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Subject:	COMMISSION STAFF WORKING DOCUMENT IMPACT ASSESSMENT Accompanying the document Proposal for a Directive of the European Parliament and of the Council on the approximation of the laws, regulations and administrative provisions of the Member States as regards the accessibility requirements for products and services

Delegations will find attached document SWD(2015) 264 final PART 2/3.

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PART 2/3

COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT

Accompanying the document

Proposal for a Directive

of the European Parliament and of the Council on the approximation of the laws, regulations and administrative provisions of the Member States as regards the accessibility requirements for products and services

{COM(2015) 615 final}
{SWD(2015) 265 final}
{SWD(2015) 266 final}

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- Study on the socio-economic impact of new measures to improve accessibility of goods and services for people with disabilities; led by Deloitte in partnership with Technosite, for the European Commission, DG Justice, Fundamental Rights and Citizenship, Unit D.3 'Rights of persons with disabilities';

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2. ANNEX 2: RESULTS OF THE STAKEHOLDER CONSULTATIONS

Further to the main highlights already included in section '1.2. Consultation and expertise' of the Impact Assessment Report, this annex contains some more information and findings from the three main external consultations that have been conducted with a view of a European Accessibility Act. They are:

1. Eurobarometer on Accessibility (2012);
2. Public Consultation on Accessibility (2012); and
3. SME Panel (2012). Information on this panel is included in Annex 11 on SMEs.

1. Eurobarometer on Accessibility (2012)

Introduction

The interviews were carried out by telephone (fixed-line and mobile phone) between the 15th and the 17th of March 2012 with nationally representative samples of EU citizens (aged 15 and older) living in the 27 Member States. The target sample size in most countries was 1,000 interviews; in total, 25,516 interviews were conducted. Statistical results were weighted to correct for known demographic discrepancies.

The summary of the analysis is presented along the following topics:

- Profile of people with disabilities and the difficulties of accessibility they are facing in their daily life
- Perception of improved accessibility of goods and services and benefits in removing barriers
- How to improve and guarantee accessibility

Profile of people with disabilities and the difficulties of accessibility they are facing in their daily life

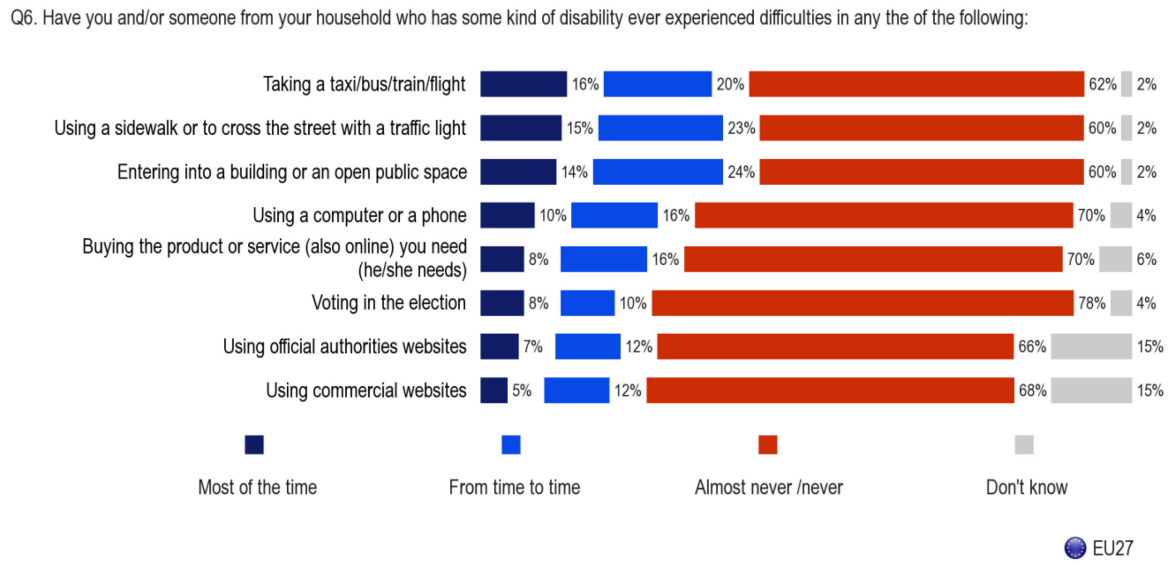
Almost three in ten Europeans (29%) say that they or someone in their household has a longstanding illness or health problem, which has lasted, or was expected to last, for 6 months or more.

Overall 29% of respondents say that they or a member of their household has been limited in some way, with one in eight (12%) describing this as severe limitation and 17% saying that it has limited them but not severely.

It is mobility issues that cause the most difficulty amongst EU citizens that say that they or a member of their household have a longstanding illness or health problem.

Nearly two in five respondents (38%) who say that they or a member of their household have a longstanding illness or health problem have experienced difficulties using the sidewalk or

crossing the street with a traffic light. The same proportion (38%) say that they have experienced difficulties entering into a building or an open public space, while more than a third (36%) have experienced difficulties taking a taxi, bus, train or flight.



BASE = Respondents who say that they or someone in their household have any longstanding illness or health problem (n=7403)

Around a quarter of those who say that they or a member of their household have a longstanding illness or health problem have experienced difficulties using a computer of telephone (26%) or when buying a product or service they needed (online purchasing included) (24%).

Fewer than one in five respondents (18%) who say that they or a member of their household have a longstanding illness or health problem has experienced difficulties voting in an election.

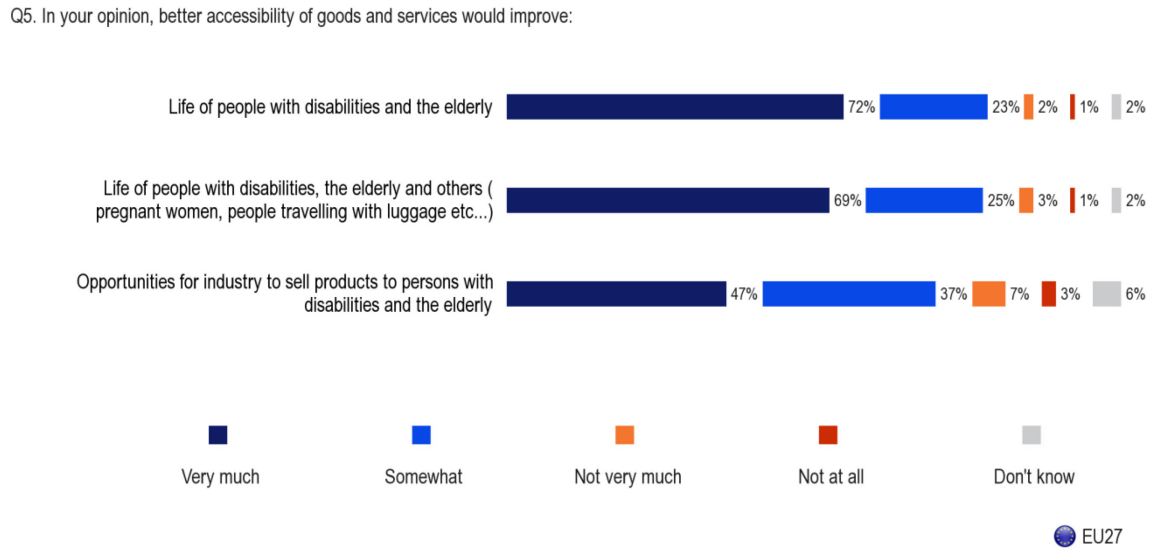
Just under one in five respondents (19%) who say that they or a member of their household have a longstanding illness or health problem has experienced difficulties using official authorities' websites, while slightly fewer (17%) have experienced difficulties using commercial websites.

Perception of improved accessibility of goods and services and benefits in removing barriers

Almost all respondents (97%) agree that people with disabilities should be able to participate fully in society like people without disabilities (*i.e.* they should be able to go to school, get a job, access shops and supermarkets, go on holidays etc.). Eight in ten respondents (80%) totally agree with this statement.

Overall more than nine in ten respondents (93%) agree that barriers make it difficult for people with disabilities, with two in three (66%) saying that they 'totally agree' and 27% saying that they 'tend to agree'.

7 in 10 Europeans believe better accessibility of goods and services would very much improve the lives of people with disabilities, the elderly and others with accessibility issues (72% say this when asked just about people with disabilities and the elderly and 69% say this when asked about people with disabilities, the elderly and others such as pregnant women and those travelling with luggage).



47% of Europeans believe better accessibility of goods and services would very much improve opportunities for industry to sell products to people with disabilities and the elderly.

Two thirds (66%) of respondents say that they would buy, or pay, more for products if they were more accessible and better designed for all, with specific reference to the inclusion of people with disabilities and the elderly.

How to improve and guarantee accessibility

86% of Europeans agree that having similar accessibility solutions across Europe would enable them to travel, study and work in another EU country. Countries with the highest level of agreement with this statement are Malta (96%), Italy (94%), Ireland (93%), Lithuania (92%) and Greece (92%).

96% of Europeans agree that when public authorities provide goods and services they should be obliged to ensure that they are also accessible to people with disabilities.

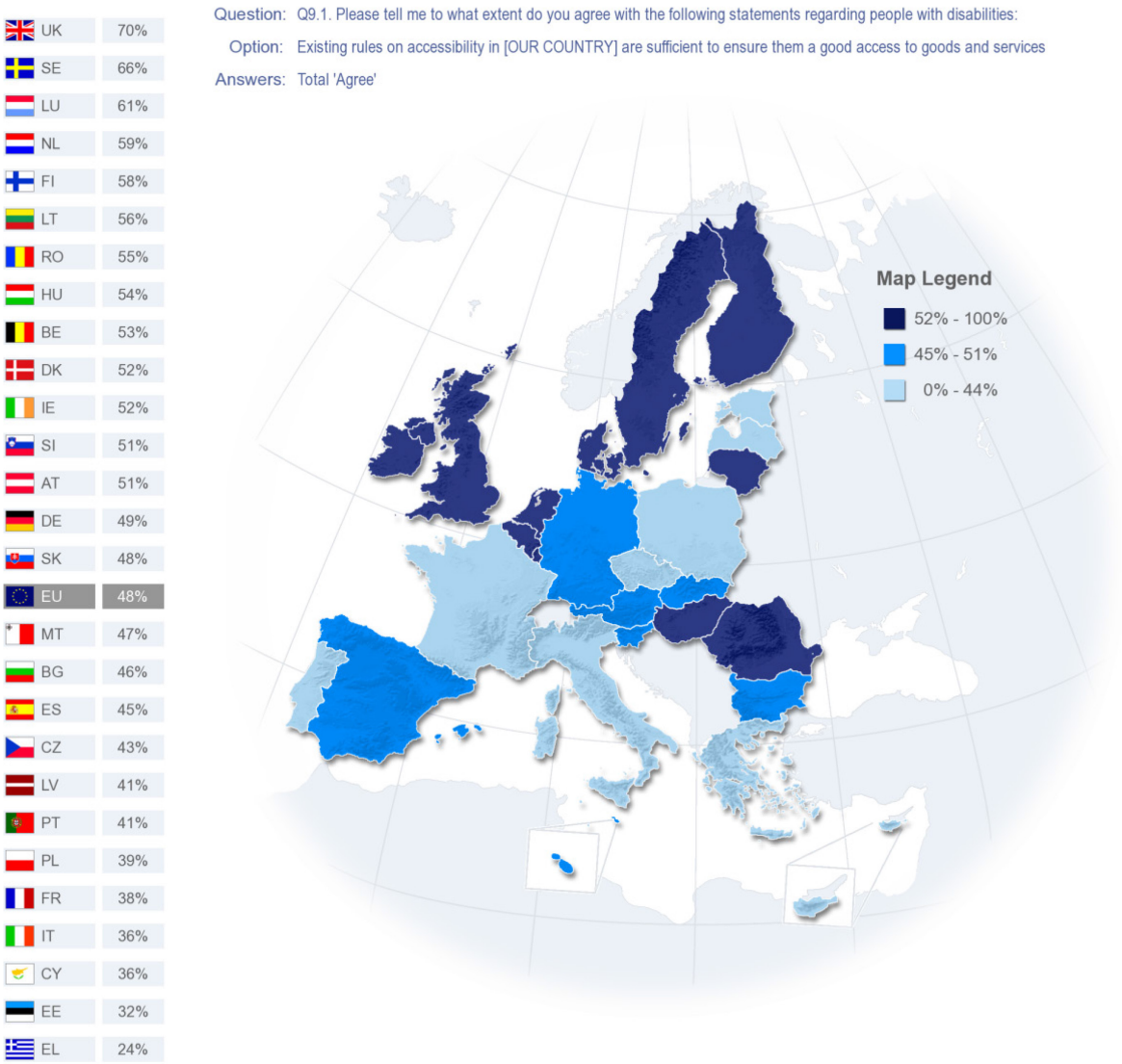
94% of Europeans agree that more money should be spent on eliminating physical obstacles which make the lives of people with disabilities and the elderly difficult.

93% of Europeans agree that manufacturers and service providers should be required to ensure accessibility of the goods and services that they sell.

85% of Europeans agree that it should be possible to complain and go to court to seek sanctions against manufacturers and service providers who do not comply with binding measures to improve accessibility.

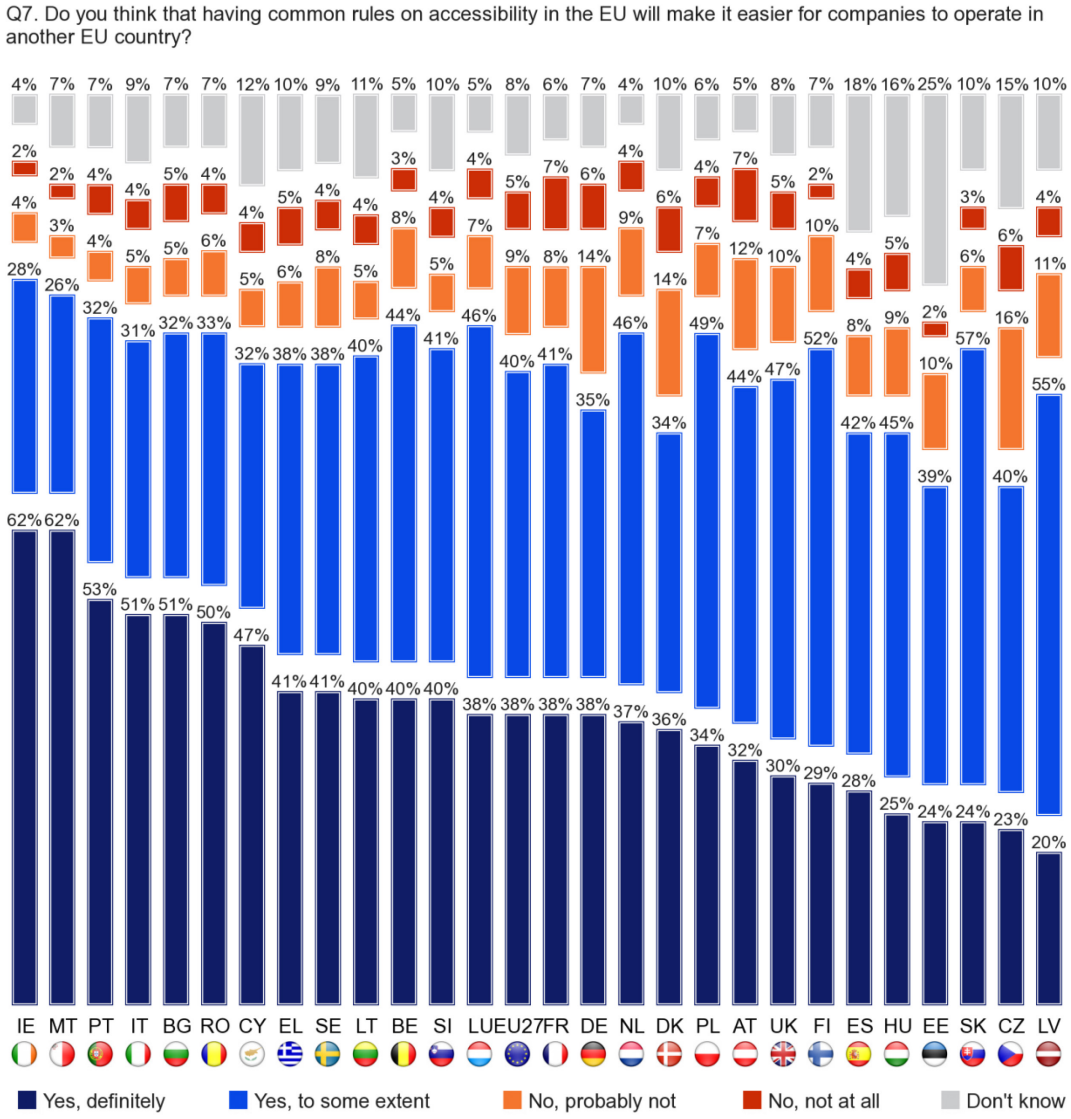
Across Europe as a whole, 48% agree that 'existing rules on accessibility are sufficient to ensure them a good access to goods and services' (14% totally agree and 34% tend to agree) whilst 47% disagree (15% totally disagree and 32% tend to disagree).

There is a difference of 46 percentage points between the country with the highest and lowest level of agreement (combined totally agree and tend to agree). In the UK seven in ten (70%) agree that existing rules are adequate while in the country with the lowest level of agreement, Greece, around a quarter (24%) agree. Other countries that have high levels of agreement with this statement overall are Sweden (66%), Luxembourg (61%), the Netherlands (59%) and Finland (58%).



78% of Europeans think that having common rules on accessibility in the EU will make it easier for companies to operate in another EU country.

There is a difference of 27 percentage points between the country with the highest and lowest level of positive response. The highest proportion saying yes overall is 90% and was recorded in Ireland. The lowest is 63% and was recorded in both the Czech Republic and Estonia.



2. Public Consultation on Accessibility (2012)

Introduction

Aiming to gather stakeholder views as input for the impact assessment of the measures to improve the accessibility of goods and services in the internal market, the "Public consultation with a view to a European Accessibility Act" (open from 12 December 2011 to 29 February 2012) was addressed to all citizens (including people with disabilities and older people), as well as to public and private sector organisations. The geographic scope covered includes EU Member States, EFTA/EEA countries and candidate countries to the enlargement of the EU.

The objective of the analysis was also to detect the goods and services prioritised by respondents to be rendered accessible, problems related to the internal market, as well as the potential measures to be taken in order to improve the current situation regarding accessibility and the functioning of the internal market for accessible goods and services.

In total, 2956 respondents accessed the public consultation online and an additional 42 responses were submitted in other formats. A high percentage of respondents merely accessed the survey and left the survey without completing the core questions of the questionnaire. Due to this factor, it was necessary to filter the data in order to analyse the valid responses. The sample of valid responses consists of 821 responses - 648 citizens (79%) and 173 representatives of organisations (21%).

The summary of the analysis is presented along the following topics:

- Current situation in the Member States and possible measures, from both a citizens' and organisations' perspective;
- Barriers, priority areas for an accessibility act and impacts from a citizens' perspective;
- Barriers, customers, costs and benefits, and measures from an organisations' perspective;
- Prioritised goods and services.

Current situation in the Member States and possible measures

From the citizens' perspective

Citizens indicated three areas as the most problematic (ranked from the poorest to the highest accessibility perceived):

- **Transport**: Accessibility in the transport area was also perceived as low as 40% of the respondents stating so. An equal percentage did not answer the question and only 10% considered accessibility in the Transport sector as medium or high in both.
- **Information and communication**: In line with respondents' opinions on the Built environment, the ICT accessibility level was considered low by 35% of citizens,

whereas 9% and 10% defined it as medium or high, respectively. When looking at the country distribution, it is worth mentioning that the poorest perception of accessibility can be found in Belgium (79%) and Italy (88%). On the other hand, Germany and the United Kingdom showed the highest perception of accessibility (25% in both countries).

- **Built environment**: Most citizens that provided a scale of the accessibility level in the built environment ranked it low (29%), whereas others ranked it as medium (9%) or high (10%). Per country analysed (only those having a minimum of 15 responses), more than half of respondents considered it low, particularly in Italy (82%) and Belgium (62%).

In line with the answers to above mentioned question, the three most relevant areas presenting many accessibility barriers for citizens are presented below, ranked in order of importance[1]: Transport is again the most important, whereas the built environment is considered more priority than information and communication:

- Transport and mobility (33%)
- Built environment (20%)
- Information and communication, including ICT (16%)
- Health (14%)
- Education (12%)
- Other goods and services (11%)
- Public services (9%)
- Culture and/or leisure (6%)
- Employment (6%)
- Integration in society (3%)
- Tourism (3%)

Scope and efficiency of legislations as perceived by citizens and organisations.

Most citizens ranked badly in terms of efficiency (34%) and scope (29%). Organisations' perception of current legislation show an equal split (19% good and 19% bad) and the efficiency of the legislation is judged to be bad by most organisations (24%) while 19% deem the efficiency to be good. Therefore, particularly among citizens there is a clear perception

[1] Percentages surpass 100% since questions were open and responses were not mutually exclusive. Accordingly, one respondent may mention as many sectors as considered relevant.

that the legislation is part of the reason why there is a problem with regards to accessibility, it being bad in scope and inefficient.

Concerning the possible actions that can be undertaken, several respondents outlined possible policy measures and best practices that could be taken in order to improve accessibility levels.

The main transversal items found in citizens' responses are the following:

- **Legislation**: When asked about essential provisions on existing national or foreign accessibility legislations, 16% of citizens cited international legislations such as the public procurement law of the US and some legal requirements on accessibility in Australia regarding consumer information on accessibility features for electronic devices.

- **Standards**: Some citizens considered essential that public authorities unify standards so that there is a comprehensive and coherent standard norm that can be referenced by different legislations and markets. It is important to remark that the lack of unified standards was considered to be a barrier; whereas also the counter part was mentioned: unified international standards are needed to foster accessibility.

- **Enforcement and control mechanisms**: More than one third of the citizens (35%) mentioned the lack of enforcement as a general problem concerning accessibility. These questions referred to what the respondents considered essential on accessibility legislation and important measures to be acknowledged by authorities. As above, the lack of enforcement is seen both as a barrier and a measure (i.e. the need of effective legislative enforcement).

- **Fines**: In line with the need of enforcement and control mechanisms, many citizens highlighted the importance of fines in order to implement legislation successfully.

- **Universal design**: This concept, linked to the UNCRPD, was the third most important policy measure for citizens.

- **Cooperation between public bodies**: Respondents ranked the cooperation among the four layers of government (EU 54%, national authorities, 48%, regional authorities 33% and local authorities 35%). The main concern declared was the actual integration and cooperation of different government levels so that accessibility is effectively accomplished.

Other citizens assigned to the EU a core important role, indicating that it should:

- Provide a common framework to support and harmonise legislation for disabled people across the EU that is reasonably enforceable;

- Set a standards across all countries, especially on transit and transport across the EU for disabled passengers;

- Set common practices on wheelchair policy and resource booking at the time of booking travel.;

- Set an equal policy for assistance dogs (registered) to travel.

Other specific roles or initiatives identified in the public consultation include:

- **Awareness campaigns**: Within the policy and legal measures acknowledged as important by citizens, it is worth mentioning the need of awareness campaigns focused not only on the topic of accessibility, but also on disability.

- **Information**: Even though not too many citizens commented on this item, some of them seemed very concerned about the lack of information relating to accessibility for businesses, citizens and disabled organisations themselves, especially regarding the question about the role that SMEs could play. Citizens declared that SMEs are very important facilitators in providing improved accessibility. Specific measures and assistance maybe be required, as costs involved in changing systems and procedures, training staff, and providing equipment could be difficult for smaller businesses to meet.

- **Training**: With less importance for citizens than for organisations, training was suggested as a policy and legal measure for the improvement of accessibility (5%). Moreover, some responses fostered the idea that special training for SME´s staff on how to deliver and facilitate service to disable people was needed.

- **Financial/Tax incentives**: The role of financial incentives was suggested as a relevant policy measure in order to foster accessibility (9%). Since many respondents argued that accessibility represents an important financial burden for small and medium enterprises (SMEs), incentives in the form of funds, subsidies or tax exemptions were suggested.

- **UNCRPD implementation**: The importance of the UNCRPD implementation was remarked by citizens as an important measure that public authorities as well as market operators should foster.

- **Understanding people with disabilities' needs**: A relevant number of citizens (27%) responded that people with disabilities should have an active role on the policy making process for public measures regarding accessibility as well as in the co-design phase of goods and services in private corporations. This was also marked as a suggestion for public authorities and market operators in order to improve accessibility of goods and services.

- **Public procurement**: Even though citizens did not mention public procurement as often as organisations did, this resort is a possible option since it can assure accessibility at least in public sector services. For some citizens, this is a starting point for the development and accomplishment of accessibility. This aspect was mentioned also within the group of suggestions for public authorities and market operations.

- **Research, Development and innovation**: Regarding existing national or foreign accessibility provisions, citizens remarked the importance of innovation and new research supported by government funds that can generate new solutions for improving accessibility. They linked it to the financial incentives measure. Within

those citizens suggesting to encourage R&D and innovation, a significant number mentioned the importance of SMEs developing new accessible solutions

From the organisations' perspective

Conclusions from the organisations' perspective are presented below, including a breakdown per type of organisation when possible[2].

In line with responses received by citizens, three areas were pointed out by organisations as the most problematic, although ranked differently:

- **Transport**: About one in every four organisations responding mentioned transport as a sector with low accessibility, whereas 10% considered it high and 8% medium.

Industries from the rail sector noted that Denmark set aside dedicated funding to improve accessibility, which may contribute to improve the current situation.

Goods mentioned by **NGOs** respondents regarding the transport sector include trains, buses, and coaches.

- **ICT**: In the ICT area, 23% of the organisations mentioned this sector's accessibility as low, whereas only 10% marked it as high and 8% as medium. There were a number of goods and services mentioned by the **industry**, including enlarged teletext internet services, and broadcasting accessibility requirements. On a communication and training level, it was noted that people with disabilities require a number of communication channels in order to precisely receive the products they need, and that staff working at stores should be trained to familiarise themselves with these needs.

Goods listed by **NGOs** as important included basic ICT equipment, mobile phones, assistive products, Internet Protocol television (IPTV), Video on Demand (VoD) services and internet TV protocols.

- **Built environment**: Some organisations (17%) perceived accessibility to be low in the built environment, whereas others considered it medium (13%) and high (7%) respectively. **Industry** respondents pointed out the lack of standards on accessibility in place to guarantee that people with disabilities are supported to fully participate in society. Responses from **NGOs** towards the built environment did point out the current state of affairs of accessibility legislation in countries such as Spain, the UK and the Czech Republic. Additionally, it was highlighted that local authorities in the UK volunteer to cooperate with civic initiatives on subsequent adaptations (physical barrier elimination) of buildings in use. Other topics discussed were access to (public) buildings, museums and exhibitions and prisons, access and use of urbanised public spaces and buildings, to name a few.

  Concerning the priority areas, the top three priorities are the same as indicated above, although information and communication was considered the most important area, followed by built environment and transport (which was indicated as the most problematic):

[2] Feedback from different types of organisations (Industry, NGO´s and Public Bodies) is also included in the analysis, although as the questions were open-ended, some topics attracted more attention from some types of organisations than from others. Note that some relevant feedback on these measures was also provided throughout the questionnaire.

- Information and communication (39%)
- Built environment (37%)
- Transport (36%)
- Health (17%)
- Public services (16%)
- Education (14%)
- Other goods and services (12%)
- Culture and/or leisure (8%)
- Employment (5%)
- Integration in society (4%)
- Tourism (3%)

Again, the underlying reasons for the current problems identified by organisation in relation to the legislation from the point of view of organisations have been analysed. The perceptions seem to be divided regarding the scope of legislation (19% considers it good and 19% considers it bad). Similarly, efficiency of the legislation is judged as bad by 24% organisations in contrast to 19% who deem the efficiency to be good. Therefore, it can be concluded that there is no consensus about the current legislation, however there is an indication that organisations consider the lack of efficiency as a reason for identified problems with regard to accessibility.

The number of organisations' responses received per country impeded to examine the influence of the country variable; however, some responses provided more insights about the issues causing problems in the sectors prioritised above:

- **ICT**: Organisations responding about the scope and efficiency of legislation regarding ICT stated that the efficiency can represent a barrier.

Barriers pointed out in the field of ICT by **NGOs** include:

- lack of including the needs of people with disabilities in the design stage of technology development;
- basic ICT equipment not having inbuilt accessibility features;
- expensive specialist assistive/accessible ICT equipment;
- information being inaccessible;
- difficulties accessing travel information;

- lack of awareness campaigns to inform professionals and public authorities;
- high price of assistive technologies.

NGOs had an overarching agreement that access to information is the key element to being an active member of society. Without access to information, blind and partially sighted people are not able to access goods and services, they may not even know that these are available; so it is of paramount importance to address this issue.

- **Built environment**: Some elements were mentioned as important, such as the lack of lifts and ramps in public places and shops. The main physical barriers mentioned by the **industry** were footpaths, parking, inaccessible buildings, signage on footpaths that impede movement, deliveries on footpaths, and also that pathways in supermarkets could be too narrow for wheelchair users, for example.

- **Transport**: Organisations that indicated barriers in Transport accessibility mostly pointed out the poor efficiency of the existing legislation. **NGOs** noted a lack of enforcement of accessibility measures, giving examples such as lack of universality on accessible trains and buses. Difficulties accessing travel information and the behaviour of drivers and other transport staff cause many of the problems people experience when travelling. **Public bodies** participating declared that the main barrier was the information at bus stops being accessible visually and also in audio form, also noting that people with disabilities should pay lower fees for public transportation services.

Concerning the possible actions or policy measures that could be undertaken to tackle these issues, perceptions of respondents have been identified within different questions posed in the public consultation.

- **Legislation**: For organisations, restrictive legislation is the most important policy and legal measure, mentioned by the 36% of them. Some organisations noted international legislation for diverse topics such as fines or public procurement laws from a variety of countries such as the United States, Australia and Republic of Korea. International legislation was also mentioned when respondents were asked about essential provisions to take into account from existing legislations.

- **Standards**: When asked about what market operators should do to improve accessibility, one of the top five suggestions was working on unifying and integrating common standards so that the general rule complying standardisation for accessibility is simple and solid. In many cases, an explicit reference to international standards was made[3].

- **Enforcement and control mechanisms**: Organisations considered that actual control, monitoring and even monetary penalties are necessary for the enforcement of accessibility. Respondents made reference to these mechanisms as a measure for public authorities (35%). A number of **industry** respondents stated that standardisation efforts should be voluntary, industry-led, transparent and open to all

[3] NGO respondents applauded the EU ensuring mainstream ICT and mobile equipment and devices having built-in accessibility features, European e-publications conformed to accessibility and interoperability standards.

stakeholders, especially people with disabilities. The general consensus of **NGOs** is that enforcement is key to maintaining beneficial accessibility legislation.

- **Fines**: Organisations often mentioned the need for more fines in order to enforce accessibility. Although enforcement of accessibility legislation was deemed important, no further information was specified by industries, NGOs and public bodies.

- **Universal design**: The third most popular policy and legal measure perceived to improve accessibility was universal design. One in every four organisations explained the importance of this concept when cutting costs, gaining new clients and improving accessibility. The use of universal design and design for all was a frequent suggestion found throughout **NGOs** responses.

- **Cooperation between public bodies**: Organisations considered that effective cooperation between the four levels of governance is essential highlighting the aspect that cooperation with disabled people and their representatives should be included in structures on those levels.

- **Awareness campaigns:** Organisations, similarly to citizens, pointed out awareness campaigns as a policy measure to promote accessibility (13%).

NGOs considered awareness as important, as it can be used to help the integration of people with disabilities and at the same time enrich those who have not experienced disability so far. Awareness campaigns can also help shift the general regard that people with disabilities are in need of help, towards a view of them being active citizens who demand respect for their specific needs[4].

Public bodies noted that there is a growing need for awareness on the behalf of non-disabled people to train them in matters of accessibility.

- **Information**: Within the response for specific measures aimed for SMEs, respondents considered that fluid information to and from SMEs had to be improved (9%).

- **Training**: Doubling the percentage of respondents compared to citizens, organisations (11%) responded highlighting training as an item for policy and legal measures; it is mostly interpreted as staff training on accessibility as well as on disability in general. A few respondents expressed some concern about the need of training for SME's staff and managers when dealing with accessibility as well as disability.

Training staff working in public services were declared important by many **industries**. People who deliver transport services need to be trained in how to support a person with a disability to access transport services to ensure equality for all.

NGOs also emphasised training staff who are dealing with the public, in various topics including sign language, design for all and accessibility. It was pointed out as especially important to train staff in the transport and health sectors.

[4] It was also believed that lack of awareness can be explained by a lack of adequate communication efforts and a lack of funding.

When respondents spoke of persons with disabilities receiving training themselves, digital literacy for people with disabilities was consider crucial in order to join the labour market and to enhance personal independence within their communities.

Training was a subject discussed in depth by **public bodies'** respondents. It was stated that the training of product development experts should include "accessibility" and "design-for-all" themes.

- **Financial /Tax incentives**: The role of financial and tax incentives were acknowledged as a measure for improving accessibility for some organisation respondents: fiscal incentives as well as specific funds will enhance a proper and fair accessibility implementation. SMEs were identified as problematic for improving accessibility due primarily to the financial burden that sometimes represent some adaptations. One of the solutions given by respondents was to endow SMEs with financial and tax incentives from public programmes (10%).

Industry respondents suggested miscellaneous measures such as:

- European and national film subsidy programs could, for example, foster the promotion of subtitling and / or audio description in their programmes.

- The European Commission should support Member States in developing national plans including dedicated funding on transport. The funding must be on a sector by sector basis that supports the Commission's goals on a Europe-wide basis.

- In a brief way, one industry stated that there is a need for fiscal incentives in order to face technical challenges presented by accessibility.

- Economic incentives including tax reductions could be designed that market retailers develop original, accessible solutions.

The notion that public authorities should create incentives for market operators in order to make accessibility more attractive to them was emphasised throughout **NGOs** responses. Many respondents found tax incentives pertinent for companies which include design for all when manufacturing goods aimed at assisting persons with disabilities. One respondent proposed the exemption of customs duties on all assistive technology equipment, as well as relevant IT software. This call is similar to the tax exemption for cars adapted for drivers with motor disabilities that is already in place, however if implemented in the future it would include people with non-motor disabilities.

