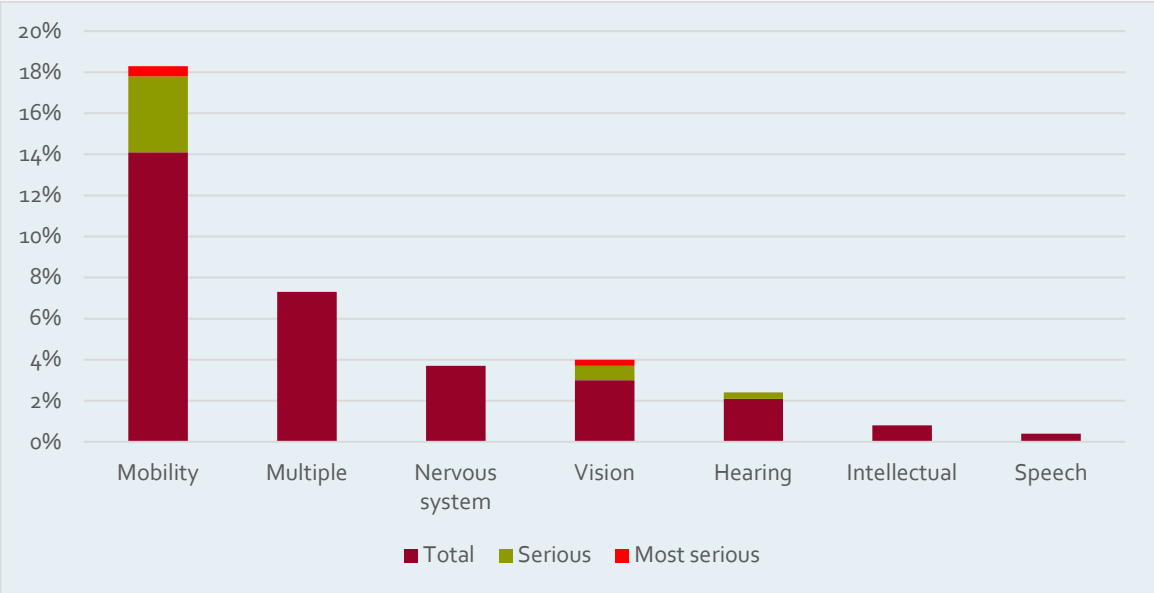
- 14.1%, or around one million people, have enduring mobility impairments
  - 3.7%, or 271,000, have serious mobility impairments
  - 0.5%, or 40,000, require wheelchairs
- 7.3%, or some 534,000 people, have multiple impairments

- 3.7%, or 270,000 people, have nervous system or mental impairments
- 3%, or 216,000 people, have seeing impairments
  - 0.7%, or 53,000, have serious seeing impairments**
  - 0.03%, or 2,200, declare themselves completely blind**
- 2.1%, or 157,000, have hearing impairments
  - 0.3%, or 19,000, have serious hearing impairments*
- 0.8%, or 59,500, have intellectual or learning impairments
- 0.4%, or 26,000, have speech impairments*

*Because the micro-census was conducted via phone, no statistics are available for completely deaf people or people with significant speech impairments. Similarly the micro-census excludes people in institutions or sheltered housing. This means the results above significantly underestimate the actual number of people with disabilities, and especially people with the most severe disabilities.

**A health census taken in 2014 estimated 1.1% of Austrians, or 80,000, have serious seeing impairments, while 0.2%, or almost 14,000, are completely blind. See Sozialministerium (2017: p.250).

Figure 1: Austrians with lasting impairments (over age 15)



Source: Sozialministerium (2017). No statistics are available for completely deaf people or people with significant speech impairments. Severity levels are not available for any disabilities besides mobility, vision, and hearing. "Serious" refers to a disability grade of over 50% based on the Austrian Disability Employment Act.

The survey shows that people over the age of 60 are approximately 2.5 times more likely to have a disability compared to 20-60 year olds. Men and women were quite similar – with

18.8% and 17.9% of the population reporting a long-term impairment, respectively. Women were slightly more likely to face lasting mobility problems (14.9% versus 13.2% for men), mental health problems (4.4% versus 3.0% for men) and multiple permanent impairments (7.9% versus 5.5% for men).

The micro-census clearly demonstrates that people with disabilities take part less in the labour market. People with disabilities accounted for 10.3% of economically active Austrians, versus 30.8% of non-economically active Austrians. Further disparities are apparent regarding education. People with disabilities account for 24.6% of those with only compulsory education, versus 9.3% of people with higher education.

> 43% of people with disabilities in Austria said the most important problems they face are in the workplace.
>
> -Sozialministerium (2017)

Lastly, the micro-census asked the most important problems people with disabilities face. 57.8% of people with disabilities cited problems with leisure activities, 43% cited problems in the workplace, 29.5% at home, 26.3% in public transport, and 25.5% with their financial situation. Given the relatively low labour market participation rates of people with disabilities, this indicates that labour market inclusion remains a key challenge.

Overall the micro-census is expected to significantly under-represent people with the most significant impairments, as is usually the case with telephone surveys (Wilson et al., 2013). Several interviewees noted that they view the methodology of the micro-census as critically flawed given the reliance on household telephone responses, which excludes many people with serious disabilities, and the lack of comparability with a 2007 Austrian micro-census.[10] Nevertheless, the 2015 survey offers a rough idea that **nearly one in five Austrians over 15 years old live with disabilities**.

The Austrian framework on employment and disability

Austria is a federal system. The legal basis for inclusion policies for people with disabilities in the labour market, as well as most other labour market policies, is set at the federal level. The relevant ministries of the federal government have developed inclusion strategies in areas such as employment, long-term care and education. For example, the Social Ministry offers

[10] For further details, see the micro-census (Sozialministerium, 2017: p.243).

"professional assistance services" (co-financed by the European Social Fund)[11] intended to promote inclusion of people with disabilities in working life. While overarching legislation is decided at the federal level, Austria consists of nine federal states in charge of planning and budgeting services, as all areas of disability policy not explicitly delegated to the federal government are provincial issues (Sozialministerium, 2018).

Main legal basis for inclusion
1) Austrian Disability Employment Act (*Behinderteneinstellungsgesetz*) **2) Federal Disability Act** (*Bundesbehindertengesetz*) **3) Disability Equality Act** (*Bundesbehindertengleichstellungsgesetz*)

In effect, this can create a **complex regulatory landscape for people with disabilities to navigate**. For example, conditions regarding healthcare are set at the federal level, while decisions are made at the state level – including provision of social services. Personal assistance to students is a federal competence, but assistance at schools and in the workplace are state competences. While employment for people with disabilities is mostly regulated at the federal level, the actual mechanisms through which the laws are enforced often rely on states (Repečkaitė, 2017). In end effect, people with disabilities living in different regions may not receive equal provision of services such as care-taking and assistive technologies.

Austria aspires to include people with disabilities in all areas of society, enabling them to lead an independent lifestyle and enjoy social recognition. In this sense, labour market inclusion is a key principle. A primary instrument for labour market inclusion is the Austrian Disability Employment Act, which obliges employers to hire people with disabilities.

To this end, the Austrian Disability Employment Act defines relevant employers and disability. Disability is defined as "the effect of a non-temporary physical, mental or psychological impairment or an impairment of the senses which makes participation in the life of society, particularly in normal working life, difficult. Non-temporary means a period which is more than (or expected to be more than) six months".[12] It is also necessary to determine the extent of a disability. For this, a physician must perform an assessment, and the Assessment Regulation of 2010 forms the legal basis for the determination.

Employers with 25 or more employees must meet a **quota** of one person with disabilities per 25 employees (4%). Failing to do so results in a compensatory levy for each position not filled

[11] ESF projects have budgeted some €200 million for Austria towards youth coaching, production school, and vocational training assistance.

[12] See § 3 Austrian Disability Employment Act), available here.

by a person with disabilities. The cost also increases in relation to the size of the employer: employers with 25-99 employees pay €262 per month; 100-399 employees, €368; and employers with 400 or more, €391.[13] The compensatory levy funds programs to include people with disabilities in the labour market, establish and extend integrated companies, and subsidies and bonuses for employers.[14]

As regards the quota law, employment of certain people with disabilities is particularly encouraged. Thus, the following persons are counted double in meeting the obligatory figure:

- People who are blind
- People who use wheelchairs
- People with disabilities under 19 receiving special support
- People with disabilities receiving special support for the duration of training
- People with disabilities over 50 receiving special support, with a level of disability of at least 70%
- People with disabilities over 55 receiving special support

The Austrian Disability Employment Act also includes increased **protection against dismissal**. Dismissing a person with disabilities receiving special support by the employer must follow prior agreement of the Disabled Persons Committee. Once an employer submits an application for dismissal, the *Sozialministeriumservice* [Social Ministry Service][15] begins an investigation procedure, which includes a hearing of employee's representative, disabled employees' representative, and staff representative. Ultimately the Disabled Persons Committee decides if the application for dismissal can proceed.[16] Initially, workers with disability could only be dismissed within a half year of employment without Committee permission. However, a 2011 change to the Austrian Disability Employment Act extended this period to four years.[17]

[13] These figures are adjusted annually, indexed with the pension adjustment factor.

[14] The Austrian Ministry of Social Affairs (Sozialministerium) has funding around €195 million for promoting occupational inclusion of people with disabilities, part of which comes from the compensatory levy. The funding finances developed by the Sozialministerium in a "nationwide labour market policy programme for disabled persons" (Sozialministerium, 2012). Funded instruments include subsidies for projects and individuals, aimed at securing long-term employment on the primary labour market.

[15] The Sozialministeriumservice is the main contact point for people with assistance needs, such as providing services such as determining the grade of disability, and coordinating service providers with people with disability. See their website here.

[16] Additional conditions apply – see *Gesamte Rechtsvorschrift für Behinderteneinstellungsgesetz, Fassung vom 13.12.2018*.

[17] Several interviewees noted that the legislative change had essentially no impact on employer practices.

In short, the Austrian Disability Employment Act creates a **financial incentive for employers to hire people with disabilities**. At least two studies have attempted to quantify the effects of this incentive. One study found that firms exactly at the 25 employee threshold employ 0.05 more people with disabilities than firms just below the threshold. Because the compensatory levy is flat, it generates much stronger employment effects for low-wage firms than high-wage firms (Lalive et al., 2009). A similar report studied the impact of severely disabled (SD) status in Austria. It found that workers holding a job when acquiring SD status have better employment prospects after. On the other hand, workers without a job when acquiring SD status do dramatically worse after than before. This suggest that **employment protection legislation places high costs on firms to dismiss employees and significantly impacts firms' decisions to hire people with disabilities** (Humer et al., 2007).

Interviewed experts greatly diverged in their thoughts on the Austrian Disability Employment Act and effectiveness of the quota system. Most interviewees noted that employers are hesitant to hire people with disabilities because of the difficulty (real or perceived) in dismissal.[18] One interviewee, who is also an employer of people with disabilities, mentioned that the Disabled Persons Committee meets only biannually. In practice, this means an employer must continue to pay wages up to six months after deciding to dismiss an employee with disabilities who cannot fulfil their duties. Another interviewee strongly disputed the accuracy of this assessment, saying that 1) the level of dismissal protection for people with disabilities is more or less appropriate; and 2) dismissal protection is grossly misunderstood by employers, which contributes to employers preferring to pay the compensatory levy rather than hiring people with disabilities. On the other hand, most interviewees expressed that the compensatory levy is too low to effectively incentivise employers to hire people with disabilities, and to provide enough capital to the compensatory levy fund. As of 2013, some 78% of employers pay the compensatory levy rather than hire people with disabilities.[19]

Beyond overarching legislation, the Austrian Federal Government further created the National Action Plan on Disability 2012-2020 with a view to implement the UN Disability Rights Convention. Due to Austria's federal system, dealing with disability affairs is a cross-cutting issue across many ministries and stakeholders. The primary objectives of the Action Plan include further disability mainstreaming, as well as better inclusion of organisations representing people with disabilities in policy-making. Moreover, a supervisory group is

[18] Note that discriminatory dismissal on the basis of a disability is strictly forbidden by the Disability Equality Act. The dismissal discussed here is based on work performance.

[19] See concluding observations on the initial report of Austria on the Convention of the Rights of Persons with Disability (2013), available here.

expected to prioritise the long-term objectives and measure the progress within the period 2012-2020 (Sozialministerium, 2012).

Lastly, Austria is in the early stages of developing a federal strategy for artificial intelligence (AI) as part of its digitalisation strategy.[20] This strategy is anticipated to advance the use of digital tools in education, business and security, including AI and machine learning. Moreover, the strategy highlights new possibilities to solve complex problems in health systems, public administration, production, as well as teaching and training. The AI strategy is expected to develop with the involvement of interdepartmental working groups representing federal ministries of all fields, and relevant stakeholders from business, society and science.

How digitalisation is changing labour markets

Digitalisation is changing labour markets in a great number of ways, many of which have direct implications for people with disabilities. Austria is no exception in this regard. A few of the main labour market shifts discussed in the literature and by expert interviewees appear below.

As technology advances, many **traditional occupations are growing obsolete** and declining in demand. Manual work is becoming automated or can be performed by fewer workers. Moreover, most new job postings for "manual work" call for computer literacy and basic digital competences (Beblavý et al., 2016).

New occupations are developing and evolving faster than ever. Many of these are in the IT field, and most of these occupations require highly-skilled workers with significant digital proficiencies. For these positions, training and re-skilling are required over increasingly short time intervals. Digitalisation has also resulted in new low and medium-skilled positions in such fields as delivery services and logistics.

