ACCESSIBLE EUROPE 2019 BACKGROUND PAPER

FUTURE OF ACCESSIBLE AUDIOVISUAL MEDIA SERVICES, TV AND VIDEO PROGRAMMING

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Glossary of acronyms

AI	Artificial Intelligence
AR	Augmented Reality
ASR	Automatic Speech Recognition
ATIS	Alliance for Telecommunications Industry Solutions
AVMS	Audiovisual Media Services
AVMSD	Audiovisual Media Services Directive
CE	Consumer Electronics
CFR	Charter of Fundamental Rights of the European Union
CJEU	Court of Justice of the European Union

CoE	Council of Europe
CRPD	Convention on the Rights of Persons with Disabilities
DTH	Direct-to-Home television
DTT	Digital Terrestrial Television
DVB	Digital Video Broadcasting
EBU	European Broadcasting Union
ECHR	European Convention on Human Rights
EPG	Electronic Programme Guide
ERGA	European Regulators Group for Audiovisual Media Services
ETSI	European Telecommunications Standardisation Institute
EU	European Union
FRA	European Union Agency for Fundamental Rights
G3ict	Global Initiative for Inclusive Information and Communication Technologies
HbbTV	Hybrid broadcast broadband Television
HTML	Hyper Text Markup Language
IBB	Integrated Broadcast Broadband
ICT	Information and Communications Technology
IEC	International Electrotechnical Commission
IP	Internet Protocol
IPTV	Internet Protocol Television
IRG-AVA	Intersector Rapporteur Group on Audiovisual Media Accessibility
ISO	International Standards Organisation
ITA	IPTV Terminal with Accessibility enhancement
ITU	International Telecommunication Union
JCA-AHF	Joint Coordination Activity on Accessibility and Human Factors
NLU	Natural Language Understanding
OJ	Official Journal

OTT	Over-The-Top
QoS	Quality of Service
RF	Radio-frequency
SDO	Standards Development Organisation
SLR	Sign Language Recognition
SLT	Sign Language Translation
SST	Speech-to-Speech Translation
STB	Set-Top-Box
TEN	Trans-European Network
TFEU	Treaty on the Functioning of the European Union
TTML	Timed Text Markup Language
TTS	Text-To-Speech
TV	Television
UDHR	Universal Declaration of Human Rights
UHDTV	Ultra High Definition Television
UN	United Nations
VoD	Video on-Demand
VR	Virtual Reality (VR)
W3C	World Wide Web Consortium
WASLI	World Association of Sign Language Interpreters
WCAG	Web Content Accessibility Guidelines
WFD	World Federation of the Deaf
WHO	World Health Organisation

1. Introduction

Accessible audiovisual media services (AVMS)[1] for all is an increasing challenge. On the one side, the AVMS landscape is changing with technology advancements, innovation, new business models and changing consumption habits. On the other side, more people in Europe[2] than ever are facing disabilities and the number is ever increasing. A quarter of the European Union (EU) population aged 16 or over reported long-standing disabilities in 2017.[3] Europe's population is also steadily ageing, and so the prevalence of age-related disabilities is increasing. In addition, the World Health Organisation (WHO) estimates that 1,1 billion young people[4] worldwide could be at risk of hearing loss due to unsafe listening practices.[5,6] Young people could also be at risk of health and vision issues due to increased use of digital technology.

The transition from analogue to digital television (TV) has been the biggest technological leap in the history of television. It altered the experience of television for viewers, distributors, and producers. For accessibility, it has brought new possibilities for delivering accessible services and so new promises for persons with disabilities.

Several European and international organisations have made continued efforts to make AVMS in Europe accessible. However, accessible services have been introduced at a much slower pace than anticipated. There are several reasons for this:

- There are technological challenges, complexity arising from the multi-platform environment and variety of standards applied across Europe. These issues are exacerbated by a lack of understanding of the whole end-to-end delivery chain for accessible AVMS as well as a lack of cooperation and consensus among stakeholders. It is a challenge to understand and manage all elements of the end-to-end delivery chain.[7] Apart from technological challenges, broadcasters and service providers also warn of high costs of providing accessible AVMS throughout the delivery chain;

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[1] Audiovisual media service is a service, which is under the editorial responsibility of a media service provider and the principal purpose of which is the provision of programmes, in order to inform, entertain or educate, to the general public by electronic communications networks. Such an audiovisual media service is either a television broadcast (i.e. a linear audiovisual media service) or an on-demand audiovisual media service (i.e. a non-linear audiovisual media service). It also includes audiovisual commercial communication. The definition of the audiovisual media service also covers text-based content which accompanies programmes, such as subtitling services and electronic programme guides.

[2] The ITU Europe Region consists of 46 member states: Albania, Andorra, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, North Macedonia, Moldova, Monaco, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, San Marino, Serbia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, Vatican, Ukraine, United Kingdom.

[3] Eurostat. *1 in 4 people in the EU have a long-term disability*. Eurostat News, 3 December 2018, ec.europa.eu/eurostat/web/products-eurostat-news/-/EDN-20181203-1.

[4] Young people refer to persons between the ages of 12-35 years.

[5] WHO, Prevention of blindness and deafness, www.who.int/pbd/deafness/activities/MLS/en/.

[6] WHO and ITU have developed the Toolkit and Global Standard (ITU-T H.870 Guidelines for safe listening devices/systems) for safe listening devices and systems, www.itu.int/en/ITU-D/Digital-Inclusion/Pages/Digital_Inclusion_Resources/Strategies%2c%20policies%2c%20toolkits/Toolkit_safe_listening_devices/safe_listening.aspx.

[7] ITU-T. Focus Group on Audiovisual Media Accessibility, Technical Report, Version 1.0, Part 18: Working Group G *"Digital broadcast television"* final report, October 2013, www.itu.int/dms_pub/itu-t/opb/fg/T-FG-AVA-2013-P18-PDF-E.pdf.

- It has become clear over the past fifteen years that accessibility policy and legal frameworks across Europe are not effective. They are fragmented and divided into provisions on media content, transmission services, electronic communications networks and services, and consumer terminal equipment. Often, there is a lack of policy coordination and countries also fail to impose clear legal obligations and targets for accessibility of AVMS.

Since December 2006, when the Convention on the Rights of Persons with Disabilities (CRPD) was adopted,[8] the demand for availability of accessible broadcasting services has grown. Moreover, an international legal basis for accessibility of broadcasting services has been established as European countries signed and ratified the convention.[9]

The CRPD identifies obligations on States parties in relation to the rights of persons with disabilities. Although it is obligatory for the State parties, the CRPD is not directly enforceable in national courts, so appropriate legislative and administrative measures need to be adopted to fully transpose the accessibility requirements.

The EU has significantly improved the legal framework for accessibility of AVMS with the revision of the Audiovisual Media Services Directive (AVMSD)[10] in 2018, which regulates the accessibility features of audiovisual content.[11] It requires the EU Member States to encourage media service providers to develop accessibility action plans in respect of continuously and progressively making their services more accessible to persons with disabilities.[12]

In 2019, the EU also adopted the Accessibility Act that sets out accessibility requirements for certain products and services, including those providing access to audiovisual media services and programmes, focusing on the infrastructure or the means by which audiovisual content is accessed.[13]

2. Brief overview of television in Europe

Accessibility of television for persons with disabilities and those with specific needs is multifaceted. Television has been evolving since the first black and white television transmissions. Spurred by relentless technological developments, television today not only includes an ever-broadening array of content offerings, but also a variety of platforms for its consumption.

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[8] United Nations. *The Convention on the Rights of Persons with Disabilities and its Optional Protocol* (A/RES/61/106), adopted on 13 December 2006 at the United Nations Headquarters in New York and opened for signature on 30 March 2007.

[9] By 2019, all European countries have ratified the CRPD, but not all have ratified the Optional Protocol to the CRPD (cf. United Nations, Human Rights, Office of the High Commissioner. Status of ratification: interactive Dashboard, indicators.ohchr.org).

[10] Directive 2010/13/EU of the European Parliament and of the Council of 10 March 2010 on the coordination of certain provisions laid down by law, regulation or administrative action in Member States concerning the provision of audiovisual media services (Audiovisual Media Services Directive) (Text with EEA relevance), OJ EU, L 95, 15 April 2010, p. 1–24, data.europa.eu/eli/dir/2010/13/oj.

[11] Directive (EU) 2018/1808 of the European Parliament and of the Council of 14 November 2018 amending Directive 2010/13/EU on the coordination of certain provisions laid down by law, regulation or administrative action in Member States concerning the provision of audiovisual media services (Audiovisual Media Services Directive) in view of changing market realities, PE/33/2018/REV/1, OJ L 303, 28 November 2018, p. 69–92, eur-lex.europa.eu/eli/dir/2018/1808/oj.

[12] Idem, Art. 1(11).

[13] Directive (EU) 2019/882 of the European Parliament and of the Council of 17 April 2019 on the accessibility requirements for products and services, (Text with EEA relevance), PE/81/2018/REV/1, OJ EU, L 151, 7 April 2019, p. 70–115, data.europa.eu/eli/dir/2019/882/oj.

2.1. Delivery platforms

The major platforms for television content delivery in Europe are:

• Digital Terrestrial TV (DTT) networks[14];

• Cable TV networks[15];

• Satellite TV networks (also known as Direct-to-Home (DTH) TV);

• Internet Protocol TV (IPTV) systems;

• Internet via (fixed or mobile) broadband networks.

The television markets across Europe are diverse. In the European Union, satellite TV, although in decline, is still prevailing, followed by digital terrestrial TV, cable TV and IPTV[16]. If the digital switch-over in terrestrial networks has already been completed (apart from a few exceptions), there is still an ongoing transition across the continent from analogue to digital technology in cable TV networks.

-      Overall, TV content delivery platforms can be broadly classified into three categories: traditional broadcast networks,

-      IP-based networks, and hybrid solutions

-      that combine the previous two categories.

These platforms come with different end-user devices. The traditional broadcast networks require transmission standard compliant receivers such as set-top-boxes (STBs), integrated TV receivers or handsets. For IP-based networks, the range of end-user devices is much wider: from smart TV sets, smart phones, tablets, phablets, laptop/desktop computers to game consoles. Receivers from both platforms can be integrated into a single device, combining broadcast and IP functionality. In Europe, the most prominent example are connected TV sets.[17]

2.2. Integrated broadcast-broadband systems

As network operators started engaging with broadband technologies and providing internet access services, stakeholders expressed interest in developing Integrated Broadcast Broadband (IBB) systems that would combine broadcast and broadband technologies at the end-users' side and provide both broadcast and internet services (Fig. 1).

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[14] In Europe, the transition from analogue to digital terrestrial television broadcasting should have been completed by 17 June 2015 as agreed for the frequency bands 174–230 MHz and 470–862 MHz at the ITU Regional Radiocommunication Conference (RRC-06) in Geneva in June 2006. However, there have been delays in some South-Eastern and Eastern European countries.

[15] In cable TV networks, the transition from analogue to digital technology is still ongoing with a very diverse mix of analogue and digital technologies across the continent.

[16] Cable Europe. *Television in Europe,* 2017, www.cable-europe.eu/wp-content/uploads/2010/09/FF-YE-2017-LR.pdf.

