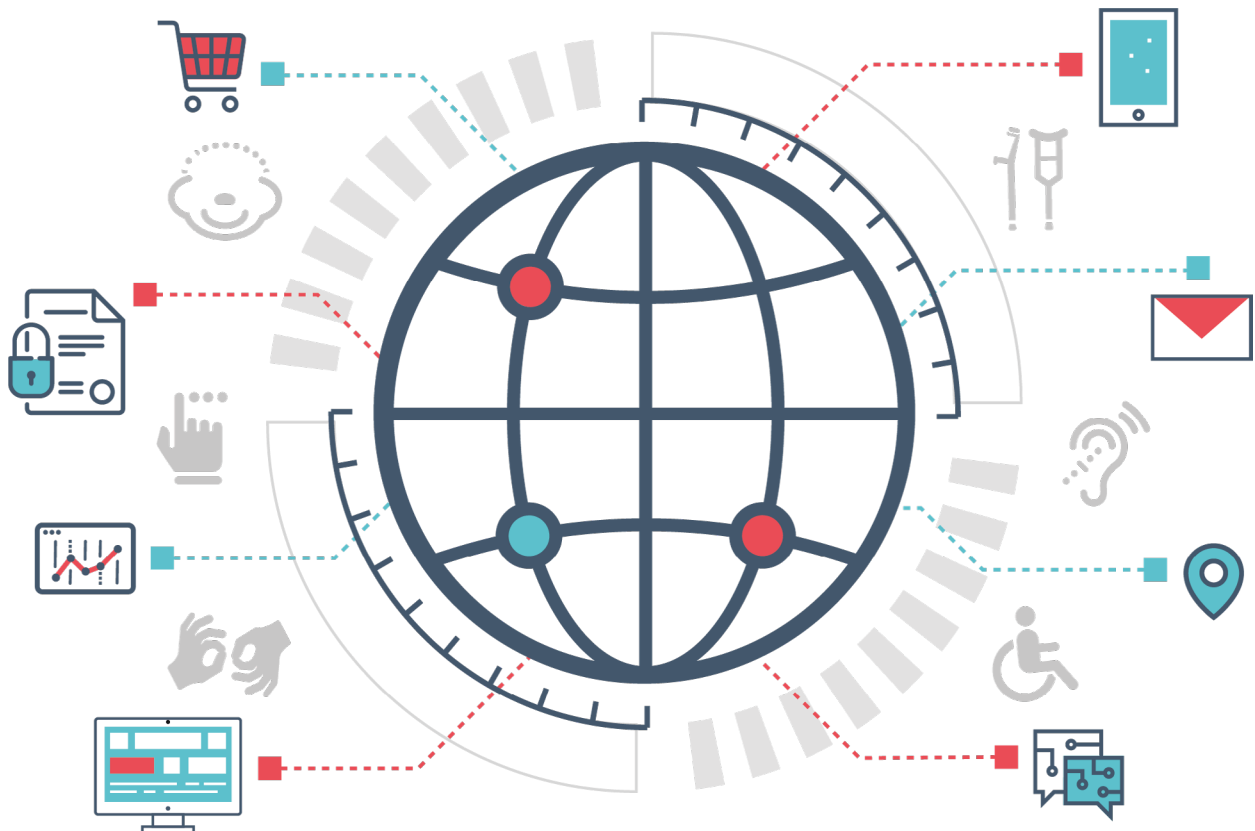
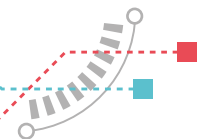


An inclusive digital economy for people with disabilities

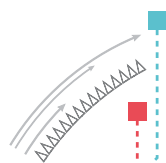
A joint publication by Fundación ONCE and the ILO Global Business and Disability Network, developed within the framework of Disability Hub Europe, a project led by Fundación ONCE and co-funded by the European Social Fund

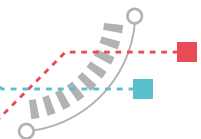




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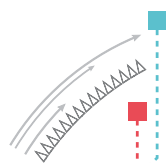
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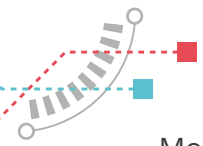
We are experiencing a huge digital transformation of our societies in real-time. These changes lead to an ever growing “digital economy” and thus they deeply impact the world of work as a whole. With opportunities also come challenges like the imperative to leave no one behind in the digitalisation process, including the more than one billion persons with disabilities across the globe.

The present publication builds on the 2019 think piece ‘Making the Future of Work Inclusive of Persons with Disabilities’. It attempted to connect different areas of a globally emerging discussion by looking at key trends of the future of work from a disability perspective. Mega trends such as the technological revolution, the demand for new vocational skills, cultural and demographic changes as well as the climate crisis were the objects of reflection.

Due to the ever increasing importance of rapidly evolving digital technologies, the ILO Global Business and Disability Network (ILO GBDN) and Fundación ONCE, as partners of the initiative Disability Hub Europe, prioritized the topic for the present publication. It takes a closer look at the digital transformation of the world of work and how it affects opportunities and challenges for the inclusion of persons with disabilities. The COVID-19 pandemic is having severe and long-lasting consequences around the globe, which are further aggravated for marginalized groups like people with disabilities. At the same time, the pandemic has already significantly accelerated the digitalisation trend, including in the world of work.

The inclusion of persons with disabilities in the world of work is essential to realize their labour rights, including through combating discrimination and creating equal opportunities. The ILO Centenary Declaration for the Future of Work from 2019 highlights the necessity for a human-centred approach and explicitly refers to the need to ensure equal opportunities and treatment for persons with disabilities. Further, Article 27 of the UN Convention on the Rights of Persons with Disabilities (UN CRPD) recognizes the right of persons with disabilities to work on an equal basis with others.





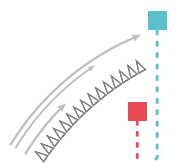
Moreover, the inclusion of people with disabilities is reflected in the 2030 Agenda for Sustainable Development, committing all UN Member States to leave no one behind. The 2030 Agenda recognizes people with disabilities as a vulnerable group, and various Sustainable Development Goals (SDGs) explicitly refer to them, such as SDGs 4 (Quality education), 8 (Decent work and economic growth), 10 (Reduced inequalities), 11 (Sustainable cities and communities) and 17 (Partnerships for the goals). An inclusive digital future of work is key to the achievement of the SDGs. All stakeholders, including governments, companies, trade unions, employers' organisations, organisations of persons with disabilities and academia, have an important role to play in creating a digitally inclusive future of work that benefits all people.

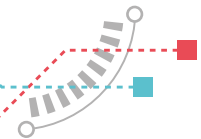
Shauna Olney

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Organization

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Fundación ONCE





Executive Summary

The technological revolution is radically transforming the world of work and this trend is not expected to slow down. In fact, the digital economy has been significantly accelerated by the COVID-19 pandemic. Digital measures have been essential in the immediate response to the crisis, in mitigating future outbreaks and in the recovery policies of institutions and companies. Considering the role digitalisation plays in the future of work, involving people with disabilities in the digital realm has become a non-negotiable aspect.

The objective of this publication is to increase awareness of the impact of a digital world of work on people with disabilities and identify actions needed to shape a future of work in a more disability-inclusive way.

The main impacts of this technological revolution in the world of work laid out in this publication are: the creation of new jobs, obsolete occupations, changes in traditional jobs and in recruitment processes and disruptive forms of work. This new world of work scenario for people with disabilities brings unprecedented opportunities for their inclusion into the labour market, but also many digital barriers.

On the one hand, digital tools enable people with disabilities to gain direct access to employment through online recruiting platforms. Digital tools can also support them in their daily tasks at the workplace, amongst other opportunities. Conversely, if they do not possess the required skills, if they find ICTs unaffordable or if digital tools are not accessible, people with disabilities will not benefit from these opportunities and are therefore at risk of being left behind.

The challenges for people with disabilities in this field such as new skill requirements, technological barriers or challenges associated with working conditions such as low and irregular pay, long working hours or isolation can be overcome by appropriate actions to turn them into opportunities.

The following main levers for an inclusive digital labour market have been identified throughout this paper:

- 1. Ensuring accessibility for people with disabilities**
- 2. Promoting digital skills amongst people with disabilities**
- 3. Promoting the digital employment of people with disabilities**

Digital tools are playing a central role across the employee life-cycle. If digital tools are not inclusive and accessible, people with disabilities will find barriers at every step of the cycle. Many digital tools remain inaccessible without the support of special assistive technologies (AT). However, although ATs could allow people with disabilities to work and build a career in equal conditions to their counterparts without disabilities, challenges in terms of digital accessibility are still being encountered.

As the technological revolution is constantly transforming jobs and creating new ones, the required skills are also changing. The demand for digital skills in both existing jobs and in new digital jobs is growing at a constant pace. Specific data on the digital skills of people with disabilities is not available at a global level. Nonetheless, they generally experience lower levels of education and training than the rest of the population. Reskilling and upskilling people with disabilities is therefore key to ensure they can access new digital jobs.

It is important to ensure that initiatives to foster digital employment are inclusive of people with disabilities. Initiatives to promote digital employment, specifically targeting people with disabilities should also be developed.

To address the challenges mentioned and break down barriers, the involvement of key stakeholders is essential to ensure a digital future of work that is inclusive for everyone.

Some of the main actions by stakeholders that have been identified are as follows:

Public authorities

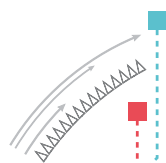
- Strategies, regulations and initiatives related to the digital world must be inclusive
- Specific measures to strengthen the required skills amongst people with disabilities
- Promote the availability of disaggregated data on disability and digitalisation
- Set accessibility requirements and provide regulations and guidelines
- Ensure that the digital world promotes decent work opportunities

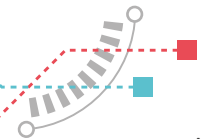
Corporate Sector

- Target people with disabilities in talent acquisition programmes
- Ensure general training and physical and digital infrastructure are accessible
- Guarantee teleworking policies are inclusive
- Set accessibility requirements on the suppliers of digital tools

Digital industry

- Mainstream a Universal Design approach for digital products and services
- Provide accessibility training to developers and service providers
- Ensure that the products and services provided are accessible to all





- Appoint people with disabilities to technology teams
- Share data on people with disabilities' use of digital platforms

Social partners – trade unions and employers organisations

- Foster the hiring of people with disabilities in the digital economy
- Promote reskilling and upskilling of people with disabilities
- Support the rights of people with disabilities in the digital world

Academia

- Ensure training on required skills is accessible for people with disabilities
- Develop open and accessible training programmes focused on the required digital skills
- Develop accessibility training programmes, targeting the ICT industry in particular

People with disabilities and their representative organisations (DPOs)

- Carry out advocacy activities in initiatives related to the digital labour market
- Raise awareness of the need to work on an inclusive digital labour market
- Support and guide stakeholders on accessibility and disability inclusion

Only through collaboration and alliances amongst relevant stakeholders can an inclusive digital labour market that leaves no one behind be achieved.