New forms of work intermediation are possible due to advances in IT infrastructure. One significant consequence is the growth of outsourcing, whereby jobs traditionally performed on-location are transferred elsewhere, typically overseas where labour costs are lower. Both workers and employers can also leverage the internet to match with one another, using job boards or social media.

[20] See AIM AT 2030 (Artificial Intelligence Mission Austria 2030), available here.

Digitalisation has made the **employment relationship more flexible**. This is indicated by reduced prevalence of the traditional (indefinite) employment relationship, and growth of self-employment, independent contracting, and other arrangements oriented towards task- or project-based cooperation. Similarly, digitalisation brought about the growth of platform work, whereby consumers and workers exchange services for payment via a digital intermediary (Eurofound, 2018). Platform work is a small but apparently growing portion of the Austrian labour market (De Groen et al., 2018).

Furthermore, digitalisation has made **work itself more virtual and flexible**. Digital communication tools and cloud computing have made location less important, and teleworking arrangements are growing in prevalence.

Given the importance of education to labour market readiness, educators at every level are making **greater attempts to teach core digital competences**. Furthermore, educators are leveraging digital strategies such as e-learning, tablets, and gamification to make education more effective. Beyond youths and young people, re-skilling and different forms of training are increasingly relevant at all stages of the career.

How digitalisation affects inclusion of people with disabilities in labour markets

These labour market shifts are already having significant effects on the inclusion of people with disabilities in labour markets, as indicated in the literature and by expert interviewees.

To begin, marketplace changes may affect important professions traditionally associated with people with disabilities. For example, several experts emphasised that blind and seeing-impaired individuals have most frequently worked as massage therapists or call centre representatives. A large part of call centre work has now been outsourced from Austria and other developed nations to locations where labour is cheaper. Similarly, deaf and hearing-impaired individuals in Austria predominantly perform manual or handiwork. According to one expert, around 70% of employed deaf people in Austria perform manual work. Manual labour is becoming less prevalent everywhere. This means that **staple professions for blind and deaf individuals in Austria are likely to continue shrinking, which requires people with disabilities to acquire new competences and learn new professions**.

In this regard, digital preparedness of people with disabilities is an important topic. According to interviewees, many Austrians with disabilities, especially those middle aged or older, lack

digital training and basic computer literacy. Programs to address this shortcoming are growing more strategically important in Austria.

Next, new digital technologies are making **practical considerations** for people with disabilities **simpler and more efficient**, particularly for people with mobility impairments (Revermann and Gerlinger, 2009; 2010). This equally applies to work in the office and work performed from home. Furthermore, people with mobility impairments have great chances to leverage the internet for both work and social opportunities. In this respect, **digitalisation can be a tool for both economic and social inclusion** of people with disabilities. Similarly, Apt et al. (2014) propose that more virtual and flexible work will lead to **rising participation rates for people with disabilities** and **other groups** typically underrepresented in labour markets. This includes the elderly, migrants, and women (especially with caretaking responsibilities).

Interviewed experts generally agreed with this point, but emphasised that the value of flexible work location is not limited to people with mobility constraints. On the contrary, people with disabilities can benefit from more flexible work on many fronts. This includes more freedom to take needed time for therapy or rest as required, and less hassle, expense, and even danger being required to navigate to and from work at the busiest times of day. Interviewees mentioned specific tools for communication including Slack, Skype, WhatsApp, and other communication and videoconferencing software that facilitate collaboration without travel.

> If the option to work from home helps someone, great! I know from visually impaired colleagues that even the freedom to leave the office an hour or two earlier in winter and avoid total darkness helps a lot. But if they never come in the office, never interact face-to-face with others, it just exchanges one problem for another.
>
> - An expert interviewee

On the other hand, experts indicated risks with these arrangements. To begin, teleworking risks further **isolation and invisibility of people with disabilities**. For all people with disabilities, active and visible participation in social life, including the workplace, is necessary to reduce **stigmatisation and discrimination**. In some cases – notably for people with Asperger's Syndrome or social phobias – this can be especially problematic, as physical inclusion in a more traditional workplace is a key factor for social inclusion.

In this regard, experts emphasised the risk of unequal gains from digitalisation for people with disabilities. Interviewees generally agreed that **people with mobility impairments are the primary beneficiaries of digitalisation**. On the other hand, people with mental illnesses, cognitive impairments, or learning impairments are at highest risk of stress and exploitation from digitalisation, and may find it even more difficult to find work than before due to new skills requirements. The risk of unbalanced gains for people with disabilities is more noteworthy in Austria given that people with mobility impairments receive the most attention, while making up only a fraction of the population with disabilities.

This point also appears in the literature, with Vanderheiden (2006) discussing advantages and disadvantages brought about by technological change for people with disabilities. Notably, technology is becoming more difficult to use as a result of more functionality and complicated features. Furthermore, new technologies and trends create a risk of isolation for people with disabilities, which would increase inequalities. For example, **not all people with disabilities can leverage communication and commercial channels** such as e-commerce, e-learning, and social networks. Again, the risk appears highest for people with cognitive or learning impairments.

Interviewees indicated that unequal gains can occur in other ways as well. As a simple example, if one cannot afford a computer and internet access, the benefits of these tools cannot be realised, and disparities between those who own and do not own a computer will rise. Similarly, social and economic gains will not be realised by people with disabilities who lack access to new technologies for financial or other reasons, thus potentially increasing inequality.

Assistive technologies

A clear benefit of digitalisation for people with disabilities is new and improved assistive technologies. **Assistive technology is an umbrella term for assistive, adaptive, or rehabilitative devices for people with disabilities**. These devices can assist in daily life as well as on the job. Assistive technologies are not new – even devices such as a wheelchair fit this category. However, as a result of digitalisation, assistive technologies have advanced very quickly with significant benefits for inclusion of people with disabilities. Digitalisation is associated not only with new technologies, but also more accessible existing technologies in the sense of size, price, and usability.

On the other hand, **technologies are more quickly becoming usable for people with disabilities**. For example, the telephone required over 100 years to become accessible for people with speech and hearing disabilities; television, 50 years to become accessible for

people who are deaf or hard of hearing; digital wireless phones, 10 years to become accessible for people using hearing aids (National Council on Disability, 2011).

> An elevator is an assistive technology, but we don't think about it as such. We just think about it as an improvement to a building that benefits everyone. That's the way assistive technology is being integrated into phones and computers these days.
>
> -An expert interviewee

A number of **new assistive technologies (or vastly improved older technologies) are associated with digitalisation**. These include speech recognition, voiceover, and integrated guidance systems to name a few. Both the literature and interviewees confirmed the importance of new assistive technologies in labour market inclusion for people with disabilities. Disabilities that impact communication in a typical office setting, such as blindness, deafness, or dyslexia can often be accommodated with the use of specific assistive hardware and software. Other features such as eye-steering computer control help facilitate computer usage for people with mobility impairments.

In some cases, assistive technologies have existed for quite some time. Speech recognition technology, for example, has existed in a basic form since around 1952 (Juang and Rabiner, 2005). Speech recognition became commercially viable and available to consumers around 1990, priced at $9,000 (€7,914). In 1997, a significantly improved version became available for around 8% of the price at $695 (€611.14) (Pinola, 2011). However, digitalisation brought advances to deep learning and big data, which vastly improved speech recognition. Speech recognition has quickly advanced from essentially unusable, outside of very specific circumstances, to a highly effective and reliable tool available by default – for free – on most smartphones and computer operating systems. Many apps leverage speech recognition, and digitalisation has empowered similar advances for other assistive technologies.

Interviewed experts were unanimous that **the single most important assistive technology is the smartphone** – an idea also reflected in the literature (National Council on Disability, 2011). The average smartphone is equipped with accessibility options including high contrast and ease-of-reading options, text-to-voice, and voice controls. Moreover, common smartphone applications are uniquely valuable for people with disabilities. Several interviewees indicated that video-calls via WhatsApp or Skype on their smartphone drastically improved communication for deaf and hard of hearing individuals by allowing real-time sign language conversations.

> A huge problem is that so many people with disabilities come to us and don't know what their smartphone can do. With a little setup or training, features like high-contrast screens, voiceover, and simplified interfaces can open up a new world.
>
> -An expert interviewee

This highlights a feature of digitalisation that some literature (Hauser and Tenger, 2015) and numerous interviewees expressed great optimism for – the **normalisation of disability**. This process works in a few channels. First, **assistive technology is integrated into everyday life such people with disabilities do not appear different**. Rather than requiring bulky and specialised instruments, people with disabilities can benefit from features built into devices everyone uses. When specialised devices are still required, as in the case of electronic hearing aids, assistive technologies are becoming smaller, better, and less intrusive.

Second, **assistive technology is increasingly recognised as beneficial to the general public as well as people with disabilities**. For example, subtitles for video on television or the internet is often necessary for deaf or hard of hearing people to understand what is said. However, subtitles are useful for any situation where a video cannot be watched at full volume, or for people who have difficulty understanding speech – such as individuals with a migrant background, cognitive impairment, or gradual hearing loss. Furthermore, rather than requiring special effort to produce subtitles, speech recognition advances allow subtitles to be automatically generated by software, or "crowdsourced" to viewers. Such is the case for YouTube videos, for example.

Interviewees also expressed many thoughts on the future of assistive technologies. Common themes include the continued integration of assistive technologies into smaller or wearable devices, such as phones, glasses, shoes or watches. As is most often the case, prices are likely to be prohibitively high for many consumers at first, followed by a great decrease. Additional trends like 3D printing and self-driving cars have great promise for improved access to prosthetic devices and independence in mobility.

In Austria, access to assistive technologies needed for employment is required by law. In practice, however, access is not guaranteed. Provision seems best for people who develop a disability at work, while people with disabilities seeking employment struggle more frequently. Several interviewees additionally noted that assistive technology is prohibitively expensive for many people with disabilities. This is especially problematic for job seekers in certain federal states.

Accessible information

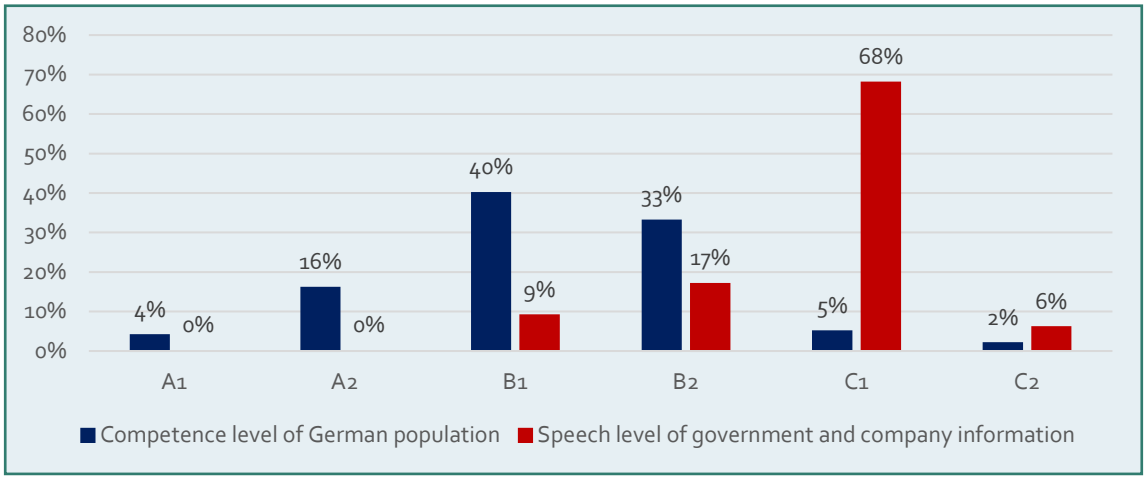
As recognised by the UN Convention on the Rights of Persons with Disabilities, access to information is a human right.[21] In this regard, the explosive growth of available information connected with digitalisation is a key principle. In 2012, IBM estimated that 2.25 exabytes, or 2.5 billion gigabytes, are created every day – a figure that has only continued to grow (IBM, 2013). The price of data storage has greatly fallen, and new techniques have made it possible to derive insights from big data. However, as discussed in the context of smart phones, information is only valuable if it is accessible. Otherwise, it may serve to increase disparities between those who can and cannot access it. In this respect, experts stressed the need for information to be accessible for people with disabilities.

Several experts brought up that information everyone is required to understand is becoming more complex. Common examples include technical and legal information like terms of use for products or services, documents on health services, and information on government assistance. This creates a risk that the German-speaking population may struggle to understand and utilise information generally, as shown in Figure 2.

However, the risk is particularly great for people with cognitive impairments or learning disabilities. In this regard, several interviewees noted efforts to **automate the process of simplifying text**. For example, atempo is developing its capito application, which eventually intends to take complex text captured via smartphone camera, and "translate" it into simpler language of a desired level. At present, such simplification software is in a fairly early development stage.

[21] See Article 21 of the UN Convention on the Rights of Persons with Disabilities, available here.

Figure 2: Language competence of German speakers vs. information



Source: study presented by *atempo* (n.d.), demonstrating that most government and company information uses language too advanced for the majority of the German-speaking population. The Common European Framework of Reference for Languages (CEFR) has six levels, with A1 the most basic and C2 the most advanced.

Information can also be inaccessible due to sensory or other impairments, and this can be mitigated by following accessibility guidelines. Most interviewees agreed this is an area where Austria is advancing too slowly.