Finally, **public bodies** stated that the federal/national governments could develop financial incentives for the creation of barrier-free access to or barrier-free equipment of hospitals.

- **UNCRPD implementation**: One in four organisations stated that legislation that public authorities should successfully implement the UNCRPD.

Both **industry** and **public bodies'** respondents stated that the German Federal Government presented an action plan to implement the UNCRPD which recently passed through the

parliament. Germany alone created a National Action Plan (NAP), of over 200 projects and activities, highlighting the overall strategy of implementing the Convention and showing that inclusion is a process that should include all areas of life for people with disabilities.

- **Understanding people with disabilities' needs**: Organisations expressed that market operators and public authorities should listen to people with disabilities and their organisations (40% of respondents), suggesting that stable communication channels should be constructed for a fluid dialogue. Similarly to the "awareness campaigns" section above, user feedback from people with disabilities was stated to be of a great value for **industries**' future product developments. A few industries participate in regular outreach and "gain useful insights" through exchanges with the disability community in order to understand needs and create product design.

NGOs mentioned some measures:

- Both public authorities and market operators should involve persons with intellectual disabilities and their representative organisations (whether at local, regional or national level) in their initiatives aiming at improving accessibility.
- Experts with disabilities should be invited to take part as consultants in all stages of the development process.
- Crucial needs of people with disabilities should be included at the design stage of technology development.
- Market operators must be aware of end users' needs, understand the benefits of including design for all and discover the potential business opportunities the disability segment offers.

Public sector organisations expressed to rely very much on NGOs of disabled people/relatives in order to have feedback from policy created and implemented.

- **Public procurement**: A suggestion by some organisations (16%) was that public authorities should strongly include accessibility on their tender requirements for public procurement.
- **Research, development and innovation**: Research, development and innovation linked with public funding for new solutions in accessibility were proven to be an essential aspect reported by respondents. Moreover, this measure is essential for SMEs in order to facilitating competitive advantages through innovation.

Industry respondents indicated that the EU research framework programme should ensure accessibility as a precondition for funding.

Barriers, priority areas for an accessibility act and impacts from a citizens' perspective

Concerning barriers perceived by citizens, the same three areas remain the most cited in relation to accessibility barriers for citizens. Presented below and ranked in order of importance, specific types of barriers mentioned per area are highlighted:

- **Built environment**: Concerning barriers perceived in this sector, answers were focused on architectural barriers (such as lack of lifts, absence or inappropriately designed ramps, inaccessible entrances to public places and high curbs) and on the lack of enforcement of accessibility measures.

- **Information and communication**: The lack of unified standards across Europe is considered the most important barrier in the Information and communication sector, followed by lack of appropriate information in public places (e.g. streets and transport stations signs, braille signing or signing interpretation for the deaf).

- **Transport**: Regarding the barriers perceived, access to public transport was considered to be the most important issue, mainly trains and buses, stating that not all routes are accessible, creating uncertainty and a feeling of lack of freedom of movement among citizens.

On a separate note, a pointed out in the Built environment and ICT sectors, lack of enforcement and standards represent an important general barrier for citizens.

Sectors and areas considered by citizens as most important (in order of importance) are:

- Built environment
- Information and communication, including ICT
- Transport and mobility
- Health
- Culture
- Education
- Employment
- Participation in society
- Tourism

When citizens were asked about the impacts of an increased availability of accessible goods and services, they explicitly pointed out that the main effects would be found in the areas of:

- Participation in Society
- Built environment
- Transport & Mobility
- Information and communication

Starting with 'participation in society', it is extensively believed that by improving access to goods and services, disabled people will automatically have a stronger involvement in society, taking part more actively of the public sphere. This would improve quality of life as well as independent living. The impact expected for the built environment normally refers to retailing, buildings and toilets. Concerning the impact of measures improving accessibility in transport, it is linked with a better mobility within and around cities. Regarding the impact on Information and communication, the main importance was given to websites and online transactions, media and self-service terminals such as vending machines.

Respondents from the UK also mentioned an increased choice and affordability of accessible goods and services in the market, which would generate increased sales (potential disabled customers are often unable to find goods that they can use or unable to afford the very few goods that exist).

Barriers, customers, costs and benefits, and measures from an organisations' perspective

Conclusions from the organisations' perspective are presented below, including a breakdown per type of organisation when possible[5].

When organisations were requested to explain to what extent they were confronted with different accessibility rules in different Member States, 54% expressed that different Member States' rules create barriers, whereas 28% stated that no barriers were apparently found. The remaining 18% pointed out that different regional rules create barriers. In relation to the three most important areas the following barriers were identified:

- **Built environment**: As a general view, organisations considered that the lack of coherence concerning accessibility rules is an important barrier, along with a lack of enforcement. Barriers found in the built environment for **industry** respondents referred to the high cost of accessibility and different Member States' accessibility rules. The items most found refer to lifts, public and residential buildings, and thresholds.

- **ICT**: The main items or aspects highlighted were websites as well as the lack of standards and enforcement on how to present public information accessible to all in alternative formats such as Braille. **Industry** representatives pointed out that the main barrier perceived for accessibility is the lack of unified standards as well as the different legislations around Member States concerning accessibility. The main items found were ATMs, hardware, software, websites and web content.

- **Transport**: The lack of universality on accessible trains and buses, was deemed important. Barriers detected by the **industry** include the high costs and rigid legislation on accessibility. According to respondents, making transport accessible is rather expensive and legislation enforces strict requirements. Some items found in the responses are buses, trains, wheelchair lifts and transport stations. Some respondents pointed out that the different accessibility rules are a fact which makes travel and

[5] Feedback from different types of organisations (Industry, NGO´s and Public Bodies) is also included in the analysis, although as the questions were open-ended, some topics attracted more attention from some types of organisations than from others.

information difficult for tourists; moreover, they could entail that there are better levels of service in some countries than others. Assistance dogs were mentioned by **NGOs** as example of barriers created by different legislations, because laws are not only different countries, but also within different regions in the same country.

Regarding the role persons with disabilities play as customers and regarding market share, they were reported as being organisations' main clients (24% of respondents). It is clear for private businesses that people with disabilities are a commercial target to aim for. Other organisations affirmed that people with disabilities test their products and services in order to improve them in terms of accessibility.

From the **industry** perspective, accessibility is seen as a relevant trend in the market. Some industries target these segments directly due to their experience in producing goods and services for people with disabilities in a high percentage, whereas others target larger segments producing goods and services for the general public but fostering accessibility in order to entice people with disabilities to be customers.

Public bodies are also aware of the market potential for accessible products.

The actual costs and benefits of producing accessible goods and services are still not quite clear for organisations. Some agree on the fact that designing and producing accessible goods and services is expensive, especially when asked about the costs faced by their own organisation. Compliance with legislation is also mentioned as a source of cost that in many cases is hard to quantify. On the other hand, some benefits were identified such as reaching or retaining more clients and the improvement of consumer satisfaction.

Some **industry** respondents indicated that the estimation of financial costs and benefits was difficult to calculate. For some organisations, accessibility implies no extra cost, whereas for others it is considered a significant burden though, very few specified actual figures or estimations.

NGOs particularly highlighted the benefits of accessibility measureable in monetary terms. In their opinion, adopting EU common accessibility standards could lead to the overcoming of a lot of obstacles as well as to the improvement of the feeling of safety and autonomy of disabled people. If mainstream manufacturers emphasised on built-in accessibility, their products would be in the hands of consumers who otherwise would not buy them. Increased availability of accessible goods and services on the market would immediately increase choice for disabled people.

Finally, some **public authorities** declared that there are generally high costs in making infrastructures accessible. For instance, older public transport infrastructure may imply high costs. In contrast, new public transport infrastructure is already built accessible all over Europe, (in some cases with legal national obligations in others without them). Concerning vehicles, the continuous modernisation of fleets has resulted that in many cities (e.g. bus or urban rail) fleets are 100 % accessible and in some cities, still existing buses (e.g. high-floor) will be replaced in the coming years.

Legislation was considered the most relevant measure (23%) supporting the industry, followed by standards (22%), enforcement (13%), best practices (7%), certification schemes

(7%), cooperation between public bodies (5%) and awareness campaigns (4%), among others. Feedback received is focused on the two most important measures (legislation and standards).

Concerning **legislation**, the following conclusions have been identified:

Industry representatives indicated that an EU Accessibility Act should include a link to EU public procurement rules since the amount of different accessibility requirements and legislation at different levels is not helpful for businesses. There is a general agreement among industry respondents that rigid legislation represents a burden, whereas certain standards such as the WCAG for websites are supporting industries in their efforts to improve accessibility. In addition, a mix of EU and Member State legislation were mentioned pointed out as relevant:

- EU: the Audiovisual Media Services Directive, the 2009 revision of the EC Regulatory Framework for Electronic Communications Networks and Services (2002/21/EC) and General Equal Treatment Act and Directive 2008/57/EC on the "Interoperability of the Rail System within the Community"

- Germany: Copyright Act and Disability Discrimination Act

- UK: 2003 Communications Act,

- International legislation mentioned include the Australian Code for Accessibility Reporting, where manufacturers provide accessibility reports for fixed and mobile phones, and the Australian Disability Discrimination Act requiring goods used in the delivery of a service to be accessible.

NGOs indicated the following national legislations as examples:

- France: 2005 Act on Equal Opportunities,

- Spain: Act 51/2003 regarding Equal Opportunities, Non-discrimination and Universal Accessibility for Persons with Disabilities law (LIONDAU), the Royal Decree 366/2007 regarding Persons with Disabilities and Relations with the General State Administration, and the Spanish Royal Decree 505/2007 on Access and Use of Urbanised Public Spaces and Buildings.

- UK: General Building Code and Building Regulations Code, Equality Act 2010, Law no. 448/2006 on protection and promotion of persons with disabilities, and the Copyright (Visually Impaired Persons) Act of 2002.

- Although international legislation was not specifically named, many NGOS respondents included references to how the United States with both strong legislation in the education market and strong public procurement legislation has driven companies like Apple to include accessibility features in their products.

Finally, **Public bodies** the following Member State laws:

- France: Code of Construction and Housing, which provides public funding to remodel existing facilities so that every disabled person can gain access.

- Germany: Act on Equal Opportunities for Persons with Disabilities (BGG) (providing for the prohibition of discrimination against disabled persons by public authorities)

- Regarding international legislation, the success of American accessibility legislation was mentioned and how the American inclusion of mandatory accessibility requirements in public procurement was found favourable.

Concerning **standards**, the following conclusions have been identified:

The majority of organisations (60%) declared that having EU accessibility standards in line with the existing international ones will facilitate and foster accessibility.

Among the EU standardisation initiatives mentioned by **industry** responses, the Mandates M/376 and M/420 were deemed important in order to promote regulatory harmonisation. It was pointed out that a unified or common accessibility standard throughout Europe, in line with standards or regulations existing in North America and other major countries, will greatly benefit all the stakeholders including industry, end-users and service providers. Regulations and guidelines such as Section 508 in the US[6] and WCAG have been in place for a few years now and have gained wide acceptance amongst all stakeholders, even in Europe. Moreover, it was indicated that standards should specify functional requirements, be cross platform, industry-led and support further innovation and competition.

Standards mentioned by **NGOs** include the Spanish DBUSA Technical Building Code, British Standard BS 8878: 2010 "Web accessibility: code of practice". It was stated that European, rather than Member State accessibility standards, should be enforced for the safety of people with disabilities visiting other countries to avoid disorientation and enhance safety for all citizens. Many existing goods and services would be more usable to the population as such if they were designed in a standardised manner giving access for everyone. Standards regarding built environment are different across member states which is stated to have a risk for imported devices and materials being incompatible with local standards.

Public bodies indicated the following statements:

- The standards of accessibility to be called on in a future Accessibility Act are subject to constant change.

- A Europe-wide adoption of common standards for accessibility of goods and services is essential. These standards should be agreed by the European standards agencies.

- EU mandatory standards on accessibility should reflect best practice and should not result in a regression of existing national standards.

[6] Electronic and Information Technology Accessibility Standards - Section 508 of the Rehabilitation Act.

Priority goods and services

The top fifteen goods and services mentioned are aligned with the feedback provided by respondents throughout the questionnaire: built environment, transport and information and communication are the areas causing more problems and barriers related to the Internal Market to all stakeholders consulted. In general terms, buildings open to the public, websites and educational services have been the three most cited items.

Whereas citizens and public bodies are more concerned about buildings open to the public and websites, industry representatives indicated goods and services related to transport as core. Finally, NGOs found websites and educational services the most important to be covered by an EU Accessibility Act.

Many goods and services listed are not regulated in regards to accessibility or are competence of different levels of the administration (national, regional and local), and are demanded to be enforced regarding accessibility by an EU initiative.

3. SME Panel (2012)

Introduction

The SME Panel was conducted through Enterprise Europe Network between end of April and end of July 2012. **180 companies responded** to this survey on accessibility, which focused on mainstream accessible goods and services used by most people, not the so-called assistive devices[7]. The aim of this survey was to gain a better understanding of the most important sectors and to identify problematic issues from the industry's perspective, which may arise as a result of current legal fragmentation concerning the regulation of accessibility of goods and services and market issues. Of particular importance is the market supply of goods and services for which accessibility is included in the design stage to take into account the needs of the widest variety of users (*i.e.* Design for All/Universal Design).

The summary of the analysis, including its results, are presented along the following topics **in annex 11 on SMEs**:

- General information about the companies;
- How accessibility is considered in the organisation;
- Obstacles to producing and providing accessible goods and services;
- Estimates of the costs and benefits derived from providing accessible goods and services; and
- Possible EU measures to encourage companies to provide more accessible goods and services.

[7] *i.e.* special devices used to replace, compensate for, or improve the functional abilities of people with disabilities like mobility and visual/hearing aids, orthotics/prosthetics, speech devices, medical supplies, environmental controls, and respiratory devices.

3. ANNEX 3: DETAILS ON NUMBER OF PEOPLE WITH DISABILITIES IN THE EU

EU27 2010. Estimation of number of people with disabilities, by age group[8]

	EU-SILC disability prevalence rates (%)	Population 1 January 2010 (millions)	Estimation of population with disability 2010 (millions)
Less than 5 (e)	3.6	26.40	0.96
5 - 14 (e)	4.8	51.88	2.49
15 - 24	7.1	60.63	4.36
25 - 34	9.2	68.36	6.32
35 - 44	14.6	74.26	10.87
45 - 64	23.1	71.52	16.49
55 - 64	33.3	60.96	20.32
65 - 74	46.0	45.96	21.09
75 - 84	61.7	30.72	18.98
85 or over	71.8	10.41	7.48
Total		**501.10**	**109.37**

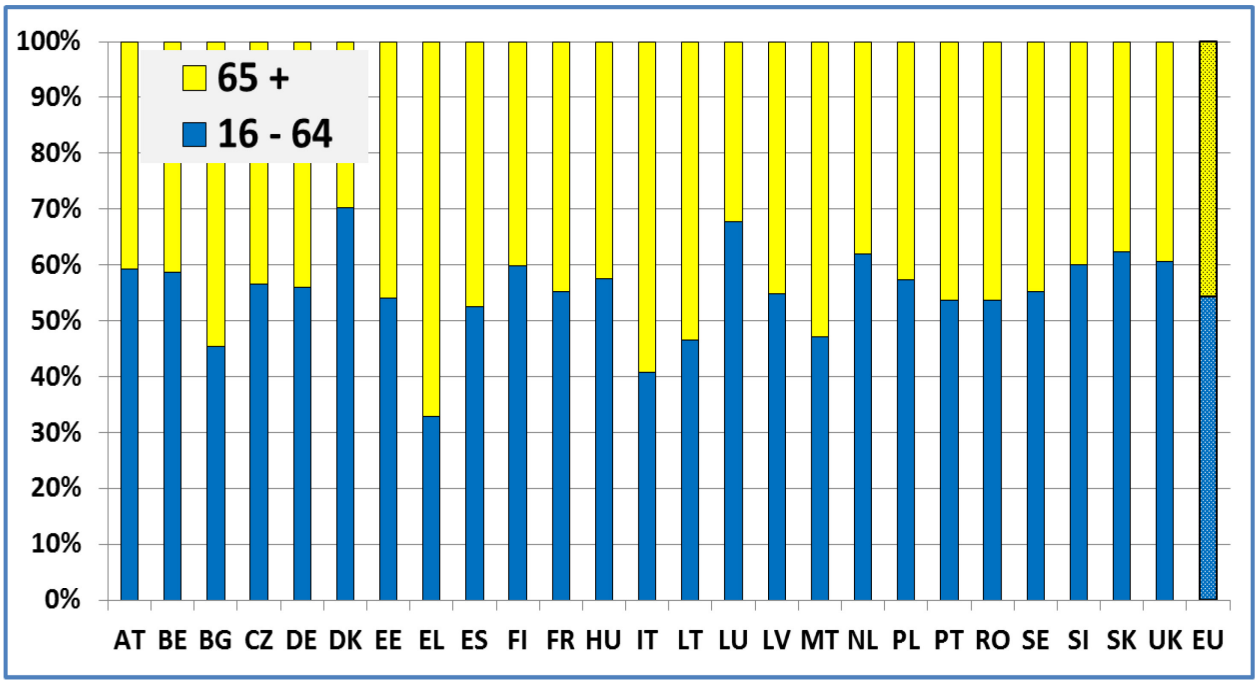
(e) *estimated by extrapolation*

EU27 2010. Estimation of number of people with disabilities, comparison between the age group 16-24 with the 65+[9]

EU: About 46% of disabled people are persons aged 65+.

[8] Source: Deloitte elaboration based in Eurostat EU-SILC 2010 and Population on 1 January 2010 by age groups and sex.

[9] Source: Centre for European Social and Economic Policy (CESEP ASBL).



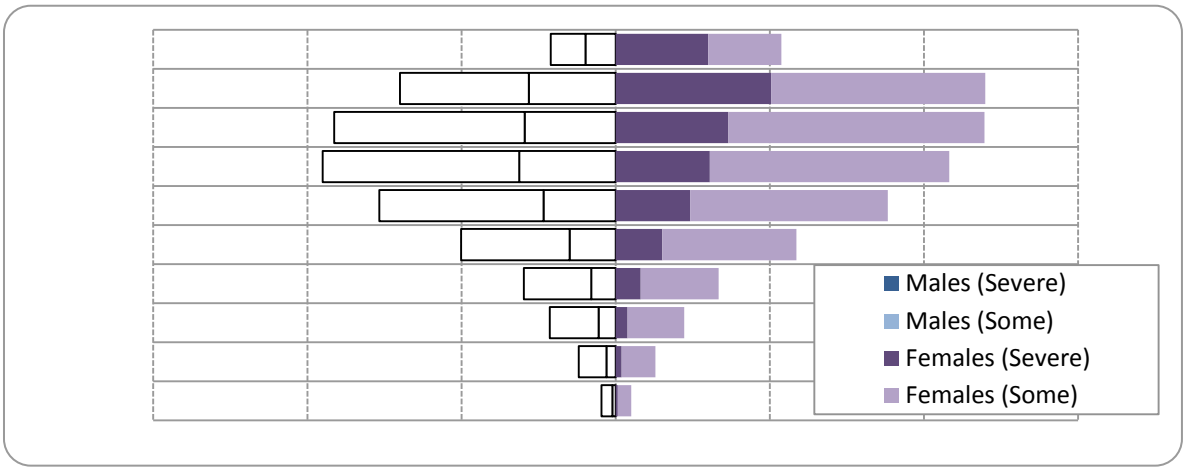
EU27 2010. Estimated number of people with disabilities, by sex and age group (millions) [10]

	Total			Males			Females		
	Total	Some	Severe	Total	Some	Severe	Total	Some	Severe
Total	109.37	70.98	34.94	47.19	30.46	15.07	62.18	40.52	19.87
Less than 5	0.96	0.79	0.18	0.46	0.35	0.11	0.50	0.44	0.07
5 - 14	2.49	1.99	0.49	1.20	0.90	0.30	1.29	1.10	0.19
15 - 24	4.36	3.42	0.94	2.14	1.58	0.56	2.22	1.84	0.39
25 - 34	6.32	4.71	1.61	2.98	2.18	0.80	3.34	2.53	0.81
35 - 44	10.87	7.86	3.01	5.01	3.52	1.50	5.86	4.35	1.51
45 - 64	16.49	11.74	4.76	7.67	5.32	2.34	8.82	6.41	2.41
55 - 64	20.32	14.14	6.18	9.51	6.38	3.13	10.82	7.77	3.05
65 - 74	21.09	14.49	6.61	9.13	6.18	2.95	11.96	8.31	3.66
75 - 84	18.98	11.12	7.86	7.00	4.18	2.82	11.98	6.94	5.04

[10] Source: Deloitte elaboration based in Eurostat EU-SILC 2010 and Population on 1 January 2010 by age groups and sex.

85 or over	7.48	3.50	3.98	2.11	1.13	0.98	5.37	2.37	3.00

EU27 2010. Population pyramid of people with disabilities (millions) [11]



EU27 2010. Estimated number of people with disabilities, by country and sex (millions)[12]

	Total	**Males**	**Females**
EU27	**109.37**	**47.19**	**62.18**
Belgium	2.36	1.03	1.33
Bulgaria	1.68	0.71	0.96
Czech Republic	2.22	0.95	1.26
Denmark	1.17	0.52	0.65
Germany	19.18	8.33	10.85
Estonia	0.29	0.11	0.18
Ireland	0.80	0.36	0.44
Greece	2.55	1.13	1.42
Spain	9.89	4.32	5.57

[11] Source: Deloitte elaboration based in Eurostat EU-SILC 2010 and Population on 1 January 2010 by age groups and sex.

[12] Source: Own elaboration based in Eurostat EU-SILC 2010 and Population on 1 January 2010 by age groups and sex.

France	13.90	5.93	7.96
Italy	14.14	6.06	8.08
Cyprus	0.15	0.07	0.08
Latvia	0.49	0.18	0.30
Lithuania	0.69	0.27	0.43
Luxembourg	0.10	0.04	0.06
Hungary	2.16	0.87	1.28
Malta	0.09	0.04	0.05
Netherlands	3.48	1.55	1.93
Austria	1.84	0.79	1.05
Poland	7.70	3.22	4.48
Portugal	2.34	1.00	1.34
Romania	4.35	1.86	2.49
Slovenia	0.44	0.19	0.25
Slovakia	1.05	0.44	0.61
Finland	1.18	0.51	0.67
Sweden	2.06	0.92	1.14
United Kingdom	13.09	5.77	7.32

EU27 2015-2050. Estimated number of people with disabilities, by country (millions)[13]

	2015	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
EU27	**114.93**	**120.11**	**125.36**	**130.23**	**134.72**	**138.36**	**140.99**	**142.52**
Belgium	2.50	2.62	2.76	2.89	3.02	3.14	3.23	3.30
Bulgaria	1.68	1.68	1.69	1.70	1.70	1.69	1.68	1.66

[13] Source: Own elaboration based in Eurostat EU-SILC 2010 and Eurostat Population Projections EUROPOP 2010.

Czech Republic	2.33	2.45	2.56	2.66	2.73	2.78	2.83	2.87
Denmark	1.23	1.29	1.36	1.41	1.45	1.48	1.50	1.52
Germany	19.84	20.42	20.81	21.12	21.33	21.45	21.37	20.93
Estonia	0.30	0.30	0.31	0.31	0.32	0.32	0.32	0.32
Ireland	0.86	0.94	1.03	1.12	1.20	1.29	1.36	1.43
Greece	2.67	2.77	2.87	2.96	3.06	3.15	3.22	3.26
Spain	10.51	11.16	11.88	12.60	13.32	13.97	14.54	14.94
France	14.72	15.46	16.22	16.97	17.65	18.21	18.56	18.83
Italy	14.96	15.67	16.38	17.04	17.68	18.26	18.72	19.03
Cyprus	0.17	0.18	0.20	0.22	0.23	0.25	0.26	0.27
Latvia	0.49	0.50	0.50	0.51	0.51	0.52	0.52	0.52
Lithuania	0.70	0.71	0.72	0.73	0.75	0.76	0.77	0.77
Luxembourg	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18
Hungary	2.21	2.27	2.34	2.39	2.45	2.48	2.52	2.54
Malta	0.09	0.09	0.10	0.10	0.11	0.11	0.11	0.11
Netherlands	3.72	3.94	4.15	4.32	4.46	4.54	4.57	4.58
Austria	1.93	2.03	2.13	2.22	2.31	2.38	2.43	2.46
Poland	8.09	8.45	8.83	9.19	9.48	9.66	9.72	9.74
Portugal	2.45	2.56	2.66	2.76	2.85	2.94	2.99	3.03
Romania	4.50	4.61	4.77	4.89	5.06	5.14	5.25	5.27
Slovenia	0.47	0.50	0.52	0.55	0.57	0.58	0.59	0.59
Slovakia	1.11	1.19	1.26	1.33	1.38	1.43	1.46	1.48
Finland	1.25	1.31	1.37	1.42	1.45	1.47	1.47	1.47
Sweden	2.17	2.29	2.41	2.51	2.60	2.67	2.74	2.81
United	13.85	14.60	15.41	16.17	16.89	17.54	18.10	18.61

Kingdom

Estimates of types of disability across the EU suggest that 54.75 million people have mobility impairments, 23.97 million people have hearing impairments, 23.87 million people have cognitive impairments, 21.08 million people have visual impairments and 20.49 million people have mental health problems.

EU27 2010 - Estimated number of people with disabilities, by broad type or impairment (millions)[14]

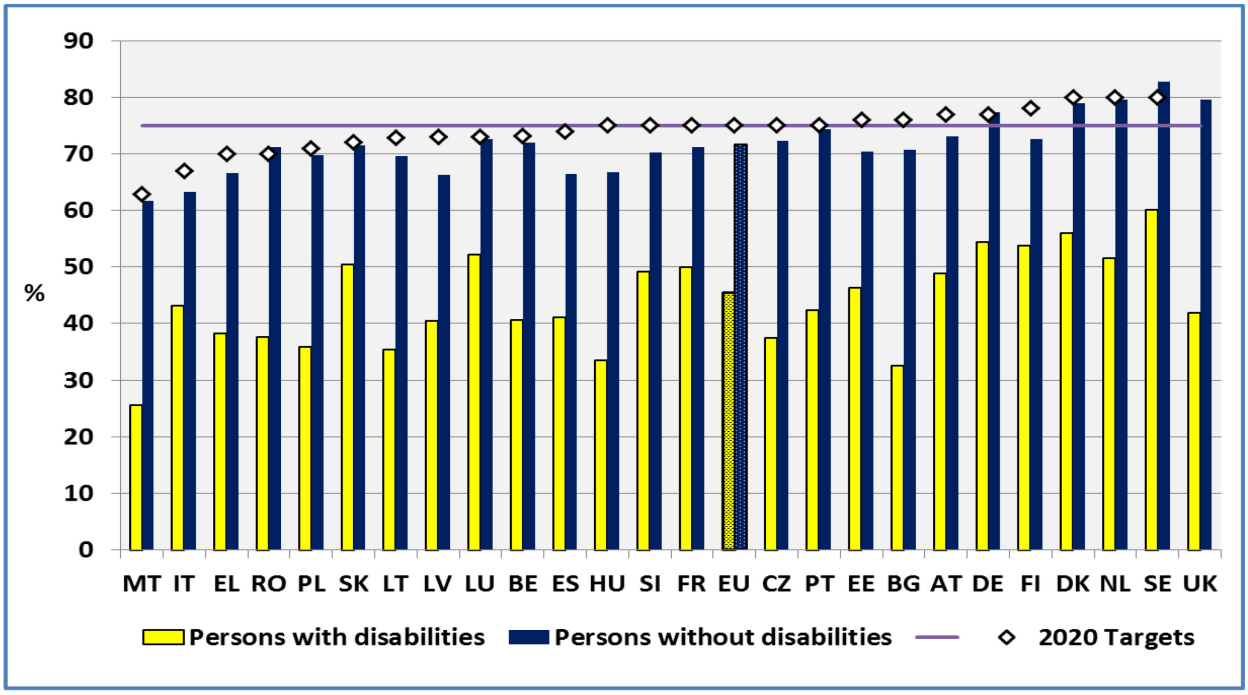
	Total	**Males**	**Females**
Mobility impairments	**54.75**	23.06	31.69
Visual Impairments	**21.08**	8.93	12.15
Hearing Impairments	**23.97**	10.11	13.86
Cognitive Impairments	**23.87**	10.36	13.50
Mental Health Problems	**20.49**	8.57	11.92

[14] Source: Own elaboration based in Eurostat EU-SILC 2010 and Population on 1 January 2010 by age groups and sex.

4. ANNEX 4: EUROPE 2020 HEADLINE TARGETS AND DISABILITY

Information based on SILC 2010 data[15]

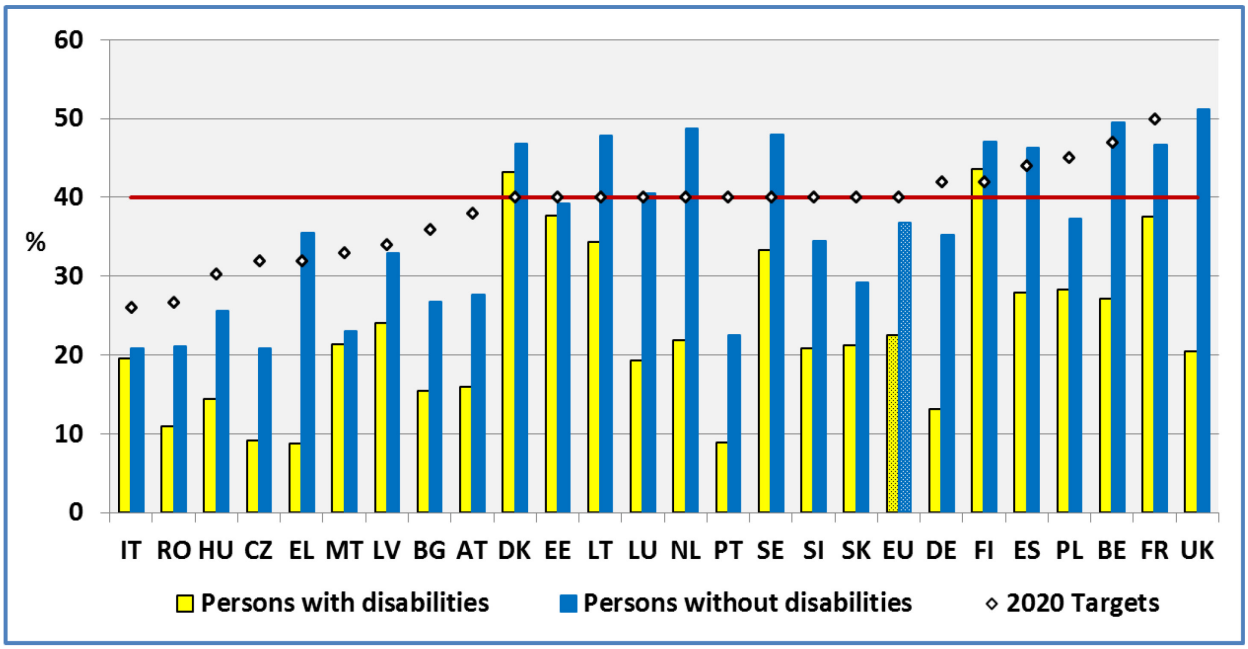
Number of persons aged 20 to 64 in employment as a % of the same age group; 2010



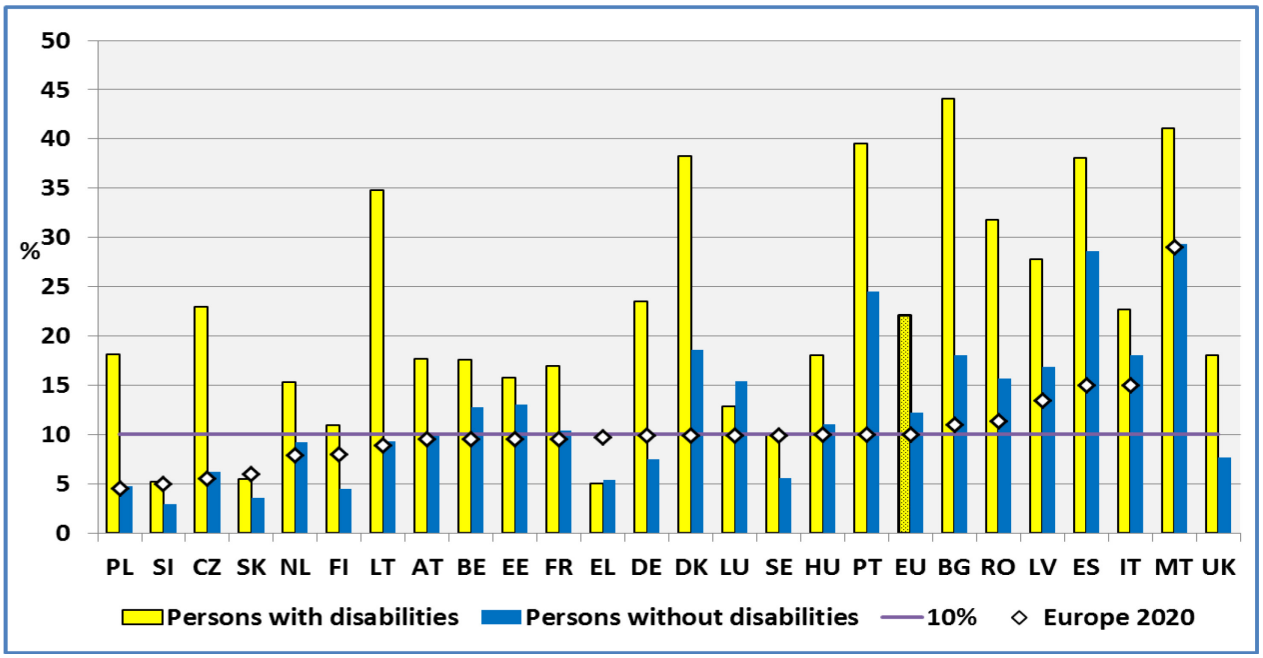
Employment gap: 26,2% - Disabled: 45,5%; Non-Disabled: 71,7%; Total: 67,2%.