[17] ITU. *The Future of Cable TV*. Industry paper on trends and implications. The background paper for the Workshop on the Future of Cable TV, ITU Headquarters, Geneva, Switzerland, 25–26 January 2018, www.itu.int/en/ITU-D/Regional-Presence/Europe/Documents/Events/2018/Future%20of%20Cable%20TV/The%20future%20of%20cable%20TV_preevent.pdf.

Fig. 1: IBB Concept
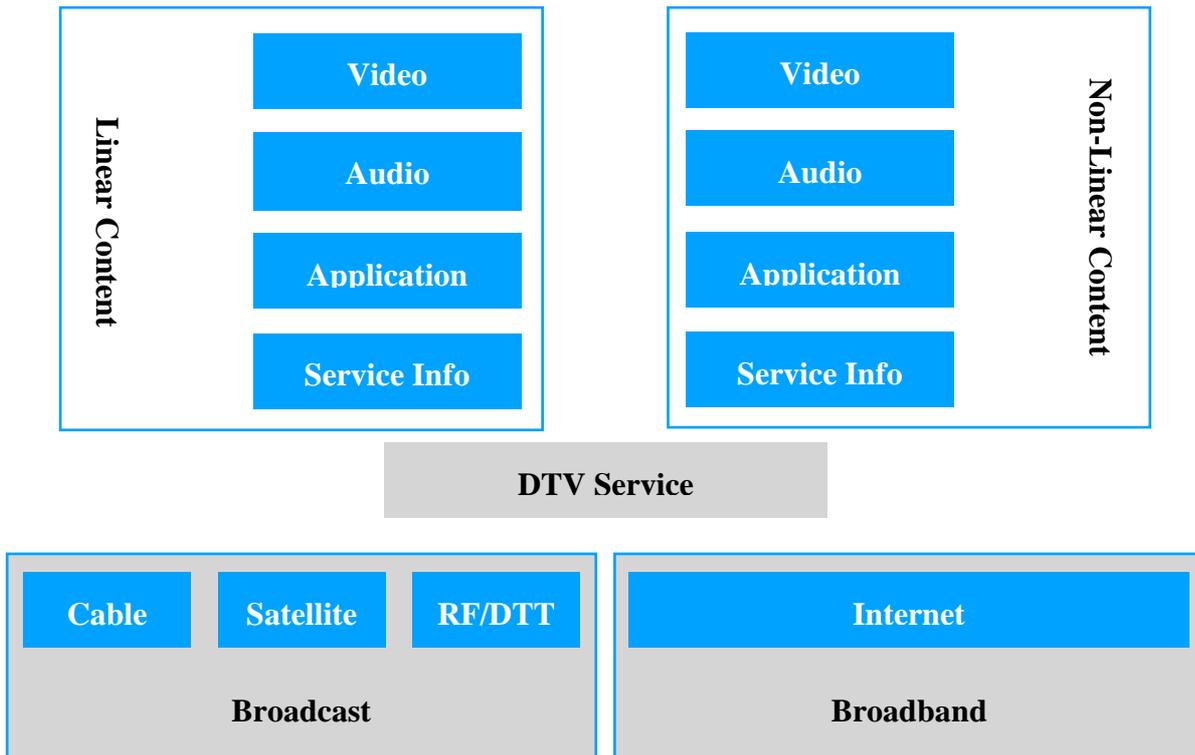
Source: ITU.

There are four well known IBB systems:[18]

- Hybrid Broadcast Broadband TV (HbbTV);

- Hybridcast;

- TOPSmedia;

- Ginga.

There is no unified global IBB standard. However, there has been an ongoing work within the ITU to develop Recommendations for IBB systems.[19]

In Europe, HbbTV is the most widespread IBB system. It has been developed by the HbbTV Association[20] and published by the European Telecommunications Standardisation Institute (ETSI).[21] It has been available for over ten years and its deployment is rising.[22] HbbTV[23] combines services delivered via a digital video

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[18] ITU Recommendation ITU-R BT.2075-2: *Integrated broadcast-broadband system*. Series BT: Broadcasting Service (television), 2019, www.itu.int/dms_pubrec/itu-r/rec/bt/R-REC-BT.2075-2-201901-I!!PDF-E.pdf

[19] Ibidem.

[20] A Swiss-based not-for-profit organisation, for more details see www.hbbtv.org.

[21] A French-based not-for-profit organisation, for more details see www.etsi.org.

[22] The definition of the HbbTV specifications began in 2008. They were released in 2009 and adopted as an ETSI standard in 2010.

[23] HbbTV Resource Library, Specifications, www.hbbtv.org/resource-library/#specifications.

broadcasting (DVB)[24] compliant broadcast network (e.g. terrestrial, cable or satellite) and a broadband connection to the internet by using broadband-connected consumer electronics (CE) devices such as STBs and hybrid or integrated TV sets (that include both a broadcast and internet connection).

As analogue TV distribution remains relevant for some markets, it is important to note that many of the conceptual and technical aspects of HbbTV are also applicable to a combination of an analogue broadcast network and a broadband internet connection.

HbbTV is essentially an enhanced broadcast system that also includes on-demand services, interactive elements and other features and functionalities that cannot easily be accommodated within traditional linear broadcast (one-way) environments. It is more than just an addition of another delivery channel. The combination has the potential of providing efficient mass content delivery and personalised services.

The merging of different platforms with wide capability and flexibility brings more complexity and challenges for the adoption of HbbTV. A key issue to tackle in hybrid TV media services is synchronisation of different media streams to one or more receivers through hybrid delivery technologies.[25] Another issue is adoption of TV receivers or television sets with latest HbbTV specifications. Both issues are also relevant for the provision of accessible services.

2.3. Audiovisual Media Services

Digital technologies have changed the way television content is produced, distributed and accessed. Television consumption and value generation in the broadcasting markets have also changed. Traditionally, broadcasters distribute linear broadcast television content on particular TV channels and on dedicated networks (e.g. digital terrestrial, cable, satellite, or IP networks). Today, broadcasters and other media service providers increasingly propose non-linear content also known as on-demand audiovisual media services. Hence, audiovisual media services can be split into two categories:

- Linear service (or television broadcasting or television broadcast) is an audiovisual media service provided by a media service provider (or broadcaster) for simultaneous viewing of programmes on the basis of a programme schedule.[26] It can be accessed by users at the particular time they are offered. A linear service is mostly continuous distribution (24/7). It also includes audiovisual media services that enable the end-user to temporarily pause and restart a programme, while the essence of scheduled programming remains unchanged. Sometimes this service is provided as a part of the Catch Up TV service;

- Non-linear service (or on-demand service) is an audiovisual media service, where service is provided by a media service provider for the viewing of programmes at the moment chosen by the user and at his individual request on the basis of a catalogue of programmes selected by the media service provider.[27] Here, users have autonomy to decide what, where, when and on which device they want to watch.[28] Non-linear services include TV catch-up and start-over TV services as well as video on-demand services (VoD).

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[24] Digital Video Broadcasting or DVB Standards, www.dvb.org/standards.

[25] Boronat, Fernando; Montagud, Mario; et al. *Hybrid Broadcast/Broadband TV Services and Media Synchronization: Demands, Preferences and Expectations of Spanish Consumers.* IEEE Transactions on Broadcasting, 64:1, 52–69, March 2018, DOI: 10.1109/TBC.2017.2737819.

[26] Idem (n 10), Art. 1(1)(e).

[27] Idem (n 10), Art. 1(1)(g).

[28] Madiega, Tambiama. *Regulating online TV and radio broadcasting.* BRIEFING: EU Legislation in Progress, European Parliament, Members' Research Service PE 620.217, 1–13, March 2019, p. 2, www.europarl.europa.eu/RegData/etudes/BRIE/2018/620217/EPRS_BRI(2018)620217_EN.pdf.

Below is a brief description of main non-linear services:

- TV catch-up (replay) service: enabling users to view TV programmes of their own choice of timing for a short period of time — typically 7 to 30 days — after transmission. It includes pausing and rewinding of linear television services (i.e. live television) as well as playback of the content after the initial broadcast (content time shifting);

- Start-over TV service: enabling viewers to start play-out of the programme currently being watched from the beginning (with a single press on the remote control). It is usually combined together with the catch-up TV service;

- Video-on-demand service (VoD): a service provided by broadcasters, network operators and subscription online video services such as HBO GO, Netflix and Amazon. It allows browsing through available VoD content catalogue, checking information about the selected movie, such as description, casting, price and trailer and watching purchased VoD content. It can be delivered over managed networks or over third-party networks / internet. VoD services can be provided both with managed or unmanaged quality of service (QoS). There are different types of VoD, depending on the amount of interactivity and the ability of controlling videos.[29,30]

The definition of the AVMS also covers text-based content which accompanies programmes, such as subtitling services and electronic programme guides (EPGs).

There is a mix of different transmission mechanisms and ways of watching online content services that encompass:[31]

- Simulcasting services: simultaneous television broadcasting of TV channels over internet by broadcasting organisations;

- Webcasting (web-streaming) services: linear mode of broadcasting online using a streaming software (e.g. YouTube live channels over internet);

- Over-the-top (OTT) services: delivered over third-party networks / internet with which the service provider has no direct business relationship. OTT TV services include various streaming[32] and VoD[33] services.

A mix of different ways of watching TV is summarised in a four-quadrant matrix (Table 1). There is a distinction between linear and non-linear services. Both can be delivered either through managed or unmanaged networks / internet.

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[29] Ma, Huadong; and Shin, Kang G. *Multicast Video-on-Demand services*. ACM SIGCOMM Computer Communication Review, 32:1, 31–43, January 2002, p. 32, DOI: 10.1145/510726.510729.

[30] Ibidem: *»Based on the amount of interactivity and the ability of controlling videos, VoD systems are classified as Broadcast (No-VoD), Pay-Per-View (PPV), Quasi Video-On-Demand (QVoD), Near Video-On-Demand (NVoD), True Video-On-Demand (TVoD)«*. While TVoD is the most ideal service with the simplest scheme of scheduling server channels (a channel is dedicated to each client), sharing channels among clients (e.g. through multicast) improves performance and lowers costs. Multicast can support all types of VoD services while consuming much less resources.

[31] Idem (n 28).

[32] Furht, Borko; and Westwater, Raymond. *Multimedia broadcasting over the Internet: Part I*. IEEE MULTIMEDIA, 5:4, 78–82, October–December 1998, DOI: 10.1109/93.735871.

[33] Idem (n 29).

Table 1: Framework for audiovisual media services video delivery

	Linear	Non-linear
Traditional TV networks (DTT/DTH/Cable)	• TV Broadcasting and distribution	
Hybrid broadcast/broadband networks (DTT/DTH/Cable/Mobile and Internet)	• TV Broadcasting and distribution	• TV catch-up (replay) • Start-over TV • EPG • VoD** • TV Apps
IP-based networks/Integrated broadband networks (IPTV/Internet/Mobile)	• Multicasting* (of linear TV) • Simulcasting • Webcasting	• TV catch-up (replay) • Start-over TV • EPG • VoD** • TV Apps • Webcasting

Multicasting is used as a transport of linear TV content in IPTV.

*** There are different types of VoD that can also be supported by multicasting.*

Recent trends and implications for the future of cable TV have been discussed at the ITU Workshop on the Future of Cable TV.[34,35]

3. Efforts to make television accessible

There have been continues efforts by several organisations to make AVMS in Europe accessible. However, progress has not been as fast as anticipated. As television is also an emergency channel, it is especially important that emergency information, including public communications and announcements in natural disaster situations and in other emergencies is accessible to persons with disabilities.

