

# Digital Transformation – The “Design for All” Approach: European Accessibility for The Disabled

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## ABSTRACT

Both the UN and the European Commission have been strengthening their regulations concerning the accessibility of products and services by persons with disabilities. Although this is not a new topic, the new regulations are designed to be more binding and to reduce remaining inequity between persons with and without disabilities. Although the topic of accessibility is increasingly better understood and discussed in terms of online systems, it applies just as much to more established technologies such as ATMs or the telephone and even to live human interactions. That said, the new regulations do robustly address the online space. In addition, the COVID 19 pandemic has, (because so many societal interactions have moved online), drawn even greater attention to existing barriers. The purpose of this study was to outline the framework of legal regulations referring to this problem and to show and analyse the broader context of the changes that are expected once the European Accessibility Act takes effect in 2025.

**Keywords:** Disability; accessibility; intellectual property; assistive technology; e-commerce; product design; education; Universal Design; Design for all

**INTRODUCTION**

Recent years have seen the European Union legislator devote substantial attention to consumer vulnerability and the incidence of discrimination against disabled people. This affects many layers of everyday consumption. The New Consumer Agenda enacted on 13th November 2020 made clear that “European consumers rightly expect to benefit fully from the single market and to be empowered to make informed choices and play an active role in the green and digital transition whenever and wherever they are in the EU. They expect to have free access to goods and services across the EU and reassurance that their rights as consumers are protected, notwithstanding traditional and emerging challenges” (COM/2020/696 final). The new policy in this area was designed partly to address the problems triggered by the ongoing COVID-19 pandemic, though the review of some topics had been long overdue. The Agenda presses home the importance of five key issues: 1) the green transition, 2) the digital transformation, 3) the redress and enforcement of consumer rights, 4) the specific needs of certain consumer groups. The Agenda takes a holistic overview of consumer-relevant EU policies. In particular, it identifies the need for other policies and activities to be consumer-centric. The Agenda supplements other initiatives including: the European Green Deal, the Circular Economy Action Plan (CEAP) and the Communication on Shaping Europe’s digital future. It gives the EU policy parity to other international frameworks including the United Nations’ 2030 Agenda for Sustainable Development (UN Resolution 2015) and the UN Convention

on the Rights of Persons with Disabilities (UN CRPD). The new EU agendas work together towards eliminating early obsolescence and promoting durability, recyclability, reparability and accessibility of products (where accessibility means the removal and prevention of barriers that hinder participation of persons with disabilities on an equal basis with others). The overall consequences of this initiative should boost durability and reusability and is consistent with the CEAP and with Directive (EU) 2019/882 (European Accessibility Act, EAA).

It was noted that the digital transformation comes with certain drawbacks, notably, the common issue whereby digital solutions are not adequately accessible to persons with disabilities. The transposition by EU Member States, supported by the Commission, of the European Accessibility Act, is due by 2025. This will create obligations for digital products and services to accommodate the accessibility needs of people with disabilities.

A further obstacle to consumer engagement with the new digital world can be a lack of digital literacy and general skills in this area. The Digital Education Action Plan 2021-2027 emphasises the need to promote the necessary education and training to address this knowledge gap. For older people or those with disabilities, inadequate accessibility can exclude them from everyday activities or interactions. The Pandemic has intensified this inequity, but the problem existed even prior to the COVID outbreak. EU accessibility requirements for products and services require that the specific needs of older people and those with disabilities be accommoda-