Percent of persons aged 30-34 who have completed a tertiary or equivalent education; 2010
Indicative results: Small samples in certain Member States

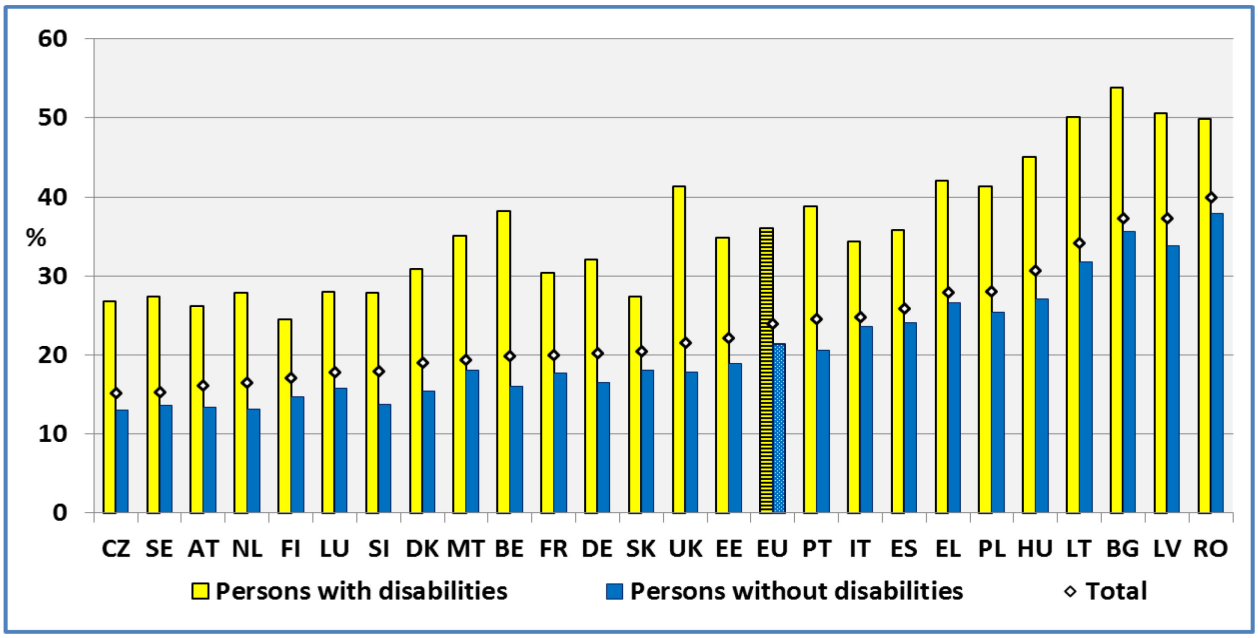
[15] Source: Centre for European Social and Economic Policy (CESEP ASBL).



Percent of persons aged 18-24 with at most lower secondary education:early leavers from education and training. 2010 Indicative results: Small samples in certain Member States.



Percent of persons who are either at risk of poverty after social transfers or severely materially deprived or living in households with very low work intensity, Age 16-64, 2010


60
50
40
%
30
20
10
0
CZ SE AT NL FI LU SI DK MT BE FR DE SK UK EE EU PT IT ES EL PL HU LT BG LV RO
Persons with disabilities
Persons without disabilities
Total

5. ANNEX 5: SCREENING PROCESS

A screening process was carried out to establish a list of goods and services affected by the divergence of accessibility requirements, which result in distortions and prevent the smooth functioning of the internal market.

The responsible services of the Commission were assisted by a contractor (Deloitte) who was asked to gather the necessary data and conduct the screening process according to the predefined criteria.

The list was established based on **the following criteria:**

- goods and services which are the most relevant for the socio-economic integration into society of persons with disabilities and other persons with functional limitations and
- encounter or are expected to encounter barriers in cross-border trade due to the already existing and growing divergence of national accessibility requirements and/or
- encounter or are expected to encounter difficulties while participating in the EU level public procurement calls for tender.

and using **the following sources:**

- United Nations Convention on the Rights of Persons with Disabilities (UNCRPD);
- EU legislation including accessibility provisions;
- National legislation, regulations or administrative actions including accessibility provisions;
- Public consultations and other contacts with stakeholders.

The screening process was carried out in successive stages:

1st stage: Identification of relevant goods and services

Objective: Identification of goods and services which are the most relevant for persons with disabilities and other persons with functional limitations.

Possible relevant goods and services were identified based on two screenings:

- ***screening of goods and services for which accessibility is required/regulated by the provisions of the UNCRPD and by EU legislation***

As a starting point, possible relevant goods and services were identified based on the analysis of the Articles of the UNCRPD. The Convention can be considered as providing the basis for accessibility policy in the EU due to the fact that the EU as well as most Member States ratified it (all of them having signed it). This is complemented by a review of existing EU accessibility-related legislation. The UNCRPD refers to accessibility on several occasions. Accessibility is established as one of the general principles (Article 3) to be observed throughout the implementation and application of the UNCRPD. State Parties committed themselves to take all "appropriate measures to ensure to persons with disabilities, on equal basis with others, access to the physical environment, to transportation, to information and communications, including information and communication technologies and systems, and to other facilities and services open or provided to the public" (Article 9, 1.). Moreover, the "State Parties shall also take appropriate measures to develop, promulgate and monitor the implementation of minimum standards and guidelines for the accessibility of facilities and services open or provided to the public" (Article 9, 2. (a)). The UNCRPD also requires that the State Parties "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" (Article 9, 2. (b)).

A summary of the different areas of EU level legislation that are related to accessibility has also been produced. In line with the UNCRPD most of the pieces of legislation identified deal with the areas of transport, the built environment and information and communication (including ICT). The legislation covers a wide range of policy areas including employment, education, information society, health, enterprise, internal market, information society, etc. It is important to note that a specific legislation in one policy area may address different aspects of accessibility that has implications for the built environment, transport information and communication (including ICT) and other areas related to accessibility.

- ***screening of goods and services for which accessibility is regulated or referred to in provisions of national legislation, regulations or administrative actions***

This next stage of the screening process analysed the state of play of the national rules in the Member States, which refer to or **regulate accessibility** of goods and services at the national or local level. Within that exercise a wide range of national provisions or administrative practices was screened.

The review of existing national level accessibility legislation identifies obligations and requirements related to accessible goods and services in different Member States with a specific focus on differences in terms of scope, level of detail, 'softness' (mandatory vs. voluntary), timeline and enforceability. This conveys an overview of the different approaches that Member States have taken so far in implementing the requirements of the UNCRPD[16] (or of their national strategies, namely for the Member States that have not yet ratified it). It further provides insights on the goods and services which require a specific attention from a legislator's point of view and indicated potential future developments in relation to accessibility policy and legislation in Europe.

[16] Some of the Member States have pointed out that (some) legislation was already in place prior to the UNCRPD or has been adopted independently of the UNCRPD.

Conclusion of the 1st stage: A list of 87 goods and services relevant for persons with disabilities and other persons with functional limitations was established, with the goods and services coming from the following areas:

- Information and communications, including information and communications technologies and systems (31 goods and services);
- Built (physical) environment (24 goods and services);
- Transportation (14 goods and services); and
- Other areas (18 goods and services).

2nd stage: Prioritisation and selection of relevant goods and services

Objective: Limitation of the list to those goods and services which are the most relevant for persons with disabilities and which hinder or are expected to hinder the well-functioning of the internal market.

In the 2nd stage of the general screening process, the list of 87 relevant goods and services was reduced notably to those for which there are obstacles or expected obstacles to the well-functioning of the internal market. Such goods and services encounter or are expected to encounter barriers in cross-border trade or their market emergence or amelioration is hindered due to a lack of economy of scale. The prioritisation and selection of selected goods and services was based in particular on quantitative and qualitative approaches.

- ***Quantitative analysis based on public consultations and other contacts with the stakeholders***

As a following step, the relevant goods and services were prioritised based on the results of the European Commission's public consultation with a view to a European Accessibility Act. Citizens and organisations had the opportunity to express their opinion on which goods and services are, according to them, the most important for the integration of persons with disabilities and other persons with functional limitations. Due to the high number of responses[17], the analysis of the public consultation has been conducted by automatized word counts within the relevant response fields. More specifically, for each of the 87 relevant goods and services, a number of keywords are defined. Of course, this quantitative analysis of the public consultation can only give an approximate indication of the goods and services that should be prioritised according to the stakeholder community, additional sources have been consulted.

At this stage, the following 23 goods and services were prioritised:

- in the area of the area of information and communication (including ICT):

[17] In total 821 responses were collected, including 648 responses by individual citizens and 173 responses on behalf of organisations.

1. Websites and website content management systems;

2. Application software (*e.g.* generic office software as well as business-specific software applications, educational software, websites and virtual learning environments (VLEs));

3. Analogue and digital TV equipment (incl. consumer equipment and all related remote controls, product documentation, etc.);

4. Cultural media content (*e.g.* performances, theatres, cinema, concerts);

5. Accessibility services for audio/visual media (including captioning, audio description, text transcripts, sign language interpretation);

6. Mobile and fixed line telephones;

7. Documents – electronic and print formats (incl. Braille documents); and

8. Self-service terminals such as automated teller machines, parking metres, transport ticket machines, vending machines, and voting machines.

- in the area of the built environment:

9. Buildings open to the public or parts thereof (*e.g.* libraries, shops and other retail outlets, community social centres, community health centres, sports centres and facilities, parks, playgrounds, restaurant, cafes, hotels, theatres, monuments, cultural heritage, leisure and entertainment etc.);

10. Shared spaces, public plaza, public roads, pavements, etc.;

11. Construction related products (including lifts, doors, handrails, ramps);

12. Buildings related to the workplace, industrials buildings, offices, conferences and meetings venues;

13. All buildings and related facilities open to the public associated with the provision of bank services and post services; and

14. Transport infrastructure (*e.g.* bus stops, train stations, airports).

- in the area of transportation:

15. Bus / coach vehicles and line operations;

16. Rolling stock (*e.g.* trains, metros, trams) and railway operations;

17. Cars and car lease / rental services;

18. Airplanes and airline operations;

19. Vessels and maritime and waterway operations.

- in other areas:

20. Financial services/banking;

21. Educational services and professional training;

22. Retail services; and

23. Hospitality services (*i.e.* accommodation services).

To determine which ones of these 23 goods and services encounter or are expected to encounter barriers in cross-border trade or which market emergence or amelioration is hindered due to a lack of economy of scale, the Commission proceeded with a qualitative analysis.

- ***Qualitative analysis of national provisions or administrative practice which already impose or are expected to impose accessibility requirements on particular goods and services***

In order to establish such national requirements, the screening process analysed the current national legislation in more detail, looking into provisions with **accessibility requirements**. For example, the national building requirements showed a level of divergence in terms of accessibility requirement, diverging national requirements were also found in the rules governing ATMs. Such divergence of national accessibility requirements is expected to grow in the near future. In particular, the obligations on the Member States stemming from the UNCRPD show the areas in which accessibility requirements are expected to be regulated by the Member States in the near future.

- ***Qualitative analysis based on other contacts with stakeholders and EU experts***

The second stage of the screening process also analysed the results of other consultations, in particular, the SME Panel where some companies signalled that they had to deal with different accessibility requirements in different Member States. Moreover, the screening process took into account the conclusions of the various meetings and interviews. In particular the contractor undertook an important amount of meetings with relevant industries already engaged in the production of accessible goods and services. The Commission had also a series of meetings with stakeholders (such as DigitalEurope, Confederation of British Industry - CBI, ATM Industry Association - ATMIA, Community of European Railway and Infrastructure Companies - CER, etc.) where they gave their opinion on issues and concerns regarding accessible goods and services and the internal market.

In addition, exchanges with different Directorates-General of the European Commission (including DG ENTR, DG INFSO (now DG CONNECT), DG MARKT, DG MOVE, and DG SANCO as well as DG JUSTICE) provided valuable feedback and input with regard to the prioritisation of relevant goods and services. Furthermore information received via the Disability Hugh level Group was also used in this context.

Conclusions of the 2nd stage:

The quantitative and qualitative analysis process to identify prioritised goods and services has yielded a list of 14 priority goods and services, which are relatively evenly distributed over the four core policy areas identified in the UNCRPD. The table below list the 14 priority goods and services and summarises their characteristics with regard to the three selection criteria: (1) results of the EC public consultation, (2) legislative review at EU and Member State level and, when applicable (3) other relevant qualitative aspects.

High level comparison table of selected priority goods and services

Selected priority goods and services	Results of the public consultation	Legislative review	Other qualitative aspects
Information and Communication, including ICT			
Computers and Operating Systems	Total hits: 208 (high)	Low legal coverage – Potential differences in requirements across Member States	The accessibility of application software is very often dependant on the accessibility of computers (hardware) and their operating system.
Digital TV services and equipment	Total hits: 141 (medium)	High legal coverage - Identified differences in requirements across Member States	
Telephony services and related terminal equipment	Total hits: 133 (medium)	High legal coverage – Potential differences in requirements across Member States	
Electronic documents (including eBooks)	Total hits: 122 (medium)	Low legal coverage	Strongly growing market. Ensuring accessibility of eBooks today is considered to be crucial in order to secure access to public life and culture for disabled persons in the future.
Self-service terminals including ATMs, ticketing and check-in machines	Total hits: 473 (high)	High legal coverage – potential differences in requirements across Member States	Stakeholders particularly focus on the accessibility of ATMs.
Built environment			
Architect services	Total hits: 97 (medium)	High legal coverage – Potential differences in requirements across Member States	Link to the Regulation on Construction products is considered as well as the Rail PRMTSIs. EU legislation is also available on the free movement of the architect profession but does not refer to accessibility.
Transport			
Bus/Coach Transport	Total hits:	High legal coverage –	

	516 (high)	Potential differences in requirements across Member States	
Rail Transport	Total hits: 397 (high)	High legal coverage – Potential differences in requirements across Member States	
Maritime Transport	Total hits: 79 (medium)	High legal coverage – Potential differences in requirements across Member States	
Air Transport	Total hits: 63 (medium)	High legal coverage – Potential differences in requirements across Member States	
Other			
Retail services (including eCommerce)	Total hits: 223 (high)	Low legal coverage	Strong cross-border component through ecommerce requires more legislative coherence across the EU in a domain that is currently mainly regulated at Member State level (if at all).
Hospitality services (concerning built-environment and websites)	Total hits: 135 (high)	High legal coverage – Identified differences in Requirements across Member States	Strong cross-border component requires more legislative coherence across the EU in a domain that is currently mainly regulated at Member State level.
Banking services (concerning ATMs, built-environment and websites)	Total hits: 432 (high)	High legal coverage – Potential differences in requirements across Member States	
Websites	Total hits: 500 (high)	High legal coverage – Potential differences in requirements across Member States	May also include e-voting as a specific aspect.

Thanks to such an analysis and comparison of different areas covered by legislation and the existence of technical accessibility requirements, combined with other qualitative insights and

taking into account the EU competences, the list of priority goods and services/relevant sectors was established:

- **Computers** and **Operating Systems**;
- **Digital TV services** and **equipment**;
- **Telephony services** and **related terminal equipment**;
- **eBooks**;
- **Private sector websites**;
- **Architect services**;
- **Self-service terminals** including ATMs, ticketing and check-in machines;
- **eCommerce**;
- **Banking services** (concerning ATMs, built-environment and websites);
- **Passenger transport services** - Air, Rail, Bus and Maritime (concerning ticketing and check-in machines, built-environment[18] and websites);
- **Hospitality services** (concerning built-environment and websites).

[18] Built-environment is considered for all transport modes, with the exception of rail, as it is already regulated at EU level through the PRM-TSI.

6. ANNEX 6: PROBLEM DEFINITION: EXAMPLES OF DIVERGENT ACCESSIBILITY REQUIREMENTS

1. Computers and Operating Systems

Computers are in essence electronic devices that process information, designed for a broad range of home and office applications like web browsing, email, word processing, gaming, etc.[19] Computer hardware is split up into desktop-PCs and portable PCs, which can in turn be split up into laptops and tablets.

Computers and their operating systems are a "platform" that enable the use of application software, peripheral devises and of course access to the Internet. They have an obvious and very close relationship with other categories of goods such as peripheral equipment e.g. mice, keyboards, printers, photocopiers, assistive devices and application software such as Microsoft Office, Adobe Acrobat etc. The accessibility of peripheral equipment and application software is very closely linked to and dependent on that of the computer hardware and the operating system. Key factors in this relationship include the extent to which accessibility is natively supported in the operating system.

Computers and operating systems are nowadays imperative for work, and constitute an important means for consumption and relations. Therefore, information concerning their accessibility is imperative for consumers.

While most companies claim to comply with the current United States legislation[20], with the evolution in technology the current US standards have become obsolete and do not ensure anymore adequate accessibility of both computers and operating systems through a comprehensive universal design approach. In Europe, specific pieces of legislation and guidance relating to the accessibility of computers and operating systems have at least been identified in Ireland, Italy, Norway and Spain (within the selected countries that were within the scope of Deloitte's analysis). The obligations contained in these legislations pertain mainly to public administrations. They either differ from US legislation containing additional elements or address the issues from a somewhat different way. ANED[21] identified existing requirements in five additional EU Member States.

The US compulsory standards are in the process of being substantially reviewed and modernised by the US Access Board[22] with references to various international technical standards. It is expected that the final rules will be published mid-2013. Therefore, the current accessibility requirements in use by countries in Europe will depart even more from those to be used globally in the near future in the absence of specific actions to ensure harmonisation. It is questionable, if the Spanish standard or the Italian legislation for these national

[19] AEA Energy & Environment (2008): Discussion Report: EU Ecolabel for personal Computers – Desktops and Computer Monitors,p. 3. http://ec.europa.eu/environment/ecolabel/ecolabelled_products/categories/pdf/discussion_desktops.pdf

[20] Electronic and Information Technology Accessibility Standards - Section 508 of the Rehabilitation Act.

[21] Academic Network of European Disability Experts.

[22] http://www.access-board.gov/sec508/update-index.htm

requirements will be updated to keep pace with the new guidelines, setting the scene for fragmentation to occur between these national requirements and those in the US, which have been adopted by the computer industry as the global *de facto* baseline accessibility standards. This will also be the case for national guidelines. The new US standards are a significant departure from the current standards. They are not structured according to types of ICT but around "characteristics" that are found in many different types of technology. This is due to the converging nature of technologies such as computers, smart phones and games consoles. The newer requirements differ greatly in content as well. Therefore, it is to be expected that current legislation in Italy and in Spain will not comply with it anymore. In Europe efforts are on the way under Mandate 376 to develop a voluntary standard taking into account the foreseen changes in the US legislation. Being voluntary this cannot prevent Member States of taking divergent legislative measures.

The total market demand is estimated at €165 billion for the EU-27[23]. In the EU, the overall level of on line information on (built-in) accessibility features in desktops and laptops, as well as in software for the major operating systems and computer peripherals (i.e. printers, copiers, scanners) is estimated at 40%, according to the MeAC 2011 study. Furthermore, the provision of accessibility information by the main computer manufacturers on their websites in the EU is low, with a score of 33% in the MeAC 2011 report[24]. Overall it can be concluded that in spite of progress on real levels of accessibility, access to information for consumers on the accessibility features of these hardware and software products remains an issue in many EU Member States. The situation is, however, slightly more positive as concerns information on accessible operating systems. According to MeAC, 70% of the main operating system developers provide web-based information on the accessibility of their products. This is, however, only the case for 54% of the main (application) software developers. In addition, only 43% of the main software developers provide information about the compatibility of products with peripheral devices. There is a link between these levels of accessibility and the regulatory situation in the US given the global nature of the computer market.

In summary, main limitations in accessibility of computer hardware and operating systems for consumers are linked to the limited information available including for example in the packaging, the lack of information about the instructions for use, installation and maintenance, storage and disposal, limitations about the functionality of the good by providing functions aimed to address the needs of persons with functional limitations and the lack of interfacing with assistive devices.

The costs of making computers and operating systems accessible are twofold: one-off development costs and subsequent on-going costs related to technological advancements updates (no specific regularity). A leading authority[25] on accessibility technology has estimated that the costs of modifying hardware and software for a fully accessible system would not exceed 1%, at most 2%, of the entire development costs. Hence, accessibility costs are a fraction of the total development costs. This estimate is based on existing accessibility requirements and design standards and their implementation in the technology.

[23] The Economist Intelligence Unit (2012).

[24] Technosite. Monitoring eAccessibility in Europe: 2011 Annual Report, p. 104. http://www.eaccessibility-monitoring.eu/researchResult.aspx

[25] Best available data relates to ATMs (which incorporate hardware and software similarly to computers). Information from Deloitte's study on the socio-economic impact of new measures to improve accessibility of goods and services for people with disabilities.

In addition to the above accessibility cost estimate of 1-2%, which is based on industry expertise, it is assumed that the relevant total general development costs of computers are between 5% and 15% of the total market turnover[26].

Deloitte[27] identified 17 manufacturers of Desktop-PCs, 14 manufacturers that provide portable PCs and 25 companies that provide tablets. The market concentration in Western Europe is high, with the five top players together accounting for 64.8% of total sales in the first quarter of 2012. Assuming that the European market accounts for roughly 10% to one third of the worldwide revenue, a total number of 467,116,320 * 10% = 46,711,632 to 467,116,320 * 33% = 154,148,386 desk-based PCs and mobile PCs (including mini-notebooks) and tablets is estimated to having been sold in Europe in 2012.

Based on the Economist Intelligence Unit's estimates of the market demand for computers, peripherals and other office equipment[28] between 2010 and 2016 for 20 Member States (except Cyprus, Estonia, Lithuania, Luxembourg, Latvia, Malta and Slovenia) a Compound Annual Growth Rate (CAGR) of 4.8% until 2020 has been calculated.

The future annual costs for businesses (both one-off and ongoing) until 2020 to comply with the accessibility requirements similar to the revised United States legislation (Section 508 standards) is estimated at around 95.2 EURm, taking a moderate estimation. Annex 7 provides the detailed calculation.

The regulatory landscape related to the accessibility of computers and operating systems in Europe is fragmented and patchy. Specific pieces of legislation were identified in Italy, Spain and Norway. In addition in Ireland IT Accessibility guidelines are in place but not referenced by law. The obligations contained in these regulations pertain mainly to public administrations:

- In **Ireland**, voluntary accessibility guidelines have been introduced for public procurers;
- In **Italy** obligations are in place for public administrations, public agencies as well as transport and communication agencies in which the State has a prevalent shareholding (as well as private firms that are licensees of public services);
- In **Spain** obligations are in place for public administrations;
- An interesting alternative approach is followed in **Norway** where any Information and Communication Technology (ICT) intended for general public use is to be universally designed (new ICT from 2011 and all existing from 2021).

The regulatory landscape in more detail *per* country:

- **Ireland:** The "Irish National IT Accessibility Guidelines" cover both hardware and

[26] Note that this is an estimate of the sum of the costs that are incurred not on an annual basis, but once at a certain point in the past for each business in the market separately.

[27] Study on the socio-economic impact of new measures to improve accessibility of goods and services for people with disabilities.

[28] The exact definition, i.e. the degree to which desktops, laptops and tablets are considered, is unknown.

"Software Applications".[29] These are not referenced in law, although they are official publications of the government agency in charge of disability affairs, the National Disability Authority. They are, however, referenced in the Irish Accessible IT Procurement Toolkit as specifications to be included by public procurers in "Requests for Tenders" for the procurement of hardware and software.[30] Accessibility issues covered include user input (e.g. keyboard and mouse navigation) and system output (e.g. screen contrast and font size), compatibility with assistive devices and software as well as packaging and installation/configuration.

- **Italy:** The "Stanca Law" No. 4 of 9th January 2004 on "provisions to support the access of the disabled to information technologies"[31] regulates the access to information technologies for disabled persons. It *inter alia* states that the government protects each person's right to access all sources of information and their relevant services, such as IT and data transmission instruments.
  Rules for the implementation and enforcement are provided by Decree of the President of the Republic, March 1st 2005, No. 75 on the "implementation Regulations for Law 4/2004 to promote the access for the disabled to computer technologies".[32]
  The Ministerial Decree of July 8, 2005 on "technical requirements and the different levels of accessibility of computer tools"[33] contains detailed technical requirements for the technical assessment and technical accessibility requirements of Internet technology-based applications (Annex A); the methodology and criteria for the subjective accessibility assessment of Internet technology-based applications (Annex B); the technical accessibility requirements of desktop and laptop personal computers (Annex C); the technical accessibility for the operating system, applications and retail products (Annex D); the accessibility logo for Internet technology-based websites and applications (Annex E); and the maximum amounts incumbent on private parties as consideration for the activities performed by assessors (Annex F). The technical accessibility requirements are based partly on the US Section 508 Standards and partly on the on WCAG 1.0 guidelines; these requirements are also referenced within the different technical Annexes of the Ministerial Decree.
  The Ministerial Decree of 30 April 2008 on "Technical rules governing access to educational tools and training for pupils with disabilities"[34] defines accessibility guidelines for educational software by students with disabilities.
- **Spain:** The Royal Decree 1494/2007[35] (Article 8) establishes that computer equipment and programmes used by public administrations must be accessible to elderly and disabled, in accordance with the guiding principle of "Design for all" and specific accessibility requirements, with preference given to the national technical standards that incorporate European standards, international standards, other systems of technical references prepared by the European standardisation bodies or, failing

[29] http://www.universaldesign.ie/useandapply/ict/irishnationalitaccessibilityguidelines
[30] http://www.universaldesign.ie/useandapply/ict/itprocurementtoolkit
[31] http://www.pubbliaccesso.gov.it/normative/law_20040109_n4.htm
[32] http://www.pubbliaccesso.gov.it/normative/implementation_regulations.htm
[33] http://www.pubbliaccesso.gov.it/normative/DM080705-en.htm
[34] http://www.pubbliaccesso.gov.it/normative/DM300408.htm
[35] English translation available under: http://sid.usal.es/idocs/F3/LYN11920/LIONDAUinfosociety.pdf

that, national standards (Standards UNE 139801:2003[36] for hardware and 139802:2003[37] for software). The technical accessibility requirements listed in the UNE Standard 139801 (Hardware) has been developed based on ISO 9241-171 and the UNE Standard 139802 (Software) has been based on ISO EMC- 29136, on JTC1 work and on the UNE of 1998, their revision was propelled by the US legislation.[38] Accessibility issues covered include user input (e.g. keyboard and mouse navigation) and system output (e.g. screen contrast and font size) as well as compatibility with assistive devices and software.

- **Norway:** The 2008 Anti-Discrimination and Accessibility Act (Section 11)[39] contains a (non-technical) requirement of universal design of ICT. The Act contains two main requirements with regard to the accessibility of computers: (1) all new ICT intended for the general public is to be universally designed as from 2011; and (2) all existing ICT intended for the general public is to be universally designed by 2021. However, the requirement has so far not been translated into technical specifications in law, but work in the field is on-going and this year the Ministry of Government Administration, Reform and Church Affairs has made a proposal for regulations pertaining to universal design of information and communication technology solutions (ICT solutions) with reference to various technical standards.[40]
  It can be noted that as part of a previous initiative, the Nordic Cooperation on Disability – an organisation under the Nordic Council of Ministers, i.e. the governments of Denmark, Finland, Iceland, Norway and Sweden – published "Nordic Guidelines for Computer Accessibility"[41] in 1998. These include recommendations for accessible computers, peripheral equipment and software.
- **USA:** Section 508 of the Rehabilitation Act (29 U.S.C. § 794d) requires federal agencies to develop, procure, maintain, or use electronic and information technology (EIT) that is accessible to people with disabilities – regardless of whether or not they work for the federal government. The U.S. Access Board establishes the Section 508 compulsory standards in order to implement the law.[42]
  The "Section 508 Standards"[43] contains technical requirements with regard to the accessibility of software applications and operating systems (subpart B – section 1194.21), of web-based intranet and Internet information and applications (subpart B – section 1194.22) as well as desktop and portable computers (subpart B – section 1194.26). These guidelines are in the process of being substantially reviewed and modernised with references to various international technical standards. A draft version of the new "Section 508 Information and Communication Technology (ICT)

[36] http://www.udc.es/fcs/es/web-to/terapia/asignaturas/toyafam/08tema/UNE139801-2003.pdf
[37] http://www.udc.es/fcs/es/web-to/terapia/asignaturas/toyafam/08tema/UNE139802-2003.pdf
[38] http://mags.acm.org/interactions/20120910/?pg=61#pg61
[39] English translation available under: http://www.regjeringen.no/upload/BLD/Diskriminering/Engelsk/Lovteksten%20eng-22.09%20ELR.CBK.doc
[40] http://www.ud2012.no/abstractsearch.cfm?pMode=AbstractView&pAbstractId=24927
[41] http://trace.wisc.edu/docs/nordic_guidelines/nordic_guidelines.htm
[42] http://www.epa.gov/inter508/faqs/index.htm
[43] http://www.section508.gov/docs/Section%20508%20Standards%20Guide.pdf

Standards and Guidelines"[44] was published in December 2011. Accessibility issues covered include user input (e.g. keyboard and mouse navigation) and system output (e.g. screen contrast and font size), operating systems as well as compatibility with assistive devices and software.

The number of countries that are likely to produce their own national accessibility requirements is expected to increase in the future given national action plans and commitments to accessibility, particularly in light of the signing and ratification of the UNCRPD by Member States.

As referred above, binding technical accessibility requirements have been identified in two Member States, namely Italy and Spain. Guidelines are in place in Ireland. Work to establish accessibility requirements is ongoing in Norway. As concerns the situation outside the EU/EEA, technical requirements are in place in the US. These are currently being revised, which may or may not be closely followed by the EU Member States.

The importance of computers and operating systems being a global market should not be underestimated. In interviews, manufacturers have stated not having economic incentives to provide versions of their products that are specifically adapted to the European market. In fact, this would lead to a reduced potential for economies of scale. Therefore, while voluntary efforts to align EU accessibility requirements with those in the US are undertaken under Mandate 376 this will not prevent Member States to adopt different legal requirements or even voluntary guidelines. This has been the case in examples above where none of the Member States identified have follow fully the US compulsory standards.

2. Digital TV services and equipment

Digital TV services and equipment concerns the audio-visual content provided in broadcasting services, notably technical aspects of access services such as font size and other aspects of how subtitles are rendered on-screen and menus presented to the user, audio description, and the digital terrestrial television equipment containing digital decoders such as set-top boxes and iDTV (integrated digital TVs) and the remote control needed to use these. The two components combined encompass a TV viewer's experience of the accessibility of a piece of audio-visual content.

The extent to which television is considered accessible was measured in the MeAC study in 2011, where an average score for the accessibility of television in the countries covered by the study was 33%, while the score for policy implementation in this area is 34%. This shows that accessibility in this area has some way to go and is important to consider.

The 2011 MeAC report measured, by surveying national experts, the availability of the following four accessibility features:

- Availability of DTV set-top boxes with built-in screen reader/voice recognition functionalities;
- Availability of screen reader/voice recognition software to be downloaded from

[44] http://www.access-board.gov/sec508/refresh/draft-rule.htm

retailers' website for accessing their DTV set-top boxes;

- Availability of DTV set-top models that allow subtitles display/audio description/sign language interpretation display when provided by the broadcaster;
- Availability of DTV set top models that allow users to configure the font and contrast features of the interface.

The results for digital TV equipment were reported as moderate with a score of 38% being achieved in the EU. According to Deloitte, the evidence gathered so far in the study through interviews with experts would suggest that these figures appear to be quite high.

Looking at the status of digital TV equipment accessibility by country, this shows that countries where initiatives have been taken to develop accessible digital TV equipment have got much higher scores than others. One possible implication of this is that a small amount of investment in innovation is sufficient to assist the markers in providing accessible digital TV equipment.

Research[45] suggests that the availability of broadcasting in terms of coverage is nearly complete, with practically the whole planet covered by a signal. Televisions are available in over 1.4 billion households around the world, representing 98% of households in the developed countries and nearly 73% of households in developing countries. However, television is far from being fully accessible.

The main beneficiaries of accessible features in **Digital TV equipment** such as talking EPGs, and easy-to use, tactile remotes can be grouped as follows:

- People with vision impairments including blind people;
- Persons with cognitive impairments;
- Older persons; and
- Any user with low experience of or ability in using technology.

The beneficiaries of **accessibility services** are similar, but include people with hearing impairments including deaf and other, wider groups including people with low literacy, older people, people whose first language is not that of the programme content and people in 'disabling environments'. Looms in "Design models for accessible media" discusses the 2006 OFCOM review in the UK, which shows that the demand for access services such as subtitling is very significant. More specifically, 12.3% of the population said that they had used subtitles to watch television, of whom about 6 million (10%) did not have a hearing impairment. Looms goes on to say that:

> *"more recent studies indicate that same language subtitles can make a difference not only for persons who are deaf or have serious disablements related to their hearing, but also elderly persons who find that unscripted speech on television has low intelligibility, persons who are learning to read, immigrants and refugees. They are also used by persons without disablements in public areas (e.g. watching TV news in*

[45] Brahima, Sanou (2011) Making TV Accessible for Persons with Disabilities is Everyone's Business. in Looms, Peter Olaf. (2011). Making Television Accessible. G3ict.ITU, ITU, Geneva, Switzerland.

airports or at hotels where the sound has been turned off)."[46]

Linear broadcast television continues to occupy a crucially important place in the lives of Europeans, in spite of the rise of other media such as the Internet. The main limitations in accessibility of digital TV services include the lack of accessible information about the functioning of the service and the accessibility characteristics, the lack of accessible on-line related applications including electronic information needed in the provision of the service, limited accessibility of EPGs (electronic programme guides) and navigation menus, the lack of accessible information to facilitate complementarities with assistive services and the lack of functions in the operation of the service (such as subtitles and audio description). For example, there is poor and inconsistent use of symbols or abbreviations that represent the various accessibility services either within the on-screen programme guides or in TV programming listing etc. provided in newspapers/magazines. The main limitations in the accessibility of the digital TV equipment are linked to the information provided about their accessibility, for example in the packaging, the lack of information about the instructions for use (of set-top boxes and remote controls), installation and maintenance, storage and disposal, limitations about the functionality of the good by providing functions aimed to address the needs of persons with functional limitations, limited accessibility of the remote controls, and the lack of interfacing with assistive devices.