For example, the ORF (*Österreichischer Rundfunk* – the Austrian national public service broadcaster) does not provide subtitles for much of its programming. As of 2017, channels ORF 1 and ORF 2 provide subtitles for 71.42% of broadcasting hours, while ORF 3 does for 37.16%. According to interviewees, this violates the principle of barrier free information for people with disabilities and represents a hurdle for economic, social, and political inclusion. On the other hand, ORF does provide Austrian sign language interpretation for its nightly main news broadcast "*Zeit im Bild*".[22] Live broadcasts of Austrian Parliament on ORF are also accompanied by subtitles and Austrian sign language interpretation (ORF, 2018).

Accessibility of information on the internet is a key challenge, as many European Member States have varying accessibility standards. In all of the EU, as well as Austria, the European Web Accessibility Directive[23] applies to public websites. An additional law close to completion is the European Accessibility Act, which is similar to the Americans with Disability Act (ADA).

[22] The title loosely translates to "Time to get caught up".

[23] See Directive (EU) 2016/2102 of the European Parliament and of the Council of 26 October 2016 on the accessibility of the websites and mobile applications of public sector bodies, available here.

To make information accessible on the internet, a number of technical design features require consideration, and websites must be uniformly compatible. To this end, the Web Accessibility Initiative (WAI)[24] emphasises the idea "**essential for some, useful for all**" in promoting good website design. WAI recommends the following features as components of accessible website design:

Keyboard compatibility – websites should be designed to be navigable by keyboard (not requiring mouse input).

Video captions – websites with video should caption videos for hard-of-hearing people, people who are not very advanced in language capability, or people who for whatever reason cannot utilise volume (e.g. in a crowded metro).

Colours with good contrast – good contrast colours make navigating, reading, and understanding significantly easier for everyone, but especially for people with low contrast sensitivity. Low contrast sensitivity is more prevalent for ageing people, but is useful for everyone in different lighting conditions. Particular attention is required for the contrast between foreground and background colours, text and background colours, as well as links, icons, and buttons.

Customisable text – customisable text is particularly important for people with vision impairments and dyslexia. In many cases, people with disabilities may need to change the text's size, spacing, font, and colours. This customisation should be possible without losing a website's functionality.

Clear layout and design – although the design and usability of websites has greatly improved in recent years, layout and design can still be problematic. Clear headings, navigation bars, and consistent styling are key principles to follow. Overly complex or visually confusing layouts can make web navigation difficult or impossible for people with vision impairments or cognitive and learning disabilities, as well as people with less experience using computers.

Voice recognition – voice recognition is especially important for people with mobility impairments, who may rely on voice commands to navigate websites. Voice recognition is also useful for those with temporarily mobility restrictions or at risk of repetitive stress injuries.

[24] Officially the EU cannot directly reference WAI standards as W3C has no international standing. Therefore, EU law references Standard – EN 301 549, which is highly similar.

Text-to-speech – for those who cannot see text, have difficulty reading text, as well as people with dyslexia, text-to-speech functionality is essential. Properly coding websites is required for text-to-speech software to work, and also aids websites' visibility by allowing search engines to index contents easier.

Understandable content – overly complex phrasing, jargon, and using too few headings, lists, and visual separation reduce websites' comprehensibility. This is problematic for non-native speakers, people with cognitive and learning disabilities, and vision impairments.

Large links, buttons, and controls – when certain website features are too small, it is overly difficult to interact with them – particularly on mobile devices like smartphones and tablets. In some cases this can make websites unusable for people with reduced dexterity or people with vision impairments.

Notifications and feedback – when interacting with a webpage, it can quickly become disorienting and confusing if proper feedback and notifications are absent. In this regard, features like submission confirmation and error messages should be clear for everyone, including people with cognitive and learning disabilities, and people with less experience using computers.

As a final point, Austrian sign language is a significant topic for people with disabilities. The Austrian Federal Constitution recognises Austrian sign language as a standalone language.[25] According to numerous laws, the costs of sign language interpretation are covered by the federal government. In practice, however, there are significant challenges in the private, work, and education spheres. The Austrian government has attempted to improve communication for sign language speakers in particular areas, such as hospitals.[26] Even so, both the Austrian federal government (Sozialministerium, 2017) and interviewed experts agree that there are simply too few interpreters available to meet demand.

Sign language interpretation is one area where digitalisation seems less promising at present. In principle it is possible to design programs that translate text to Austrian sign language and vice versa, however multiple attempts to do so have not produced a reliable product. Even with a large database of Austrian sign language speakers, and using machine learning to

[25] Art. 8 Abs. 3 of the Austrian Federal Constitution.

[26] In 2011, for example, the Austrian Ministry of Health supported the creation of a video interpretation platform. This platform aims to help sign language speakers, and others who do not speak in German, to communicate in Austrian hospitals. Experts indicated that the service is very effective, providing interpretation within a few minutes, and at a very modest price. See here.

"train" a program to translate, sign language may be too unique from person to person for accurate and reliable conversion to German text. This implies that reliance on personal interpretation will continue for the foreseeable future. As discussed, however, digital technologies like smartphones are easing communication for sign language speakers.

Best practice 1: atempo's ava platform

atempo is a hybrid company based in Graz, Austria focused on providing assistance to people with disabilities. While atempo provides assistance to people with disabilities generally, it has a particular focus on people with learning difficulties and cognitive impairments.

atempo has developed **ava**, a digital platform for intermediating personal assistance for people with disabilities. Personal assistance for people with disabilities takes a variety of forms, such as assistance performing household tasks, transportation or running errands, interpretation for sign-language speakers, administrative work like filling out tax forms, etc. Personal assistance is associated with everyday life as well as the work sphere.

At present, personal assistance in Austria is usually intermediated as a traditional business. A company hires a number of personal assistants who work a given set of hours, and within those hours they are matched to individuals who require their services. However, this creates issues when, for example, a personal assistant needs to take a day off work and miss a scheduled appointment. This often leaves a person with disabilities without the required assistance, and with limited means to find a suitable replacement – particularly as service delivery is limited to the working hours of the head office. Furthermore, no centralised system for finding personal assistants exists.

The creators of ava recognised that the **labour platform model has the potential to more efficiently intermediate supply and demand for personal assistance**. In this sense, platforms such as Helpling informed the idea. With Helpling, individuals register to search for or provide service – usually home cleaning. Service providers indicate when they are available to work, and consumers when they are searching for services. The consumer views a list of individuals free for a given time period and sends a request for service. The two parties chat online and agree to the services to be provided, logistics, and remuneration. After the service is rendered, they can post public ratings for each another based on communication, courtesy, quality of service provided, etc. Ava similarly allows individuals to register as offering or seeking personal assistance.

One key difference between ava and typical labour platforms is that personal assistance for people with disabilities is more personal and sensitive than general services. To address this, ava incorporates ideas from dating platforms as well. Registrants on ava initially see each other's avatar and generic name, and communicate anonymously via the platform. This allows consumers to specify what they need, as well as the type of individual – for example, which languages they speak, what services they have experience in, age and gender, etc. Once each party has agreed to an arrangement, they are able to exchange further personal information including contact details.

The developers of ava are aware of the risks associated with this business model, including exploitation of people with disabilities or workers. However, ava aims to keep the barriers to entry as low as possible and assist people in making their own informed decision on who will assist them and how. For this reason, ava does not require an extensive verification process for those offering service. On the other hand, people with disabilities can search exclusively for service providers who are trained and certified personal assistants. Furthermore, ava advises that people with disabilities have a friend present when they meet service providers for the first time.

By combining lessons from labour and dating platforms, ava has the potential to more efficiently intermediate personal assistance, build a network of trust, improve service quality at lower cost, and ultimately reduce barriers for people with disabilities. The relevance of personal assistance is quite universal as well. For example, deaf or hard-of-hearing individuals can more easily find interpreters. People with mobility impairments requiring personal assistance for a business trip can access a broader pool of assistants than a single organisation could offer. People with learning disabilities can find trusted individuals to assist with tasks that can provide difficulties, such as filling out official forms.

Ava has already undergone a testing period and went online 17 January 2019. It is an initiative with significant potential to make the personal and working lives of people with disabilities more inclusive, and its development is worth following closely.

Ava is a best practice because it combines learning from both labour and dating platforms, creating more efficient matching of supply and demand. If it gains enough attention and builds a sufficient network, all types of people with disabilities stand to benefit.

Best practice 2: Specialisterne

Specialisterne is a social enterprise that began in Denmark and is active in Austria since 2011. It is specialised in preparing people from the autism spectrum for suitable jobs, using a mixture of training, coaching, and support measures.

People who come to Specialisterne have generally been unemployed for a long period of time. Specialisterne starts with a discussion to understand the individual challenges the person faces in life and on the job market. Then Specialisterne's team of experts decides upon a course of action. If a candidate is selected, Specialisterne offers him or her specialised training in soft skills and basic or specialised qualifications needed for jobs in IT or Quality Management. The courses Specialisterne offers typically run over a period of two to three months and include training in software testing, self-management, team skills and social interactions. The overall goal is making the individual "job ready", thus helping them find their way into a position, and gain self-confidence.

One key competence of Specialisterne is the matchmaking between selected candidates and open positions on the market. The firms that Specialisterne is in contact with for potential placement of candidates are typical private sector companies. The type of positions that Specialisterne's candidates are mostly suited for include software testing, data management, checking financial documents, and proofreading.

Within the first two weeks of the start of a new employment contract, a representative of Specialisterne visits the firm and conducts a brief (one to several hours) training on autism for the team and management. This training consists of education on autism and the particular needs of the new employee, as well as time for open questions and answers. Special care is taken that the particular needs of our candidates will be met, from practical considerations like a sufficiently calm working environment, to support structures in the office.

Thereafter, a job coach from Specialisterne continues to regularly meet the worker and their mentor within the team on a weekly or bi-weekly basis. This aims to ensure that the job start runs smoothly and possible concerns of the team or the management can be addressed early on. With time these consultations become less frequent – typically every month – and continue for six months to a year. These measures contribute to an extremely high success rate – some **90 % of the people that benefit from Specialisterne's training and job placement remain gainfully employed long-term**.

Some of Specialisterne's candidates also work on a project-basis directly in their Vienna office. These employees work remotely for project partners outside of Vienna. Reasons for

this arrangement can be that a candidate does not feel comfortable to move to another city for work, or the work environment at the company may not be suitable. The latter can be when there are frequent changes in the team, the noise level is too high, or there is a lack of local support from a mentor.

Specialisterne's candidates are known for providing excellent service, in particular with regard to tasks that require great concentration and attention to detail. As such, Specialisterne has become a valued partner for companies in Austria, Germany, and Switzerland. These firms regularly consult Specialisterne to find the best candidates for a variety of tasks at different skill levels.

Specialisterne qualifies as a good practice for a number of reasons. First, it recognises and helps develop the strengths of a particular group of people with disabilities that struggle in the labour market. Second, it takes targeted and personalised measures to make these individuals job-ready, and coaches firms to implement inclusive structures and processes within their organisation. Third, it connects individuals and firms, utilising a long-term follow-up strategy to ensure that both parties are a good match for each other. Fourth, it caters to candidates with different needs, offering gainful employment in an alternative setting with extra flexibility. Fifth, it represents a highly cost-effective measure to empower long-term unemployed people with disabilities to (re)enter the labour market.

Summary

It is **overly optimistic to think that digitalisation will automatically "fix" labour market inclusion for people with disabilities**. To be sure, the market itself creates many advantages for people with disabilities – for example, subtitles are automatically included in many popular video sites, and accessibility features are become default in software of many electronics devices. Still, **while digitalisation offers exceptional opportunities, policy action is still required to realise inclusion**.

Moreover, many aspects of inclusion are only tangentially affected by inclusion, and other barriers cannot be solved by digitalisation. For example, greater inclusion of people with disabilities in education is an important step towards greater sensitisation and awareness of people with disabilities – only 8% of Austrian primary schools include people with disabilities, which may contribute to further stigmatisation later in life. While **digitalisation may offer new tools** for people with disabilities to take part in all stages of education, digitalisation alone is insufficient.

Numerous experts indicated that **modest changes to the legal framework of labour market inclusion** should be considered. Furthermore, **data collection on people with disabilities in the labour market has not been standardised across all federal states**, and the methodology used in Austria's micro-censuses could be improved. Doing so would help facilitate evidence-based policy-making. Overall, the inclusion process **still requires substantial political will and investment**.

Many **traditional jobs for people with disabilities are disappearing**. Manual trades are less in demand than before, and other tasks are vulnerable to outsourcing. Addressing this requires promoting new opportunities for people with disabilities in the labour market, as well as re-skilling.

Traditional jobs require greater digital competences, and in this sense, most jobs are becoming "digital". Simultaneously, **new jobs are appearing, including many with great promise for people with disabilities**. However, these require specific skillsets that people with disabilities may lack. The solution entails greater effort to promote training in digital competences for people with disabilities. However, this training should not be limited to people with disabilities in the labour market. People with disabilities who are searching for work or economically inactive require special consideration, as they may struggle to find financial assistance.

Attitudinal challenges are also important to consider. Many stakeholders demonstrate insufficient awareness of **strengths of people with disabilities**, and place too much emphasis on what people with disabilities cannot do. In this sense, Austria could learn from good examples where people with disabilities have special advantages in tasks demanded by the labour market. Specialisterne has found a niche for people with Asperger's syndrome, and an award winning German initiative Discovering Hands[27] has done the same for women with seeing impairments. Furthermore, the public and stakeholders are insufficiently aware of people with disabilities generally. In this regard, groups including the deaf, blind, mentally ill, and people with cognitive impairments are particularly affected.