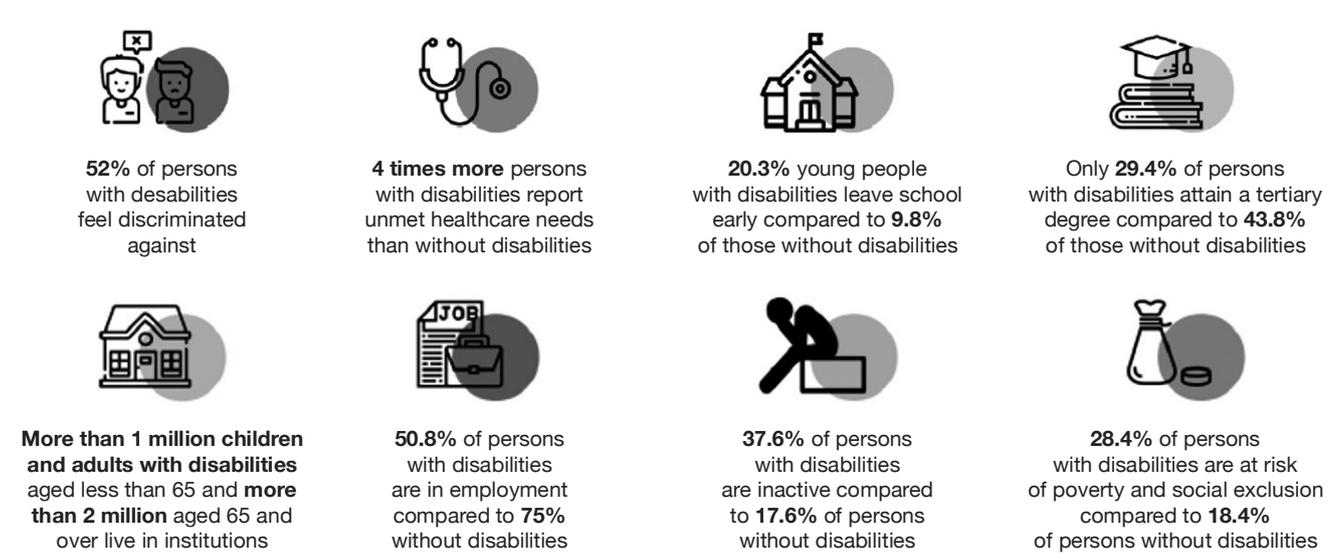


Figure 1. **Accessibility-related statistics (source: Strategy for the rights of persons with disabilities 2021-2030).**

ted through the provision of clear and easily accessible information both online and offline.

This class of consumer, in addition to the needs already outlined, may require specific accommodations such as assistive technologies to ensure accessibility of products. Providers of products and services must therefore adopt a fair and non-discriminatory approach to their offerings, ensuring compatibility with such assistive technologies. Care must also be taken to accommodate the difficulties faced by “off-liners”, that is, those less familiar with online technologies. These consumers can be particularly vulnerable to exploitation and fraud.

Approximately 15% of the world’s population has some kind of disability, with about 2-4% being seriously curtailed in their daily lives, of whom about 80% live in developing countries (World report on disability, World Health Organization/World Bank, 2011). In many countries, those with disabilities have difficulty accessing: inclusive basic services, protection, assistive technologies, information, justice and legal identity. They are also subject to discrimination and may lack job opportunities (Shaping Europe’s Digital Future 2020). They may find themselves segregated from society and reliant on institutionalised care. Education systems often do not cater well to the needs of children with disabilities.

**DIGITAL THREATS AND CHALLENGES**

The recent scholarship has given us a detailed account of challenges that are faced by users of the digital environment. These challenges are acutely felt by those in society who are disabled or less computer-literate. Let us examine some relevant examples from the digital world (Costa E., Halpern D. 2019):

**1. The potential to exploit consumer biases online**

In the familiar world of bricks-and-mortar shops, there are equally familiar, and extremely subtle, techniques for luring customers into a transaction. Similarly, our online experience is influenced by the presentation of the web sites and systems that we use. For instance, more than 70% of the time, consumers will choose from one of the top three results from mobile searches. These and other behavioural biases are magnified in the fast-moving online processes that characterise our new shopping reality. Using Big Data, the operators of the global platforms involved in e-commerce can readily exploit our biases

and weaknesses, which are better understood by the systems than by us ourselves.

**2. Understanding and accepting the ‘terms of engagement’ online**

A key example of how customers engage with online terms and conditions is the fact that Paypal’s terms & conditions are 36,275 words long – that’s longer than Shakespeare’s Hamlet. Even in less extreme cases, the effect is the same: consumers, when confronted with small print regarding important aspects of their online engagements will simply click through without reading the content. Given that these terms and conditions relate to the use and sharing of their personal data, it is clear that these disclosures are ineffective. Consumers end up agreeing to unseen conditions and remain ignorant of the agreements they have given.