The report has been prepared by analysing key sources and by conducting consultations with key experts, who are mentioned in the acknowledgements section. These pages also include examples of initiatives that have been adopted by companies, the public sector and civil society organisations that show the way forward. The examples do not follow representative criteria such as geography or economic sector, but rather they mainly serve to illustrate possible actions related to the opportunities and challenges described in the body of the text.

1. Current work situation of people with disabilities

Over a billion people in the world and 100 million people in the EU live with a disability. The worldwide figure is expected to double to 2 billion by 2050^{1 2}. Data in figure 1, structured according to various Sustainable Development Goals (SDGs), show that people with disabilities experience significantly lower socio-economic status (SES) than the overall population.



Figure 1: An overview of the socio-economic situation of people with disabilities within the framework of the 2030 Agenda and the SDGs^{3 4 5}.

Source: Disability Hub Europe

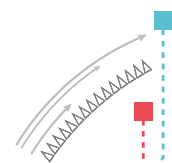
1. Disability and Health. World Health Organization (WHO), 2018.

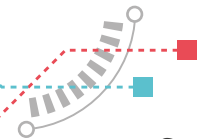
2. How many persons with disabilities live in the EU? European Disability Forum (EDF), 2019.

3 Europe 2020 data & People with disabilities. The Academic Network of European Disability Experts (ANED), 2020. Note that data refers to EU-27 and that it excludes people with disabilities living in institutions.

4. Self-perceived health by level of activity limitation, sex and age. Eurostat, 2020. Note that data refers to EU-27.

5. Note that few reliable data on people with disabilities is available.





Some facts that need to be considered when analysing the current situation of people with disabilities are the following:

- The real employment situation of people with disabilities is not often reflected as many persons with disabilities might not be registered as unemployed⁶.
- In most countries, people with disabilities who are employed are more likely to be in vulnerable employment, characterised by inadequate earnings, low productivity and difficult working conditions that undermine workers' fundamental rights⁷. Especially in developing countries, many people with disabilities work in the informal economy⁸ which normally "engages non-waged and unorganised workers in precarious work processes and labour arrangements that are largely unregulated and unregistered"⁹.
- Generally, people with disabilities face a pay gap. For example, in the United Kingdom before the COVID-19 pandemic, people with disabilities faced a disability pay gap of 15%, working out at £1.65 per hour and £3,000 per year, on average¹⁰.
- People with disabilities generally experience significantly lower educational levels than people without disabilities.
- Women with disabilities are often more disadvantaged than their male counterparts.
- Disability has a bidirectional link to poverty: "disability may increase the risk of poverty, and poverty may increase the risk of disability"¹¹.

It is worth mentioning that, people with disabilities in developing countries might be even more disadvantaged than those in developed countries.

6. World Report on Disability. World Health Organization and The World Bank, 2011.

7. Disability and Development Report: Realizing the Sustainable Goals by, for and with persons with disabilities. United Nations Department of Economic and Social Affairs, 2018.

8. World Report on Disability. World Health Organization, 2011.

9. Informal Economy: a hazardous activity. International Labour Organization, 2021.

10. Locked out of the labour market. The impact of COVID-19 on disabled adults in accessing good work-now and into the future. Leonard Cheshire, 2020.

11. World Report on Disability. World Health Organization, 2011.



COVID-19 has intensified inequalities

People with disabilities have faced a greater impact from COVID-19 for many reasons. Firstly, they have a higher risk of contracting the virus as they face barriers to access preventive measures and they are more likely to develop severe illness due to their pre-existing health conditions and limited access to healthcare. Moreover, mobility restrictions and social distancing measures have increased the pre-existing barriers for people with disabilities and created new disruptions and risks to their autonomy, health and lives¹². Finally, the solutions adopted have not, in many cases, been inclusive of people with disabilities. According to the UN General-Secretary, António Guterres, “COVID-19 is intensifying the inequalities people with disabilities face under normal circumstances”. Therefore, it is estimated that the data presented in chapter 1 will in fact get worse. For example, people with disabilities who faced exclusion in employment before this crisis are now more likely to lose their job and experience greater difficulties in returning to work^{13 14}.

Although, the potential of inclusive businesses is being increasingly appreciated by companies and other organisations, there are still false beliefs about work and disability, including the idea that hiring people with disabilities could lead to “a loss of productivity as well as to negative impacts on the financial results of companies”¹⁵.

The pandemic could have a negative impact on employers’ willingness to hire people with disabilities. In the United Kingdom, 42% of employers surveyed said “they were discouraged from hiring disabled people due to concerns around supporting them properly during the pandemic”¹⁶.

Even though many false beliefs persist, “many companies have seen tangible benefits from disability inclusion”. Research carried out by the World Economic Forum showed that more inclusive companies achieved “28% higher revenue, double the net income and 30% higher economic profit margins on average over the four-year period analysed”¹⁷.

12. COVID-19 and the Rights of Persons with Disabilities: Guidance. United Nations Human Rights Office of the High Commissioner, 2020.

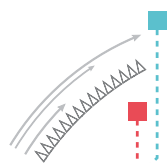
13. According to the first piece of specific research conducted in Spain by Fundación ONCE, within the framework of the statistical analysis carried out by ODISMET, 37% of people with disabilities surveyed have been affected by temporary layoff schemes, a much higher percentage than the estimate for the population without disabilities, and 47% consider that it will be very difficult to get a job.

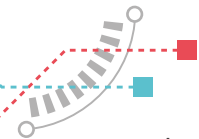
14. We have a unique opportunity to design and implement more inclusive and accessible societies. United Nations, 2020.

15. Making the future of work inclusive of people with disabilities. Fundación ONCE and ILO GBDN, 2019.

16. Locked out of the labour market. The impact of COVID-19 on disabled adults in accessing good work-now and into the future. Leonard Cheshire, 2020.

17. What companies gain by including persons with disabilities. World Economic Forum, 2019.





A comprehensive approach by organisations when considering persons with disabilities, such as that reflected in figure 2 below, can maximise profit and create long-term value.



Figure 2: 360° approach of people with disabilities.

Source: Disability Hub Europe

The 360° approach values people with disabilities' roles as employees and as consumers (including their families, which also seek accessible products and services), suppliers, employers, investors and as part of the community in which a company operates.

The labour exclusion of people with disabilities is not only a violation of their rights but a loss of talent for businesses and a loss of diversity for society. This has led authorities, experts and companies to become aware of their social inclusion responsibilities as part of efforts to protect human rights and to incorporate disability-related strategies into their wider corporate social responsibility and sustainability agenda.



Some of the important steps taken to include disability and accessibility as part of CSR and sustainability agendas

- The Guiding Principles on Business and Human Rights implementing the UN 'Protect, Respect and Remedy' Framework (UNGPs)
- The OECD guidelines for Multinational Enterprises
- The 2015 and 2019 Guides on "Disability in Sustainability Reporting" by GRI and Fundación ONCE, with the co-funding of the European Social Fund
- The 2017 "Guide for business on the rights of persons with disabilities" by ILO and UN Global Compact
- The European Commission guidelines on non-financial reporting adopted in 2017

2. Digitalisation: a trend of the future of work

2.1. Digitalisation trends

Throughout history, humanity has undergone continuous changes. However, in recent decades the pace of change has accelerated thanks to the deployment of digital infrastructure¹⁸. This rapid development is triggering a massive digital transformation of society, making companies rethink their business models and processes, and people their way of life¹⁹.

Specifically, the technological revolution is dramatically transforming the world of work and this trend is not expected to slow down²⁰. As stated by the OECD “the general-purpose nature of digital technologies increases their development speed and sustains their acceleration over time as they find new areas of application”²¹.



Main technological drivers and growing industries

Some of the most important technological drivers of the digital transformation include 5G, cloud computing, the internet of things (IoT), artificial intelligence (AI), machine learning, blockchain, 3D printing, and big data analytics^{22 23}.

These technologies have powered some of the fastest growing industries such as those linked to biotechnology, telemedicine, renewable energy, drones, virtual and augmented reality, wearables, robotics, automation, mobile payments, cybersecurity, cryptocurrencies, connected home, and autonomous vehicles²⁴.

Other trends are arising from digitalisation such as GovTech, one of the most promising trends in the public innovation landscape in recent years. GovTech ecosystems are made of a new brand of tech-based, data-driven start-ups with a public vocation that want to make a difference and generate a social impact. It is an emerging sector with the potential to increase government capabilities for service delivery, while detonating new data-driven economic sectors²⁵.

18. Vectors of digital transformation. OECD Digital Economy Papers. N° 273. OECD, 2019.

19. Digitalization: Yesterday, Today and Tomorrow. Dornberger R., Inglese T., Korkut S., Zhong V.J., 2018.

20. New Markets and New Jobs. 2016 Ministerial Meeting on the Digital Economy. OECD, 2016.

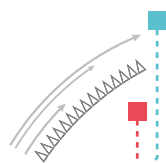
21. Measuring the Digital Transformation. A roadmap for the future. OECD, 2019.

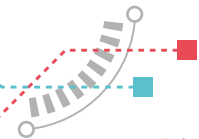
22. The Future of Jobs. Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution. World Economic Forum, 2016.

23. The top 10 technology trends of the 4th Industrial Revolution. Forbes, 2020.

24. Top 5 of the fastest-growing industries in the world. World Finance, 2018.

25. The GovTech Index 2020. Unlocking the Potential of GovTech Ecosystems in Latin America, Spain and Portugal. CAF, govtechlab and Oxford Insights, 2020.





Digital transformation can affect different groups in society in very different ways, not only in the field of work but also in other spheres of life, such as access to physical or virtual environments or access to new products and services. When used to their full potential, the technological drivers mentioned in the box above provide numerous opportunities for improving people with disabilities' daily and work activities. However, they also present many challenges, such as technology taking over tasks or roles, also including people with disabilities.

Each of these technological drivers presents different opportunities and challenges for people with disabilities. Moreover, the impact of digitalisation varies amongst persons with disabilities. In this regard, the digital inclusion of people with disabilities is diverse and "a complex terrain of disability diversity is in place"²⁶. It is therefore important to adopt an intersectional approach when analysing the impact of digitalisation on people with disabilities. Persons with disabilities represent the full breadth of intersectional identities of human beings. Across the community there is the intersection of cultural background, education level, religion, gender, ethnicity, age, geography, sexual orientation and socio-economic status, amongst others²⁷.