DTT (digital terrestrial television) equipment is already today largely covered by technical accessibility requirements (obligations, requirements, standards/guidelines have been identified in all the examined countries - 9 EU Member States and Norway). These standards differ in scope and technical rules. Broadcasters and manufactures of equipment are faced with a fragmented landscape. There is no certainty that products that follow one national specification will fully work without modifications in other Member States. ANED identified at least three other Member States, outside the scope of Deloitte's analysis, with requirements in this area.

Similarly, the provision of broadcasting accessibility services is already today largely covered by technical accessibility requirements (such requirements have been defined in all countries within the scope of Deloitte´s analysis, with the exception of Norway and Portugal). ANED identified at least 10 other Member States, outside the scope of Deloitte's analysis, with requirements in this area.

Regarding the cost of support for accessibility features in set-top boxes, while there are apparently no costs associated with manufacturers "*switching on and switching off features that are already available in DVB* (Digital Video Broadcast standards) *compliant set-top boxes*", it would appear, according to the NorDig study[47], that the implementation of these standards may be problematic in the area of audio description at least.

Clear costs have been identified for text-to-speech support in set-top boxes. For a typical entry-level set-top box currently available in a supermarket, adding these features would cost

[46] Looms, Peter. Awaiting publication "Design models for media accessibility"
[47] www.nordig.org

add an additional 6 EUR to the costs of a 19 EUR product, an increase of 30%.[48] The ITU report "Making Television Accessible" provides an overview of the relative production costs for specific TV accessibility services.

One potential benefit to increased levels of accessibility for television is an increase in reach by advertising. Current regulations on the levels of broadcasting accessibility services to be provided do mainly focus on the TV programming content and not on advertising. Figures from the "2011 Magnaglobal Advertising Forecast" predicted advertising revenues per person in the European countries to be amongst the highest in the world. (7 of the 10 countries with the highest advertising revenue per person were Norway, Switzerland, Austria, Ireland, Finland, United Kingdom, and Germany).[49]

According to a study conducted by Digital TV Research, Europe will not be completely digitalised by 2017 as initially planned although 85% of the televisions in the EU Member States already received digital TV by the end of 2011. Western Europe[50] has been stated to be expected to have passed 150 million digital TV households during summer of 2012, with an increase to 175 million by 2017.[51] The worldwide market trend is expected to lead to a total number of 1.3 billion digital TV households by 2017.[52] Within the EU, Germany and France will have the biggest market for digital TV with 37.1 million and 27.5 million subscriptions respectively.

Furthermore, triple-play subscriptions (defined as homes subscribing to TV, broadband and fixed telephony services) are expected to increase up to 400 million by 2017 on a worldwide basis.[53] The deepest market penetration of triple-play subscriptions are expected to be reached in Belgium and the Netherlands (both with 64%), while Germany and France are expected to have the highest total number of triple-play households in the EU by 2017 (11.5 million and 7.9 million respectively). The volume of the triple-play market in France, Germany, Belgium and the United Kingdom is expected to reach approximately 14.3 USDb by 2017.[54]

As concerns the number of set-top boxes sold, according to two studies by iSuppli and ABIresearch, the global set-top boxes market reached a market volume in 2011 of between 134.9 million and 221 million units.[55] [56] The market value has been estimated at approximately EUR 6.9bn[57] in 2011.[58] As a remote control is included with and needed to

[48] http://www.itu.int/ITU-D/sis/PwDs/Documents/ITU-G3ict%20Making_TV_Accessible_Report_November_2011.pdf

[49] http://www.neoadvertising.com/ch/wp-content/uploads/2011/06/2011-MAGNAGLOBAL-Advertising-Forecast-Abbreviated.pdf

[50] The study did not specify which countries are classified under "Western Europe". However, the contractor assumed that Western Europe comprises Austria, Belgium, Denmark, Germany, Finland, France, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the UK, because different figures and tables in the study refer to these countries.

[51] http://www.digitaltvresearch.com/ugc/press/29.pdf

[52] http://www.digitaltvresearch.com/ugc/press/36.pdf

[53] http://www.digitaltvresearch.com/ugc/press/42.pdf

[54] Ibid.

[55] http://www.isuppli.com/Home-and-Consumer-Electronics/MarketWatch/pages/Set-Top-Box-Market-to-Decline-in-2011,-but-Semiconductors-Stay-Strong.aspx

[56] http://www.abiresearch.com/research/1003752

[57] Using an exchange rate of 1.2590 as of 29 June 2012, http://www.ecb.int/stats/exchange/eurofxref/html/index.en.html

[58] http://www.companiesandmarkets.com/News/Information-Technology/Set-top-box-devices-market-to-hit-15-6-billion-by-2018/NI3331

operate these devices, the forecasted sale of devices that contain a digital decoder in units can serve as well as a proxy for the potential market size of remote controls.

According to IHS iSuppli Research, worldwide shipments of set-top boxes were anticipated to have reached 134.9 million units in 2011. This represents a decrease of 5.5% compared to the previous year. It is projected that worldwide shipments of set-top boxes will grow in the next two years and will face a situation of saturation in 2014/2015.[59] According to IMS Research, global set-top box shipments for the digital terrestrial platform were expected to be 20.5 million in 2012, whereof Western Europe[60] was expected to account for approximately 25% (5.1 million), especially due to the analogue switch-off.[61]

Considering the provision of broadcasting (accessibility) services and according to a market study for the European Commission[62] the **total European TV revenue** of 78.1 EURb in 2009 was attributed as follows: Delivery platforms retain 13.6 EURb; the remainder of 64.5 EURb flowed to broadcasters of which 5.0 EURb is spent on transmission, 35.0 EURb is invested in programming, and the remaining 24.5 EURb covers all profits, administration and management costs. Furthermore, the report notes that of the 35.0 EURb spent on programming, 16.6 EURb was spent on acquiring rights of various kinds, 6.2 EURb on sports rights, and 10.4 EURb on film and TV acquisitions. The remaining 18.4 EURb was invested in original programming, including 8.9 EURb on in house production, 2.6 EURb on the production of news programming, and 6.9 EURb invested in the external production market.

In addition, BusinessWire research on the broadcasting and cable TV market in Europe provides indications on **market growth expectations**.[63] The broadcasting & cable TV market consists of all terrestrial, cable and satellite broadcasters of digital and analog television programming. The market is valued as the revenues generated by broadcasters through advertising, subscriptions, or public funds (either through TV licenses, general taxation, or donations). The European broadcasting and cable TV market had total revenues of EUR 84.7 billion in 2011, representing a compound annual growth rate (CAGR) of 2.9% between 2007 and 2011.

Regarding the provision of cross-border supply of audiovisual content, the market and, more specifically, public service broadcasters currently supply consumers with audiovisual content and services from other EU countries. However, the availability of video content from other EU countries depends greatly on which country a consumer is resident in, which country they seek content from and which distribution platform they happen to use.

The regulatory landscape related to the accessibility of digital TV services and equipment is linked with the Digital Video Broadcast (DVB) family of standards, approved by the European Telecommunications Standards Institute (ETSI)[64], which cover both the devices and

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59 http://www.isuppli.com/Home-and-Consumer-Electronics/MarketWatch/pages/Set-Top-Box-Market-to-Decline-in-2011,-but-Semiconductors-Stay-Strong.aspx

60 The source does not elaborate this term.

61 http://imsresearch.com/news-events/press-template.php?pr_id=2495

62 Attentional Limited, Oliver & Ohlbaum Associates, Rambøll Management and Headway International (2009): *The application of measures concerning the promotion of distribution and production of European works in audiovisual media services, including television programmes and non-linear services*, study commissioned by EC DG INFSO, http://ec.europa.eu/avpolicy/docs/library/studies/art4_5/presentation.ppt

63 http://finance.yahoo.com/news/research-markets-broadcasting-cable-tv-173300015.html and http://www.researchandmarkets.com/research/j9hcp9/broadcasting_and

64 http://www.etsi.org/

the end-to-end services provided. The Digital Terrestrial Television (DDT) Equipment is therefore included in the DVB family of standards for digital TV used in Europe.

National specifications for DTT such as NorDig used in the Nordic region and Ireland and the 'D-Book' used in the UK are essentially 'profiles' of the DVB. All the national specifications for DTT are based on the DVB family of standards; each implements a profile of these standards. This results in differences in the fundamental requirements supported in different countries. For instance, some countries used MPEG 4 and others MPEG 2 as the compression standard for the transmission of the TV signal. This is the main reason why digital tuners that are compatible with the national specifications in one country or region may not work in another.

While the national and regional specifications for DTT require different set-top boxes to be developed for the different countries or regions, these specifications may add to, but not take away the core set of accessible features that are mandatory in the DVB standards. While the access features specified tend to be similar, some variances do arise. Yet, any receiver in Europe (terrestrial, cable or satellite) that has the DVB logo on it must be able to handle same language DVB subtitles and same language DVB digital teletext subtitles.

The table below provides a synthetic overview of obligations, technical requirements, standards and guidelines with regard to the accessibility of DTT equipment in the selected countries that are within the scope of Deloitte's study analysis.

Table 1: Digital terrestrial television equipment: overview of identified obligations, requirements, standards/guidelines

	Name of DTT service (if one identified)	Name of DTT specification	Compression	Support for subtitles	Support for Audio Description	Others/comments
France	Télévision Numérique Terrestre[65] (TNT)	Services et profil de signalisation pour la diffusion de la TV numérique de terre [66]	MPEG-2, H.264	Requires support for the DVB Subtitling standard: ETSI EN 300 743	Requires support for receiver mix and broadcast mix Audio Description	Nothing identified in the specification with regard to remote controls
Germany		"DVB-T Minimum Requirements and Guidelines for DVB-T Receivers"[67]	MPEG-2 / H.264	Does not require support for DVB complaint subtitles (ETSI EN 300 743)	Nothing identified in the specification with regard to Audio Description	Nothing identified in the specification with regard to remote controls. Note: The status of this 2003 document is being queried. It is currently the 'outlier' in terms of not supporting DVB subtitles.
Ireland	SAORView	Minimum Receiver Requirements Irish Digital Terrestrial Television[68]	H.264/MPEG-4 AVC	Requires support for the DVB Subtitling standard: ETSI EN 300 743	Mandatory as Broadcast mix Optional as receiver mix	Based on the NorDig specification, with some minor differences not related to accessibility. NorDig compliant receivers have an optional provision for a subtitles button on the television remote control. If present this subtitles button must behave according to the NorDig specification. In practice all remotes in Ireland contain the subtitles button.
Italy		"Compatible DTV receivers for the Italian market: baseline requirements"[69]	MPEG-2, H.264	Requires support for the DVB Subtitling standard: ETSI EN 300 743	Requires support for receiver mix and broadcast mix Audio Description	Detailed non-mandatory description of remote control. Provision of a dedicated 'audio' and 'subtitles' button is optional.

[65] http://www.recevoirlatnt.fr
[66] http://www.csa.fr/es/content/download/16480/308960/file/CSATNT.pdf
[67] http://www.ueberalltv.de/download/AG_DVBT2/MinAnfor/MinAn-V11e.pdf (EN version), http://www.ueberalltv.de/download/AG_DVBT2/MinAnfor/MinAn-V11d.pdf (DE version)
[68] http://rtenl.ie/wp-content/uploads/2012/09/Irish-DTT-Minimum-Receiver-Requirements.pdf
[69] http://www.dgtvi.it/upload/1286542855.pdf

	Name of DTT service (if one identified)	Name of DTT specification	Compression	Support for subtitles	Support for Audio Description	Others/comments
Netherlands	-	-	-	-	-	No minimum receiver requirements specification document identified. Queries on-going with ITU and Dutch experts to identify such.
Norway		NorDig v2.3[70]	H.264/MPEG-4 AVC	Requires support for the DVB Subtitling standard: ETSI EN 300 743	Requires support for receiver mix and broadcast mix Audio Description	Optional provision for a subtitles button on the television remote control.
Poland		"Requirements for the Polish Digital Terrestrial Television Receiver"[71]	H.264/MPEG-4 AVC	Requires support for the DVB Subtitling standard: ETSI EN 300 743	Requires support for receiver mix and broadcast mix Audio Description	Detailed specifications provided on remote control. "Subtitles" and "Audio" are provided as optional. See figure below.
Portugal		"Signalling Specifications for DTT deployment in Portugal"[72]	H.264/MPEG-4 AVC	Requires support for the DVB Subtitling standard: ETSI EN 300 743	No explicit requirements for Audio Description.	No Recommendation related to remote controls present.
Spain		"Especificación de receptores de televisión digital terrestre para el mercado español" ("Specifications of digital terrestrial receivers") - August 2012.[73]		Requires support for the DVB Subtitling standard: ETSI EN 300 743	No recommendation related to Audio Description present.	No Recommendation related to remote controls present.
United Kingdom	FreeView	"D-Book"[74]		Requires support for the DVB Subtitling standard: ETSI EN 300 743	Requires support for receiver mix and broadcast mix Audio Description	Subtitles button "essential", AD button "strongly recommended"

[70] www.nordig.org/pdf/NorDig-Unified_ver_2.3.pdf
[71] http://www.kigeit.pl/FTP/kl/stirc/SPECv0_6_EN.pdf
[72] http://tdt.telecom.pt/recursos/apresentacoes/Signalling%20Specifications%20for%20DTT%20deployment%20in%20Portugal.pdf
[73] http://www.televisiondigital.es/Terrestre/ForoTecnico/receptor-tdt/Documents/ReceptoresTDT.pdf
[74] The D-Book is a closed specification provided by the DTG group in the UK. Chapter 25 of the D-Book on remote controls was provided by Ocean Blue.

The table shows a mixed level of implementation of **audio description**. The specifications in France, Ireland (broadcast mix only), Italy, Norway and the United Kingdom contain mandatory requirements**.** This is a clear fragmentation between the requirements, with some countries having made audio description mandatory and some optional, while some do not deal with it at all. However, the fact that all countries/regions use the MPEG standard is significant in terms of what this means for manufacturers of set-top boxes selling into these different countries, still they do not all use the same version. Audio description is most commonly provided by means of a separate, optional audio track. This functionality is implicitly supported by the MPEG suite of standards, which allow for different audio tracks to be supported for the same video stream. Therefore, even if a country/region's specification does not require the support of audio description, the fact that they use MPEG means that this functionality is implicitly supported.

The regulatory analysis in the table above shows a mixed level of support for the design of **remote controls**. Some countries (Ireland, Norway, Poland, and Italy) allow for support of a subtitles and audio description buttons. Although these buttons are optional, the functionality they provide is mandatory. Only the United Kingdom specification has a mandatory subtitles button.[75]

Under the DVB family of standards there are multiple delivery mechanisms for **subtitles**, namely DVB subtitles and DVB Teletext subtitles. In countries such as the United Kingdom there is only one delivery mechanism in use (DVB subtitles). In territories such as the Nordic region that use both, there needs to be a mechanism that defaults to, say, DVB-text then digital Teletext. The button itself will need to activate something in the receiver to prevent both subtitles being activated. The NorDig specification has a mandatory requirement to select DVB subtitles if both delivery mechanisms are present.[76] Therefore, the way in which subtitles are implemented differ in both "what" is to be provided as well as "how" it is to be done.

Apart for the DVB, there is a wide a range of voluntary standards, guidelines and other advisory materials that deal with various aspects of the accessibility of digital TV. An extensive literature review of resources in the English languages conducted by the Irish Centre for Excellence in Universal Design in 2011 highlighted that manufacturers are faced with an extremely confusing landscape when developing new products or services in terms of what advice to follow on accessibility.[77] Many of the guidelines and standards were found to contain recommendations that others do not, or had reconfigured their recommendations at different priority levels, or were optimised to suit a particular disability sector.[78]

Regarding Linear TV Broadcasting Accessibility Services while all Member States within the scope of Deloitte´s analysis with the exception of Norway have introduced some kind of

[75] It is important to consider that a subtitle button has different connotations in different territories.
- In territories where foreign language programmes have subtitles, pressing the button would activate interlingual subtitles and intralingual subtitles.
- In territories where foreign language programmes are dubbed, pressing the button would activate intralingual (same language) subtitles.

[76] "If both DVB Subtitling and Teletext subtitling are received simultaneously with the same language code, the IRD shall only display the DVB Subtitling stream". From http://www.nordig.org/pdf/NorDig-Unified_ver_2.2.pdf

[77] http://www.universaldesign.ie/dtv

[78] Source: Centre for Excellence in Universal Design. "The editorial guidelines for audio description, e.g. what tense should be used, how to describe body language that indicates emotions, etc. The fact that some of the guidelines are quite old brings in some differences."

accessibility requirements, the nature, legal force and coverage of these instruments vary considerably across the countries. In all Member States within the scope of Deloitte´s analysis, with the exception of Norway and Portugal, technical accessibility requirements for broadcasting services have been defined. These requirements typically take the form of target percentages of the broadcasting programme which need to be covered by broadcasting accessibility services such as subtitling, audio description and sign language interpretation. While Portugal is currently in the process of defining such technical accessibility requirements, no such initiative could be identified in Norway.

While most countries have set legal target accessibility rates for both public and private broadcasters, Italy and Germany have only established contractual target agreements with public broadcasters. Target levels of broadcasting accessibility services vary between countries in both the quantities and types of broadcasting accessibility services to be provided. While required levels for subtitling are strong for most public broadcasters (from 80% upwards in most cases) these fall significantly for commercial broadcasters. Levels for the provision of audio description tend to be much lower.

Coupled with this, the mechanisms for calculating a broadcaster's achievement of these targets vary, with some broadcasters counting e.g. shows that have been imported from other networks and shows that are repeated after midnight with subtitles towards their targets. Other broadcasters such as the BBC in the UK have made significant efforts to subtitle most of their live broadcasting.

In conclusion, the legislative landscape at national level is fragmented, with a patchwork of requirements in place.

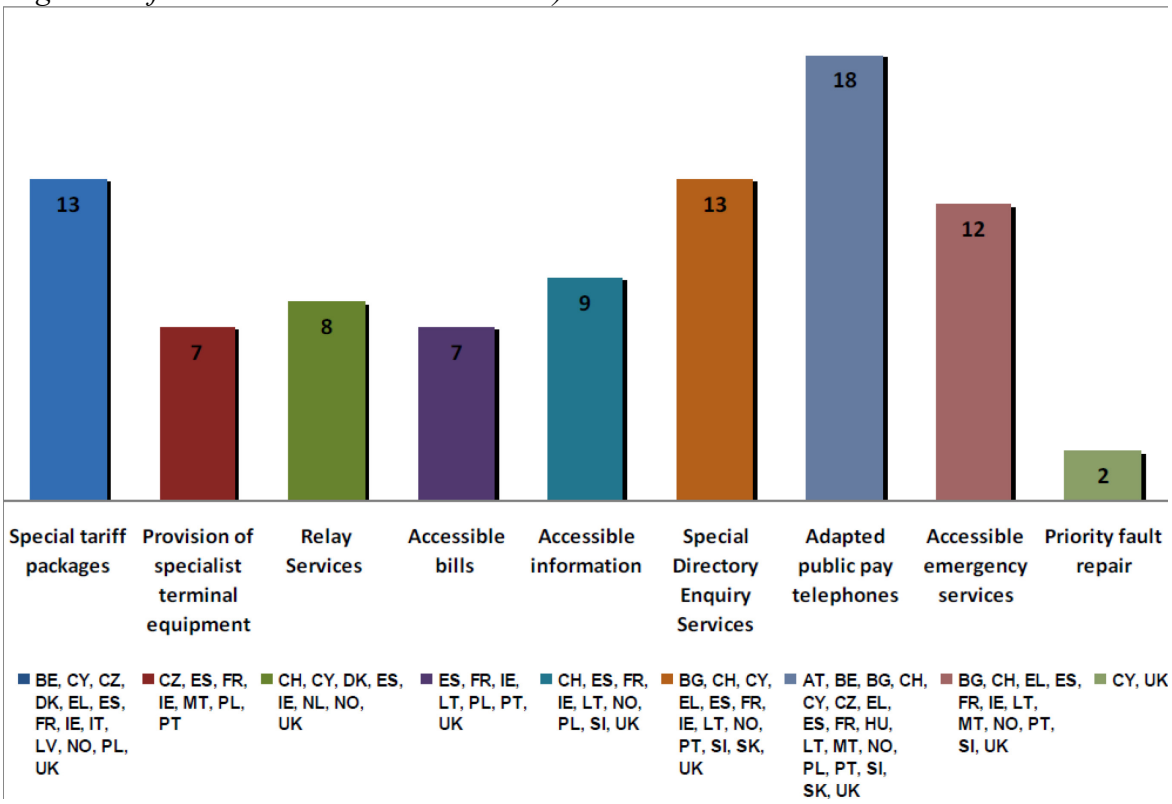
3. Telephony services and related terminal equipment

Telecommunications services include those services that can support communications between two or more people over a distance by electronic means. These services are known as telephony services. The scope of this section does not cover data communication. Besides the telecommunications service itself, this section also covers terminal equipment that is necessary in order to be able to effectively communicate using a telephony service.

Based on EU obligations under the EU regulatory framework for electronic communications to provide equivalent access for users with disabilities, Member States and their National Regulatory Authorities (NRAs) have responded and have taken a number of measures that address different components of the services, the network or the terminals. Following the revision of the framework in 2011, the Members States are obliged to take special measures to ensure that disabled persons have affordable access to fixed telephony services, including emergency services, directory enquiry services and directories. In addition, the other services covered by the universal service obligation can include mobile telephony and Internet access. These services are being considered recently in several Member States. The framework also contains certain provisions that commit Member States to make additional measures possible. These measures give power to the NRAs to take certain actions when needed (information of users, access and choice of providers, etc.). Finally, Members States can take measures to ensure that disabled users can benefit from a choice between providers of services. Practices in the Member States indicate that **making the services accessible** include the provision of accessible information, the accessibility of the directory enquire service and the bills, the accessibility of public pay phones, the provision of relay services, the availability of special tariffs for disabled persons, the provision of special terminal equipment, the adaptation of public pay phones to be accessible and the accessibility of emergency services[79]. In particular making accessible the "voice" telephony for deaf persons has been achieved in some cases by the provision of video telephones that permit person using sign language to communicate among themselves. In other cases this has been achieved by the provision of Real Time Text (RTT) permitting in addition those deaf and hard of hearing persons that are not sign language users to communicate directly among themselves but also with hearing persons. Usually Real Time Text is provided as a separate service not connected to the general voice telephony. The introduction of SMS (Short Message Service) has allowed some mainstreaming of the written communication but cannot be considered equivalent to voice conversation. Recent punctual efforts for example related to the provision of 112 provided for the combination of coordinated video and Real Time Text is provided in solutions called "Total Conversation". The term Total Conversation is defined by the ITU-T recommendation F.703 as “An audiovisual conversation service providing bidirectional symmetric real-time transfer of motion video, text and voice between users in two or more locations”. ITU-T does not refer to interoperability with relay services.

[79] Concerning the provision of accessibility to 112 some Member States have put the obligations to provide accessibility using alternative numbers, use of faxes, use of SMS or video and/or the use of Real Time Text services and devices. Some Member States require a combination of those.

Specific measures, already in place for users with disabilities in relation to electronic communications, according to information provided by NRAs to BEREC (Body of European Regulators for Electronic Communications) in 2010 [80]



While mainstream solutions are emerging in the markets that combine voice and video and some text capabilities they are not interoperable among themselves or with PSTN Real Time Text telephony and their related terminals and are not Total Conversation solutions. They do not provide the RTT that is needed to access to real conversational services, comparable to and complementing voice communication. This is the case of mainstream solutions like Joyn and WhatsApp that still belong to the messaging concept. The following is missing from these for them to be accessible and equivalent to voice communication:

- They lack a more fluent form, with real-time transmission. They are stressful to use in intensive conversational situations. Their equivalent would be like having a voice call through a technology that forced the interlocutors to first record a spoken sentence, and then after being ready, to press a button to play it out to the other party.

- They seem to lack a convenient link to voice phone calls. The value with RTT is in many cases that it can be used interchangeably with voice in a call. That suits a much wider population than the pure text calls and permit deaf persons communicating directly with those using voice.

- They lack interoperability with other similar services e.g. a WhatsApp user cannot

[80] BEREC 2010, Electronic communications services: Ensuring equivalence in access and choice for disabled end-users, http://berec.europa.eu/doc/berec/bor_10_47Rev1.pdf

communicate with a Joyn user, they need to communicate in another way before the chat session to ask each other what chat service they use and install support for that service and sign up for it. Then they need to both have the tool for the same service running in their phones.

- There is no indication that they are open for connection with relay services and emergency services. Such services cannot be expected to install support for a multitude of private communication methods, but should be contacted through openly specified standard protocols. IP multimedia standards for relay and emergency service connections have recently been settled and it is a huge job to introduce new ways to contact them. Instead, providers of other services need to adapt to the protocols used by emergency and relay services.

So, while the emergence in the market of mainstream services providing some combination of voice, video and some textual capability is a good step forward, their constraints from an accessibility perspective result in persons with disabilities considering that they are not entitled to the equivalent access indicated in the Telecom Directives.

National initiatives to fulfil obligations under the above mentioned Directives relate also to efforts to make voice communication accessible to disabled persons through "Total Conversation".

Currently, Real Time Text solutions in use in the Member States are based on old technology mainly PSTN. These solutions are also used for communications with Relay services.

The national solutions are not interoperable and while operators are moving toward IP based networks, in many Member States, the fact that Real Time Text and related terminals are needed to provide access to relay services or to the emergency services would imply that service providers and manufacturers need to provide interoperability between the old and current "PST solution" used by the final consumer and the "new solutions" when using IP networks. While this is a so called "legacy problem" that technology could solve by moving all the relay services and user terminals to IP based solution, market forces have not yet remove this problem and Member States have not yet removed obligations of interoperability with "PST solutions". This is a complex problem that cannot be solved at national level given that different solutions are used in the Member States. This is particularly important in relation to emergency services through the EU number 112.

Making the terminals accessible includes both hardware and software aspects and relates to the provision of information about the accessibility features of the terminals, the accessibility of the design of their user interface addressing issues related to the input, the output, the controls functions, and the display. Other issues relate to interoperability with assistive devices in terms of connectivity and compatibility for example avoidance of interference for hearing aids. The accessibility features of terminals concerning text and video communication depends on the hardware configuration and the software available.

The functionality of terminals is also changing following service trends. A study from BITKOM estimates that only 22% of the EU customers in 2010 used Internet telephony while in 2011 there were up to 28%. This percentage is expected to increase until 2020. The **market of mobile devices** has been increasing in Europe with a figure of about 14 Million sold in 2005 to a figure of 17 Million in 2010 while the manufacturing in Europe is being replaced progressively by import. In those figures the weight of smart phones versus traditional mobile phones is also progressively increasing. Already in 2011 smart phones were about one third of the total mobile telephone devices worldwide. So the scope of this section will focus on mobile devices and in particular smart phones.

Based on the MeAC 2011 an estimate for the **current accessibility rate of smart phones** has been calculated as the average of mobile telephony accessibility and mobile web accessibility 2011 study (i.e. (49% + 19%) / 2 = **34%**).

Telecommunication services providers would need to comply with a significant and different number of measures related to accessibility if they were to operate across all the EU countries. Some of those measures relate to affordability but many of those different measures concern accessibility sometimes provided via assistive solutions in the absence of mainstream equivalents. This divergence is expected to increase by 2020.

National Telecom legislation varies also in terms of personal scope. Sometimes obligations related to disability and accessibility require the undertakings designated with universal service obligations to provide accessibility and affordability for disabled end-users but in other occasions concern all telecom providers for that country. The legal situation makes it difficult for industry to provide the same solutions concerning accessibility across the EU. National differences in regulations exist in relation to the services and the terminals as well as a large variety of standards and practices.

The differences of national accessibility requirements make it particularly difficult for SMEs, for examples those that want to provide solutions for hearing-impaired and speech-impaired persons or relay services (relay services, etc.) to be able to enter the market or compete with large established industry for example for the provision of total conversation solutions.

In the telecommunications area, changes in technology point at a move towards mobile communications as well as an increase use of Internet Based solutions replacing fixed point networks and technologies.

The BEREC report concludes that "Article 23a (of the Universal Service Directive and User Rights as amended in 2009) is important in all Member States for end-users with disabilities in respect of electronic communication services. However, BEREC is of the view that the measures put in place to implement Article 23a, will vary between Member States".

Focusing on terminals, while in the 9 Member States whose legislation has been examined in detail no direct legislation obliging manufacturers to develop accessible terminals has been found it is plausible that Member States will develop obligations in the future. Today, already very detailed and diverse technical requirements exist for Public pay phones. For example in France it concerns the lay out of the user interface having a special button for blind users while in Italy a special solution for hearing aid users is provided as well as some design

features for blind persons using sticks. In Lithuania accessible public phones must be equipped for example with large and easy to read fonts. Polish legislation contains not only provisions related to public pay phones but also the possibility "to specify additional requirements for the adaptation and use by disabled persons" of terminal equipment placed in the market. In Ireland some of the services that are provided for disabled persons have implications for the design of fixed terminals with issues like inductive couplers, tele-flash and virtual alerts, hands free phones, etc. Several Member States require connection and access to the fixed network and services for users of relay services. Portugal in relation to access to emergency service requires accessibility of handsets for fixed telephony.

Furthermore, according to the MEAC Study the following Member States have some standards and guidelines concerning telephone devices: Germany Sweden, United Kingdom and Ireland that has in addition some legal obligations.

In addition, Spain has introduced provisions about accessible telephone directories via the internet. Royal Decree 424/2005: specifies “the range of universal service, imposing obligations on the designated operator with regard to accessibility, such as those that guarantee the existence of an adequate supply of special terminals, technologically up to date, adapted to the different types of disabilities and giving them adequate public exposure;

In the UK, the 2003 Communications Act further stipulates that OFCOM has the power to take steps towards the development of domestic electronic communications apparatus capable of being used with ease and without modification by the widest possible range of individuals (including those with disabilities). The ‘General Conditions of Entitlement’ published by Oftel on 22 July 2003 requires that all providers of publicly available telephone services or public telephone networks implement special measures for end users with disabilities, such as “to provide particular groups of disabled customers with inter alia (ii) access to text relay services which include particular facilities". In doing so, providers will have to support the technical solutions used in the UK.

Furthermore, the BEREC report notes that seven Member States have put in place obligations with respect to terminal equipment under Universal Service and that Article 23a of the 2009 USD is not specific regarding the measures that can or cannot be mandated by NRAs under it.

The rules related to emergency services terminals are likely to be strengthened by Member States. In spite of the Universal Services obligations at EU level, which cover access to emergency number, operator and directory services, MeAC 2 (2011) found that only 47% of Member States analysed provide direct access to emergency services via text telephony, with only 38% through video phone service. The accessibility level is therefore variable across countries: direct accessibility to emergency services is highly supported for both text and video telephone users only in Spain and Italy, while in Sweden and the UK direct accessibility is only provided to text telephone users. Moreover, in light of the developments planned by national and regional public bodies in charge of 112 numbers (such as the Dutch government and the Castilla y Leon region in Spain), it is likely that this situation evolves towards the adoption of new different solutions to deliver accessible emergency services to citizens, thus creating more divergence in the European market.

The total **Telecommunications services revenues** in Europe in 2010 were reported to be 275 Billion Euros[81] from which mobile services account for at least 142 billion Euros. While the revenues of mobile services and data/Internet services increased, fixed telephony lost more and more market share. The Digital Agenda Score Board reports that the total revenues of the electronic communications sector in EU27 was 327,111 million euros in 2010 constituting a decrease compared to 2009.

The number of smart phones in the market is expected to grow with a CAGR of 33% between 2009 and 2014 and that CGAR has been applied till 2020. This is in line with an increase demand for mobile data and internet services. The **total market size** (total industry turnover for smart phones in the EU is estimated at **31,659,436,588 Euros** and consequently the forecast till 2020 is 729,241,259,571 Euros. Five market players account for 73% of the total smart phone market value in Europe.

The situation above described has also an impact for Public-safety answering points (PSAPs) call centres in the provision of emergency centres[82]. It relates to the PSAPs back-office equipment, for instance, the 112 call centres in Member States and their ability to receive 'accessible calls' requesting emergency assistance (e.g. through text, video call, etc.) The general problem within the European Union is that Emergency service terminal providers do not have a unified standard of accessibility for 112 emergency services. The existing different requirements in legislation lead to market fragmentation since service and equipment providers have to do an extra-effort in order to adapt their goods and services to the national or even regional market. Moreover, the market fragmentation may lead to problems for disabled travellers and cross-border workers in emergency situations. MeAC 2 (2011) found that only 47% of Member States analysed provide direct access to emergency services via text telephony, with only 38% through video phone service.

Looking to the particular case of terminals used in the provision of emergency services, the so called PSAPS, it is estimated that the **market size** for the whole EU to be in a range of **1,200 to 1,500 PSAPs**. These terminals need to receive emergency calls from a variety of modes, most frequently voice but video and text are increasingly being demanded in order to fulfil the obligation under the Telecom Directives of providing equivalent access to 112 for persons with disabilities. Terminals that would operate in one Member State would require adaptations unless similar accessibility requirements would be required. It is estimated that the hardware and software costs related to the set-up of the infrastructure of a PSAP and the annual replacement cash flow to be between approx. 330 EURm and 700 EURm. Furthermore the annual on-going costs related to PSAPs can be estimated to be between approx. 400 EURm and 600 EURm. Based on those different assumptions the **annual market value of Emergency Service Centres** to be approx. **730 EURm** (330 EURm set-up costs plus 400 EURm annual costs) **to 1,300 EURm** (700 EURm set-up costs plus 600 EURm annual costs). The market consists largely of global players that focus on this market as one of

[81] ETNO annual economic report 2011

[82] PSAPs are defined as: "The first point of contact for 112 calls. The PSAP answers the incoming emergency call and transmits the emergency information to the concerned emergency authority, such as police, fire, and ambulance services. The PSAP may be either part of one of the above mentioned emergency authorities or just an interface between callers and emergency authorities."

many in their portfolio, while smaller firms also exist that focus specifically on emergency solutions for disabled persons.

Information from Spain related to the net cost of providing the disability related obligations for the provision of accessible telephony services under the Universal Service obligations in 2010 is reported to be 5,296 Euros excluding special services for deaf person what can be still a significant amount. In the UK the annual cost of relay services is estimated to be 10,101,945 Euros *per* year and the annual cost for accessible billing is calculated at 8,004,500 Euros.