Company	Time to Read	Reading age required
Instagram terms of use and data policy	31 mins	18 years
Facebook terms of service and privacy policy	34 mins	18 years
Whatsapp terms of service and privacy policy	41 mins	21 years
Snapchat terms of service and data policy	35 mins	16 years
Twitter terms of service and privacy policy	46 mins	18 years

Figure 2. Length and complexity of typical terms of service and privacy policies (Costa E., Halpern D. 2019)

**3. Trust manipulation**

In the online world, even the less digitally-literate are largely aware of the need for caution, and trust plays a huge role in influencing online engagement. Unfortunately, this trust can be manipulated using techniques specifically designed to prey on the consumer’s awareness of the need for vigilance. Once the illusion of trust can be created, consumers will be more willing to engage in expensive or even outright fraudulent transactions. Fake reviews (a

manifestation of “Astroturfing”) and even scam adverts are very common and prove very difficult to prevent.

#### 4. Attention wars

In an online world, large numbers of providers compete for our attention. Once our attention is gained, they jealously strive to retain it using finely honed interaction techniques. Swipes, likes and streaks are examples of the refined approaches in use. Infinitely-scrolling message feeds similarly prolong interaction.

#### 5. Predicting our preferences

Human preference operates on different levels. We can think of a “first order preference” being that which is reflected in our behaviour at the first moment of a stimulus or temptation. On reflection, a more considered or rational “second order preference” can emerge. In online situations, system operators may configure their offering in ways that encourage immediate actions based on the first order preference, often before a second order preference can emerge. An example of this is online gambling, where operators are motivated to keep users betting more for longer. Various techniques are also adopted to lessen the perceived impact of the money committed, for example, online wallets that encourage users to think about their money in a fragmented way. Clearly, such impulsive activity can be to the detriment of vulnerable consumers.

#### 6. More than markets: morals, ethics and social networking

Even outside of commerce and money, other familiar aspects of life also exist online. Concepts of belonging and of social groups can also be observed in online interactions. Online, as in real-life, social groups, acceptance and “who knows who?” can be very important. Online social networks can be much larger than their offline equivalent, which can therefore further amplify any social inequity. This becomes particularly worrying in any situations involving bullying or exclusion. Because e-commerce itself often carries a social component (often linked to reputation and trust mechanisms), we see negative examples in this area too. As an example, Airbnb guests with distinctively African-American names are 16% less likely to be accepted than identical guests with distinctively White names.

#### 7. Other problems

A range of other issues can apply to online engagement, including fake news, deep fakes, personalized pricing and price discrimination. Consumers can be susceptible

to attacks on their data security including: hacking - behavior consisting of unauthorized access to information as a result of breaching security; phishing - a method of fraud in which a criminal impersonates another person or organization in order to obtain certain information (e.g. login details for online banking) or tricks the victim into performing specific actions; sniffing - unauthorized interception of information sent over networks, notably unencrypted WiFi networks, or spoofing - understood as impersonating another element of the IT system, e.g. a computer of another user, in order to use it as a tool to perform other illegal activities, e.g. to launch attacks on specific websites.

From the foregoing observations it is possible to conclude that it is getting more and more important to help users safely navigate through websites and applications. It was noted that a contemporary consumer must now be sufficiently savvy to resist a range of persuasive and potentially deceptive ploys.

Even if actual online interactions over the Internet are increasingly simple, and despite widely held views that access to it is a fundamental right, responsible Internet use is not always easy. Most users are ignorant of the traces they leave behind during their interactions and how advertisers aggregate this information to target them. Similarly, complex terms and conditions that can be easily acknowledged unread have the effect of granting wide permissions over the use of sensitive personal data.

In a world where even relatively informed consumers cannot be expected to anticipate these kinds of threat, governments and regulators need to ensure they stay abreast of these issues. Existing competition and consumer law were not designed for this kind of commerce and must therefore be bolstered in the interest of all consumers.