Artificial Intelligence: opportunities and challenges for people with disabilities²⁸

Artificial Intelligence (AI) is the development of computer systems that can perform tasks that normally require human intelligence. AI is changing the landscape for people with disabilities.

On the one hand, "software is learning how to recognise and respond to images, sounds, and linguistic expressions". Therefore, tools like auto-captioning with AI, autonomous cars and facial and image recognition to support interaction with the environment, present great opportunities for people with disabilities.

On the other hand, these tools will only impact positively if they are designed for full inclusion. Some examples of risks include: "models learning from biased data may reproduce and continue historical biases", "training data may underrepresent outlier populations" and "data collection may not include representation from individuals with disabilities".

Currently, people with disabilities frequently experience digital exclusion as they encounter many difficulties when it comes to being able to afford or access Information and Communications Technologies (ICTs) and the Internet due to a myriad of factors.

26. Digital Inclusion of People with Disabilities: A Qualitative Study of Intra-disability Diversity in the Digital Realm. Panayiota Tsatsou, 2019.

27. The high cost of exclusion and what we need to do about it. Portulans Institute, 2020.

28. AI and Accessibility. World Institute on Disability, 2019.

According to GSMA, there are significant digital gaps in mobile ownership and use amongst people with disabilities. It was also found that the perception of the relevance and awareness of ICTs is a barrier for people with disabilities. For example, in Mexico, there is an 18% disability gap in mobile phone ownership, a 37% disability gap in smartphone ownership, a 26% disability gap in awareness of the relevance of mobile Internet and a 38% disability gap in mobile Internet use²⁹. This exacerbates their exclusion from society in general terms. In light of this, there is a need for people with disabilities to be digitally included so that they can access the digital labour market.

There is also a digital gap between developed and developing countries, where access to ICTs and the Internet in the latter is lower. As an illustration, in 2016 there were practically 100 active high-speed mobile subscriptions per 100 inhabitants in developed countries, versus 40 per 100 in developing countries³⁰. Therefore, people with disabilities in developing countries may face even higher digital exclusion.

In this regard, people with disabilities must be considered in the digital transformation, not only to prevent them from remaining on the sidelines of digital advances, but also to take advantage of new technologies to broaden their skills. Investing in people with disabilities might have an impact on other vulnerable groups, resulting in higher returns for everyone. Using these technologies sensibly and putting people at the centre of development and innovation will expand the capabilities of our society, making it more inclusive and socially just.

2.2. The digital world of work is here to stay

The digital economy has been significantly accelerated by the COVID-19, an unprecedented health crisis that has rapidly led to the “worst global crisis since the Second World War”^{31 32}. Adaptability and transformation were amongst the most highly needed skills for entities to respond to measures such as mobility restrictions, social distancing policies and workplace and school closures. Therefore, a digital response to this crisis was a key element for organisations. Remote working, digital learning³³, digital services and the need for digital skills became the new reality in record time. According to McKinsey, “we have vaulted five years forward in consumer and business digital adoption in a matter of around eight weeks”³⁴.

29. The Digital Exclusion of Women with Disabilities. A Study of Seven Low- and Middle-Income Countries. GSMA, 2020.

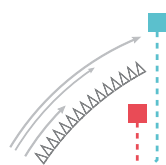
30. Building tomorrow's digital skills - what conclusions can we draw from international comparative indicators? UNESCO, 2018.

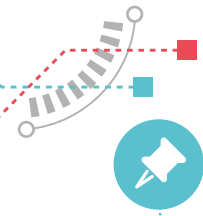
31. How COVID-19 is changing the world: a statistical perspective. Committee for the Coordination of Statistical Activities, 2020.

32. OECD Digital Economy Outlook 2020. OECD, 2020.

33. Digital Skilling in the Time of COVID-19: Innovations and Outreach. Gan Global, 2020.

34. The COVID-19 recovery will be digital: A plan for the first 90 days. McKinsey Digital, 2020.





Remote working, digital services and digital learning, accelerated by COVID-19

The global health crisis has forced entities to face unknown challenges such as keeping employees safe while guaranteeing business continuity. Through remote working and online services, organisations have managed to protect employees' health and safety while maintaining business activity to fulfil customers' needs. This has resulted in banks shifting to remote sales and teams; grocery businesses giving priority to online ordering and delivery; cultural and entertainment organisations such as museums providing online content; and public administrations offering eGovernment solutions, amongst others^{35 36 37}. There have never been so many people working from home³⁸. Also, the closure of educational institutions has confronted students, teachers and parents with new digital challenges. Digital learning seemed the only option to move ahead with the academic year and reduce the impact on students.

Furthermore, organisations, employees, students and customers that have migrated to the digital realm, have now tried the opportunities it offers³⁹. This has changed their interactions and behaviours, making them highly unlikely to reverse this trend and undo the steps they have taken. For example, 75% of people that have used digital tools for the first time during COVID-19 stated that this will not change once they go back to what is now already being described as the "new normal". Also, digital competitiveness between companies has increased, pushing the digital transformation even further⁴⁰.



A gradual and uncertain return to normal after COVID-19

Since the risk associated with the COVID-19 pandemic has not diminished since its initial outbreak at the end of 2019, digital measures are still in place and will remain so at least for a while. For instance, some organisations have kept part of their workforce working remotely despite the lifting of lockdowns in some countries and digitalisation continues to play a central role in mitigating new outbreaks.

35. COVID-19: How eGovernment and Trust Services can help citizens and businesses. European Commission, 2020.

36. Cultural Heritage @home. European Commission, 2020.

37. The COVID-19 recovery will be digital: A plan for the first 90 days. McKinsey Digital, 2020.

38. How to use the surge in teleworking as a real chance to include people with disabilities. Eurofound, 2020.

39. The digital-led recovery from COVID-19: Five questions for CEOs. McKinsey Digital, 2020.

40. The COVID-19 recovery will be digital: A plan for the first 90 days. McKinsey Digital, 2020.

The COVID-19 pandemic has led to a major socio-economic crisis⁴¹. The data of 2020 below demonstrates the relevance of its impact, considering that the figures will surely have changed by the time this document is published.

1.6 billion students	93% of the workforce	14% drop in working hours
disrupted their studies by educational institutions close	lived in countries with workplace closures	equivalent to 400 million full-time jobs, was estimated for the second quarter of 2020
40-60 million people	\$1 billion	\$58 million
pushed into extreme poverty	needed for the socio-economic response and recovery in middle- and lower-income countries for the first nine months of the pandemic	were secured at the beginning of September by UN COVID-19 Response and Recovery Fund

Figure 3: COVID-19 effects on society in numbers^{42 43 44}.

Source: Disability Hub Europe

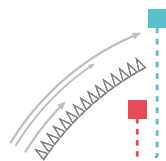
Digitalisation has not only been a key driver for the immediate response to COVID-19 but will also be a core element of companies and institutions' recovery policies. Therefore, digitalisation is here to stay. The EU initiatives, such as the EU Recovery Plan, clearly illustrate this fact, with digitalisation and a green recovery forming the backbone of these initiatives.

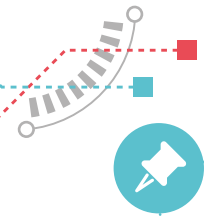
41. How COVID-19 is changing the world: a statistical perspective. Committee for the Coordination of Statistical Activities, 2020.

42. ILO Monitor: COVID-19 and the world of work. Fifth edition. Updated estimates and analysis. ILO, 2020.

43. How COVID-19 is changing the world: a statistical perspective. Committee for the Coordination of Statistical Activities, 2020.

44. United Nations Comprehensive Response to COVID-19. United Nations, September 2020.





Digitalisation has consolidated its position as the backbone of the Europe of the future

The European Commission is promoting various initiatives – The Recovery Plan for Europe, The European Digital Strategy and The Digital Europe Programme – aimed at shaping Europe’s digital future, as well as strengthening equality to ensure a prosperous future for everyone.

The Recovery Plan for Europe focuses on the digital and green transition defined by the European institution as “the challenges of this generation”. Through this plan the European Commission will promote significant investment in digital projects and will ensure that equality is the backbone of the plan⁴⁵.

The European Digital Strategy is structured around four main pillars: technology that works for people; a fair competitive digital economy; an open, democratic and sustainable society; and Europe as a global digital player⁴⁶.

The European Commission’s Digital Europe Programme, to be adopted in 2021, aims to build the strategic digital capabilities of the EU and facilitate the wide deployment of digital technologies⁴⁷.

Considering that the European Pillar of Social Rights includes disability in Principle 17 (Inclusion of people with disabilities), European digital initiatives should ensure equal opportunities for people with disabilities.

The importance of equality is mentioned in all these initiatives, however people with disabilities are rarely mentioned explicitly. One of the few references is included in the draft Orientations for Digital Europe, published in 2019 to shape the work for the Digital Europe Programme. It reads: “particular attention will be paid to ensuring that fundamental rights and ethics requirements, such as privacy, diversity, non-discrimination, accessibility (including people with disabilities), societal and environmental wellbeing, are met when developing and deploying AI technology”⁴⁸.

In this context, digital reskilling and upskilling is more important than ever considering the pace at which society is evolving.

As seen previously, digitalisation is leading to unprecedented advances in society, such as connectivity and automation. However, it is also leading many people, especially vulnerable groups, to tackle new challenges that affect their lives and well-being^{49 50}.

45. Recovery plan for Europe. European Commission, 2020.

46. The European Digital Strategy. European Commission, 2020.

47. Europe investing in digital: The Digital Europe Programme. European Commission, 2020.

48. Draft Orientations for the preparation of the work programme(s) 2021-2022. European Commission, 2020.

49. The age of digital interdependence. Report of the UN Secretary-General’s High-level Panel on Digital Cooperation. United Nations, 2019.

50. Vectors of digital transformation. OECD Digital Economy Papers. N° 273. OECD, 2019.

For instance, digital measures during COVID-19 have led to greater exclusion for people with disabilities. Many employees and students with disabilities have faced major limitations to continue work or school activity from home as they did not have the necessary equipment^{51 52}. According to international bodies such as the European Parliament, “it is extremely important that persons with disabilities are not left behind when society becomes fully digital”⁵³.

