



# Digitalisation and digital transformation in Cyprus

Implications for persons with disabilities

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# **Digitalisation and digital transformation in Cyprus**

Implications for persons with disabilities

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## **1 Executive summary**

The main document that includes almost all priorities and summarises strategies and measures for digitalisation and digital transformation in Cyprus is the National Digital Strategy. The strategies include six main objectives covering all sectors and fields for e-Government, public administration, education and learning, digital literacy, broadband and networks, digital entrepreneurship and ICT for the environment through green solutions and teleworking. A communication plan is also suggested for raising awareness and promoting the objectives of the strategy. There are a few measures among the actions of the generic strategy that correspond to sector-specific strategies with a disability perspective. These include ambient and assisted living (AAL), digital literacy with the use of assistive technology, cost benefits and internet access for persons with disabilities, and the accessibility of public websites.

The National Disability Strategy and the three National Disability Action Plans designed to implement the strategy include some objectives and actions that are relevant to digitalisation and digital transformation. However, most of these actions are existing schemes and projects, which do not address or challenge the potential of new and emerging technologies. For example, the plans include provisions for independent and supported living that are unconnected to AAL, and the proposed new network for social inclusion services and unified statistical data is not linked to e-Health strategies. Rather, most of the disability-related digitalisation measures are limited to access to the internet and information, and they do not extend to smart technologies or to the digital capacity empowerment of both users with disabilities and professionals.

Since there does not yet seem to be any remarkable progress in digital transformation developments in Cyprus, and as the implementation of emerging and innovative technologies is still in the very early stages, there is little evidence of the experiences of persons with disabilities. Recent experience comes mostly from the sudden and forced shift to digital, online and distance solutions due to the COVID-19 pandemic, and this has not been very positive. For example, in education, children with disabilities were further marginalised and stigmatised, as digital-enhanced learning and distance education during lockdown periods failed to include all students. Lack of access to appropriate technology, inaccessible digital content and learning materials and a lack of digital competency on the part of educators and students, especially in relation to inclusive education, resulted in practices of exclusion and sometimes in no education being provided at all. In other sectors, digitalisation of disability-relevant services and schemes has not yet been implemented, and hence there is no evidence regarding their use (see, for example, the Ariadni gateway portal). Other recently digitally transformed systems, including the General Healthcare System (GHS) are mostly used by family members and carers on behalf the person with disabilities, as the systems are still in their very early stages. In general, by examining the existing situation, it seems that in relation to digital inclusion and accessibility, there is lack of specificity that involves the risk to omit appropriate and effective technological solutions and responses in relation to digital and assistive technologies for the effective digital inclusion of persons with disabilities.

### **Examples of good practices**

Three examples of good practices related to strategies, policies and actions are: (a) the Web Accessibility and Mobile Devices Application for the Public Sector

Organisations Law of 2019, and the intention of the Department of Information Systems to develop a monitoring mechanism in evaluating and certifying the accessibility of public websites; Implementation of the Law and re-design and development of the public sector websites is at its early stages and there are not yet any examples for the evaluation of the initiative. In addition, the introduction of the Law was clearly an initiative respond to the requirements of the EU Web accessibility directive and at the moment it does not seem to go beyond that. An example of this conclusion is the fact that the provisions of the Law do not extent to content and material available e.g. in educational websites of public schools but only to the information landing pages. Moreover, the Law does not provide for the accessibility of larger private organisations and other agencies websites, outside the public sector; (b) funding for assistive technology, both from the Ministry of Education, Culture, Youth and Sports (MECYS) and under schemes from the Department for Social Inclusion of Persons with Disabilities, through which children and adults can obtain personal assistive technology for both education and other daily activities and participation; (c) digitalisation efforts by museums and cultural heritage sites and libraries. Although it is still in its early stages, the digitalisation of cultural material seems to take accessibility and the digital inclusion of persons with disabilities into consideration.

## **Recommendations**

Disability-inclusive digitalisation and digital transformation policies and actions in Cyprus are fragmented and mostly limited to digital accessibility. Recommendations include the development and implementation of more coherent systems for the provision of digital and assistive technology and services, across sectors and for all disability groups, including education and support on a regular and consistent basis for developing digital competence among persons with disabilities and professionals. In addition, the development of more unified, accessible and usable digital information and digital services systems is important in order to avoid duplication of processes and to ensure increased functionality and a more appropriate operational and learning load for persons with disabilities. Accessibility of websites and applications should extend to the accessibility of processes and learning content (especially for education) and not only to informative material. Last but not least, persons with disabilities should be involved in all stages of the development of digitalisation and digital transformation strategies, policies and actions.

## **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 Cyprus, the newly established Deputy Ministry of Research, Innovation and Digital Policy (DMRID, launched in February 2020)<sup>1</sup> is the competent agency responsible for the development of a national policy and strategy, and for the coordination of official activities linked to digitalisation and digital transformation. The Deputy Ministry comprises four departments/units: the Department of Information Technology Services (DITS), the Department of Electronic Communications (DEC), the Directorate for Research and Innovation (R&I) and the Directorate of Digital Policy and Technology. DEC is the department responsible for digital transformation, under which the National Digital Strategy<sup>2</sup> has been developed. Objectives, measures and actions under the Digital Strategy include activities and projects that are either under development, in progress or planned, and they are connected to projects and content-specific strategies of other departments of the Deputy Ministry, in collaboration with departments of other Ministries. In most cases, these are identified as priorities, and are either co-funded by the EU or are or will be included in the Government budget. The Deputy Ministry of Research, Innovation and Digital Policy seems to have a general overview of all digitalisation and digital transformation activities around the country.

The Digital Strategy of Cyprus includes six main objectives, each of which is promoted through different measures and instruments that are outlined in general here: (1) connect Cyprus by promoting a stable regulatory framework and by applying measures for lower-cost and better-quality network connections; (2) modernise the public administration and provide public electronic services by increasing network and information security and developing infrastructure for digital and paperless government services, e-Health, local authority operations, digital signatures and ID, and digital cultural and tourism activities; (3) include everyone (including vulnerable groups, implying but not specifically referring to disability) in digital Cyprus by promoting digital literacy and providing network connections in public places; (4) provide education and learning by enhancing schools infrastructure and equipment; (5) facilitate digital entrepreneurship by promoting financial support programmes and incentives for e-commerce among businesses; (6) support ICT for the environment by developing strategies for the use of intelligent transport systems, water management and teleworking. A comprehensive communication plan aims to promote and raise awareness of the Digital Strategy.

Although the objectives of the strategy include several issues that could be relevant to and are particularly linked to disability, this is not clearly stated in the strategy. For example, objectives 1, 2, 3 and 4 hold the most potential benefit for persons with disabilities, as they recognise the need for barrier-free internet access and connectivity

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<sup>1</sup> Deputy Ministry of Research, Innovation and Digital Policy: see [https://www.dmid.gov.cy/dmid/research.nsf/home\\_en/home\\_en?opendocument](https://www.dmid.gov.cy/dmid/research.nsf/home_en/home_en?opendocument) (English).

<sup>2</sup> Cyprus National Digital Strategy documents (in Greek): see [https://dec.dmid.gov.cy/dmid/dec/ws\\_dec.nsf/strategy\\_el/strategy\\_el?OpenDocument#](https://dec.dmid.gov.cy/dmid/dec/ws_dec.nsf/strategy_el/strategy_el?OpenDocument#); executive summary in English at: [https://dec.dmid.gov.cy/dmid/dec/ws\\_dec.nsf/strategy\\_en/strategy\\_en?OpenDocument](https://dec.dmid.gov.cy/dmid/dec/ws_dec.nsf/strategy_en/strategy_en?OpenDocument).



(objective 1), the importance of making e-public services available (objective 2), narrowing the digital divide especially in terms of digital competencies (objective 3) and the imperative of inclusive digital education (objective 4). However, none of those objectives is clearly linked to disability and human rights for persons with disabilities in their statements or in the actions planned.