### INTERNATIONAL LEGAL FRAMEWORK OF ACCESSIBILITY

Article 1 of the Charter of Fundamental Rights of the EU (the Charter) sets forth that “Human dignity is inviolable. It must be respected and protected”. The Charter refers to the rights of disabled people in article 26 and makes clear that “the EU recognises and respects the right of persons with disabilities to benefit from measures designed to ensure their independence, social and occupational integration and participation in the life of the community.” On the basis of Article 21 of the Charter it is prohibited to discriminate on the basis of disability.

The Treaty on the Functioning of the EU (TFEU) in Article 10 requires the Union to define its policies and activities in an anti-discriminatory manner, including respect for people's disabilities. According to Article 19 "without prejudice to the other provisions of the Treaties and within the limits of the powers conferred by them upon the Union, the Council, acting unanimously in accordance with a special legislative procedure and after obtaining the consent of the European Parliament, may take appropriate action to combat discrimination based on sex, racial or ethnic origin, religion or belief, disability, age or sexual orientation".

The United Nations Convention on the Rights of Persons with Disabilities is acknowledged to be the first legally-binding international human rights instrument. Therefore, the EU and its member states must ensure its implementation in their legal regimes. UN CRPD was agreed on 13th December 2006 at United Nations Headquarters in New York and was opened for signature on 30th March 2007. Initially, the Convention and the Optional Protocol were signed by 82 and 44 signatories respectively. To date, (May 2021) there have been 164 signatories to the Convention and 94 to the Optional Protocol. It earned the distinction of being the "highest number of signatories in history to a UN Convention on its opening day". It is acclaimed as "the first comprehensive human rights treaty of the 21st century" and "the first human rights convention to be open for signature by regional integration organizations". It took effect on 3rd May 2008.

Article 1 of the UN CRPD sets forth the subject matter of the regulation by referring to persons that have disabilities, such as long-term physical, mental, intellectual or sensory impairments, that in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others. As the UN CRPD is intended to combat discrimination on the basis of disability such discrimination is defined as "any distinction, exclusion or restriction on the basis of disability which has the purpose or effect of impairing or nullifying the recognition, enjoyment or exercise, on an equal basis with others, of all human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field. It includes all forms of discrimination, including denial of reasonable accommodation" (Article 2). At the heart of the UN CRPD are also the concepts of accessibility and universal design. The UN CRPD introduces the concept of accessibility in Article 9, which

requires that "States Parties take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas.

**These measures, which shall include the identification and elimination of obstacles and barriers to accessibility, shall apply to, inter alia:**

- (a) Buildings, roads, transportation and other indoor and outdoor facilities, including schools, housing, medical facilities and workplaces;
- (b) Information, communications and other services, including electronic services and emergency services.

**[...] States Parties shall also take appropriate measures to:**

- (a) Develop, promulgate and monitor the implementation of minimum standards and guidelines for the accessibility of facilities and services open or provided to the public;
- (b) Ensure that private entities that offer facilities and services which are open or provided to the public take into account all aspects of accessibility for persons with disabilities;
- (c) Provide training for stakeholders on accessibility issues facing persons with disabilities;
- (d) Provide in buildings and other facilities open to the public signage in Braille and in easy to read and understand forms;
- (e) Provide forms of live assistance and intermediaries, including guides, readers and professional sign language interpreters, to facilitate accessibility to buildings and other facilities open to the public;
- (f) Promote other appropriate forms of assistance and support to persons with disabilities to ensure their access to information;
- (g) Promote access for persons with disabilities to new information and communications technologies and systems, including the Internet;
- (h) Promote the design, development, production and distribution of accessible information and communications technologies and systems at an early stage, so that these technologies and systems become accessible at minimum cost".

The legal acts referring to disabilities introduce the significant idea of Universal Design, known also as the

Design for all approach. The UN CRPD in Article 2 defines Universal Design as the “products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design”. It must not exclude assistive devices for particular groups of persons with disabilities where these are needed.

