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Digitalisation and digital transformation in Portugal

Implications for persons with disabilities

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Table of contents

1   Executive summary

Following the October 2019 elections through Decree-Law No. 169-B/2019[1] the government introduced the new organization of the executive, creating the Minister of State, Economy and Digital Transition, that is to work with other Ministers to address some of the challenges involved in the digital transition, including in what concerns issues related to persons with disabilities, although they are not specifically mentioned in the legislation.

The following year, the Portuguese government issued the Action Plan for Digital Transition, approved by the Council of Ministers on 30 March 2020. The document includes three pillars:

1)   training and digital inclusion;
2)   the digital transformation of businesses;
3)   the tate's digitalisation.

The pillars encompass actions that may be particularly relevant for people with disabilities,[2] such as improving digital literacy (of 1 million digitally excluded adults), updating knowledge and skills, promoting Internet use, and democratising Internet access. Moreover, the Plan includes measures adopted by the Government to improve open government by guaranteeing accessibility regulations and tools.

The government has also issued legislation transposing the EU Directive 2016/2012 of the European Parliament on the accessibility of public sector bodies' websites and mobile applications (Decree-Law No. 83/2018)[3] The Decree-Law recognises that digital accessibility for people with disabilities is a crucial concept for modern societies, and states that lack of digital accessibility is a form of discrimination, protected under the law.

The National Initiative for Digital Competence e.2030 (InCoDe.2030) reaffirms that digital competences are essential for the exercise of citizenship, also acting as a facilitator of employability in responding to the demands of the growing digitalisation of the labour market. The first axe of action, **Inclusion**, seeks to guarantee the entire population equal access to digital technologies that imply information, communication, and interaction. Thus, the programme "Creative Communities for Digital Inclusion",[4] is being implemented throughout the country to address factors such as socioeconomic inequalities, sex, age, and special needs, among others, that often prevent access and use of new technologies.

The Portuguese Government launched the National Strategy for digital inclusion and Literacy 2015-2020. Its areas of intervention were addressed to increase the number of internet users by 2020. The Strategy acknowledges that, within the so-called

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[1]   Decree-Law No. 169-B/2019 https://dre.pt/application/file/a/126733067.
[2]   The Plan mentions people with disabilities once, within the third pillar. It says that, in the context of digital transformation, access to services and promotion of communication between the state and citizens are fundamental elements of a democratic society. Therefore, providing everyone, but especially persons with disabilities, with the conditions to access opportunities created by digital technologies is a priority. In addition, it states that public websites and applications must be accessible to all.
[3]   Decree-Law No. 83/2018 https://dre.pt/application/conteudo/116734769.
[4]   Comunidades Criativas para a Inclusão Digital https://comunidadescriativas.pt/#enquadramento.

vulnerable groups, the percentage of people who do not access Internet is higher, and includes some measures targeted to people with disabilities, such as the creation of the National Network for Digital Inclusion and Literacy (TIC and Society Network, axe 2).

In November 2020, the Government issued the new National Strategy for Disability Inclusion 2021-2025[5] for public discussion. The final document has not yet been adopted but the draft version addressed the concept of digital accessibility in two strategic axes, **a) Promoting an inclusive environment**, and **b) Work, employment, and professional training.** Measures proposed include a wide range of actions, such as promoting the online availability of usability and accessibility rankings of Public Administration websites and portals and creating a national ICT/digital literacy training programme, specifically aimed to build capacity and develop skills of persons with disabilities in this area.

The concept of digital accessibility is also introduced on the National Institute for Rehabilitation website and the four principles that should guide digital accessibility are described there. Moreover, the National Institute for Rehabilitation and the Agency for the Public Management Modernization created the Accessibility and Usability Seal, which recognizes the effort made by public institutions in adapting their websites and apps for people with disabilities.

Information regarding significant challenges faced by persons with disabilities in relation to digitalisation and digital transformation is not common among non-governmental actors. However, the Portuguese Association of People with Disabilities (Associação Portuguesa de Deficiêntes-APD), analysed the situation of employment in 2003 and updated the document in 2012, highlighting some issues regarding digital accessibility and inclusion. These include, among others, the lack of accessibility in the working processes in the public administration sector, and the lack of awareness of employers regarding accessibility issues. Although this report had been developed in 2012, we believe these issues remain very relevant in the labour market today, both in the public and private sectors.

Good practices

The NAU project, as part of the national strategy InCoDe.2030, includes objectives of digital inclusion and literacy. The catalogue of available courses to be offered online include some courses that have digital accessibility as central topic, such as "Digital Contents accessibility", developed by the Agency for Public Management, IP, in collaboration with the National Institute for Rehabilitation.