Given that it was already predicted that by 2030 many jobs will require digital skills and bearing in mind that the current crisis has pushed the agenda even faster than expected, involving people with disabilities in the digital space has become a non-negotiable aspect. Understanding and acting on the economic and social dimensions of digital transformation is crucial to ensure that no one is left behind. The UN Secretary General’s High-level Panel on Digital Cooperation describes it as “the ways of working together to address the societal, ethical, legal and economic impacts of digital technologies in order to maximise benefits to society and minimise harms”⁵⁴.



Principles for an inclusive digital transformation

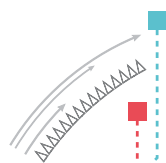
- In conjunction with mobile operators and disability and accessibility experts, **GSMA** has developed a set of **Principles** to advance the digital inclusion of persons with disabilities. These Principles provide a framework for action for the industry along with a set of potential activities that can be carried out by mobile operators in order to reduce the gap in access and use of mobile-enabled products and services by persons with disabilities. By endorsing these Principles, mobile phone operators and digital stakeholders will push a more inclusive society.
- In response to the rapid digital transformation, 22 leading companies have come together through WBCSD’s (World Business Council for Sustainable Development) Future of Work Project to develop a shared set of principles to ensure technology transformation benefits the workforce in an inclusive way. Adopting **WBCSD’s Business principles for people-centred technology transformation** will help companies to ensure trust, preparedness and resilience of their workforce, attract and retain the best talent and contribute to a thriving and inclusive workforce, company, labour market and society.

51. COVID-19 and the Rights of Persons with Disabilities: Guidance. United Nations Human Rights Office of the High Commissioner, 2020.

52. COVID-19 response: Considerations for Children and Adults with Disabilities. UNICEF, 2020.

53. Digital inclusion should become a priority of the new EU Disability Strategy. European Economic and Social Committee, 2017.

54. The age of the digital interdependence. Report of the UN Secretary-General’s High-level Panel on Digital Cooperation. United Nations, 2019.



3. A new world of work scenario for people with disabilities

The new world of work brings unprecedented opportunities for the inclusion of people with disabilities in the labour market. Nonetheless, this segment of the population may also encounter many barriers.

Digital transformation implies significant structural and organisational changes in the labour market, both within companies and across entire sectors. In this chapter, the four main impacts of the technological revolution in the world of work will be discussed, together with the associated risks and opportunities these entail for people with disabilities. The main impacts are: new jobs, obsolete occupations, changes in traditional jobs and in recruitment processes and disruptive forms of work.

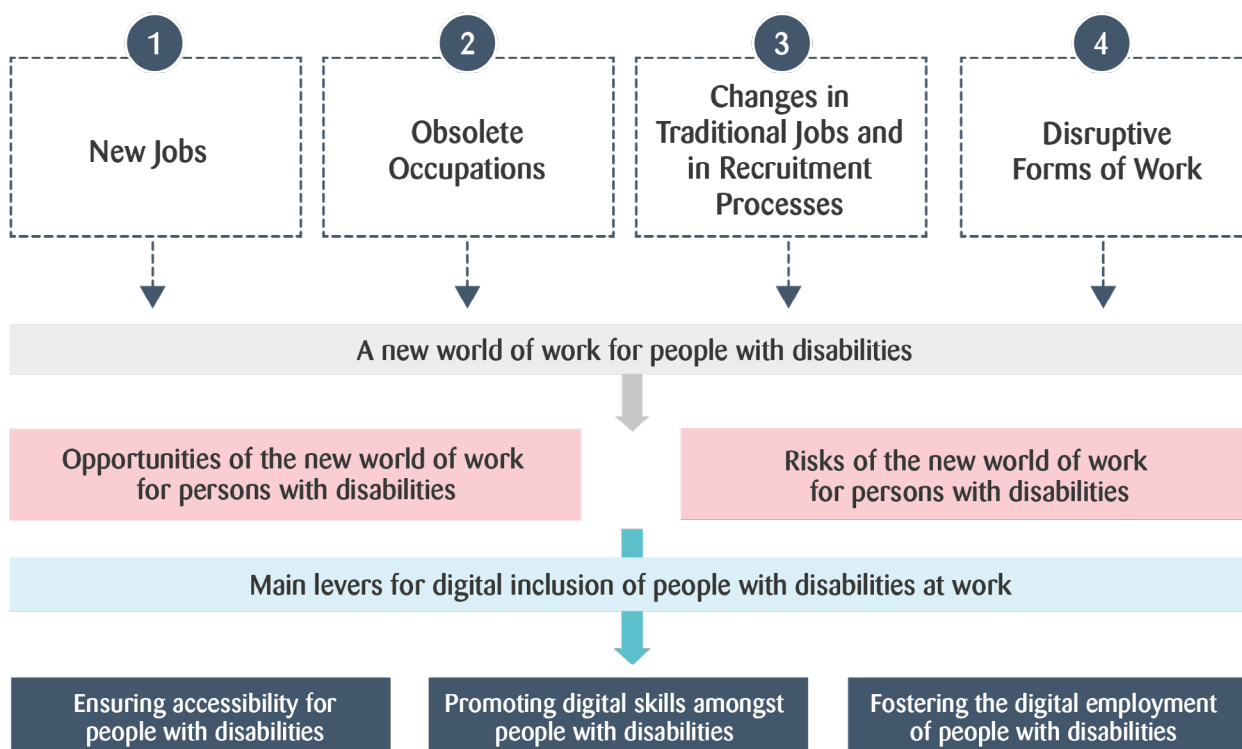


Figure 4: The new world of work scenario.

Source: Disability Hub Europe

Considering the current employment situation of people with disabilities and the related impact in all other aspects of their lives, it is crucial to manage risks and opportunities in a timely and appropriate manner. It should be noted that the impact of the risks and opportunities on people with disabilities will depend on their individual circumstances, such as their level of education and (digital) competencies, as well as their current job, amongst other aspects.

3.1. New Jobs

The digital transformation of societies creates many jobs both in traditional and in more recently-created markets, offering new employment opportunities^{55 56 57}. Some new digital jobs such as Artificial Intelligence Specialists and Data Scientists require strong digital expertise, while many others are entry level jobs such as Community Manager or Web Designer. Generally speaking, there is a very significant mismatch between supply and demand of new digital jobs.



Opportunities for people with disabilities

- New digital jobs (both in traditional and more recently created markets) offer a range of new employment opportunities, particularly interesting for people with disabilities.
- The mismatch between supply and demand of new digital jobs presents an opportunity for people with disabilities.
- People with disabilities with different levels of education can access digital jobs since some require high skills and others are entry level jobs.



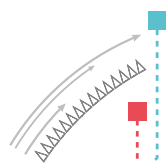
Risks for people with disabilities

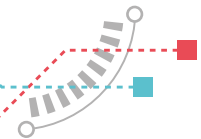
- People with disabilities often encounter barriers in accessing education and training. Consequently, there is a risk that people with disabilities might not have the required skills to be eligible for new digital job positions.
- All new digital jobs are not necessarily decent jobs.
- There are instances of highly qualified individuals undertaking low-skilled digital work, which in turn signifies an important challenge, including for persons with disabilities.

55. New markets and new jobs. 2016 ministerial meeting on the digital economy. OECD, 2016.

56. Work for a brighter future. ILO Global Commission on the Future of Work, 2019.

57. Jobs of Tomorrow. Mapping opportunity in the New Economy. World Economic Forum, 2020.





3.2. Obsolete Occupations

Digital transformation does not only create new employment opportunities, it also renders many jobs obsolete. Digital developments enable machines to perform tasks originally carried out by people, a trend that is expected to rise over time. Therefore, technology can take over people's roles. More goods and services being produced with a reduced workforce leads to a risk of "technological unemployment"^{58 59}.

While work automation leads to a lower demand for mid-level qualified jobs, it results in a greater demand for low and highly-qualified jobs⁶⁰. As a result, the wages of high-level expertise jobs are set to increase, while those associated with lower qualified employment are expected to drop, triggering a major inequality effect⁶¹. Hence, digitalisation plays its part in "job losses, wage stagnation and rising wage inequality"⁶².



Risks for people with disabilities

- There is likely to be an overrepresentation of persons with disabilities amongst those affected by technological unemployment and wage inequality. This can negatively impact their already vulnerable situation.
- The lack of statistics on where persons with disabilities are currently working means the impact of obsolete occupations on people with disabilities cannot be ascertained.

3.3. Changes in Traditional Jobs and in Recruitment Processes

The digital age is transforming traditional professions. The use of digital tools to support people in their job activities is increasingly common in the workplace. One example is the use of smartphones and computers for remote work or to provide services online, which has been heightened by COVID-19.

Additionally, the digital revolution has also had an impact on the process of traditional job hunting, as recruitment and job searches have converged towards digital platforms which connect employers with job seekers. There is also widespread use of AI tools in recruitment processes.

58. New markets and new jobs. 2016 ministerial meeting on the digital economy. OECD, 2016

59. An Introduction to Online Platforms and Their Role in the Digital Transformation. OECD, 2019.

60. Green paper. Federal Ministry of Labour and Social Affairs of Germany, 2015.

61. Global Risks Report 2018, 13th Edition. World Economic Forum, 2018.

62. New markets and new jobs. 2016 ministerial meeting on the digital economy. OECD, 2016



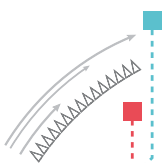
Opportunities for people with disabilities

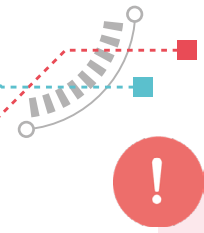
- Digital tools can support people with disabilities to perform tasks that they might otherwise be unable to do as affectively as others due to their disabilities.
- The use of online recruitment platforms, if accessible, offers people with disabilities direct access to employment and employers. Digitalisation expands people with disabilities' range of possibilities to access the traditional labour market.
- Remote work can also provide flexibility which may promote a better work-life balance for people with disabilities⁶³.
- Remote working makes persons with disabilities suitable candidates for jobs, irrespective of the accessibility shortcomings of the workplace or transport⁶⁴.
- Digitalisation and, more specifically, remote work foster innovation in the workplace in the form of "organisational changes, flexibility, online learning and new forms of cooperation". Its potential for cultural change could help in making workplaces more inclusive of persons with disabilities⁶⁵.
- The use of digital tools can enhance reasonable accommodation. They are key to accommodate persons with disabilities in the workplace or at home. They therefore have the potential to remove the barriers encountered by people with disabilities in traditional jobs.