It should also be emphasised that signatories recognize the right of persons with disabilities to education (Article 24). “With a view to realizing this right without discrimination and on the basis of equal opportunity,

**States Parties shall ensure an inclusive education system at all levels and life long learning directed to:**

- (a) The full development of human potential and sense of dignity and self-worth, and the strengthening of respect for human rights, fundamental freedoms and human diversity;
- (b) The development by persons with disabilities of their personality, talents and creativity, as well as their mental and physical abilities, to their fullest potential;
- (c) Enabling persons with disabilities to participate effectively in a free society.

**In realizing this right, States Parties shall ensure that:**

- (a) Persons with disabilities are not excluded from the general education system on the basis of disability, and that children with disabilities are not excluded from free and compulsory primary education, or from secondary education, on the basis of disability;
- (b) Persons with disabilities can access an inclusive, quality and free primary education and secondary education on an equal basis with others in the communities in which they live;
- (c) Reasonable accommodation of the individual’s requirements is provided;
- (d) Persons with disabilities receive the support required, within the general education system, to facilitate their effective education;
- (e) Effective individualized support measures are provided in environments that maximize academic and social development, consistent with the goal of full inclusion.

In order to secure the above goals it is openly admitted that artificial intelligence and augmented are of major importance.”

**EUROPEAN UNION: TOWARDS EQUALITY AND PROTECTION OF PERSONS WITH DISABILITIES.**

**“DESIGN FOR ALL” APPROACH**

Accessibility is a concept that is attained by the conscious removal of hurdles to accessing products and services and the prohibition of introducing new barriers. It should be accomplished through a universal design or design for all approach, in order to secure access for persons with disabilities on an equal basis with others.

**In 2002 the European Commission adopted 5 Directives labeled collectively as the “regulatory package”:**

- Directive 2002/21/EC (Framework Directive);
- Directive 2002/20/EC (Authorisation Directive);
- Directive 2002/19/EC (Access Directive);
- Directive 2002/22/EC (Universal Service Directive);
- Directive 2002/58/EC on privacy and electronic communications.

The regulatory package provides a framework for regulating electronic networks and services and addresses many of the needs of users with disabilities. The overall goal is to ensure equality of access by all users, with or without disabilities.

The EU has in the last few years adopted a number of regulations championing greater accessibility for persons with disabilities: the European Accessibility Act covering products and services, the Web Accessibility Directive, the Electronic Communications Code, the Audiovisual Media Services Directive and copyright legislation. Furthermore, European accessibility standards have been established in support of the Design for All principle.

The European Union adopted the EU Disability Action Plan 2003-2010, the European Disability Strategy 2010-2020 and the Strategy for the rights of persons with disabilities 2021-2030. In 2010 it was noted that one in six EU residents has a mild-to-severe disability, which amounts to 80 million people who may be partly excluded from the information society (EU Labour Force Survey, 2002). The Strategy 2010-2020 emphasised the importance of eliminating barriers, based on eight distinct categories: Accessibility, Participation, Equality, Employment, Education and Training, Social Protection, Health and External Action. From the point of interest of this paper, attention should be drawn to accessibility and education.

*Accessibility* is the principle that people with disabilities should have access, on an equal basis with others, the physical environment, transportation, information and communications technologies and systems (ICT), and other facilities and services. All of the areas listed still suffer from the presence of significant barriers. For example, only 5% of public web sites in the EU-27 comply fully with web accessibility standards, though more are partially accessible. Subtitles and audio-described broadcasts are still far from universal on television.

To focus for a moment on the area of ICT, the specific topic of e-Accessibility was addressed in the 2005 e-Accessibility Communication, which identified the need for additional efforts in this area.

#### ***E-Accessibility solutions can be divided into:***

- ‚mainstream’ solutions in which accessibility features are built in from the outset.
- ‚assistive’ solutions, which are add-on tools to provide additional accessibility to products or systems which do not provide such capabilities ‚out of the box’.

#### ***E-Accessibility must address a diversity of needs across a wide range of disability types:***

##### **• Visual impairment**

Online content can be very visually oriented, with content or features often difficult to access for visually impaired users. This arises with web sites, mobile phones, ATMs and even traditional paper documents. E-Accessibility approaches can include options to adjust display parameters including font size, style, colour and contrast. In addition, there is the option to provide text-to-speech or other audio interfaces.