Based on the Spanish model for digital inclusion and literacy adapted to the Portuguese context, the Digital Literacy for the Labour Market Programme is an initiative coordinated by the School of Education in the Polytechnic institute of Santarem. The course aims to support young people with intellectual and developmental difficulties to develop the necessary skills to perform a profession with sustainable employability. It also seeks to build eSkill's and soft skills that allow them to respond to societal challenges. In addition, the course trains potential employers

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[5]   National Strategy for Disability Inclusion 2021-2025
https://www.inr.pt/resultados-de-pesquisa/-/journal_content/56/11309/433133?p_p_auth=qiHLQiGL.

and mentors so that they establish a network and support young people in the workplace. it also aims to establish partnerships with entrepreneurial companies that focus on creating inclusive jobs and promoting interaction between the business community, teaching and research institutions.[6]

Furthermore, the National Institute for Rehabilitation and the Agency for the Public Management Modernization created the Accessibility and Usability Seal,[7] which recognizes the effort made by public institutions in adapting their websites and applications for people with disabilities. The seal aims to generate awareness on equal access to information and promote the use of public websites by citizens with disabilities.

Recommendations

1) Develop the digital skills of persons with disabilities.
2) Promote other types of recognition for non-governmental institutions, private sector and higher education institutes who use technologies to improve independent living and autonomy of persons with disabilities.
3) Ensure the possibility of electronic voting in all elections taking into account the principles of accessibility for persons with disabilities.
4) Support research on digital transformation and social inclusion of people with disabilities to produce knowledge and data that can be useful for designing new programmes addressed to reducing the digital divide among persons with disability.

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[6] Potes Barbas, M.; Matos, P.; and Lopes, N. Digital literacy for the labour market: inclusive training in higher education. Instituto Politécnico de Santarem, Escola Superior de Educação.
[7] https://www.inr.pt/selo-de-usabilidade-e-acessibilidade.

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

In 2015, the Portuguese Government launched the **National Strategy for Digital Inclusion and Literacy 2015-2020**.[8] Its areas of intervention were addressed to increase the number of internet users by 2020, including among people with disabilities. In its initial diagnosis, the Strategy highlights that in 2013, just 38 % of the population used the internet to interact with the Government recognizing that this indicates a very low level of digital literacy among the Portuguese population. It highlighted that within the groups at risk of vulnerability the percentage was even lower and contemplated specific measures towards people with disabilities. One of such measures was the National Network for digital inclusion and literacy (TIC and Society Network, axis 2). The Network's aim was to mobilise the population and the public institutions from different levels of Government to diminish the digital gap and generate new ways of interaction with the Government. The third axis of the Strategy also mentions that digital inclusion and literacy resources should follow accessibility standards, namely the W3C Accessibility Guidelines for Web Content (WCAG 2.0). It recognizes the importance of promoting resources that inform users of how they can take advantage of the accessibility features available today in the ICT universe, such as, screen readers that people with visual disabilities or people that do not know how to read can use. In order to fulfil the aims of this axis, the Strategy included the following activities:[9]

1) Creating a repository that aggregates awareness, and teaching/learning resources on digital inclusion and literacy.
2) Making available awareness/teaching/learning resources on digital inclusion and literacy.
3) Encouraging the creation and dissemination of digital inclusion and literacy actions, initiatives, and projects.
4) Promoting the dissemination and use of existing Support Lines for the use of online technologies.
5) Promoting the development of web content on accessibility features available in ICT.

In December 2019, following general elections in the country, Decree-Law No. 169-B/2019[10] introduced the organization of the new executive, creating the Minister of State, Economy and Digital Transition. Article 12th describes how some of the national strategic challenges will be addressed within the government and states that the Minister of State for Economy and Digital Transition's mission is:

"*to monitor the execution of inter-ministerial measures for the execution of the Government Programme relating to the digital transition, which articulates with the Minister of State and Finance, the Minister for Modernization of State and*

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[8]   National Strategy for digital inclusion and literacy 2015-2020, https://arquivo.pt/wayback/20181014091727/http://www.ticsociedade.pt/enild.
[9]   National Strategy for digital inclusion and literacy 2015-2020, Third Core Topic. https://arquivo.pt/wayback/20181014091727/http://www.ticsociedade.pt/enild.
[10] Decree-Law No. 169-B/2019 https://dre.pt/application/file/a/126733067.

Public Administration, the Minister for Science, Technology and Higher Education, the Minister for Education, the Minister for Labour, Solidarity and Social Security, the Minister for Infrastructure and Housing, and the Minister for Territorial Cohesion".

However, the Decree-Law does not mention any functions of the Minister of State, Economy and Digital Transition specifically related to disability. Nonetheless, in the Article that describes the functions of the Minister of Labour, Solidarity and Social Security, two paragraphs mention the coordination between these two Ministers in order to respond to the inclusion of people with disabilities: "*6 - The Minister of Labour, Solidarity and Social Security, together with the Minister of Education, exercises superintendence and supervision, in matters within its competence, over the National Agency for Qualification and Vocational Education, IP,*[11] *in coordination with the Minister of State , Economy and Digital Transition.*

7 - The Minister of Labour, Solidarity and Social Security exercises superintendence and supervision over the Institute of Employment and Professional Training, IP, in coordination with the Minister of State, Economy and Digital Transition".