63. New markets and new jobs. 2016 ministerial meeting on the digital economy. OECD, 2016.

64. How to use the surge in teleworking as a real chance to include people with disabilities. Eurofound, 2020.

65. How to use the surge in teleworking as a real chance to include people with disabilities. Eurofound, 2020.





Risks for people with disabilities

- As mentioned before, people with disabilities may find difficulties when it comes to being able to afford and access the Internet and ICTs which can prevent them from accessing the companies' online recruitment processes or recruitment platforms.
- If digital tools required to enter the labour market and to support people in their tasks are not inclusive and accessible, this would prevent people with disabilities from benefitting from the opportunities that could arise. Therefore, people with disabilities would be at a disadvantage compared to those without disabilities. With regards to remote working, it is important to ensure that people with disabilities have the necessary resources and adaptations carried out at home and that platforms used cover accessibility needs. For example, in many cases deaf people are not able to follow meetings due to a lack of accurate closed captioning systems.
- There is also a risk of employers pushing people with disabilities to work from home to avoid having to adapt the workplace. Remote work should not be an obligation but a choice and, therefore, employers must continue to make their workplace and the office accessible.
- Remote work is not possible in every job. For instance, during the pandemic workers in frontline jobs did not have the option to work from home. Also, since the crisis, remote work has mainly accelerated in high-paid employment⁶⁶.
- An additional risk that persons with disabilities may face is the invisibility and isolation that remote working may entail.
- If people with disabilities do not acquire the digital skills required to make use of digital tools and remote working skills such as strong written communication, collaboration, focus, time management and adaptability⁶⁷, they will once again be left behind.
- The use of AI in recruiting processes implies risks for people with disabilities such as "the analysis of facial movements and voice in recruitment" which may not be accessible or "personality tests that disproportionately screen out people with disabilities"⁶⁸.

66. How to use the surge in teleworking as a real chance to include people with disabilities. Eurofound, 2020.

67. 5 Must-Have Skills For Remote Work. Forbes, 2020.

68. Considerations for AI Fairness for People with Disabilities. AI Matters, Volume 5, Issue 3. ACM DL Digital Library, 2019.

3.4. Disruptive Forms of Work

With the emergence of online platforms new economic models such as the sharing economy and the gig economy have emerged^{69 70}. They provide digital marketplaces for information, goods and services, allowing demand and supply to match in real-time and globally^{71 72}. Also, digitalisation is enhancing entrepreneurship and start-ups.



Online platforms are transforming the world of work

As stated by the ILO, online platforms make it possible, on the one hand, to “outsource work through an open call to a geographically dispersed crowd (“crowdwork”)” and, on the other, “to allocate work to individuals in a specific geographical area, typically to perform local, service-oriented tasks such as driving, running errands or cleaning houses”⁷³.

In this way, there are two types of work services provided by digital platforms: digital web-based services such as micro tasks, including for example content review or transcription tasks, or on-location services through location-based applications such as transport or delivery⁷⁴.

The share of jobs emerging from online platforms in the labour market is growing very rapidly. For example, in 2016, the number of app economy jobs in the United States had almost quadrupled compared to five years earlier⁷⁵.

This new paradigm is transforming “traditional work arrangements and labour market relationships”⁷⁶. Full-time and long-term traditional jobs are turning into a “flow of on-demand tasks for a large global pool of online workers”⁷⁷. Thus, non-standard work arrangements are emerging and are characterised by being temporary, part-time work and self-employment employment jobs⁷⁸. Workers are employed for specific tasks and not for specific roles⁷⁹.

69. New forms of work in the digital economy. 2016 Ministerial Meeting on the Digital Economy. OECD, 2016.

70. New markets and new jobs. 2016 ministerial meeting on the digital economy. OECD, 2016.

71. New markets and new jobs. 2016 ministerial meeting on the digital economy. OECD, 2016.

72. New forms of work in the digital economy. 2016 Ministerial Meeting on the Digital Economy. OECD, 2016.

73. Crowdwork and the gig economy. International Labour Organization, 2020.

74. Digital employment platforms gaining a foothold in Europe’s labour markets. European Commission, EU Science Hub, 2018.

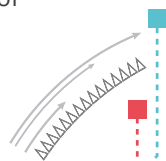
75. An Introduction to Online Platforms and Their Role in the Digital Transformation. OECD, 2019.

76. Digital employment platforms gaining a foothold in Europe’s labour markets. European Commission, EU Science Hub, 2018.

77. New markets and new jobs. 2016 Ministerial Meeting on the digital economy. OECD, 2016.

78. New forms of work in the digital economy. OECD Digital economy papers. OECD, 2016.

79. Digital labour platforms and new forms of flexible work in developing countries: Algorithmic management of work and workers. Rani, Uma, and Marianne Furrer. Forthcoming





Opportunities for people with disabilities

- Flexible and low barrier access to income opportunities, including self-employment⁸⁰ and entrepreneurship, increases the likelihood of people with disabilities finding a job.
- Flexibility in terms of managing work time independently and of choosing the place of work can greatly benefit some people with disabilities, thus improving their work-life balance. Furthermore, it offers opportunities for some that might not be able to work full time or at set times^{81 82 83}.
- The geographical scope of new employment opportunities is global. Online platforms can remove the barriers encountered by people with disabilities to work abroad due to the lack of transferability of disability support services (also in the EU). This is a chance for people with disabilities to work globally⁸⁴.
- Available technology can be provided at the workplace as reasonable accommodation.



Risks for people with disabilities

- Considering the difficulties people with disabilities face when it comes to being able to afford or access Internet subscriptions and/or electronic devices, they might have no opportunity to participate in the new economies in which participants must have access to the Internet and their own devices in order to take part. Therefore, this is a crucial barrier for people with disabilities to access new employment opportunities.
- Lack of accessibility of the digital tools and online job platforms would also be an obstacle for people with disabilities to benefit from the new employment opportunities these present.

80. New forms of work in the digital economy. 2016 Ministerial Meeting on the Digital Economy. OECD, 2016.

81. An Introduction to Online Platforms and Their Role in the Digital Transformation. OECD, 2019.

82. New forms of work in the digital economy. 2016 Ministerial Meeting on the Digital Economy. OECD, 2016.

83. New markets and new jobs. 2016 ministerial meeting on the digital economy. OECD, 2016.

84. An Introduction to Online Platforms and Their Role in the Digital Transformation. OECD, 2019.

- The flexibility provided by these new forms of work comes at a cost, such as not finding jobs when needed or desired. Moreover, multi-jobbing can lead to a loss of time control, working longer hours and under higher stress than in traditional jobs and can hinder people-building expertise. Also, online workers are less likely to receive employer-sponsored training. Wages in platform-based jobs and in start-ups tend to be lower than those in traditional jobs and there is greater job and career insecurity^{85 86 87 88}.
- Having no professional status leads to fewer or no work-related rights or benefits such as unemployment benefit, work injury benefit, maternity and retirement, engaging in collective bargaining or benefitting from minimum wage regulations. This is due to digital economies not falling under traditional employment laws^{89 90 91}. It is important to ensure that new digital opportunities for people with disabilities are decent jobs⁹².
- If people with disabilities do not have basic computer literacy, this will hinder their participation in online job platforms. In addition, considering the situation of people with disabilities in terms of education and training, they might only have access to low-skilled job positions on online platforms.
- People with disabilities may have fewer resources to become an entrepreneur. Also, platform commission fees, and exclusivity arrangements through terms of service agreements can be a serious hindrance to entrepreneurship opportunities.
- Many employment opportunities in digital platforms require English (or other) language skills that some people with disabilities might not have.
- These risks can be assumed by most gig workers since online work is a secondary source of income^{93 94}. However, some people with disabilities might not be well equipped to manage the risk of independent work and multi-jobbing due to their vulnerable social situation.

85. On-Demand Digital Economy: Can Experience Ensure Work and Income Security for Microtask Workers? Journal of Economics and Statistics. ILO, 2019.

86. An Introduction to Online Platforms and Their Role in the Digital Transformation. OECD, 2019.

87. New markets and new jobs. 2016 ministerial meeting on the digital economy. OECD, 2016.

88. New forms of work in the digital economy. 2016 Ministerial Meeting on the Digital Economy. OECD, 2016

89. New markets and new jobs. 2016 ministerial meeting on the digital economy. OECD, 2016.

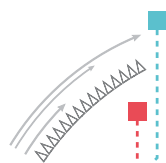
90. New forms of work in the digital economy. 2016 Ministerial Meeting on the Digital Economy. OECD, 2016

91. An Introduction to Online Platforms and Their Role in the Digital Transformation. OECD, 2019.

92. World Employment and Social Outlook 2021: The role of digital labour platforms in transforming the world of work. ILO, (Forthcoming).

93. Digital employment platforms gaining a foothold in Europe ´s labour markets. European Commission, EU Science Hub, 2018.

94. An Introduction to Online Platforms and Their Role in the Digital Transformation. OECD, 2019.



4. Main levers for the digital inclusion of people with disabilities at work

Digital tools and platforms, such as ICTs and online platforms, are powerful enablers to remove disability-related barriers; offering people with disabilities many job opportunities. Nonetheless, significant digital gaps remain between people with disabilities and those without disabilities. Generally, many technologies are not accessible for all users and people with disabilities may not have the required skills. Therefore, ensuring digital accessibility for people with disabilities and promoting digital skills amongst this group are the main levers for an inclusive digital labour market. Furthermore, it is also important that initiatives to promote digital employment are inclusive of people with disabilities.

4.1. Ensuring accessibility

As seen in previous chapters, digital tools are playing a central role across the employee life-cycle: from acquiring skills, finding job opportunities, applying for a job, participating in the selection process to performing the tasks required.



Figure 5: Digitalisation across the employee life-cycle.

Source: Disability Hub Europe

If digital tools are not inclusive and accessible, people with disabilities will find barriers at every step of the employee life-cycle: from online recruitment, which is often not accessible for some persons with disabilities, to performing the tasks required in a job position.



What does accessibility mean?

Accessibility means “to ensure persons with disabilities can access and use, on an equal basis with others, the physical environment, transportation, information and communications, including information and communications technologies and systems and other facilities and services open or provided to the public, both in urban and in rural areas”⁹⁵. Therefore, more specifically, digital accessibility is the process of making digital products accessible to everyone.

As an example, digital content may require accessible formatting or assistive software for persons with visual impairments or some people with physical disabilities may encounter barriers “to operate the standard devices for navigating the Internet such as the mouse, keyboard or screen”⁹⁶. Another example is non-inclusive AI-powered recruitment software which, in many cases, is discriminatory.

Digital accessibility is not particular to a specific industry, since all of them use technologies. Most often, digital tools are not designed with people with disabilities’ rights, needs and abilities in mind and therefore are not usable by them.