##### **• Hearing impairment**

The hearing-impaired will, in general, experience challenges with any voice or audio-based interaction. This includes voice telephony, the audio component of on-screen content. In addition, some audio-based devices, such as mobile phones, may even interfere with hearing aids. The needs of hearing-impaired users should be heeded by providing control over volume levels and other audio settings. Visual alternatives to audio components are also appropriate. Where real-time human interaction is required, alternatives to voice communication, such as text chat or sign language can be considered.

##### **• Speech impairment**

Speech-impaired users can encounter obstacles when required to interact using their own voice. This applies not only to human-to-human interactions, but also to automated voice menu systems. Text telephony alterna-

tives can address these challenges, as can many of the text-oriented Internet-based approaches.

##### **• Mobility impairment**

The need to interact with specific user interfaces can be challenging for users with impaired dexterity. Keyboards or keypads and computer pointing devices may be difficult to use at all or may be difficult to use to control certain systems not built with sufficient care. Where interactions are required in a public space, devices like ATMs may be difficult to access for wheelchair users or people with other mobility impairments.

##### **• Cognitive impairment**

These can include changes in cognition due to advanced age, and the category encompasses challenges related to memory, reaction speed or any other difficulty relating to systems or in managing their complexity. Here, it is essential that the systems be designed for maximum comprehensibility by all classes of user.

##### **• Multiple disabilities**

It must be remembered that many users may be faced with a combination of different impairments. Again, this can often arise with increasing age. This means that certain solutions that may apply to a single impairment will not cover all eventualities.

Unequal access to education is also a factor. Among those aged 16-19, the rate of non-participation in education is noticeably higher for considerably restricted people (37%) than for somewhat restricted people (25%) or those not restricted at all (17%). Often, those with severe disabilities may be segregated from mainstream education. For children in particular, this is undesirable and integration into the main education system is the better approach. The European Commission is promoting inclusive education as part of the “Youth on the Move” initiative and the Lifelong Learning Programme.

The coming of the COVID 19 pandemic focused a lot of attention on all these challenges, since the need for home confinement created new imperatives for online activity, which, as we have seen, are already challenging for many individuals. As such, the inequities already identified have been magnified by the pandemic. All of the noted obstacles to online engagement apply, along with the challenges faced by those who cannot easily afford the equipment or connectivity required. Many people were ill-equipped for the sudden obligation to engage in video conferencing, teleworking, distance learning, online shopping or even online engagement with public health infrastructure.

The Disability Strategy 2010-2020 identified employment as a policy priority. The Commission is committed to improve access to the labour market for persons with disabilities. Despite the success of the Employment Equality Directive in advancing the employment rights of persons with disabilities, more needs to be done. This is an area which may benefit from what other industries have learned from the COVID 19 pandemic. The pandemic made it necessary for certain kinds of employment flexibility that had previously been resisted by many employers. Many useful precedents can now be used to promote similar creativity in enabling greater access to employment by persons with disabilities.

**ACCESSIBILITY REQUIREMENTS FOR PRODUCTS AND SERVICES**

The European Accessibility Act noted disparities between Member States regarding the accessibility of products and services for persons with disabilities. These create barriers to the free movement of products and services and undermine competition in the internal market. In some cases, these disparities may increase after the implementation of the UN CRPD. Businesses, especially SMEs, are particularly affected by these barriers (Preamble to EAA, point 1).

The EAA further noted that the UN CRPD calls on its signatories to undertake or promote research and development of, and to promote the availability and use of, new technologies, including information and communications technologies, mobility aids, devices and assistive technologies, suitable for persons with disabilities (Preamble to EAA, point 3, 5, 12-17, 50).

Accessibility requirements must be defined for the products and services within the scope of the Directive

in order that these can move freely within the internal market (Preamble to EAA, point 22).

Furthermore, the Directive commits to the four principles of accessibility for web site and mobile applications already referenced in (EU) 2016/2102. **These are:**

- Perceivability (information and user interface components must be presentable to users in ways they can perceive);
- Operability (user interface components and navigation must be operable);
- Understandability (information and the operation of the user interface must be understandable);
- Robustness (content must be robust enough to be interpreted reliably by a wide variety of user agents, including assistive technologies). Those principles are also relevant for this Directive.