Lastly, the Austrian business sector may not adequately recognise the benefits of inclusion policies. As argued, inclusion efforts like assistive technologies benefit people with disabilities and the general population. However, the **Austrian business sector stands to benefit from inclusion as well**. Several case studies suggest that companies generate increased traffic and reach a larger audience when they implement accessibility features and target people with

[27] Discovering Hands is an initiative to improve early recognition of breast cancer. Because blind and seeing disabled women have superior tactile sensitivity, Discovering Hands trains these women to perform early cancer screenings with around **30% higher detection of soft tissue changes than doctors**. See here.

disabilities (W3C, 2018; Gonzalez and Fernandez, 2016). Furthermore, consumers more favourably view and are more loyal to companies who hire people with disabilities (Sipersetin et al., 2006).

Case study 2: Platform work for the inclusion of people with disabilities in the labour market - a European picture

Platform work is a growing form of work enabled by digitalisation. The spread of new and disruptive platforms like Uber, Deliveroo, Upwork, and Freelancer has led to significant debate about the merits and pitfalls of these diverse new work arrangements. For example, platform work has few entry barriers, and is thus attractive for people who traditionally have difficulty in the labour market. Platform work can generally be done at very flexible times, which appeals to people who need to balance work with other obligations like receiving therapy, childcare or primary jobs. On the other hand, platform work has been criticised for driving low remuneration, precarious working conditions, social exclusion, and bogus self-employment. These **potential advantages and disadvantages for labour market inclusion** – such as the benefits of flexibility or the impact of social isolation, **may well be magnified for people with disabilities**.

This case study therefore explores the opportunities and challenges that platform work may represent as a new source of employment for people with disabilities. The scope of analysis is the EU level. For this reason, as a starting point it presents the employment situation of people with disabilities in the EU, and considers the EU framework in the field of employment for people with disabilities. On the empirical side, the case study is developed to provide both an EU-level perspective and examples of relevant national practices.

Overview

In the EU in 2016, there lived 80 million people with disabilities, accounting for more than 16% of the total EU population (EDF, 2016). As the EU population ages, the number of Europeans with disabilities is rising significantly. It is expected that by 2020, approximately 120 million Europeans will have a disability (EC, 2017).

In terms of employment and socio-economic conditions, the gap between people with disabilities and the rest of the population is significant. According to data from the European

Quality of Life Survey (EQLS), some improvement occurred between 2011 and 2016 and, in the same period, fewer people reported being unable to work because of their disability (Eurofound, 2018b). Nonetheless, access to the labour market remains a key challenge for people with disabilities. In fact, the employment rate of people with disabilities is 48.7% versus 72.5% for Europeans as a whole.[28]

Relatedly, quality education remains low for people with disabilities. In fact, close to 22.5% of young people with disabilities are early leavers from education and training, compared to 11% for other pupils. Moreover, about 29.5% of people with disabilities in the age group 30-34 have completed tertiary education or equivalent, compared to 42.5% for other people. This is particularly worrying considering that the employment gap for people with disabilities with a tertiary education level is much smaller than for those with lower education. In fact, just 26% of people with disabilities who only completed primary level have a job; this figure rises to 46% for those with secondary education and 72% for those who completed tertiary education (Eurofound, 2018b). As result of all these employment figures, 30% of people with disabilities are at risk of poverty or social exclusion in the EU, compared to 21.5% of people without disabilities (EC, 2017).[29]

Given the economic disadvantages facing people with disabilities and priority of labour market and social inclusion, it is worth exploring the possibilities for platform work to contribute to labour market inclusion. Platform work seems to be a potential field where technology can help to generate employment and overcome the barriers that people with disabilities face in the traditional labour market. Yet, this is a relatively new and highly heterogeneous phenomenon, and concerns are often raised about the quality of the jobs that online platforms provide. Because empirical research on platform is limited, especially with regard to people with disabilities, further investigation is needed to clarify the opportunities and risks. As the phenomenon is still emerging and growing, there is momentum for a reflection about how platform work can be optimised for workers.

The EU framework on employment and disability

The EU definition of people with disabilities references the UN Convention of Rights for People with Disabilities (UNCRPD), with the Court of Justice of the EU stating that "**Persons with disabilities include those who have long-term physical, mental, intellectual or**

[28] These estimates are based on EU-SILC data that account for disability in terms of "activity limitation" due to health problems for at least the last 6 months (EC, 2017).

[29] Additional statistics on people with disabilities are available from Eurostat, see here.

sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others".[30]

Against this background**, the European Disability Strategy (EDS) 2010-2020**[31] was adopted in order to empower people with disabilities to claim their rights and benefit from the laws that should promote their social inclusion, acknowledging the importance of including people with disabilities for the success of the wider Europe 2020 strategy for smart, sustainable and inclusive growth in the Single Market. Indeed, the EDS highlights that an inclusive society brings up business opportunities and fosters innovation, being increasingly relevant to provide accessible products and services, as well as assistive devices, for an ageing society such as Europe (EC, 2010). The EDS is grounded in the EU legal framework, which consists of the UNCRPD as well as the Charter of Fundamental Rights of the EU and the Treaty on the Functioning of the EU.

The UNCRPD was signed by the EU in 2007, ratified in 2010 and entered into force in January 2011, becoming a legally binding instruments for the EU and its Member States, to protect human rights and fundamental freedoms of people with disabilities. Article 27 of the Convention explicitly recognise the "right of persons with disabilities to work, on an equal basis with others".[32] Related to this aspect, other articles tackle the issue of accessibility "to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public",[33] and right to access education "without discrimination and on the basis of equal opportunity".[34] Furthermore, Article 21 of the Convention upholds freedom of expression and opinion, and access to information on an equal basis with others, and through all forms of communication. Article 21 paragraph A further requires, "Providing information intended for the general public to persons with disabilities in accessible formats and technologies appropriate to different kinds of disabilities in a timely manner and without additional cost".

The Charter of Fundamental Rights of the EU, proclaimed in 2000, recognises in Article 26, "the right of persons with disabilities to benefit from measures designed to ensure their

[30] See UNCRPD, available here.
[31] See EDS, available here.
[32] See Article 27 of the UNCRPD, available here.
[33] See Article 9 of the UNCPRPD, available here.
[34] See Article 24 of the UNCPRD, available here.

independence, social and occupational integration and participation in the life of the community". In addition, Article 21 prohibits any discrimination on the basis of disability.[35]

The Treaty of the European Union (TEU) recognises in Article 2, the foundations of the Union to be on the principle of non-discrimination, among others, and, in Article 3, the aim of the Union to promote the wellbeing of its people, while combating social exclusion and discrimination.[36]

The Treaty on the Functioning of the EU (TFEU) states the intention to combat discrimination based on disability when defining and implementing EU policies and activities, in Article 10, and Article 19 gives to the EU the power to adopt legislation to address such discrimination.[37]

Stemming from this legal framework, the EDS focuses on eliminating barriers through EU action to supplement national measures, identifying eight main areas of intervention that are accessibility, participation, equality, employment, education and training, social protection, health and external action.

In line with the UNCRPD, the EDS defines accessibility as the possibility to have access on an equal basis with other to the physical environment, transportation, ICT and other facilities and services. Thus, in line with the EDS and specifically relating to ICT, the **Web Accessibility Directive**[38] ensures that people with disabilities, especially those with vision or hearing impairments, will have better access to the websites and mobile applications of public services. In fact, the Directive applies to all websites and mobile apps of public sector bodies, with exception of broadcasters and livestreaming, requiring standards to make websites and mobile apps more accessible. Such standards require for instance that there should be a text for images, or that websites can be browsed without a mouse, which can be difficult to use for some people with disabilities.

A broader implementation of accessibility is foreseen by the **European Accessibility Act,**[39] which was agreed between the Council and the European Parliament under the Austrian Presidency and is expected to be formally adopted by the Council and the European Parliament in spring 2019. This applies the notion of accessibility to a wider range of products and services and consequently a large group of manufacturers and service providers,

[35] See Article 26 of the Charter of Fundamental Rights of the EU, available here.
[36] See TEU, available here.
[37] See TFEU, available here.
[38] See Web Accessibility Directive, available here.
[39] See European Accessibility Act, available here.

acknowledging that it is of key importance to have a standardisation and harmonisation of accessibility requirements for products and services across the EU to strengthen the single market while ensuring the inclusion of people with disabilities in all aspect of social and economic life. The list of products and services covered by the Act includes: computers and operating systems, ATMs, ticketing and check-in machines, smartphones, TV equipment related to digital television services, telephony services and related equipment, audio-visual media services such as television broadcast and related consumer equipment, services related to air, bus, rail and waterborne passenger transport, banking services, e-books, e-commerce. Although the Act does not prescribe to the level of technical details on how to render a product or service accessible, it provides for the development of standards or technical implementing measures wherever more detail is needed.

The EDS then stresses the importance of employment to ensure independent living, personal development and avoid poverty. On the one hand people with disabilities should be included on the labour market to achieve EU growth targets, on the other hand the EDS makes it clear that quality jobs are important to promote people with disabilities living standards. Among other actions, the Strategy states that people with disabilities employment should be fostered within the Europe 2020 framework, promoting new skills and jobs. Acknowledging the limited participation of people with disabilities in the labour market, which in turn leads to income inequalities and poverty, the Strategy also recognises the need for people with disabilities to benefit from social protection systems, poverty reduction programmes and disability-related assistance.

The **European Social Fund (ESF)** is Europe's primary instrument for promoting social and labour market inclusion.[40] The ESF contains many avenues to pursue inclusive employment and social protection systems for people with disabilities, as well as other groups that face marginalisation on the labour market. For example, ESF funds are intended to help people of all ages gain qualifications, find jobs, and learn to use technology and multimedia training. For the period 2014-2020, ESF projects have some €80 billion budgeted for the EU. This budget includes a range of measures to help people with disabilities to access the labour market.

In addition, education and training is also given key importance in the Strategy, which states that people with disabilities should be included in mainstream education, avoiding segregation and providing individual support when needed. The **Youth on the Move**

[40] See the ESF website, available here.

initiative and the strategic framework for European cooperation in education and training (ET 2020) are designed to provide EU support to national actions in these regards.

All of these interrelated three dimensions, employment, social protection and education, are integrated in the **European Pillar of Social Rights** paying special attention to people with disabilities. The European Pillar of Social Rights, by its design, covers all aspects of people's social needs, with a focus on employment but also on those conditions that are preparatory for quality jobs and to those conditions that should be ensured also to people outside employment. While it is made clear that the principles and rights stated in the Pillar concerns all EU citizens and third-country nationals with a legal residence, there are also specific mentions to people with disabilities. Everyone's right to quality and inclusive education is stated in Article 1. Equal treatment and opportunities regarding employment, social protection, education and access to goods and services available to the public are recognised to everyone and specifically to people with disabilities in Article 3. Article 4 recognises the right to active support to employment for everyone. Article 17, importantly, sets forth the right to inclusion of people with disabilities through income support for living in dignity, services that enable them to participate in the labour market and in society and a work environment that adapts to their needs.

In these regards, **Directive 2000/78/CE**[41] on establishing a general framework for equal treatment in employment and occupation represents a key legal instrument to ensure people with disabilities inclusion in the labour market. In particular, Article 2, in defining the principle of equal treatment, refers to both direct and indirect discrimination. While direct discrimination is an openly less favourable treatment in a comparable situation, according to the Directive, indirect discrimination occurs when "an apparently neutral provision, criterion or practice would put a person having a particular religion or belief, a particular disability, a particular age, or a particular sexual orientation at a particular disadvantage compared with other persons". With specific reference to people with disabilities, the Article prescribes that any person and organisation to which the Directive applies is obliged to put in place measures to avoid such form of discrimination. To this purpose, Article 5 establishes the right to reasonable accommodation for disabled persons, as following "In order to guarantee compliance with the principle of equal treatment in relation to persons with disability, reasonable accommodation should be provided. This means that employers shall take appropriate measures [...] to enable a person with a disability to have access to, participate in, or advance in employment, or to undergo training, unless such measures would impose a disproportionate burden on the employer. This burden shall not be disproportionate when it

[41] See Directive 2000/78/CE, available here.

is sufficiently remedied by measures existing within the framework of the disability policy of the Member State concerned".

On platform work

Being a relatively new phenomenon, a common definition of platform work has not been agreed yet in the literature. However, according to Eurofound (2018a: p.3), **platform work consists of the "matching of supply and demand for paid work through an online platform".** According to the same report, the term platform work collects a variety of different situations, which differ significantly in terms of characteristics of the job and in terms of employment and working conditions. Overall, for what concerns workers, **flexibility and low entry barriers** are recognised as the main benefits of platform work, while **precarious employment and working conditions** are acknowledged as the main risks (Berg, 2016; Eurofound, 2018a; Garben, 2017; Pesole et al., 2018).

However, given the heterogeneity of platform work, Eurofound (2018a) points out that the benefits and risks rely on the type of job and tasks, on the platform and on the workers' employment status. For the scope of this case study it is worth considering some examples on how different types of platform work, as defined by Eurofound (2018a), can affect people with disabilities differently, even considering different disabilities.

One of the main relevant differences is between **on-line and on-location platform work.**[42] The former refers to work to be performed online through a profile on the platform, with the possibility to decide whether to accept the job or not and when to perform it, and thus delivering large flexibility for people with disabilities. The level of skills required and the nature of tasks required varies considerably according to the platform, ranging from professional creative work to clerk activities. As such, this type of work may be specifically relevant for people with mobility impairments or those that suffer from social anxiety. By contrast, being completely dependent on digital technology, this form of platform work may not be fully beneficial for people with visual disabilities, if such technology is not made accessible. On-location platform work, instead, refers to work that has to be performed in person for several clients in different locations, through the platform. The level of skills required is usually low and medium, while the scope of the task is often limited. Depending on the platform, the work is either assigned automatically when the worker declares to be available or selected by the worker themselves time by time. As such, this type of work can

[42] In the literature, this distinction is also made with the terms analogue versus digital platform work, or location-dependent versus location-independent platform work.

offer flexible working hours to people with disabilities, although to a more limited extent when the work is assigned by the platform itself. In any case, the need to be on different sites for different tasks make it less relevant for people with disabilities with mobility or visual impairments, for example, while often it does not necessarily constraint the capacity of workers that are deaf or hearing impaired.