3.1. Broadcasting standards

The DVB standards[36] are the most used broadcasting standards in Europe, available for digital terrestrial, cable and satellite networks. They have been published by ETSI and become an integral

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[34] ITU. *The future of cable TV: Trends and implications*. Regional initiatives: Europe, 2018, www.itu.int/dms_pub/itu-d/opb/gen/D-GEN-EUROPE.01-2018-PDF-E.pdf

[35] Idem (n 17).

[36] Idem (n 24).

part of global broadcasting, setting standards for terrestrial, cable, satellite and lately IP-based services.

DVB standards have also been adopted to address the increasing demand for accessible content across all platforms. Initially, they supported signing and audio description.

ETSI not only publishes DVB standards, but addresses two other important aspects of broadcast technologies: system and equipment specifications, and 'harmonised' standards to assist equipment to be placed on the market in line with the European legislation.[37,38]

The DVB will continue to provide the backbone of television services in Europe for some time. However, traditional television broadcasters are increasingly looking to exploit the internet as a delivery mechanism for their services in order to retain their competitive position and access new markets and demographics.

The DVB is developing specifications to allow linear television services over the internet to be signalled and distributed in a standardised manner, and to be as user-friendly and robust as traditional broadcast television. They have developed new DVB-I specifications with the intention of enabling broadband-delivered television services to be signalled and distributed in a standardised manner, without a need for specific applications.[39]

DVB-I will allow broadcasters to take advantage of the unique capabilities of IP delivery. Apart from linear television, video-on-demand will be also supported. Additionally, broadcasters will be able to offer different versions of a service, targeting different groups of users in a way that is not feasible with traditional broadcast. They will also be able to provide more comprehensive access services, such as video with signing.[40]

3.2. EBU recommendations

In 2004, the European Broadcasting Union (EBU) published a detailed report on access services with recommendations for their members and the industry.[41] The report covered the following access services, as defined therein:

• Subtitling: provision of overlaid text representing the spoken audio of the programme;

• Spoken subtitling: provision of synthesised speech (automatically), to make subtitles audible;

• Audio description: provision of additional speech, describing what is happening on the screen;

• Signing: provision of sign language interpretation of the spoken audio of the programme.

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[37] ETSI. Broadcast, www.etsi.org/technologies/broadcast.

[38] ETSI. *Who is involved in Broadcast standardization work?* Broadcast Standards, 2014, www.etsi.org/images/files/ETSITechnologyLeaflets/BroadcastStandards.pdf.

[39] DVB-I, www.dvb.org/standards/dvb-i.

[40] Lanigan, Peter. *DVB-I: television without limits*. DVB Scene, March 2019, www.dvb.org/resources/public/scene/pages_from_dvb-scene53.pdf.

[41] EBU. *Report on Access Services – includes recommendations.* EBU Technical Information I44-2004, June 2004, tech.ebu.ch/docs/i/i044.pdf.

With this report, the EBU responded to the growing demand for accessible services, which were increasingly required by national legislations across Europe, where public broadcasters have a particular duty to provide services to the whole community. It provided an overview and recommendations to help broadcasters facing technological choices and costs of providing accessible services. An explanatory summary of the report with related recommendations was also published.[42]

The EBU stressed that the provision of accessible services does not solely depend on broadcasters. The availability of these services depends on the whole end-to-end chain (authoring, exchange/distribution, delivery and presentation). Therefore, the EBU also provided, where relevant, advices on issues throughout the end-to-end chain and recommendations for the industry. For the access services matrix see Appendix C.

3.3. Hybrid broadcast-broadband platforms

While DVB-I is still in development,[43] IBB platforms are gaining importance. In 2019, HbbTV was in regular operation in 25 European countries.[44]

HbbTV was not a technology specially conceived to provide access services.[45] As already mentioned, a key challenge in HbbTV is synchronisation of different media streams.[46] There are also other concerns regarding accessibility of AVMS in HbbTV, such as how to improve accessibility in audiovisual contents (e.g. providing signing via broadband connection for broadcast contents) or take advantage of HbbTV features to provide new access services,[47] or how to make on-demand AVMS and broadband services accessible.

With the publication of HbbTV 2.0 standard,[48] new features such as second screen and HTML5 support were added. With new features, HbbTV can also be used to provide access services, such as: subtitling, spoken subtitling, audio description, and signing.[49]

However, in order to provide closed signing, a truly hybrid approach would involve the delivery of the programme via the broadcast network (i.e. digital terrestrial, cable or satellite) and the

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[42] De Jong, Frans. *Access Services for digital television*, EBU Technical Review, October 2004, tech.ebu.ch/docs/techreview/trev_300-de_jong.pdf.

[43] DVB. *DVB at the heart of Europe's TV future*. News, 21 June 2019, www.dvb.org/news/dvb-at-the-heart-of-europes-tv-future.

[44] European countries with regular operation of HbbTV in 2019: Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Lithuania, Luxembourg, Norway, Poland, Slovakia, Slovenia, Spain, Sweden, Switzerland, The Netherlands, Turkey and United Kingdom (cf. HbbTV Deployments, www.hbbtv.org/deployments).

[45] Martín, Carlos Alberto; Cisneros, Guillermo; et al. *Deployment of access services based on HbbTV standard technology.* In: 2015 International Symposium on Consumer Electronics (ISCE), 24-26 June 2015, DOI: 10.1109/ISCE.2015.7177777.

[46] Idem (n 25).

[47] Idem (n 45), § III.

[48] ETSI. Technical Specification TS 102 796 V1.3.1, *Hybrid Broadcast Broadband TV*, 2015.

[49] Idem (n 45), § I.

delivery of the signing interpretation video via the broadband network. Both video signals would then be mixed in a hybrid TV set in order to provide a signer as a picture-in-picture functionality, preferably with various customisation options (regarding the position and size of the signing window). Such an implementation requires a TV set with two separate receivers.[50]

3.4. IP based TV

Another technology that has emerged as one of the major distribution and access platforms in Europe for broadband multimedia services was IPTV. Initially, IPTV systems were based on proprietary implementations. There have been efforts to standardise IPTV and provide for interoperability. Extensive work has been carried out by several organisations, including the DVB, ETSI, Alliance for Telecommunications Industry Solutions (ATIS),[51] Open IPTV Forum, and ITU.[52]

The ITU has taken a central role in IPTV standardisation:[53] first within the IPTV Focus Group (2006–2007)[54] and IPTV Global Standardisation Initiative (2008–2012),[55] work that is currently being continued within the ITU-T Study Group 16.[56] Several Recommendations on IPTV have been published since 2007, also covering accessibility of IPTV (see Appendix B).

With the Recommendation ITU-T H.702, the ITU has defined accessibility profiles for IPTV systems with three levels of accessibility.[57] The Basic profile provides an entry-level support for accessibility, whereas the Main profile provides the widest range of features. The Enhanced profile provides the middle-level support between the Basic profile and the Main profile. With the availability of different accessibility profiles, persons with disabilities can choose more easily end-user devices that have the functions they need. In order to achieve the required functions of these profiles, both end-user and transmitting devices that send accessibility information[58] need to meet the requirements of each profile.

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[50] Martin, Carlos Alberto; Orero, Pilar; et al. *Signing provision in Connected TV: HBB4ALL project*. In 2015 IEEE International Symposium on Broadband Multimedia Systems and Broadcasting, 17-19 June 2015, DOI: 10.1109/BMSB.2015.7177264.

[51] A US standards organisation, for more details see www.atis.org.

[52] Maisonneuve, Julien; Deschanel, Muriel; Heiles, Juergen; et al. *An Overview of IPTV Standards Development. IEEE Transactions on Broadcasting*, 55:2, 315–328, June 2009, DOI: 10.1109/TBC.2009.2020451.

[53] During the first IPTV Focus Group meeting, IPTV was defined as "multimedia services such as television/video/audio/text/graphics/data delivered over IP based networks managed to provide the required level of QoS/QoE, security, interactivity and reliability."

[54] ITU-T IPTV Focus Group, www.itu.int/en/ITU-T/focusgroups/iptv/.

[55] ITU-T IPTV Global Standards Initiative, www.itu.int/en/ITU-T/gsi/iptv/.

[56] ITU-T SG16: Multimedia, www.itu.int/en/ITU-T/studygroups/2017-2020/16/.

[57] ITU Recommendation ITU-T H.702: *Accessibility profiles for IPTV systems: Various corrections and clarifications*. Series H: Audiovisual and Multimedia Systems. IPTV multimedia services and applications for IPTV – General aspects, Corrigendum 1, 2017, www.itu.int/rec/dologin.asp?lang=e&id=T-REC-H.702-201703-I!Cor1!PDF-E.

[58] Accessibility information is sent separately from video contents to IPTV end-user devices. Accessibility services are additional accessibility features intended to make primary audiovisual content accessible to

With the definition of these accessibility profiles, the ITU has paved the way for general accessibility requirements for AVMS as the requirements can be applied to all delivery platforms. Recommendation ITU-T Rec. H.702, developed focusing on IPTV systems by the ITU-T Study Group 16, will be considered by the ITU-R Study Group 6 and ITU-T Study Group 9 for possible incorporation in their broadcast and cable systems (see also Appendix H).[59]

IPTV accessibility profiles as defined by ITU-T Rec. H.702:[60]

a. Basic profile: Supports only the closed-captioning function. With an IPTV Terminal[61] with Accessibility enhancement (ITA) that implements this profile, a user can display captions overlaid on the main video. A user can select a caption from multiple captions (e.g. select French caption from English and French captions). A user can switch a display direction of caption text between horizontal and vertical and can change the transition effect of the caption text between cut and scroll. A user can change font size, font colour, position of caption text, as well as the background colour and size of its caption box, where appropriate;

b. Enhanced profile: In addition to the functions of the Basic profile, a user can change font style of caption text. When changing channels, ITA holds the language setting of caption (e.g. when a French caption has been selected, even when a user changes the channel, the caption language remains French). This profile includes sign language and audio description functions too. With an IPTV terminal incorporating accessibility enhancements executing this profile, a user can display sign language overlaid on the main video. A user can select sign language from multiple sign languages (e.g. select French sign language from English and French sign languages). A user can change size and position of sign language. This profile allows users to play audio description along with the main video. A user can adjust the volume of audio description and can select audio description from multiple audio descriptions. This profile includes the functions of information accessibility for real-time transmitting video, but does not include strict synchronisation;

c. Main profile: In addition to the functions of Enhanced profile, this profile includes the function of adding accessibility information to the recorded and on-demand video, even when the original video is fast-forwarded or rewound. An IPTV terminal with accessibility enhancements that implements this profile can display caption, sign language and audio description synchronised with the main video. When the main video is paused, caption, sign language and audio description are paused too. The IPTV terminal with accessibility enhancements can hold sign language and audio description settings.

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users with specific impairments or preferences, or in specific environmental contexts. Examples of common accessibility services are captioning, audio description and sign language interpretation.

[59] It was a conclusion of the ITU Workshop on the Future of Television in Europe, Session on Making Television Accessible, Geneva, 7 June 2019, that ITU Recommendation ITU-T H.702 should be circulated to ITU-R SG6 and ITU-T SG9 for possible incorporation in their broadcast and cable systems.

[60] See Appendix D for more details on accessibility profiles.

[61] Terminal or terminal device is an end-user device.