It was observed that the term 'disability' is not used in the disability-relevant discourse in the strategy document. However, the phrase 'vulnerable groups' is mentioned 23 times in action statements, under the general reference that actions will 'include vulnerable groups'. More specific references include the accessibility of the web page with the implementation of WCAG2.0 (level not specified) and the installation of computer stations in communities, taking vulnerable groups into consideration. There are also three references to the term 'special "needs"/"groups"', generally referring to digital inclusion and 'specially adopted equipment' that can be used for educational material for the development of digital competences (Action 14.2, page 31). An analysis of the measures and instruments for the implementation of the Digital Strategy is presented in Appendix 2.<sup>3</sup> In this analysis, the following disability-specific actions are set out:

- Action 9.5 of Measure 9: E-Health, under objective 2 for the modernisation of the public sector, is about the design and development of Autonomous/Ambient Assisted Living (AAL), or persons with disabilities, older adults and persons with chronic diseases living in distant areas. The implementation of the programme specifically aims at the installation of appropriate medical equipment for telehealth applications, and it is included in the framework of the development of regional health networks. In the Strategy document AAL measures are not linked to the EU AAL programme. Specific actions could be possibly developed under this, but there is no available evidence or indication for specific actions linked to the EU programme.
- Action 14.1 of Measure 14: Digital Literacy, under objective 3 for the participation of all citizens in digital Cyprus, is about massive population training on digital competencies for persons that are considered 'digitally illiterate' so as to be able to use the available digital services. Action 14.1 is linked to Action 14.2 (Digital Citizenship) of the same measure (14) and as stated in the Strategy document, it may involve the development and use of units for digital skills training that may also be equipped with 'specially adapted material for persons with disabilities, including on-screen keyboards, special mice for "the paraplegic", braille displays and speech generators for persons with disabilities' (Action 14.2, p. 33). The action refers to available AT equipment that will be used during the training, but it is not clarified whether this equipment will be funded in some way, or whether the training will also be specific to the use of AT. The statement does not seem to include such an implication, but rather refers to training on basic digital skills, and AT will be used for purposes of access for particular needs of persons with disabilities.
- Action 15.1 of Measure 15: National Broadband Penetration, under objective 3, is about the installation of computers in dedicated spaces of Municipalities and Communities, in order to provide access to the internet for all citizens. These installations will also include equipment for persons with disabilities (the document uses the term 'special needs') (p. 35).

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<sup>3</sup> Digital Strategy, Appendix 2, <https://tinyurl.com/437cb7n4>.

- Analysis of Measure 20: The teleworking framework outlines the benefits for persons with disabilities and parents/carers of persons with disabilities.
- Action 21.3 of Measure 21: The communication plan is about mapping and monitoring the cost of broadband services, which will also include 'special products' for vulnerable groups.
- Actions including development of public websites and public services portals refer to accessibility for persons with disabilities and vulnerable groups, with a single reference to WGAG2.0.

Appendix 1<sup>4</sup> of the Cyprus Digital Strategy briefly outlines the European Policies for the Information Society and those aspects of them that should be included in the Digital Strategy, linked to an analysis of the relevant current situation and needs in the national context of Cyprus. In this document, disability is specifically mentioned, but with reference to the relevant European policies and guidelines and not in relation to the current situation and outlook for Cyprus.

The methodology for the development of the Digital Strategy<sup>5</sup> does not refer to any involvement of persons with disabilities in the consultation process (Primary Research, p. 3), which included consultation with the public sector (ministries), the private sector (central business and technology representatives), academia (academics from public and private universities) and attendance at seminars abroad. In the SWOT analysis included in the methodology, there is no reference to issues of accessibility or inclusion of persons with disabilities or older adults, whereas there is reference to digital and social exclusion for geographically distant areas.

In general, it is noted that the Digital Strategy documents of Cyprus make very few references to disability, and other than provisions on the accessibility of public websites, which have already been ratified as a Law,<sup>6</sup> there are no other disability-specific measures or tools. In the very few cases where technology for persons with disabilities is mentioned, the terminology is neither consistent nor correct in relation to literature and current trends. Finally, it is worth mentioning that the pdf documents of the strategy and the appendices do not comply with accessibility requirements.

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

In the health sector, one of the priorities relevant to digitalisation and digital transformation is the introduction of the new General Healthcare System. The system came into force in 2020, with the ratification of the relevant regulations in 2019, through the General Healthcare System Law (N.89 (I)/2001-2017)<sup>7</sup> first passed in 2001. The

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<sup>4</sup> Digital Strategy, Appendix 1, <https://tinyurl.com/42xuewve>.

<sup>5</sup> Digital Strategy, Methodology, <https://tinyurl.com/33tm9cdh>.

<sup>6</sup> The Web Accessibility and Mobile Devices Application for the Public Sector Organisations Law of 2019 (N.50(I)/2019), [http://www.cylaw.org/nomoi/arith/2019\\_1\\_050.pdf](http://www.cylaw.org/nomoi/arith/2019_1_050.pdf) information provided in personal communication with disability representatives. The president of the Cyprus Confederation of Disability Organisations was involved in the development of the Public Websites Accessibility Law, (telephone communication, 18 September 2020).

<sup>7</sup> The General Healthcare System Law of 2001 (N.89 (I)/2001), [https://www.gesy.org.cy/sites/Sites?d=Desktop&locale=en\\_US&lookuphost=/en-us/&lookuppape=hiollegislation](https://www.gesy.org.cy/sites/Sites?d=Desktop&locale=en_US&lookuphost=/en-us/&lookuppape=hiollegislation).

corresponding Information Technology System<sup>8</sup> is considered the backbone of the GHS, as is the system that digitally supports both health service providers (health professionals) and users for enrolling in the system, submitting questions, accessing personal information and medical history, making and accessing referrals, submitting and accessing test results, updating electronic files, etc. The main disability-specific GHS provision is the introduction of rehabilitation professionals and services in the GHS, which is also an action included in the National Disability Action Plan (see Section 3).<sup>9</sup> In addition, the GHS website has been developed based on some accessibility requirements for persons with disabilities, i.e. compatibility to various browsers, screen resolutions variability, CSS protocol, and AA W3C compliance.<sup>10</sup>

It is interesting to note that, while the general National Disability Strategy of Cyprus<sup>11</sup> includes measures on e-Health<sup>12</sup> (see measure 9, p. 21 of Appendix 2),<sup>13</sup> there is no reference to whether and how the suggested e-Health digital systems will be connected to the GHS information system. The new E-Health Law of 2019 (N.59(I)/2019) does not refer to this either.<sup>14</sup> The E-Health Law lacks any disability-specific references. Nevertheless, according to Appendix 2, the e-Health digital transformation measures involve the development of peripheral health networks (PHN), will allow communication between private and public health providers and will include ambient and assisted living (AAL) and telecare applications for persons with disabilities. Furthermore, no links are made to the efforts of the Department for Social Inclusion of Persons with Disabilities to create a comprehensive Disability Registry<sup>15</sup> with the aim of maintaining aggregated statistical and other data.

Arguably, it seems that digitalisation and digital transformation strategies and planning in the health sector are not mutually informed or coherent, with the potential result of fragmentation of digital systems, which will increase 'digital' bureaucracy as well as the learning/functionality burden, especially for digitally excluded and less digitally educated persons, including persons with disabilities. Furthermore, as mentioned earlier, no links are made to building digital skills for persons with disabilities.

Finally, it may be noted that the actions being taken by the Ministry of Labour, Welfare and Social Inclusion (Department for the Inclusion of Persons with Disabilities) related to independent and supported living do not mention or include any implementation of

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<sup>8</sup> GHS Information Technology System, Functionalities: see [https://www.gesy.org.cy/sites/Sites?d=Desktop&locale=en\\_US&lookuphost=/en-us/&lookuppage=hiointegrationtechnologysys](https://www.gesy.org.cy/sites/Sites?d=Desktop&locale=en_US&lookuphost=/en-us/&lookuppage=hiointegrationtechnologysys).

<sup>9</sup> National Disability Action Plan, Reports and Future Plans under consultation: see [http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/dsispd8b\\_gr/dsispd8b\\_gr?OpenDocument](http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/dsispd8b_gr/dsispd8b_gr?OpenDocument).

<sup>10</sup> GHS Website Accessibility Statement: [https://www.gesy.org.cy/sites/Sites?d=Desktop&locale=el\\_GR&lookuphost=/el-gr/&lookuppage=sxediodimosiefsisandhiointegrationaccessibility](https://www.gesy.org.cy/sites/Sites?d=Desktop&locale=el_GR&lookuphost=/el-gr/&lookuppage=sxediodimosiefsisandhiointegrationaccessibility).

<sup>11</sup> Cyprus National Digital Strategy documents (in Greek): see [https://dec.dmid.gov.cy/dmid/dec/ws\\_dec.nsf/strategy\\_el/strategy\\_el?OpenDocument#](https://dec.dmid.gov.cy/dmid/dec/ws_dec.nsf/strategy_el/strategy_el?OpenDocument#).

<sup>12</sup> Ministry of Health, E-Health: see [https://www.moh.gov.cy/moh/cbh/cbh.nsf/page20\\_gr/page20\\_gr?OpenDocument](https://www.moh.gov.cy/moh/cbh/cbh.nsf/page20_gr/page20_gr?OpenDocument).

<sup>13</sup> Digital Strategy, Appendix 2, <https://tinyurl.com/437cb7n4>.

<sup>14</sup> The e-Health Law of 2019 (N.59(I)/2019), [http://www.cylaw.org/nomoi/enop/non-ind/2019\\_1\\_59/full.html](http://www.cylaw.org/nomoi/enop/non-ind/2019_1_59/full.html).

<sup>15</sup> Department for Social Inclusion of Persons with Disabilities, National Disability Registry: see [http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/dsispd07\\_gr/dsispd07\\_gr?OpenDocument](http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/dsispd07_gr/dsispd07_gr?OpenDocument).

