Digitalisation and digital transformation in Spain

Implications for persons with disabilities

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1 Executive summary

It is possible to mention three national priorities related to digitalisation and digital transformation. All of them are included in the Digital Spain 2025 strategy and they are related to: (1) the *Educa en Digital* programme; (2) The National Digital Skills Plan, and (3) Digital health. In the three initiatives, references to people with disabilities are very scarce or non-existent. Instead, the term vulnerable group is used, or the gender gap is mentioned. Although the term access is mentioned in the different documents, references to ensuring accessibility of technologies for persons with disabilities is not specifically mentioned.

Spain is committed to promoting digital transformation as evidenced by the creation of the Ministry of Economic Affairs and Digital Transformation in 2020. There is an overarching digital strategy called 'Digital Spain 2025', which is focused on promoting the country's digital transformation. Several plans and strategies have been developed under this strategy. Typically, these documents refer generally to 'vulnerable population' rather than 'disabled people', or the like. However, the Charter of Digital Rights, drafted by the aforementioned Ministry, explicitly provides for the protection of people with disabilities in the digital environment. The Spanish Disability Strategy Action Plan 2014-2020 includes a section on accessibility with several measures related to digitalisation. As the final evaluation is scheduled for 2021, we expect to have more information of the state of the art by the end of the year.

The national Disability Strategy 2012-2020, and the Action Plan 2014-2020 have just expired, and the Government, through the Ministry of Social Rights and Agenda 2030, is currently carrying out a public consultation on the proposal for the elaboration of the Spanish Strategy on Disability 2021-2030.[1] So far, there is no additional specific disability-related strategy. However, there are other sector focused strategies relevant to the rights of persons with disabilities that mention digitalisation and that can be utilized as the basis to promote specific actions focused on this population, such as the Strategic Plan for Vocational Training. A second example is the Emergency Plan for the care economy and the strengthening of gender equality and social inclusion policies. Although this Emergency Plan has not been published yet, its objectives can benefit from technological development as they emphasise the need for digital literacy and access to technologies for disabled people and dependent population (i.e. persons who, due to age or disability, require the assistance of another person to carry out basic activities of daily living). Given the lack of specification of the disability as a cross-cutting variable, we do not envision that it is possible to quantify funding for the digital transition in the group of people with disabilities. Nor do we believe it is possible to determine the degree to which programmes that fund ICT are inclusive and accessible.

Both NGOs and regional and central governments recognise that digitalisation is a way to reduce several of the country's problems (unemployment, early school dropouts, lack of competitiveness of small and medium-sized enterprises, imbalance between the population with university studies and those with vocational training). They also agree that vulnerable groups must overcome the technological gap and require digital literacy. This requires prioritizing economic and technological support to guarantee access to and use of these technologies, from initial education levels through to adulthood. The organisations representing people with disabilities call for a greater

[1] See: https://www.mscbs.gob.es/normativa/docs/20210414_CPP_EED.pdf.

presence of the group in all plans and strategies. It is also necessary to identify actions in which the disability variable is disaggregated so that these actions can be evaluated. Such an evaluation would make it possible not only to analyse the degree of development of the actions but also the extent to which such development has left no one behind.

Recommendations

- The digitalisation of people with disabilities is a right included in the Charter of Digital Rights. As a right, it must be guaranteed throughout the life cycle.
- In the formative stage, in compulsory education, digital literacy of students must be guaranteed.
- In post-compulsory education, quality training must be guaranteed, aligned with digitisation and able to be recognized and accredited.
- For adults and during the active age, it is essential to promote orientation and job search activities, as well as, where appropriate, professional updating and retraining related to current employment opportunities. Career development must be guaranteed for all people, regardless of their disability. Continuous training and professional recognition through work experience are also key tools to achieve inclusive digitalisation.
- Small and medium-sized enterprises, third sector companies, self-employment initiatives, sheltered jobs for people with disabilities or jobs reserved for people with disabilities must take advantage of these new job opportunities offered by digitisation and orientate their business towards these new job opportunities. Aid must be provided for the updating of companies in accordance with the demands of digitisation and for the adaptation of jobs to ensure the accessibility of technologies. Universal design must be implemented to avoid the digital divide for groups with greater difficulties in integration.

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

2.1 Disability inclusion in generic strategies on digitalisation and digital transformation

Spain is committed to promoting digital transformation. Evidence of this is the creation of a Ministry focused on these issues. In 2020[2] the Ministry of Economic Affairs and Digital Transformation was created. The Ministry of Economic Affairs and Digital Transformation is responsible for proposing and implementing the Government's economic policy and reforms aimed at improving competitiveness, telecommunications and the information society. It is organized into the following higher-level departments: (1) State Secretariat for Economy and Support to Businesses; (2) State Secretariat for Digitalisation and Artificial Intelligence; (3) State Secretariat for Telecommunications and Digital Infrastructure.

The Government has also created the Consultative Council for Digital Transformation,[3] which has a public-private nature and aims at facilitating dialogue and participation of the different economic and social agents for the digital transformation of the country. The Spanish Committee of Representatives of Persons with Disabilities (CERMI) is member of this Council.

Another structure that the government has created is the National Observatory of Telecommunications and the Information Society (ONTSI).[4] Its goal is to provide public information on digital transformation and supporting the preparation of reports for the evaluation and updating of the actions carried out within the framework of the strategy Spain Digital 2025.[5] The ONTSI depends on the public business entity Red.es.[6] As indicated in the regulations governing it, the plenary (decision-making body) of Red.es has a member "representing national associations of disabled people with special difficulties in accessing the information society, appointed by the President of ONTSI at the proposal of these organisations".

Further regulations have developed the structure and competencies of this Ministry.[7] In 2021,[8] in light of the needs that emerged with the onset of the COVID-19, this Ministry was remodelled to increase its capacity to respond to the challenges imposed by the pandemic. Specifically, a new Directorate General for Digitalisation and Artificial Intelligence was created, reporting directly to the State Secretariat for Digitalisation and Artificial Intelligence.

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2 Real Decreto 2/2020, de 12 de enero, por el que se reestructuran los departamentos ministeriales. Available at: https://www.boe.es/boe/dias/2020/01/13/pdfs/BOE-A-2020-410.pdf.

3 See: https://www.boe.es/eli/es/o/2020/09/28/etd920/dof/spa/pdf.

4 See: https://www.ontsi.red.es/index.php/en.

5 See: https://portal.mineco.gob.es/en-us/ministerio/estrategias/Pages/00_Espana_Digital_2025.aspx.

6 See: https://www.boe.es/boe/dias/2002/02/16/pdfs/A06313-06322.pdf.

7 Real Decreto 403/2020, de 25 de febrero, por el que se desarrolla la estructura orgánica básica del Ministerio de Asuntos Económicos y Transformación Digital. Available at: https://www.boe.es/boe/dias/2020/02/27/pdfs/BOE-A-2020-2739.pdf.