We are also witnessing the adoption of web-streaming television and media substitution,[62] especially as users expect interactivity and the same user experience across platforms and devices. It is not only web-streaming such as for example YouTube, but also media service providers that switched to OTT IP-based streaming services that offer better user experience and significant advantages, including the ability to integrate television with other IP-based services.

Accessibility of web content, including web-based and mobile applications, is addressed by the Web Content Accessibility Guidelines (WCAG), current version 2.1. The WCAG has been developed by the World Wide Web Consortium (W3C).[63] The WCAG has also been a basis for the new European standard on accessibility requirements for information and communications technology (ICT) products and services[64] and the oldest standard on accessibility requirements suitable for public procurement of ICT products and services in Europe.[65]

Despite the increased demand, popularity, and cultural significance of web-streaming television and other streaming content, many individuals with disabilities are unable to experience this content. Standardisation across web-streaming as well as web-based and mobile applications is necessary to create more accessible products.[66]

3.5.ITU standardisation work

With the emergence of digital television, the ITU has strengthened its position as a key player in the development of international standards and recommendations for accessible AVMS. There are several groups within the ITU — across all three Sectors ITU-D, ITU-R and ITU-T — dealing with accessibility.[67] Their work is coordinated by the Joint Coordination Activity on Accessibility and Human Factors (JCA-AHF) that works in concert with other United Nations organisations, activities and specialised agencies, International Standards Organisation (ISO), International Electrotechnical Commission (IEC), regional and national Standards Development Organisations (SDOs), industry groups, academia, disability organisations and telecommunication user groups for persons with disabilities. For more details, see Appendix A.

The Intersector Rapporteur Group on Audiovisual Media Accessibility (IRG-AVA) discusses standardisation topics related to audiovisual media accessibility of common interest to the ITU-T and ITU-R and aims at facilitating the development of draft Recommendations for "Accessible

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[62] Tefertiller, Alec. *Media Substitution in Cable Cord-Cutting: The Adoption of Web-Streaming Television*, Journal of Broadcasting & Electronic Media, 62:3, 390–407, 2018, DOI: 10.1080/08838151.2018.1451868.

[63] An international community, for more information see: www.w3.org.

[64] ETSI standard EN 301 549 V2.1.2, 2018, www.etsi.org/deliver/etsi_en/301500_301599/301549/02.01.02_60/en_301549v020102p.pdf

[65] ETSI standard EN 301 549 V1.1.2, 2015, www.etsi.org/deliver/etsi_en/301500_301599/301549/01.01.02_60/en_301549v010102p.pdf.

[66] Kearney-Volpe, Claire; Holloway, Shannon; and Hurst, Amy. *Entertainment for All: Understanding Media Streaming Accessibility*. Conference on Human Factors in Computing Systems 2019, 4–9 May 2019, Glasgow, Scotland, UK, 1–5, DOI: 10.1145/3290607.3312882.

[67] ITU, Accessibility, www.itu.int/en/ITU-T/accessibility/.

Systems" that can be used for all media delivery systems, including broadcast, cable, internet, and IPTV.[68]

With increasing penetration of fast and ultra-fast broadband internet, the potential to use new IP-based technologies for the delivery of audiovisual media services is also growing. The broadcasting industry is steadily transforming and IP-based technologies are replacing traditional broadcasting technologies. The transformation of the broadcasting industry may be further impacted by the 5G technology that will provide very high-speed low-cost wireless internet.

Ubiquitous availability of affordable ultra-fast internet will make the viewing experience progressively more real with ultra high definition television (UHDTV) as well as with virtual reality. Accessibility will be further improved with object-based functionalities such object-based audio for accessibility that will enable personalisation, also for persons with visual and hearing impairments. These functionalities are especially important for countries with more than one official language or with a number of languages spoken regionally or by immigrant groups.[69]

As digital television converges with other media platforms including web and becomes available on more devices, it is getting more complex. There are also new actors — online and media platforms — that increasingly provide accessible services. They invest heavily into automatic speech recognition (ASR), text-to-speech (TTS), natural language understanding (NLU), speech-to-speech translation (SST), sign language recognition (SLR), sign language translation (SLT), avatar signing, virtual reality (VR), augmented reality (AR), artificial intelligence (AI) and other novel technologies, which have an increasingly important role in the provision of accessible AVMS. With all these emerging technologies that can improve accessibility of AVMS, there is a need for strengthened cooperation between the ITU and ISO, IEC and other SDOs on standardisation. Moreover, cooperation should also be strengthened with organisations of persons with disabilities.

While language technologies develop, standards are lacking on how to measure performance, putting users at risk of receiving unsatisfactory services. For example, the recent statement of the World Federation of the Deaf (WFD) and the World Association of Sign Language Interpreters (WASLI) on the matter of use of signing avatars shows the concerns from the community of persons with disabilities.[70] Key performance indicators, such as the ones under study in the ITU-T, need to be developed so satisfactory level of service can be determined and asserted.

In its standardisation work, the ITU proactively addresses accessibility and human factors. Its contribution is significant also in awareness-raising, sharing good practices and capacity development, done in collaboration with its members, academia, governments and other international organisations. In cooperation with the Global Initiative for Inclusive Information and

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[68] ITU. IRG-AVA – Intersector Rapporteur Group Audiovisual Media Accessibility, www.itu.int/en/irg/ava/.

[69] Simon, Christian; Torcoli, Matteo; and Paulus, Jouni. *MPEG-H Audio for Improving Accessibility in Broadcasting and Streaming*. White Paper, Fraunhofer Institute for Integrated Circuits IIS and International Audio Laboratories Erlangen, Erlangen, Germany, arXiv:1909.11549v1 [eess.AS], September 2019, arxiv.org/pdf/1909.11549.pdf.

[70] WFD and WASLI Statement on Use of Signing Avatars, 14 March 2018 (updated 14 April 2018), wfdeaf.org/news/resources/wfd-wasli-statement-use-signing-avatars/.

Communication Technologies (G3ict) in 2011, the ITU published a report on accessible television.[71] The report addressed not only the audiovisual content, but also information and devices needed by persons with disabilities to fully enjoy access to the content. The ITU and G3ict have also co-produced the e-Accessibility Policy Toolkit for Persons with Disabilities[72] and the Model ICT Accessibility Policy Report.[73] This report is a good starting point for policy makers to develop a policy and legal framework to ensure accessibility of AVMS. The report includes not only technical and legal issues related to accessibility of AVMS content but also discusses important topics such as accessible EPGs that can be accessed by blind or partially sighted persons to identify accessible programming. In addition, the partnership delivered awareness raising and capacity building programmes for policy makers and stakeholders involved in accessibility issues around the world.

4.   Level of television accessibility assessed by EBU

It was recognised both by AVMS regulators and broadcasters that there was a need for benchmarking of audiovisual media services. The European Regulators Group for Audiovisual Media Services (ERGA)[74] emphasised the need to address the entire supply chain for accessibility in the television field (broadcast content, carriers such as cable TV companies, consumer equipment such as set top boxes, remote controls, TV receivers, etc.) as well as a full range of recently available content access and delivery modes.[75]

In 2016, the EBU conducted a pan-European survey on access services among its members.[76] It included 36 broadcasters in 24 national markets from EU countries that shared their experience with the provision of accessible services. The survey covered the following four key areas of accessibility services, as defined therein:

• Subtitling;

• Audio subtitling;

• Audio description;

• Signed programme.

The survey revealed significant differences in accessibility of broadcasting among their members and different markets. Broadcasters have reported primarily financial, technical and quality issues

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[71] Loom, Peter Olaf. *Making Television Accessible*. Report, ITU and G3ict, November 2011, www.itu.int/en/ITU-D/Digital-Inclusion/Persons-with-Disabilities/Documents/Making_TV_Accessible-English.pdf

[72] *e-Accessibility Policy Toolkit for Persons with Disabilities*, ITU, ITU-D and G3ict, www.e-accessibilitytoolkit.org.

[73] Msimang, Mandla; Rice, Dónal; Thorén, Clas et al. *Model ICT Accessibility*, Policy Report, ITU and G3ict, November 2014, www.itu.int/en/ITU-D/Digital-Inclusion/Persons-with-Disabilities/Documents/ICT%20Accessibility%20Policy%20Report.pdf.

[74] ERGA, ec.europa.eu/digital-single-market/en/avmsd-audiovisual-regulators.

[75] ERGA. *Special Task Report on the provision of greater accessibility to audiovisual media services for persons with disabilities*. Pilot study: preparing for a possible European benchmarking and bench-learning initiative in the television field, ERGA (2016)12, November 2016.

[76] EBU. *Access Services Pan European Survey 2016*, www.ebu.ch/publications/access-services-pan-european-survey-2016.

as major barriers for providing accessible services. However, there are other important factors that have led to different levels of AVMS accessibility across Europe, for example:

• Legal and regulatory requirements differ among jurisdictions. Although the legal recognition of AVMS accessibility has clearly been improved, the scope and implementation in practice of the international and/or EU law vary considerably among countries;

• Language diversity — not only from one country to another but sometimes within the same country — also has an impact on the implementation of access services. There are three language-transfer practices in Europe for audiovisual works that exist side-by-side, i.e. subtitling, dubbing and voice-over;[77]

• Different institutional setups, market structures and technology deployment lead to different approaches to the implementation of access services.

4.1. Share of persons with disabilities

According to the EBU survey, in 2016 there was on average 10% of the population with sensorial disabilities. As Europe is ageing due to rising life expectancy, a share of persons with sensorial disabilities is expected to further increase.

The shares varied significantly among the countries (between 1% and 25%). This disparity of results could be due to different definitions applied. Lower shares of population with sensorial disabilities in some countries might indicate that they still have narrower, medical definitions in their laws, which have not yet been fully adapted to the CRPD. For reference, disability prevalence rates were indicated by the World Report on Disability.[78] The share might increase as young people could be at risk of hearing loss due to unsafe listening practices.[79]

4.2. Spending and organisational aspects

Public broadcasters have a duty to provide services to the whole community. There is a significant disparity among the broadcasters and different markets. On average, the broadcasters spent 0.44% of their total annual budget for providing access services. The share varied between 0.1% and 1.23% of the total budget.

The majority of broadcasters (72%) outsourced access services. Most outsourced services were subtitling and audio description, while signing and especially live subtitling were mainly provided in-house.

Most of the broadcasters had teams for providing access services composed of more than five persons while more than a third had rather small teams composed of up to five persons only.

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[77] Bachmeier, Cristina. *Barrier-free access to audiovisual content — A fundamental human right.* In: Enabling Access to the Media for All, Nikoltchev S. (Ed.), IRIS plus 2014-3, European Audiovisual Observatory, Strasbourg, 2014, 1–43, p. 10.

[78] WHO. *World Report on Disability*. World Health Organisation, Geneva, 2011, 1–325, www.who.int/disabilities/world_report/2011/en/.

[79] Idem (n 5).

4.3. Accessibility services provided

All broadcasters that participated in the survey provided accessible services at least on their main national channels as follows:

• All provided subtitling;

• Majority provided audio description and signed programmes;

• Only a fifth provided audio subtitling.

The majority of broadcasters offered part of their programming as video-on-demand. Two thirds had HbbTV or connected TV applications and offered part of their programming as VoD.