AAL measures and digital applications, nor do they make any reference to smart homes.<sup>16 17</sup>

In the education sector, efforts in relation to digitalisation and digital transformation have proliferated, especially since the outbreak of the COVID pandemic. However, Digital Education has been included in the National Digital Strategy since 2012, when the strategy was launched (Measure 16). Nevertheless, analysis of this measure and the actions it includes does not involve any disability-specific activities or references. The Ministry of Education, Culture, Youth and Sports has already carried out a number of activities, mainly infrastructure related (see actions under Measure 16 in Digital Strategy Appendix 2), to enhance the use of digital technologies in education. These include the improvement of the network and broadband connections in schools and the acquisition of new desktop computers and some laptop computers and mobile devices (in very few situations).

Some efforts for the design and development of digital learning material have been discussed, but not yet decided. Most of them have not been concluded, implemented or evaluated in a coherent programme for the digital transformation of education, and others have been discontinued. For example, the DIAS e-learning platform started in 2011 but was discontinued, as its pilot implementation did not prove very successful. For example, the domain for the platform (<http://www.dias.ac.cy/>) is not active any more. The specifications for the platforms design and development did not initially include accessibility requirements. Discussions on possible implementation of WCAG requirements (version available then) were held within the responsible teams then, but there is no available evidence of those, as tenders' documents are not open to the public. This information is based on EDE experts' from prior experience in the sector. In addition, no information about the implementation of any design requirements is available, and the platform was not further developed or used. Although no public information or evidence is available on this outcome, it seems that the piloting of the DIAS project did not provide evidence of the benefits as measured against cost. At the time, there were a number of discussions on whether the project was worth the cost and effort against the existing similar (and sometimes open/free) resources available in the market, e.g. Moodle, and whether this project was too ambitious. What is interesting to observe is that the progress of the project is mentioned in the MECYS annual reports of 2010 to 2013, but thereafter disappears, with no further explanation of the result and the project's discontinuation.<sup>18</sup>

The Ministry has announced the design and development of a Digital Strategy/Policy for Education, which has been undertaken by the Pedagogical Institute, although it has not yet been published officially. The outline and the rationale of the strategy was recently presented at a day conference organised online by MECYS,<sup>19</sup> but no specific reference to disability, digital inclusion or accessibility was made. In 2020 the Ministry of Education, Culture, Youth and Sports appointed an Advisory Committee for the Use of Digital Technology in Education, Digital Applications and Distance Education

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<sup>16</sup> Department for Social Inclusion of Persons with Disabilities, Supported Living: see [http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/dsipd93b\\_gr/dsipd93b\\_gr?OpenDocument](http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/dsipd93b_gr/dsipd93b_gr?OpenDocument).

<sup>17</sup> See also Section 4.2, as well as the EDE Country Semester Report 2020 for Cyprus.

<sup>18</sup> MECYS, Annual Reports: see <http://www.moec.gov.cy/etisia-ekthesi/index.html>.

<sup>19</sup> Digital Education in Cyprus, MECYS: see [http://www.moec.gov.cy/psifiaki\\_ekpaidefsi.html](http://www.moec.gov.cy/psifiaki_ekpaidefsi.html).

(holding its first meeting on 27 October 2020),<sup>20</sup> one of the members of which is an expert in technology and disability. The committee is expected to provide feedback on the Digital Education Policy document currently under preparation.

During the last meeting of the Minister with committee members on 12 April 2021, the inclusion of children with disabilities in digitally enhanced learning and distance education was mentioned,<sup>21</sup> but without providing many details and only highlighting the importance of ensuring digital education for children with disabilities. Despite this acknowledgement by the Ministry, all efforts for the promotion of digitalisation and digital transformation in education did not particularly target digital inclusive education, or digital inclusion and accessibility for learners with disabilities in a more strategic way.

The EDE report on Cyprus's response during the COVID-19 pandemic explains these difficulties in more detail, indicating how digital inclusion and accessibility were not taken into consideration in the efforts for designing distance and online education in any professional development and training provided to educators during or even before the pandemic (see also Sections 4.3 and 4.4 below). In the same report, evidence is also provided on how learners with disabilities were excluded from online and distance education (and education in general) during the lockdown periods, due to lack of access to the necessary technology, unprepared students and educators, a lack of digital competences in digital inclusive education, inaccessible learning material, etc.<sup>22</sup> The observation of the monitoring bodies as well as the experiences of parents indicated that children with disabilities were not able to attend digitally enhanced and distance education.<sup>23 24</sup>

In the Government administration sector, the digitalisation of public services in the framework of e-Government strategic planning is one of the main priorities. The Ariadni Government Gateway<sup>25</sup> has been a major infrastructure measure, providing the main portal for accessing various governmental information systems and securing access to citizens' personal files for public service transactions. The Ariadni main website and information webpages comply to W3C CSS and WCAG 2.0 level AA accessibility. No further information on the accessibility of the submission portal and other e-services through this, is available. Through Ariadni, citizens are able to submit applications for various social welfare benefits as well as conducting other transactions. However, not

<sup>20</sup> First Meeting of the Advisory Committee for the use of Digital Technology in education, digital applications and distance education, MECYS, 27.10.2020: <https://www.pio.gov.cy/%CE%B1%CE%BD%CE%B1%CE%BA%CE%BF%CE%B9%CE%BD%CF%89%CE%B8%CE%AD%CE%BD%CF%84%CE%B1-%CE%AC%CF%81%CE%B8%CF%81%CE%BF.html?id=16503#flat>.

<sup>21</sup> Announcement of the meeting between the Minister of Education and the Advisory Committee for the use of Digital Technology in education, digital applications and distance education: <http://enimerosi.moec.gov.cy/archeia/1/ypp12114a>.

<sup>22</sup> Cyprus Confederation of Disability Organisations, Marginalisation of learners with disabilities (31.12.2020), <https://tinyurl.com/jmr7ldnc>.

<sup>23</sup> Report of the Office of the Commissioner for Administration and Protection of Human Rights (21.05.2020), [http://www.ombudsman.gov.cy/ombudsman/ombudsman.nsf/All/549327802D18D7F1C2258573004149DF/\\$file/C.N%20789-2020%20-%20Children%20with%20disabilities-Reopening%20of%20schools.pdf?OpenElement](http://www.ombudsman.gov.cy/ombudsman/ombudsman.nsf/All/549327802D18D7F1C2258573004149DF/$file/C.N%20789-2020%20-%20Children%20with%20disabilities-Reopening%20of%20schools.pdf?OpenElement).

<sup>24</sup> Letter of the Ombudsman of the Protection of Children's Rights to the Ministry of Education and the Ministry of Health (07.07.2020).

<sup>25</sup> Ariadni Government Gateway, <https://eservices.cyprus.gov.cy/EL/Pages/Home.aspx>.

all disability-related benefits and funding schemes are included in the portal yet. For example, benefits directly linked to the Social Welfare and Social Insurance Departments can be accessed online through Ariadni (e.g. disability pension and disability allowance through the Guaranteed Minimum Income scheme), whereas schemes available from the Department for Social Inclusion of Persons with Disabilities, including the Severe Motor Disability Allowance and Funding for Technical Means, are not digitally available yet.<sup>26</sup> However, the e-Government strategy is enhanced by features that take into account digital inclusion and accessibility, with a requirement for all public services websites to be accessible in accordance with the Web Accessibility and Mobile Devices Application for the Public Sector Organisations Law of 2019 (N.50(I)/2019)<sup>27</sup> and the relevant policy on web-accessibility of the DIS.<sup>28</sup> Other strategies and priorities in relation to digitalisation and digital transformation (most of them available under the departments of the Deputy Ministry of Research, Innovation and Digital Policy, and also included in the National Digital Strategy - see Section 2.1) do not seem to make any disability-specific references. However, some of them can be relevant from a disability perspective, such as the Artificial Intelligence National Strategy,<sup>29</sup> the National Strategy for a Better Internet for Children in Cyprus 2018-2023,<sup>30</sup> and the Cyprus Research and Innovation Strategy 2019-2023.<sup>31</sup> Nevertheless, none of these documents refers to digital inclusion and accessibility or the implications of these emerging technologies for persons with disabilities or older adults. Rather, they describe the way the public sector, the entrepreneurship sector and research and innovation organisations may collaborate to implement the strategy. The strategies currently do not include action plans, suggested activities or projects, nor the opportunities and benefits these would offer to the general public or specific populations. Other field and sector-specific digital strategies in contexts such as teleworking, political participation and online voting are not yet available, even though they are included in the general Digital Strategy.

AI-enhanced transport planning, which makes it possible to avoid congested areas, has a general benefit and is of particular value to some people with autism.

<sup>26</sup> Department for Social Inclusion of Persons with Disabilities, Social Provision Schemes: see [http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/index\\_gr/index\\_gr?opendocument](http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/index_gr/index_gr?opendocument).

<sup>27</sup> The Web Accessibility and Mobile Devices Application for the Public Sector Organisations Law of 2019 (N.50(I)/2019), [http://www.cylaw.org/nomoi/arith/2019\\_1\\_050.pdf](http://www.cylaw.org/nomoi/arith/2019_1_050.pdf).