In addition to these general guidelines, the Council of Ministers issued the Action Plan for Digital Transition[12] on 5 March (approved on 30 March 2020). The document points out the importance of implementing measures that ensure Portugal's position as an international reference for digital transition. The Plan evolves around three main pillars:

- Training and digital inclusion
- The digital transformation of businesses
- The State's digitalisation

The first pillar seeks to e*ncourage "access to education and lifelong learning (…) which favours the creation of conditions of generalized, easy, and free access to the Internet, as a tool for updating knowledge and skills*." The pillar identifies education as the sector that can best contribute to develop digital skills at different life stages. The document mentions that through implementing new ways to teach children and young people about how to use digital tools in primary and secondary education, inequalities will be reduced. It also mentions that digital employment can be boosted and promoted by extending digital training to professionals and unemployed people (requalification).

Within this first pillar, **training and digital inclusion**, three sub-areas are defined: (1) **Digital education**, which includes, among others, the educational strategies that schools must develop in order to respond to the challenges of new technologies; (2) **Requalification and professional training**, which is addressed to both employed, and unemployed people, as well as trainers and teachers. It focuses on training people to give them new tools and develop digital skills to diminish the risk of unemployment. One specific action of this sub-area is the "Portuguese alliance for digital employability (CPED)".[13] launched by the government on 22 January 2021. It seeks to respond to

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[11] Initials for Public Institute. The Portuguese agencies usually have these initials to explain their national scope.

[12] Action Plan for Digitalisation and Digital Transition, https://www.portugal.gov.pt/gc22/portugal-digital/plano-de-acao-para-a-transicao-digital-pdf.aspx.

[13] Portuguese Alliance for Digital Employability, https://www.incode2030.gov.pt/destaque/coligacao-portuguesa-para-empregabilidade-digital-cped-ja-comecou-preparar-resposta-crise-no-mercado.

the challenges of employment recovery in a post-pandemic context. This initiative aims to requalify unemployed persons having in mind the digital market opportunity that the pandemic revealed. The Portuguese Institute for Employment and Professional Training is part of this initiative, and it is possible that persons with disabilities registered there will be able to join in the activities, but they are not specifically mentioned, although they generally lack digital skills. Finally, the sub-area (3) **Inclusion and Digital Literacy**, which is aimed to create a programme for 1 million adults who are digitally excluded to teach them how to use technologies (how to create an email, access, and search information online, home-banking, consult public services online, and use social media). It also involves measures to reduce the costs of using the internet through the introduction of a social tariff. Persons with disabilities are not explicitly mentioned in any of these measures but since many persons with disabilities are likely to be digitally excluded it is possible that they will also benefit from them. The programme "Creative Communities for Digital Inclusion[14]" (included within this pillar), for example, seeks to combat inequalities of groups at risk of exclusion addressing socio-economic factors such as ethnicity, age, disability, gender, among others, through promoting digital literacy. The programme implemented eleven pilots in 2017. Nowadays, 14 projects are part of the programme working in collaboration with local governments, higher-education institutions, and non-governmental organizations. The programme has been recognised as the flagship project of the pillar since it promotes internet access points for all the citizens, but no evaluation or results of it (other than this) are public.

Only within the third pillar, **Digitalisation of the State**, the text mentions persons with disabilities when it states that

> 'the evolution towards an increasingly inclusive and democratic digital society, endowed with public services that serve citizens better and better (…) must bet on communicational accessibility, providing everyone, particularly people with disabilities, conditions to access opportunities that new digital technologies create. This evolution will always have to meet the accessibility requirements in force for public bodies' websites and mobile applications'.

The programmes involved in this pillar aim to guarantee access to information and services provided by the State to all citizens. It includes eliminating barriers to access services, creating procedures that eliminate bureaucracy, and optimizing other communication channels between citizens and public administration. The plan defines three sub-pillars that can illustrate better the actions that will be undertaken to achieve complete digitalisation of the State:

1) digital public services, in which the government includes actions towards digitalizing the 25 services more used by citizens, translating the websites that citizens can consult abroad, and providing guidance for private organizations and public institutions to improve for digital usability and accessibility;
2) agile and open central administration, that seeks to facilitate contracts for ITC services and promote teleworking;
3) connected and open regional and local administration, that addresses actions of the strategy "Smart cities: from smart cities to smart nation" and the initiative for compiling proprieties data across the country, BUPi.

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[14] Comunidades criativas para a inclusão digital https://comunidadescriativas.pt/.

The Plan further includes indicators for measuring the progress achieved in terms of technologies use per capita, but it does not have any indicator specifically related to disability. The Plan delegates monitoring activities on the Observatory of digital skills,[15] coordinated by the Directorate-General for Science and Education Statistics.

In addition to this Plan, Decree-Law No. 83/2018[16] transposes to domestic law the EU Directive 2016/2012 from the European Parliament on accessibility of public sector bodies' websites and mobile applications. It recognises that digital accessibility for people with disabilities is a crucial concept for modern societies, and that by guaranteeing them access to information and services, the State is promoting inclusion and equality. The legislation applies to all the public sector, non-governmental organizations whose service-users are persons with disabilities, and higher education institutions, as well as pre-school and educational establishments. It includes procedures to claim equal access in cases where a person with disabilities faces difficulties using a website or an app that a person without disabilities does not experience, stating that such situation will be considered as a discriminatory practice.