The EAA refers to persons with disabilities, who are defined as “persons who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others” (Article 3 (1)).

It imposes obligations on producers, manufacturers, importers and distributors when placing a product on the market or offering it for sale. Manufacturers shall ensure that the products have been designed and manufactured in accordance with the applicable accessibility requirements of the Directive (Article 7).

Where compliance of a product with the applicable accessibility requirements has been demonstrated by that procedure, manufacturers and importers shall draw up an EU declaration of conformity and affix the CE mar-

**Table 1. According to Article 2 the EAA “applies to the following products placed on the market after 28 June 2025:**

(a)	consumer general purpose computer hardware systems and operating systems for those hardware systems;
(b)	the following self-service terminals: (i) payment terminals; (ii) the following self-service terminals dedicated to the provision of services covered by this Directive: – automated teller machines; – ticketing machines; – check-in machines; – interactive self-service terminals providing information, excluding terminals installed as integrated parts of vehicles, aircraft, ships or rolling stock;
(c)	consumer terminal equipment with interactive computing capability, used for electronic communications services;
(d)	consumer terminal equipment with interactive computing capability, used for accessing audiovisual media services; and
(e)	e-readers”.

**Table 2. In the same instance it is also mentioned that the directive “applies to the following services provided to consumers after 28 June 2025:**

(a)	electronic communications services with the exception of transmission services used for the provision of machine-to-machine services;
(b)	services providing access to audiovisual media services;
(c)	the following elements of air, bus, rail and waterborne passenger transport services, except for urban, suburban and regional transport services for which only the elements under point (v) apply: (i) websites; (ii) mobile device-based services including mobile applications; (iii) electronic tickets and electronic ticketing services; (iv) delivery of transport service information, including real-time travel information; this shall, with regard to information screens, be limited to interactive screens located within the territory of the Union; and (v) interactive self-service terminals located within the territory of the Union, except those installed as integrated parts of vehicles, aircraft, ships and rolling stock used in the provision of any part of such passenger transport services;
(d)	consumer banking services;
(e)	e-books and dedicated software; and
(f)	e-commerce services”.

king (Articles 7-10). Manufacturers shall keep the technical documentation and the EU declaration of conformity for five years after the product has been placed on the market.

All products shall comply with the accessibility requirements set out in Sections I and II of Annex I (Article 4 Section 2). Only self-service terminals are exempted from the accessibility requirements set out in Section II of Annex I.

#### **The EAA sets forth very detailed requirements for:**

- product design,
- labelling and instructions,
- user interface,
- functionality design,
- support service.

In general, products must be designed and manufactured in such a way as to maximise their foreseeable suitability for persons with disabilities and shall be accompanied where possible in or on the product by accessible information on their functioning and on their accessibility features.

#### **The information about a product should be:**

- made available via more than one sensory channel,
- presented in an understandable way,
- presented to users in ways they can perceive,
- presented in fonts of adequate size and suitable shape, taking into account foreseeable conditions of use, and using sufficient contrast, as well as adjustable spacing between letters, lines and paragraphs.

## **CONCLUSIONS**

This study shows that people with disabilities face many obstacles in their everyday lives. Affected areas may include simple tasks, such as online shopping, through education and access to the labour market. In 2006, the United Nations adopted a Convention to combat these obstacles. In the European Union it can be observed that people’s disabilities have triggered a discussion that gave rise to several legal acts and documents geared towards remediating many of the accessibility gaps faced by people with disabilities. As of early 2000, many legal documents offered only a general perspective on this problem, but recently, the EU has combined several policies in its unified strategy regarding education, employment, the circular economy and combating discrimination based on disabilities. The EAA sets forth a new set of obligations that will take effect from 28th June 2025 with regard to products and services. It may be important from the point of view of product designers, who must now ensure that their products are accessible to people with disabilities and that any provided labels and information meet the new requirements. It is important that products, and services, including all related instructions and information, are user-friendly, easy to understand, clear to read and intuitive.