<sup>28</sup> Department of Information Services, Web-Accessibility: see [https://dits.dmrid.gov.cy/dmrid/dits/dits.nsf/international01\\_el/international01\\_el?OpenDocument](https://dits.dmrid.gov.cy/dmrid/dits/dits.nsf/international01_el/international01_el?OpenDocument).

<sup>29</sup> Artificial Intelligence National Strategy, [https://www.dmrid.gov.cy/dmrid/research.nsf/All/AEA3A781A72928B0C22585340035382E/\\$file/%CE%95%CE%B8%CE%BD%CE%B9%CE%BA%CE%AE%20%CE%A3%CF%84%CF%81%CE%B1%CF%84%CE%B7%CE%B3%CE%B9%CE%BA%CE%AE%20%CE%A4%CE%9D.pdf?OpenElement](https://www.dmrid.gov.cy/dmrid/research.nsf/All/AEA3A781A72928B0C22585340035382E/$file/%CE%95%CE%B8%CE%BD%CE%B9%CE%BA%CE%AE%20%CE%A3%CF%84%CF%81%CE%B1%CF%84%CE%B7%CE%B3%CE%B9%CE%BA%CE%AE%20%CE%A4%CE%9D.pdf?OpenElement).

<sup>30</sup> National Strategy for a Better Internet for Children in Cyprus 2018-2023 (Safe Internet for Children, Educators and Parents), <https://cyberalert.cy/Media/Attachments/eggrafo-ethinikis-stratigikis-asfaleia-diadiktio.pdf>.

<sup>31</sup> Cyprus Research and Innovation Strategy Framework 2019-2023, [https://www.dmrid.gov.cy/dmrid/research.nsf/All/93BD79089C22336BC225853400356CCB/\\$file/Innovate-Cyprus-CYRI-Strategy-Framework-2019-2023-NBRI-May-2019.pdf?OpenElement](https://www.dmrid.gov.cy/dmrid/research.nsf/All/93BD79089C22336BC225853400356CCB/$file/Innovate-Cyprus-CYRI-Strategy-Framework-2019-2023-NBRI-May-2019.pdf?OpenElement).

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

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

The first National Disability Strategy 2018-2028 is built on the principles of the Strategic Planning Guide of the Ministry of Finance (vision, values, goals, objectives) and is linked to the recommendations made to the Republic of Cyprus by the UN Committee on the Rights of Persons with Disabilities, the European Disability Strategy 2010-2020 and the Council of Europe's Disability Strategy 2017-2023.<sup>32</sup> Accessibility is one of the principles stated in the first National Disability Strategy 2018-2028. More specifically, one of the aims of the strategy is to provide access to a natural and structured environment, transport and information through the provisions of reasonable adjustments, adaptations and the implementation of universal design ('design for all').<sup>33</sup> The terms 'digitalisation' and/or 'digital transformation' are not specifically included in the documents of the National Disability Strategy nor in the national action plans on disability that set implementation targets for a three-year period.

However, it is mentioned that the cultivation and understanding of equity and a non-discriminatory culture will be based on educational actions and the use of new information and communications technologies.<sup>34</sup> Aiming in this direction, one of the new actions set by the National Disability Strategy for the period 2018-2020 was the coordination of the relevant national ministries in preparation for the implementation of the European Accessibility Act.<sup>35</sup> According to the second National Disability Action Plan, this new action is identified as Action 27 of the National Disability Strategy and is set out under the budget of the Ministry of Labour, Welfare and Social Insurance. The Department for Social Inclusion of Persons with Disabilities has taken over the coordination and supervision of the implementation of the European Accessibility Act, which requires the development of a bill for harmonisation (see Section 2 for more information).

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

National disability action plans have been issued for the implementation of the National Disability Strategy. Each national action plan covers a period of three years, starting from 2018. In accordance with the second National Disability Action Plan 2018-2020,<sup>36</sup> which was recently concluded and evaluated, specific actions related to digitalisation and digital transformation have been presented in relation to the competent agency/ministry as follows:

- Ministry of Education and Culture:

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<sup>32</sup> Cyprus National Disability Action Plan, [http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/dsipd8b\\_en/dsipd8b\\_en?OpenDocument](http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/dsipd8b_en/dsipd8b_en?OpenDocument) (summary in English) and [http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/dsipd8b\\_gr/dsipd8b\\_gr?OpenDocument](http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/dsipd8b_gr/dsipd8b_gr?OpenDocument) (full documents in Greek).

<sup>33</sup> National Disability Strategy 2018-2028, <https://tinyurl.com/7e7ve6fc>.

<sup>34</sup> National Disability Strategy 2018-2028, <https://tinyurl.com/7e7ve6fc>.

<sup>35</sup> National Disability Strategy 2018-2028, <https://tinyurl.com/7e7ve6fc>.

<sup>36</sup> Second National Disability Action Plan, <https://tinyurl.com/cf4p6dtd>.

- Action 28: Provision of educational equipment and assistive equipment for students with disabilities.<sup>37</sup>
- Ministry of Transport, Communication and Works:
  - Action 53: Online public transport application to be upgraded from accessibility level A to level AA.
  - Action 61: This action indicates the development of accessibility for passengers with disabilities at the national airports – more specifically, the use of telecommunications equipment for requesting assistance and the RoomMate digital device for audio description, which can provide guidance to passengers with visual disabilities.
  - Action 64: Bus stops in city centres to be upgraded to smart bus stops with audio-visual announcements and other information.
  - Action 67: Improving access to museums using multimedia and audio guides.
- Ministry of the Interior:
  - Action 70: Implementation of the Tripos plan for the protection of citizens with disabilities at times of disaster, as defined by this action. This requires the development of a database with citizens' personal details is required, with their home addresses mapped using Google Maps.
- Deputy Ministry of Research, Innovation and Digital Policy:
  - Action 72: Official government websites to be updated so that they are accessible for people with disabilities.
  - Action 73: The development and adoption of a national bill for accessible official government websites.
- Ministry of Energy, Commerce and Industry:
  - Action 82: Addition of audio format for consumer information on the Consumer Protection Service website.<sup>38</sup>

Reporting of the implementation of the second National Disability Action Plan<sup>39</sup> has identified actions that have been successfully completed, mainly in relation to accessibility (see Sections 2 and 4.3) as well as actions to be continued in the third National Disability Action Plan 2021-2023, the first published draft of which is currently under consultation.<sup>40</sup> The draft third National Disability Action Plan 2021-2023<sup>41</sup> includes the following actions in relation to digitalisation and digital transformation (listed according to the competent agency/ministry):

- Ministry of Labour, Welfare and Social Insurance (Department for Social Inclusion of Persons with Disabilities):
  - Action 1: Development of Supported Living Houses, which includes infrastructure and services for supported living for persons with disabilities. Although it is not specified, this action could be connected to the digital strategy measures and actions for AAL (see Section 2).
  - Action 3: New Network of Services for the Social Inclusion of Persons with Disabilities, which will include the digital disability registry.

<sup>37</sup> Details are provided in the Disability Assessment (2018) and Social Protection (2016) ANED Cyprus Reports. See <https://www.disability-europe.net/country/cyprus>.

<sup>38</sup> Consumer Protection Service: see [www.consumer.gov.cy](http://www.consumer.gov.cy).

<sup>39</sup> Analytical Report of the Implementation of the National Disability Action Plan, <https://tinyurl.com/65ak6nf>.

<sup>40</sup> Department for Social Inclusion of Persons with Disabilities, Consultation on the draft Third Disability Action Plan, <http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/All/E70B0A820241194BC22586AB003891A0?OpenDocument>.

<sup>41</sup> Draft Third National Disability Action Plan (available for consultation), <https://tinyurl.com/yv3vn9yv>.



- Action 4: Unified data and information collection system for the implementation of the UNCRPD in collaboration with other Ministries and Services. See Sections 2.2 and 5 on how Actions 3 and 4 could be connected to e-Health, despite the fact that no document makes any such connection or reference.
- Ministry of Education, Culture, Youth and Sports:
  - Action 3: Communication network between schools. This action refers to the communication and dissemination of educational materials and good practices for special education. However, no reference is made to inclusive education or digital inclusive education, distance learning or e-learning for children with disabilities, despite the policies mentioned in Section 2.
  - Action 6: Development of webspace on the Examination Services website<sup>42</sup> dedicated to information for students with disabilities regarding examinations and tests provided by the service (e.g. public sector exams).
  - Action 8: Development of an information database on higher education and students with disabilities (e.g. provision, reasonable adaptations and openings in academic programmes offered specifically for students with disabilities).
- Ministry of Health: Action 8: Collection of data on the health of persons with disabilities and chronic diseases through an e-platform. Despite their relevance, no connection is made to the e-Health or GHS systems.
- Ministry of Transport, Communication and Works:
  - Action 12: Public transport accessibility, to include digital solutions.
  - Action 17: Accessibility of the Hermes Airports websites.
  - Actions 24, 25 and 26: Accessible information and digital accessibility of some museums and cultural heritage sites through digital technologies.
- Ministry of Internal Affairs: Action 2: Reform of the Radio and Television Organisations Law for the enhancement of accessibility of information for persons with disabilities.
- Deputy Ministry of Tourism: Action 3: Digital recording of accessible tourism sites through digital applications.
- Deputy Ministry of Research, Innovation and Digital Policy: Actions 5 and 6: accessibility of public websites and training of the officers involved (see Section 4.3).