In 2019, the Government presented the Digital Government Factsheet,[17] which compiles actions taken by the Portuguese Government to implement digital transformation. The factsheet focuses mainly on the activities and measures in place to ensure a digital and open government, and it points out existing measures for persons with disabilities, such as:

(1) the Solidarity Network, which is a strategy that consists of 280 internet access points in NGOs for and of people with disabilities, older people, and other groups at risk of exclusion;
(2) an online simulator for calculating the amount of the pension in case of disability, allowing people to know in advance an estimate of their pension in case of early retirement;
(3) an online catalogue of the support devices and products for people with disabilities that "*provides information on the National Agents and Support Devices existing in the Portuguese market, based on the international classification ISO 9999: 2007.*";
(4) finally, the document mentions the programme "Password in time", a service for citizens to access the Social Security online system, and through which persons with disabilities can apply to the Social Inclusion Benefit (PSI).

Moreover, on the website of the National Initiative for Digital Competence e.2030[18] (InCoDe.2030), it is mentioned that digital skills are essential for the exercise of citizenship, also acting as a boost for employability in responding to the demands of the growing digitalisation of the labour market:

> 'a more qualified active population gives way to new forms of work, new professions, to markets and innovative products and, therefore, more robust and competitive economic activities. **Digital skills are also of the utmost**

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[15] Observatory of Digital Skills http://observatorio.incode2030.gov.pt/.
[16] Decree-Law No. 83/2018 https://dre.pt/application/conteudo/116734769.
[17] Digital Government Factsheet https://joinup.ec.europa.eu/sites/default/files/inline-files/Digital_Government_Factsheets_Portugal_2019_vFINAL.pdf.
[18] National Initiative for Digital Competence e.2030 https://www.incode2030.gov.pt/incode2030.

> **importance for developing critical and multifaceted thinking and promoting inclusion, autonomy, well-being, and social justice'** (our emphasis)**.**

For people with disabilities, developing digital skills and promoting accessibility and usability can reduce physical barriers experienced while interacting with the community, learning, working, and shopping, among other activities. However, increasing the use of technology in society requires efforts for enhancing the digital skills among vulnerable groups, such as persons with disabilities, to prevent new exclusion factors.

Moreover, during April and July 2020, when the State declared the firsts emergency states due to the pandemic, InCoDe.2030 created the support hotline "We are all digital.[19]" It aimed to assist people with fewer digital skills in using communication apps, such as Facebook, WhatsApp, and Skype, among others, that could help during the isolation. The government broadcasted the campaign on the radio, TV, and national websites. In general, the initiative was addressed towards people at risk of being info-excluded and although it did not mention persons with disabilities specifically, it is highly likely that some people with disabilities benefitted from it. During the time of its operation, the hotline answered 900 calls. Around 160 volunteers from six universities were involved in the initiative. The government is considering adopting this initiative permanently to support the digital transition plan, especially in digital literacy.

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

In 2015, the Minister of Education and Science issued the Order No. 5291/2015,[20] through which the national network of Resource Centres of Information and Communication Technologies for Special Education (CRTIC) was created. The network is constituted by 25 centres and aims to provide support technologies to children that need them to access the curriculum. The Network also collaborates, and trains teachers and other members from the community on the use of the support technologies.

In addition, the Directorate-General for Education develops an initiative for producing and broadcasting webinars[21] for the educative community. The online conferences aimed to present innovative experiences and proposals for educators. Some discussions combine inclusive education and Information and Communication Technologies and address how to integrate the last within the education process.

In 2017, the Institute of Employment and Professional Training and the Syndicate for the Office, Commerce, Services and New Technologies Sector, adopted the new protocol for the Vocational Training Centre for the Office, Commerce, Services and New Technologies Sector (CITEFORMA). The strategy was created in 1987. Since then, it has trained people on new communication and information technologies (internet, software, Microsoft tools, animation, rendering, programming), labour regulation, management, and administration, among others, which can boost their performance in different areas. The platform offers professional and technical training

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[19] Somos todos digitais https://somostodosdigitais.pt/.
[20] https://dre.pt/application/conteudo/67271020.
[21] https://webinars.dge.mec.pt/webinars/cat/tecnologias-digitais.

online. In 2018, the platform introduced a seminar on Accessibility and Inclusion Technologies,[22] aiming

> 'to raise participants' awareness of the use of IT in supporting learners with special needs, framing a set of techniques and technologies that can be used in school and in the classroom'.

The seminar included master lectures on accessibility and inclusion tools, web accessibility, and technologies and resources for learning and inclusion. Furthermore, in June 2020, the Institute of Employment and Professional Training published a book[23] in which the experiences and topics of this seminar were included, among others related to the cycle of conferences dedicated to innovation in technologies in Education/Training. The handbook compiles four areas:

1) being a student in the 21st Century;
2) a "new" school for all (which includes using ICT for accessibility and inclusion, and multimodal technologies);
3) smart schools; and
4) learning technologies and strategies.

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[22] https://www.citeforma.pt/seminarios/tecnologias-no-ensino-formacao-acessibilidade-e-inclusao.