Many digital tools remain inaccessible and unusable unless special assistive technologies (AT)⁹⁷ are provided. Having the appropriate ATs and accessible website and applications would enable people with disabilities to access the labour market under the same conditions as those without disabilities⁹⁸. Some of the key examples of assistive technology are screen readers for persons with a visual impairment, braille writing equipment or speech recognition software.

However, although ATs could allow people with disabilities to work and forge a career under the same conditions as their counterparts without disabilities, the following challenges are still encountered within the field of digital accessibility.

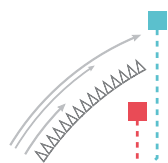
- Not only are ATs needed but digital tools themselves must be accessible and thus compatible with ATs. For example, if a website is not compatible, the screen-reader software will not be able to navigate it properly, meaning people with disabilities would not be able to access it. Many people with disabilities and organisations encounter this problem when seeking accessibility.

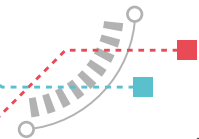
95. Article 9 – Accessibility. UN Convention on the Rights of Persons with Disabilities (CRPD).

96. Disability and Development Report: Realizing the Sustainable Goals by, for and with persons with disabilities. United Nations Department of Economic and Social Affairs, 2018.

97. ATs are defined as “any information and communications technology, product, device, equipment and related service used to maintain, increase, or improve the functional capabilities of individuals with specific needs or disabilities”.

98. Model ICT accessibility. Policy Report. G3ict and ITU, 2014.





- Affordability of assistive technologies is another issue detected in terms of accessibility⁹⁹¹⁰⁰. The cost can prevent people with disabilities, who are often low-income earners¹⁰¹, from acquiring assistive technologies. Given that every step of the employee life-cycle is increasingly carried out remotely, affordability can prevent them from participating in online training, finding online job opportunities, applying for a job online, going through an online selection process or becoming an online worker.
- Financial barriers are also an obstacle for some organisations, such as employers or training institutions. However, there are many affordable assistive technologies in the market. In fact, there are many mainstream software products that include accessibility features. Companies are now competing with each other to upgrade their products' accessibility features and to be recognised as the most accessible player. It is also worth mentioning that the cost of replacing an employee is significantly higher than retaining that same person. Therefore, employers should invest in assistive technologies in order to retain people with disabilities, including those acquiring a disability during their working life.
- One of the main difficulties organisations find is the lack of knowledge on how to ensure accessibility. In addition, in general terms, governmental regulations and guidelines to ensure digital accessibility are insufficient or non-existent.
- The pace of innovation is so fast that by the time accessibility has been added to digital products and services, they will already have been replaced. As COVID-19 has demonstrated, rapid adaptation is key. If technological tools are not designed in an inclusive way from the outset, in emergency situations such as COVID-19, institutions and organisations will probably not be able to ensure that the measures taken are inclusive of people with disabilities. One example is the use of digital platforms to organise online meetings when working remotely. If the platforms are not designed for everyone and are not usable by people with disabilities, organisations will struggle to adapt them to employees with disabilities on time.
- Moreover, "a major challenge around digital accessibility concerns the present inability of technology to cover the diverse types of disabilities".

To achieve accessibility, legislation plays a key role. Governments around the world should require employers and training institutions to have internal processes and technologies in place that are accessible for persons with disabilities, as well as provide them with accurate guidelines and regulations.

99. Model ICT accessibility Policy Report. G3ict and ITU, 2014.

100. Model ICT accessibility Policy Report. G3ict and ITU, 2014.

101. Digital Inclusion of People with Disabilities: A Qualitative Study of Intra-disability Diversity in the Digital Realm. Panayiota Tsatsou, 2019.

They should also set requirements for digital industries to demonstrate the accessibility of new products and services. Additionally, national and local governments should support people with disabilities, employers and training institutions that are having difficulties to cover the associated costs.

Furthermore, organizations must require that their suppliers demonstrate the accessibility of the products and services provided. While organizations may find themselves dependent on digital tool providers, it gives them significant market power.

Moreover, Universal Design, as an approach to achieve accessibility and usability, should lie at the heart of teams working on new technological developments in order to involve a wider range of users at design inception. By following a Universal Design approach, accessibility and usability are ensured from the outset of a tool or service, thus guaranteeing equal access to all.

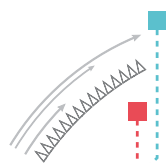


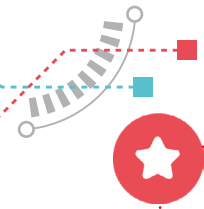
People with disabilities must take part in technological developments

Accessibility legislation and requirements are expanding. There will therefore be a new set of jobs in the accessibility field. This is a major opportunity for persons with disabilities who will have the chance of becoming accessibility experts (e.g. as designers, testing user experience, testing user acceptance). Their experience can bring highly valuable and unique insights to the ICT industry. It is also worth mentioning that employees in this field are currently very difficult to come by.

People with disabilities should be present from the very beginning of the technological design process to ensure accessibility is borne in mind from the outset. Also, bringing accessibility requirements to the fore, forces designers to put the user at the centre of the design process, resulting in a better designed product for everyone.

For people with disabilities to succeed in the world of work, all technologies available for employees and candidates must be inclusive. This is essential for employees with disabilities to be as productive as those without disabilities. Otherwise, they will find many barriers to success.





Company practices in terms of accessibility

- The 'Elisa' project, promoted by **Fundación ONCE**, is amongst the winners of the competition organised by several entities, including Telefónica, to recognise the ten best AI initiatives with a social and ethical impact. This project aims to develop an AI-based solution that translates simple sentences from voice or text into Spanish sign language.
- **Microsoft** has developed the AI for Accessibility programme that supports projects that use AI to empower people living with disabilities, such as AI solutions. One of the projects supported was **Object Recognition for Blind Image Training (ORBIT)** that was recently launched by City University of London. This research programme aims to build large datasets by involving blind persons in the process of AI development. The team is collecting videos from visually impaired persons of the most important things they use on a daily basis to combine these videos and form a large dataset of different objects. These datasets will then be used to develop AI algorithms for building disability-inclusive apps for blind and visually impaired people all around the world.
- **Indra** and the **Spanish Association of Foundations** came together in a major collaborative project to combat the educational digital divide, which has been aggravated by the COVID-19 lockdown. Some 28 foundations have distributed 5,023 tablets, donated by Indra. In addition, Indra provided another 2,313 tablets to the Red Cross, bringing the total number of donated devices to 7,336. Within this framework, Fundación ONCE has distributed 200 tablets to victims of gender-based violence with disabilities and entrepreneurs.

4.2. Promoting digital skills

As the technological revolution is constantly transforming and creating jobs, the skills required are also changing. The demands for digital skills, both in pre-existing jobs and in new digital ones are constantly growing.



Different types of digital skills

Digital skills can be segregated in Tech Baseline Skills¹⁰² which refer to basic skills such as data storage technologies, web development or digital literacy, and Tech Disruptive Skills¹⁰³ which refer to advanced skills such as data science, development tools or artificial intelligence¹⁰⁴.

102. Tech Baseline Skills span Basic Computer Literacy, such as Web Design, Online Marketing, Social Media, Telecommunications, Drafting and Engineering Design Software, as well as Medical and Clinical Software.

103. Tech Disruptive Skills are those that allow individuals to use and design technologies that are set to impact business models and the labour market in significant ways over the coming years.

104. Jobs of Tomorrow. Mapping opportunity in the New Economy. World Economic Forum, 2020.

As a result of the growing demand, there are imbalances between the skills offered and the skills required. In fact, 71% of employees in the EU need basic or moderate level digital skills to perform their jobs. Furthermore, it is expected that more advanced digital skills will be required to meet market demands¹⁰⁵. However, in 2015 only 55% of EU citizens had basic or above basic overall digital skills. In 2019 this figure had not improved much, with 58% having basic or above basic overall digital skills¹⁰⁶. Specific data on people with disabilities' level of digital skills is not available. Nonetheless, they generally have low levels of education and training, as previously seen in chapter 1. Also, difficulties encountered by people with disabilities to access ICTs hinder their chances of attaining digital skills. A survey conducted in Spain in 2018 found that, for many, the principal barrier to accessing ICTs was that they found them complex to use¹⁰⁷.

Acceleration of the digital transformation driven by the consequences of the COVID-19 crisis has translated into a major increase in the need for digital skills. In fact, digital skilling has been a reliable and universal solution across countries and sectors during COVID-19¹⁰⁸. Also, the climate change emergency will enhance the need for both digital reskilling and upskilling¹⁰⁹.



Digital skills and green jobs

The transition to a low-carbon, circular, and resource-efficient economy will lead to changes in the occupational structure of the economy¹¹⁰. In fact, it is estimated that it will generate 18 million new jobs worldwide and 1.2 million new jobs in the EU by 2030¹¹¹.

The digitalisation and the development of ICTs is laying the foundations for green growth, representing the backbone for some key environmental technologies, such as smart grids¹¹².

It should be noted that the green transition offers an opportunity to solve existing inequalities, such as the exclusion of people with disabilities from the labour market if inclusive labour practices are implemented. The main international organisations agree that the transition should be green, but also fair and equal for all¹¹³.

In fact, within the EU Green Deal, the Just Transition Mechanism aims to address the transition's social and economic impacts, focusing on regions, industries and workers who will face the greatest challenges.

105. Insights into skill shortages and skill mismatch. CEDEFOP, 2018.

106. Individuals who have basic or above basic overall digital skills. Eurostat, 2020.

107. People with disabilities and internet use: six key facts. Fundación Vodafone España and Observatorio Estatal de la Discapacidad, 2018 (in Spanish only).

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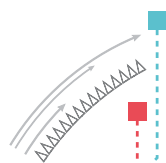
109. Measuring the Digital Transformation. A roadmap for the future. OECD, 2019.

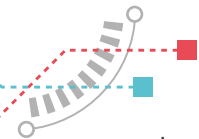
110. Greening with jobs. World Employment Social Outlook. International Labour Organization, 2018.

111. Employment and Social Developments in Europe 2019. European Commission, 2019.

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113. Skills for Green Jobs – A Global View. International Labour Office Geneva and CEDEFOP, 2011.





In addition to digital skills, critical thinking, analytical capacity, emotional intelligence, problem solving, cognitive flexibility, versatility and adaptability are also valuable skills in the new world of work. These are social and personal skills that cannot be replaced by technological processes and, therefore, are prioritised over specific expertise¹¹⁴.

The need for accessibility skills must also be considered. People with disabilities should be trained in accessibility in view of the job opportunities offered by this field. It is also very important that ICT professionals, not just developers, but also those involved in the digital service and support delivery area, receive accessibility training.