Subtitling

All broadcasters that took part in the survey delivered subtitled programmes. Public broadcasters on average delivered subtitles on over two thirds of programmes. Half of them delivered over 80% of programmes with subtitles. Some broadcasters were committed to subtitling 100% of all content.

Majority of broadcasters offered closed subtitles, some offered open subtitles and some offered both. They offered subtitles across a broad range of platforms, that is:

• Own websites;

• Social networks;

• Connected TV or HbbTV services;

• Mobile devices; and

• VoD operators.

Although subtitling is the most common access service, according to the EBU technological choices among broadcasters vary widely — from analogue teletext, DVB teletext, dub subtitling to web-streaming. All these technologies are widespread among the broadcasters and they often use more than one technology/standard for subtitling.

In several countries, associations of the hearing impaired requested or demanded subtitles on all platforms. Only in a few countries, media authorities required subtitles on online platforms or there were voluntary agreements to provide subtitles on all platforms.

The majority of broadcasters faced obstacles in providing subtitles. The major obstacles were high costs and technical issues.

Audio subtitling

Audio subtitling was not widespread. In the Nordic countries and in the Belgian Flanders region, broadcasters offered all or almost all programmes with audio subtitles. In majority of Europe, though, no audio subtitling was provided.

Broadcasters provided audio subtitling on:

• Own websites;

• Connected TV or HbbTV services;

- Mobile devices.

Only two broadcasters provided audio subtitling on an online platform, the rest intended to provide this access service in 2016.

Audio subtitling was provided via different technologies/standards — from teletext to DVB pre-mixed audio channel, DVB receiver-mix audio and other technologies.

Less than half of the broadcasters that provided audio subtitling faced obstacles in providing the service, with technical and quality as most mentioned issues.

Audio description

The majority of public broadcasters offered programmes with audio description on their broadcast channels. On average, they delivered audio description on 13% of their total number of programmes.

Audio description services were available on the following platforms:

- Own websites;

- Connected TV or HbbTV services;

- Mobile devices; and

- Online platforms.

Broadcasters that did not provide audio description online, were considering providing this service online as well.

In several countries, associations of the blind requested or demanded audio description on all devices. In some countries, there were only individual requests.

The majority of broadcasters believe it is relevant to deliver audio description on HbbTV or connected TV services.

The most common method used to deliver audio description was pre-mixed, while receiver-mix was also used.

Two thirds of broadcasters were facing obstacles in providing audio description, with costs and technical issues as most mentioned.

Signed programmes

The majority of broadcasters offered signed programmes. On average, public broadcasters provided sign language on 4% of their programmes. All but one broadcaster offered programmes with sign language interpretation on less than 10% of programmes.

The majority offered signing with daily news, while other categories were not widespread: special programmes, children programmes, documentaries, music and entertainment, and sports programmes.

Broadcasters offer signed programmes on

- Own websites;

- Social networks;

- Connected TV or HbbTV services; and

- Mobile devices.

More than half broadcasters faced obstacles in providing signing, with costs being the most important obstacle, following by technical issues.

Challenges, concerns and developments

According to the EBU survey, the most important challenges for broadcasters in 2016 in providing access services were:

- Costs;

- Engagement of online service providers with accessibility;

- Putting access services online; and

- Switch-over to digital.

Broadcaster also expressed the concerns about:

- Enhancing awareness in their organisations;

- Improving quality of access services;

- Anticipating the impact of an ageing population;

- Constantly changing technology;

- Shortage of accessibility technical experts;

- Strengthening regulations;

- Increasing access services quotas.

Other foreseen developments:

- Read me buttons on web sites;

- Easily accessible content on web sites;

- Font size options for web sites and apps;

- Application accessibility for persons with visual impairments;

- Easy-to-read content;

- Slowly and clearly spoken language;

- Personalised subtitles on HbbTV.

5. Legal framework for accessibility

5.1. The Convention on the Rights of Persons with Disabilities

The international human rights framework for the protection of rights of persons with disabilities is established by the CRPD.[80] It is the first legally binding instrument with comprehensive protection of the rights of persons with disabilities, which sets out legally binding obligations on States to promote, protect and ensure the rights of persons with disabilities. For its enforcement, however, its uniform and consistent interpretation and effective implementation into national laws is essential.

> (a) The CRPD is the international human rights treaty that also addresses access to information and communications technologies and to audiovisual media services, but it does not create new rights in that regard for persons with disabilities. For a brief explanation of the CRPD's provisions on ICT accessibility (Art. 9) as well as on freedom of expression and opinion, and access to information (Art. 21), see Appendix E. Both articles are also related to accessibility of audiovisual media services.

Article 30 of the CRPD on participation in cultural life, recreation, leisure and sport recognises the right of persons with disabilities to take part on an equal basis with others in cultural life (see also Appendix F). The Article places an obligation on State Parties to take all appropriate measures to ensure that persons with disabilities, among others, enjoy access to television programmes in accessible formats.

The Article does not elaborate on in more detail what comprises such "appropriate measures" nor does it indicates what constitutes "accessible formats". However, there is a reference to cultural rights in general obligations (Art. 4) and the obligation for State Parties to undertake measures using the greatest amount of available resources and with a view to achieving progressively the full realisation of these rights. This obligation, commonly referred to as progressive realisation, "acknowledges that it often takes time to realise […] these rights fully". "While progressive realisation gives States Parties […] some flexibility in achieving the objectives of the Convention, it does not absolve States Parties of the responsibility to protect those rights."[81]

Therefore, State Parties have an obligation to take appropriate measures to ensure that persons with disabilities enjoy access to television programmes in accessible formats under Article 30 of the CRPD. This right is subject to progressive realisation.

By referencing to participation "on an equal basis with others in cultural life", Article 30 establishes the connection between the right to participate in cultural life and non-discrimination (Art. 5). This implies that denial of access to television programmes in accessible formats could amount to discrimination on grounds of disability under Article 30 of the CRPD.[82]

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[80] Idem (n 8).

[81] United Nations. *From Exclusion to Equality: Realizing the rights of persons with disabilities: Handbook for Parliamentarians on the Convention on the Rights of Persons with Disabilities and its Optional Protocol*. Office of the United Nations High commissioner for Human rights, 2007, p. 19, archive.ipu.org/PDF/publications/disabilities-e.pdf.

[82] Cunningham, Ingrid. Media and disability - issues of portrayal and access, PhD Thesis, March 2016, 1–441, p. 335. aran.library.nuigalway.ie/bitstream/handle/10379/5731/Ingrid%20Cunningham%20Final%20Master%20Document%20Thesis%20April%202016.pdf.

Primary legislation

The EU Treaties, such as Treaty of Rome[83] and Treaty on the Functioning of the European Union (TFEU),[84] that constitute the EU primary law have not granted any explicit powers to the EU in the area of audiovisual and media policy. Given the complex nature of media goods and services, which can be defined neither solely as cultural goods nor simply as economic goods, audiovisual and media policy is drawn from a range of articles of the TFEU, within the framework of sectoral and horizontal policies,[85] in order to formulate policies for the various media and communication technology sectors.

With regard to disability, the initial treaties of the European Communities did not contain any reference to human rights or their protection. In 2000, the EU and its Member States pronounced the Charter of Fundamental Rights of the European Union (CFR).[86] The Charter was introduced to bring consistency and clarity to the rights established at different times and in different ways in individual EU Member States. In contrast with early treaties, the Treaty of Lisbon[87] requires the EU to combat discrimination based on disability in defining and implementing its policies and activities. When this treaty entered into force, the CFR became legally binding.[88]

The CFR contains a list of human rights, inspired by the rights contained in the constitutions of the Member States, the European Convention on Human Rights (ECHR)[89] and universal human rights

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[83] Treaty establishing the European Community (Consolidated version 2002). OJ EU, C 325, 24 December 2002, p. 33–184, data.europa.eu/eli/treaty/tec_2002/oj.

[84] Treaty on the Functioning of the European Union, Consolidated version, OJ EU, C 202, 7 June 2016, p. 1–388, data.europa.eu/eli/treaty/tfeu_2016/oj.

[85] The EU may take relevant actions within the framework of sectoral and horizontal policies, such as: industrial policy (Article 173 TFEU); competition policy (Articles 101-109 TFEU); trade policy (Articles 206 and 207 TFEU); the trans-European networks (TENs) (Articles 170-172 TFEU); research and technological development and space (Articles 179-190 TFEU); the approximation of laws for technological harmonisation, or the use of similar technological standards (Article 114 TFEU); the free movement of goods (Articles 28, 30 and 34-35 TFEU); the free movement of people, services and capital (Articles 45-66 TFEU); education, vocational training, youth and sport (Articles 165 and 166 TFEU); and culture (Article 167 TFEU). (Source: European Parliament, Fact Sheets on the European Union).

[86] Charter of Fundamental Rights of the European Union. OJ EU, C 326, 26 October 2012, p. 391–407, data.europa.eu/eli/treaty/char_2012/oj.

[87] Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community, signed at Lisbon, 13 December 2007, OJ EU, C 306, 17 December 2007, p. 1–271, data.europa.eu/eli/treaty/lis/sign.

[88] European Union Agency for Fundamental Rights (FRA) and Council of Europe (CoE). *Handbook on European non-discrimination law.* 2018 edition, fra.europa.eu/sites/default/files/fra_uploads/fra-2018-handbook-non-discrimination-law-2018_en.pdf.

[89] Council of Europe, European Convention on Human Rights, Rome, 4 November 1950, as amended by protocols up to No. 16, www.echr.coe.int/Documents/Convention_ENG.pdf.

treaties of the UN. The CFR can be seen as the overarching framework for human rights in the EU, of which the ECHR forms only one part, though an important one.[90,91]

The CFR influenced the accessibility provisions of the Audiovisual Media Services Directive 2010/13/EU[92], yet with a rather limited scope. The accessibility provisions in Article 7 were defined with a balance of broadcasting freedom enshrined in Article 11 of the CFR and Article 10 of the ECHR on the one hand, and Articles 21 of the CFR that bans discrimination with regard to certain personal attributes, including disability, and Article 26 that protects persons with disabilities with regard to their social and occupational integration and participation in the life of the community, on the other hand. Member States have also imposed different obligations on public service and commercial broadcasters. Therefore, Article 7 of the Directive 2010/13/EU only stated that "Member States shall encourage media service providers under their jurisdiction to ensure that their services are gradually made accessible to people with a visual or hearing disability."

In December 2010, the EU ratified the CRPD, which became an integral part of the EU legal order.[93] Moreover, international agreements concluded by the EU have primacy over instruments of secondary law, which must therefore be interpreted in a manner that is consistent with the CRPD.[94] As both the EU and its Member States are separate contracting parties, and each has competence in the fields covered by the CRPD, in the context of the EU the CRPD is a 'mixed' agreement.

All CRPD provisions falling within EU competence are binding on the EU institutions. In addition, EU law obliges Member States to implement the CRPD to the extent that its provisions fall within EU competence. Implementation of the CRPD in areas not under EU competence rests exclusively with the Member States. Despite their different competences, the EU and its Member States are subject to a duty of sincere cooperation when fulfilling the obligations set out in such 'mixed' agreements.[95]

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[90] The CFR is sometimes confused with the ECHR. They contain the overlapping human rights provisions, but the two operate within separate legal frameworks — the CFR was drafted by the EU and is interpreted by the Court of Justice of the European Union (CJEU), while the ECHR was drafted by the Council of Europe in Strasbourg and is interpreted by the European Court of Human Rights.