[23] Book New Information Technologies for training and education. Minutes of the cycle of conferences on training and education technologies https://iconline.ipleiria.pt/bitstream/10400.8/5711/1/AsTICeasTecnologiasdeApoionaeducaodepessoascomnecessidadeseducativasespeciais.pdf.

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

In November 2020, the Government issued the new National Strategy for Disability Inclusion 2021-2025[24] for public discussion to receive feedback from the civil society until 24 December 2020. The document, which is not yet available in its final version, addressed the topic of digital accessibility in two strategic areas:

a)   promoting an inclusive environment, and
b)   work, employment, and professional training.

In the first one, measures for improving access to information and communication are proposed. Specifically, the plan includes the following measures:

1)   elaborating a multi-annual plan that guarantees that the contents in public administration websites are displayed in an accessible format allowing access to information by persons with disabilities on an equal basis with others;
2)   submitting a Draft Law to define the minimum requirements of accessible content to be made available by television operators (Sing Language, audio description, subtitling, and audio description);
3)   creating a Technical Quality Standard to define the accessibility level of communication and dissemination instruments developed by public sector organizations;
4)   introducing in the Municipal Civil Protection Plans specific procedures for identification, information, and rescue of people with disabilities;
5)   creating, within each Ministry, a team responsible for making accessible information and documents that concern the relationship between services and citizens;
6)   promoting through training and support the recognition of websites with the Accessibility and Usability Seal;
7)   online availability of usability and accessibility rankings for Public Administration websites and portals;
8)   creating a website with guidelines, good practices, testimonies, and examples of information and communication, accessible in the fields of culture, sports, tourism, leisure, etc.;
9)   creating a Portuguese Sign Language interpretation service that can be used by all central government services; and
10)   consolidating a Portuguese Sign Language interpretation service that can be used in the National Health Service.

Within the "**Work, employment and professional training**" strategic area, the measure proposes the creation of a National ICT Training Programme / specific digital literacy for capacity building and/or skills development for people with disabilities. So far only a few training initiatives of this kind exist throughout the country, such as the pioneer programme offered by the Superior School of Education of Santarem on

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[24]   National Strategy for Disability Inclusion 2021-2025
https://www.inr.pt/documents/11309/284924/ENIPD.pdf/5bce7969-0918-4013-b95d-2a5a35a870c5.

Digital Skills for the Labour Market, targeted to persons with intellectual disabilities, which opened in 2019 and lasted for 2 years.[25]

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

The concept of digital accessibility is featured on the National Institute for Rehabilitation[26] website. The webpage stresses that, besides questions that concern all the population, such as access to information and communication tools regarding training and labour market skills, specific issues must be considered for persons with disabilities to avoid creating them further social participation restrictions. The webpage describes the four principles that should guide digital accessibility.

Three examples:

1. The National Institute for Rehabilitation and the Agency for the Public Management Modernization created the Accessibility and Usability Seal,[27] which recognizes the effort made by public institutions in adapting their websites and applications for people with disabilities. The seal aims to generate awareness on equal access to information and promote the use of public websites by citizens.
2. On December 2020, the National Institute for Rehabilitation, in collaboration with the SIMPLEX+ Programme, published the document *Practical guide on the Rights of people with disabilities in Portugal.*[28] The document compiles helpful information for people with disabilities regarding the programmes, actions, and services available by the Portuguese Government. The paper includes a chapter dedicated to accessibility, in which initiatives such as the standards published regarding website accessibility, or the use of sign language and closed captioning on TV programmes are described. Besides, the document gives information about the communication devices that people with disabilities can use and of the commercial arrangements that the phone companies should fulfil to provide a service that can be compared to another that a person without disabilities uses.
3. In 2019, the government tested the electronic vote[29] during the European Elections. Through a pilot project implemented in Evora, the Minister of Internal Affairs set up 50 electronic voting booths, in addition to the 186 conventional voting booths. The project sought to modernize the electoral system, to promote participation by facilitating the process for citizens, and to diminish voting abstention. Unfortunately, there is no publicly available evaluation of this pilot project.

The National Health Service launched in 2017 the strategy SNS24,[30] a hotline to assist citizens in providing information and services that facilitate access, ensure equity, and simplify the use of the Health National Service. During the pandemic, the hotline opened a channel for people with hearing disabilities, through which 800 video calls were received. The SNS24 was presented as an example for other European countries

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[25] https://www.incode2030.gov.pt/destaque/literacia-digital-contribui-para-educacao-inclusiva.
[26] https://www.inr.pt/acessibilidade-digital.
[27] https://www.inr.pt/selo-de-usabilidade-e-acessibilidade.
[28] https://www.inr.pt/guia_pratico.
[29] https://eportugal.gov.pt/pt/noticias/voto-eletronico-presencial-vai-ser-testado-no-distrito-de-evora-nas-eleicoes-europeias.
[30] SNS24 platform https://www.sns24.gov.pt/.

in the Euro Healthnet,[31] where the service was explained as an alternative to promote access to health. The services available through the platform are: Accessing the electronic health register and managing information and personal health reports; Accessing payment receipts; Consulting the waiting time in emergency services at hospitals; Online health consultations; Scheduling medical appointments; among other administrative activities. However, other than the hotline for Deaf people, it is unknown the extent to which persons with disabilities are benefitting from these services.