Furthermore, the pace of change is so fast that by the time employees have acquired the required skills, different skill requirements may have arisen. Constant innovation also hampers the identification of knowledge gaps and the necessary abilities. Therefore, life-long learning is essential for people to succeed in the labour market¹¹⁵. This new scenario shifts the responsibility of being qualified from the individual onto public administrations and companies. The latter must make sure employees have the necessary ongoing training to cover all the cutting-edge skills and must accompany them throughout a lifelong learning process¹¹⁶.

Online learning platforms make digital skills more accessible and knowledge easier to acquire than ever before. Since the emergence of Massive Open Online Courses (MOOCs) and other learning platforms, a wide range of digital skills can be acquired through online learning^{117 118}. However, the difficulties encountered by people with disabilities to access the Internet and afford ICTs can prevent them from benefiting from these opportunities.

Reskilling and upskilling for people with disabilities, especially those who have jobs that will likely disappear, is key to ensuring they can access new jobs in the future, including green jobs in the growing low-carbon and circular economy. In order to achieve this, it is necessary to develop ad-hoc and accessible training for people with disabilities^{119 120}. Furthermore, mainstream initiatives on digital skills, such as online learning platforms and training provided for employees, must be inclusive of people with disabilities so they can also benefit from the new labour market opportunities.

Mainstream digital skills initiatives aimed at other groups of people must also consider those with disabilities by means of an intersectional approach.

114. Green Paper. Federal Ministry of Labour and Social Affairs of Germany, 2015.

115. Article 24 of the Convention on the Rights of Persons with Disabilities.

116. Work for a brighter future. ILO Global Commission on the Future of Work, 2018.

117. Making Digital Skills Initiatives Inclusive of Young Persons with Disabilities. Decent Jobs for Youth, (Forthcoming).

118. An Introduction to Online Platforms and Their Role in the Digital Transformation. OECD, 2019.

119. Greening with jobs. World Employment Social Outlook. International Labour Organization, 2018.

120. Greening the Global Economy – The Skills Challenge. International Labour Organization, 2011.

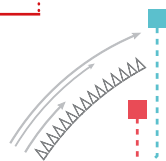
121. Science, Technology, Engineering and Mathematics. A term used to define scientific career and job profiles.

As an example, there is an increasing number of STEM121 training programmes targeting women to increase their employability in those fields. These initiatives should also be inclusive of women with disabilities. Likewise, digital programmes targeting people with disabilities should also follow an intersectional approach.



Company practices in terms of digital skills and disabilities

- **Por Talento Digital** is a technological and digital skills training programme led by **Fundación ONCE**. Its aim is the acquisition of technological and digital skills by people with disabilities to foster their inclusion in high-demand jobs. **Radia** is another digital technology training programme led by **Fundación ONCE**, the **Conference of Social Councils of Spanish Universities** and the **CEOE** (Spanish Confederation of Employers' Organisations) **Foundation**. The aim is to promote the inclusion of women with disabilities in digital work environments. Participants are given the opportunity to learn about new digital technologies, the real-life contexts of the technological field and receive a digital training course supported by mentors with a view to carrying out an internship at a company.
- **Microsoft** has launched a global skills initiative aimed at bringing greater digital skills to 25 million people worldwide by the end of the year. This initiative brings together every part of the company, combining existing and new resources. While all resources will be available online to millions of people in multiple languages, Microsoft has recognised the need to supplement them with additional services and support. That is why they will provide \$20 million in grants, plus technical support, to non-profit organisations around the world, with the aim of reaching 5 million unemployed people, especially vulnerable groups, including people with disabilities.
- **Three Talents** is building training academies that provide people with disabilities with certified skills that lead to high-paying IT jobs. Their pilot Bridge Academies leverage the Cisco Networking Academy program to develop employable skills and globally recognised certification that leads to a high-paying job career as cyber-security analysts. To date, 16 people with disabilities have completed the programmes through the pilot versions in the US and Europe with average graduation and employment rates of over 90%.
- **Turtle Coding Box**, which is part of the **Code your Life** initiative developed within the framework of **Microsoft YouthSpark**, aims to introduce learners with disabilities to coding. Turtle Coding Box won the industry-recognised ALL DIGITAL Award for Best Digital Resource during its annual summit.





4.3. Fostering the digital employment

To ensure the inclusion of people with disabilities in the new digital labour market, it is also important to make sure that the initiatives designed to promote digital employment also include people with disabilities. Responses to COVID 19, such as the Recovery Plan for Europe, should consider people with disabilities in initiatives related to the promotion of digital employment with decent working conditions.

Digital employment initiatives targeting people with disabilities must also be developed. As we have seen earlier, ensuring accessibility and fostering digital skills are key to the inclusion of people with disabilities. However, initiatives that go that one step further and consider the labour inclusion of people with disabilities in addition to upskilling and the fostering of accessibility will have a higher impact. Programmes that work hand-in-hand with people with disabilities through the hiring process, that connect people with disabilities with digital opportunities or that promote the experiences of people with disabilities in the labour market are all examples of initiatives that will have a direct impact on the inclusion of people with disabilities in the labour market.



Company practices in terms of digital employment opportunities and disability

- Amalitech (a social enterprise in Germany that reinvests its profit in further training, network growth and local community support on the ground) works to ensure inclusion of people with disabilities. AmaliTech Training Academy works with disability-related sourcing channels to ensure they also provide skills to persons with disabilities. For the assessment stage of the hiring process, AmaliTech ensures that specific needs, including the accessibility of the assessment centre, of the software used and the provision of sign language interpreters, have been suitably accommodated. It also ensures full accessibility of the venue at the interview stage.
- The **Digital Employment Pathway (DEP)** is a career support tool being tested in Kenya and Bangladesh to help persons with disabilities access paid employment opportunities online. The **Innovation to Inclusion (i2i) consortium** led by **Leonard Cheshire** is applying a four-component framework to the digital employment pathway, which includes testing the technology used to support registration and skills assessments of persons with disabilities, conduct upskilling programmes, provide job matching services and support with workplace solutions.
- **ILUNION**, the business project of ONCE Social Group, is driven by the principles of inclusion and diversity, demonstrating that a more inclusive economy is possible. With more than 50 business lines, ILUNION's staff comprises over 34,400 employees, of which 42% are persons with disabilities. One of the group companies, ILUNION T&A, with 65 workers – nearly 60% with disabilities – offers quality technological and accessible solutions, contributing to create digital environments that meet the needs of everyone and to advance digital transformation so that nobody is left behind.

5. A roadmap for an inclusive digital economy

The technological revolution is noticeably transforming the world of work. Furthermore, this trend has been significantly accelerated by the COVID-19 pandemic and will continue to be so, considering that digitalisation is at the centre of the recovery responses.

This paper finds that the digital scenario brings unprecedented opportunities for the inclusion of people with disabilities into the labour market, who still face major obstacles in this regard. Digital tools and platforms are powerful enablers to remove disability-related barriers, offering people with disabilities many job opportunities.

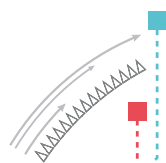
Nonetheless, it also brings to the fore the challenges that digitalisation implies for the inclusion of people with disabilities, such as the significant digital gaps that remain between people with disabilities and those without disabilities.

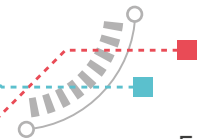
The lack of digital skills and the shortcomings in the accessibility of digital tools are the primary barriers encountered by people with disabilities. The main levers for an inclusive digital labour market are therefore: the promotion of digital skills amongst people with disabilities and the assurance of digital accessibility. It is also important that initiatives aimed at promoting digital employment are inclusive of people with disabilities.

To address these challenges and break down barriers, the involvement of all stakeholders is key to ensure a future world of work that is inclusive for everybody. Below is a non-exhaustive list of stakeholder actions.

Public authorities

- Strategies, regulations and initiatives related to the digital world must be inclusive of persons with disabilities, such as those related to remote working, to online platforms and to digital skills. For example, COVID-19 recovery plans that include digital measures should also ensure the inclusivity of people with disabilities.
- Specific measures and initiatives must be implemented (with tangible goals) to promote the skills required in the digital world amongst people with disabilities and to connect them to new job opportunities, with a special focus on young people and women with disabilities.
- Promote the availability of disaggregated data as regards people with disabilities and digitalisation in order to ensure an effective follow-up to reveal which areas need to be addressed.





- Ensure that the digital world promotes decent work opportunities and fair competition (recognition of workers' status of employment as employees which allows them to obtain labour and social protection benefits, amongst other aspects) . Also, that new regulation to protect employees' rights in the digital labour market is also inclusive of people with disabilities.
- Set accessibility requirements for employers (including employers in the gig economy), training institutions and online platforms themselves to ensure their physical and digital infrastructure are accessible to people with disabilities. Establish appropriate corrective actions in the event of non-compliance.
- Establish requirements for digital industries to use a Universal Design approach to digital developments so that products and services provided are accessible to people with disabilities.
- Provide clear regulations and guidelines regarding accessibility and Universal Design. Also, ensure consistency amongst countries regarding requirements and guidelines through the use of international standards.
- Support employers, training institutions and digital industries with accessibility related costs.
- Provide grants to the most vulnerable people with disabilities to help them deal with the cost of ICTs and assistive technologies.
- Ensure people with disabilities and their representative organisations take part in the relevant bodies that address the digital economy.
- Promote the employment of people with disabilities in digital job and accessibility positions in the public sector.
- Use public procurement programmes to promote accessible digital products and services.

Social partners - trade unions and employers' organisations

- Promote the hiring of people with disabilities in the digital economy by ensuring it is considered in the collective negotiation process.
- Foster reskilling and upskilling of people with disabilities, especially those affected by technological changes, such as job destruction and obsolescence.
- Support the rights of people with disabilities to receive accessible ongoing training and to have an accessible working environment, such as accessible and inclusive remote working, so that employees with disabilities are working under the same conditions as their peers.
- Enhance decent work opportunities and fair competition in the digital realm.

Corporate Sector

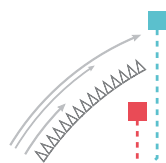
- Review and include procedures and metrics in talent acquisition programmes to target people with disabilities to fill digital talent gaps.
- Ensure general training for employees is accessible to everyone and, in particular, to young people and women with disabilities.
- Guarantee physical and digital infrastructure is accessible for people with disabilities, such as using digital technologies to adapt workplaces and ensuring digital platforms, tools and processes are accessible.
- Ensure teleworking policies set by companies are inclusive of people with disabilities.
- Set accessibility requirements on the suppliers of digital tools.
- Define key performance indicators (KPIs) and quantitative targets on the digital inclusion of people with disabilities at work.