In addition, as concluded by Eurofound (2018a), it is worth considering the high heterogeneity in terms of the employment and working conditions that result from **different business models adopted by platforms**. Because there is no legislation that specifically apply to platform workers, employment and working conditions are ultimately determined by the employment status that is established by each platform's terms and conditions. Given this heterogeneity, it should be acknowledged that platform work can impact very differently on people with disabilities, as for all other workers, in terms of capacity to gain independent living through quality jobs.

So far, the literature shows little evidence on people with disabilities in platform work. As pointed out by Zyskowsky et al. (2015), studies on demographics of platform workers do not include disability status among the considered traits and much more attention is devoted by a growing body of the literature to people with disabilities as users of digital technology and contents, including online platforms (see also Johnson, 2018). Only one study that deals with disability among platform workers covers the EU comprehensively (Pesole et al., 2018). Although this study is not specifically concerned with people with disabilities in platform work, the authors find out that **health issues or a disabilities constitute a motivation to do platform work for approximately 25% of the workers surveyed**.

Similarly, Berg (2016) considers disability as a motivation to do platform work in an ILO study that covers several countries around the world. However, in the survey, disability is coupled with other necessities that workers have faced and that pushed them to engage in platform work, namely caretaking responsibilities and old age. The results of this study shows that, **among workers that stated that they need to work from home, 36% indicated to have health problems limiting their capacity to work**. Overall, **9% of the platform workers interviewed** (i.e. 109 workers) **reported having a physical or mental condition or illness lasting longer than twelve months**. Those who declared to have health issues explained that they could benefit from platform work because they were able to work from home and make a living while it would not have been possible otherwise.

Finally, two studies provide evidence of people with disabilities in platform work in the US and discuss it in detail. Johnson (2018) analyses the positive and negative effects that a large live streaming platform has on people with disabilities that use it for income generation. The

relationships established with the live streaming community, the level of control over the job and the flexibility that it offers to respect healthcare necessities are mentioned as important benefits. Negative aspects include the excess of hours and the pressure to perform well, with high levels of attentiveness and diligence that the workers have to put in their job to be successful, as well as complicated social interactions that may arise on the platforms (e.g. trolls). Zyskowsky et al. (2015) provides an extensive analysis on the characteristics and the experiences of people with disabilities undertaking platform work to perform micro tasks online. These workers had very heterogeneous disabilities, including blind or seeing-impaired people, deaf or hearing-impaired people, people with mobility impairments or other physical disabilities, and people with intellectual impairments or learning disabilities. The majority had completed some college education and were above 50 years of age. The study concludes that the main benefits are identified in the job flexibility and the possibility to avoid relying on public transportation. However, the study also highlights how the workflow designs do not make platform work fully accessible to people with disabilities, which could negatively affect the professional reputations of people with disabilities.

Stakeholder interviews

Because of limited literature, interviews were particular important for this case study. The research team undertook 16 interviews with experts and key informants at EU level and in seven Member States (Austria, Belgium, Denmark, Germany, Ireland, Spain, and the United Kingdom). The interviewees were selected to represent a variety of points of view, as reported in the table below, which summarises the number and types of interviews. Among these 16 interviews, 4 were in common with CS1, consisting of 3 experts in digitalisation and 1 platform. Four workers with disabilities also took part, representing work performed digitally (via phone and computer) and manually (performed on-location or with specialised tools).

Table 2: Detail of stakeholders interviewed for CS2

Type of interview	Count
EU stakeholder	5
Expert/Academic	3
Platform	4
Worker with disability	4

Total	**16**

General remarks

First, in line with the literature, **nearly all interviewees spontaneously pointed out the heterogeneity of both disabilities and platforms**. Some stated that it is hard to generalise about employment of people with disabilities given the fact that different disabilities lead to different difficulties and needs for people to work, while not comprising the capacity to work at the same extent for all people with disabilities. On the other hand, certain disabilities are less visible than others, followed by different efforts and attention in terms of policy support. Others made clear that they could refer only to a specific type of disability that they knew better, because of their personal or working experience with the disability. In four interviews, the heterogeneity of platform work was also pointed out, highlighting that the impact, both in general and specifically on employment of people with disabilities, would differ significantly according to the type of jobs and tasks to perform and depending on the business model of each specific platform, even in the same sector.

Secondly, a number of obstacles for people with disabilities to enter and participate in the labour market emerged from the interviews. Such obstacles affect people with disabilities in the recruitment process and throughout their entire working life. Almost all interviewees talked about two main obstacles. Namely, they referred to **attitudinal barriers**, on one side, and, on the other, to the lack of accessibility, due to both **physical barriers and digital barriers**. Attitudinal barriers were described as "*the perception that some part of the society has towards people with disabilities, that they cannot perform the job*"[43] and to a lack of awareness of employers about the capacities of people with disabilities. One interviewee also reported a lack of self-awareness in people with disabilities about their own capacity to work.

> Platform work lets people with disabilities work without their disabilities being known. In that sense, it can be a great equaliser.
>
> -An expert interviewee

The lack of accessibility was reported either in terms of physical barriers to reach or access or move around at the workplace or in terms of accessible technology, or both. Regarding specifically accessible technology, according to an interviewee the notion of accessibility refers to "*the possibility of a person, regardless of their ability and characteristics, to enjoy use*

[43] Quotations in italics are taken from the interviews.

on an equal basis with others" and this cannot be guaranteed if all the digital devices, for example the user interfaces or display screens, are not designed for the use of people with disabilities. This can be achieved through a universal design approach to remove digital barriers, so as "*to allow people with disabilities to work on equal footing as others*". For this reason, the same interviewee remarked that the notion of **reasonable accommodation**, as in the EU legislation, **encompasses not only physical environments**, working time, tasks or job functions, **but also all ICT that people with disabilities need to use at the workplace**.

In addition to these obstacles, some interviewees pointed out that the low quality education and the marginalisation of people with disabilities, due to both segregation and poverty, prevent them from participating in the labour market because of lack of adequate skills, both technical and social.

Finally, in a number of interviews there was a reference to several other obstacles that are related to labour market institutions. Referring to the Belgian system, one interviewee described the "*benefit trap, that is, when a person with disabilities works a certain numbers of hours and gets a salary, then loses the benefits he or she is entitled to have"* and highlighted that this may discourage people with disabilities to enter the labour market. Two other interviewees referred to the liberalisation of the labour law, which may endanger instruments designed to protect and guarantee the participation of people with disabilities in the labour market. Referring to the Irish case, one interviewee mentioned lack of involvement of relevant stakeholders when designing labour market policy for the inclusion of people with disabilities, also for what concerns accessibility policies. Finally, one interviewee stated that difficulties are in general related to the eroded capacity to generate and maintain employment for everyone, and thus also for people with disabilities.

Opportunities

Overall, the majority of the interviews expressed an expectation that platform work would continue to grow, and a positive attitude towards platform work as a potential means to increase employment important opportunities for people with disabilities.

According to the interviewees, platform work can significantly help in removing some of the obstacles that people with disabilities encounter the labour market as described above and could represent **a source to gain independent living for people with disabilities, fulfilling both economic and personal needs**. Indeed, almost all interviewees recognised that platform work can be an opportunity for people with disabilities because in most cases **it mitigates both attitudinal and physical barriers**.

Concerning physical barriers, many platforms offer people with disabilities the possibility to work from home, thus lowering the need for accessible transportation to go to work and for adequate physical arrangements at the workplace. In fact, one worker with disabilities stated that "*working remotely is of key importance*", and another stated that "*working from home massively helps*". In addition, other interviewees recognised that platform work is a very relevant opportunity for people with mobility constraints to work from home.

Concerning attitudinal barriers, platform work often does not require a person to disclose information about their health conditions or disabilities to participate. Most platforms do not have recruitment or hiring processes where people with disabilities have to disclose this information. In many cases, especially when the work is done remotely, the disability is not acknowledged by the worker or known to the customer or platform. In this regard, one interviewee stated that "*[Platform work] can also help to remove attitudinal barriers because the stigma that a person with disability faces can be eliminated, because you work autonomously in a way, but still with your peers sometimes; [the disability] is hidden in a way – you can prove that your disability does not prevent you working".*

Another opportunity of platform work for people with disabilities that strongly emerges from the majority of interviews is **the possibility for flexible working hours**. Three of the four platforms involved in the study offer the possibility to connect whenever the worker feels to work and disconnect otherwise, providing for the possibility to decide whether to accept a task or not at any moment. According to the majority of interviewees, this flexibility represents an opportunity for people with disabilities because of the special needs they may have in terms of healthcare assistance or rest time. As stated in an interview, "*Flexibility is important for people with disability. The rhythm is different. It may require some people more time to do something or to move from one place to another. Flexibility of working time facilitates a lot people with disabilities to fulfil their need for special assistance*". According to an interviewee, flexible working hours should already be an important component of reasonable accommodation to work, and platforms typically provide this benefit.

In addition to these opportunities, it is worth noting that another important positive effect of platforms on employment of people with disabilities emerged from the interviews. Many interviewees mentioned an indirect effect, whereby people with disabilities use services of platforms in their working lives. In fact, several interviews reported that platforms enormously facilitate workers with disability in their job, for example by providing cheaper accessible transportation or providing specific services to people with disabilities while working. By lowering the need for special assistance in specific cases, platforms can represent an important means to increase employment of people with disabilities in traditional jobs. One of the interviewed workers reported that "*especially working, when we are stacked […],*

the app helps so much". The interviewees from two of the platforms involved in the study argued that a promising field is to develop agreements and partnerships with public bodies or private firms to provide services for workers with disabilities, facilitating both employers to provide reasonable accommodation and people with disabilities to work. This remark corresponds with the perception that people with disabilities are mainly users of platforms, rather than workers, as reflected by the literature and as discussed in the next section.

Indeed, despite the potential widely acknowledged by the interviewees, the evidence about people with disabilities working in online platforms emerged as marginal from the interviews. This could be due to barriers and challenges hindering the full deployment of this opportunity. In addition, while platform work can remove certain significant barriers for people with disabilities to enter and participate in the labour market, as discussed above, it may worsen some others and create new risks.

Barriers, challenges and risks

A lack of robust evidence on platform work for people with disabilities might be due to difficulties in detecting people with disabilities among platform workers. However, interviewees also indicated that the **opportunities of platform work for people with disabilities are hindered by a number of barriers and existing challenges**.

Three interviewees reported that access to enabling technology to allow people with disabilities to engage in platform work may be limited because of **lack of financial means**, due to people with disabilities' precarious economic conditions, as registered by statistics such as poverty rates among people with disabilities. One interviewee spoke explicitly of a "*big digital* divide" for people with disabilities due to their vulnerability to poverty. Another interviewee explained, however, that with technology developing at a fast pace, the economic burden of suitable ICT will decrease and become affordable for an increasing portion of the population. The interviewee provided the example of the Android mobile phones, which have become more and more popular in India, providing access to the discussed app for a larger portion of people with disabilities in the last few years.

Moreover, several interviewees discussed **inadequate skills of people with disabilities** to seize the opportunities that platform work could deliver, pointing out that when people with disabilities are to be involved in platform work, additional initial training is often required. Some discussed the issue of general low education and segregation at young age, which prevent people with disabilities from developing adequate technological and social skills. Some others referred to more specific situations. Two interviewees explained that even people with disabilities with tertiary education lack certain specific skills that are generally

needed in the labour market, referring both to soft skills, such as social skills, self-awareness and motivational skills, and to technical skills to deal with technology, as required in many jobs through platforms.

> A key barrier is low quality education. People with disabilities are still steered towards lower quality education options.
>
> -An expert interviewee

One worker with disability explained that, when available, government-provided training is often outdated and does not consider the most recent technological developments and possibilities. For example, the interviewee said that he was offered a training to use the braille writing system, while he instead uses much more efficient digital tools when needed for his job. According to another interviewee, it would be important to enlarge access of people with disabilities to digital learning, not only in education but also throughout life, in order to involve those already out of school and to keep pace with technological change. One interviewee, finally, stated that the problem is not in skills but rather in the lack of awareness of technological possibilities among people with disabilities. Adding to this, two other interviewees claimed that people with disabilities do not widely perform platform work because of a lack of awareness of advancing technological opportunities generally, or the possibilities offered by platform work specifically.

Several interviewees noted a **lack of full digital accessibility on platforms**. One interviewee remarked that, on digital accessibility "*there is more focus on the user side than on the worker side. There is more interest to make sure that the e-commerce and public body websites and mobile apps are accessible rather than to make sure that the inside of these platforms is accessible. […] So you see how focus is more on seeing people with disabilities as consumers and end users rather than on seeing them adding value to the society as workers*". Several examples in the interviews described a situation of "*holes in the working procedures"* in terms of accessibility. Performing platform work involves a number of steps, and if any one of these is inaccessible, many people with disabilities will be unable to complete perform the work without assistance.

In three interviews, two experts and one stakeholder highlighted that there are already clear guidelines on how to make websites fully accessible, mentioning that "*there are sources such as WCGS 2.1, the Web Content Accessibility Guidelines, which give developers clear guidelines on how to make a website accessible in every aspect*". Two of them specified that the transposition and implementation of the Web Accessibility Directive will provide good

examples of Member States' engagement in accessibility and on how digital accessibility can be achieved in practice.