In general, actions included in the second and third disability action relevant to digital inclusion and accessibility place too much emphasis on infrastructure and on the development of websites and applications, and less emphasis on implementation and effective use by and for persons with disabilities. For example, the action plans do not clearly indicate activities for building digital competence, capacity building for digital inclusion, substantial training of professionals and employees in the public sector, or links to new and emerging technologies that may play an important and life-changing role in the quality of life of persons with disabilities (e.g. smart homes, AAL, robotics, automation of procedures, VR and AR in museums, or even the unification of digital information systems to avoid repetition of processes and potential duplication of applications and evaluations).

It has been highlighted that some of the actions are existing policies and schemes, which have been implemented for years as part of the benefits and funding for persons

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<sup>42</sup> Examination Services: see <http://www.moec.gov.cy/ypexams/>.

with disabilities, and some other actions do not include innovative technology applications, but refer to traditional responses to accessibility and inclusiveness (e.g. audio guides for museums versus VR and AR applications). In addition, as identified elsewhere in this report, the various strategic documents do not seem to make connections between strategies, action plans and systems, even though a number of them could be linked (or perhaps are linked), but such connections may not be obvious; neither do the documents explain how the measures could collectively benefit persons with disabilities.

## 4 Promoting disability inclusion through funding, education and training

### 4.1 How funding promotes disability-inclusive digitalisation and digital transformation

The funding for the completion of the actions mentioned in Sections 3.1 and 3.2 seems to be set by each ministry based on the annual state budget and EU funds (the cohesion fund)<sup>43</sup> to support the implementation of the National Disability Strategy. Individual funding for the acquisition of products/services (including assistive technology) is mainly provided by two sources.

In education, funding for learners attending public schools at all levels (early childhood and lower and upper secondary) is provided through the Ministry of Education, Culture, Youth and Sports, after assistive technology specific assessment has been conducted through the disability evaluation processes under the educational system.<sup>44 45</sup> Following assessment and recommendations for individual assistive technology, the Ministry acquires the relevant equipment including mainstream accessible technology (e.g. personal laptops) that has been considered necessary after individual student assessment, for each student through public procurement processes.<sup>46</sup>

For adults or for the use of assistive products outside the education sector, funding is provided through schemes for the provision of technical means<sup>47</sup> (which include any type of digital or other assistive technology, excluding prosthesis and medical devices provided by the Ministry of Health)<sup>48</sup> and the provision of wheelchairs<sup>49</sup> by the Department for Social Inclusion of Persons with Disabilities. In these cases, funding is provided directly to the applicants, who can acquire their own assistive technology by presenting relevant quotations and assessments from private rehabilitation and disability professionals. This scheme applies for the acquisition of accessible mainstream technology, and especially laptop computers, which can be funded with a standard amount, additional to any other request for assistive technology.

In the case of wheelchairs, equipment is mostly fully funded. In the case of other technology and digital assistive technology, equipment is funded up to 80%, and for computers the funding is a fixed amount. Applicants are eligible only if they have been previously identified as persons with disabilities through the Department's System for

<sup>43</sup> Investment Design for the use of European Union Resources 2021-2027, Cohesion and common fisheries policy: see [https://www.structuralfunds.org.cy/uploadfiles/%CE%95%CE%A0%CE%95%CE%9D%CE%94%CE%A5%CE%A4%CE%99%CE%9A%CE%9F%CE%A3\\_%CE%A3%CE%A7%CE%95%CE%94%CE%99%CE%91%CE%A3%CE%9C%CE%9F%CE%A3\\_2021-2027\\_%CE%99%CE%BF%CF%8D%CE%BB%CE%B9%CE%BF%CF%822020.pdf](https://www.structuralfunds.org.cy/uploadfiles/%CE%95%CE%A0%CE%95%CE%9D%CE%94%CE%A5%CE%A4%CE%99%CE%9A%CE%9F%CE%A3_%CE%A3%CE%A7%CE%95%CE%94%CE%99%CE%91%CE%A3%CE%9C%CE%9F%CE%A3_2021-2027_%CE%99%CE%BF%CF%8D%CE%BB%CE%B9%CE%BF%CF%822020.pdf).

<sup>44</sup> See ANED Disability Assessment Country Report (CY), <https://www.disability-europe.net/downloads/903-country-report-on-disability-assessment-cyprus>.

<sup>45</sup> See ANED Social Protection Country Report (CY) (funding schemes), <https://www.disability-europe.net/downloads/726-country-report-on-social-protection-and-article-28-uncrpd-cyprus>.

<sup>46</sup> Mavrou, K. (2011), 'Assistive Technology as an Emerging Policy and Practice: Processes, Challenges and Future Directions', *Technology and Disability*, vol. 23, No. 1, pp. 41-52.

<sup>47</sup> Department for Social Inclusion of Persons with Disabilities, Social Provision Schemes: see [http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/index\\_gr/index\\_gr?opendocument](http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/index_gr/index_gr?opendocument).

<sup>48</sup> These schemes are discussed in detail in the Cyprus Social Protection Country Report (ANED, 2016).

<sup>49</sup> Department for Social Inclusion of Persons with Disabilities, Social Provision Schemes: see [http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/index\\_gr/index\\_gr?opendocument](http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/index_gr/index_gr?opendocument).

the Evaluation of Disability and Functionality<sup>50</sup> (see footnotes 32 and 33 for details on funding and assessment procedures). Occasional schemes and measures by the Ministry of Labour, Welfare and Social Insurance may also provide funding for digital skills development, but this is not specific to assistive technology; instead, this funding is focused on basic computer skills (see e.g. Section 4.4), although these are not regular or permanent schemes available to persons with disabilities.

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

See also Section 4.3, as information for Section 4.2 is relevant for both sections. In summary, in relation to higher education, the Multimedia and Graphic Arts undergraduate programme at the Cyprus University of Technology includes Human-centred Design and Design for all modules as part of the curriculum.<sup>51</sup> Universal design seems to be one of the aspects included in the Advanced Software Engineering module of the undergraduate programme of the Department of Computer Science at the University of Cyprus.<sup>52</sup>

The European University Cyprus seems to be the only university in Cyprus that has signed<sup>53</sup> the Bologna Declaration, 'Unlocking Human Potential: A Call for Action to Improve Access to Quality Assistive Technology for Realising Fundamental Human Rights and Achieving the Sustainable Development Goals in a Fully Inclusive Manner'.<sup>54</sup> However, specialised Disability & Technology modules are currently offered to students of Education Sciences and BSc Occupational Therapy programmes at this (private) university, which opens up these seminars and workshops to professionals from outside the university. There are also sporadic opportunities offered by assistive technology companies in the private sector, either through open series seminars (e.g. on specific tools and software)<sup>55</sup> or through customised training requested by individuals or groups of professionals.

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

In Cyprus, there are not many professionals identified as accessibility and inclusion professionals. For example, there are no web designers or architects who seem to be specialised in accessibility and inclusion or other professionals in either the private sector or the public sector. However, in general terms, one can identify accessibility

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<sup>50</sup> Department for Social Inclusion of Persons with Disabilities, System for the Evaluation of Disability and Functionality,

[http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/dsipd06\\_gr/dsipd06\\_gr?OpenDocument](http://www.mlsi.gov.cy/mlsi/dsid/dsid.nsf/dsipd06_gr/dsipd06_gr?OpenDocument).

<sup>51</sup> Multimedia and Graphic Arts curricula at the Cyprus University of Technology: see <https://www.cut.ac.cy/faculties/aac/mga/degrees/undergraduate-programmes/?languageId=1>.

<sup>52</sup> Department of Computer Science at the University of Cyprus, curricula: see <https://www.cs.ucy.ac.cy/index.php/education/undergrad/courses-descriptions>.

<sup>53</sup> EUC signs the Bologna Declaration: see <https://inbusinessnews.reporter.com.cy/business/services/article/223877/to-evropaiko-panejistimio-to-mono-stin-kypro-poy-ypegapse-ti-diakiryxi-tis-bologna161>.

<sup>54</sup> The Bologna Declaration (27.08.2019), 'Unlocking Human Potential: A Call for Action to Improve Access to Quality Assistive Technology for Realising Fundamental Human Rights and Achieving the Sustainable Development Goals in a Fully Inclusive Manner': <https://aaate.net/the-bologna-declaration/>.