Based on that and other information from various Member States, as well as various sources on other specific measures[83] and after weighting the GDP where the service is provided, the **costs of making the telephony services accessible** covering the various measures described in the BEREC report are estimated to be **179 Million Euro for the EU** with a proportion of 50% of turnover from cross border trade. The estimation used for the **additional accessibility cost due to different requirements in the Member States is between 1% and 5%**.

The **availability of accessible fixed telephony features**[84] is generally considered to be rather good, however, the availability varies between countries with The Netherlands on the last position with an availability score (calculated based on a scoring model and derived from a set of different questions) of 10% compared to a value of 64% for Ireland. Looking at mobile telephone technology, no exact figures on the **take-up by people with disabilities and elderly** were identified for the EU overall, but only examples for individual Member States. In the UK, take-up by people with disabilities was lower (82%) than the national average for adults under 65 (90%)[85]. It is estimated[86] that the average take-up rate of mobile telephony in the EU27 for people aged 15-64 to be five percentage points below the average of all citizens (91%), i.e. at approximately 86%.

The availability of mobile telephones is considered to be better than for fixed line telephones, which is partly driven by the growing availability of smart phones that come with more embedded accessibility features or can easily be made accessible by installing external applications. Nevertheless, as per the fixed telephone market, there are variations between the EU Member States. According to an assessment by Technosite, Portugal performed best with a score of 71% availability, while the lowest figures were recorded for Hungary (20%). Persons with visual impairments were less satisfied with mobile telephones, with text

[83] for example OFCOM in the UK, PSAP centre in Germany studies like MeAC and outside Europe like Australia

[84] Study led by Technosite in partnership with NOVA and CNIPA for the EC ,

[85] In Spain the take-up rate by people with disabilities is in line with or even higher than the take-up rate for the general population. More specifically, the take-up rates were as high as 98.4% for hearing impaired people, 91.6% for visually impaired people and 89.4% for people with a physical impairment (compared to a mobile telephone uptake of 89.0% for the general population in Spain85). However, senior people with disabilities had a low uptake of 24.7% compared to the 58.0% reported by Eurostat for the general population aged 65-74. DG INFSO - Study on the Internal Market for assistive ICT - Final report, 2008.

[86] 'The Internal Market for assistive ICT' published by Deloitte.

messaging and other visual functions being inaccessible to many consumers with this type of disability and elderly.[87]

The **take-up of smart phones** is not yet as progressed as the take-up of mobile phones in general with figures declining significantly with age which is the group with the highest prevalence of disability[88]. An estimation of the take-up rate of smart phones by persons with disabilities can be calculated[89] at 36.86%.

Member States have developed different **legislation, technical rules, programmes and practices** putting direct obligations on services providers affecting in a different way the two components mentioned above, namely services and terminals. A report of the European Regulator BEREC concludes that "most significant differences exist with regard to telecommunications-related services to be provided by the operators in different Member States". The measures taken are a mix of legislative, policy, programme and technical measures. In the 9 Member States examined there were no direct obligations placed on terminal manufactures. The obligations on the provision of accessible terminals are indirectly placed through their provision by telecommunication service providers. Telecommunication services providers and manufacturers of terminals would need to comply with a significant and different number of measures related to accessibility if they were to operate across all the EU countries. Some of those measures relate to affordability but many of those different measures concern accessibility sometimes provided via assistive solutions in the absence of mainstream equivalents.

The functionality of the internal market in relation to telecommunications services is compromised. There are barriers and obstacles to free trade as the telecommunications service providers cannot offer their services in all Member States without investing time to understand the relevant national requirements and making respective adaptations to their service portfolio (e.g. to ensure that accessible billing is available). Furthermore, service providers in some Member States experience higher costs than providers in other Member States as they have to ensure that accessible services are available, which operators in other countries currently do not need to ensure. While there are no legal barriers for mainstream terminal manufactures to place their products in the market, the existence of **different national practices and standards** in relation mainly to Real Time Text services seems to have a negative impact in the availability of mainstream terminals that would address those services, being left often to old PSTN specialised terminals.

Concerning emergency services and the terminals used in the PSAPS, it was perceived that businesses usually look at all of Europe instead of focusing only on single national markets. It was stated that there was a lack of economies of scale, as the goods/services produced cannot be sold in other Member States without adaptations of the accessibility features. However, the

[87] http://stakeholders.ofcom.org.uk/binaries/research/consumer-experience/GfKNOP.pdf
[88] http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr12/CMR_UK_2012.pdf p. 58
[89] using the ratio of the take-up of mobile telephony of PwD / take-up of mobile telephony of Non-PwD (i.e. 86%/91%=94.51%) and applied it to the 39% of UK smart phones owners. Hence, our estimate of PwD smart phone take-up is 36.86% (i.e. 94.51%*39%).

lack of economies of scale is more closely linked to technical details other than accessibility, as accessibility is only one of several challenges in the market. The existing different requirements in legislation lead to market fragmentation since service and equipment providers have to do an extra-effort in order to adapt their goods and services to the national or even regional market. Moreover, the market fragmentation may lead to problems for disabled travellers and cross-border workers in emergency situations.

People with disabilities need to be able to communicate with the emergency services using the same conversational terminal for the emergency call that they use for everyday calls and this is a problem when travelling across the EU as for example terminals that would interoperate with PSAPs terminals in one Member State, will most probably not be able to do so in another Member State when using Real Time Text or video. This fragmentation affects fixed and mobile terminals. However market forces have solved the voice interoperability issues long time ago.

The main obstacles encountered by disabled people are the physical and financial accessibility of the services. Certain disabled people cannot have access to some telecommunication services without adaptation (expensive handsets, etc.). They also may face higher costs because they need more time to use a service.

In the United States, technical standards exist related to accessibility of telecommunications services, networks and equipment. Those standards are compulsory under the section 255 of the Telecom Act and 508 of the Rehabilitation Act. The evolution of technology has been one of the reasons that lead the US administration to update those standards, which for example in the area of Real Time Text were based on old TTY (Teletype) solutions. Recently, the 21st Century Communications & Video Accessibility Act of 2010 (CVAA) (section 104) defines general non-technical accessibility requirements for advanced communications equipment and services, including RTT and video communication services and access to the next generation of 911 services. The Federal Communications Commission (FCC) has the competence to issue guidelines with compulsory technical requirements after a participative consultation of stakeholders. Such guidelines have not yet been published but they are under development. Industry has developed a number of initiatives to raise awareness about their efforts to comply with US regulations and raise visibility about the accessibility features of their products. Some seem to be directly linked to legislative obligations like the information about the level of compatibility between mobile phones and hearing aids. Such information is commonly available at retail telephone shops in the US. Others initiatives seem to respond to voluntary efforts of industry to reach disabled customers like the database on accessibility features of phones. Despites these efforts, and according to the FCC, the adoption by Congress of the CVVA was needed to ensure that telephone and television services would be accessible to all Americans with disabilities.: *"The CVAA follows a string of laws, passed in the 1980s and 1990s that were designed to ensure that telephone and television services would be accessible to all Americans with disabilities. But these laws were not able to keep up with the fast paced technological changes that our society has witnessed over the past decade. The new law*

contains ground breaking protections to enable people with disabilities to access broadband, digital and mobile innovations."

4. eBooks

Electronic books, generally referred to "eBooks", are books that are provided in digital form, consisting of text and / or images and which are readable on computers, mobile telephones or other electronic devices, such as dedicated eBook readers. eBooks are available in numerous formats. Some of these are supported by large software companies such as Adobe (PDF formats) while others are supported by open-source and independent programmers.

Figures from the Royal National Institute of Blind People (RNIB) in the United Kingdom suggest that "just 7% of all books are available in Braille, audio and large print, including titles available in these formats using eBooks". The **overall share of accessible eBooks** is estimated to be **32.5%**, according to the MeAC 2 study (2011), which considered the following two indicators: (1) provision of accessibility information by the two main public electronic libraries; and (2) provision of accessibility information by the main eBook reader manufacturers. In this context it can be noted that accessible eBooks are often provided by public or publicly funded organisations such as national libraries for blind people – not by the market.

Generally making the document accessible includes mark-up of the document as per its semantics (headings, pages, footnotes etc.) and then converting it to DAISY XML and DAISY text-only book. The work starts from unformatted electronic files such as Word, TXT, HTML etc. The DAISY XML file can be used to create other accessible formats such as Braille and audio while the DAISY text-only book can be directly used for reading purposes.

Publishers continue to discuss the merits of different file formats. Formats are especially important to consumers, as few eReader or eBook companies in Europe provide full interoperability with all formats available on the market. This means that consumers have to be aware of the file type and compatibility with their own devices. Another related issue refers to Digital Rights Management (DRM) practices which limit the user's access rights to eBook content which are needed to operate text-to-speech programmes for blind persons. Therefore, even where an electronic version of a book is available, it is not ensured that the end user has the "permission" to convert it from text to speech or that the software/reader can support this facility

In conclusion, the main limitations in accessibility of digital publications include the lack of accessible information about the functioning of the service and the accessibility characteristics of the publications themselves, including interoperability with assistive devices, the lack of accessible online related applications including electronic information needed in the provision of the service.

The overall share of accessible products is estimated to be 32.5%, according to the MeAC 2 study (2011), which considered the following two indicators: (1) provision of accessibility information by the two main public electronic libraries; and (2) provision of accessibility information by the main eBook reader manufacturers. In this context it can be noted that accessible eBooks are often retrofitted by public or publicly funded organisations such as national libraries for blind people.

ANED already identified accessibility requirements on eBooks in five EU Member States in addition to Italy (identified by Deloitte).

As concerns the key players on the market, as a starting point a distinction can be made between two types of players in the eBook market, namely publishers and retailers. The main activity of publishers is to distribute eBooks, whereas retailers supply eBooks to the end-users[90]. Focusing on actions covered by publishers, the market consists of at least 31 players. It must, however, be noted that the European eBook market in addition includes a large number of smaller publishers that operate in certain niche segments of the market. Furthermore, "self-publishing" is an increasing market for writers and especially academics. The market share of eBooks in the European publishing market is about 1%, while it is about 15-20% in the USA.

In the next years, the European eBook markets are expected to grow strongly. Based on a PricewaterhouseCoopers[91] market outlook for Germany, the Netherlands and the United Kingdom, the growth potential for accessible eBooks (CAGR) in Europe is estimated to be about 36.6% from 2012-2015. Because no growth estimations for the time period after 2015 could be identified, it was assumed that the growth rate will remain constant until 2020.

The regulatory landscape related to the accessibility of eBooks in Europe remains weak as legal technical accessibility requirements for eBooks were only identified for a niche market in Italy. This said the existing European and Member State legislation on copyright waivers for disabled persons under certain conditions also impacts on the accessibility of eBooks. Furthermore, several Member States (as well as the USA) have implemented legal accessibility requirements in relation to the provision of electronic information by public bodies. While eBooks do not fall directly under their scope, it is possible that as the market for eBooks matures, governments may in the future adopt the practice of providing official publications in eBook formats. In addition, some Member States such as Spain have implemented governmental support schemes to foster the accessibility of books (including eBooks) and libraries. Finally, international industry initiatives for the standardisation of eBook formats in the framework of the International Digital Publishing Forum (IDPF) and the DAISY Consortium have been an important – yet insufficient – driver to foster the accessibility of eBooks on a voluntary basis.

The **Italian accessibility requirements** for electronic versions of educational textbooks have been introduced through the Ministerial Decree of 30 April 2008 on "Technical rules governing access to educational tools and training for pupils with disabilities"[92]. These requirements "apply to the educational and didactic materials used in all schools and at every level" in Italy (Art. 5 of the 'Stanca' Law 4/2004[93]). The accessibility requirements in Italy

[90] Prieto/Schiro (2011): "E-book market: recent developments and competitive concerns". The main retailers in the U.S. in 2010 were Amazon (58%), Barnes & Nobles (27%) and Apple (9%), http://www.bloomberg.com/news/2011-03-22/barnes-noble-is-said-to-be-likely-to-end-search-for-buyer-without-a-sale.html

[91] PwC: Global Entertainment and Media Outlook 2010 – 2014, German Entertainment and Media Outlook 2010 – 2014; see http://www.pwc.com/en_GX/gx/entertainment-media/pdf/eBooks-Trends-Developments.pdf

[92] http://www.pubbliaccesso.gov.it/normative/DM300408/.htm

[93] http://www.pubbliaccesso.gov.it/normative/law_20040109.htm

cover the structure, navigation features, use of images, graphs and tables, magnification features, content export and interoperability with reading devices and assistive technology.[94]

Several EU/EEA Member States have introduced **copyright waivers** for disabled persons under specific conditions based on the European Directive[95], including France, Germany, Ireland, the Netherlands, Norway and the United Kingdom. While eBooks are not explicitly mentioned in the European and Member State legislation on copyright exemptions for disabled persons, the provisions can be interpreted to have an impact on eBooks. It is yet to be seen how such exemptions will impact the market for (accessible) eBooks. On the one hand, such copyright exemptions would need to be integrated in Digital Rights Management (DRM) systems of eBooks in order to allow disabled persons to benefit of their legal entitlement. On the other hand, such exemptions may restrain eBook publishers to consider disabled persons as an interesting segment in the mainstream market because this customer group benefits from specific rights with regard to copyrights, which may negatively affect their profitability.

Some Member States such as **France** or Germany have adopted specific and detailed accessibility requirements in relation to the provision of electronic information by public bodies. This does not cover eBooks *per se* and the regulations are most relevant to content and format (e.g. the provision of official documents in PDF and HTML). For instance, the French General Reference Document for Accessibility in Administrations[96] (Référentiel Général d'Accessibilité des Administrations, RGAA) sets out detailed technical requirements and guidance for electronic (online) content published by public authorities by inter alia referring to the WCAG 2.0 recommendations. While these guidelines mainly focus on web-accessibility issues, many requirements (e.g. with regard to document structure, navigation elements, use of graphics and formulas, etc.) may also be applied to eBooks and other electronic documents. Even though such accessibility requirements in relation to the provision of electronic information by public bodies are not directly relevant to publication of eBooks (from a legal point of view), they may become relevant in the future.

In **Spain**, Law 10/2007 on reading, books and libraries[97] regulates the management system of public libraries and citizens' rights on their use. This piece of legislation does not provide technical requirements, but contains the government's engagement to promote access to reading without discrimination and the obligation that support programmes for the book industry must take into account the particular needs of people with disabilities, especially regarding the promotion, dissemination and standardisation of accessible formats and methods. While governmental support schemes cannot be expected to ensure the accessibility of all eBooks, they are certainly an important measure to raise awareness of and provide guidance to publishers and retailers in order to foster the voluntary industry uptake of international accessibility standards for eBooks.

International industry initiatives for the standardisation of eBook formats have been a driving force to foster the accessibility of eBooks on a voluntary basis. Yet, these efforts have so far not been sufficient to ensure a broad accessibility of the European eBook market. The International Digital Publishing Forum (IDPF), the global trade and standards organisation dedicated to the development and promotion of electronic publishing and content consumption, supports ePub to be the standard

[94] A full translation of the requirements can be found in the Annex (see section 3.2).
[95] Directive 2001/29/EC on the harmonisation of certain aspects of copyright and related rights in the information society.
[96] http://references.modernisation.gouv.fr/rgaa-accessibilite
[97] http:/www.boe.es/boe/dias/2007/06/23/pdfs/A27140-271

format for electronic publishing.[98] "ePub defines a means of representing, packaging and encoding structured and semantically enhanced Web content - including XHTML, CSS, SVG, images, and other resources - for distribution in a single-file format. ePub allows publishers to produce and send a single digital publication file through distribution and offers consumers interoperability between software/hardware for unencrypted reflowable digital books and other publications."[99] The DAISY Consortium[100] has developed accessibility solutions that have been integrated into the ePub standard.

The ePub standard has established itself as the predominantly used format for eBooks. However, other proprietary formats such as those of Apple or Amazon remain very significant. Furthermore, some popular reading devices such as Amazon's Kindle do not support ePub. Another related issue refers to Digital Rights Management (DRM) practices that limit the access rights to eBook content, which is needed to operate text-to-speech programmes for blind persons, as mentioned before.

Interviewed industry players have pointed out the following challenges when operating in the EU internal market: technical problems; a narrow and fragmented market; a costly, overly complicated and time-consuming process of acquiring information and knowledge on accessibility for SMEs; no specific guidance on accessibility; and rapidly changing requirements and technologies. Furthermore, several accessibility features would need to be considered to take into account consumers' different abilities. For these reasons, many eBook industry players consider that the incentives are very limited to invest in accessible products, leading to an insufficient provision of accessible eBooks. This said, obstacles may arise for businesses if Member States would introduce diverging accessibility requirements for eBooks in the future.

5. Private sector websites

This case only addresses the assessment from the perspective of businesses, meaning web developers, given the fact that the situation across these sectors is similar (i.e. in terms of the legislative environment as well as cost estimates, etc.). The assessment of the problems from a consumer perspective and the subsequent baseline scenario are presented in the cases on eCommerce, hospitality, banking and transport services. More qualitative and / or quantitative elaborations and calculations regarding the consumers' situation can be found in the respective single cases.

Web accessibility refers to the inclusive practice of making websites usable by people of all abilities and disabilities. When websites are correctly designed, developed and edited, all users can have equal access to information and functionality. People with disabilities may use assistive technologies to facilitate the management and interaction with web contents.

It is essential that several different components of web development and interaction work together in order for the web to be accessible to people with disabilities. These components[101] include: contents (information in a Web page or Web application), web browsers, media players and other "user agents", assistive technology (e.g. screen readers, alternative keyboards, switches, scanning software, etc.), authoring tools and evaluation tools. For the purpose of this impact assessment only private sector websites are taken into account.

[98] http://idpf.org/
[99] http://idpf.org/
[100] http://www.daisy.org/
[101] http://www.w3.org/WAI/intro/components.php

The accessibility of private sector websites is low. The 2011 benchmarking study MEAC 2 selected per country a handful of much used commercial websites with public relevance such as public transport, banks, newspapers and other media, and found that 18% of them were web-accessible.

While the accessibility of private sector websites among the 10 countries studied in detail in Deloitte's study is currently only covered with mandatory requirements in Spain, this situation can be expected to evolve in the future. Furthermore in some Member States like the UK accessibility of private sector websites is covered by antidiscrimination legislation in relation to access to services. This has resulted in some court cases for companies failing to fulfil accessibility obligations[102]. Voluntary standards to promote web-accessibility among private businesses have also been identified in Italy and the United Kingdom. ANED has also identified requirements on private sector websites in five additional EU Member States (Belgium, Cyprus, Malta, Netherlands and Slovenia).

Furthermore, the Commission has prepared an in-depth impact assessment on the problem of the non-functioning of the internal market of web accessibility based on the existing diverging rules for public sector websites in the proposal COM (2021) 721. The information and calculations in Annex 7 have been as much as possible aligned. This is the case for example of the information used to calculate the costs of making websites accessible.

Completely different approaches to web-accessibility of public sector websites have been taken in 13 EU Member States within the scope of the analysis of an EU study[103]. Indeed some Member States introduced detailed technical mandatory requirements, whereas others only have possible protection from equality law. Some Member States have already extended their accessibility requirements for private sector websites[104]. If the rest of the Member States were to do so and extend also their accessibility requirements to private sector websites, this would lead to a strongly fragmented regulatory landscape for private sector websites.

Eurostat's latest available structural business statistics (referring to 2010) indicate that 189,960 businesses were active in computer programming activities (NACE rev. 2, J6201) generating a total turnover of 136,410.13 EURm. According to the most recent data from 2011, the total turnover generated went slightly up to 146,016.8 EURm. Data on the number of companies active in the field of web portals (NACE re.v 2, J6312) was not available. In 2009, however, the web portal industry generated a turnover of 14,269.98 EURm.[105]

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[102] http://www.rnib.org.uk/aboutus/mediacentre/mediareleases/mediareleases2012/Pages/pressrelease27Jan2012.aspx

[103] Technosite, NOVA and CNIPA (2010) Study on Monitoring eAccessibility – MeAC2. Report on implementation and interpretation of WCAG 2.0. Available at http://www.eaccessibility-monitoring.eu/descargas/MeAC2_Report_on_implementation_and_interpretation_of_WCAG_2_0.docx

[104] http://ec.europa.eu/digital-agenda/en/news/study-assessing-and-promoting-e-accessibility

[105] http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs_na_1a_se_r2&lang=en

A good proxy for the number of websites in the EU27 is the number of businesses[106]. In the EU27 there were some 21,761,617 companies in 2010 which would imply that there could be around the same number of websites run by private sector.

The main limitations in accessibility of websites include the lack of accessible information about the functioning of the service and the accessibility characteristics, the lack of accessible online related applications including electronic information needed in the provision of the service.

Projections for future development are uncertain, therefore it is assumed that the number of businesses (i.e. websites) remains at the same level.

The regulatory landscape related to the accessibility of private sector websites is weak in comparison with the accessibility of public websites which is increasingly regulated across Europe.

Mandatory web-accessibility requirements for certain private undertakings have been identified in **Spain**. The Royal Decree Royal Decree 1494/2007 regulates the basic terms and conditions of access for the disabled to technologies, goods and services related to the information society and social media. It also provides legal force to the national standard UNE 139803:2012 "Web content accessibility requirements". The Spanish legislation covers all governmental websites. Law 56/2007 on measures for the promotion of the Information Society extends this obligation of web accessibility to enterprises offering services of public interest (public or private ones). This concerns Spanish companies with over 100 employees or a turnover of more than EUR 6,010,121.04, if operating in any of the following economic sectors: electronic communication services giving services to consumers; consumer financial services, which include banking services, credit or debit services, investment services, insurance, pension plans and brokering; water supply companies giving services to consumers; gas supply companies giving services to consumers; gas supply companies giving services to final consumers; travel agencies; companies transporting travellers (by road, rail, sea or air); and retail companies giving services to final consumers. Law 49/2007 establishing the system of offenses and penalties relating to equal opportunities, non-discrimination and universal accessibility for people with disabilities foresees penalties of up to 30,000 EUR per site in case of non-compliance.

Accessibility of private sector websites falls also under the scope of some national antidiscrimination legislation but without the provision of specific technical requirements.

Voluntary standards to promote web-accessibility among private businesses have been identified in **Spain** and the **United Kingdom**. In **Italy**, a voluntary scheme to encourage the accessibility of private sector websites has been launched in 2004. Yet, in a large majority of countries, the provision of accessible private sector websites mainly depends on the voluntary action by service providers.

[106] As used in the impact assessment accompanying the proposal for a Directive of the European Parliament and of the Council on the accessibility of public sector bodies' websites, page 9 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SWD%3A2012%3A0401%3AFIN%3AEN%3APDF

In Spain, the aforementioned national standard UNE 139803:2012 "Web content accessibility requirements" also intends to promote the take-up of web-accessibility features by private businesses that are not covered by the obligations of Law 56/2007.

In the United Kingdom, the British Standard 8878: 2010 "web accessibility code of practice" provides guidance on web-accessibility to private businesses of all sectors. The BS 8878:2010 code of practice applies to all products delivered via a web browser, including websites, web services and web-based applications such as email. It is intended to help anyone commissioning or designing a website or product to ensure it can be accessed by anyone. It outlines ways to define and assess the impact of web products on users, especially disabled and older people. The BS 8878:2010 is not a technical standard, but a process standard aimed not to substitute WCAG but to work alongside it. Compliance with the standard implies compliance with WCAG version 2.0, as the websites has to be tested against it.

In Italy, The Law 4/2004 on provisions to support the access of the disabled to information technologies ("Stanca Law") as well as the implementing legislation (Decree of the President of the Republic, March 1st 2005, No. 75 on Enforcement Regulations for Law 4/2004 to promote the access of the disabled to information technologies; Ministerial Decree of July 8, 2005 on technical requirements and the different levels of accessibility of computer tools) define technical accessibility requirements as well as a conformity assessment and labelling scheme for accessible websites. While the legal obligation to comply with these requirements is limited to public administrations, public agencies, private firms which are licensees of public services, regional municipal companies, public assistance and rehabilitation agencies as well as transport and telecommunication companies in which the State has a prevalent shareholding and ICT services contractors (art. 3 para 1 Law 4/2004), the voluntary uptake by private sector websites is encouraged via the labelling scheme which is implemented by the public agency CNIPA (Centro Nazionale per l'Informatica nella Pubblica Amministrazione).

Voluntary standards and certification schemes for the promotion of the accessibility of private sector websites have so far had a limited impact on private businesses, even though anecdotic evidence points to a few success stories.

Costs associated with the regulatory fragmentation in the EU are **incurred by web professionals** that basically provide websites with accessibility features. Web professionals cannot provide their services to businesses without incurring costs for efforts they have to make in order to understand the legislation (namely the Spanish one) and adapting their services and products accordingly. It can be expected that web professionals directly forward their costs of adapting to the legislation to their customers, i.e. the businesses that have commissioned web professionals to develop an accessible website. Furthermore, this is a problem that applies to all types and sectors of professional website services. Web professionals face accessibility compliance costs of 1.1 EURm to 9.7 EURm (depending on the complexity of the website) when providing web development services to Spanish online service providers that operate in Spain.

It should be noted that web-accessibility services are themselves examples of cross-border online services and lend themselves well to be delivered over the internet, provided language is not a barrier, thus creating job opportunities also in low-wage EU countries. Yet, an increasing number of eCommerce businesses are providing accessible websites and services on a voluntary basis - not least in view of the important customer base of disabled persons and elderly.

6. Architect services

Accessibility requirements for the built environment affect primarily the architect services' sector.

These services according to the European Union structural business statistics NACE Rev. 1.1[107] *inter alia* include:

- Architectural and engineering activities, corresponding to NACE Group 74.2, which include:
    - Architectural consulting activities (such as building design and drafting, supervision of construction, town and city planning, and landscape architecture);
    - Various engineering and technical activities related to construction;
    - Geological and prospecting activities;
    - Weather forecasting activities;
    - Geodetic surveying;
- Technical testing and analysis activities, corresponding to NACE Group 74.3, which include:
    - Environmental measuring;
    - Testing of food hygiene, buildings and equipment;
    - Periodic testing of vehicles for roadworthiness.

The differences identified in legislation and detailed technical accessibility requirements for the built environment by Deloitte lead to barriers for architectural design and construction companies providing services across borders within the Internal Market. Businesses face extra costs every time they work on projects in other countries because they have to understand and comply with differing local regulations on accessibility and other technical areas. Different accessibility requirements concerning issues such as entrances, corridors, stairways, toilets and manoeuvring areas roughly affect 25% or more of the net space of buildings. Compliance with local requirements may require the hiring of local designers in order to operate swiftly enough during the design process, and to minimise the likelihood of expensive mistakes.

Another example of fragmented legislation related to the vertical design of buildings for accessibility which in simple terms relates to the obligation to have lifts for buildings of more than one floor. The fragmented situation resulting from national regulations is such that for example in some German Länder it is still allowed the construction of residential buildings of 4 levels without a lift and at least 6 EU Member States only require the placement of lifts in a

[107] http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Architectural,_engineering_and_technical_services_statistics_-_NACE_Rev._1.1

limited number of public buildings. Slovenia requires the lift from 3 floors onwards. At least 14 Member States require the placement of a lift in public buildings of more than 1 floor. Architects need to be aware of these divergences and adapt their designs accordingly.[108] In fact a design that would be fulfilling national accessibility legislation in one country would not be legally correct in others. Furthermore this plays also a role in public procurement as the placement of lifts in public buildings is a key component of their accessibility. Bids from other Member States could be excluded if they were following national rules on the placement of lifts.

Some 129.6 EURb of value added was generated in 2006 by the EU's technical business services sector (NACE Groups 74.2 and 74.3) from a turnover of 269.6 EURb[109]. This corresponded to 15.3 % of the total turnover for business services (NACE Divisions 72 and 74) and 14.5 % of the value added. According to other Eurostat statistics, around 26% of the EU turnover of architecture, engineering and technical testing related to architectural services.[110]

Using these numbers, the **turnover of architect services** in Europe in 2006 is estimated to have been **37.74 EURb**. In **2011**, according to the most recent data, this turnover went up to **39.4 EURb**.

Large **architectural design companies regularly work across borders**. Hiring local expertise or co-contracting local companies are typical market solutions in order to more quickly understand and comply with local (accessibility) requirements.

The **fragmentation of the legislative situation** (analysed in detail further down) in the EU27 architect service market can, however, **lead to additional costs for architect firms**. As noted above, these costs relate to efforts that need to be made in order to understand the different domestic accessibility legislations in the EU Member States where the building needs to be set up and to adapt the architectural services accordingly. Evidence from Germany suggests that architect fees are in the range of 10% to 13% of the total (monetary) building sum for new buildings and 15% to 18% for existing buildings.[111]

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[108] ELA - EEA - ELCA - EFESME – EPSA-EDF - ANEC – EUCAN report on Accessibility of the built environment legislation in Europe; 2013. It is important to note that this study concerns the divergent legislation related to the design of buildings and not the design of the lifts themselves for which EU legislation already exists and it has been indicated by ELA (European Lift Association) to have been extremely useful in removing fragmentation from EU market and provided new market opportunities for industry

[109] The update from 2011 is "Some 147.8 EURb of value added was generated in 2011 by the EU's technical business services sector (NACE Rev.2 division 71) from a turnover of 297.6 EURb. This corresponded to 28 % of the total turnover for business services excluding software publishing, data processing, hosting and related activities; web portals (NACE Rev.2 Divisions 69, 71, 73 and 78 and group 70.2) and 25.2% of the value added. According to other Eurostat statistics, around 13% of the EU turnover of architecture, engineering and technical testing related to architectural services."

[110] http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-08-042/EN/KS-SF-08-042-EN.PDF, p. 3

[111] http://www.aknw.de/bauherren/planen-und-bauen/architektenhonorar/

Data from the Royal Institute of British Architects suggests that an architect's working hour on average costs 61 EUR in the UK.[112] Thus, an average cost of 50 EUR to 70 EUR *per* working hour has been assumed. Furthermore, it has been assumed that in order to understand the existing legislative requirements in the EU Member State where an architect is providing services, one fulltime equivalent's (FTE) work is needed to be put in for two to ten days.

About 40% of architect service projects undertaken by major architectural companies can be on buildings in other countries. For smaller companies the fraction is much lower, around 10%[113]. The total volume has not been identified as early discussions with major architectural design companies indicated that the exact number of projects affected was not regarded as having a significant impact on their annual financial turnover. Since it can be assumed that most of the cross-border architect projects in Europe are undertaken by major companies, the rate for **cross-border trade** in the area of architect services has been fixed at **40%**.

The provision of architect services across national borders within the Internal Market typically covers situations where an architectural company wins a competition or is awarded a public procurement contract on designing buildings in another Member State. The early plans as well as more detailed designs often rely on domestic, standardised architectural designs compliant with the accessibility requirements in the home country of the company. Such requirements include a range of elements such as design of ramps, entrances, door placement, door widths, thresholds, automatic door controls, access control interfaces, lobby space layout, toilet room layout, toilet room equipment specifications, alarm system placement, dimensions of handrails, stair layout, signage and self-service terminals. The needs of most users of a building have to be considered under building regulations nowadays, and accessibility requirements derive from the needs of a wide range of persons, primarily with reduced mobility, but also with cognitive and sensory impairments.

All EU Member States require built environment elements to be designed to be accessible for persons with disabilities. The CEN/CENELEC/AENOR Mandate 420 report provided an overview of the coverage of various accessibility issues in the built environment by legislation and other statutory documents in different European countries and regions. While a large number of accessibility issues are covered in all EU Member States, the detailed level of coverage varies strongly across countries.

Furthermore, the **detailed technical specifications for the accessibility requirements vary across Member States**. As an illustrative example, the table below provides examples of technical accessibility requirements in the built environment (with regard to ramps, doors, toilet room free space and stair cases) in seven European countries. It appears that while most countries have regulated the accessibility of these built environment elements, the detailed technical requirements vary across countries. As a result, **architectural designs** that are

[112] http://www.servicemagic.co.uk/resources/guide-to-architect-fees-costs-and-prices/

[113] Review of portfolios of 20 major European architectural companies and 20 smaller German and Nordic companies, by Soren Ginnerup, Building Research Institute of Denmark, 2012, plus interviews with members of the Association of Danish Architects.

exported to other countries **have to be adapted to meet national codes and regulations**, and consequently no single, standard design can be put to use across Europe.

Table 2: Examples of technical accessibility requirements in the built environment

Differences in requirements, non-domestic buildings	France	Ireland	Spain	United Kingdom	Germany	Norway	Italy
Ramp slopes, max.	1:20	1:12	-	1:12	1:16.5	1:12	1:12.5
Ramp widths, min.	1.4 m	1.0 m	-	1.5 m	1.5 m	1.6 m	0.9 m
Corridor widths, min.	1.4 m	1.2 m	0.9 m	1.2 m	1.5 m	1.6 m	1.0 m
Door widths, min.	0.9 m	0.8 m	0.85 m	0.8 or 1.0 m	0.9 m	1.0 m	0.8 m
Toilet room free space	One side	One side	One side	One side	Two sides	Two sides	-
Relative size of staircases	Small	Small	-	Medium	Larger	Larger	-

In view of overcoming this legislative fragmentation, the European Commission issued a Standardisation Mandate to CEN, CENELEC and ETSI in support of European accessibility requirements for public procurement in the built environment (Mandate 420[114]) in 2007. The main objectives of this mandate are to: (1) facilitate the public procurement of accessible built environment following the Design for All principles by developing a set of standards/Technical specifications that will contain (I) a set of functional European accessibility requirements of the built environment; and (II) a range of minimum technical data to comply with those functional requirements, and (2) to provide a mechanism through which the public procurers have access to an online toolkit, enabling them to make easy use of these harmonised requirements in procurement process. The results of the first phase of Mandate 420 are available and identify a set of standards on accessibility along with various methods to assess conformity with those standards for the built environment.[115] The progress with the Mandate is highly welcomed, yet European standards not accompanied by other legal measures are voluntary tools.

Based on the above findings, it can be concluded that the legislative landscape at national level is fragmented, with **large variations between different jurisdictions in terms of how**

[114] EC (2007): *Standardisation Mandate to CEN, CENELEC and ETSI in support of European accessibility requirements for public procurement in the built environment*, M/420 EN, http://ec.europa.eu/enterprise/standards_policy/mandates/database/index.cfm?fuseaction=search.detail&id=392#

[115] CEN, CENELEC and AENOR (2011): *Final Joint Report - CEN/BT WG 207 (PT A and PT B) – Phase I: Inventory, analysis and feasibility of European and International accessibility standards in the built environment*, ftp://ftp.cen.eu/CEN/Sectors/Accessibility/ReportAccessibilityBuiltEnvironment%20Final.pdf

accessibility in the built environment should be ensured. National or regional technical accessibility requirements for the built environment exist in all 27 EU Member States.