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## REFERENCES

- Communication from the Commission to the European Parliament and the Council New Consumer Agenda *Strengthening consumer resilience for sustainable recovery*, Brussels, Nov. 13, 2020; COM/2020/696 final;
- Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions, *The European Green Deal*, Brussels, Dec. 11, 2019, COM/2019/640 final
- Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *A new Circular Economy Action Plan For a cleaner and more competitive Europe*, CEAP, Brussels March 11, 2020; COM/2020/98 final
- Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, *Shaping Europe's Digital Future*, Brussels, Feb. 19, 2020, COM/2020/67 final
- Resolution adopted by the General Assembly on 25 September 2015. Transforming our world: the 2030 Agenda for Sustainable Development, *UN Resolution 2015*, General, Oct. 21, 2015; A/RES/70/1
- Convention on the Rights of Persons with Disabilities and its Optional Protocol (A/RES/61/106), Dec. 13 2006; *United Nations Headquarters in New York*, opened for signature on March 30, 2007, UN CRPD
- Directive (EU) 2019/882 of the European Parliament and of the Council of 17 April 2019 on the accessibility requirements for products and services, OJ L 151, 7.6.2019, p. 70; European Accessibility Act.
- Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Digital Education Action Plan (2021-2027), *Resetting education and training for the digital age*, Brussels, Sept. 30 2020; COM/2020/624 final
- Union of Equality: Strategy for the Rights of Persons with Disabilities 2021-2030; KE-02-21-257-EN-N; <https://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=8376&furtherPubs=yes>
- World Report on Disability 2011; World Health Organization/World Bank
- Costa E., Halpern D., The behavioral science of online harm and manipulation, and what to do about it, London 2019, [https://www.bi.team/wp-content/uploads/2019/04/BIT\\_The-behavioural-science-of-online-harm-and-manipulation-and-what-to-do-about-it\\_Single.pdf](https://www.bi.team/wp-content/uploads/2019/04/BIT_The-behavioural-science-of-online-harm-and-manipulation-and-what-to-do-about-it_Single.pdf)
- Shaping Europe's Digital Future, February 2020, [https://ec.europa.eu/info/sites/default/files/communication-shaping-europes-digital-future-feb2020\\_en\\_4.pdf](https://ec.europa.eu/info/sites/default/files/communication-shaping-europes-digital-future-feb2020_en_4.pdf)
- Charter of Fundamental Rights of the European Union, 2012/C 326/02; OJ C 326, 26.10.2012, p. 391–407
- Treaty on European Union and the Treaty on the Functioning of the European Union, 2012/C 326/01, TFEU, *Official Journal* C 326 , 26/10/2012 P. 0001 – 0390
- Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive), OJ L 108, 24.4.2002, p. 33–50
- Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services (Authorisation Directive), OJ L 108, 24.4.2002, p. 21–32
- Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive), OJ L 108, 24.4.2002, p. 7–20
- Directive 2002/22/EC of the European Parliament and of the Council of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive), OJ L 108, 24.4.2002, p. 51–77
- Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications), OJ L 201, 31.7.2002, p. 37–47
- Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions *Equal opportunities for people with disabilities: A European Action Plan*, Brussels, Jan. 30, 2003, COM/2003/650 final
- Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions *European Disability Strategy 2010-2020: A Renewed Commitment to a Barrier-Free Europe*, Brussels, Nov. 15, 2020; COM/2010/636 final
- EU Labour Force Survey, 2002
- Communication from the Commission to the Council, the European Parliament and the European Economic and Social Committee and the Committee of the Regions – *eAccessibility* [SEC(2005)1095], Brussels Sept. 13, 2005; COM/2005/0425 final
- Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions *Investing In Europe's Youth*, Brussels Dec. 7, 2016, COM/2016/0940 final
- Council Directive 2000/78/EC of 27 November 2000 establishing a general framework for equal treatment in employment and occupation, OJ L 303, 2.12.2000, p. 16–22
- Directive (EU) 2016/2102 of the European Parliament and of the Council of 26 October 2016 on the accessibility of the websites and mobile applications of public sector bodies (Text with EEA relevance ), OJ L 327, 2.12.2016, p. 1–15