<sup>55</sup> Examples of seminars and training provided on assistive technology in the private sector are available at: <http://www.mkprosopsis.com/News&Events.htm>.

and inclusion professionals, who may also provide services in the digital area, in the following groups:

- public servants working at the Department for Social Inclusion of Persons with Disabilities;
- other public servants (e.g. officers in the employment services);
- architects and civil engineers in the public and private sectors;
- doctors and other health staff;
- social workers;
- educators;
- disability service providers and rehabilitation professionals (including occupational therapists and speech and language therapists);
- public servants/officers responsible for developing public websites.

However, it is noted that involvement in the digital area of disability professionals in Cyprus is in its very early stage. Most professionals have been involved in digital services and other digital area activities during the COVID-19 pandemic. There is not much information or evidence available about digital inclusion and accessibility in the education and professional development of professionals, as referred to above. However, the following have been identified as an indication of how education on digital inclusion and accessibility may be addressed:

- **Education and training offered by the state:** There is no published information available on how digital inclusion and accessibility education are officially offered by the state. However, with respect to web and digital online services development, it seems that the professionals involved in the development of the public websites and applications concerned are expected to have relevant education and training. Together with the new Public Websites Accessibility Law,<sup>56</sup> the Department of Information Services (DIS) has implemented a policy and practice for monitoring digital accessibility by (a) providing guidelines that all public procurement documents for digital services should include accessibility requirements and (b) approving the accessibility of public websites and digital services through an accessibility evaluation.<sup>57 58</sup>
- Hence, the web designers and developers of the various public services are expected to have some digital accessibility training. In the Analytical Report<sup>59</sup> of the Implementation of the National Disability Action Plan, Action 76, which refers to the 'Education of Officers updating Public Websites (preparation of manual and 3-hour seminar for all governmental organisations)' for maintaining the accessibility of public websites, is reported as an action partially completed, under the responsibility of the DIS of the corresponding Deputy Ministry. However, it was not possible to identify any information on how the state provides this training to this group of professionals or to other relevant officers or members of staff. There is an assumed safeguard under public procurement procedures that the

<sup>56</sup> The Web Accessibility and Mobile Devices Application for the Public Sector Organisations Law of 2019 (N.50(I)/2019), [http://www.cylaw.org/nomoi/arith/2019\\_1\\_050.pdf](http://www.cylaw.org/nomoi/arith/2019_1_050.pdf).

<sup>57</sup> Information from DIS on web accessibility is available at: [https://dits.dmrid.gov.cy/dmrid/dits/dits.nsf/international01\\_el/international01\\_el?OpenDocument](https://dits.dmrid.gov.cy/dmrid/dits/dits.nsf/international01_el/international01_el?OpenDocument).

<sup>58</sup> An example of a website accessibility approval statement (on the Deputy Ministry of Tourism Website) is available at: [http://www.tourism.gov.cy/tourism/tourism.nsf/accessibility\\_el/accessibility\\_el?opendocument](http://www.tourism.gov.cy/tourism/tourism.nsf/accessibility_el/accessibility_el?opendocument).

<sup>59</sup> Analytical Report of the Implementation of the National Disability Action Plan, <https://tinyurl.com/65ak6nf>.

providers involved have relevant training for the design and development of accessible digital services, applications and websites.

- In addition, in its regular customised in-service professional development programmes, the Ministry of Education, Culture, Youth and Sports offers disability, special and inclusive education seminars and conferences, very few of which include references to assistive technology and/or accessibility. During the COVID-19 pandemic and in the sudden shift towards teachers preparing for online education, professional development programmes provided by MECYS, in collaboration with the Pedagogical Institute, did not cover issues of accessibility or digital inclusive education,<sup>60</sup> other than a couple of the regular in-service training events that were held (pre-recorded online) in September 2020 for both mainstream and special teachers<sup>61</sup> (see EDE COVID-19 Country report, 2021).
- **Higher education institutions:** Universities in Cyprus offer digital inclusion and accessibility education in some of their courses of study. These involve Design for All courses included in undergraduate and graduate programmes (including Multimedia and Graphic Design and study programmes at the Cyprus University of Technology),<sup>62</sup> courses on Assistive Technology and Accessibility and Universal Design courses (including the MA Special and Inclusive Education Programme<sup>63</sup> and the BSc Occupational Therapy Programme<sup>64</sup> at the European University Cyprus). However, other programmes of study and professional development programmes connected to disability and digital inclusion do not include any disability or accessibility-relevant courses, as is also indicated by information on DOTCOM in relation to the training of lawyers, engineers and doctors. For example, the study carried out by Liasidou and Mavrou<sup>65</sup> indicates that medical schools and other health-related academic disciplines do not include courses related to promoting disability rights education or to assistive technology and/or accessibility.
- In some cases, however, a university may offer short seminars on digital accessibility and digital inclusion that are often linked to training and multiplier

<sup>60</sup> MECYS and Pedagogical Institute announcement (May 2020) on teacher training in the use of online learning environments, <http://enimerosi.moec.gov.cy/archeia/1/ypp10813a>.

<sup>61</sup> Training material for two days of in-service training for teachers in pre-school, primary and special education, September 2020, [https://www.pi.ac.cy/pi/index.php?option=com\\_content&view=article&id=2908&Itemid=497&lang=en](https://www.pi.ac.cy/pi/index.php?option=com_content&view=article&id=2908&Itemid=497&lang=en).

<sup>62</sup> Cyprus University of Technology, Multimedia and Graphic Design, Programmes of Study (3rd year – Design for All), <https://www.cut.ac.cy/studies/bachelor/bachelor-programmes/mga-ug/>.

<sup>63</sup> MA Education Sciences: Special and Inclusive Education Programme, European University Cyprus (Course EDI627): see <https://euc.ac.cy/en/programs/master-special-inclusive-education/#program-page-tabs|2>.

<sup>64</sup> BSc Occupational Therapy, European University Cyprus (Course ERG440): see <https://euc.ac.cy/en/programs/bachelor-occupational-therapy/#program-page-tabs|2>.

<sup>65</sup> Liasidou, A. and Mavrou, K. (2017), 'Disability Rights in Higher Education Programs: The case of medical schools and other health-related disciplines', *Sociology Science & Medicine*, vol. 191, pp. 143-150.

events for projects (e.g. ENTELIS+,<sup>66</sup> BLENDI<sup>67</sup> and SIDE).<sup>68</sup> <sup>69</sup> These courses are open to the public, while invitations are sent to interested stakeholders including social and welfare officers, web and digital technology designers, educators, persons with disabilities, etc. Similar issues are included in universities' in-house professional development programmes for academics. The European University Cyprus and the Cyprus University of Technology, for example, have offered short seminars to their faculties during the pandemic.

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

During the last decade, with the rapid advancement of digital technology and the digitalisation of sectors and activities, digital inclusion and digital skills<sup>70</sup> development have been at the centre of the discussions, projects and policies around the empowerment of people with disabilities (e.g. the EU Digital Competence Framework,<sup>71</sup> the Entelis Network<sup>72</sup> and the Bologna Declaration)<sup>73</sup> to which private and public institutions, organisations and other stakeholders in Cyprus have signed up, or that they support or participate in as active members. Digital skills are also included among the main actions mentioned in the Cyprus National Reform Programme (NRP) (at p. 59) for promoting digital competence development, through which several training programmes will be developed.

However, there is no evidence on any recent or current programmes in Cyprus providing persons with disabilities with the opportunity to gain or improve their knowledge and understanding of using digitalisation and digital transformation.

The Cyprus Productivity Centre has launched a series of free training programmes on digital skills development.<sup>74</sup> However, both disability organisation representatives and the EDE experts have noted that these programmes disregard opportunities for disabled participants, and they do not include a disability/accessibility perspective.

<sup>66</sup> ENTELIS+ project: see <https://entelisplus.entelis.net/homepage/>.

<sup>67</sup> BLENDI project: see <https://www.blendedinclusion.eu/project-info/>.

<sup>68</sup> SIDE project: see <https://www.facebook.com/SIDEproject2017> (Empowering Deaf youth for the labour market through digital competence development).

<sup>69</sup> For examples of research projects at the SoScieAtH Center of Excellence at the European University Cyprus, see <https://soscieath.euc.ac.cy/index.php/research/>; for Assistive Technology and Inclusive Education Unit projects, particularly those offering digital inclusion and accessibility curricula, see <https://soscieath.euc.ac.cy/index.php/projects-2/>.

<sup>70</sup> Digital Skills and Jobs Policy: see <https://ec.europa.eu/digital-single-market/en/policies/digital-skills>.

<sup>71</sup> EU Digital Competence Framework, <https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework>.

<sup>72</sup> Entelis Network and Projects, available at <https://www.entelis.net/> and <https://entelisplus.entelis.net/homepage/>.

<sup>73</sup> The Bologna Declaration, <https://aaate.net/the-bologna-declaration/>.