8 Real Decreto 147/2021, de 9 de marzo, por el que se modifican el Real Decreto 139/2020, de 28 de enero, por el que se establece la estructura orgánica básica de los departamentos ministeriales, y el Real Decreto 403/2020, de 25 de febrero, por el que se desarrolla la estructura orgánica básica del Ministerio de Asuntos Económicos y Transformación Digital. Available at: https://www.boe.es/boe/dias/2021/03/10/pdfs/BOE-A-2021-3701.pdf.

The State Secretariat for Digitalisation and Artificial Intelligence aims at promoting the digitisation of society and the economy. It is specifically responsible for: a) the promotion, programming and supervision of the actions related to digital administration, b) advancing the creation of universal and, where appropriate, cross-border, quality electronic public services, c) eliminating the digital divide, d) proposing, coordination and monitoring of international relations in the digital society.

The General Directorate of Digitalisation and Artificial Intelligence is responsible for, among other things: a) the general policy and strategic and action planning on the digital transformation of the economy and society, b) the Spanish Artificial Intelligence Strategy, c) the regulation of artificial intelligence and other digital enabling technologies (cloud computing, language and image technologies, Internet of things, distributed registry technologies, cybersecurity, data management, among others) for the transformation of the economy and society, d) the promotion of R + D + i in the field of artificial intelligence, e) the incorporation of digital technologies and services and the use of big data for all productive sectors of the economy, f) accelerating the digital transformation. g) promoting entrepreneurial initiatives of digital companies, g) promoting access to and use of digital services by citizens and facilitating the availability and accessibility of digital technologies, contributing to the correction of digital gaps, h) cybersecurity.

In Spain, there is an overarching digital strategy called 'Spain Digital 2025'.[9] This strategy promotes the country's digital transformation process in line with the digital strategy of the European Union, through public-private collaboration and with the participation of all economic and social agents in the country. More than 15 ministries and public organisations and more than 25 economic, business and social agents have participated in the elaboration of this digital agenda.

Spain Digital 2025 contemplates the implementation, during 2020-2022, of a set of structural reforms that would mobilize a significant volume of public and private investment, around EUR 70 000 million. Public investment in the period 2020-2022 would be around EUR 20 000 million, of which EUR 15 000 million, approximately, would correspond to the different programmes and new Community financing instruments of the Next Generation EU Recovery Plan, which establishes that digitisation has to be one of the main axes to mobilize these resources. To this would be added the investment planned of some EUR 50 000 million, by the private sector in a moderate scenario of deployment of the measures.

Spain Digital 2025 focuses its objectives on promoting the country's digital transformation as one of the fundamental levers to relaunch economic growth, reduce inequality, increase productivity and take advantage of all the opportunities offered by new technologies. This agenda consists of about 50 measures that are articulated around ten strategic axes: 1) Digital connectivity. 2) Continuing the deployment of 5G technology, 3) Strengthening the digital skills of workers and the general public. 4) Strengthening cybersecurity. 5) Promoting the digitisation of Public Administrations. 6) Accelerating the digitisation of companies. 7) Accelerating the digitisation of the production model; 8) Improving the attractiveness of Spain as a European audiovisual platform to generate business and jobs. 9) Moving towards a data economy,

[9] See: https://portal.mineco.gob.es/en-us/ministerio/estrategias/Pages/00_Espana_Digital_2025.aspx.

guaranteeing security and privacy. 10) Guaranteeing rights in the new digital environment. Numerous plans and strategies have been developed under this strategy.

Several of these strategies or plans mention disabled people. For example, in the Strategy for the promotion of 5G,[10] it is provided that this technology will be used to increase the assistance to ageing and disabled populations (p. 19). This document also stresses that Spain must, in short, continue to consolidate its strength in 5G and contribute to European leadership without leaving anyone behind while attending to the specific needs of the most vulnerable (p. 43).

Likewise, the National Artificial Intelligence Strategy (ENIA),[11] mentions that the Government has launched an Action Plan aimed at reducing gender discrimination, promoting gender equality and narrowing the gender gap in science, promoting equality for persons with disabilities and combating social exclusion. These actions will be applied in all areas of STEAM training and in access to AI jobs. Other instruments that will be applied include scholarships, industrial doctorates, programmes for technical support personnel, post-doctoral contracts, seed capital reserves for start-ups, and support for women's participation in international AI technology programmes (p. 33). In addition, concerning public employment, this document mentions that: the Administration has pioneered access for persons with different skill sets and who present 33 % disability or greater. In all employment offers by the Administration, special emphasis should be placed on recruiting persons combining technical capacities, in subjects such as science, technology, engineering and mathematics (STEM), with skills and knowledge in humanistic components and the social sciences (STEAM), to promote a balanced approach to the diverse aspects of AI (p. 37).

The National Plan for Digital Skills[12] states that 'The initiative 'Digital skills training programmemes for workers in employment' was launched by the Ministry of Labour and Social Economy. These programmes consisted of digital transformation training courses offered in 2021 and included grants to participate in these courses. The programmes were primarily aimed at persons in employment, assigning priority access to women, persons with disabilities, workers with little formal education and persons aged over 45 years (p. 61).

[10] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/Strategy-for-the-promotion-of-5G.pdf.

[11] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/National-Strategy-on-AI.pdf.

[12] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/Digital-Skills-Plan.pdf.

Moreover, the Charter of Digital Rights,[13] [14] [15] was drafted by the Ministry of Economic Affairs and Digital Transformation. The Charter has been submitted for public consultation and, such a consultation process saw the participation of organisations representing people with disabilities. In this Charter reference is made to the 'Protection of people with disabilities in the digital environment'. Specifically, it establishes that:

1. The accessibility of digital environments to persons with disabilities shall be guaranteed both from a technological point of view and with respect to their contents. In particular, they shall ensure that the information related to the legal conditions of the service is accessible and understandable.
2. Digital environments, and in particular those intended for digital political participation, shall ensure the effective participation of persons with disabilities or functional diversity.
3. The right to digital education of persons with disabilities shall be guaranteed.

The deadline for proposals for amendments to the Charter was January 20, 2021. Both CERMI (i.e. the Spanish Committee of Representatives of People with Disabilities) and CERMI Women have sent their suggestions.[16] These can be summarized as follows:

1. Eliminate from the text the expression 'functional diversity', as a synonym for disability and use the term 'persons with disabilities'.
2. Refer to universal accessibility in the aforementioned Charter.
3. Expressly mention the concept of 'accessible and inclusive' in issues such as freedom of expression, digital education, privacy, participation in digital environments, safety and security, health, employment, and freedom of creation and culture. Otherwise, digital rights in these areas will be empty for people with disabilities.
4. Ensure that complaint and grievance processes are accessible and inclusive for persons with disabilities.
5. Emphasise the intersectional approach of equality between women and men in the access, use and exercise of digital rights and, within this, that of women and girls with disabilities, as the most excluded social segment.
6. The State must ensure that technologies are both affordable and accessible.
7. Artificial Intelligence (AI) must take into account underrepresented groups, such as persons with disabilities, and use these terms in the labelling for the training of the different models. This will allow the design of actions focused on fields such as: a) AI systems that facilitate access to information and communication itself in all media and formats; b) AI systems that facilitate decision-making; c) AI systems that facilitate accessibility in the environment and reasonable accommodation; d)

[13] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/participacion_publica/audiencia/ficheros/SEDIACartaDerechosDigitales.pdf.