Two interviewees, one expert and one worker with disability, argued that **digital accessibility is often seen as a cost without tangible benefit**. Referring to digital accessibility, one of them declared that "*there is a lack of corporate willingness to embrace the opportunities that are there, arguing that the need to do so is too small […] compared to the effort that it takes*".

All the interviewees remarking on digital accessibility of platforms pointed out the importance of having platforms designed to be accessible for people with disabilities from the beginning. This avoids significant costs to implement accessibility features step by step later. Two interviewees added that dialogue with the industry would be helpful to achieve more accessible websites, and two others added that the design should involve all the stakeholders and people with disabilities.

A general conclusion is that if people with disabilities lack access to digital training opportunities and accessible websites, people with disabilities **may not benefit from the growing field of platform work (or other fields that may emerge), or be able to fully participate in the digitalised labour market.** In addition to this, when considering the possibility of people with disabilities in platform work, a number of other **potential risks were described in the interviews**.

Several interviews described the possibility that people with disabilities, by working remotely from home through platforms, may experience **further isolation, missing the opportunity of employment as a form of inclusion in society.** In an interviewee's words, "*employment is successful if it is related to other aspects of life. Platform work can be done from your bed, and this could be a source of further segregation of people with disabilities*".

> If we move towards having people with disabilities doing online work, that's great if it leads to economic independence. But if it leads to further segregation and isolation, we're moving in the wrong direction.
>
> -An expert interviewee

While working remotely was recognised as an opportunity, some interviewees also acknowledged that this might result in lack of inclusion that employment should deliver to people with disabilities. In this sense employment of people with disabilities in platform work may serve economic purposes but also undermine the social aspects of work. In fact, one interviewee declared that "*inclusion is not about ignoring the differences but taking them on*

board", raising concerns about the possibility for people with disabilities to have their voice heard and their needs taken into account in a context of detachment from the working environment in general and from particular companies. According to the same interviewee, the non-declaration of disabilities and separation inherent in remote work can result in **invisibility and loss of guarantees for people with disabilities**. One interviewee mentioned the possibility of "*feelings of isolation, [because] working on your own daily, not interacting with anyone can become discouraging*". However, depending on the platform, personal connections might be established virtually, as one of the workers with disability declared to enjoy a specific app because of the personal relationships they can build – not only because it was necessary for their job.

Furthermore, four interviewees raised concerns about the **difficulties in applying existing labour legislation to platform work.** Two interviewees stressed that the application of legislation depends on the business models and the employment relationships set up by different platforms, which vary greatly. While some platforms hire workers as employees, platform workers are self-employed. In the latter case, platforms are not automatically subjected to most labour legislation. Indeed, one interviewee highlighted that there is no overarching legislation on platform work, and often the existing legislation is either not applicable or applied on a case by case basis. In this context, legislation on equality and non-discrimination, including reasonable accommodation, may be difficult to apply.

One interviewee from a platform stated that as the company moves to recognise its workers as employees, the legislation on equality and non-discrimination applies. The interviewee stated that the platform already has an explicit policy for gender equality and intends to create a similar policy for people with disabilities as well. Considering the lack of overarching legislation for platform work and the difficulties to apply the existing legislation to this kind of work, one interviewee stated that "*If you are going to pass legislation on platforms, it's really important that legislators think about ways for ensuring accessibility for people with disabilities and how to push platforms to think about it, and not just about going for the cheapest option from the beginning. This is to try to make sure that if these are jobs that are going to be there in the future, they are inclusive from the beginning and not to wait and see what problems develop. We should act from the beginning […] as job opportunities should be accessible when they are created, to avoid repeating the same errors as traditional jobs"*.

Furthermore, the majority of the interviewees mentioned the risk of **poor employment and working conditions** that may result when people with disabilities perform platform work. Several interviewees stressed the importance of ensuring decent jobs for people with disabilities in particular. Overall the interviews highlight a feeling that uncertain employment and working conditions might offset the benefits of platform work for people with

disabilities. One interviewee stressed the job insecurity of platform work – not knowing if they can continue earning a living wage, and the pressure that results.

Three interviewees emphasised that the lack of entitlement to social protection that often results from the self-employment status would particularly impact people with disabilities and make them more vulnerable to poverty. Another interviewee noted that this depends on the country and on the specific arrangements with the platform, which may differ from one case to another. Two interviewees raised concerns about scarce possibilities for platform workers to organise, which would help collective bargaining for adequate employment and working conditions, and foster participation and inclusion for diverse platform workers. One interviewee, however, highlighted cases where platforms have established workers' councils and are engaged on collective agreements, citing these as best practices. Other suggestions that came from the interviews regard the need for a horizontal system of social protection, to be detached from the employment status, and to help in mitigating the risks associated with employment and working conditions in platform work. Finally, several suggested teleworking in traditional jobs as a possible alternative to platform work, because it would help in removing physical barriers to get to work and within the workplace, and at the same time provide the possibility for flexible working hours, without compromising fair employment and working conditions.

Best practice 1: Uber's tool for deaf or hard of hearing drivers

Uber's business model consists in engaging individual drivers as independent contractors (i.e. "driver partners"), and matching them with customers searching for a ride. For the workers, a few benefits of the platform are the highly flexible working hours – as drivers can connect and disconnect at will, efficient matching with customers, and low barriers to work entry. Potential risks are identified in the fact that the self-employed drivers are mostly responsible for their own social security, apart from specific provisions set up in the partnership agreement. Moreover, the driver partners are responsible for the equipment they use on the job, such as the mobile phone and vehicle. On the other hand, Uber involves drivers in the decision-making process to make the platform more suitable to their needs, especially in terms of app features. In this context, Uber has adopted an advanced accessibility policy for both riders and drivers, with employees across the company focused on accessibility.[44]

[44] For Uber's accessibility policy, see here.

In effect, Uber is committed to meeting the Web Content Accessibility Guidelines (WCAG) 2.0 at Level AA Success Criteria[45] and involves a third-party provider for continuous accessibility testing and monitoring of the app. As some sections of the app are still undergoing accessibility optimisation, Uber has set a reporting system to allow people with disabilities to point problems out. The company has developed several app features that are relevant for people with different types of disabilities mainly as users of the app.[46] However, Uber has added specific features to provide accessibility to deaf or hard of hearing people as drivers, which can be easily enabled by self-identifying as deaf or hard of hearing options in the app.

The features include 1) a signal for a trip request with a flashing light, in addition to the existing audio notification, making it easier for drivers to respond to a new potential client 2) deactivating the possibility to call the driver, while directing the rider to text the driver, so the driver does not have the ride cancelled after a failed phone call; and 3) a message letting them know their driver is deaf or hard of hearing. Thanks to these features, in the US, over 6,000 drivers who self-identified as deaf or hard of hearing work through Uber. In Europe, an estimated number of several thousands of drivers do the same, being able to use the app and interact with clients without any need for audio or verbal communication.[47]

To continuously improve the app, Uber has collaborated with relevant stakeholders' associations in the US. Uber also undertook awareness initiatives in the US, such as an awareness day for sign language, and a tool in the app to learn phrases in American Sign Language. The company reported that the **features for deaf and hard of hearing drivers are also activated by people that are not fluent in the language** and prefer to have written interactions with clients, supporting the idea that accessibility features are beneficial for people with disabilities and the wider public.

A representative from Uber explained that wider exploitation of this opportunity might be hindered by business regulations that make the initial investment more expensive and thus potentially unaffordable for part of people with disabilities, who may face particular financial constraints due to their precarious economic situation. For example, the system of occupational licensing, which is in place in several European countries, requires drivers to set-

[45] Full list and description of the WCAG 2.0 can be found here.

[46] With regards to the feature UberWAV specifically, which is aimed at providing access to people on wheelchairs, it should be noted that NYLPI (2018) reports raises concerns about the success of this app in New York, USA. However, Uber states that all driver partners must comply with all applicable state, federal and local laws governing the transportation of riders with disabilities, and any violation or failure to provide accommodation to the maximum extent feasible would a breach of the parties' Technology Services Agreement.

[47] The representative of Uber was unable to provide exact figures for deaf or hard-of-hearing drivers, or people using the accessibility features.

up a business, obtain a business license, to own a vehicle that matches standards and has certain characteristic as set by regulation. While representing a guarantee of the service quality, these requirements might discourage or even make it impossible for people with disabilities to enter into collaboration with Uber, even if accessible technology is provided to them.

Regardless of existing limitations, Uber's tools for deaf and hard of hearing drivers can be considered a best practice because they were designed in cooperation with the stakeholders and tailored to meet the need of a specific group of people with disabilities. As such, this technology can provide tailored solutions to mitigate digital barriers for certain people with disabilities, and even benefits the general population. In addition, the awareness raising initiatives contribute to remove the attitudinal barriers that deaf of hard of hearing drivers may still face in their job, despite their full capacity to perform it with the aid of assistive technology. At the time of the study, Uber seems to be the only large online platform that has adopted an explicit policy for accessibility to people with disabilities, both as workers and users.

Best practice 2: Ilunion's platform concept for people with disabilities in the traditional labour market

Ilunion is an enterprise with a social aim that operates mainly in Spain, in several diversified sectors of the economy such as manufacturing, trade and healthcare, with approximately 50 business lines. Its business model exploits the concept of the platform to match supply and demand in the traditional labour market, with the primary aim to include people with disabilities and increase their access to quality jobs.[48] Ilunion's employees are 40% people with disabilities and, while hired by Ilunion, they perform jobs for different enterprises when a position opens. In agreement with the partner enterprise and according to the people with disabilities' needs, Ilunion's employees can work on-site, at Ilunion's premises or remotely from home, thanks to accessible technology identified by Ilunion among large providers, or even developed *ad hoc*.

PWD working for Ilunion live with a variety of disabilities including physical, mental, psychological, and sensory. By operating in different sectors and with a set of diversified enterprises, Ilunion is able to match the needs and strengths of people with disabilities with companies' job offers. The added value relies on the capacity to connect a supply of workers with the labour demands of companies, while offering flexibility to both people with

[48] See Ilunion's website here.

disabilities and partner companies in terms of working arrangements, and ensuring fair employment and working conditions for people with disabilities.

The benefit of this arrangement is two-fold. On the one hand, Ilunion promotes quality employment for people with disabilities, while on the other, it supports other enterprises in matching social commitments and developing their Corporate Social Responsibility strategies. In addition to matching labour demand and supply, Ilunion also facilitates training for the workers, both on hard and soft skills, and with raising awareness for the companies employing people with disabilities. In fact, Ilunion offers a consultancy service for audit, certification, training and awareness in the field of accessibility, focusing on technical, business and relational aspects. In this consultancy service, 26% of employees are people with disabilities.

Ilunion is not an online platform *per se*,[49] though it leverages the benefits of labour platforms by effectively matching labour supply and demand with digital tools. Owing to its explicit mission of promoting quality employment for people with disabilities, and its strategy of providing support on accessibility and raising awareness in companies, it is able to **exploit the benefits of technology without eroding working and employment conditions**.

Summary

Case Study 2 has found that definitive statements about the relationship between people with disabilities and platform work are problematic, given the heterogeneity of both. Platform work can offer a variety of work opportunities, while people with disabilities have diverse strengths and needs. Although empirical evidence is currently lacking, certain patterns emerged from the desk research and expert interviews.

The case study finds most experts are optimistic about the opportunity of platform work to facilitate employment for people with disabilities in line with the EU objectives. Contrarily, most experts acknowledge platform work brings certain risks and challenges for inclusion of people with disabilities in the labour market and in society. While the risks of platform work for workers in general have been discussed in the literature,[50] the potential for social isolation may be particularly high for people with disabilities.

[49] See Lenaerts et al. (2018) for discussion on similarities and differences between labour platforms and traditional temporary employment agencies.
[50] See Eurofound (2018a).

Platform work can contribute to lower barriers and obstacles that people with disabilities often encounter when entering and participating in the labour market. Platform work offers the possibility to work remotely and from home, which would significantly mitigate physical barriers for people with disabilities. Technology may also help reduce attitudinal barriers, giving people with disabilities the possibility to perform the job without facing discrimination *a priori*. Moreover, platform work can provide an inherently flexible means of work for people with disabilities. Flexibility is particularly beneficial for people with disabilities to reduce conflict between working and personal life, including taking care of their health needs as required.

However, platform work cannot mitigate all barriers to labour market inclusion for people with disabilities. The issue of accessibility – especially of apps and websites – is particularly noteworthy for people with disabilities considering platform work. As jobs in the platform economy are created, they may not be adequately accessible to many people with disabilities if accessibility remains insufficiently addressed. In this sense, platform work (and other digital advances) could create benefits for some, alongside new forms of exclusion for people with disabilities.

Similarly, lack of adequate digital skills or access to technology among people with disabilities, which result from fewer education opportunities, higher risk of poverty, and a lack of awareness, may remain important obstacles to people with disabilities performing platform work. These factors seem to prevent more people with disabilities from performing platform work, and represent a potential risk of further exclusion.

Even if these informational, financial, and skills barriers can be overcome by sound digital strategies at government and company levels, other potential risks remain. A first matter of concern is a new form of isolation and invisibility that people with disabilities may face by working remotely and from home. While the European Disability Strategy recognises that including people in employment is necessary for exploiting untapped resources for sustainable growth and to improve people with disabilities' economic conditions, it also states that **employment should be a means towards social inclusion**. Experts raised concerns about the lack of social interaction in a physical working environment, and the lack of visibility of the disability. In this regard, **platform work could deliver economic results but still fail to include people with disabilities socially** by recognising, accepting and protecting differences.