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[31] Addressing digital health literacy is essential to avoid widening health inequalities https://eurohealthnet.eu/media/news-releases/addressing-digital-health-literacy-essential-avoid-widening-health-inequalities.

4   Promoting disability inclusion through funding, education, and training

4.1   How funding promotes disability-inclusive digitalisation and digital transformation

Although no specific programmes or initiatives were identified establishing inclusion and accessibility as a requirement for funding, in a recent Conference on Digital Teaching (12-13 March 2021) the Secretary of State for the Inclusion of Persons with Disabilities stated[32] that the digital transition process

> 'will be a basic condition for mobilizing any funds, be it at the level of the Recovery and Resilience Plan, or the new multiannual financial framework of the European Union'.

In this context, she added, inclusion

> 'is a prerequisite for all the projects that will be presented in terms of funds, and this is a huge achievement for people with disabilities'.

On the other hand, the Government recognises that for promoting inclusion of people with disabilities, websites and apps must meet accessibility requirements and protocols, as it is stressed in the Digitalisation and Digital Transition Plan. The Minister of State Modernisation and Public Administration, Alexandra Leitão, mentioned during the Accessible Europe-. ITCs 4 All forum,[33] that:

> 'the digital transition is not only a lever for recovery but also a cornerstone of the European Pillar of Social Rights, with the assumption that this digital transformation is fair, inclusive and at the service of citizens'.

She added that the Government ought to lead by example, namely concerning public services.

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

As part of the Action Plan for Digital Transition, the Government introduced the project NAU.[34] NAU is an online project for supporting training and education for large audiences, coordinated by the Science and Technology Foundation (FTC). It allows recognised institutions to create courses available and accessible to all, using the platform MOOC (Massive Open Online Course). The NAU project is part of the national strategy InCoDe.2030, through which the objectives of digital inclusion and literacy are addressed. Some of the courses available in the catalogue include digital accessibility as central topic, such as "Digital Contents accessibility", developed by the Agency for Public Management, IP, in collaboration with the National Institute for Rehabilitation. Its main objective is to present an introduction to good practices and accessibility and digital usability requirements, as well as the tools available to ensure their application

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[32]   https://www.portugal.gov.pt/pt/gc22/comunicacao/noticia?i=inovacoes-tecnologicas-tem-de-ser-inclusivas-para-ninguem-ficar-para-tras.

[33]   https://www.portugal.gov.pt/pt/gc22/comunicacao/noticia?i=tecnologia-e-um-instrumento-de-apoio-politicas-publicas.

[34]   https://nau.edu.pt.

on public administration websites. It is connected to the Usability and Accessibility Seal promoted by these two institutions. In addition, another course available in the platform, "Web accessibility, where to start", designed by the Polytechnic Institute of Leiria, focuses on creating accessible material for websites, and is addressed to content developers.

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

The Action Plan for the Schools' Digital Development[35] is a complementary strategy derived from the Action Plan for Digital Transition. It aims to train professors and teachers as key actors in the digital transition. The Plan is addressed to teachers from public schools by introducing Information and Communication Technologies in their routine and their professional and pedagogical practices, using as a reference the European Framework for the Digital Competences for Educators,[36] in which accessibility and inclusion are key when it comes to digital transformation.

In 2018, the University of Aveiro, through the Research Centre for Didactics and Technology in the Training of Trainers, published the translation into Portuguese of the European Framework for the Digital Competence of Educators: DigCompEdu,[37] made by the Joint Research Centre (JRC) from the European Commission. The document seeks to strengthen local efforts towards digital transformation by unifying concepts and narratives among European Union members. It includes a chapter dedicated to Accessibility and Inclusion, which mentions how educators can use technologies as an inclusive tool to promote social inclusion and to address special education needs through the digital transformation. The document's translation is a tool for teachers and educators, and it contributes to the national efforts to implement the Action Plan for School's Digital Development.

The document points out six areas in which teachers and trainers can implement digital technologies. The first area is related to their professional practice. It invites teachers to use technologies and digital resources to improve professional collaborations, institutional communication, develop reflective practices about the use of the technologies within the schools, and get involved in continuous education processes that can help them improve their digital skills. The second area is focused on digital resources. It advises teachers to use and select digital resources according to the contents, the learning environment, and the students' needs. It also promotes the development of new digital resources and the modification of existing ones to respond to their purpose. Finally, it points out security and dissemination issues, including copyright, personal data information, among others. The third area includes the learning-teaching process. It advises teachers to prepare and select the digital resources and implement methodologies accordingly. It also highlights the importance of guiding the use of technologies and digital resources in the classroom and promoting collaborative learning among students to promote better communication among them. This area also supports self-regulated learning, "allowing them to plan, monitor and reflect on their learning, provide evidence of progress, share ideas, and find creative

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[35] Action Plan for the Schools' Digital Development https://www.dge.mec.pt/pcdd/pcdd.html.
[36] https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/european-framework-digital-competence-educators-digcompedu.
[37] European Framework of Digital Competence of Educators-Portuguese version https://area.dge.mec.pt/download/DigCompEdu_2018.pdf.

solutions". The fourth area regarding evaluation suggests teachers using technologies to implement new assessment strategies, monitor learning processes, and give feedback through digital resources. The fifth area is dedicated to the learners' training on technology use. It includes accessibility and inclusion concerns, differentiation and personalization of technologies according to the learners' needs, and finally, full involvement of students in the learning process by promoting creativity and solution-making techniques. This area is connected to the sixth one, which seeks to improve and develop students' digital skills in the following dimensions: digital literacy, digital communication and collaborations, digital content development, problem-solving through digital use, and responsible technologies use.