[14] English unofficial translation available at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/participacion_publica/audiencia/ficheros/Charter%20of%20Digital%20Rights.pdf.

[15] Preliminary considerations (in English) can be downloaded here: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/participacion_publica/audiencia/ficheros/Preliminary%20considerations%20to%20the%20Charter.pdf.

[16] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/participacion_publica/audiencia/ficheros/Respuestas.zip.

AI systems included in robots (androids) that facilitate personal assistance; e) automotive AI systems that facilitate universal design; and f) AI systems that facilitate health care and habilitation and rehabilitation services;

8. AI must also avoid risks to the disabled population. Among the main risks, the following can be noted: (a) The use of AI systems to justify genetic selection of people without disabilities; (b) The use of AI systems to identify and eventually discriminate against people with disabilities; (c) The creation of AI systems based on standardization models that exclude or do not take into account the needs, opinion and diversity of people with disabilities; d) The design of AI systems that are based on or fed by data that include stereotypes, biases and prejudices regarding disability; e) The use of AI systems that do not allow the participation or decision-making of persons with disabilities, by themselves or through their representative organisations; f) The creation of AI systems aimed at persons with disabilities that are not tested and validated for use by persons with disabilities themselves.
9. Actions that seek to enforce the digital rights of persons with disabilities must dialogue with and take into consideration the representative organisations of the disability sector.

It is important to say that typically, documents use the umbrella term 'vulnerable population' rather than 'disabled people', 'people at risk', or people with disabilities. Thus, other documents, such as 'España puede',[17] on the Recovery, Transformation and Resilience Plan, states that a country that promotes the social economy is a country that contributes to more inclusive and sustainable growth. (p. 11). The document continues, affirming that Spain is a country that protects the most vulnerable by adopting an equal rights-based approach that addresses the gender gap, defends social cohesion and is committed to individuals, to leaving no one behind (p. 12). The funds to implement this plan are channelled to Spain through two of the main instruments comprising the Europeans Recovery Fund: The Recovery and Resilience Facility and the REACT-EU (p. 12).

The Plan on Digital Infrastructures and Connectivity plan for society, economy and the territories[18] includes key measures such as connectivity vouchers for vulnerable groups at risk of exclusion due to the difficulty of access to connectivity for economic reasons. As the Plan states: 'the need for this type of measure has become more evident in a context of semi-presential education due to the impact of COVID-19, in which some families have not been able to telework or access a basic service such as the education of their children (p. 8)'. This Plan also stresses the fact that a high proportion of people in vulnerable groups do not have sufficient income to buy broadband and equipment capable of supporting the most advanced digital services (p. 50). This is why this Plan aims to tackle social imbalances and facilitate the affordability of these services by the most vulnerable groups, either from a social point of view or to promote the economic sustainability of self-employed workers and micro-SMEs in their digital transformation (p. 50). The Plan develops measures grouped into five lines of action. Some of them specifically mention disadvantaged groups. For example, in measure 2, on Strengthening connectivity in reference centres and

[17] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/ESPA%C3%91A-PUEDE-English.pdf.

[18] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/Connectivity-Plan.pdf.

essential services, it is said that to guarantee access to essential services for vulnerable groups, complementary measures are needed to provide connectivity resources, both for reference centres at local, regional or provincial level (educational, socio-health, etc.), and to provide the most vulnerable groups with the necessary means to access them. It is also proposed that, in coordination with the networks of telecasters and digital training centres, as well as with other programmes belonging to the government's global action on digitalisation, these projects will be encouraged to be accompanied by aid for training and equipment to enable users to make the most of the advantages of digitalisation (p. 60).

Measure 4 of the Digital Infrastructures and Connectivity Plan for society, economy, and the territories,[19] deals with connectivity vouchers for vulnerable groups. This Plan states that the Connected Schools Programme, as well as the reinforcement of the RedIRIS-NOVA, in order to provide connectivity to educational centres, respectively, in the cycle of compulsory education and in university education. However, the need to generalize distance education for health reasons has highlighted the risk of exclusion of certain families with school-age children and, therefore, the need to meet the connectivity needs of students in their homes, both in terms of coverage and financial accessibility (p. 61). To alleviate this situation, the *Educa en Digital* programme, developed as part of the Digital Spain 2025 strategy, will be complemented with digital vouchers that will facilitate connectivity on a temporary basis for schoolchildren or students in the university environment in cases where it is necessary. The digital voucher will cover a broadband connection package with the most appropriate technology in each case. In addition, another model of vouchers will be identified that can guarantee access and connectivity for other vulnerable groups of users or consumers beyond the educational sphere (p. 61).

The Plan for the Digitalisation of Spain's Public Administration: 2021-2025,[20] acknowledges that the current digital relationship with Spain's citizens is transactional, fragmented, generalist and impersonalized. That has the effect of hindering access to government policies, assistance and services by the groups of people they are targeted at, particularly the more vulnerable segments of the population. Also, business access to digital procedures for interacting with government (public procurement, grants, tax information, etc.) remains fragmented and costly, proving a particular onus for SMEs. This Plan aims to deliver digital, accessible, efficient, secure and reliable services: To develop digital public services for Spain's citizens, businesses and civil servants that are higher in quality and more inclusive, efficient, personalized and proactive. The Plan includes several measures such as, measure 1. App Factory, aimed at boosting the development of high-quality mobile apps for the key public services provided to citizens. One of the specific targets associated to this measure is that at least 50 % of all digital public services to be accessible from mobile handsets by the end of 2025. However, there is not any reference to EU funds or public procurement legislation requiring accessibility as an obligation. It should be recalled that universal accessibility is an obligation in all laws and actions implemented in Spain since the approval of Law 51/2003, of 2 December 2003, on equal opportunities, non-discrimination and universal accessibility for people with disabilities. This law, currently

[19] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/Connectivity-Plan.pdf.

[20] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/Digitalisation-of-Public-Administrations-Plan.pdf.

repealed after the entry into force of Royal Legislative Decree 1/2013,[21] of 29 November, which approves the Revised Text of the General Law on the Rights of Persons with disabilities and their social inclusion. This law establishes that universal accessibility is applicable to all environments, processes, goods, products and services. This law also establishes the penalties for non-compliance with this obligation.