A second concern is that existing labour legislation aimed at protecting people with disabilities does not typically apply to platforms workers, with exceptions depending on the platform and worker's employment status. Interviewees emphasised legislation on equality

and non-discrimination as especially important. For example, the notion of reasonable accommodation might not be enforceable, while it would be highly relevant to ensure that the digital technologies used by platforms are accessible for people with disabilities. Similarly, labour legislation to protect workers and ensure them quality jobs is generally not automatically enforceable. This may make it more difficult for people with disabilities to find quality jobs in the platform economy, in contrast with the objectives set in the EDS.

Ultimately, the risk is that platform work would provide low-barrier work opportunities for people with disabilities, but the work could entail unfavourable employment and working conditions, and not necessarily empower them to improve their economic conditions.

Conclusions and policy recommendations

The case studies have found that the effects of digitalisation and platform work on labour market inclusion for people with disabilities are quite difficult to generalise, largely due to the substantial differences between people with disabilities. While all women and men with disabilities are often grouped into the same category for convenience, their needs and strengths are very different. These differences require careful assessment and tailored policies to result in successful inclusion initiatives.

In spite of these differences, the desk research and interviews find that digitalisation has significant potential to improve labour market inclusion, even while creating several important risk factors. On balance, it seems that the trends of digitalisation, including platform work, will provide new tools for policy-makers to leverage, and new chances for people with disabilities to empower themselves.

The research team presents the following conclusions to answer the research questions.

Conclusions of Case Study 1:

What is the relationship between digitalisation and inclusion for people with disabilities?

Digitalisation mostly corresponds to increased opportunities for people with disabilities. This is particularly true of those with mobility or other physical disabilities. Both new jobs, and traditional jobs aided by improved assistive technologies and new forms of work intermediation, carry great promise for many people with disabilities.

At the same time, digitalisation is drastically changing labour markets, including traditional domains of people with disabilities. People with disabilities employed in manual labour, call centres, and other roles may find that their skills are less in demand. This implies that digitalisation is putting some employed people with disabilities at risk of unemployment, even while expanding other employment opportunities.

What risks and challenges does digitalisation create for inclusion of people with disabilities in the labour market?

The primary risk seems to be twofold. First, people with disabilities may not benefit from all the economic and social gains associated with digitalisation. This would imply that while most of society advances in terms of access to information and technology, new jobs with higher income, etc., the socioeconomic gaps between those with and without disabilities could deepen. The risk is especially acute if attitudinal barriers remain unaddressed, and employers fail to recognise new opportunities to include people with disabilities in their businesses.

Second, gains from digitalisation – for the most part – offer the clearest benefits for people with mobility or other physical impairments, or sensory disabilities. This means that people with disabilities dealing with intellectual disabilities or mental illness may continue to be excluded. This is particularly concerning in countries like Austria, where people with mobility impairments already benefit from relatively high visibility and service provision.

What policy pointers can be identified?

Based on the literature and advice of experts, the research team puts forward the following policy pointers for Austrian stakeholders, as well as others interested in leveraging digitalisation to improve labour market inclusion for people with disabilities.

1) Consider a broad digital strategy

Austria has no overall digital strategy and should consider adopting one. Countries including Denmark, Germany, Sweden, Estonia and Israel have ongoing national digital programmes, of which digital inclusion is a key component. Austria can build on their examples to empower people with disability. A successful digital inclusion strategy recognises that benefits are not just for people with disabilities, but for the general public and business sector as well.

Several interviewees highlighted Israel's programme as a best practice that Austria could follow. The overall goals of Israel's "Digital Israel National Plan" is to reduce socio-economic inequalities, accelerate economic growth, and create a "friendly and smart government". Part of each goal is ensuring all citizens can equally benefit from digital services, by ensuring simple and intuitive digital services that people can understand without external assistance. Israel particularly focuses on narrowing the "digital divide" in the social and geographical periphery (including rural areas), and for the elderly and people with disabilities. Further focus is paid to improving digital skills and digital literacy for all marginalised groups.

A digital strategy could also detail a programme to ensure long term research and development of assistive technologies, effective federal or state-level policies, and coherence between fund allotments and stakeholder activities. In addition to policy-makers, organisations representing people with disabilities, the participation of employers should be assured.

Lastly, a digital strategy should not neglect the importance of other barriers such as stigma, and a lack of public awareness and sensitisation to disabilities. Several interviewees indicated that school teachers and police officers would be key recipients of sensitivity training, and inclusion of people with disabilities in general schooling and social life at an early age is crucial.

The following points could also be considered as a part of a broad digital/inclusion strategy, or as individual measures.

2) Ensure learning between inclusion projects and stakeholders

Several experts noted that projects to promote inclusion for people with disabilities often receive public financing in Austria. However, once the financing period ends, so too does the project, and **little learning results due to closed-source and proprietary software and hardware**. In end effect, efforts are often duplicated and minimal progress follows. A digital inclusion strategy could help in a few ways: first, by providing a centralised information hub for stakeholders to share information on past, ongoing, and future efforts to avoid repetition; and second, relevant projects receiving public financing could be required to make materials and findings publicly available (and open-source when applicable) at the conclusion of the project.

3) Ensure information is accessible to everyone

Many informational sources in Austria are still insufficiently accessible to people with disabilities. Austria could consider requiring good practices in accessibility, such as those provided by W3C guidelines or Standard - EN 301 549. This equally applies to websites, television programmes (particularly on ORF), emergency phone services, etc.

An especially helpful initiative could be a **one-stop-shop for information** on digital resources and assistive technologies for people with disabilities in Austria. This may help to simplify Austria's fairly complicated landscape for assistance, and provide a centralised information source where accessibility is easily verified. The one-stop-shop should also include clear links to existing (or new) job portals such as the Arbeitsmarktservice,[51] which would help both

[51] See the Arbeitsmarktservice website here.

employers and job-seekers find and utilise resources. Furthermore, the one-stop shop could provide information on past and ongoing projects and initiatives, thus helping avoid duplicated efforts (as discussed in in Point 2 above).[52]

Finally, interviewees highlighted that accessibility features are relatively easy to implement when considered from the beginning. Rather than trying to ensure compliance with accessibility across numerous existing websites, it may be less costly to develop a new website.

4) **Ensure access to assistive technologies, regardless of labour market status and location**

Several experts noted a lack of support for assistive technologies for people with disabilities outside of the labour market, which leads to reduced physical and information accessibility. Potential solutions that have been used in other countries include offering a fixed grant for each person with disabilities, which can only purchase assistive technologies, training or education. This would help address unemployment and underemployment of people with disabilities without substantially increasing administrative costs to the government.

Policy-makers could similarly consider a legal entitlement to grants for personal mobility and equal access to assistive technologies for all people with disabilities (irrespective of employment status). This would be best accompanied by standardised criteria for the approval of grants and equal quality of benefits at federal and regional level. It is also important to allow people with disabilities freedom of choice in the selection of aid devices that are appropriate in terms of individual requirements, the latest technology, and affordability.

Lastly, implementation could be ensured through a standardised administrative body (or as part of the one-stop-shop suggested in Point 3 above) providing counselling and information about assistive technologies, interacting with decision-makers, and supporting proposals and requests.

5) **Ensure digital training and re-skilling for people with disabilities, regardless of labour market status or location**

PWD have often been employed in niche positions, which leave them vulnerable to labour market shifts. As is the case with call-centre operators or people performing manual tasks, people with disabilities may realise that their skills are less in demand, and have little

[52] The planned redevelopment of the website Arbeit und Behinderung [Work and Disability] should be (re)considered in this context. The website is available here.

recourse. Stakeholders across Europe recognise re-skilling an important task, as digital competences and computer literacy are becoming universally applicable. Nevertheless, special focus on people with disabilities is required to realise the growing potential of "more digital" forms of work. In order to succeed, training opportunities must be specially tailored to their target group. Whenever possible, training and work placement programmes need to target high-quality, durable jobs for people with disabilities.

6) Promote digital training and inclusion in early education

Similarly to learning foreign languages, acquiring digital skills is easiest at a young age. Ensuring effective educational programs for digital skills from an early age is important to ensuring a skilled populace in the future.

Furthermore, early exposure to people with disabilities is a key step to increase understanding and reduce stigmatisation. Whenever possible, people with disabilities should be included in traditional schools from kindergarten to secondary school. Newer digital tools, such as laptops or tablets with accessibility features, digital textbooks, and gamified learning programs can all help to facilitate an inclusive learning environment at all ages. People with disabilities, including children with disabilities and their representative organisations, should be involved at all stages in implementing inclusive education models.

7) Consider revisions to the quota system (Austrian Disability Employment Act)

While not directly related to digitalisation, the quota system is a key instrument for promoting labour market inclusion for people with disabilities. All interviewed experts agreed that the system is good in principle, but does too little to encourage participation, as most companies prefer to pay the compensatory levy rather than hire people with disabilities.

Three potential changes emerged from the interviews: 1) increasing flexibility for employers, or making it easier to dismiss employees with disabilities (while maintaining a strict prohibition on dismissal on the basis of discrimination; 2) increasing the fine for non-compliance (with potential exceptions for the smallest employers or other special cases); and 3) promoting awareness of the quota system, as well as financial assistance available to employers who hire people with disabilities.

The Austrian Disability Employment Act was already modified in 2011 to increase flexibility for employers, and very little seems to have changed. Thus, further action in this direction seems less warranted. Instead, the research team proposes a combination of the second and third strategies highlighted above. By increasing the fine for non-compliance, employers will have an increased financial incentive to hire people with disabilities. At the same time,

programs for promoting labour market inclusion for people with disabilities could be better funded. The awareness component is also necessary to bring employers up to speed on their legal obligations and benefits offered (e.g. government-provided financial assistance for assistive technologies) when hiring people with disabilities, as well as the extended four year period to terminate employment, as many employers seem to have a distorted or outdated view of the situation.

8) Improve data collection on people with disabilities

Systematic data collection and study is vital to understanding the employment situation of people with disabilities, as well as other areas such as health, independent living, education, and social protection. In spite of robust data on people with disabilities in the labour market, standardised data on the employment situation of people with disabilities across all of Austria's federal states is still lacking. This makes the work of policy-makers and organisations for people with disabilities much more difficult.

A few specific problems could be addressed in this regard. First, data collection on people with disabilities begins with the definition of disabilities, which is not standardised across all of Austria. Greater harmonisation of medical definitions across Austria's federal states could improve on this. Furthermore, greater emphasis could be placed on gathering information on all people with disabilities – not merely those with 50% or greater disability, as defined by the Austrian Disability Employment Act. Disabilities are not static – many people are born without disabilities and lose their vision or hearing over time. Thus, accurate data for all people with disabilities is necessary for informed policy-making and long-term strategy.

Second, the micro-censuses published every five years must use an improved methodology that better accounts for people with more serious disabilities (e.g. living in clinics or sheltered workshops, or unable to use a landline phone). Improving the data would help to improve visibility and target action for some of the most vulnerable groups. Lastly, censuses must use methods allowing direct comparisons over time.

Conclusions of Case Study 2:

To what extent does platform work impact people with disabilities' access to labour markets?

Little evidence suggests that platform work has a great impact on people with disabilities at present. However, people with disabilities do seem to make up a disproportionate amount of

platform workers on certain platforms – particularly those where work is performed remotely online.

Overall it appears that platform work has the potential to improve people with disabilities' access to labour markets, due to it being a more flexible form of work with few access barriers. This makes platform work a potential tool for labour market inclusion for people with disabilities requiring more flexibility due to health limitations or caretaking obligations.

This potential may not be fully realised for a variety of reasons, including people with disabilities lacking awareness of platform work, required digital skills, or suitable assistive technologies. Furthermore, platform work may not be desirable for some people with disabilities who prefer more traditional employment and the increased security that accompanies it.

Is platform work a form of work that should be promoted for people with disabilities?

While platform work has potential for some people with disabilities, the research team is sceptical that it should be promoted for people with disabilities. Platform work seems most promising for people with disabilities desiring part-time, highly flexible working opportunities from home. Even for these individuals, platform work can only be recommended with reservations. Platform work is rarely suitable as a replacement for full-time employment in terms of remuneration, labour market inclusion, and social inclusion. Platform work may be more advisable when social protection is not contingent on employment status. In short, platform work may increase labour market access for people with disabilities, while doing little to ensure social inclusion.

What policy pointers can be identified?

Based on the literature and advice of experts, the research team puts forward the following policy pointers for stakeholders interested in leveraging platform work to improve labour market inclusion for people with disabilities.

1) **Pursue research to find or develop tailored and solutions.**

Because of the heterogeneity of people with disabilities and forms of platform work, further research would be helpful to better understand how platform workers with disabilities perceive advantages and disadvantages of their work.

Moreover, the services that platforms provide (e.g. transportation, assistance on demand) may empower people with disabilities in a variety of ways. Therefore, platform work could be a tool for labour market inclusion for people with disabilities as both workers and consumers.

2) **Ensure full digital accessibility for people with disabilities as workers and users.**

In order to ensure full inclusion of people with disabilities in the developing platform economy, proper accessibility features must be implemented. Policy-makers could consider requiring good practices in accessibility, such as those provided by W3C guidelines or Standard - EN 301 549.

3) **Clarify labour legislation applicable to platform work.**

By clarifying which labour legislation applies to platform work, people with disabilities may benefit from assurance of reasonable accommodation and discrimination protection. Furthermore, if specific legislation on platform work is developed, it should explicitly refer to inclusion principles for people with disabilities.

4) **Invest in education and training on digital skills will empower people with disabilities**.