<sup>74</sup> Cyprus Productivity Centre, digital skills training programmes, available at: [http://www.mlsi.gov.cy/mlsi/kepa/kepa\\_new.nsf/All/9F4D9A31402D607FC225819200374AAF](http://www.mlsi.gov.cy/mlsi/kepa/kepa_new.nsf/All/9F4D9A31402D607FC225819200374AAF), with more details at: <https://www.pio.gov.cy/%CE%B1%CE%BD%CE%B1%CE%BA%CE%BF%CE%B9%CE%BD%CF%89%CE%B8%CE%AD%CE%BD%CF%84%CE%B1-%CE%AC%CF%81%CE%B8%CF%81%CE%BF.html?id=15442#flat>.

The following specific points have been noted and provided the basis of written feedback to the Centre:<sup>75</sup>

- the announced programmes do not ensure that persons with disabilities can access the training through meeting the accessibility requirements of any disabled trainees and/or by letting them use their own assistive technologies during training;
- the training does not cover issues of accessibility, such as the production of accessible documents or principles of accessible design;
- there is no specific training programme on digital skills for persons with disabilities for the use of mainstream and/or assistive technology, especially for preparation for and access to the labour market, although there are programmes specific to other groups, such as older adults.

Although it was focused on digital job roles rather than digital transformation in general, in 2016 the Ministry of Education, the Ministry of Transport, Communication and Works, the Digital Champion and the Ministry of Energy, Commerce, Industry and Tourism launched a programme in which persons with disabilities, students, unemployed persons and soldiers were provided with the opportunity to attend and complete the ECDL (European Computer Driving License). The programme was part of the national action plan within the framework of the Grand Coalition for Digital Jobs,<sup>76</sup> an EU initiative, which seems to have covered the years 2015 to 2020. Actions were organised in 2018, with a duration of two years.<sup>77</sup> There is no published evidence yet on the impact of this programme, as it only concluded in 2020, and its impact is presumably under evaluation and analysis.

Other training and education in the use of systems for digitalisation and digital transformation in Cyprus do not seem to include programmes specifically to address the needs of persons with disabilities (or other targeted groups of citizens), and they tend to be generic rather than inclusive. For example, when the digital platform of the General Healthcare System was launched, a training environment was created for health service providers<sup>78</sup> but not for users or groups that might need further training, including older adults and persons with disabilities (those who may additionally use assistive technologies and require accessibility features, or even other groups with a low level of digital skills).

Similarly, no training sessions or preparation work has taken place for students (including students with disabilities) for the use of digital tools such as MS Teams that have been used for e-learning and distance learning during the pandemic (or at other times) in schools. Some guidelines were provided to parents in written formats, sent as personal emails or direct messages, but these are not publicly available for parents to retrieve easily.

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<sup>75</sup> Email from Agkalia Elpidas to Cyprus Productivity Center, 3 September 2020. Communication copied to interested parties, including universities and the EDE team.

<sup>76</sup> Grand Coalition for Digital Jobs, Cyprus: see <http://www.digitaljobs.cyprus-digitalchampion.gov.cy/el/page/home>.

<sup>77</sup> Cyprus National Action Plan for Digital Job Positions: see <http://www.digitaljobs.cyprus-digitalchampion.gov.cy/el/file/V87uJE4hd0ahGYAsI9Rd6A==/>.

<sup>78</sup> GHS, Operation and Use of the GHS (GESY) Information System – Training Environment for Health Service Providers (registrations form), <http://www.digitaljobs.cyprus-digitalchampion.gov.cy/el/file/V87uJE4hd0ahGYAsI9Rd6A==/>.



There is no available information or evidence on any training or education provided for other digitalisation and digital transformation projects and services such as the Government Gateway Portal (Ariadni).<sup>79</sup> In general, there is currently no action, innovation, call or suggestion under the 'digital literacy' or 'e-skills for all' measures (see Section 2.1.) of the Deputy Ministry that refers specifically to the education of persons with disabilities in the use of assistive technology and/or the development of digital skills, either in terms of provision or in terms of access to and the availability of training.

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<sup>79</sup> Government Gateway Portal (Ariadni), <https://eservices.cyprus.gov.cy/EN/Pages/Home.aspx>.

## 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

Digitalisation is a prerequisite to achieving disability inclusion in all aspects of life and society. Knowledge sharing is an integral aspect of digital citizenship. The internet and other digitally mediated sources can enable people with disabilities to access public health and social services information that can facilitate independent living. For example, welfare technology, robotics and smart home technologies can enable people with disabilities to become more autonomous and independent in their homes and communities. The use of social robots not only facilitates independent living by encouraging people to engage in activities that they can still do by themselves, such as going for a walk, but also provides personalised forms of entertainment and support for physical, cognitive and interactive/emotional tasks.<sup>80</sup>

However, the above-mentioned digital and disability strategies of Cyprus do not currently make any reference to digital inclusion and accessibility specific to persons with disabilities and/or older adults, other than the references outlined in Sections 2, 3 and 4 above. Nevertheless, digitalisation can enable access to other forms of entertainment such as gaming, e-books, digital radio and streamed entertainment content with captions, as well as education.

The accessibility of information and websites is promoted by relevant legislation and priorities in Cyprus. In particular, these are safeguarded by the Public Websites Accessibility Law, as previously mentioned, by the Radio and Television Organisations Law 1998 to 2020 (N.7(I)/1998),<sup>81</sup> and by the Public Electronic Communications and Postal Services Law 2004 to 2020 (Law 112(I)/2004).<sup>82</sup>

Examples of the implementation of these strategies and regulations include the monitoring of the accessibility of public websites (see Section 2) and of the availability of accessible digital and online information in relation to COVID-19 (see EDE country report on the impact of COVID-19). In addition, the Press and Information Office has launched a digitalisation programme entitled 'Digitalisation, accessibility and dissemination of audio-visual, printed and musical material'. The programme is part of the Digital Herodotus II project, which is supported by European funds. Digital technology makes it possible to preserve and disseminate information and to maintain a historical, social and cultural archive.<sup>83</sup> Archival material can be easily accessed from computers and mobile devices through the digital platform digital-herodotus.eu, which

<sup>80</sup> [On the impact of digitalisation on social services, see the European Foundation for the Improvement of Living and Working Conditions \(Eurofound\) website; https://www.eurofound.europa.eu/?url=https%3A%2F%2Fwww.eurofound.europa.eu%2Fpublicatio ns%2Freport%2F2020%2Fimpact-of-digitalisation-on-social-services.](https://www.eurofound.europa.eu/?url=https%3A%2F%2Fwww.eurofound.europa.eu%2Fpublicatio ns%2Freport%2F2020%2Fimpact-of-digitalisation-on-social-services)

<sup>81</sup> The Radio and Television Organisations Law 1998 to 2020 (N.7(I)/1998) (Article 30B, accessibility for persons with disabilities), [http://www.cylaw.org/nomoi/enop/non-ind/1998\\_1\\_7/full.html](http://www.cylaw.org/nomoi/enop/non-ind/1998_1_7/full.html).

<sup>82</sup> The Public Electronic Communications and Postal Services Law 2004 to 2020 (Law 112(I)/2004) (Articles 39(2)(h) and 70(1)), [http://www.cylaw.org/nomoi/enop/non-ind/2004\\_1\\_112/full.html](http://www.cylaw.org/nomoi/enop/non-ind/2004_1_112/full.html).

<sup>83</sup> Press and Information Office, announcement on the digitalisation of the PIO archives, 08.01.2020, <https://www.pio.gov.cy/%CE%B1%CE%BD%CE%B1%CE%BA%CE%BF%CE%B9%CE%BD%CF%89%CE%B8%CE%AD%CE%BD%CF%84%CE%B1-%CE%AC%CF%81%CE%B8%CF%81%CE%BF.html?id=11798#flat>.

takes the needs of people with disabilities into consideration.<sup>84</sup> The platform does not currently seem to contain any Virtual Reality (VR) and Augmented Reality (AR) material, but only video, audio and image archives.<sup>85</sup> Digitally mediated radio and broadcast services can offer a range of disability-friendly functions and features such as the integration of sign language interpretation or voiceover audio channels to enhance access to entertainment and news bulletins.

As far as access to education is concerned, library professionals can use diverse digital formats as well as developing e-reading systems that may be appropriate for the specific needs of persons with disabilities.<sup>86</sup> For example, the Digital Platform of the Cyprus Library<sup>87</sup> is an initiative of the Cultural Services of the Ministry of Education, Culture, Youth and Sports for the digitalisation of cultural heritage and other library-relevant content. However, digital accessibility requirements have not yet been fully addressed or complied with in this case.

In terms of enhancing access to health and social care services, digitally mediated forms of communication can be instrumental in enabling people with disabilities to access online consultations and counselling, which is still underdeveloped in Cyprus (see Section 4.4). Similarly, AAL and artificial intelligence systems will definitely provide invaluable opportunities for persons with disabilities but as discussed earlier in this report, there are no specific actions in place yet.