In previously mentioned documents, there is no evidence of the involvement of disabled people, such as the Spanish Committee of Representatives of Persons with Disabilities (CERMI).

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

Three national priorities related to digitalisation and digital transformation can be mentioned. All are included in the Digital Spain 2025 Strategy, and they are related to: (1) the Educa en Digital programme; (2) The National Digital Skills Plan, and (3) Digital health.

The Digital Spain 2025[22] aims to reduce the digital divide and, specifically, the third axis focuses on strengthening digital skills of both of the general public and of the workforce. In order to achieve this, the role of the education system and lifelong learning is stressed. In alignment with the European Commission's Digital Education Action Plan, the Digital Spain 2025 Strategy states that '(1) those currently in primary or secondary education or in vocational training must be assured that the education system will provide them with the digital skills required by society in order to live a full life, on both a personal and a professional level; (2) vocational training providers and universities, along with companies, must make the necessary adaptations to ensure that current and future workers have the required skills; and (3) social actors and organisations and public administrations must act to include digital skills in lifelong learning' (p. 28). The Strategy goes on to state that 'by improving the public's basic digital skills and closing divides between groups, Digital Spain 2025 will promote the universalization of basic digital skills, so that citizens can live a full life in the digital age (communicating, obtaining information, making purchases, carrying out transactions, interacting with administrations, etc.). To that end, special emphasis must be placed on training those groups who encounter the most difficulties in acquiring those skills (inter alia, the elderly, the retired, people on low incomes and people living in non-urban areas). 'The goal is to train 15 million people in basic skills' (p. 29). In addition, emphasis is put on Equipping workers with the digital skills required in the workplace. In order to achieve this, 'Digital Spain 2025 will prioritize closing the digital skills divide between those in work and the unemployed, in order to prevent unemployment from becoming entrenched and to enable continuous requalification throughout an individual's working life, paying particular attention to the digital divide existing in areas with a low population density and the rural world. The goal is to train 8 million people in digital skills for the workplace'. (p. 29). Related measures such as measure 10: *Educa en Digital*[23] that 'consists of several actions to support the digital transformation

[21] Downloadable at: https://www.boe.es/boe/dias/2013/12/03/pdfs/BOE-A-2013-12632.pdf.
[22] See: https://portal.mineco.gob.es/en-us/ministerio/estrategias/Pages/00_Espana_Digital_2025.aspx.
[23] See: https://www.mineco.gob.es/stfls/mineco/prensa/noticias/2020/200929_np_CM.pdf.

of the education system, by providing devices and digital educational resources and adapting the digital skills of the teachers, as well as actions involving the application of artificial intelligence to personalized education. In short, it is a programme that makes it possible to continue making progress, following the steps already taken in this area, such as the Connected Schools programme, which helps to provide educational establishments with reliable and high-quality connectivity' (p.30). *Educa en Digital* has an initial budget of up to EUR 190 920 000 and is co-financed by the European Regional Development Funds (ERDF). This budget is complemented with almost EUR 70 million financed by the Autonomous Communities.

Similarly, Measure 11: National Digital Skills Plan[24] is a comprehensive plan which aims to: (1) substantially increase the level of basic digital skills in those groups which are currently worst positioned (the elderly, individuals with low incomes and few qualifications, non-urban areas, women); (2) ensure that students have advanced digital skills on completing secondary education; (3) provide workers with the digital knowledge necessary for their jobs and for future employability, increasing their productivity and also encouraging remote working; and (4) meeting the demand for generalist and advanced digital specialists in the Spanish economy, paying particular attention to reducing gender divides across the board. The plan includes the relevant actions of all ministerial departments, encouraging the development of synergies with other public administrations, universities and the private sector. The strategy will include, at a minimum, the following programmes: (1) Digital training programme for the general public; (2) Digitalisation and digital skills development programme in education (primary, secondary and university) and vocational training; (3) Digital skills programme for those in work and the unemployed; and (4) Programme for specialists in basic and advanced digital technologies, such as data analytics, artificial intelligence, cybersecurity and others' (pp. 30-31).

Measure 34 of the Digital Spain 2025[25] relates to 'Digital health: Towards prediction, personalisation and efficiency'. In this measure the government will give impetus to a key project for the digital transformation of the healthcare sector, through innovation, research, assistance and patient empowerment, in order to improve the population's quality of life. That project may include three major areas of action: (1) research, to measure and improve health outcomes and design preventative systems; (2) patient assistance, increasing automation and providing the public with tools, so that they are better informed when making decisions; and (3) empowering patients with telemedicine tools, self-diagnosis and greater accessibility. The actions envisaged also include speeding up information systems, to allow greater data sharing and interoperability in the provision of services, designing health policy strategies and promoting care which is personalized to the needs of citizens. All of these actions will contribute to the transformation of the National Health System towards a coordinated, interoperable, integrated and multidimensional form of development, by developing applications for the whole healthcare ecosystem: public health and epidemiology, clinical practice, healthcare management, universities, research centres and a booming sector of emerging and innovative companies connected with health and lifestyle, with clear synergies between them all (p. 60).

[24] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/Digital-Skills-Plan.pdf.

[25] See: https://portal.mineco.gob.es/en-us/ministerio/estrategias/Pages/00_Espana_Digital_2025.aspx.

In the three initiatives we have just mentioned, references to people with disabilities are very scarce or non-existent. Instead, the term vulnerable groups is used or the gender gap is mentioned. Once again, we note that disability is less used in educational, social or health policy documents and has been replaced by a broader vision of disadvantaged groups. Within the scope of this study, we have not identified any references to accessibility in these policy documents. Probably the weight in Agenda 2030 of Goal 5, related to gender equality, and Goal 10, related to the reduction of inequalities, contributes to explain this fact. Therefore, it is important to remember that people with disabilities are at an economic, educational, labour, and health disadvantage, so they must be taken into account in the development of any policy, programme or strategy. More emphasis should be put in ensuring accessible services concerning digital health strategic plans. Accessibility should be mentioned across the measures. This in turn requires:

(1) including the disability variable in all measures and indicators of progress and results that are established in the programmes, since anything that is not evaluated is not recognized, nor is it valued, nor can it be evaluated;
(2) guarantee access to digitisation for students with special educational needs, not only in regular education centres but also in special education centres and from an early age, under equal conditions as students without special educational needs;
(3) guarantee that training programmes, especially those focused on STEAM fields, comply with universal accessibility requirements and respect the enrolment quota for students with disabilities;
(4) rethink and update the occupational training offered to adults with disabilities, especially those with intellectual and developmental disabilities or other more severe disabilities, to align it with the challenges of Digital Spain and Digital Europe. This will allow obtaining and maintaining more competitive employments;
(5) guarantee access to e-health and m-Health for people with disabilities, both in the design of services that must follow the principles of universal design, and in the provision of aids for financing and learning how to use these services.