[91] There is a legal obligation under Article 6(2) of the Treaty of Lisbon for the EU accession to ECHR with the aim of creating a single European legal space and coherent framework of human rights protection throughout Europe. See e.g. www.europarl.europa.eu/legislative-train/theme-area-of-justice-and-fundamental-rights/file-completion-of-eu-accession-to-the-echr.

[92] Idem (n 10).

[93] See for example: CJEU, Joined Cases C-335/11 and C-337/11 HK Danmark, Judgement of 11 April 2013, para. 30.

[94] See for example: CJEU, Joined Cases C-335/11 and C-337/11 HK Danmark, Judgement of 11 April 2013, para. 29.

[95] European Commission. *Guidance on ensuring the respect for the Charter of Fundamental Rights of the European Union when implementing the European Structural and Investment Funds*, Commission Notice, OJ EU, C 269, 23 July 2016, p. 1–19, Annex II, p. 15.

Secondary legislation

By recognising its competence for the implementation of the CRPD in the area of audiovisual media services,[96] the EU opened the way to stronger protection of the rights of persons with disabilities in the latest revision of the AVMSD.[97]

Recital 22 of the AVMSD provides that the right of persons with an impairment and of the elderly to participate and be integrated in the social and cultural life is linked to the provision of accessible audiovisual media services.[98] Therefore, Member States should, without undue delay, ensure that media service providers under their jurisdiction actively seek to make content accessible to persons with disabilities.

The means to achieve the accessibility of AVMS should include, but need not be limited to, sign language, subtitling for the deaf and hard of hearing, spoken subtitles, and audio description.[99] However, that AVMSD does not cover features or services providing access to audiovisual media services, nor does it cover accessibility features of EPGs.

In accordance with Article 7 of the AVMSD (Appendix G), Member States should ensure, without undue delay, that media service providers make continuously and progressively audiovisual content accessible to persons with disabilities, in particular with a visual or hearing impairment, through proportionate measures. In accordance with Recital 22, with regard to proportionate measures, it could be understood that practical and unavoidable constraints should be taken into account, such as programmes or events broadcast in real time, that could prevent full accessibility.

Media service providers should report on the implementation of these measures on the regular basis to national regulatory authorities or bodies. Member States should also report on the implementation to the European Commission, first by 19 December 2022 and every three years thereafter.

In respect of making continuously and progressively audiovisual content accessible to persons with disabilities, media service providers should develop accessibility action plans and communicate any such plan to national regulatory authorities or bodies.

The EU has also stressed the importance of accessible emergency information, made available to the public through audiovisual media services. In this regards, Member States should ensure that emergency information, including public communications and announcements in natural disaster situations, is accessible to persons with disabilities. However, if it is not possible to provide emergency information in a manner that is accessible to persons with disabilities, this should not prevent emergency information from being made public through audiovisual media services.

Each Member State should designate a single point of contact for providing information and receiving complaints regarding any issues related to accessibility of audiovisual services provided by media service providers. This should be publicly available, online and easily accessible also for persons with disabilities.

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[96] Council Decision of 26 November 2009 concerning the conclusion, by the European Community, of the United Nations Convention on the Rights of Persons with Disabilities, OJ EU, L 23, 27 January 2010, p. 35–36.

[97] Idem (n 10).

[98] Idem (n 10), recital 22.

[99] Idem (n 10), recital 23.

The implementation of these provisions will be challenging. Similar practices have been seen in the UK, where the National Regulatory Authority in charge of AVMS Ofcom adopted the Code on television access services that sets out the requirements on subtitling, sign language and audio description that apply to television services licensed in accordance with the United Kingdom's Communications Act 2003, the Broadcasting Act 1996, or the Broadcasting Act 1990.[100] Ofcom is required to set ten year targets for subtitling, signing and audio description, as well as five year targets for subtitling. The media service provider report regularly to Ofcom on the extent to which broadcast television channels carried access services (i.e. subtitles, audio description and/or signing).

This practice might spread throughout Europe as national regulatory authorities would be granted new powers and duties to ensure the accessibility of audiovisual content in line with the objective of the AVMSD (Art. 30). In addition, ERGA would be tasked with exchanging experience and best practices on the application of the regulatory framework for AVMS, including on accessibility (Art. 30b).

It is therefore important to understand, that accessibility throughout the end-to end delivery chain for AVMS also rests with the Directive (EU) 2019/882 on the accessibility requirements for products and services (see Appendix G),[101] which establishes in Recital 11 that there is a need for concerted action to ensure that access to audiovisual media services are fully available to persons with disabilities.

The Directive (EU) 2019/882 aims to harmonise the accessibility of services providing access to audiovisual media services, defined in Article 3 as services transmitted by electronic communications networks which are used to identify, select, receive information on, and view audiovisual media services and any provided features, such as subtitles for the deaf and hard of hearing, audio description, spoken subtitles and sign language interpretation, which result from the implementation of measures to make services accessible as referred to in Article 7 of Directive 2010/13/EU, and includes EPGs.

Access to audiovisual media services should mean that the access to audiovisual content is accessible, as well as mechanisms that allow users with disabilities to use their assistive technologies. Services providing access to audiovisual media services could include websites, online applications, set-top-box-based applications, downloadable applications, mobile device-based services including mobile applications and related media players as well as connected television services. EPGs are included in the definition of services providing access to audiovisual media services to which this Directive applies.

The Directive also defines requirements for consumer terminal equipment with interactive computing capability, used for accessing audiovisual media services that should make available to persons with disabilities the accessibility components provided by the audiovisual media service provider, for user access, selection, control, and personalisation and for transmission to assistive devices.

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[100] Ofcom. *Code on television access services*. 30 January 2017, www.ofcom.org.uk/tv-radio-and-on-demand/broadcast-codes/tv-access-services.

[101] Directive (EU) 2019/882 of the European Parliament and of the Council of 17 April 2019 on the accessibility requirements for products and services (Text with EEA relevance) PE/81/2018/REV/1, OJ EU, L 151, 7 June 2019, p. 70–115, data.europa.eu/eli/dir/2019/882/oj.

6. Conclusions

6.1. Regulatory framework

Barrier-free access to audiovisual media services[102] has been recognised as a fundamental human right. Enabling access to media for all has been ever more important as the number of persons with disabilities, including age-related disabilities, in Europe is increasing. Additionally, young persons[103] are at risk of hearing and sight loss due to unsafe listening practices and increased use of technology, respectively.

There have been continued efforts to make audiovisual media services accessible. All European countries[104] have signed and ratified the Convention on the Rights of Persons with Disabilities.[105] Yet, more than a decade after the adoption of the CRPD, in most of Europe the level of accessibility of audiovisual media services is not satisfactory, with significant differences among countries and markets.

Public broadcasters, as State Parties in accordance with the CRPD, have a positive obligation to provide accessible audiovisual media services. In general, they have provided subtitling, audio subtitling, signing and/or audio description, although in most countries the provision of access services has not been requested officially by law or media authorities. The pressure has come mainly from persons with hearing and sight impairments individually or through their associations who requested or demanded accessible audiovisual media services.

Other media service providers have only been encouraged to ensure that their services are gradually made accessible to people with a visual or hearing disability. Yet, they have mostly ignored these rather general instructions.

In the EU, the situation will change with the transposition and implementation of the revised AVMS Directive[106] that requires the Member States to ensure, without undue delay, that services provided by media service providers under their jurisdiction are made continuously and progressively more accessible to persons with disabilities. Other European countries should implement the CRPD by following the EU regulatory examples.

6.2. Obstacles

In the EBU survey, conducted in 2016 among European public broadcasters, three obstacles have emerged as the most often issues in the provision of access services: high costs, technical issues and quality issues.

Additionally, there are challenges related to the multi-platform environment and variety of standards applied across Europe. This diversity, even within individual countries, poses great challenges for the provision of accessible services. Especially, as with platform diversity there is

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[102] Idem (n 1).

[103] Idem (n 4).

[104] Idem (n 2).

[105] Idem (n 9).

[106] Idem (n 11).

also a diversity in solutions along the end-to-end process of audiovisual media service delivery that increases both the complexity as well as costs of accessible service delivery.

There is also language diversity that adds an extra layer of complexity to the implementation of access services. Firstly, there are different language-transfer practices such as subtitling, dubbing and voice-over. Secondly, in most markets there is a need for more than one voice channel for audio subtitles and audio descriptions, respectively. Similar requirements may apply to signing.

6.3. Technology trends

Technological development brings new promises. The penetration of fast and ultra-fast broadband networks is increasing and so the potential to use new IP-based technologies for the delivery of audiovisual media services, which will replace traditional broadcasting technologies. The transformation of the broadcasting sector may be further impacted by the 5G technology that will provide very high-speed low-cost wireless internet.

Ubiquitous availability of affordable very high speed internet will make the viewing experience progressively more real with ultra-high definition television (4K and 8K) as well as with virtual reality. Accessibility will be further improved with object based functionalities such object based audio for accessibility that will enable personalisation, also for persons with hard of hearing impairments.

Language technologies, such as automatic speech and signing technologies,[107] have also been used for audiovisual media service provisioning. Especially global online and media platforms are investing heavily into these technologies. Small language groups are at disadvantage here as the development of state-of-the-art language technologies is very expensive and small teams, often university based, cannot ensure the development and appropriate maintenance of these advanced technologies. It should be mentioned, however, that organisations of persons with disabilities such WFD and WASLI have already expressed concerns with regard to the development of specific language technologies (i.e. signing avatars).[108]

6.4. Recommendations

Technology itself is not a saviour, but rather a tool or an enabler. The success of individual technologies in the marketplace is important, so meeting user needs, ease-of-use, convenience and affordability are important factors — in addition to regulatory compliance. Although IP-based AVMS are the ultimate trend, the diffusion of new technologies is not fast. In the multi-platform environment it is therefore important to provide for cross-platform and integrated broadcast broadband solutions.

There is a strong need for collaboration throughout the end-to-end process of audiovisual media service delivery and among all stakeholders. Broadly speaking, the entire supply chain for accessibility in the area of AVMS should be addressed (i.e. broadcast content, carriers such as cable TV companies, consumer equipment such as set-top-boxes, remote controls, TV receivers, etc.) as well as a full range of recently available content access and delivery modes.

Persons with disabilities need to be involved in the entire process of providing accessible audiovisual media services, including designing, developing, testing and deploying accessible

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[107] Languages technologies include e.g. automatic speech recognition, text-to-speech, natural language understanding, spoken-to-speech translation, sign language recognition and sign language translation.

[108] Idem (n 70).

products and services. They need to be consulted and involved in key activities in order to ensure that accessible services meet their needs. Employment opportunities in the sector could also facilitate the provisioning of accessible AVMS.

Procurement is another powerful tool for driving market players towards the production or provision of accessible products and services and an effective way of enforcing accessibility standards. All stakeholders should cooperate in the development of requirements and specifications to be used in the procurement by all actors in the supply chain.

In order to reduce the costs of provisioning accessible services, public broadcasters and other media service providers could cooperate and outsource the production of access services. They could establish joint ventures or partner with already established service providers. One should note, however, that persons without sight or hearing impairments are also increasingly important consumers of accessible services.[109] By making content accessible, broadcasters and service providers have a potential to enlarge their use base and further justify investments in this area.