The differences identified in legislation and detailed technical accessibility requirements for the built environment **lead to barriers for architectural design companies providing services across borders** within the Internal Market. Businesses face **extra costs** every time they work on projects in other countries because they have **to understand and comply with differing local regulations on accessibility** and other technical areas. Accessibility requirements concerning issues such as entrances, corridors, stairways, toilets and manoeuvring areas roughly affect 25% or more of the net space of buildings. Compliance with local requirements may require the hiring of local designers in order to operate swiftly enough during the design process, and to minimise the likelihood of expensive mistakes.

In some case, software toolkits attempt to supply a better overview of national/regional (accessibility) requirements, where these may be difficult or time-consuming to understand by professionals. Cross-border information, however, does not seem to be included. BIM and CAD systems used for modelling increasingly act as on the fly toolkits making adaptations of different local requirements easier, typically offering ranges of standard building elements and solutions to choose from.

Designers may use some of the existing toolkits and they might be helpful to a certain extent. However, they will never solve the legislative fragmentation problem.

7. Self-service terminals including ATMs

Self-service terminals (SSTs) are computerised telecommunications device or electronic outlets that provide the users with access to various operations in public spaces without personal assistance. SSTs are commonly used in several sectors such as banking (ATMs), retail (self-checkout machines) and transport services (check-in machines and ticketing machines).

More specifically, an Automated Teller Machine (ATM) is a computerised telecommunications device or an electronic banking outlet that provides the users (e.g. clients of financial institutions) with access to banking operations in public spaces without the assistance of a clerk. There are two primary types of ATMs: the basic units allow the customer to only withdraw cash and receive a report of the account balance. The more complex machines will accept deposits, facilitate credit card payments and report account information. On most modern ATMs, the customer is identified by inserting a plastic ATM card with a magnetic stripe or a plastic smart card with a chip and by entering a personal identification number (PIN)[116].

As computerised devices, SSTs require operating systems in order to perform the various available functions. In the case of ATMs, their vast majority nowadays use a Microsoft Windows operating system or Linux. In addition to the operating systems, SSTs require various applications (constantly improved) that allow transactions to be performed. Hence it is

[116] Among others, cf.
http://www.sccs.swarthmore.edu/users/08/ajb/tmve/wiki100k/docs/Automated_teller_machine.html,
http://banksindia.in/atm-services, http://www.diebold.com/atmsecurity/security/EMV_WhitePaper.pdf

important that both the physical device (the SST machine) and the software are accessible for a fully user-friendly experience.

The accessibility requirements of the physical setting usually stem from regulation addressing the built environment, and can vary depending on different aspects such as the access to the pathway towards the machine, the lighting of the environment, etc. The accessibility features behind the SST should include more than ensuring that the SST has the right position/height, such as that facilities can be accessed, e.g. because of lack of sound, wrong lightning, lack of logic etc.

Regarding the barriers linked to the usability of the interface, the following challenges have been highlighted both in the public consultation and by the other sources of information consulted: the height of the machine relative to users in a wheelchair; the lack of similarity of the display from one machine to another (inconsistent layout of keypads, number orientation, size and style of the keys, colour and contrast); the lack of audio output; the small print of the receipts issued by SSTs which makes them difficult to read, and poor general functionality. In addition, according to the public consultation, there needs to be a requirement for ATMs to use the already existent speech technology, as speech technology is seen as adding significant value to the user experience[117].

In summary, the main limitations in the accessibility of ATMs and self-service terminals are linked to the functionality of the good, the limited accessibility of the user interface and the limited interoperability with assistive devices and when existent, it is very seldom standardised across the EU[118].

Technical accessibility requirements have been identified in 8 out of 9 EU Member States (i.e. 89%) within the scope of the analysis. ANED identified at least six other Member States, with requirements in this area.

The regulatory fragmentation identified further down, introduces obstacles in the EU Internal Market. It is clear that in the current situation, an ATM that complies with the accessibility requirements in one Member States would not be compliant with the requirements other Member States and can therefore be sold in only one or two of these countries without adaptations[119]. This can be considered as an obstacle to the free movement of goods within the Internal Market.

Leading ATM manufacturers have confirmed that such regulatory differences in technical requirements lead to obstacles in the internal market and additional costs for accessibility because they have to familiarise themselves with the diverging national accessibility requirements and adapt their products in order to be able to sell them in the different national sub-markets within the internal market.

[117] Technosite. Accessible Personalised Services in PDTs for All *(work in progress)*. 2012

[118] In the US a standard connector exists in ATMs so that a blind person can plug a headset and use the ATM to make transactions.

[119] As explained in the Annex on problem definition, for instance, an ATM with a height of operation of 1250 mm would be considered as accessible in France, Ireland and the UK, while it would be considered as inaccessible in Austria, Germany, Denmark, Spain and the Netherlands. Similarly, an ATM with a height of operation of 750 mm would be considered as accessible in Spain and the UK, while it would be assessed as inaccessible in Austria, Germany, Denmark, France, Ireland and the Netherlands

More specifically, based on the analysis above, it appears that:

- ATM manufacturers (large companies that sell their goods worldwide) face additional cost for product adaptations due to inconsistent and incompatible accessibility requirements across countries in the Internal Market;

- Retrofitting non-accessible ATMs can be very expensive; typically accessibility features are added when replacing existing ATMs by new (accessible) ones and seldom by retrofitting existing ones.

- European-level standardisation of accessibility requirements is advocated by the industry as the most appropriate way to overcome barriers in the Internal Market caused by inconsistent requirements. A single European voluntary standard would only potentially remove the costs that are necessary for national level adaptations and make accessible ATMs more affordable if enforced by EU legislation.

Disabled consumers find barriers in two dimensions of SSTs (including ATMs): on the one hand, the physical setting and surrounding of the machine and on the other, the design and usability of the interface.[120]

The accessibility requirements of the physical setting usually stem from regulation addressing the built environment, and can vary depending on different aspects such as the access to the pathway towards the machine, the lighting of the environment, etc. The accessibility features behind the ATM concern more than ensuring that the ATM has the right position/height, so that facilities can be accessed. They address many other barriers, for example those related to the user interface, e.g. lack of sound, wrong lightning, lack of logic etc.

Regarding the barriers linked to the usability of the interface, the following differences in features have been highlighted as challenges for compatibility, both in the public consultation and by the other sources of information consulted: the height of the machine relative to users in a wheelchair; the lack of similarity of the display from one ATM to another (inconsistent layout of keypads, number orientation, size and style of the keys, colour and contrast); the lack of audio output; the small print of the receipts issued by ATMs which makes them difficult to read, and poor general functionality. In addition, according to the public consultation, there needs to be a requirement for ATMs to use the already existent speech technology[121].

In comparison to ATMs, ticketing machines and check-in machines have lower sales prices. Industry expertise provided by Wincor-Nixdorf suggests that EU sales prices for ATMs are between 8,000 and 42,000 EUR *per* product depending on the included features. According to Hoefft & Wessels, a ticketing machines manufacturer, sales prices for ticketing machines are around 10,000 EUR per good. By applying the same range of sales prices as for ATMs, the sales prices are expected to be between 3,200 EUR to 16,800 EUR. Since check-in machines are basically only provided with a touch screen and printing functionality their sales prices is expected to be even lower, i.e. 2,000 EUR to 8,000 EUR.

[120] INREDIS Project: http://www.inredis.es/Default.aspx
[121] Technosite. Accessible Personalised Services in PDTs for All *(work in progress)*. 2012

A leading authority on accessibility technology estimates that the costs of modifying hardware and software for a fully accessible system would not exceed 1%, at most 2%, of the entire development cost of a SST's hardware and software. This estimate is based on existing accessibility technology and design standards. On the other hand, retrofitting is usually very expensive (up to half the costs of a new ATM), meaning that embedding accessibility from the design phase would be a win-win situation both for the company and the end-user, since the latter would be more likely to engage in transactions and generate higher sales if the ATMs are accessible.[122]

According to Eurostat data (PRODCOM code 26201200) the **total production value** of "Point-of-sale terminals, **ATMs** and similar machines capable of being connected to a data processing machine or network" was **222,335,531 EUR** in 2011. Although the number of point-of-sale (POS) terminals is expected to be very high since almost every in-store check-out terminal is equipped with a POS payment device, it is expected that the majority of the market size can be attributed to ATMs. Hence, Deloitte assumed that 60% to 70% of the total annual production value can be attributed to ATMs. Thus, the applied annual market turnover stemming from ATMs is equal to 60% to 70% of the annual production value:

Lower range estimate: 60% * 222,335,531 EUR = 133,401,319 EUR

Upper range estimate: 70% * 222,335,531 EUR = 155,634,872 EUR

According to the European Central Bank (ECB), there were about 434,200 ATMs in the EU in 2010.[123] While the total number of ATMs has strongly increased in all EU Member States over the last decade[124], growth has come to halt in recent years. For instance, in 2010 the total number of ATMs in the EU decreased slightly by 0.2%.[125] The ATM density in the Euro area has grown from about 675 ATMs per million inhabitants in 2001 to more than 950 ATMs per million inhabitants at the end of the decade. Since then the ATM density in the Euro area has been stagnating. The ATM market is largely controlled by eleven global players. Currently all major ATM manufacturers are able to develop and deploy accessible ATMs; some ATM manufacturers even sell accessible machines across the full pricing spectrum[126] thus making it more affordable for ATM operators to provide accessible machines to their clients.

To calculate the **market size for ticketing machines and check-in machines** the PRODCOM figures were also used. For "Accounting machines, cash registers, postage-franking machines, ticket-issuing machines and similar machines, incorporating a calculating device" (code 28231300), the total production value in the EU27 was **304,379,040 EUR**, corresponding to a total export value of 172,822,250 EUR and an import value of 437,393,710 EUR. Deloitte assumed the value that can be attributed only to ticket-issuing machines to be between 20% and 50%, while the share of check-in machines is expected to be between 5% and 15%. Due to a lack of data, this is, however, not backed by evidence. Thus, the applied annual market turnover stemming from ticketing machines is estimated as follows:

Ticketing machines:

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[122] See Frieden (2006); Gill (2009b).

[66] http://www.ecb.int/press/pr/date/2011/html/pr110912.en.html

[124] Data on the total number of ATMs for individual countries is available in the ECB's Statistical Data Warehouse: http://sdw.ecb.europa.eu/search.do?type=series&q=number+of+ATMs

See also: http://www.epractice.eu/files/European%20Journal%20epractice%20Volume%2010.1.pdf

[125] http://www.ecb.int/press/pr/date/2011/html/pr110912.en.html

[126] Disability Rights Education and Defense Fund (2010): Electronic and Information Technology. Retrieved from http://www.dredf.org/anprm/electronic-and-information-technology.shtml

Lower range estimate: 20% * 304,379,040 EUR = 60,875,808 EUR

Upper range estimate: 50% * 304,379,040 EUR = 152,189,520 EUR

Check-in machines:

Lower range estimate: 5% * 304,379,040 EUR = 15,218,952 EUR

Upper range estimate: 15% * 304,379,040 EUR = 45,656,856 EUR

The market for these SSTs is likely to increase, taking into account the potential benefits of using these machines: revenues increase and efficiency gains.

As regards the regulatory landscape, while **technical accessibility requirements** for ATMs exist in several EU Member States, these mainly refer to the built environment relating to the ATMs (e.g. an obstacle free route to the ATM, the height of the installation, etc.) and in some cases to the user interface. For instance, Austria, Denmark, France, Germany and the United Kingdom provide accessibility requirements for ATMs through building regulations. ICT-related accessibility requirements are rarely present in legislation.

"More complete" technical accessibility **guidelines or standards** for SSTs, including ATMs, i.e. covering both ICT- and built environment-related requirements, are available in most of the analysed countries. These have typically a non-binding self-regulatory character or have been published as recommendations by disability organisations or public authorities.

The table below provides an overview of identified obligations in legislation, related technical accessibility requirements and standards/guidelines of a mandatory or voluntary nature in both selected EU and non-EU countries.

Overview of identified obligations, requirements, standards and guidelines

	Obligations	Technical Accessibility Requirements	Standards/Guidelines (mandatory)	Standards/Guidelines (voluntary)
Austria	X (*)	X	S (*)	S
Denmark	X	X	S	G
France	X	X		G
Germany	X (*)	X	S, G (*)	S, G
Ireland				G
Netherlands				G
Norway				G
Spain	X	X		G
Sweden				G

United Kingdom	X	X	S	S, G
Australia				S
Canada				S
United States	X	X	S	

(*) = Only in those regions where the regional building codes give legal force to accessibility standards.

There are significant differences between the accessibility requirements for self-service terminals (including ATMs) specified by legislation, standards and technical guidance documents across Europe. These relate inter alia to issues of the built environment such as the height of operation, the knee space or the access area in front of the SSTs. The regulatory coverage with regard to ICT-related accessibility requirements is more limited.

The illustrative comparison of selected technical accessibility requirements for SSTs in Europe shows that incompatibilities exist across countries. For instance, an ATM with a height of operation of 1250 mm would be considered as accessible in France, Ireland and the UK, while it would be considered as inaccessible in Austria, Germany, Denmark, Spain and the Netherlands. Similarly, an ATM with a height of operation of 750 mm would be considered as accessible in Spain and the UK, while it would be assessed as inaccessible in Austria, Germany, Denmark, France, Ireland and the Netherlands. With regard to knee space provided below the ATM in order to make the operating devices reachable (i.e. accessible) for wheelchair users, (diverging) technical requirements exist in Germany, France, the Netherlands and the UK, while no requirements have been defined in the other countries under scope.

Similar problems can be observed with regard to the minimum requirements for the access area in front of the SSTs as well as the degree of coverage of ICT-related accessibility requirements.[127]

While the general non-technical accessibility requirements for ATMs are broadly aligned, technical accessibility requirements vary significantly across EU Member States. As a result, adaptations for the different national markets within the EU Internal Market are necessary. Interviewed SSTs manufacturers reported that the fragmentation and inconsistency of accessibility requirements across the EU prevent them from exploiting potential economies of scale of Europe-wide or worldwide standardised products. These differences also lead to additional costs because they have to familiarise with the diverging national accessibility requirements and adapt their products in order to be able to sell them in the different sub-markets within the internal market.

[127] For example, the Irish Guidelines for Public Access Terminals Accessibility contain requirements for keyboards and displays of ATMs and other SSTs.
http://www.universaldesign.ie/useandapply/ict/itaccessibilityguidelines/publicaccessterminals/guidelines/guidelinesforpublicaccessterminalsaccessibilityprinta

Therefore, European-level accessibility requirements is advocated by the industry as the most appropriate way to overcome barriers in the internal market caused by inconsistent requirements[128].

8. eCommerce

In addition to what has been said under the private sector websites section, eCommerce refers to retail services which are available online (independently of the existence or not of physical facilities).Even though data on the online retail website market is scarce, Deloitte provided the following conclusions:

- There will be costs related to cross-border trade for online retail businesses in the future due to an eventual legal fragmentation related to accessibility requirements;

- A qualitative assessment of the consumer situation suggests that consumers could use accessible eCommerce websites to impact price levels and the supply side through market adjustments. Furthermore, consumers benefit from an additional supply of goods that are not available in the domestic market but could be purchased cross-border.

Regarding the number of enterprises among the Member States, it can be pointed out that of all EU countries Italy is characterised as having the largest number of retailers in 2009 (over 650,000). Although the number of retail service enterprises declined between 2008 and 2009, Italy has the largest retail service market, followed by Spain (nearly 500,000), France (nearly 380,000) and Germany (nearly 330,000). These numbers had few variations if comparing with the updated data from 2011. Out of these, only Germany experienced an increase in 2009 compared with the foregoing year. Approximately 20% more enterprises were active in the retail service sector in Germany than one year prior. The highest decrease is observed in Poland (15.4%).[129] Concerning the **number of companies that engaged in eCommerce**, in 2010, 15% of all EU enterprises sold their goods and services online (i.e. 3,555,397 * 15% = 533,310), 14% sold them in their own EU Member State and 6% of all enterprises sold their goods online in other EU Member States. Within the EU27 in 2010, the most enterprises which are active online were recorded in Denmark (28%). However, only 8% of Danish enterprises engaged in eCommerce outside Denmark. In Spain, the number of businesses active in online retail trade in 2010 was 497,992 * 15% = 74,699.

The specific accessibility requirements for e-shops can be classified into the following groups[130]:

- Web page template: having an application to generate web content makes publication

[128] Contribution to the public consultation by the industry association ATMIA: *"The costs incurred can be very high and varies according to the requirements of particular accessibility standards or the accessibility policy of the ATM operator. Currently there are different accessibility regulations that have to be complied with in some of the EU nation states. In some countries there are existing mature standards such as CAE Guidelines in the UK and the decrees on self-service & ATM heights in France. In other countries regulations are in development, for example in Germany work is undergoing to develop a standard for banking machines. And then there are some EU countries where no regulations exist pertaining to ATMs. It would be sensible to bring together current activity in member states to reduce the chance of confusion between national and EU wide standards."*

[129] Eurostat, NACE code G47 (retail trade except for motor vehicles and motorcycles).

[130] Web Page Template. (2007). http://juicystudio.com/article/eshop-accessibility.php#webtemplate

simple and easy to define. This means that there is a page-model (template) where there will always be similar content where the only differences are the name, description, images, options (for example, related items) displayed for the chosen item. For the web page template, the recommendations will be the same as those for a simple web page, referring to the WCAG 2.0 Guidelines or similar standards. These are a set of rules with an international scope in order to agree on the development of accessible websites. This is very helpful for all kind of disabilities, including people with visual, motor and cognitive impairments.

- Website sections and good/service presentation: eCommerce web solutions usually organise navigation in sections. Every section has a description and can contain other sections and/or goods/services. Users who rely on screen readers to obtain the information due to visual impairments often do not have the same ability to access the information as someone who is sighted. In order to ensure web accessibility of the website sections and the presentation of the good/service, the e-shop application developer needs to:
    - Make a clear navigation structure for the section, using list elements.
    - In a web page that contains a list of sections, make the text used in the links unique and clear to describe each section.
    - Data tables for good/service listings: when users with assistive technologies browse a web page, they must understand the goods'/services' details, and must be able to interact with the content. For example, with an inaccessible goods/services listing, the user might not be able to select goods/services options, or determine its price, or other problems that might make it impossible to continue shopping. A set of information about a good or service requires a data table because the navigation of the data table allows the user to retrieve the heading information.
    - Use explicit label associations and clear text inside button images: When a user interacts with the goods/services in order to add them to the shopping cart, usually there are different options for the same item: for example, choose the size for a T-shirt, the colour, number of items, etc. Every element needs to have a label and this label must be explicitly associated.
    - One must be careful with the use of colour or text decoration to provide information. In an e-shop catalogue, there are commonly goods and services available for sale at special prices (special offers). It is important to remember that all information should be available without relying on the use of colour. For example, if we have a special price, we should not indicate the price through colour alone, such as displaying bargains in red. By doing this, colour blind people or people with some kind of cognitive impairment would be undermined.

- There must be clear information about prices, offers, etc. Some visitors can have learning disabilities and we must ensure that information about prices and offers are clear. Moreover the use of pictograms is highly recommended for people with cognitive impairments.

- The use of an accessible document format for documentation is necessary. Some goods/services include technical specifications - usually made available in PDF format. To ensure that all users can read the content of this documentation it is important that PDFs are accessible.

- Shopping Cart: When goods/services are added to the shopping cart, the user should be able to:

  - View shopping cart content.

  - Modify shopping cart content.

  - Go back and continue to shop or proceed to checkout.

  - The shopping cart visualisation should be consistent with the good/service visualisation to ensure the user knows how to interact with the content (delete, modify or confirm orders).

- Checkout: Confirming the order for payment and processing is a process known simply as "checkout". To ensure accessibility for the checkout procedure, there are some issues that must be addressed:

  - The user must be able to review the shopping cart content. Using a data table, it is possible to organise table headers and table data to ensure the correct reading order for screen reader users. If the user desires to go back to the shop and/or to the previous page, they must be able to do so without use of scripts.

  - The user must be able to know how many steps are involved to complete the checkout – preferably not too many.

  - All instructions and information should also be concise and clear. If there are extra-costs that will be added to the cart during the checkout process, the user must be prompted with textual information.

  - Existing registered users must be able to be recognised. The first form in the checkout module should be a login form for existing users: this will help them fill all the required information by retrieving existing data from the shop archive.

  - Every form control must be identified with a unique ID and must have an associated label.

- Payment Gateway In this step the user is moved to another website that may be inaccessible. This would cause serious problems for a user with visual impairments. The best solution is to use payment gateways that use server-2-server communication. This way, the user provides payment details directly inside the shop (last step in the checkout form) and the shop sends to the payment gateway the required information to confirm/decline the transaction.

- Customer Area In the customer area, the user must be able to interact with the orders placed and with the merchant: this means that the e-shop developer should include some interaction between customer and merchant:

    - Search and view orders: The user must be able to interact with previous orders, and to have the ability to search among them and visualise the order details.

    - Manage personal data: The user must be able to manage personal data and update information as needed. The edit form should be similar to the registration form, with all the accessibility issues addressed and solved (for example, using the label for form controls, device independence, etc.).

    - Send messages to the merchant: The user must be able to interact with the merchant and be able to send messages (not just through a client e-mail application).

    - Make payments for unpaid orders: The user must be able to interact with the payment gateway to pay orders that haven't previously been paid. The entire payment procedure should be accessible using simple input forms.

IBM[131] has pointed out that many accessibility tools can help users navigate the Internet more easily by reading web pages aloud and by allowing them to resize panes, enlarge font sizes, and change background colours for better contrast. Some retailers have introduced these technological features on their websites to assist low-vision users as a way to be more customer-oriented to people with disabilities. However, while most of these inventions were initially designed with disabled users in mind, they also further the cause for usability by designing goods to be usable by more people. The simplicity and the comfort of accessible websites are not only for disabled people, but for all. People without disabilities also benefit from accessible services since it makes their lives easier, when suffering from fatigue, minor illnesses and stress.

An **estimate of the total current eCommerce market size** in Europe is thus calculated by multiplying the total retail turnover in Europe (2,585,213,880,000 EUR in 2010) with the percentage of eCommerce in total retail turnover (14% in 2010). The total current eCommerce market turnover in Europe is estimated to be: 2,585 EURb * 14% = **362 EURb.**

[131] In-store and online accessibility with IBM
http://www-03.ibm.com/able/industries/retail/execbrief_advantage.html#section5

There is a growing importance of eCommerce for the retail service sector in particular in recent years. Trends varied slightly between different Member States; some countries (primarily EU12 Member States) continued to show a positive trend.[132]

In the EU27 over 3.5 million enterprises are active in the retail service sector according to the European statistical office (NACE code G47 and its sub categories). Especially in the sub segment "retail sale of other goods in specialised stores" approximately 350,000 enterprises are counted for 2009.[133]

Mandatory accessibility requirements for private eCommerce websites were identified in Spain and voluntary ones also in Italy and the United Kingdom, as already pointed out in detail under 'private sector websites'. The obstacles created by this **regulatory landscape** fall on web professionals that are not able to provide their services across the internal market without incurring costs that relate to efforts made to understand the legislative requirements in each country.

In the framework of the Technosite study "Economic Assessment for Improving e-Accessibility"[134] various accessibility experts were consulted in order to provide a rough estimate of extra costs faced when different web accessibility standards apply. Costs are twofold: Initial costs (comprised by all work done in order to have the website ready for the first time) and on-going costs (running costs which have to be paid annually). Concerning on-going costs, accessibility would need slightly more powerful resources, as well as additional testing and maintenance (it is important to remark that accessibility degrades over time, and it must be assumed as a procedure to manage the website. Some testing should be made periodically –each 3/6/12 months, depending on the certification body - to ensure that the website remains accessible according to the guidelines followed).

Illustration of costs based on the Technosite Study:

The average price of a given accessible website in Spain is, on average, 52,116.64 EUR. Moreover, it is 8.28% more expensive to make a website compliant with WCAG 1.0 AA, and 8.76% more expensive if compliant with UNE 139803 (Spanish standard based on WCAG 1.0) rather than WCAG 2.0.

If a company would like to make the website compliant with a national legislation different from the local one (i.e. a Spanish company that have to make their website, already compliant with UNE 139803:2004[135] , also with (voluntary) Italian Stanca Law requirements), would have to face 400 EUR (1 working day according to Technosite) extra in order to learn how to apply the norms (web developers need 133 working days to make a website compliant with WCAG 1.0 vs. 134 working days if compliant with UNE, which is based on WCAG 1.0). Therefore, in order to make one website compliant with the other "X" EU Web accessibility

[132] The information is the result of a survey carried out by the National Statistical Institutes on usage of Information and Communication Technologies (ICT) by enterprises. The indicator is calculated as the enterprises' receipts from sales through the Internet as percentage of their total turnover. Only enterprises from NACE sections manufacturing, distributive trades, hotels and accommodation, transport and communication and real estate, renting and business activities with 10 or more employees are covered. Eurostat, code TSIIR100, last update 05.10.2011.

[133] This subsegment includes for instance the retail sale of clothing and footwear; medical and orthopaedic goods; cosmetic and toilet articles; flowers, plants and pet animals.

[134] http://www.eaccessibility-impacts.eu/

[135] Note that UNE 139803:2004 has been replaced in July 2012 by UNE:139803:2012.

laws, a company must add 10,400 EUR to the 56,433.15 EUR that costs WCAG 1.0 AA (please note that this is an estimate and it has been assumed that all national legislations are based on WCAG 1.0 AA with slightly differences).

In what concerns barriers for business, it should be noted that retail services are a key intermediary factor in the modern economy acting as the conduit between thousands of good and service suppliers and consumers. Many consumers in Europe benefit from the EU integrated retail market by buying goods from other Member States. The retail sector is also one of the biggest users of Information and Communications Technology (ICT) when considering its role with eCommerce, and thus a driver of innovation. It has a major part to play in the sustainability of small businesses[136] and it also allows citizens to face the current economic downturn by giving them easy access to affordable and good quality consumables[137] due to the cutting costs of intermediation and stocking. These are among the reasons, why an increasing number of eCommerce businesses are providing accessible websites and services on a voluntary basis.

Retailers that use eCommerce operations should – ideally – give website visitors a good online shopping experience by way of easy navigation, fast loading web pages and secure, easy-to-use online payment gateways. Website visitors should have the opportunity to browse a catalogue, search for goods and services, add items in their shopping carts, manage the shopping cart and then proceed to check-out in order to end their order. It is also important that the user is able to communicate with the e-shop management.

9. Banking services

Banking services are composed by several elements which if accessible, they allow for a fully user-friendly banking experience. These elements are: ATMs, the banking related built-environment and the online banking (websites).

The level of accessibility, market size and its potential growth of ATMs and private sector websites have already been analysed in previous sections. The built environment will be further analysed from the perspective of architect services. Therefore, in this section only particular information related to the banking sector will be added.

In summary regarding **ATMs**, accessibility barriers have to do with on one hand, the physical setting and surrounding of the machine and on the other hand, the design and usability of the interface.[138]

Consumers benefit through the use of websites, since it enables the collection and comparison of eventually scarce information, in particular **online banking** facilitates the consumers' efforts to take care of their financial matters. This increases consumer confidence and saves time and thus, societal life is not thinkable anymore without websites anymore.

Online banking consists of three main parts: the marketing / information pages, the online application and the transactional banking area, all of these can provide the user with problems:

- Inconsistent navigation and page layouts;
- On-site search engines that don't find information, even when it is available;

[136] Iain Richmond (2011) E-commerce Evolution is Key to Small Business Sustainability http://technorati.com/business/small-business/article/e-commerce-evolution-is-key-to/

[137] European Commission website (2012) Retail services: http://ec.europa.eu/internal_market/retail/index_en.htm

[138] INREDIS Project: http://www.inredis.es/Default.aspx

- Bank orientated language that is not explained;
- Poor feedback when using interactive tools and forms;
- Inability to save an application and complete is at a later date;
- Too many steps in transactions and no visibility of progress;
- Unhelpful error messages; and
- Pages which are inaccessible to assistive technology.

The specific accessibility requirements for banking service websites can be classified into the following groups[139], most of them related with visual and cognitive impairments. The requirements for the websites transactional area, not included here in detail, should be aligned with the new Regulation on electronic identification and trust services for electronic transactions in the internal market[140].

- Web page template: having an application to generate web content makes publication simple and easy to define. This means that there is a page-model (template) where there will always be similar content where the only differences are the name, description, images, options (for example, Related items) displayed for the chosen item. For the web page template, the recommendations will be the same as those for a simple web page, referring to the WCAG 2.0 Guidelines. These are a set of rules with an international scope in order to agree on the development of accessible websites. This is very helpful for all kind of disabilities, but especially for people with visual and cognitive impairments.
- Website sections and service presentation: web solutions usually organise navigation in sections. Every section has a description and can contain other sections and/or services. Users who rely on screen readers to obtain the information due to visual impairments often do not have the same ability to access the information as someone who is sighted. In order to ensure web accessibility of the website sections and the presentation of the good/service, the online banking application developer needs to:
    - Make a clear navigation structure for the section, using list elements.
    - In a web page that contains a list of sections, make the text used in the links unique and clear to describe each section.
    - Data tables for services listings: when users with assistive technologies browse a web page, they must understand the services' details, and must be able to interact with the content. For example, with an inaccessible services listing, the user might not be able to select services options, or determine its price, or other problems that might make it impossible to continue using the website. A set of information about a service requires a data table because the navigation of the data table allows the user to retrieve the heading information.
    - Use explicit label associations and clear text inside button images: When a user interacts with the services in order to select one of them. Every form element

[139] Web Page Template. (2007). http://juicystudio.com/article/eshop-accessibility.php#webtemplate
[140] COM (2012) 238

needs to have a label and this label must be explicitly associated.

- One must be careful with the use of colour or text decoration to provide information. It is important to remember that all information should be available without relying on the use of colour. Otherwise, colour blind people or people with some kind of cognitive impairment would be undermined.
- There must be clear information about prices, offers, etc. Some visitors can have learning disabilities and we must ensure that information about prices and offers are clear. Moreover the use of pictograms is highly recommended for people with cognitive impairments.
- The use of an accessible document format for documentation is necessary. Some services include technical specifications - usually made available in PDF format. To ensure that all users can read the content of this documentation it is important that PDFs are accessible.

By the end of 2010, the number of banks in the EU had fallen by 2.2% to 6,825. 5,404 of which were banks based in the Euro zone. Bank branches also registered a decline of 1.9%, to 215,000, on the account of a rise in popularity of online banking.141 Hence, the number of EU27 banking service websites is assumed to be 6,825,

Most banks also have physical facilities (agencies/branches), the accessibility of these facilities (**built environment**) is mostly regulated through national building regulations/plans. In some cases it is specified that they are applicable to the banking sector.

The number of Member States with accessibility requirements on **private sector websites** and **ATMs** has already been pointed out above. 11 EU Member States with specific accessibility requirements for banks have been evidenced as part of CEN/CENELEC/AENOR research under Mandate 420. ANED identified general obligations for the **built environment** of banks in 10 additional EU Member States.

The estimated turnover of architect services in Europe in 2006 was 37.74 EURb. With regard to banking services facilities, the number of banks (including the ones based in the Euro zone) and the number of bank branches has been pointed out above. The number of bank branches in the EU will be further used to calculate potential costs for architect service providers.

The **regulatory landscape** in the EU regarding ATMs and private sector websites had been described in detail in previous specifically dedicated sections. The CEN/CENELEC/AENOR Mandate 420 report[142] provides a broad view on the legislative coverage of various accessibility issues in the built environment in different European countries and regions. The report identifies specific accessibility requirements for banking service facilities in 11 EU Member States (Austria, Belgium, Cyprus, Denmark, Finland, Greece, the Netherlands, Portugal, Spain, Sweden and the United Kingdom) out of 15 EU Member States covered by the analysis.

[141] http://www.ebf-fbe.eu/uploads/Facts%20&%20Figures%202011.pdf

[142] CEN, CENELEC and AENOR (2011): *Final Joint Report - CEN/BT WG 207 (PT A and PT B) – Phase I: Inventory, analysis and feasibility of European and International accessibility standards in the built environment*, ftp://ftp.cen.eu/CEN/Sectors/Accessibility/ReportAccessibilityBuiltEnvironment%20Final.pdf

Regulatory differences in accessibility technical requirements in ATMs, private sector websites and the built environment in the banking sector lead to obstacles for both industry and consumers and create barriers to the free movement of goods and services.

10. Passenger transport services

Passenger transport services are composed of some elements which if accessible, they allow for a fully user-friendly transport experience. These elements are: SSTs (including ticketing machines and check-in machines), transport related built-environment and transport services websites (where one can get information on schedules, ticket prices, purchasing tickets, etc.).

Passenger transport services are not only important in themselves, but also as key enablers to access many other services. They are included in most of the chains of activities people follow in everyday life.

The level of accessibility, market size and its potential growth of private sector websites and SSTs have already been analysed. The built environment will be analysed further down from the perspective of architect services. Therefore, in the following sub-sections, *per* mode of transport, only particular information related to the specific transport service will be added.

All Member States have got some kind of transport accessibility legislation often covering the built environment or concerning vehicles or assistance. While those concerning vehicles and assistance are often harmonised as a result of EU legislation the rules related to the built environment significantly differ except for rail where EU rules are in place. Some of those laws also concern websites and self-service terminals but with differences in scope and requirements as previously explained.

It is important to notice that in some countries passenger transport services, despite being provided by private entities, operate under public service obligation and may be covered by national accessibility obligations addressed to the public authorities. However, this does not modify the nature of the entities providing the service.

Technical accessibility requirements on self-service terminals (including **ticketing machines and check-in machines**) have been identified in 8 out of 9 EU Member States within the scope of the analysis.

In line with Deloitte's research, ANED confirmed the existence of general requirements regarding the **built-environment** in most of the EU Member States. Efforts at European level related to on-going voluntary standardisation work under the European Commission Mandate 420 are insufficient to remove existing fragmentation.