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

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

There is no specific mention of the term 'digitisation' in the Spanish Disability Strategy 2012-2020[26] or in the Spanish Disability Strategy Action Plan 2014-2020.[27] Aspects related to the need to train people with disabilities in technological areas are not included. The need to guarantee accessibility in the education system is mentioned. The need to include a subject on "universal accessibility" in curricula is also mentioned. The term digitalisation seems to have been coined after the publication of national plans. It is to be expected that after the approval of the Union of Equality: Strategy for the Rights of Persons with Disabilities 2021-2030,[28] the EU Member States will adopt measures in this respect in their national strategies. In April 2021, the Government has commenced the public consultation phase on the proposal for the elaboration of the Spanish Strategy on Disability 2021-2030.[29] The aim is to obtain the opinion on the following question: In the process of drafting the new Spanish Strategy on Disability 2021-2030, what needs and demands of people with disabilities do you think should be raised, and how should the possible solutions be approached from your point of view? The strategy is based on the human rights approach of the United Nations Convention on the Rights of Persons with Disabilities, and the 2030 Agenda for Sustainable Development. It also mentions the importance given to universal accessibility and full inclusion. However, and according to the information currently available, there is no specific mention of digitisation or similar terms.

The National Council on Disability (CND) is the body responsible for the monitoring and control of the Spanish Disability Strategy, developed through the Spanish Disability Strategy Action Plan 2014-2020.[30] Through the State Disability Observatory, this body must prepare an annual report on the Strategy. So far, only one report has been published on the implementation of the first phase of the plan (2014-2016).[31] In 2021, the State Disability Observatory is going to carry out a final evaluation of the 2014-2020 Action Plan of the Spanish Disability Strategy. As indicated by this body, the evaluation will involve a multidimensional analysis of the public resources allocated to disability: evolution and future strategy, with special attention to the digital transformation processes and their impact on the third sector.

As digitalisation includes topics such as information technology, artificial intelligence, intelligent domotics, the internet of things, wireless data communication, person-machine communication, bio-technologies, nanotechnologies, and advanced robotics, there are several related issues that appear in the above mentioned plan and that may constitute opportunities for further development and improvement.

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[26] See: https://www.mscbs.gob.es/ssi/discapacidad/docs/estrategia_espanola_discapacidad_2012_2020.pdf.

[27] Downloadable at: https://www.mscbs.gob.es/ssi/discapacidad/docs/plan_accion_EED.pdf.

[28] Downloadable at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0101&from=ES.

[29] See: https://www.mscbs.gob.es/normativa/docs/20210414_CPP_EED.pdf.

[30] Downloadable at: https://www.mscbs.gob.es/ssi/discapacidad/docs/plan_accion_EED.pdf.

[31] Downloadable at: https://www.observatoriodeladiscapacidad.info/wp-content/uploads/2016/12/Informe-Eval-Fase1-PAEED-OED-web.pdf.

More specifically, the Axis 4 of the Spanish Disability Strategy Action Plan 2014-2020[32] focuses on Accessibility, and several actions are closely related to digitalisation. For example, this axis mentions that special consideration must be given to technological accessibility, in order to eliminate barriers, promote accessibility to goods and services -especially public ones-, and improve the availability and variety of assistive devices and means. It is also noted that it is essential for people with disabilities to have access to information through communication systems that can be adapted to their individual needs. The Operational objective 1 of the axis 4 is about promoting accessibility of information and communication technologies and includes actions such as:

56. To elaborate a Special Plan of Accessibility for People with Disabilities with special attention to the traditional technologies (television, radio, home environment and technologies of the urban environment).
57. To promote the use of information and communication technologies among people with disabilities.
58. To support training actions aimed at people with disabilities in the use of information and communication technologies.
59. To promote the offer of services and technological devices and means of support that enable communication for persons with disabilities in the field of public services, and that make it possible for them, in accordance with the principle of personal autonomy, to exercise basic rights, expressing their will, wishes and preferences.
60. To support research and training in new information and communication technologies, technical aids, products, appliances and devices that can contribute to the independent living and participation in society of persons with disabilities.
61. To promote channels, resources and reports on the evolution of information technologies, programmes, practical applications and advances in accessibility.

Operational objective 2 focuses on Promoting the presence of universal accessibility in both public policies and business strategies, addressing the needs of people with disabilities. This objective includes measures such as:

63. Incorporate universal accessibility as an essential factor, especially in the development and implementation of all regulations, including public procurement and services.
66. Make progress in coordinating the accessibility planning of ministerial departments.
68. Ensure that the creation and financing of technological resources for accessibility are consistent with the needs expressed by persons with disabilities.
69. To define consensual criteria for cognitive accessibility through the creation of a working group with the participation of organisations representing people with disabilities.

    Operational objective 3 focuses on advancing universal accessibility and design for all people in those specific areas that require a higher degree of development. This objective includes actions such as:
71. Promote that the design of emergency and evacuation means contemplate the safety of people with disabilities.

[32] Downloadable at: https://www.mscbs.gob.es/ssi/discapacidad/docs/plan_accion_EED.pdf.

On the other hand, Operational objective 5, focused on favouring the availability of resources to guarantee the right to independent living for people with disabilities, includes measures such as:

77. To promote measures that facilitate the use of technical means of support that facilitates independent living for persons with disabilities.
78. To promote measures that favour the availability of the human resources and personal assistance necessary for people with disabilities to live as independently as possible.
79. To promote the consideration of persons with disabilities as a preferential group in access to aid or incentives for access to rented housing, as provided for in state plans.

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

There is no additional specific disability-related strategy other than the above-mentioned Strategy. However, there are other sector focused strategies relevant to the rights of persons with disabilities that mention digitalisation and that can be utilized as a basis to promote specific actions focused on this population. For example, the Strategic Plan for Vocational Training[33] that, as stated on the Recovery, Transformation and Resilience Plan[34] (p. 45), aims to modernize and make the system more flexible by expanding and resizing education and training possibilities, adjusting it to the needs of productive sectors and the labour market. The goal is to create 200,000 new vocational training openings by 2023 linked to emerging sectors such as big data, AI, smart industry, sustainable development, robotics, and 3d, among others. This strategy will promote the accreditation of basic and professional competence of more than three-million workers. In the document on the recognition of professional competencies acquired through work experience, it is established that such a candidate has the right to be treated in a way that guarantees equal opportunities, non-discrimination and universal accessibility, especially if he/she is a person with a disability (p.8)[35]. Additional measures will consist of the promotion of Dual Vocational training, the implementation of modular and ad hoc programmes, etc.