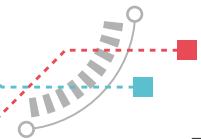
Digital industry

- Mainstream a Universal Design approach for digital products and services from the outset (including the algorithms used by platforms that should be disability inclusive).
- Provide accessibility training to technology developers and digital service providers.
- Ensure that the products developed, and services provided are accessible to everyone.
- Bear in mind the specific requirements of persons with disabilities at the inception of new technological innovations and applications by employing people with disabilities to work on the team, both as developers and as digital service providers.
- Promote the use of international accessibility ICT standards.
- Share data on people with disabilities' use of digital platforms given the detailed information they have on the workers they mediate through the platform.
- Ensure decent work opportunities and fair competition in the digital realm.

Academia

- Conduct research and studies on the digital economy and people with disabilities (e.g. on the digital knowledge of people with disabilities; on online workers with disabilities; on the impact of job destruction on people with disabilities; on Universal Design and assistive technologies; on young people and women with disabilities in the digital world; on the impact on different kinds of disabilities, etc.).





- Ensure training programmes and initiatives to foster the skills required by the digital labour market are accessible for people with disabilities so they can participate effectively by using Universal Design.
- Develop open and accessible training programmes focused on the skills required by the digital labour market and on accessibility skills, targeting people with disabilities.
- Develop accessibility training programmes aimed at both ICT manufacturers and service providers.

People with disabilities and their representative organisations (DPOs)

- Carry out advocacy activities in initiatives related to the digital labour market.
- Raise awareness of the need to ensure digital accessibility, to promote digital skills amongst people with disabilities and to protect online workers with disabilities. Also, raise awareness of the risks associated with working from home and of the varying impacts of digitalisation depending on the type of disability.
- Support and guide the corporate sector in general, the digital industry, public authorities, academia and social partners on accessibility and inclusion of people with disabilities.
- Share knowledge and good practices with all relevant stakeholders on accessibility and digital inclusion.
- Inform people with disabilities of relevant digital job opportunities and of digital skills programmes.
- Help the most vulnerable people with disabilities to acquire ICTs, including online workers with disabilities (with ongoing training etc.) and those affected by digital job destruction.

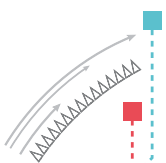
General recommendations for all

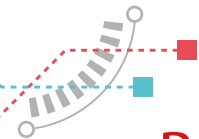
- Collaboration between stakeholders through the creation of spaces for exchanging information and knowledge on the digital inclusion of people with disabilities.
- Ensure meaningful and effective participation of people with disabilities and their representative organisations in decision-making.
- Different types of disabilities and an intersectional approach must be considered when working towards the inclusion of people with disabilities.

As the figures in chapter 1 have shown, a major effort is still required to ensure a labour market that is inclusive of people with disabilities, which will contribute to a sustainable and inclusive society where nobody is left behind¹²². If no effort is forthcoming to address the challenges and to seize the opportunities outlined throughout this paper, the inequality gaps between people with disabilities and the rest of the population will widen further, especially considering the current context of the global health crisis.

Finally, the pandemic crisis has shown our ability to change structures and attitudes rapidly, which is evidence that these changes can be made. Businesses and societies have demonstrated their potential to change and to change rapidly. It can therefore be concluded that inaction is not an option.

122 For more information on the disability inclusion in the 2030 Agenda and SDGs, check “The 2030 Agenda, SDGs and Disability” developed by Fundación ONCE and the European Disability Forum in the framework of Disability Hub Europe in 2020.

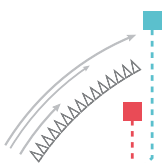


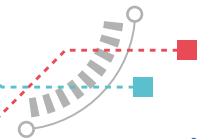


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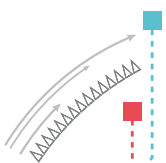
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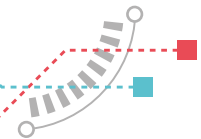




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Acknowledgements

ILO GBDN and Fundación ONCE would like to thank the following persons and organisations for their contributions to this report:

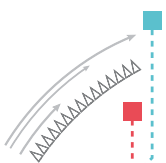
- Alexandra Cutean - [Information and Communications Technology Council \(ICTC\)](#)
- Carlos de la Iglesia - [Microsoft](#)
- David Zanoletti - [Fundación ONCE](#)
- Frances West - [FrancesWest Co](#)
- Gemma James - [GSMA](#)
- Haydn Hammersley - [European Disability Forum](#)
- Inmaculada Placencia - [European Commission](#)
- Jim Poisant - [World Information Technologies and Services Association \(WITSA\)](#)
- Jim Smith - [Atos](#)
- Nazrene Mannie - [Global Apprenticeship Network \(GAN\)](#)
- Neil Milliken - [Atos](#)
- Pat Romczek - [Three Talents](#)
- Pilar Villarino - [CERMI](#)
- Ricardo Trujillo/Germán Granda - [Forética](#)
- Rishabh Dhir - [ILO Research Department](#)
- Sabina Lobato - [Fundación ONCE](#)
- Shane Kanady - [Portulans Institute](#)
- Tiziana Oliva - [Leonard Cheshire Disability](#)
- Uma Rani - [ILO Research Department](#)
- Verónica Martorell - [ILUNION](#)
- Virginia Carcedo - [Inserta Empleo](#)
- Yves Veulliet - [IBM](#)

Design & Layout: ILO GBDN and Fundación ONCE would also like to thank ILUNION for the publication's design and its associated accessibility treatment.

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- ILO GBDN: Stefan Tromel, Natalia Privee
- Fundación ONCE: Carla Bonino, Maria Tussy
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February. 2021



About the leading organisations of the publication



The ILO Global Business and Disability Network (GBDN) aims to create a global workforce culture that is respectful and welcoming of persons with disabilities. Its goal is to make sure that employment policies and practices in companies of all types are inclusive of persons with disabilities around the world. The GBDN also works to increase awareness about the positive relationship between disability inclusion and business success. The GBDN is a unique platform for business-to-business support and peer-to-peer learning on disability issues. The GBDN facilitates the exchange of knowledge through global, regional and national meetings, both face-to-face and online, as well as working groups, joint publications and tools. The GBDN also supports national-level business initiatives on disability inclusion, particularly in developing countries. It provides technical advice and facilitates contacts with national business and disability initiatives, disabled people's organizations, partners and offices of the ILO.

Website: www.businessanddisability.org/



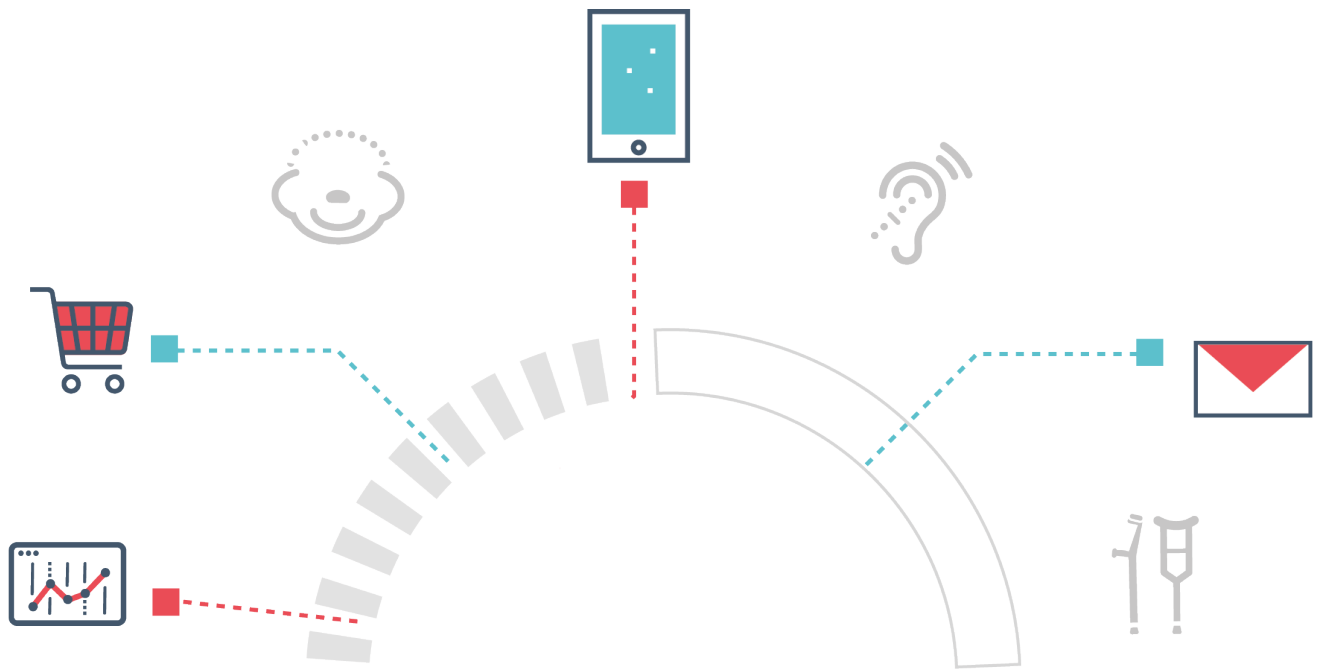
The main goal of Fundación ONCE for the Cooperation and Social Inclusion of People with Disabilities (Fundación ONCE) is to promote the quality of life of people with disabilities and their families, particularly focusing on the areas of training, employment and the universal accessibility of environments, products and services. Based in Spain and founded by ONCE (the National Organisation of the Spanish Blind), Fundación ONCE has extensive experience in the labour inclusion of people with disabilities, and has collaborated across borders with private companies, governments at all levels and other organisations from civil society, making the disability dimension in this field much more visible.

Website: www.fundaciononce.es



Fundación ONCE runs the Spanish Operational Programme "Social Inclusion and Social Economy" 2014-2020, co-funded by the European Social Fund, which allows it to develop several key activities, including the transnational initiative "Disability Hub Europe for sustainable growth and social innovation", that focuses on best practice exchange, dissemination, mutual learning and awareness-raising on the binomial Disability and Sustainability. Aligned with the 2030 Agenda and the SDGs, Disability Hub Europe serves as the framework for this Publication.

Website: disabilityhub.eu



This document is a contribution to the 2030 Agenda and the Sustainable Development Goals, particularly to Goal 8 “Decent work and Economic Growth” and to the specific target 8.5 “By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value”.