It is important to follow international good practices and examples. However, there is no one-size-fits-all solution to the challenges in the provision of accessible audiovisual media services: besides the needs within a particular jurisdiction, there are also large need variations within the spectrum of a same disability category. Relating to the former, existing international policies, standards and good practices from other countries can be tailored to fit the respective national circumstances. Relating to the latter, careful consultation with the national stakeholders remains fundamental.

Raising awareness and educating all relevant stakeholders about AVMS accessibility trends is key for the successful implementation and provisioning of access services. In this respect, governments need to consider collaborating with industry, universities and international organisations.

Organisations such the ITU and EBU should have a greater role in these collaborative efforts, and partner with governments, organisations of persons with disabilities and academia. They should engage in awareness raising and capacity building campaigns among stakeholders, and encourage universities to design and share their curricula on accessibility of ICTs and AVMS.

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[109] As Ofcom found in a consultation on the Code and the Guidance on television access services in 2006, that majority (80%) of viewers who used subtitles to watch television did not have a hearing impairment. (Ofcom. Television access services — Review of the Code and guidance. Consultation, 2006. www.ofcom.org.uk/__data/assets/pdf_file/0016/42442/access.pdf).

Appendix A
ITU and accessibility

The ITU works to increase access to ICTs for persons with disabilities by:

• Raising awareness of their right to access telecommunications/ICTs;

• Mainstreaming accessibility in the development of international telecommunications/ICT standards; and

• Providing education and training on key accessibility issues.

ITU-T and accessibility of AVMS

ITU-T Study Group 16 (lead ITU-T Study Group on Accessibility):
Multimedia coding, systems and applications
www.itu.int/go/tsg16

• Question 26/16: Accessibility to multimedia systems and services
www.itu.int/ITU-T/studygroups/com16/sg16-q26.html

• Question 24/16: Human factors related issues for improvement of the quality of life through international telecommunications
www.itu.int/ITU-T/studygroups/com02/sg16-q24.html

ITU-T Study Group 9:
Television and sound transmission and integrated broadband cable networks
www.itu.int/go/tsg9

• New Question [A]/9: Accessibility to cable systems and services

IRG-AVA

Intersector Rapporteur Group Audiovisual Media Accessibility – This is a joint group of

www.itu.int/en/irg/ava

JCA-AHF

Joint Coordination Activity on Accessibility and Human Factors

www.itu.int/en/ITU-T/jca/ahf

Joint IEC/ISO/ITU Policy Statement on Standardisation and accessibility

www.worldstandardscooperation.org/accessibility/

ITU-R and accessibility of AVMS

ITU-R Study Group 6: Broadcasting Service

www.itu.int/en/ITU-R/study-groups/rsg6

Appendix B
ITU Recommendations on accessibility of AVMS

ITU-T Rec. F.790: Telecommunications accessibility guidelines for older persons and persons with disabilities. Series F: Non-Telephone Telecommunication Services. Audiovisual services. 2007.

> Recommendation ITU-T Rec. F.790 provides general guidelines for standardising, planning, developing, designing and distributing all forms of telecommunications equipment and software and associated telecommunications services to ensure their accessibility for people with the widest possible range of abilities. It gives guidance on understanding the topic of accessibility and the ways that accessibility may be incorporated in products and services.

ITU-T Rec. Y.1901: Requirements for the support of IPTV services. Series Y: Global Information Infrastructure, Internet Protocol Aspects and Next-Generation Networks. Internet protocol aspects – IPTV over NGN. 2009.

> Recommendation ITU-T Y.1901 specifies the high level requirements to support IPTV services. These include IPTV requirements for service offering, network aspects, QoS and QoE, service and content protection, end system, middleware and content. It also includes recommendations for accessibility features.

ITU-T Rec. J.205: Requirements for an application control framework using integrated broadcast and broadband digital television. Series J: Cable Networks and Transmission of Television, Sound Programme and Other Multimedia Signals. Application for Interactive Digital Television – Part 1, Corrigendum 1, 2014.

> Recommendation J.205 defines high-level requirements for an application control framework based on IBB DTV services where broadcasters or cable operators are continually engaged with their network. This application control framework is intended to harmonise the behaviour and the interaction of a variety of types of applications, provided by network agnostic delivery mechanisms, including applications that are broadcast-delivered, broadband-delivered, pre-installed, installed via an application repository, or home area network delivered. This Recommendation is intended to define a baseline for such an integrated application framework.

ITU-T Rec. H.702: Accessibility profiles for IPTV systems. Series H: Audiovisual and Multimedia Systems. IPTV multimedia services and applications for IPTV – General aspects, Corrigendum 1, 2017.

> Recommendation H.702 defines three profiles for accessibility features in IPTV systems, with increasing levels of support. The Basic profile provides an entry-level support of accessibility, whereas the Main profile provides the widest range of features. Beyond 2020, the Main profile should be available in all IPTV end-user devices that are considered fully accessible.

ITU-R Rec. BT.2037: General requirements for broadcast-oriented applications of integrated broadcast-broadband systems and their envisaged utilisation. Series BT: Broadcasting Service (television), 2007.

Recommendation BT.2037 defines general requirements for broadcast-oriented applications of IBB digital television systems. These systems are based on the combination of technical specifications and related operational processes that together define how services can be provided to the end-user based on combinations of traditional broadcast and broadband telecommunication mechanisms.

ITU-R Rec. BT.2053-0: Technical requirements for integrated broadcast-broadband systems. Series BT: Broadcasting Service (television), 2014.

Recommendation BT.2053-0 defines technical requirements for IBB systems; intended to harmonise the behaviour and the interaction of a variety of types of applications by broadcast delivery, broadband delivery, pre-installed, via application repository, and home area network delivery.

ITU-R Rec. BT.2075-2: Integrated broadcast-broadband system. Series BT: Broadcasting Service (television), 2019.

Recommendation BT.2075-2 provides guidance for choosing an IBB system. The guidance is described in terms of service capabilities and technical elements of the IBB systems.

ITU-R Report BT.2267-9: Integrated broadcast-broadband systems. Series BT: Broadcasting Service (television), 2019.

Report BT.2267-9 provides information on IBB systems that enable the provision of IBB services, and considerations for building IBB services.

IEC/ISO/ITU: Policy on Standardisation and accessibility, 2014.

IEC, ISO and ITU encourage the development of standards that take account of the widest range of characteristics and abilities of persons, including in particular those of older persons, children and persons with disabilities. To ensure standards contribute to accessibility, IEC, ISO and ITU emphasise the importance of:

(i)   Applying the principles of Accessible or Universal Design;

(ii) Engaging older persons and persons with disabilities in standards development;

(iii) Training standards developers on the importance of accessibility;

(iv) Improving accessibility of standardisation secretariat support.

Appendix C
EBU access service matrix

Table 2: Access services matrix

AUTHORING	EXCHANGE DISTRIBUTION	DELIVERY	PRESENTATION
SUBTITLING			

- Prepared subtitling *creating subtitles and timecodes* - Semi-live subtitling *live, but script is available* - Live subtitling	Video and subtitles: - on VHS tape with VITC or BITC - in VBI lines - on DVD - file-based via floppy disks/network	+ Analogue Teletext: subtitles in VBI fixed/spread (EN 300 706) * DVB subtitling (EN 300 743) * DVB Teletext (EN 300 472)	+Analogue receiver with Teletext DVB Set-top Box or IDTV with: * Teletext decoder and/or * DVB-subtitle decoding capability
SPOKEN SUBTITLING			
- ASCII-code from subtitle-generator into speech synthesiser results in spoken subtitles as an automatic process	+ Audio signal with synthesised speech * Audio signal with synthesised speech and fade information	+ Teletext packet 31 data Extra DVB audio channel: * pre-mixed with programme sound * separate audio with fade information	+ Analogue receiver + special receiver DVB Set-top Box or IDTV: * with receiver-mix capability * without receiver-mix capability
AUDIO DESCRIPTION			
- Script + fade and pan information is turned into two additional audio signals with description and encoded fade and pan control track	+ Audio with description signal * Description signal and control track synchronised with video on tape, on server or via distribution network	+ As one half of a stereo pair + Separate as AM-radio DVB audio channel: * pre-mixed * with fade & pan information embedded	+ Second analogue audio channel + AM radio receiver DVB Set-top box or IDTV: * with receiver-mix capability * without receiver-mix capability
SIGNING			
- Signing interpreter interprets speech and action in vision	- Signer on separate medium: tape, server or live (separate video signal) * Elective signing under development	- Programme with signer superimposed * DVB: additional vision component or encoded movements & expressions	+ Analogue receiver * Digital receiver * Set-top Box or IDTV with mixing capability or avatar-animation

*Special characters indicate area of applicability: - analogue & digital, + analogue only, * digital only*

BITC — Burnt-In Time-Code; DVB — Digital Video Broadcasting; DVD — Digital Versatile Disc; IDTV — Integrated Digital Television; VBI — Vertical Blanking Interval; VHS — Video Home System; VITC — Vertical Interval Time-Code.

Source: EBU, Technical - Information I44-2004.

Appendix D
ITU-T IPTV accessibility profiles

Table 3: Capabilities of profiles

Accessibility medium	Capabilities	Basic profile	Enhanced profile	Main profile
Caption	Turn on/off overlaid caption (R-1)	R	R	R
	Change the direction of displaying text between horizontal and vertical (R-2)	OR	R	R
	Change the transition effect of the caption text between cut and scroll (and bidirectional) (R-3)	OR	R	R
	Select from multiple captions (R-4)	R	R	R
	Change font size of the caption text (R-5)	R	R	R
	Change font colour of the caption text (R-6)	R	R	R
	Change caption position of the caption text (R-7)	R	R	R
	Change the background colour of caption box (R-8)	R	R	R
	Change the size of background box (R-9)	R	R	R
	Change font style of the caption text (OR-1) (R-11)	OR	R	R
	Hold the language setting of captions when multiple captions are supported (Function of holding the language setting. When a user changes channels, the user can get the same language caption as in the previous channel) (OR-2) (R-12)	OR	R	R
	Synchronise captions with video (OR-3) (R-22)	OR	OR	R
	Synchronise caption with the main video during the playback mode including slow motion (OR-4) (R-23)	OR	OR	R
	Automatically generate multiple captions with speech recognition (OR-5)	OR	OR	OR
	Display caption to different display devices (OR-6)	OR	OR	OR
	Change display speed (OR-7)	OR	OR	OR
NOTE – "R" is mandatory requirement. "OR" is optional requirement.				

Accessibility medium	Capabilities	Basic profile	Enhanced profile	Main profile

Sign language	Turn on/off overlaid sign language (OR-8) (R-13)	OR	R	R
	Select from multiple sign languages (OR-9) (R-14)	OR	R	R
	Change video size of sign language (OR-10) (R-15)	OR	R	R
	Change video position of sign language (OR-11) (R-16)	OR	R	R
	Synchronize sign language video with the main video during the playback mode including slow motion (OR-12) (R-24)	OR	OR	R
	Hold the language setting of sign language when multiple sign languages are supported (OR-13) (R-25)	OR	OR	R
	Change the background colour of sign language video (OR-14)	OR	OR	OR
	Automatically generate synthesized sign language interpretation (OR-15)	OR	OR	OR
	Avoid covering important information of original main video with sign language video (OR-16)	OR	OR	OR
Audio description	Turn on/off audio description (OR-17) (R-17)	OR	R	R
	Adjust volume of audio description (OR-18) (R-18)	OR	R	R
	Read letters and description of button on the screen (OR-19) (R-19)	OR	R	R
	Select from multiple audio descriptions (OR-20) (R-20)	OR	R	R
	Synchronize audio description with the main video during the playback mode including slow motion (OR-21) (R-26)	OR	OR	R
	Play in slow motion, pause-and-play (OR-22) (R-27)	OR	OR	R
	Hold the language setting of audio description when multiple audio descriptions are supported (OR-23) (R-28)	OR	OR	R
	Adjust sound quality of audio description (OR-24) (R-29)	OR	OR	R
	Avoid interfering original main audio with audio description (OR-25)	OR	OR	OR
NOTE – "R" is mandatory requirement. "OR" is optional requirement.				