A second example from the aforementioned Plan[36] (p. 47) is the Emergency Plan for the care economy and the strengthening of gender equality and social inclusion policies. This Plan has not been published yet. It aims to develop new networks of tele-assistance, modernize dependency care systems and develop new residential infrastructure that facilitates the autonomy of elderly people and dependents (i.e. persons who, due to age or disability, require the assistance of another person to carry out basic activities of daily living)]., and the reorientation of the long-term caregiving system toward a less institutionalised, more customer-focused model which is better

[33] Downloadable at: https://www.todofp.es/dam/jcr:163978c0-a214-471e-868d-82862b5a3aa3/plan-estrategico--enero-2020.pdf.
[34] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/ESPA%C3%91A-PUEDE-English.pdf.
[35] Downloadable at: https://incual.educacion.gob.es/documents/35348/80300/2021_Gu%C3%ADa_PersonaCandidata_PEAC_NG.pdf/ca4d85aa-3a47-407e-abd8-7e004f5c436d.
[36] https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/ESPA%C3%91A-PUEDE-English.pdf.

connected to the primary healthcare network. These objectives can benefit from technological development and require digital literacy and access to technologies for the disabled and dependent population.

4 Promoting disability inclusion through funding, education and training

4.1 How funding promotes disability-inclusive digitalisation and digital transformation

The plans, strategies and other documents mentioned above do not adopt a disability perspective. As we have been pointing out, the term 'disability' is less used in official documents in favour of more generic terms such as 'vulnerable groups' and a gender perspective, in accordance with current social challenges (gender gap, ecological transition, digital literacy, etc.). In fact, the term 'disability' is not mentioned in the Recovery Transformation and Resilience Plan,[37] or in the Plan for the Digitalisation of Spain's Public Administration: 2021-2025,[38] nor is it in the Digital Infrastructures and Connectivity plan for society, economy and the territories[39] or in the SME digitalisation Plan 2021-2025.[40] In other documents, such as the National strategy for artificial intelligence[41] it is only mentioned collaterally.

As a consequence, a disability perspective is not being taken with regard to funding the development and roll out of digitalisation and digital transformation.

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

Documents, such as the National strategy for artificial intelligence,[42] acknowledge that to meet the social challenge of narrowing the digital divide it is important to pay attention to certain groups, at risk of social exclusion or experiencing this situation that are especially vulnerable to the digital divide (p. 21). The document continues, stating that if the problem is not addressed and overcome as a matter of urgency, the emergence of AI will be an additional factor weighing on the social exclusion that is suffered by many, further distancing them from society and employment. Great opportunities exist for [younger population] in the digitalisation of jobs and in the introduction of ICTs in the workplace. Further openings arise with the specific training needed for teachers (p. 21). In this regard, young people can be involved in teacher

[37] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/ESPA%C3%91A-PUEDE-English.pdf.

[38] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/Digitalisation-of-Public-Administrations-Plan.pdf.

[39] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/Connectivity-Plan.pdf

[40] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/SME-Digitalisation-Plan.pdf.

[41] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/National-Strategy-on-AI.pdf.

[42] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/ficheros/National-Strategy-on-AI.pdf.

training in ICTs, as there is ample room for improvement for this group.[43] Also mentioned is that 'Understanding the benefits of digital technology, accessing it, and using it to communicate, and perhaps even creating digital content; these are some of the skills that must be much more widely acquired to narrow the digital divide' (p. 21).

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

The Spanish strategy on R&D&I[44] acknowledges that the impact of AI in educational domain and states that: 'The use of intelligent systems would allow the transformation of Spanish education based on different technologies, guaranteeing an inclusive education, renewed and adapted to the needs of students and teachers according to the preferences, knowledge and individual evolution of the student. Its large-scale implementation could completely transform current education. The key aspect is that AI techniques enable the implementation of new educational models oriented to personalized learning. Secondly, it would allow educational and training centres to identify those students who require more support. This could address aspects such as the assessment and identification of high competencies in students (predictive AI models), the treatment of students with functional diversity (learning analytics, adapted AI-based systems), new tutoring models (intelligent tutoring systems), recommendation and feedback systems; prediction of early failure and detection of anomalous students through automatic learning systems and the assessment of competencies' (pp. 29-30).

The First Strategic Plan for Vocational Training in the Education System[45] notes that 'the technological innovations, the progressive automation of production processes, technological innovations that transform techniques and equipment, the ecological transition, new types of management and business organisation, the emergence of new professional fields, the restructuring of the labour market, the creation of new green employment niches and new decarbonization technologies, and the need for access to quality employment have led the productive and service sectors to demand profound changes in vocational training' (p. 7). It also points out that vocational training is of strategic importance in Spain for the competitiveness and progress of the productive fabric and for the employability of people.

The document sets out the characteristics of the National Catalogue of Professional Qualifications (CNCP in Spanish) that organizes the professional qualifications susceptible of recognition and accreditation. Of these qualifications, most are included in vocational training studies under the Ministry of Education. Others consist of Certificates of Professionalism, which consist of vocational training carried out in the workplace and which depend on the Ministry of Labour. In addition, there is the accreditation of professional competencies acquired through work experience and non-formal training. The professional family of information technology and communications (ICT)[46] as well as the professional family of building and civil

[43] https://www.oecd.org/spain/Skills-Outlook-Spain-ES.pdf.
[44] Downloadable at: https://www.ciencia.gob.es/stfls/MICINN/Ciencia/Ficheros/Estrategia_Inteligencia_Artificial_IDI.pdf.
[45] Downloadable at: https://www.todofp.es/dam/jcr:163978c0-a214-471e-868d-82862b5a3aa3/plan-estrategico--enero-2020.pdf.
[46] See: https://incual.educacion.gob.es/informatica_descripcion.

engineering[47] specifies the importance of taking into account the principles of universal accessibility, as established in the Spanish accessibility regulations since 2003, which have been reinforced with the 2013 legislation. So, although the training plans include contents on accessibility, it is not possible with the current information and the lack of data containing the disability variable in a cross-sectional way in all actions is, for example, the number of students or workers with disabilities who can benefit and who are actually benefiting from these programs and measures. The Plan includes the strengthening of the Professional Observatory of the National Institute of Qualifications. This Observatory should become an active observatory that maintains a permanently updated CNCP. Objective 5 of the aforementioned plan focuses on facilitating the diversification of training itineraries, taking into account the characteristics of each productive environment and personal interests. This objective includes a line of action consisting of incorporating new content associated with key competencies (languages, digital competence, internationalization, entrepreneurship, applied creative thinking, innovation in SMEs, ecological transition, etc.). Objective 6 refers to expanding the catalogue of VET degrees, incorporating training in emerging sectors, especially those associated with digitalisation. Two other objectives related especially to the subject of this report are Objective 10, related to Improving the accessibility of the procedures for accreditation of professional competencies, and Objective 11, focused on developing a procedure for accreditation of basic -non-professional- competencies aimed at adults. The Plan[48] includes achievement indicators for each of the objectives and actions. However, it would be necessary to disaggregate several of the indicators according to the disability variable. For example, although future digital professionals receive training by law, on accessibility issues, it is not possible to determine how many persons with disabilities benefit from these programmes.