In February 2021, the Catholic University, in collaboration with Altice Foundation, launched an Advanced Training Programme on Support Technologies for Inclusion.[38] The programme is addressed to special education and rehabilitation professionals, especially those who integrate the ICT centres. The description of the programme highlights that even when schools and rehabilitation centres count on inclusion resources, professionals are not fully skilled in their uses and potentialities.

> *'It is, therefore, essential to train teachers and technicians with the necessary knowledge about the assistive technologies available in the market, thus facilitating the entire process of inclusion of their students, with particular emphasis in the areas of interpersonal communication and social integration'.*

The programme prioritises the areas of alternative and augmentative communication, and support technologies.

In addition, the book published by the Institute of Employment and Professional Training, mentioned in section 2.2, includes a chapter[39] about supporting learning technologies and strategies. The chapter presents a table in which technologies are divided according to the types of disabilities. However, there is no more information on the implementation or use of these technologies.

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

Based on the Training Programme for Labour Inclusion of Young Persons with Disabilities, from Universidad Autónoma de Madrid, the Superior School of Education at the Polytechnic Institute of Santarem launched the Digital Literacy Programme for the Labour Market[40] in 2018. It seeks to train people with intellectual disabilities (60 % or higher incapacity level) for their inclusion in the labour market. This 2-year no-degree-awarder programme is the first one of its nature to be developed by a higher education institution in Portugal and was developed in partnership with 40 companies. In its first edition, 18 persons applied for 11 places available. A second edition is planned, but no information is yet available about it on the Institute's website.

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[38] Advanced Training Programme on Support Technologies for Inclusion https://ics.lisboa.ucp.pt/pos-graduacoes-e-formacao-avancada/programas-formacao-avancada/formacao-avancada-em-tecnologias-de-apoio-para-inclusao.

[39] https://iconline.ipleiria.pt/bitstream/10400.8/5711/1/.AsTICeasTecnologiasdeApoionaeducaodepessoascomnecessidadeseducativasespeciais.pdf.

[40] Digital literacy for the labour market Programme http://w3.ese.ipsantarem.pt/literaciadigital/.

In addition to this, in several vocational training centres for persons with disabilities training programmes are provided in areas such as Administrative/Clerical Work, which offer basic knowledge about information and communication technologies (including how to work with the Office software).

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

In 2019, the article "The elderly and the digital inclusion: a brief reference to the initiatives of European Union and Portugal"[41] highlighted the challenges faced by the governments in Europe to address the digital divide. Specifically, the research pointed out some concerns about the implementation of the strategy InCoDe.2030.

> 'The main concern is to ensure that contexts of equity and social cohesion can be guaranteed, to promote balanced and sustainable development and to properly prepare the population for the future that will be eminently digital'.[42]

The author pointed out the three areas in which InCoDe.2030 faced major challenges. These are:

- Citizenship: generalizing digital access, use and literacy for the full exercise of citizenship and promoting inclusion in an increasingly dematerialized society where much social interaction occurs on the Internet and is increasingly mediated by electronic devices
- Employment: Stimulating employability, training and expertise in digital technologies and applications to meet growing market demand and to promote job skills and a higher value-added economy
- Knowledge: Ensuring strong participation in international Research and Development networks and knowledge production in digital areas. In turn, this national initiative is divided into five axes distributed by several ministries of the Portuguese government: Inclusion; Education; Qualification; Specialization; and Research.'[43]

The first two areas are also relevant for people with disabilities. In addition, the research pointed out the relevance of implementing universal design solutions: since universal design principles seek to be inclusive for all, respecting them and introducing adaptability and flexibility as cornerstones for future developments will ensure that any person can benefit from the equipment:

> 'What is behind the concept of universal design is that it minimizes the effort of individuals to adapt to equipment so as to maximize their natural inclusion within their daily routine'.[44]

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[41] Gil, H. (2019) The elderly and the digital divide: a brief reference to the initiatives of the European Union and Portugal. *MOJ Gerontology & Geriatrics.* 4(6):213–221, https://repositorio.ipcb.pt/bitstream/10400.11/6868/1/Artigo_Revista_MOJGG-04-00209_2019.pdf.
[42] Gil, 2019, p. 117.
[43] Gil, 2019, p. 117.
[44] Gil. 2019, pp.218-219.