- **Air transport services**

Air transport is examined with regard to the accessibility of online information concerning air transport services, the accessibility of self-service terminals (SSTs), including check-in machines, used in air transport services, as well as the accessibility of the built environment related to the provision of these services.

A valuable source is the Commission's Impact Assessment report for the Web Accessibility Directive[143] which states that a good proxy for the number of **websites** in the EU27 is the number of businesses.

The EU27 air transport service market is dominated both by the established globally active airlines such as Lufthansa (which was the dominant EU market leader in 2011) as well as some airlines focussing on the intra-European market, such as Ryanair and Vueling.

Desk research brought upon a total number of **390 airlines based in EU27** Member States. It has to be noted, however, that this is only an indicative number that has to be viewed as a maximum amount since it was not clear for all airlines whether or not they still operate on a day to day basis.

Furthermore, the **total number of airports in the EU27** has to be considered as well since their websites are one of the main points of contact for citizens that try to find information on air transport services. Desk research has found that there are approx. **482 airports** with at least 15,000 passenger movements per year in Europe[144].

Hence, the **overall number of websites relevant for the EU27 air transport service sector** is (390 + 482 =) **872**. Please note that this number does not contain third party private sector websites on which consumers can book tickets online (e.g. Opodo, Expedia, lastminute.com, cheaptickets.com), since an actual number of those sites could not be identified. It is expected, however, that various national websites exist. Therefore, the number of 872 air transport websites in Europe is to be regarded as the minimum level. The actual number of relevant websites is likely to be higher.

With regard to websites' accessibility, it can be assumed that air transport businesses gain significant additional customer share since air transport customers are expected to take-up air transport services at a higher rate when provided information and online booking possibilities are accessible.

Self-Service Terminals (SSTs) have become an essential interface for customers who want to gather information on specific transport services, buy and validate tickets or check-in to their journey, SSTs in the area of transportation typically include ticketing machines, ticket validation machines and self-service check-in terminals at airports.

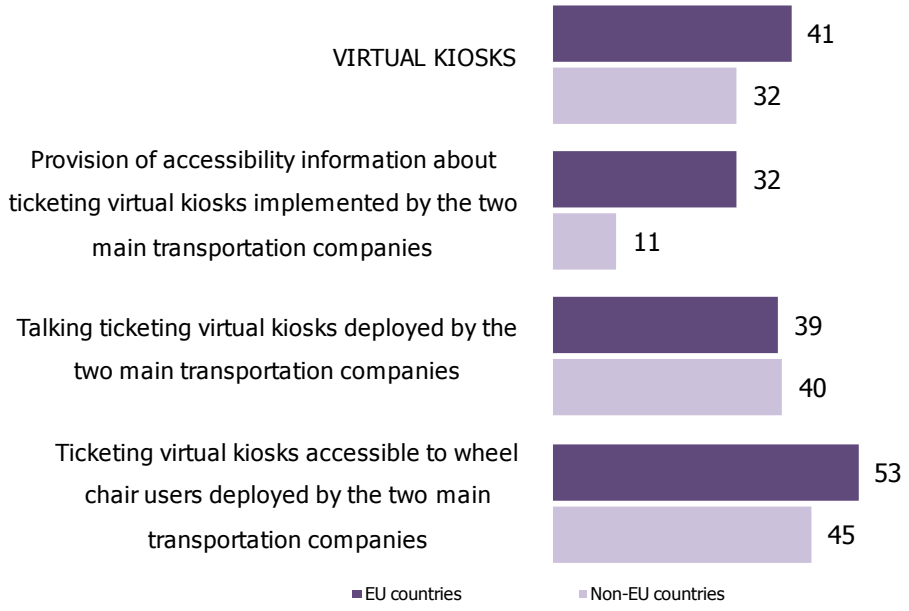
Today, only about 41% of the SSTs in the area of transportation in the EU can be considered as accessible according to a recent Technosite survey.[145] About 53% of all SSTs are wheel-chair-accessible, while only 39% are accessible to visually impaired persons according to the same source.

Although considerable progress in the development of accessible SSTs in the area of transportation has been made, persons with disabilities still face challenges when using SSTs such as self-service check-in terminals. The recent Technosite study "Monitoring eAccessibility in Europe: 2011" provides some data on the level of accessibility of virtual kiosks, i.e. SSTs, in the area of transportation.

[143] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SWD:2012:0401:FIN:EN:PDF
[144] http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=avia_if_arp&lang=en
[145] Technosite. Monitoring eAccessibility in Europe: 2011 Annual Report. p. 153.

Virtual kiosks are vending machines which do not only require a commercial transaction to obtain a physical product, but commonly focus on electronic services (e.g. internet access, digital printing, tourist information, ticketing, etc.) that require user interaction with information and can be for both free and pay services. The virtual kiosks focused on in the report were those used for ticketing at transport stations (train/bus/airports), since this covers a main functionality (i.e. mobility) in the urban environment. It figures the level of accessibility of virtual kiosks in the EU against the ones in various non-EU countries (Australia, Canada, USA, and Norway). The figure below presents an overview of virtual kiosk accessibility in EU and selected non-EU countries with regard to particular key aspects, such as available information about accessible virtual kiosks, the share of talking virtual kiosks or the share of virtual kiosks that are accessible to wheel chair users.

Status of ticketing machine accessibility in EU vs. non-EU countries in percentages[146]



Calculations suggest that **architect services** providers incur annual costs of between 138,880 EUR and 1.0 EURm when providing cross-border architect services for airports. It is assumed that these costs cannot be forwarded to architect service customers (i.e. cities, municipalities, and / or local authorities) since they are expected to be incurred as part of the general preparation for projects and / or market entrance.

The **turnover of the air transport industry** was **111,662 EURm in 2009**.[147] It went up to **126,808 EURm** in 2011. According to the Air Transport Action Group (ATAG), passenger

[146] Technosite. Monitoring eAccessibility in Europe: 2011 Annual Report. p. 153.

[147] http://epp.eurostat.ec.europa.eu/statistics_explained/images/8/8c/Key_indicators%2C_air_transport_%28NACE_Division_51%29%2C_EU-27%2C_2009.png

numbers in the EU are expected to approximately double from 605.8 million in 2010 to nearly 1.2 billion in 2030[148]. Also taking into consideration catalytic effects in terms of increased tourism receipts, the real GDP for the industry is **expected to grow at an average annual rate of 4.4%** with an implied creation of 1.6 million jobs up to 2030[149]. It should be noted that these analyses relate to Europe as a whole, not only EU Member States.[150]

Additional relevant data to assess the market size in aviation is the service relevant growth rates of overall passenger numbers and passengers with reduced mobility (PRMs). The total European air transport passenger volume slightly decreased between 2007 and 2010, by a Compound Annual Growth Rate (CAGR) of 0.7%[151]. The most significant decrease in the period analysed was observed in 2009 with a year-on-year decline in passenger volume of 5.9% compared with 2008, which was mainly related to the consequences of the financial crisis starting in the autumn of 2008. The European market for passenger air transport services has been recovering from the crisis-related decline in passenger volumes as well as airport and airline profitability in 2010 and 2011. However, EU growth rates still fall short of other rates observed in the developing markets such as Asia, Pacific, Latin America and the Middle East[152]. In total, the relative growth in the EU between 2010 and 2011 mainly relates to EU Member States such as Latvia and Romania.

The **regulatory fragmentation** regarding **SSTs** introduces obstacles in the EU Internal Market. It is clear that in the current situation, check-in machines that comply with the accessibility requirements in the UK may not be compliant with the requirements in Germany or Denmark and can therefore be sold in only one or two of these countries without adaptations. This can be considered as an obstacle to the free movement of goods within the Internal Market.

All EU Member States require **built environment** elements to be designed to be accessible for persons with disabilities, including facilities for air transport.

While a large number of accessibility issues are covered in all EU Member States, the detailed level of coverage varies strongly across countries. While some Member States have implemented specific accessibility requirements for airport facilities (these countries include, according to the Mandate 420 report, AT, BE, CY, DK, FI, GR, IE, LU, ES, SE, and the UK), other Member States cover the accessibility of air transport facilities with general requirements for buildings open to the public and for the external built environment (e.g. general rules for ramps, signage, manoeuvring spaces, etc.).

Based on the above findings, it can be concluded that the legislative landscape at national level is fragmented, with a patchwork of strong or weak requirements in place, depending on the specific elements of the built environment and the jurisdiction. National or regional technical accessibility requirements for the built environment for air transport services (i.e.

[148] http://www.aviationbenefitsbeyondborders.org/around-the-world/europe

[149] http://www.aviationbenefitsbeyondborders.org/sites/default/files/pdfs/REGIONAL_ANALYSIS_ABBB_Europe1.pdf

[150] See also http://www.jadc.or.jp/wmf11.pdf

[151] Eurostat

[152] http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Air_passenger_transport_-_monthly_statistics and European Commission, Annual Analyses of the EU Air Transport Market 2010, September 2011

buildings open to the public and the external built environment) exist in all 27 EU Member States.

- **Railway transport services**

The built-environment in relation to railway transport services operating cross-border is already covered by European legislation[153], therefore it will not be analysed in this impact assessment. The rail transport services encompass the accessibility of online information concerning rail transport services, the accessibility of self-service terminals (SSTs), including ticketing machines, in rail transport services as well as the accessibility of the built environment related to the provision of rail transport services.

Continuing to follow the approach of the Commission's Impact Assessment report for the Web Accessibility Directive[154] which states that a good proxy for the number of **websites** in the EU27 is the number of businesses.

The rail transport service sector comprises operators in the sub-sectors heavy rail transport, light rail transport, metro, and tram. Since market entrance is difficult due to the sector's capital and labour intensive nature, passenger transport in Europe is mainly operated by state and regional monopolies in single Member States. Furthermore, there are strong monopolistic incumbents that effectively hinder market entrance for smaller competitors (for example, the strong market participant Deutsche Bahn in Germany).
Due to extensive liberalisation efforts made in the last decades by some Member States, the international market since 2010 and the EU proposal concerning domestic markets, it cannot anymore be expected that each EU Member State's rail network is operated by one operator. What can, however, be expected is that the number of operators varies considerably from country to country. Desk research brought upon a total number of **289[155] rail transport operators based in EU27** Member States. This is only an indicative number that has to be viewed as a maximum amount since it was not clear for all railway companies whether or not they still operate on a day to day basis.

In the metro sector, operations are mainly performed by public companies. As a matter of fact these tend to be local, mostly city-owned or state owned companies. However, there are both private operating companies as well as companies in shared ownership in the market. There are **44 cities with a metro system in the EU27**. The operators being active in these cities are the key market players in Europe. As examples, the operators in London, Paris and Berlin are public companies, while those in Madrid and Barcelona are private.

As in the metro sector, tram or light rail sector operators are also mainly public companies. These tend to be local, mostly city-owned or state owned companies as well. **203 cities**

[153] Directive 2008/57/EC of 17 June 2008 on the interoperability of the rail system within the Community (Recast) (OJ L 191, 18.7.2008, p.1) and Commission Decision 2008/164/EC of 21 December 2007 concerning the technical specification of interoperability relating to 'persons with reduced mobility' in the trans-European conventional and high-speed rail system (OJ L 64, 7.3.2008, p. 72)

[154] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SWD:2012:0401:FIN:EN:PDF

[155] The Commission Staff Working document SWD(2012) 246 final/2 accompanying the 2012 Report from the Commission to the Council and the European Parliament on monitoring development of the rail market {COM(2012) 459 final} reports that in 2010 there were **526 active licences** in rail passenger transport (of which 320 in Germany). As some of these are inactive, this IA considers **289** as a conservative estimate.

operate tram and/ or light rail networks in Europe (197 cities with tram networks, 38 of them with additional light rail networks, six cities that only have light rail). 16 of them are Spanish with 13 having tram networks, one having tram and light rail and three only having a light rail network. As in the metro sector, the key market players in this sector are those who operate the largest networks in the EU27. However, these are not necessarily located in the biggest cities (Sofia in Bulgaria for example has one of the biggest networks).

To sum up, whereas the EU landscape of operators is relatively fragmented for metro and tram or light rail with many local service providers (public and private), the railway operations market is dominated by a few large players (usually evolved from formerly federal public railway operators).

It can be assumed that a total of 203 businesses are active in the tram/light rail sector. Hence, the **overall number of websites/businesses relevant for the EU27 rail transport service sector** is expected to be around (289 + 203 + 44 =) **536**.

Calculations show that non-Spanish web professionals face accessibility compliance costs of 272 EUR to 2,624 EUR when providing web development services to Spanish railway transport service providers that operate in Spain.

Service providers do not face these costs directly due to the fact that Spain has websites accessibility legislation in place. Costs are, however, incurred by web professionals that are not able to provide their services and products on the Spanish market without facing costs for efforts made to understand the Spanish legislative requirements and adapt their products accordingly. As can be seen above, the costs are negligible in the current situation.

For the level of accessibility of **SSTs**, including ticketing machines, please consult the overview included under the air transport sub-section.

The German operator Deutsche Bahn provides figures on its total numbers of **ticketing machines** which is 7,349, i.e. 7,349 / 5,685 = 1.3 ticketing machines per railway station.[156] Assuming an estimated number of 27 000 railway stations in the EU27[157], a total number of 1.3 * 27 000 = **35 100 ticketing machines** is **operated at EU27 railway stations**.

The total **one-off development and investment costs** for ticketing machine manufacturers are calculated. The calculated costs refer to both hard- and software since no distinction could be made due to a lack of data. **Ongoing costs** were not estimated since the marginal costs of providing ticketing machines with accessibility features are close to zero.

Calculations show that ticketing machine manufacturers, at some point in the past, faced a total cost impact of at least 3,156 EUR and 86,023 EUR at most to develop accessibility features for ticketing machines due to regulatory fragmentation within the EU if six EU Member States had accessibility requirements in place. The cost impact increases to at least 4,223 EUR and 115,118 EUR if 18 Member States required accessibility features in ticketing machines.

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[156] http://lokster.deutschebahn.com/fileadmin/Redaktion/Images/06_Mitnehmen/Bahn-Wissen/Daten_und_Fakten_2011.pdf

[157] Based on information obtained from Member States, rail infrastructure Network Statements and own sources, the European Railway Agency considers there to be around 27.000 railway stations in the EU. This figure has been used in the carrying out of an impact assessment on revisions to the PRM TSI.

Although railway service operators generally provide online booking functionalities for tickets, they are still mostly purchased at SSTs or in-store (at least for long-distance travel). Desk-research evidence suggests, however, that 33% to 44% of the total number of railway tickets sold by Deutsche Bahn is purchased online.[158] Furthermore, it is expected that, as for example in the case of ticket purchases at SSTs in the transport sector, tickets purchased online are less expensive than tickets purchased in-store. Indeed, evidence from Deutsche Bahn suggests that consumers who purchase railway tickets (both short and long distance travel) at the ticket office face additional costs of 2 EUR to 5 EUR compared to tickets bought at ticketing machines and online.

Future costs saving potentials for persons with disabilities with regard to accessible websites and SSTs in the railway transport sector are expected to be in the range of the whole cost saving potential of online booking services and accessible SSTs, i.e. within 91.3 EURm – 11.6 EURb).

- **Bus transport services**

Bus transport is examined with regard to the accessibility of online information concerning bus transport services, the accessibility of self-service terminals (SSTs), as well as the accessibility of the built environment related to the provision of bus transport services.

Continuing to follow the approach of the Commission's Impact Assessment report for the Web Accessibility Directive[159] which states that a good proxy for the number of **websites** in the EU27 is the number of businesses.

According to the German Federal Association of Bus transport Businesses (Bundesverband Deutscher Omnibusunternehmen), the total number of bus transport service businesses in Europe was **65,000 in 2012**. More specific numbers state that 4,747 businesses were active in the German market of which 452 are local / municipal companies (i.e. 9.5%), 4,121 businesses were active in the field of occasional excursion trips (i.e. 86.8%), 2,541 were active in short-distance public transport (i.e. 53.5%), and 82 were active in long-distance public transport (i.e. 1.7%).[160]

Applying these percentages to the total EU27 market, the following numbers can be calculated:

Total numbers on bus transport operating companies in Europe

Description	Share of total number of German bus operators	Total number of bus operators (extrapolation to EU27)

[158] http://www.sueddeutsche.de/bayern/neue-vertriebs-plaene-bahn-will-weniger-fahrkartenautomaten-1.1368448

[159] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=SWD:2012:0401:FIN:EN:PDF

[160] http://www.bdo-online.de/fileadmin/Dateien/Infographiken/2012/Branchendaten/bdo_chart_wirtschaftsfaktor_bus2v2.pdf

Local / municipal bus operators	9.5%	6,175
Bus operators of occasional excursion trips	86.8%	56,420
Short-distance public bus transport operators	53.5%	34,775
Long-distance public bus transport operators	1.7%	1,105

Based on desk research, the following large operators have been identified, including the countries in which they are operating.

Large Bus & Coach Operators in Europe

Operator	Country Coverage
Nobina[161]	Sweden, Denmark, Finland, Norway
Arriva[162]	Czech Republic, Denmark, Hungary, Italy, Malta, the Netherlands, Poland, Portugal, Slovakia, Spain, Sweden, UK
Firstgroup[163]	UK
Stagecoach Group[164]	UK
Deutsche Bahn[165]	Germany
Keolis[166]	France
Eurolines	Austria, Belgium, Bulgaria, Czech Republic, Denmark, France, Germany, Hungary, Ireland, Italy, Lithuania, Netherlands, Poland, Romania, Slovakia, Spain, Sweden, UK

[161] http://www.nobina.com/en/Nobina/
[162] http://www.arriva.co.uk/arriva/en/about_arriva/company_profile/overview/
[163] http://www.firstgroup.com/corporate/our_company/ukbus.php
[164] http://www.stagecoach.com/
[165] http://www.deutschebahn.com/de/konzern/geschaeftsfelder/dbbahnregio/2190568/dbregio.html?start=0
[166] http://www.keolis.com/en/business-activities/transport-expertise/bus-and-coach.html

Large minibus operators in Europe[167]

Operator	Country	Region
Vlaamse Vervormaatschappij VVM De Lijn	Belgium	Western Europe
Regie Autonome Des Transports Parisiens	France	Western Europe
Societe Regionale Wallonie Du Transport	Belgium	Western Europe
Transports Metropolitans De Barcelona	Spain	Western Europe

It can be noted that for small buses the operators that have been identified are active only nationally. Indeed, the current accessible minibus market can be seen as national, retro-fitting oriented, fragmented and predominantly small scale.

Further information on the level of accessibility and the legal fragmentation regarding the several elements that compose the bus passenger transport services, can be consulted in the respective sections of these annex ('private sector websites', 'SSTs', including also 'air transport' for some particular information of SSTs in the transport sector and 'architect services').

- **Maritime and Inland Waterway transport services**

Maritime transport is examined with regard to the accessibility of online information concerning maritime transport services, the accessibility of self-service terminals (SSTs), as well as the accessibility of the built environment related to the provision of maritime transport services.

According to the German Federal Association of Inland Waterway (Bundesverband der Deutschen Binnenschifffahrt), the total number of inland waterway service businesses that are involved in passenger transport in Germany was 311 in 2010 with an annual turnover of 246.9 EURm.[168] Furthermore, desk research evidence indicates that 56 of 74 cities in Germany with more than 100,000 inhabitants have a port (i.e. 75.7%). Assuming that inland waterway businesses are distributed equally across harbours[169], it is estimated that 311 / 56 = 5.6 companies for inland waterway transport operate in each harbour in Germany. Furthermore, desk research evidence indicates that across the EU27 446 cities have more than 100,000 inhabitants. This may lead to the conclusion that 5.6 * 446 = **2,498 passenger transport companies operate within the EU27 inland waterway transport market**. Hence, it is assumed that the **number of websites** in the EU27 for inland waterway transport is 2,498. Please note that this is to be seen as a minimum estimate since the number of maritime transport number is not known.

Calculations suggest that **architect services** providers incur annual costs of between 54,080 EUR and 560,000 EURm when providing cross-border architect services in the maritime transport sector. It is assumed that these costs cannot be forwarded to architect service

[167] statistical reports and company information
[168] http://www.binnenschiff.de/downloads/daten_und_fakten/Daten_und_Fakten_2011_2012.pdf
[169] There is, however, no quantitative or qualitative evidence for this highly disputable assumption.

customers (i.e. cities, municipalities, and / or local authorities) since they are expected to be incurred as part of the general preparation for projects and / or market entrance.

The costs related to the provision of accessible architect services across borders can be compared with the industry turnover. In 2006[170] the turnover of architect services in Europe was 37.74 EURb. The costs associated with efforts made in order to understand accessibility legislation in place and to adapt the services accordingly is estimated to be between approx. 0.0001% and 0.002%.[171]

As concerns the implications of this regulatory fragmentation for architects that provide their services across borders, it should be noted that accessibility aspects only constitute part of the built environment legislation. Even in a scenario where common harmonised accessibility requirements are adopted at EU level, architects would continue to incur costs for understanding and implementing the varying built environment legislation when supplying their services in different Member States.

All EU Member States require built environment elements to be designed to be accessible for persons with disabilities, including facilities for maritime and inland waterway transport. The CEN/CENELEC/AENOR Mandate 420 report – provides a view of the detailed coverage of various accessibility issues in the built environment by legislation and other statutory documents in different European countries and regions.

While a large number of accessibility issues are covered in all EU Member States, the detailed level of coverage varies strongly across countries. While some Member States have implemented specific accessibility requirements for port facilities (these countries include, according to the Mandate 420 report, BE, CY and GR)[172], other Member States cover the accessibility of maritime and inland waterway transport facilities with general requirements for buildings open to the public and for the external built environment (e.g. general rules for ramps, signage, manoeuvring spaces, etc.).

Based on the above findings, it can be concluded that the legislative landscape at national level is fragmented, with a patchwork of strong or weak requirements in place, depending on the specific elements of the built environment and the jurisdiction. National or regional technical accessibility requirements for the built environment for maritime and inland waterway transport services (i.e. buildings open to the public and the external built environment) exist in all 27 EU Member States.

Further information on the level of accessibility and the legal fragmentation regarding the several elements that compose the maritime and inland waterway transport services, can be consulted in the respective sections of these annex ('private sector websites', 'SSTs', including also 'air transport' for some particular information of SSTs in the transport sector and 'architect services').

[170] The latest year for which data have been identified.

[171] 54,080 EUR / 37.74 EURb = 0.0001%; 560,000 EUR / 37.74 EURb = 0.002%

[172] See also annex section **Error! Reference source not found.** for a review of accessibility legislation for maritime and inland waterway transport services in selected EU/EEA Member States, including guidance documents to specific built environment issues such as port facilities.

11. Hospitality services

The two key elements of accessibility hospitality services are hospitality related **built-environment and websites**. These are 2 independent components that relates to 2 different professional markets but are equally relevant for the accessibility of the service. These two elements will be analysed separately. The level of accessibility, market size and its potential growth of private sector websites have already been analysed in its respective section. The built environment will be analysed further down in this document from the perspective of architect services. Therefore, in this section only particular information related to the hospitality sector will be added.

Challenges currently encountered by disabled consumers relate e.g. to the insufficient availability of (comparable and reliable) information concerning the accessibility of hospitality services, as well as problems in relation to the actual accessibility of the built environment and websites where hospitality services can be booked.[173]

Disabled **consumers** assert that they **are confronted with** inaccessibility and **very different solutions in accessibility**, in relation to the different providers and across the various EU Member States.[174] Any disabled traveller, either from an EU Member State or from overseas, who wishes to make use of hospitality services in an (other) EU country – be it for business or for pleasure – faces a major challenge due to the **lack of similar or coordinated accessibility requirements across Europe**. The choice of suitable hospitality services is limited firstly by the difficulty of obtaining reliable information about accessibility, prior to travel, and subsequently by the highly variable quality of the venues and services, in terms of their accessibility.[175] Disabled persons affirm their right to have at their disposal accessible hospitality and transport services all across Europe, according to comparable procedures in every European country.[176]

The market for accessible hospitality services is short in supply, i.e. many disabled persons and elderly in Europe who want to use accessible hospitality services (and have sufficient means to do so) face insufficient and inadequate market offerings and thus do not consume as much of these services as they would wish. While this is partly caused by regulatory failures and fragmentation as discussed above, market failures remain a core problem.

Accessibility for consumers of hospitality services refers to a series of issues which can be structured in eight main themes as depicted below:

Accessibility aspects in hospitality services[177]

Theme	Benefit for disabled	Impact on the business
1. Standardised	• Clarify terms	• Allow comparison of services

[173] With regard to barriers faced by disabled consumers when using websites, please also refer to the private websites section.

[174] AFNOR (2008), *Feasibility and opportunity to develop a standardisation work programme concerning "Criteria for accessibility to tourist and transport services for disabled people"*, p. 14,

[175] Fundación ONCE (2009): *Study of Access Requirements Related to Quality Norms in European Tourism*, p. 6.

[176] AFNOR (2008), *Feasibility and opportunity to develop a standardisation work programme concerning "Criteria for accessibility to tourist and transport services for disabled people"*, p. 14, ftp://ftp.cen.eu/cen/Sectors/List/Services/feasibilitystudies/Project2Accessibility.pdf

[177] Source: Adapted from AFNOR (2008): *Feasibility and opportunity to develop a standardisation work programme concerning "Criteria for accessibility to tourist and transport services for disabled people"*, p. 48, ftp://ftp.cen.eu/cen/Sectors/List/Services/feasibilitystudies/Project2Accessibility.pdf

Theme	Benefit for disabled	Impact on the business
terminology	• Allow common comprehension • Facilitate accommodation, contractual relation, etc.	• Allow statistics on common bases • Clarify contractual relation
2. Information provision	• Provide complete information provision on accessible services • In adequate formats (Braille, large print, easy-to-read, etc.)	• Allow comparison of services • Inform the disabled on the services provided • Clarify competition
3. Accessibility criteria (incl. built environment and web sites)	• Feel confident to travel and to enjoy it • Facilitate the choice	• Allow comparison of services • Clarify competition • Recognition of providers • Encourages provider's responsibility on accessibility
4. Signs, symbols and labels	• Help identify the availability of accessible services in an easy and simple manner regardless of the country. • Facilitate reliability of information on accessible services • Provide information on achievement of minimum accessibility criteria	• Increase security of services and clients
5. Safety of services	• Give safety requirements for disabled • Clarify safety procedures for disabled	• Increase security of services and clients
6. Training[178] and competence requirements for assistance and care services	• Preparation of the professionals • Increase the disability awareness and disability equality treatment of the personnel working in the	• Clarify what such training should include at minimum • Help the professionals in their daily work

[178] It is important to note that in addition, the training of architects and engineers as well as web professionals on accessibility matters is essential to achieve results in this area. Some Member States have taken measures in that direction but there is no comprehensive and systematic training for these professionals across the EU. National initiatives are limited in their possibilities to train professionals to be knowledgeable of the wide range of rules, guidance, and practices in the Member States limiting in practice the exercise of the freedom to provide services across the EU.

Theme	Benefit for disabled	Impact on the business
	sector	
7. Guidelines: good practices	• Service providers well prepared to welcome disabled	• Allow the sharing of good European initiatives • Encourage investment and accessibility improvement
8. Complaints and redress procedures	• Facilitate the complaints procedures	• Give complaints procedure with minimum specifications • Allow the improvement of services • Opportunity to minimise potential client dissatisfaction

While all above accessibility aspects are relevant to ensure a barrier-free provision of hospitality services to disabled persons, some accessibility aspects can be considered as being of particular importance for disabled consumers. For instance, an empirical study from Germany shows that almost half (47%) of disabled customers with activity limitations travelling claim to encounter difficulties in terms of accommodation. According to customers with disabilities, the greatest barrier is the accessibility of the facilities. Furthermore, it is reported that there is also a lack of (online) information about the accessibility and usage of accommodation establishments. The lack of standardised assessment and recording criteria means that even the existing range of accessible facilities is unclear and cannot be reliably assessed.[179] A comparable survey conducted among 416 disabled persons in Australia brought the same accessibility issues to the forefront: accessibility of the transient lodging facilities and the need for more and better information on accessibility features based on clearly defined criteria.[180] The availability of that information on line helps to remove the barriers.

Today many **barriers** still **prevent potential customers from travelling and consuming accessible hospitality services** in Europe. For instance, empirical evidence from Germany shows that 37% of persons with activity limitations have in the past decided not to undertake a trip due to the lack of accessible facilities, equipment or services. According to the same survey, 48% of persons with disabilities would travel more frequently if more accessible facilities were available. Especially persons with physical, mental, emotional or learning disabilities would travel more frequently if appropriate facilities were available.[181]

Very few figures exist on the actual take-up of accessible hospitality services by people with disabilities and elderly. The OSSATE study provides data on the existing degree of

[179] BMWi (2004), p. 25. http://www.bmwi.de/English/Redaktion/Pdf/economic-impulses-of-accessible-tourism-for-all-526,property=pdf,bereich=bmwi,sprache=en,rwb=true.pdf

[180] Darcy (2008a): *Accessible Tourism Accommodation Information Preferences*, p. 3ff, http://epress.lib.uts.edu.au/dspace/bitstream/handle/2100/982/lstwp10%20.pdf?sequence=1

[181] BMWi (2004), p. 19. http://www.bmwi.de/English/Redaktion/Pdf/economic-impulses-of-accessible-tourism-for-all-526,property=pdf,bereich=bmwi,sprache=en,rwb=true.pdf

accessibility of accommodation facilities in Europe.[182] This supply side information may serve as an indication on the degree of actual take-up by disabled persons and elderly.

It appears that **5.6% of the total known stock of accommodation units in Europe was accessible for wheelchair use in 2005**. No further cross-country data on accessible hospitality facilities could be identified.[183] However, the European Regulation 692/2011 concerning European statistics on tourism[184] obliges national statistical offices to transmit to Eurostat triennial data on the "*number of establishments having one or more bedrooms accessible for persons with reduced mobility, including wheelchair users*" from 2015 onwards. This data will provide a necessary evidence base for EU level policies in the area of accessibility.[185]

Empirical market studies[186] show that disabled persons travel on a level comparable with the general population for domestic overnight and day trips. Furthermore, disabled customers typically spend similar or higher amounts inter alia for hospitality services than the general population[187]. Almost two thirds of the 4,000 interviewed disabled persons (62.3%) were willing to pay a charge for using additional accessible facilities and services.[188]

Even though accessible hospitality services has shown promising signs of expansion in recent years, it has been regularly reported that the market is delivering way below its potential, thus preventing disabled persons of consuming more accessible hospitality services.[189]

Accessibility labels for hospitality services are promoted to increase the number of disabled customers. Often these labels are used in the context of tourism but their information is meant to be equally relevant for those using hospitality services for professional reasons. While **accessibility certification schemes and labels** are intended to foster market development, their large number, **fragmentation and diversity across Europe** has led to a situation where these schemes and labels have not only lost most of their practicality for disabled customers,

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[182] Buhalis et al. (2005), *OSSATE - Accessibility Market and Stakeholder Analysis*, p. 74ff, http://www.ossate.org/doc_resources/OSSATE_Market&Stakeholder%20Analysis_Public_Version_Fina..pdf.

[183] Some regional / local assessments of the stock of accessible hospitality facilities have been undertaken recently. Yet, these provide neither comparable results nor a full coverage of the EU. Examples include a recent study commissioned by the Greater London Authority revealing that currently the proportion of accessible rooms is less than 2% of total existing stock.
See: Greater London Authority (2010): *Accessible Hotels in London,* p. 2.

[184] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:192:0017:0032:EN:PDF

[185] RPA (2012): *Study on the impact of EU policies and the measures undertaken in their framework on tourism – Vol. 1: Measures*, study commissioned by the European Commission DG ENTR, pp. 49ff, http://ec.europa.eu/enterprise/newsroom/cf/itemdetail.cfm?item_id=6227.

[186] CRC (2008), p. 5; BMWi (2004), p. 16ff.
http://www.bmwi.de/English/Redaktion/Pdf/economic-impulses-of-accessible-tourism-for-all-526,property=pdf,bereich=bmwi,sprache=en,rwb=true.pdf

[187] CRC (2008), p. 5.

[188] BMWi (2004), p. 18.
http://www.bmwi.de/English/Redaktion/Pdf/economic-impulses-of-accessible-tourism-for-all-526,property=pdf,bereich=bmwi,sprache=en,rwb=true.pdf

[189] See for instance: CRC (2008); AFNOR (2008), *Feasibility and opportunity to develop a standardisation work programme concerning "Criteria for accessibility to tourist and transport services for disabled people"*, p. 48, ftp://ftp.cen.eu/cen/Sectors/List/Services/feasibilitystudies/Project2Accessibility.pdf; Buhalis et al. (2005), *OSSATE - Accessibility Market and Stakeholder Analysis*, http://www.ossate.org/doc_resources/OSSATE_Market&Stakeholder%20Analysis_Public_Version_Fina..pdf

but may also cause security problems for disabled customers due to wrong or misleading information. The main problems can be summarised as follows:

- The increasingly large number of different accessibility labels across Europe is more and more confusing for customers. It is very difficult for them to understand the meaning of the different labels[190] and thus to make active use of them – especially when purchasing hospitality services abroad. Indeed, accessibility labels can be difficult to understand when the person looking at the label does not have the "key" or description close by. As a result, potential time savings and market efficiency gains of labelling (overcoming the problem of incomplete and asymmetric information in the market) are not realised.
- None of the accessibility certifications, classifications and labels answers the same logic and technical accessibility requirements. As a consequence, they are not comparable or transferable.[191] For example, a disabled person in the UK intending to book an accessible hotel room in Germany cannot expect a hospitality facility certified with the DEHOGA accessibility label to fulfil the same accessibility requirements as a hospitality facility certified with the National Accessible Scheme (NAS) in the UK – even though the pictograms used are very similar.

Accessibility of accommodation services for mobility impaired persons – Comparison of the German DEHOGA labels and the UK National Accessibility Scheme

When comparing the German DEHOGA accessibility scheme and the UK National Accessibility Scheme (NAS) for mobility impaired persons, it is clear that the logic of both schemes differs and that various types of accessibility categories are used. The underlying accessibility requirements differ as well. For instance, the DEHOGA scheme only covers accessibility issues related to the built environment and equipment of the accommodation facilities, while the NAS also defines requirements with regard to the personal services provided to guests.