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

As already mentioned, the Spain Digital 2025 Strategy includes measures to implement digitalisation throughout the entire education system. In addition, the Vocational Training Reform Plan, with the implementation of digital content in the different vocational training degrees, as well as the recognition by professional experience of different qualifications, including those related to digitization, are ways through which it is possible to access this knowledge. An example of the progress made in this area is the recent publication of the Royal Decree 143/2021,[49] of 9 March, amending Royal Decree 1224/2009, of 17 July, on the recognition of professional competences acquired through work experience.

On the other hand, the Spain Digital 2025 Strategy also includes training actions in digital skills for the general population and for vulnerable groups, as a way to reduce the technological gap.

This type of measure can, for example, enable people with disabilities who are engaged in occupational activities to have their professional qualifications recognized

[47] See: https://incual.educacion.gob.es/edificacion_descripcion.
[48] Downloadable at: https://www.todofp.es/dam/jcr:163978c0-a214-471e-868d-82862b5a3aa3/plan-estrategico--enero-2020.pdf.
[49] See: https://www.boe.es/boe/dias/2021/03/10/pdfs/BOE-A-2021-3700.pdf.

that will increase their employability and reduce low-skilled jobs, which are also more susceptible to being affected by economic, health or other crises.

In order for these measures to have a real impact on the disabled population, it is necessary to:

(1) specify actions through measures such as reserving positions (quota system) in different training alternatives for students or people with disabilities,
(2) ensure architectural, urban, materials and equipment, technological and cognitive accessibility of training and labour resources,
(3) increase dialogue and advice on training and labour alternatives for people with disabilities, in order to enable the recognition of professional qualifications through professional experience;
(4) offer aid and prioritize the reconversion of third sector companies that work with groups with disabilities, in order to take advantage of new employment opportunities related to digitalisation.

Although these actions are being implemented in Spain, it is necessary to be able to quantify the degree to which people with disabilities benefit from them. This again requires collecting data on beneficiaries of the different actions with different types of disabilities.

In the educational context, the document 'Inclusive best practices in the education and training of young people with disabilities'[50] published by ONTSI and Fundación Vodafone España, 2019, defines technology as a resource or work tool. The document states that for the results of its use to be inclusive, there must be a basic attitude that aims at the inclusion of students in the classroom. In the guide of good practices for the inclusion of students with disabilities in the school and the way technology is used, the criteria are established as:

- Work the same curricular objectives with all students in the classroom, adapting the contents where necessary. Technology is a support that allows adapting information and contents.
- Incorporate support personnel in the classroom to avoid splitting up and leaving the classroom. In some of the experiences collected, the entry into the classroom of family support has been considered.
- Encourage collaborative and participatory work of students through the formation of small working groups. In this sense, digital whiteboards are a tool of special interest for this type of tasks.
- Establish heterogeneous working groups, where different typologies of students with different abilities are represented.
- Work on the acquisition of autonomy of the student by both the teacher and the families.
- Educate the student on the management and adaptation of the tools to their own needs.

[50] Downloadable at: https://www.ontsi.red.es/sites/ontsi/files/2020-03/BuenasPracticasInclusivasJovenesDiscapacidad.pdf.

- Know the operation and use of specific technical tools for different disabilities, such as FM systems (frequency modulated deaf people), Braille printer....
- Establish a continuous relationship with the technicians specialized in the disabilities to support and coordinate with each other in action guidelines, objectives to be addressed, use of specific technology, etc.
- Generate forums and common spaces among professionals for the sharing of successful experiences: methodologies, materials, materials, technology, etc. Involve families in the learning of new technologies.

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

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

Digitisation and digital transformation offer undeniable opportunities to promote the rights of people with disabilities in terms of access to and use of environments, processes and services. As we will point out below, different organisations representing people with disabilities highlight the advantages that all this can have for these people. In summary, we could say that the provision of educational, health and social services can benefit from digitisation and transformation.

For example, as previously stated, and in accordance with CERMI's considerations,[51] Artificial Intelligence (AI) offers opportunities to advance the rights of people with disabilities in relation to inclusion, accessibility and independent living. Specifically, AI may allow the design of actions focused on fields such as:

a) AI systems that facilitate access to information and communication itself in all media and formats;
b) AI systems that facilitate decision-making;
c) AI systems that facilitate accessibility in the environment and reasonable accommodation;
d) AI systems included in robots (androids) that facilitate personal assistance;
e) Automotive AI systems that facilitate universal design; and
f) AI systems that facilitate health care and habilitation and rehabilitation services.

According to CERMI, Artificial Intelligence must also avoid risks to the disabled population. Among the main risks, the following can be noted:

a) The use of AI systems to justify genetic selection of people without disabilities;
b) The use of AI systems to identify and eventually discriminate against people with disabilities;
c) The creation of AI systems based on standardization models that exclude or do not take into account the needs, opinion and diversity of people with disabilities;
d) The design of AI systems that are based on or fed by data that include stereotypes, biases and prejudices regarding disability;
e) The use of AI systems that do not allow the participation or decision-making of persons with disabilities, by themselves or through their representative organisations;
f) The creation of AI systems aimed at persons with disabilities that are not tested and validated for use by persons with disabilities themselves.

In early intervention, recent documents emphasize the importance of tele-intervention as a way to provide and maintain early care in situations of confinement.[52] Its

[51] Downloadable at: https://portal.mineco.gob.es/RecursosArticulo/mineco/ministerio/participacion_publica/audiencia/ficheros/Respuestas.zip.

[52] See: García-Sánchez,F.A., Pacheco, M. & Orzajada, N. (in press). Respuesta de la Atención Temprana española a la situación de confinamiento por COVID-19. *Siglo Cero - Revista Española sobre Discapacidad Intelectual*.

usefulness in providing information to families about possible support for their children is also highlighted.[53] Finally, tele-intervention is proposed as a way to develop family-centred practices beyond a rehabilitative model.[54]

In the document "technologies for people with intellectual disabilities",[55] edited by Plena Inclusión in easy reading for people with intellectual and developmental disabilities, the available technology is presented grouped by topics and highlights how the areas in which more technology is available are related to: Communication and autism spectrum disorder, employment, education, rights, reporting and participation. The following areas in which more technological aids would be necessary are also indicated: Participation, Culture, Leisure, Relationships with friends and partners, and Sports. Plena Inclusión calls for more technological developments focused on finding accessible technology designed for people with intellectual or developmental disabilities and their families; Getting personal assistance, i.e., a place to get information and hire assistants; Tools for finding one's way around the street; Technology to report with photos the lack of cognitive accessibility. Also, they should receive notices every day on the activities of the family member with intellectual or developmental disability.

There are also initiatives,[56] [57] [58] carried out by organisations representing people with disabilities registered as job seekers, co-financed by financial entities and focused on digital skills training.