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

A major challenge to making effective use of digital technologies to enhance disability accessibility and support in Cyprus relates to ‘the absence of a unified social services system and the lack of coordination between services’.<sup>88</sup> The fragmented nature of social services prevents the creation of a unified digital system for providing information and disability-related support. This is a major challenge especially if we bear in mind that people with disabilities consider teleassistance and the management of digital administration for accessing social services as the most important and relevant aspects of digital development.<sup>89</sup>

A further important challenge relates to the digital divide, which is manifested in people with disabilities potentially not having the necessary knowledge and pertinent skills to access digitally mediated information, resources and support. This is especially true for people with disabilities from impoverished socio-economic and ethnic minority backgrounds, who experience overlapping and cumulative forms of social

<sup>84</sup> Digital Herodotus II, announcement on the digitalisation and accessibility of audio-visual, printed and musical material, <https://tinyurl.com/2jds9r42>.

<sup>85</sup> Digital Herodotus archive, <https://www.digital-herodotus.eu/archive/>.

<sup>86</sup> Broadband Commission for Digital Development, G3ict, IDA, ITU, Microsoft, the Telecentre.org Foundation and UNESCO (2013), *The ICT Opportunity for a Disability-Inclusive Development Framework*, <https://www.itu.int/en/action/accessibility/Documents/The%20ICT%20Opportunity%20for%20a%20Disability%20Inclusive%20Development%20Framework.pdf>.

<sup>87</sup> Digital Platform of the Cyprus Library, <http://www.cyprusdigitallibrary.org.cy/about>.

<sup>88</sup> Molinuevo, D. / European Foundation for the Improvement of Living and Working Conditions (Eurofound) (2020), *Impact of digitalisation on social services*, Luxembourg, Publications Office of the European Union, [https://www.eurofound.europa.eu/sites/default/files/efpublication/field\\_ef\\_document/ef19043en.pdf](https://www.eurofound.europa.eu/sites/default/files/efpublication/field_ef_document/ef19043en.pdf).

<sup>89</sup> Molinuevo / Eurofound (2020).

disadvantage and are more likely to be digitally and socially excluded. The adverse effects of the digital divide are manifested not only in disabled people's employment and education prospects and trajectories, but also in their daily lives; the World Health Organization<sup>90</sup> provides evidence to suggest that disabled people have worse health outcomes due to lower levels of health literacy in accessing digital health information and services.<sup>91</sup>

The issue of the digital divide and the relationship between digital exclusion and the lack of digital literacy and limited opportunities for persons with disabilities to develop digital competencies has been highlighted in the international<sup>92 93</sup> and national literature<sup>94 95</sup> during the last decade, and this is not solely connected to the acquisition of and access to technology per se (e.g. access to a mobile device); it also relates to issues of digital literacy, opportunities to use technology, attitudes, awareness, etc.

Another challenge relates to the fact that education professionals are not equipped with the relevant knowledge and skills to use digital technologies to support children and young people with disabilities,<sup>96</sup> and awareness and capacity are limited among many groups of stakeholders when it comes to digital inclusion and accessibility.<sup>97</sup>

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<sup>90</sup> World Health Organization (2013), *Health Literacy*,

[https://www.euro.who.int/\\_data/assets/pdf\\_file/0008/190655/e96854.pdf](https://www.euro.who.int/_data/assets/pdf_file/0008/190655/e96854.pdf).

<sup>91</sup> NHS Digital (2020) 'What we mean by digital inclusion', *Digital Inclusion for health and social care*, <https://digital.nhs.uk/about-nhs-digital/our-work/digital-inclusion/what-digital-inclusion-is>.

<sup>92</sup> ENTELIS Project – Systematic Literature Review: see <https://www.entelis.net/a-systematic-literature-review-on-education-and-learning-related-to-ict-and-ict-based-assistive-technology/>.

<sup>93</sup> ENTELIS+ Project: see <https://entelisplus.entelis.net/homepage/>.

<sup>94</sup> Mavrou, K. and Meletiou-Mavrotheris, M. (2015), 'Views and considerations on ICT-AT competences development within the ENTELIS project: The Case of Cyprus', *Studies in Health Technology Informatics*, vol. 217, pp. 671-678, <http://www.ncbi.nlm.nih.gov/pubmed/26294546>.

<sup>95</sup> Mavrou, K., Meletiou-Mavrotheris, M., Kärki A., Sallinen, M. and Hoogerwerf, E.J. (2017), 'Opportunities and challenges related to ICT and ICT-AT use by people with disabilities: an explorative study into factors that impact on the digital divide', *Technology and Disability*, vol. 29, pp. 63-75.

<sup>96</sup> Liasidou, A. and Hadjiyiannakou, A. (2019), 'Disabling discourses and some implications for parent leadership in special education policy and practice', *European Journal of Special Needs Education*, vol. 34, No. 3, pp. 342-354, <https://doi.org/10.1080/08856257.2018.1520492>.

<sup>97</sup> ENTELIS+ Project success factors and fact sheets: see <https://entelisplus.entelis.net/resources/>.

## 6 Conclusions and recommendations

### 6.1 Conclusions

Based on the above presentation and brief discussion of the digitalisation and digital transformation strategies and policies in Cyprus with regard to digital inclusion and accessibility for persons with disabilities, it is noted that in general there is a lack of coherence or unified approach in the various current and forthcoming actions. In addition, it has been noted that persons with disabilities are not represented in decision making and relevant discussions on digitalisation and digital transformation policies, resulting in the lack of obvious effort in all aspects of digital inclusion.

The involvement of persons with disabilities and the adoption of a disability perspective in general is limited to issues of web accessibility and the consultation for the third National Disability Action Plan.

Other strategies, especially those that involve innovative and emerging technologies, do not seem to have included the aspect of digital inclusion or the essential role of such technologies in the lives of persons with disabilities. However, some of the researchers and academics involved in an advisory capacity or even in the design teams for various of these strategies, priorities and plans come from organisations and bodies that work with persons with disabilities (e.g. the Cyprus Institute of Neurology and Genetics and universities running programmes on inclusive education, rehabilitation and technology). Hence, they are aware of the importance of digital, assistive and accessible technologies for persons with disabilities and it is anticipated that revised and updated versions of the strategies and relevant action plans will be more disability informed.

Arguably, and although they were initially designed in 2012, the National Digital Strategy and relevant actions were not implemented or taken forward in a way that would allow further developments nine years later. Hence, it is anticipated that, especially after the rapid shift to digital and online technologies with the outbreak of the COVID pandemic, the need for more careful review and a more inclusive approach to digitalisation will now be more obvious, and strategies will soon be revised accordingly.

Another conclusion is on the problematic use of 'vulnerable groups' as an indiscriminate and all-encompassing term to include persons with disabilities.<sup>98</sup> This concern was also discussed in the latest EDE Country Semester and COVID-19 reports, and the issue was highlighted by disability representatives as well.<sup>99</sup> Especially in relation to digital inclusion and accessibility, lack of specificity may lead to the omission of appropriate and effective technological solutions and responses in relation to digital and assistive technologies for the effective digital inclusion of persons with disabilities.

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<sup>98</sup> Gabel, S. (2002), 'Some conceptual problems with critical pedagogy', *Curriculum Inquiry*, vol. 32, issue 2, pp. 177-201.

<sup>99</sup> Cyprus Confederation of Organisations of the Disabled (2020), [http://www.kysoa.org.cy/kysoa/userfiles/file/diekdikiseis/20200402\\_kysoa%20proedro%20corona%202020.doc](http://www.kysoa.org.cy/kysoa/userfiles/file/diekdikiseis/20200402_kysoa%20proedro%20corona%202020.doc).

Finally, with respect to education and training at all levels, a number of matters seem to be disregarded or not considered to the extent that they should be: specific measures for digital inclusive education, implementation of the principles of universal design and universal design for learning in e-learning, and actions to close the digital divide through the development of digital literacy (with the use of both accessible mainstream and assistive technologies) from early-years education to lifelong learning.

## **6.2 Recommendations**

- Put into law accessibility at all levels, including that of content and information, as well as access to buildings and services infrastructure outside the public sector; monitor compliance with the relevant regulations.
- Establish a coherent assistive technology and accessibility service delivery system, which will also be responsible for the education, training, implementation and/or monitoring of the development of digital competences and the relevant capacity of stakeholders, including service providers and persons with disabilities.
- Introduce compulsory digital inclusion and accessibility awareness training and education for professionals and service providers involved in inclusion and digital accessibility policies and practices.
- Develop a monitoring mechanism and establish a competent agency (within existing or new structures) for digital inclusion and accessibility, focusing on closing the digital divide for persons with disabilities and other digitally excluded groups.
- Provide funded opportunities to persons with disabilities to attend regular and targeted education programmes on digital competence development. Curricula and programmes of existing projects can be used, through collaboration by the state with academic institutions already involved in such projects.
- Involve persons with disabilities in all stages (decision making, design and implementation) of developing the digital transformation strategies and action plan.
- Create unified digital information and digital services systems within the same sector (e.g. Health with the GHS, e-Health and AAL) and across sectors (e.g. disability assessment processes, AAL and supported living), in order to reduce the functional, learning and procedural load for persons with disabilities and their families/carers.

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