The modern labour market requires modern skills, and it is clear that people with disabilities remain disadvantaged in accessing training and education. Additional focus on programs to develop digital proficiencies for people with disabilities at all stages of life would help ensure labour market inclusion, both for traditional employment and platform work.

5) **In addition to platform work, similar alternatives could present opportunities for people with disabilities.**

The principles behind platform work, such as efficient intermediation of supply and demand through ICT and digital portals, apply in the traditional labour market as well as the platform economy. Examples like Ilunion show that the "platform concept" can empower people with disabilities while avoiding common pitfalls of platform work, like precarious working conditions.

Moreover, many of the benefits of platform work correspond to those of teleworking – working from home with more flexible hours, avoiding the need to travel to and from work, and no requirement to be physically present at the office. For this reason, teleworking opportunities could be promoted as an alternative to traditional employment. These may be especially important in the public sector, which represent an important source of employment for people with disabilities, but also to comply with inclusion legislation (e.g. quotas) for private companies.

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Annex I: Abbreviations

3D	Three-dimensional
ADA	Americans with Disability Act
AI	artificial intelligence
ATM	Automated teller machine
CDA	Council for Disease Awareness
CEPS	Centre for European Policy Studies
CERMI	Centre for European Research in Microfinance
CS	Case Study
EDS	European Disability Strategy
EQLS	European Quality of Life Survey
ESF	European Social Fund
EU	European Union
EU-28	The 28 Member States of the European Union
EU-SILC	European Union Statistics on Income and Living Conditions
ICT	Information and communication technologies
ILO	International Labour Organization
IT	Information technologies
n.d.	No date
NGO	Non-governmental organisation
OECD	Organisation for Economic Cooperation and Development
ORF	Österreichischer Rundfunk [Austrian Broadcasting]
PWD	People with disabilities
SD	Severely disabled
TEU	Treaty of the European Union
TFEU	The Treaty on the Functioning of the European Union

UN	United Nations
UNCRPD	United Nations Convention of Rights for People with Disabilities
W3C	World Wide Web Consortium
WAI	Web Accessibility Initiative
WCAG	Web Content Accessibility Guidelines
WHO	World Health Organisation
ET	Education and training

Annex II: Interview Guidelines for Case Study 1

Introduction

The Austrian Presidency of the Council of the European Union has tasked the Centre for European Policy Studies (CEPS) to undertake research to better understand the effects of digitalisation on the inclusion of people with disabilities (PWD) in Austria's labour market. We are also interested in learning more about Austria's labour market inclusion policies for people with disabilities more generally.

The goal of this research is understanding what best practices and risks can be identified, and how to maximise the impact of these tools and practices, so as to inform policy making and business strategies.

This interview will be recorded to ensure accuracy, but completely anonymised. Final results will be used in a presentation of the study and final report, presented in aggregate or anonymous form.

A few relevant definitions for clarity follow:

- Assistive technologies - any item, piece of equipment, or product… that is used to increase, maintain, or improve the functional capabilities of individuals with disabilities
- Digitalisation – the process of integrating digital technologies, particularly communication, information, and media infrastructures, into everyday life and business operations.
- Platform work – a diverse form of work using digital platforms to exchange services for money. Platform work can be done at a specific location (e.g. Uber, Foodora, MyHammer) or from anywhere with an internet connection (Clickworker, Amazon Mechanical Turk, 99 Designs)
- People with disabilities – people with one or more disabilities, being "the effect of a non-temporal physical, mental or psychological impairment or an impairment of the senses which makes participation in the life of society, particularly in normal working life, difficult. Non-temporary means a period which is more than (or expected to be more than) six months".

Please be aware that the information provided during this interview will be used as an input for the final report and presentation of the study, but anonymously so. For this purpose you are asked to sign a consent form that will be kept as part of project's documentation but not shared outside the project team.

A: General policies for inclusion of people with disabilities in Austria's labour market

1. What do you see as the primary motivation for the development of policies to include people with disabilities in the Austrian labour market?
    a. For example, was compliance with international or EU commitments a consideration?
    b. To the best of your knowledge, when and how did this interest begin for stakeholders?
2. How do you feel these policies of inclusion **affected** the **labour market generally**, and how have they **affected** people with disabilities?
3. Do you feel that adequate **monitoring and collection of data** on people with disabilities is taking place in Austria?
    a. Do you feel enough is being done on the research and development side of this issue?
4. Based on your experience, are people with any **particular types of disabilities inadequately supported**, or receive inadequate attention, in the current system? Please explain.
5. PWD face a **variety of barriers** in accessing the labour market – among these attitudinal, physical, and financial. In your opinion, which barriers is Austria's system most successful at addressing, and which least?

B: Digital strategies for integrating people with disabilities in Austria's labour market

6. At present, **which digital technologies and/or strategies** are used to promote inclusion for people with disabilities?
    a. Based on your experience and expertise, how effective do you feel they are?
7. Can you please explain potential **strategies to incorporate digital technology** for people with disabilities in the Austrian labour market, which have not been sufficiently implemented?
    a. Were there good ideas that simply did not work in practice?

b. What reasons do you see for this? Can you name any particular barriers or failures?

c. Do you perceive a lack of public or stakeholder support?

8. What new and promising **assistive technologies** are you aware of – such as perhaps wearable technologies (Google Glass, Google Assistant, Dot, Wavio, etc.), that would significantly impact labour market inclusion for people with disabilities?

    a. Is enough being done in Austria to promote their development and usage?

9. **Platform work** is often associated with increased flexibility as regards working time, and entrepreneurship. On the other hand, it may be associated with precarious working conditions, social isolation, etc. Do you think promoting platform work could be a valuable strategy to explore for people with disabilities?

    a. Have you observed any effects that the development of platforms had on people with disabilities?

    b. Are you aware of specific examples to illustrate your point of view?

C: Lessons learned, best practices, and reproducibility

10. In your experience, what is **most effective** about Austria's strategy to leverage digital technologies to include people with disabilities in the labour market?

    a. What potential side benefits can be identified?

11. In your experience, what is **least effective** (or lacking) about Austria's strategy to leverage digital technologies to include people with disabilities in the labour market?

    a. Are any unintended consequences noteworthy?

12. From your perspective, what **risk factors and challenges** should policy-makers and business leaders be aware of in this regard?

    a. Do any clear solutions exist for these?

    b. Are these risks and/or solutions particular to Austria, or could they be extended to other countries in Europe?

13. Would you say there are any particularly **illustrative examples** of policies **in other countries** that Austria should learn from?

D: Round-up

14. Is there anything else you would like to add that might be relevant to our study?

15. Are there any relevant **reports, literature,** or **contacts** that could be useful for our study?
16. Do you have any objections if we contact you for further clarification?

Thank you for the interview!

Annex III: Interview Guidelines for Case Study 2

Introduction

Thank you for accepting the invitation to participate in this interview, which is carried out in the framework of a study on "**The impact of digitalization on labour market inclusion of people with disabilities**" commissioned to CEPS Jobs and Skills Unit by the **Austrian Presidency of the Council of the European Union**.

Official estimates show that 15% of world's population are people with disability (PWD), of which 80% are of working age. Lack of inclusion in the labour market can increase people with disabilities' vulnerability and limit their personal development. By changing the work organisation and facilitating access to the labour market, digital technologies, and specifically online platforms, can play a role to foster such inclusion.

A few definitions follow for clarity:

- **Digitalisation –** the process of integrating digital technologies, particularly communication, information, and media infrastructures, into everyday life and business operations
- **Platform work –** a diverse form of work using digital platforms to exchange services for money. Platform work can be done at a specific location (e.g. Uber, Foodora, MyHammer) or from anywhere with an internet connection (Clickworker, Amazon Mechanical Turk, 99 Designs)
- **PWD –** people with one or more disabilities, being "an impairment that is "long-term" and which, in the field of professional life, "hinders an individual's access to, participation in, or advancement in employment". (Court of Justice of the EU, aligning to the UNCRPD)

A specific objective of the study is to gain a sound understanding of challenges and opportunities that platform work presents to people with disabilities, as well as to identify best practices, to inform policy making.

Please be aware that the information provided during this interview will be used as an input for the final report and presentation of the study, but anonymously so. For this purpose you are asked to sign a consent form that will be kept as part of project's documentation but not shared outside the project team.

A: People with disabilities in the labour market

1. According to your experience and understanding, what are the **main difficulties** that people with disabilities find in entering and participating in the traditional labour market?

a) Would you highlight any specific differences according to the type of disability?
b) (for workers) What are the main difficulties you have found in entering and participating in the labour market?

2. Would you point out any **significant improvement** in the inclusion of people with disabilities in the labour market in the last 20 years? Can you indicate the main drivers of these improvements?

a) (*note if they mention technology rather than policy, culture, or medicine*)

B: Platforms' potential for the inclusion of people with disabilities in the labour market

3. Do you think that online labour platforms can play a role in facilitating people with disabilities in entering the labour market? If so, how and what are the **benefits** that platforms could offer to people with disabilities for their inclusion in the labour market?

a) Would you highlight any difference according to the type of disability and type of platforms? (e.g. Listminut, Uber or Helpling versus Amazon Mechanical Turks, Upwork or 99designs)

4. How do you see **stakeholders' involvement** in this (i.e. government, platforms, people with disabilities, employers, other workers)? Please describe and give examples.

a) Would you say there is a lack of public support for platform work for people with disabilities? If so, why?
b) (*note if they mention compliance with legislation*)

5. Do you see the existing **legislation for inclusion** of people with disabilities applying to platforms? On the other hand, do you see possible contribution of platforms for complying with this legislation (e.g. quotas)?

C: Size, patterns and obstacles of platform work for people with disabilities

6. Do you have any direct experience or knowledge on how platforms are facilitating people with disabilities in participating in the labour market? If so, please describe and provide examples of platforms.

a) Would you highlight any difference according to the type of disability and type of platforms? E.G. Listminut, Uber or Helpling VS Amazon Mechanical Turks, Upwork or 99design
b) Would you highlight any difference across EU countries or worldwide? Why do you think so?
c) (for workers) How are you using platforms to gain better access to labour market?/ How is your platform facilitating people with disabilities in the labour market?

7. If not/if limited, what are the **barriers to the full deployment** of the role of platforms in facilitating labour market inclusion for people with disabilities?

a) (*note if they mention economic incentives, legislation/policy, technological constraints*)

8. Are you aware of any failure or any good initiative that failed to fully develop? If yes, please describe it and outline the main reasons for failure.

D: Challenges of platform works for people with disabilities

(Q9) Do you see any **obstacles or particular difficulties** for people with disabilities working through platforms? If so, please specify.

a) (*note if they mention e-accessibility*)
b) Would you highlight any difference according to the type of disability and type of platforms? E.G. Listminut, Uber or Helpling VS Amazon Mechanical Turks, Upwork or 99design
c) (for workers) What obstacles do you encounter working through online platforms?/ What obstacles do people with disabilities working through your platform encounter?
d) (*note if they mention e-accessibility*)

10. In your opinion, how can existing obstacles, if any, be overcome?

a) Is it a matter of technological developments or rather a policy, business and cultural issue?

11. Do you see any **risk and challenge of platform work** to which people with disabilities may be more vulnerable?

a) (*note if they mention organisational safety and health issues, precarious working conditions, social exclusion*)
b) Would you highlight any difference according to the type of disability and type of platforms?
c) (for workers) To which risks and challenges of platform work do you/PWD working for your platform feel more vulnerable?
d) (*note if they mention organisational safety and health issues, precarious working conditions, social exclusion*)

12. A recent EU-OSHA report highlights possible **health and safety risks** that arise from platform work, such as injuries, visual fatigue and musculoskeletal problems, social isolation, stress etc. Would you see these as more relevant for people with disabilities?

a) (for workers) A recent EU-OSHA report highlights possible health and safety risks that arise from platform work, such as injuries, visual fatigue and musculoskeletal problems, social isolation, stress etc. Have you/people with disabilities in your platform experienced or ever felt vulnerable to any of this?

13. Several studies, such as the recent Eurofound report, argue that platform workers experience particularly **precarious working conditions**, such as job and income insecurity, low pay, long working hours, etc.., would you see these as more problematic for people with disabilities?

a) (for workers) Several studies argue that platform workers experiment particularly precarious working conditions, such as job and income insecurity, low pay, long working hours, etc.., have you/ people with disabilities in your platform experienced or ever felt vulnerable to any of this?

E: Best practices

14. Based on your knowledge and/or experience, could you describe any existing best practice concerning the use of platforms as enabler for the inclusion of people with disabilities in the labour market? Feel free to refer to both Europe and beyond.

a) Who are the implementers, the beneficiaries and what is the impact so far?
b) Are there any context-specific factors that help determine its success?
c) Are you aware of any references for it?

15. Would you see any **scope for upscaling and replicating** these best practices in other contexts or at EU-level?

F: Round-up

16. Is there anything else you would like to add that might be relevant to our study?

17. Are there any relevant reports, literature, or contacts that could be useful for our study?

18. Do you have any objections if we contact you for further clarification and to let you know about the final results of the study?

Thank you for the interview!

Impressum

Medieninhaber und Herausgeber:
Bundesministerium für Arbeit, Soziales, Gesundheit und Konsumentenschutz (BMASGK),
Stubenring 1, 1010 Wien
Verlags- und Herstellungsort: Wien
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Titelbild: © XXX
Druck: XXX
Wien, 2019

Bestellinfos: Kostenlos zu beziehen über das Broschürenservice des Sozialministeriums unter der Telefonnummer 01 711 00-86 2525 oder per E-Mail unter broschuerenservice@sozialministerium.at.

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