Germany: DEHOGA accessibility certification scheme: labels for mobility impaired guests	
	**Category A** Guests with mobility impairments, who may need to use a non-motorised wheelchair or a walking aid some of the time
	**Category B** Wheelchair users, who are unable to walk and constantly depend on the use of a wheelchair

[190] BMWi (2008), p. 34. and Toerisme Vlaanderen (2001), p. 27.

[191] AFNOR (2008) *Feasibility and opportunity to develop a standardisation work programme concerning "Criteria for accessibility to tourist and transport services for disabled people"*, p. ftp://ftp.cen.eu/cen/Sectors/List/Services/feasibilitystudies/Project2Accessibility.pdf, p. 31ff. and Toerisme Vlaanderen (2001), p. 27.

United Kingdom: NAS accessibility certification scheme: labels for mobility impaired guests

	**M1 (One step ahead) – Older and less mobile guests** Typically suitable for a person with sufficient mobility to climb a flight of steps, but who would benefit from fixtures and fittings to aid balance.
	**M2 – Part-time wheelchair users** Typically suitable for a person with restricted walking ability and for those who may need to use a wheelchair some of the time and can negotiate a maximum of three steps.
	**M3I – Independent wheelchair users** Typically suitable for a person who depends on the use of a wheelchair and transfers unaided to and from the wheelchair in a seated position. This person may be an independent traveller.
	**M3A – Assisted wheelchair users** Typically suitable for a person who depends on the use of a wheelchair and requires assistance from a carer and maybe a hoist, when transferring to and from the wheelchair in a seated position.

Comparing the different labels, one notices that the logo of the DEHOGA category A (which has the lowest accessibility requirements) is very similar to the NAS category M3A (which corresponds to the category with the highest accessibility requirements). Mobility impaired customers who travel cross-border may misunderstand the meaning of the accessibility labels if they would transfer their understanding of accessibility in their home country to a foreign country's labels.

- Many accessibility certification schemes and labels are based on self-assessments by the hospitality service providers without any third party testing (e.g. the German DEHOGA accessibility scheme). As a consequence, consumers often have no assurance that labelled hospitality facilities are actually accessible. It has been reported that some providers of hospitality services have wrongly labelled their facilities – generally because of a lack of technical skills to perform a correct conformity assessment.[192] As a result, disabled customers relying on accessibility labels without third party testing run a risk of unintended booking non-accessible services (potentially even endangering their security).
- Many accessibility certification schemes and labels focus only on accessibility aspects of the built environment and do not include accessibility of services. Yet, disabled consumers often require accessibility of both the physical facilities and the related services.[193]

[192] BMWi (2008), p. 34ff.
[193] BMWi (2008), p. 34.

At least five EU Member States already have voluntary accessibility **certification schemes and labels** for hospitality services. It is likely that more (voluntary) standardised accessibility certification schemes and labels for hospitality services will be initiated across Europe in the future. All the nine EU Member States examined by Deloitte have technical accessibility requirements for **hospitality services and facilities**. 16 additional EU Member States, have been identified by ANED.

National level legislation, standards, technical guidance, certification schemes and labels aiming at ensuring and/or promoting the accessibility of hospitality services are strongly fragmented across Europe. In addition, the coverage of these instruments is often insufficient to ensure an adequate level of accessibility of hospitality services. At the European level, no harmonised standards or technical guidance documents exist and initiatives for regulatory solutions appear to be on hold since several years.

This situation has negative consequences for the hospitality industry. Industry professionals argue that they are confronted with the difficulty of applying the various accessibility requirements across Europe considering their number and fragmentation, costs of implementation and the calendar of application.[194] Understanding different sets of regulations, ensuring compliance with non-consistent accessibility requirements, and obtaining various labels certifying accessibility in different Member States comes with substantial additional costs and prevents the realisation of economies of scale for example for using the same accessibility label across the UE or having the same number of accessible rooms in the same design construction.

In order to overcome the regulatory failure (*i.e.* regulatory fragmentation as well as diverse and insufficient regulatory coverage), some industry representatives have called for more international cooperation with a view to develop good practices and international standards for accessibility. They considered that the principle of a European standard established on the basis of already elaborated rules which are transparent and recognised at international level would enable the establishment of common reference points shared by all the players in the hospitality sector. It would also ensure a greater coherence in the service chain for travellers who have to cross different countries and who require services of a different character (such as transport, hoteliers, restaurant, leisure, etc.)."[195] Once more it is important to note that standards are of voluntary nature and that on their own they cannot replace divergent laws.

"Most accommodation providers do not generally have easy access to information about how to build or adapt their premises to make them accessible – they simply do not know what "accessible" means. Indeed, most accommodation providers do not know the requirements of disabled customers or how to provide for them. To be effective, the information must be carefully standardised, reliable and authoritative."[196] The fragmentation of these schemes across Europe and their reliance on inconsistent accessibility criteria hampers their effectiveness.

According to Datamonitor data, the European hotels and motels industry generated total **revenues** of approx. 130 EURb in 2010, representing a compound annual growth rate

[194] AFNOR (2008), opt. cit., p. 14.
[195] AFNOR (2008), opt. cit., p. 3f.
[196] Toerisme Vlaanderen (2001), opt. cit., p. 13f.

(CAGR) of 0.9% between 2006 and 2010.[197] Slightly divergent figures were estimated in a European Commission study, in which the total accommodation sector (hotels, rural gîtes, campsites, youth hostels and apartments for rent as well as other private accommodation facilities) realised a turnover of approx. 135 EURb in 2006, accounting for approx. 1.2% of GDP in the EU27.[198] Of the accommodation revenues, approx. 77.6% related to leisure, whereas the remainder of 22.4% was generated by business guests in 2010[199].[200]

It can be noted that in 2010, the 'Big Five' Member States – France, Italy, the United Kingdom, Germany and Spain – accounted for almost 75% of the entire hotels and motels market in the EU. All of these countries belong to the group of "old" EU15 Member States.[201]

The general market development of the accommodation and food services industry was positive between 2007 and 2011, with a drop in 2009 related to the financial crisis and the overall economic decline in Europe. Growth rates in individual countries vary significantly within a range of -7.3% in Greece and more than +20% in the Baltic countries between 2010 and 2011.

It appears that non-resident guests (i.e. guests that have their main residence in another country than the hosting country[202]) account for approx. 40.7% to the total EU market volume.[203] Yet, the situation varies significantly across Member States, with some countries accommodating more national residents than non-residents (e.g. Germany) and others having more guest-nights booked by non-residents (e.g. Spain). In sum, the cross-border business plays an important role in the hospitality services market, which is therefore sensitive to potential internal market barriers.

The accommodation sector in the EU is very fragmented, with a total of approx. 260,000 enterprises being active in this sector in 2006.[204] The market structure is characterised by a few large hotel chains on the one hand and a very large number of micro-enterprises with one to nine employees on the other hand. In most Member States, these micro-enterprises represent 75% or more of all accommodation companies. In all countries across the EU, more than 90% of the companies in the market employed 50 people or less. Additionally, the accommodation industry is very fragmented in terms of ownership, with the top 10 of the largest players in the industry having less than 5% of the total bed stock in Europe. The vast majority of accommodation companies are located in the EU15.

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[197] Datamonitor (2011): *Hotels & Motels in Europe*, p. 7.

[198] Ecorys (2009): Study on the Competitiveness of the EU tourism industry, commissioned by the European Commission, Directorate General Enterprise and Industry, http://ec.europa.eu/enterprise/newsroom/cf/_getdocument.cfm?doc_id=5257.

[199] Datamonitor (2011): *Hotels & Motels in Europe*, p. 7.

[200] More than 80% of companies active in the sub-sector of restaurants and cafés; tour operators and travel agents represent 4% of the enterprises. Cf. Ecorys (2009): Study on the Competitiveness of the EU tourism industry, commissioned by the European Commission, Directorate General Enterprise and Industry, http://ec.europa.eu/enterprise/newsroom/cf/_getdocument.cfm?doc_id=5257.

[201] Datamonitor (2011): *Hotels & Motels in Europe*.

[202] Relevant statistical definitions are provided under http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/EN/tour_occ_esms.htm

[203] Source: EUROSTAT, http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Tourism_statistics_-_nights_spent_in_tourist_accommodation_establishments

[204] Ecorys (2009): *Study on the Competitiveness of the EU tourism industry*, commissioned by the European Commission, Directorate General Enterprise and Industry, http://ec.europa.eu/enterprise/newsroom/cf/_getdocument.cfm?doc_id=5257.

The general market structure of the accommodation sector also holds for the hotel sub-segment, where large multinational hotel chains operate alongside very small local establishments. On average, integrated hotel chains are responsible for 25% of the total hotel market in the EU, with a large degree of disparity between different Member States.

It appears that most of the world's largest hotel chains' headquarters are located in the USA. IHG and Accor are the two largest European hotel groups seen in a global context. It can be noted that although Accor is by far the most important player in the European hotel sector in terms of revenue, IHG has a larger global capacity of hotel rooms.[205]

According to a 2011 Datamonitor study, four major hotel chains are active in the European hospitality market, three of these having their headquarters in the EU. Other sources also identify Best Western and Groupe du Louvre among the key market players[206].

While the total number of market participants is very high, there are only few very large players active in the market, partly serving different market segments. Accordingly, the implementation of accessibility features by any of these major accommodation providers has a significant impact on guests with disabilities.

Other relevant areas of built environment regulations which are not further assessed here include for instance the minimum dimensions and of accessible rooms, minimum dimensions of moving spaces as well as the equipment of hospitality facilities (e.g. availability of accessible bathrooms and accessible telecommunication equipment).

As a result of diverging requirements and standards, it may be difficult for consumers that travel cross-border to predict the available capacities of accessible guest rooms in hospitality facilities. For providers that are established in several countries, the cost of accessibility may be higher because standardised building designs for hospitality facilities may not be re-usable across countries due to diverging accessibility requirements.

To conclude, due to a relatively small number of providers with a significant market share in a very fragmented market, the analysis of accessibility measures put in place by individual hotel chains might be of particular importance for the understanding of the hospitality sector as a whole.

In the USA, technical accessibility requirements for hospitality services are included in the Section 508 ADA Guidelines for Buildings and Facilities" (section 224). These requirements mainly refer to the built environment (e.g. minimum number of accessible rooms, minimum dimensions and of accessible rooms, minimum dimensions of moving spaces, etc.) and equipment of hospitality facilities (e.g. availability of accessible bathrooms and text-relay telecommunication equipment).

The study commissioned by the German Ministry of Economics and Technology that has been used to estimate the annual monetary benefits for consumers (i.e. the potential cost savings) is also used for the baseline scenario. It has been calculated that persons with disabilities spend an annual amount of 14.9 EURb to 21.0 EURb on accommodation in 2010. Assuming that the reported **market growth between 2006 and 2010 (CAGR of 0.9%)** also applies to the period from 2010 until 2020, the **annual amount spend on accommodation by persons with disabilities increases to 16.3 EURb to 23.0 EURb in 2020**.

Concerning information about accessibility on line, as previously presented, it can be assumed that the total number of businesses is equal to the number of **websites**, i.e. each business has

[205] http://www.bighospitality.co.uk/Trends-Reports/Chain-hotel-market-stabilises-boosted-by-budget-demand
[206] http://www.bighospitality.co.uk/Trends-Reports/Chain-hotel-market-stabilises-boosted-by-budget-demand

at least on website. Hence, the total number of websites in the EU27 hospitality service sector is **260,000**.

The Internet could be regarded as a good source for potential (disabled) customers to find detailed, reliable and up to date information on (accessible) hospitality services since printed material of specialised travel guides are often not accurate enough or out of date. Furthermore, the Internet provides opportunities to reduce and simplify the search procedure. Therefore, the use of the Internet generally represents an appropriate and dynamic source of information.[207]

Offering information about accessible hospitality services online (information and booking) to individuals with disabilities requires web accessibility, *i.e.* websites have to be accessible to all people, no matter whether they have impairments or not. In the large majority of countries, the provision of accessible websites for information and booking of hospitality services mainly depends on voluntary action by service providers.

With regard to the actual implementation of accessible websites by hospitality providers, a recent ENAT study[208] reports relatively low degrees of progress across Europe – even though the implementation of accessible websites is in the economic self-interest of service providers intending to attract disabled customers and their travel companions. As a result, online information and booking services for (accessible) hospitality services across Europe remain mostly inaccessible, despite the fact that there is some legislation and voluntary standards in some Member States (as seen under private sector websites).

Standardised certification schemes and labels are often used to facilitate the information gathering and quality assessment process for customers – they are generally a solution to problems of incomplete and asymmetric information in markets.

In the market for accessible hospitality services where disabled customers require detailed and trustful information before booking their accommodation, standardised accessibility certification schemes and labels can support and accelerate the information and purchasing process. For example, a customer requiring a wheelchair accessible hotel room could chose his/her hotel room among offers that have been certified and labelled as wheelchair accessible without having to analyse the accessibility of every single offer – leading to a significant time saving. The multiplication of labels also applies to the accessibility of the websites themselves. Self-use of labels often overestimate the level of accessibility of the websites.

The existence of standardised accessibility certification schemes and labels for hospitality services has been used as a proxy to estimate the baseline scenario in this area and to identify the market at risk of fragmentation. They have been identified in five out of ten EU Member States (i.e. 50%) within the scope of the analysis. This led to the following extrapolation range for the EU27:

- **Lower range limit:** standardised accessibility certification schemes and labels for hospitality services in **5 EU Member States** (i.e. those countries where accessibility certification schemes and labels for hospitality services have been evidenced as part of the research: France, Germany, Ireland, Italy and the UK).

[207] Buhalis et al. (2005), *OSSATE - Accessibility Market and Stakeholder Analysis*, p. 58, http://www.ossate.org/doc_resources/OSSATE_Market&Stakeholder%20Analysis_Public_Version_Fina..pdf.

[208] ENAT (2012): *Reaching All Customers: How do European NTOs Compare on Online Accessibility?*, http://www.accessibletourism.org/resources/enter2012-helsingborg_enat_final_.pdf

- **Upper range limit:** standardised accessibility certification schemes and labels for hospitality services in 50% * 27 EU Member States = **14 EU Member States** (extrapolation to the EU27 level).

The **regulatory review** for selected EU/EEA Member States shows that, in general, **legislation, standards, technical guidance as well as certification schemes with regard to accessibility of hospitality services are diverse and fragmented across Europe**. While some Member States have introduced mandatory accessibility requirements (AT (some regions), FR, DE (some regions), ES, IE and UK), others build on voluntary schemes only (AT (some regions), DE (some regions) and NO). The type, scope, content and legal force of (technical) accessibility requirements vary widely across Member States, but also within federalist countries such as Germany, Spain or Austria. While many Member States regulate only accessibility related to the built environment and equipment of hospitality facilities, other Member States also define requirements for personal services (e.g. reception services) provided to disabled persons. See also what has been said above under 'architect services' regarding the placement of lifts in public buildings. Standardised accessibility certification schemes and labels, which are implemented on a voluntary basis, were identified in FR, IE and the UK as well as in Germany, where several national and regional schemes exist. Standards which are specifically related to accessibility of hospitality services could be identified in AT, FR, ES, NO and the UK. The coverage and degree of detail of these standards vary widely across countries.

In sum, accessibility is not regulated along common lines throughout Europe. The adopted instruments are "rarely based on a shared outlook between the different parties concerned, something which contributes to the variation of practices and, in certain cases, to the inadequacy of certain solutions".[209]

A detailed review of requirements with regard to the minimum number of accessible rooms in hospitality facilities in the countries under scope is provided below:

Austria: The basic standard for accessibility in the built environment – ÖNORM B 1600:2012:02[210] – is explicitly referenced within the Austrian Institute of Construction Engineering's (OIB) harmonised Guideline n° 4 on "Usability and accessibility of the built environment"[211] which has legal force in seven out of nine federal states in Austria. ÖNORM B 1600:2012:02 (section 5.11) specifies that in hotels and similar facilities such as youth hostels and holiday homes, etc. at least one guest room per 50 guest beds has to be accessible.

Furthermore, the voluntary ÖNORM B 1603:2005[212] standard for barrier free buildings for tourism specifies that in hotels and similar facilities such as youth hostels and holiday homes etc. at least one guest room per 15 guest rooms has to be accessible – and in order to meet the voluntary higher requirements, all guest rooms have to be accessible.

France: The building code sets mandatory minimum requirements with regard to the minimum number of accessible rooms in hospitality facilities:

[209] AFNOR (2008), *Feasibility and opportunity to develop a standardisation work programme concerning "Criteria for accessibility to tourist and transport services for disabled people"*, p. 33, ftp://ftp.cen.eu/cen/Sectors/List/Services/feasibilitystudies/Project2Accessibility.pdf

[210] The standard can be purchased on: http://www.as-institute.at/

[211] http://www.oib.or.at/RL4_061011.pdf

[212] The standard can be purchased on: http://www.as-institute.at/

France – Minimum number of accessible rooms in hospitality facilities[213]

Number of Rooms	Accessible Rooms
1 to 20	1
21 to 50	2
51 and over	2 plus 1 for each 50 over 50

Germany: According to DIN 18025-2, 1% of all rooms in hospitality facilities (in any case at least one room) need to be accessible (i.e. planned and equipped in line with the standard DIN 18025-1, which has been partly replaced by DIN 18040-1).[214] The legal force of the standard is determined by the federal state level building codes. While in some federal states, the application of the standard is mandatory, it only serves as a guideline in others. The building codes of some federal states also go beyond the standard; for example in the *Land* Berlin, 10% of all rooms in hospitality facilities need to be accessible.[215]

Ireland: According to the Technical Guidance Document for Part M of the Building Regulations (2000) (section 1.18) "one guest bedroom out of every twenty, or part thereof, of guest bedrooms [is required to be] suitable in terms of size, layout and facilities for independent use by a wheelchair user".[216]

United Kingdom: According to the technical guidance ("Approved Document M") for the Building Regulations (2010) (section 4.24g)[217] "at least one wheelchair-accessible bedroom should be provided for every twenty bedrooms", i.e. 5% of the rooms of hospitality facilities are required to be accessible.

A recent study for the Greater London Authority recommends a requirement of 10% accessible rooms in hospitality facilities in order to meet the existing and future demand.[218]

The voluntary standard "*BS 8300:2009 Design of buildings and their approaches to meet the needs of disabled people. Code of practice*"[219] recommends an increase in accessible bedrooms to a minimum of 15%, comprising: 5% without a fixed tracked-hoist system; 5% with a fixed tracked-hoist system or similar system giving the same degree of convenience and safety; and 5% capable of being adapted in the future to accessibility standards (i.e. with more space to allow the use of a mobile hoist, wider doors, provision for services and with enclosing walls capable of supporting the required fittings, e.g. grab rails and drop-down support rails).[220]

[213] http://www.bordeaux.fr/ebx/ShowBinary/BEA%20Repository/flip/fr/groupePiecesJointes/21756/2/pieceJointeSpec/57525/file/FICHE_12e_etablissement_hebergement.pdf

[214] http://nullbarriere.de/din18024-2-beherbergung.htm

[215] http://nullbarriere.de/planung-hoteleinrichtung.htm

[216] http://www.environ.ie/en/Publications/DevelopmentandHousing/BuildingStandards/FileDownLoad,1655,en.pdf

[217] http://www.planningportal.gov.uk/uploads/br/BR_PDF_ADM_2004.pdf

[218] Greater London Authority (2010): *Accessible Hotels in London*, p. 4ff.

[219] http://shop.bsigroup.com/en/ProductDetail/?pid=000000000030217421
Please note that this standard is not publically available and is sold by national standardisation bodies.

[220] http://www.newham.gov.uk/NR/rdonlyres/BC015437-8B02-4813-AEB4-1EBC0FB89069/0/Hotels_FactsheetNov09_final.pdf

USA: The Americans with Disabilities Act Accessibility Guidelines set mandatory minimum requirements with regard to the minimum number of accessible rooms in hospitality facilities:

USA – Minimum number of accessible rooms in hospitality facilities[221]

Number of Rooms	Accessible Rooms	Rooms with Roll-in Showers
1 to 25	1	
26 to 50	2	
51 to 75	3	1
76 to 100	4	1
101 to 150	5	2
151 to 200	6	2
201 to 300	7	3
301 to 400	8	4
401 to 500	9	4 plus 1 for each add. 100 over 400
501 to 1000	2% of total	
1001 and over	20 (1 for each 100 over 1000)	

Italy, Netherlands, Norway, Poland, Portugal and Spain: No minimum requirements with regard to the minimum number of accessible rooms in hospitality facilities could be identified.

Based on the above findings, it can be concluded that the legislative landscape at national level is fragmented, with a patchwork of strong, weak and no requirements in place.

National technical accessibility requirements for the built environment of hospitality services have been identified in nine out of ten EU Member States (i.e. 90%) within the scope of the analysis. This led to the following extrapolation range for the EU27:

- **Lower range limit:** technical requirements in **9 EU Member States** (i.e. those EU Member States where technical accessibility requirements have been evidenced as part of the research: Austria, France, Germany, Ireland, Italy, the Netherlands, Portugal, Spain and the United Kingdom).
- **Upper range limit:** technical requirements in 90% * 27 EU Member States = **24 EU Member States** (extrapolation to the EU27 level).

National level legislation, standards, technical guidance, certification schemes and labels aiming at ensuring and/or promoting the accessibility of hospitality services are strongly fragmented across Europe. In addition, the coverage of these instruments is often insufficient to ensure an adequate level of accessibility of hospitality services. At the European level, no

[221] Cf. section 9.1.2 of the Americans with Disabilities Act Accessibility Guidelines.

harmonised standards or technical guidance documents exist and initiatives for regulatory solutions appear to be on hold since several years.

This situation has negative consequences for the hospitality industry. Industry professionals argue that they are confronted with the difficulty of applying the various accessibility requirements across Europe considering their number and fragmentation, costs of implementation and the calendar of application.[222]

Despite the abundant evidence for the business case and the potential market size of accessible hospitality services, the industry has so far failed to recognise enough the business opportunities of this market.[223] There are several reasons behind this.

First, there is a general lack of awareness in the hospitality industry of the business potential that lies in the provision of accessible services to disabled persons and elderly. "Owners and managers do not recognise disability as a market and, hence, do not promote the rooms in an appropriate manner for people with disabilities to make an informed choice about their accommodation needs. In addition, some accommodation managers report low occupancy of the accessible rooms and that non-disabled customers do not like using accessible accommodation."[224] "The incentive to attract "neglected" customers has driven some successful developments in the direction of improved provisions for disabled customers over the past decade"[225], but the take-up of this business case remains too low in order to cover existent supply shortages.

Finally, "most accommodation providers do not generally have easy access to information about how to build or adapt their premises to make them accessible – they simply do not know what "accessible" means. Indeed, most accommodation providers do not know the requirements of disabled customers or how to provide for them. To be effective, the information must be carefully standardised, reliable and authoritative."[226]

The **regulatory fragmentation with regard to accessibility requirements across Europe is not only an obstacle for disabled citizens intending to travel across borders, but also for businesses** that intend to provide accessible hospitality services in different Member States. Understanding different sets of regulations, ensuring compliance with non-consistent accessibility requirements, and obtaining various labels certifying accessibility in different Member States comes with substantial additional costs and prevents the realisation of economies of scale. For instance, large hospitality undertakings that operate cross-border have to comply with different national accessibility requirements in building regulations when building / adapting their facilities for the provision of accessible hospitality services. The regulatory fragmentation, for instance with regard to the minimum number of accessible rooms in a facility, impedes the use of standardised buildings plans and thus the realisation of economies of scale.[227] As a consequence, large market players of the hospitality industry may have lost their interest in the active provision and marketing of accessible services

[222] AFNOR (2008), opt. cit., p. 14.
[223] International Centre for Responsible Tourism (2010), opt. cit., p. 15.
[224] Darcy (2008a), opt. cit., p. 3.
[225] Toerisme Vlaanderen (2001), opt. cit., p. 8.
[226] Toerisme Vlaanderen (2001), opt. cit., p. 13f.
[227] Another consequence of the regulatory fragmentation with regard to the built environment of hospitality facilities is that architects cannot easily provide their services across borders because they need to familiarise with different national (accessibility) requirements. This issue is further discussed in the fiche on architect services.

Providing accessible online information on hospitality services has a cost for business, which may be significant for smaller undertakings. Indeed, the average price difference between a non-accessible website (total cost of 33,816.61 EUR) and a, for example, WCAG 2.0 AA accessible website (total cost of 52,116.64 EUR) is of 18,300.03 EUR. While mandatory web-accessibility requirements for private hospitality undertakings currently only exist in Spain and voluntary ones in a few other Member States (Italy, Ireland and the United Kingdom), it is probable that other countries will introduce similar obligations. National-level diverging obligations mean that businesses will face additional costs for the understanding and compliance with the different national requirements when operating across borders.

12. Public Procurement

Public Procurement at EU level is defined in the related Directives.[228]

Public procurement practices in the Member States can have an important impact on the market, since it represents a large volume of public spending each year, corresponding to approximately 17% of the EU GDP[229]. Given its economic significance, public procurement has the potential to influence the market in terms of production and consumption trends in favour of socially responsible goods and services – including accessible goods and services – on a large scale.

According to the Adelphi-Report, the desire to integrate such policy objectives into public procurement is already widespread throughout Europe[230], and the European Commission also attributes considerable importance to this issue as an important measure for the implementation of the EU 2020 Strategy, as well as the European Sustainability Strategy.

In order to contribute to reduce the existing fragmentation and to foster interoperability, the European Commission has issued two standardisation mandates for European accessibility requirements suitable for public procurement of products and services in the ICT domain

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[228] Directive 2004/17/EC coordinating the procurement procedures of entities operating in the water, energy, transport and postal service sectors: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:134:0001:0001:EN:PDF; and Directive 2004/18/EC on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts sets out the rules for awarding contract within Europe: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:134:0114:0240:EN:PDF. These Directives were adopted after the finalisation of these Annexes to the IA. The changes proposed by the Commission making accessibility compulsory were accepted and remained in the adopted Directives. This should be considered throughout the text. References in to those Directives adopted in 2014 are: Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement and repealing Directive 2004/18/EC, OJ L 94, 28/03/2014, p. 65; Directive 2014/25/EU of the European Parliament and of the Council of 26 February 2014 on procurement by entities operating in the water, energy, transport and postal services sectors and repealing Directive 2004/17/EC, OJ L 94, 28/03/2014, p. 243; Directive 2014/23/EU of the European Parliament and of the Council of 26 February 2014 on the award of concession contracts, OJ L 94, 28/03/2014, p. 1.

[229] EC (2010): *Europe 2020 Flagship Initiative - Innovation Union*, COM(2010) 546 final, p. 16. http://ec.europa.eu/research/innovation-union/pdf/innovation-union-communication_en.pdf

[230] Adelphi (2010): *Strategic Use of Public Procurement in Europe*, Final Report to the European Commission MARKT/2010/02/C, http://ec.europa.eu/internal_market/publicprocurement/docs/modernising_rules/strategic-use-public-procurement-europe_en.pdf

(Mandate 376[231]) and in the built environment (Mandate 420[232]). The main objectives of these mandates are: (1) to harmonise and facilitate the public procurement of accessible goods and services by identifying a set of functional European accessibility requirements for public procurement, and (2) to provide a mechanism through which the public procurers have access to an electronic toolkit, enabling them to make use of these harmonised requirements in procurement process.

According to the current EU Public Procurement Directives it is possible – yet not mandatory – to integrate social considerations and specifically the use of Design for All and accessibility requirements in the technical specifications and award criteria of public bids. The current Proposal for a Directive on public procurement[233] strengthens the legislative framework by obliging contracting authorities to draw up technical specifications that shall "take into account accessibility criteria for people with disabilities or design for all users", "except in duly justified cases". And the Proposal for a Directive on procurement by entities operating in the water, energy, transport and postal services sectors[234] states that "where mandatory accessibility standards are adopted by a legislative act of the Union, technical specifications shall, as far as accessibility criteria are concerned, be defined by reference thereto".[235]

Furthermore, the European Commission's legislative proposal for the review of the EU Public Procurement Directives foresees a "comply or explain" regime for a generalised public procurement of accessible goods and services, where the exceptional procurement of non-accessible goods and services needs to be duly justified. The consistency and interoperability in the internal market would be facilitated via European Standards. The proposed legal framework for public procurement of accessible goods and services is comparable to the Section 508 regime in force in the USA.[236]

Currently, the national level implementation and take-up of such accessibility criteria in public procurement has, however, proven to be very low and heterogeneous across Member States.[237] In practice, in most Member States contracting authorities do not make sufficient use of the possibilities offered under Article 23 of Directive 2004/18/EC, as this Article does

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[231] EC (2005): *Standardisation Mandate to CEN, CENELEC and ETSI in support of European accessibility requirements for public procurement in the ICT domain*, M/376 EN, http://www.ictsb.org/Working_Groups/DATSCG/Documents/M376.pdf

[232] EC (2007): *Standardisation Mandate to CEN, CENELEC and ETSI in support of European accessibility requirements for public procurement in the built environment*, M/420 EN, http://ec.europa.eu/enterprise/standards_policy/mandates/database/index.cfm?fuseaction=search.detail&id=392#

[233] EC (2011): *Proposal for a Directive of the European Parliament and of the Council on public procurement*, COM(2011) 896 final, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0896:FIN:EN:PDF

[234] EC (2011): *Proposal for a Directive on procurement by entities operating in the water, energy, transport and postal services sectors*, COM(2011) 895 final, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0895:FIN:EN:PDF

[235] Respectively Article 40 (1) Proposal for a Directive on public procurement; Article 54 (1) Proposal for a Directive on procurement by entities operating in the water, energy, transport and postal services sectors.

[236] Please refer to annex 10 of this report for a detailed presentation of the EC legislative proposal for the revision of the EU Public Procurement Directives.

[237] ETSI (2008): *ETSITR 102 612 - Human Factors; European accessibility requirements for public procurement of products and services in the ICT domain*, http://www.mandate376.eu/doc/tr_102612v010101p.pdf.

not currently include a clear requirement for goods and services to be accessible.[238] Furthermore, the cost criteria have often been an overriding concern to the detriment of the accessibility criteria.[239]

While all EU/EEA Member States within the scope of the Deloitte analysis – with the notable exception of Germany and Poland – have transposed the legal possibility (i.e. not obligation) to include accessibility requirements in public procurement specifications and award criteria as foreseen in Directives 2004/17/EC and 2004/18/EC, only the UK has implemented a cross-sector scheme for the promotion of accessibility in public procurement and Italy legislation focusing on ICT. In the other Member States the promotion of accessibility in public procurement is limited to ICT-related toolkits and/or guidelines for public procurement, mainly concerning the accessibility of public websites[240]. The specific accessibility requirements and recommendations in the national toolkits and guidelines for public procurement differ across countries resulting in regulatory fragmentation.

A web-survey on the strategic use of public procurement by contracting authorities across Europe conducted for the European Commission DG MARKT[241] in 2010 shows that 20% of those public contracting authorities that include social responsibility/ethical requirements in their tender documents included accessibility/design-for-all requirements in their tender documents.[242] Furthermore, 13% of those public contracting authorities that include social responsibility/ethical requirements in their tender documents included accessibility/design-for-all requirements in the award criteria.[243]

When considering the entire survey sample, it appears that 9.8% of all responding contracting authorities included accessibility/design-for-all requirements in their tender documents[244] and 6.4% of all responding contracting authorities included accessibility/design-for-all requirements in the award criteria.[245]

Enforcement of the actual use of such accessibility requirements in public procurement is mostly ineffective. As an example, the Irish government has developed the Irish Accessible IT Procurement Toolkit that refers to the Irish National IT Accessibility Guidelines, which provide accessibility requirements for among others things computers and operating systems.

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[238] http://www.mandate376.eu/ws1/Open%20Workshop%20public%20procurement_speech_Cattani.pdf

[239] http://www.euroblind.org/media/position-papers/EBU_response_EC_Green_Paper_public_procurement_final.doc

[240] Please refer to the case fiche on websites for a more in-depth analysis of web-accessibility of public websites. See also annex section **Error! Reference source not found.** for a presentation of the Irish Accessibility Toolkit and a comparison with the US Section 508 guidelines.

[241] Adelphi (2010): *Strategic Use of Public Procurement in Europe*, Final Report to the European Commission MARKT/2010/02/C, http://ec.europa.eu/internal_market/publicprocurement/docs/modernising_rules/strategic-use-public-procurement-europe_en.pdf
See annex 4 of the report (unpublished – provided by the European Commission DG MARKT) for a detailed discussion of the methodology of the web-survey and statistical considerations on its representativeness.

[242] *Results based on the survey question 23: "What kind of specific requirements do you set with regard to socially responsibility objectives in your tender documents?" [various pre-defined choices, including "Promoting accessibility and design for all"]*

[243] *Results based on the survey question 24: "Do you use social responsibility objectives in award criteria in the tender documents?" [various pre-defined choices, including "Promoting accessibility and design for all"]*

[244] 226 out of 2,299 valid responses – see Adelphi (2010), opt. cit., annex 4, p. 45

[245] 147 out of 2,299 valid responses – see Adelphi (2010), opt. cit., annex 4, p. 46

The specific case of the Irish Department of Finance, shows that the enforcement is ineffective due to mainly issues concerning lack of awareness, understanding and expertise of accessibility concepts and accessible goods/services available on the market. This was also confirmed through interview with the largest OS manufacturer that closely monitors the situation in Europe regarding fragmentation of standards. It is aware that "to the extent that standards exist, there is no large difference" and admits that it has "never seen real enforcement" in Europe, in contrast to the USA where it must comply with Section 508 in all procurement exercises with Federal governments and increasingly with individual States. It was this company's view that "training governments how to ask for accessibility features" should be undertaken.

As a consequence of the legal fragmentation across Europe, the strategic potential of public procurement as a powerful leverage factor for the development of the market for accessible goods and services remains largely unused. Furthermore, there is a risk of fragmentation of the internal market due to differences in national legislation and public procurement practices that lead to barriers for businesses and professionals to provide their goods and services cross-border, since they have to modify their goods and services in order to be able to provide them in other countries and / or because of significant differences in terms of compliance costs in the different Member States.

As to the magnitude of the impacts of the varying accessibility requirements, it is assumed for example that 8.5% of the services provided by web professionals will take place cross-border in 2020. It is further assumed that for the cross-border cases, companies will incur between 1% and 5% additional costs for ensuring accessibility due to differences between national technical accessibility requirements. It is expected that the differences between national technical accessibility requirements has a negative impact on cross-border trade and that the full potential of the internal market would not be achieved.