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

According to CERMI,[59] the info-inclusion of people with disabilities must be guaranteed by addressing the accessibility and economic gaps and minimizing the technological biases that punish human and social diversity. For CERMI, digitisation will not be possible without ensuring the prior assumption of universal accessibility and design for all people of technological environments, which is the gateway for people with disabilities and the elderly. In addition to the accessibility gap, the economic gap must be addressed, with affirmative action measures and public interventions that make digital goods and services affordable for the general population. Another aspect highlighted by CERMI is the effective neutrality of artificial intelligence, algorithms and

[53] Lopez-Riobóo, E., Páramo. P. & Mampaso, J. (in press). Los profesionales de Atención Temprana frente al COVID-19: Autocompetencia percibida de los profesionales en la teleintervención.

[54] Herrán, I., de la Mano, P., Díaz, C. & Martínez, J. (in press). Atención Temprana en tiempos de COVID-19: Investigar la/s realidad/es de la teleintervención en las Prácticas Centradas en la Familia [*Early Childhood Intervention in times of covid-19: Exploring the reality(ies) of Tele-intervention in Family-Centred Practices (FCP)] Siglo Cero - Revista Española sobre Discapacidad Intelectual*.

[55] Downloadable at: https://www.plenainclusion.org/sites/default/files/tecnologia_para_personas_con_discapacidad_intelectual.pdf.

[56] See: https://www.tododisca.com/un-proyecto-de-digitalizacion-de-las-personas-con-discapacidad-intelectual/.

[57] See: https://enaccion.bankia.com/articulo/proyecto-e-health-empleo-salud-digitalizacion/

[58] See: http://www.rrhhdigital.com/secciones/rsc/146683/Electronic-IDentification-y-FUNDACI%C3%93N-JUAN-XXIII-fomentan-la-digitalizacion-de-personas-con-discapacidad-intelectual?target=_self.

[59] See: https://www.cermi.es/es/actualidad/noticias/la-carta-de-derechos-digitales-debe-garantizar-la-infoinclusi%C3%B3n-de-las-personas.

big data management, so that they respect human and social diversity, without biases or standardizations that hide differentiated social groups and minorities.

Organisations representing people with intellectual and developmental disabilities[60] agree that the 'digital divide' must be prevented from becoming a 'digital abyss'.

The report 'Technology and disability'[61] by the Adecco Group concludes that, in order to reduce the digital divide, it is essential to strengthen the digital skills of people with disabilities and train them in the use of these essential channels, in order to ensure that they can compete in today's market with real possibilities.

The document, an inclusive digital economy for people with disabilities,[62] 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, stresses the need for ensuring accessibility, promoting digital skills, and fostering digital employment. As the authors summarise (p. 36): 'This paper finds that the digital scenario brings unprecedented opportunities for the inclusion of people with disabilities, who still face major obstacles in this regard, into the labour market. 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'.

In summary, we could say that the provision of educational, health and social services can benefit from digitisation and transformation. However, in order to evaluate the degree to which these benefits are obtained, it is necessary to include the disability variable in a clear way in all actions, so that we have specific indicators that allow us to evaluate the effectiveness and efficiency of the different programmes and initiatives. All actions financed with national, European or other funds should clearly and unambiguously include the variable «disability» as a category of analysis. This is especially important at a time when other terms such as gender or vulnerable groups are receiving more support.

[60] See: https://www.tododisca.com/la-tecnologia-no-debe-ser-un-factor-de-exclusion-social-para-las-personas-con-discapacidad-intelectual/.

[61] Downloadable at: https://fundacionadecco.org/wp-content/uploads/2019/07/Descarga-informe-tecnologi%CC%81a-y-discapacidad-2020.pdf.

[62] Downloadable at: https://biblioteca.fundaciononce.es/publicacion/descarga/nojs/f9ed82f1adeda2046bcc718963afb649.

6 Conclusions and recommendations

6.1 Conclusions

Spain is fully committed to the digitalisation and digital transformation of the country. This change is considered an opportunity to improve the employability of the population, the high levels of early educational dropout and to improve the competitiveness of the company, especially small and medium-sized enterprises. In both in the National Strategy on Digitalisation (Digital Spain 2020-2025) and in the plans and strategies derived from it, the benefits for the general population are accentuated. The challenges to be addressed, such as the digital divide that characterizes the most vulnerable population and the digital divide associated with gender, are also raised.

Yet, digitalisation, from a rights perspective, is receiving recent attention in Spain. For example, regional governments in Spain are requesting that the European Strategy for the Rights of Persons with Disabilities 2021-2030[63] pay more attention to the digitisation needs of persons with disabilities and the needs of those living in rural areas.

Despite the above, in the documents presented by the different government agencies, there is a general lack of references or specifications regarding the situation of people with disabilities. Although allusion is made to concepts such as equality, inclusion and similar, disability has lost presence and is scarcely mentioned. The planned results indicators do not allow us to glimpse the presence of data disaggregated by disability, which prevents us from assessing and evaluating, where appropriate, the impact of the different strategies and plans on this population. At present, there is no evaluation of the 2014-2020 Action Plan of the Spanish Disability Strategy, which prevents us from knowing the degree to which the planned actions have been deployed and especially everything related to digital transformation.

6.2 Recommendations

The digitalisation of people with disabilities is a right included in the Charter of Digital Rights promoted by the government and agreed with different entities, including those representing groups with disabilities. As a right, it must be guaranteed throughout the life cycle. The Spanish Strategy on Disability 2021-2030 should include specific demands and needs related to digitalisation, in order to advance towards a social model of equal opportunities, enjoyment of their fundamental rights and freedoms, universal accessibility and full inclusion in society.

In the formative stage, in compulsory education and regardless of whether this is carried out in ordinary centres or in special education centres, the digital literacy of students must be guaranteed. Access to equipment and support adapted to the needs of each student must also be guaranteed.

In post-compulsory education, regardless of whether it depends on Education, Labour or Social Services agencies, quality training must be guaranteed, aligned with digitisation and be recognized and accredited.

[63] See: https://amica.es/es/la-consejera-de-accion-exterior-de-cantabria-presenta-18-enmiendas-para-que-la-estrategia-de-derechos-de-las-personas-con-discapacidad/.

In the adult stage and during the active age, it is essential to promote orientation and job search activities, as well as, where appropriate, professional updating and retraining related to current employment opportunities, such as jobs related to digitization. Career development must be guaranteed for all people, regardless of their disability. Continuous training and professional recognition through work experience are also key tools to achieve inclusive digitalisation.

Small and medium-sized enterprises, third sector companies, self-employment initiatives, sheltered jobs for people with disabilities or jobs reserved for people with disabilities must be aligned with these new job opportunities offered by digitization. Aid must be provided for the updating of companies in accordance with the demands of digitisation and for the adaptation of jobs to ensure universal accessibility of technologies.

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