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

The discussion of the challenges faced by persons with disabilities in relation to digitalisation and digital transformation is not common among non-governmental actors, who tend to be more concerned about the material circumstances of the daily life of persons with disabilities. However, the Portuguese Association of People with Disabilities (Associação Portuguesa de Deficiêntes-APD), analysed the situation of employment in 2003 and updated the document in 2012,[45] highlighting some issues regarding digital accessibility and inclusion. The document points out that, even when working in the public administration sector, people with disabilities often do not have access to the technical and support devices that are necessary for the performance of their functions nor is there a concern with making information accessible for them. For instance, the provision of documents in Braille or in accessible electronic version for people with visual impairments is not yet a widespread practice among the employers. Although this is a 2012 paper, we believe it still very well characterises the ongoing situation in most of the private companies and public administrations. There is generally a lack of awareness about the specific needs of persons with disabilities and ensuring accessibility in the workplace, rather than an obligation of the employer, is still viewed as a burden that companies try to avoid as much as possible, including by not employing persons with disabilities.

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[45] Employment and people with disabilities, https://www.apd.org.pt/dmdocuments/Emprego_APD.pdf.

6 Conclusions and recommendations

6.1 Conclusions

Portugal has included digital transformation within its political agenda since at least 2015 by designing a transversal strategy that involved all the government areas and institutions. Some of them are focused on modernising communications and markets. Since the government sees an economic opportunity in implementing these actions, programmes are also aimed at improving the social inclusion of vulnerable groups.

However, actions more specifically focused on persons with disabilities are very recent and mainly concentrated on online governance. In other words, the Government is particularly focused on improving the usability and accessibility of public sector websites, to guarantee access to services and benefits from the State and facilitate communication between the citizenry and the Government. In this sense, the incentives for public institutions, education institutions and non-governmental organizations whose service-users are persons with disabilities are fundamental in terms of websites' accessibility and usability. Some specific actions introduced during and because of the pandemic demonstrated that the implementation of certain measures that were on hold could be undertaken: for example, a dedicated line for deaf and hard-of-hearing persons through which information related to the healthcare system could be obtained. It was part of the national health system hotline (SNS24), which opened video calls to promote access to health care. Another action that could help persons at risk of (digital) exclusion is the hotline aimed at assisting persons with low digital skills to use communication apps, such as Facebook, WhatsApp, and Skype, among others. The Government has considered maintaining it as a service, but has not approved it yet.

Opportunities to train persons with disabilities to use and take benefit from digital technologies exist but are less common. In the general Plan of digitalisation and digital transformation, the Government included a measure on Digital Literacy that aims to create a programme for digitally excluded adults aiming to teach them how to use these technologies (to create an email, access, and search information online, do home-banking, consult public services online, and use social media). Persons with disabilities are not explicitly mentioned as one of the target groups of this strategy but we anticipate they will be. If they are not, efforts to improve accessibility of websites will be unfruitful. It is also important to increase the digital skills of persons with disabilities to improve their chances of labour market integration.

The training programme coordinated by the Polytechnic of Santarem is an example of how digital skills can address the inclusion of people with disabilities. It counts on partners who provide internships, but its scope is narrow: the first edition of the programme had only eleven places available, and the second edition starting date has not yet been announced. On the other hand, the government has developed some initiatives on digital literacy that can boost social communication skills. Still, those actions are not enough for guaranteeing the labour market inclusion and then independent living of persons with disabilities. As far as we can see, efforts are still focused on the use of technology rather than on education, work, independent living, etc.

Furthermore, indicators used to monitor the improvement of digital skills are not disaggregated, so it is challenging to see the impact of the measures on persons with disabilities' lives.

6.2 Recommendations

As mentioned, in point 5.1, some considerations regarding Digital access and digital transformation need to be considered by the National Plan for Digital Transition:

- Social inclusion cannot be limited to improve access to services and information online, by rendering websites and other information more accessible. While this is important, there should also be more opportunities to develop the digital skills of persons with disabilities.
- Apart from the Usability and Accessibility Seal recognition, the National Institute for Rehabilitation could promote other types of recognition for non-governmental institutions, private sector and higher education institutes focused on how technologies improve independent living and autonomy. (For instance, specific programmes/projects/strategies that support innovation of software and tools that facilitate the interaction with technological devices; setting up local and regional centres of technological support and digital literacy for people with disabilities; a Seal or other Prize to award strategies developed by companies in promoting accessible websites and information; among others)
- Ensuring the possibility of electronic voting in all elections. There is no evaluation available about the pilot project that was undertaken during the 2019 elections. This would be important to improve the system that was implemented then and ensure its implementation in all coming electoral acts. It also implies that information on governmental plans and proposals need to be accessible for all. The dissemination of the electoral process must consider people with disabilities as citizens who can vote and elect. Candidates' websites and Political Parties should guarantee digital accessibility, and the State should penalise those that do not make information accessible.
- Finally, we recommend supporting research on digital transformation and social inclusion of people with disabilities to produce knowledge and data that can be useful for designing new programmes and technologies addressed to reducing the digital divide, having into consideration aspects such as rurality, age, ethnicity, gender and disability and benefit persons with disabilities, in particular.