Source: ITU-T Rec. H.702.

Appendix E
Explanation of CRPD ICT accessibility provisions

The CRPD is the international human rights treaty that addresses access to Information and communication technologies and audiovisual media services, but it does not create new rights in that regard for persons with disabilities. It sets out legally binding obligations on States to promote, protect and ensure the rights of persons with disabilities.

The historical overview of the background for the implementation of the ICT accessibility provisions of the CRPD is explained in the general comment of Article 9 of the CRPD.[110]

The notion of equality in international law has changed over the past decades and there has been a conceptual shift from formal equality to substantive equality that has an impact on the duties of States Parties. "States' obligation to provide accessibility is an essential part of the new duty to respect, protect and fulfil equality rights. Accessibility should therefore be considered in the context of the right to access from the specific perspective of disability. The right to access for persons with disabilities is ensured through strict implementation of accessibility standards."[111]

As emphasised by the UN Committee on the Rights of Persons with Disabilities, accessibility is a precondition and a means to achieve de facto equality for all persons with disabilities to live independently and participate fully and equally in society.[112] In particular, without access to information and communication, including information and communications technologies and systems, and to products or services provided to the public, persons with disabilities would not have equal opportunities for participation in their respective societies. For persons with disabilities to effectively participate in the community, States parties must therefore address accessibility of information and communication services, which must be available and usable for all persons with disabilities on an equal basis with others.

Furthermore, accessibility of information, including accessibility of audiovisual media services, is of paramount importance to persons with disabilities in ensuring that they can exercise their right to freedom of expression and opinion, as laid down by Article 19 of the Universal Declaration of Human Rights (UDHR). This right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas, regardless of the communication medium used and regardless of the frontiers.[113]

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[110] UN Committee on the Rights of Persons with Disabilities, General comment No. 2 (2014), Article 9: Accessibility, 22 May 2014, CRPD/C/GC/2, documents-dds-ny.un.org/doc/UNDOC/GEN/G14/033/13/PDF/G1403313.pdf.

[111] Idem, p. 5.

[112] UN Committee on the Rights of Persons with Disabilities, General comment No. 6 (2018), on equality and non-discrimination, 26 April 2018, CRPD/C/GC/6, 1–19, p. 11, tbinternet.ohchr.org/_layouts/15/treatybodyexternal/Download.aspx?symbolno=CRPD/C/GC/6&Lang=en.

[113] UN General Assembly. Universal Declaration of Human Rights. United Nations, 217 (III) A, 1948, Paris, Art. 1, www.un.org/en/universal-declaration-human-rights/.

In accordance with Article 3, General principles, and Article 4, General obligations, the CRPD clearly defines specific actions the State parties must undertake to ensure that the rights of persons with disabilities are respected, protected, and fulfilled.

Article 9, Accessibility

Article 9 of the CRPD, Accessibility, lays out requirements and standards of accessibility for States Parties to follow in ensuring non-discrimination and equality for people with disabilities and their full participation in society (see also Appendix F). Article 9 is a general obligation and applies to all relevant provisions in the CRPD.

In accordance with Article 9 (cf. Appendix F), States should develop, promulgate and monitor the implementation of minimum standards and guidelines for the accessibility of facilities and services open or provided to the public (Art. 9, Para. 2(a)), which includes AVMS. They should also promote the design, development, production and distribution of accessible information and communications technologies and systems at an early stage, so that these technologies and systems become accessible at minimum cost (Art. 9, Para. 2(h)).

The scope of Article 9 is legally binding for State parties (i.e. States and States' entities).[114,115] Additionally, Article 9 implicates private actors, by requiring State parties to take measures "to 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" (Art. 9, Para. 2(b)). In other words, although the CRPD is not directly legally binding on private actors (as only States can be bound by international treaties), it obligates States to ensure that private actors that are open to the general public and over whom they have control act in a manner consistent with the goals and obligations of Article 9. The duty to observe accessibility standards applies equally to the public and to the private sector.

It should also be mentioned in relation to Article 9, that accessibility and reasonable accommodations are two distinct concepts of equality laws and policies: [116]

(a) Accessibility duties relate to groups and must be implemented gradually but unconditionally;

(b) Reasonable accommodation duties, on the other hand, are individualised, apply immediately to all rights and may be limited by disproportionality.

Because the gradual realisation of accessibility of information and communication services may take time, reasonable accommodation may be used as a means to provide access to an individual in the meantime, as it is an immediate duty.

Article 21, Freedom of expression and opinion, and access to information

Article 21 of the CRPD deals with the right to freedom of expression and opinion, and access to information (see also Appendix F). The right to freedom of expression and its corollary freedom of

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[114] State entities encompass local and national governments, government agencies, and government corporations.

[115] In terms of broadcasting, Article 9 shall apply to all government departments responsible for telecommunications and broadcasting sectors.

[116] Idem (n 112), p. 6-7.

the media are indispensable for genuine democracy and democratic processes.[117] Broadcasting has a special role in these processes and is of primary importance to the vitality of democracy and citizenship.[118, 119]When broadcast media is inaccessible to persons with disabilities, it is submitted that they are effectively excluded from effective participation in democracy as citizens.[120]

Articles 9 and 21 intersect on the issue of information and communication. In addition to Article 9 of the CRPD that imposes a duty on State parties to ensure that persons with disabilities are able to access services open to or provided to the public on an equal basis with others, Articles 21 provides that States parties "shall take all appropriate measures to ensure that persons with disabilities can exercise the right to freedom of expression and opinion, including the freedom to seek, receive and impart information and ideas on an equal basis with others and through all forms of communication of their choice".

Article 21 describes in detail how the accessibility of information and communication can be ensured in practice. It sets out a number of measures for States Parties to ensure that persons with disabilities can exercise the right to freedom of expression and opinion (as expressed earlier in the text) on an equal basis with others and through all forms of communication of their choice, as defined in Article 2 of the CRPD,[121] including by:

- Providing information intended for the general public to persons with disabilities in accessible formats and technologies appropriate to different kinds of disabilities in a timely manner and without additional cost (Art. 21 (a));

- Facilitating the use of sign languages, Braille, augmentative and alternative communication, and all other accessible means, modes and formats of communication of their choice by persons with disabilities in official interactions (Art. 21 (b));

- Urging private entities that provide services to the general public, including through the internet, to provide information and services in accessible and usable formats for persons with disabilities (Art. 21 (c));

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[117] Council of Europe: Committee of Ministers. Recommendation No. CM/Rec(2011)7 of the Committee of Ministers to member states on a new notion of media, 21 September 2011, www.osce.org/odihr/101403?download=true.

[118] Graham Murdock. Television and Citizenship: In Defence of Public Broadcasting, in Alan Tomlinson (ed), Consumption, Identity and Style: Marketing, Meanings and Packaging of Pleasures, London and New York: Routledge, 1990, 77–101.

[119] Idem, p. 78, Graham Murdock: "Full and effective citizenship requires access to the range of information, insights, arguments, and explanations that enable people to make sense of the changes affecting their lives, and to evaluate the range of actions open to them both as individuals and as members of a political community. Without these resources, they are excluded from effective participation. They become the victims not the subjects of change, unable to pursue their rights and press for their extension. Precisely because of its centrality the television system has become a key site on which the struggle to secure and develop resources for citizenship takes place. Once this is recognised, we are bound to ask how current and impending changes in this system are likely to affect its capacity and willingness to deliver and develop these resources."

[120] Idem (n 82), p. 326-327.

[121] Article 2 of the CRPD, Definitions (excerpts), for the purposes of the CRPD:

"Communication" includes languages, display of text, Braille, tactile communication, large print, accessible multimedia as well as written, audio, plain-language, human-reader and augmentative and alternative modes, means and formats of communication, including accessible information and communication technology;

"Language" includes spoken and signed languages and other forms of non-spoken languages.

- Encourage the mass media, including providers of information through the internet, to make their services accessible to persons with disabilities (Art. 21 (d)).

The word "including" implies that the right to freedom of expression and opinion could also be achieved by other measures.

Public service broadcasters[122] as State parties may have a positive duty to provide information in accessible formats and technologies, appropriate to different kinds of disabilities and provided in a timely manner and without additional cost to persons with disabilities. On the other hand, State parties have only to "encourage" mass media to make their services accessible to persons with disabilities, suggesting a limit on what State parties can oblige their broadcasters to do.

Appendix F
Convention on the Rights of Persons with Disabilities

Excerpts from the CRPD

Article 5, Equality and non-discrimination

1. States Parties recognise that all persons are equal before and under the law and are entitled without any discrimination to the equal protection and equal benefit of the law.

2. StatesPartiesshallprohibitalldiscriminationonthebasisofdisabilityandguaranteetopersons with disabilities equal and effective legal protection against discrimination on all grounds.

3. In order to promote equality and eliminate discrimination, States Parties shall take all appropriate steps to ensure that reasonable accommodation is provided. Specific measures which are necessary to accelerate or achieve de facto equality of persons with disabilities shall not be considered discrimination under the terms of the present Convention.

Article 2, Definitions (excerpts)

"Discrimination on the basis of disability" means any distinction, exclusion or restriction on the basis of disability which has the purpose or effect of impairing or nullifying the recognition, enjoyment or exercise, on an equal basis with others, of all human rights and fundamental

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[122] Public Service Broadcasting includes radio, television and other electronic media outlets whose primary mission is public service. Public broadcasters receive funding from diverse sources including license fees, individual contributions, public financing and commercial financing.

freedoms in the political, economic, social, cultural, civil or any other field. It includes all forms of discrimination, including denial of reasonable accommodation.

Article 3, General principles

The principles of the present Convention shall be:

    a) Respect for inherent dignity, individual autonomy including the freedom to make one's own choices, and independence of persons;

    b) Non-discrimination;

    c) Full and effective participation and inclusion in society;

    d) Respect for difference and acceptance of persons with disabilities as part of human diversity and humanity;

    e) Equality of opportunity;

    f) Accessibility;

    g) Equality between men and women;

    h) Respect for the evolving capacities of children with disabilities and respect for the right of children with disabilities to preserve their identities.

Article 8, Awareness-raising

1. States Parties undertake to adopt immediate, effective and appropriate measures:

    a) To raise awareness throughout society, including at the family level, regarding persons with disabilities, and to foster respect for the rights and dignity of persons with disabilities;

    b) To combat stereotypes, prejudices and harmful practices relating to persons with disabilities, including those based on sex and age, in all areas of life;

    c) To promote awareness of the capabilities and contributions of persons with disabilities.

2. Measures to this end include:

    a) Initiating and maintaining effective public awareness campaigns designed:

        i. To nurture receptiveness to the rights of persons with disabilities;

        ii. To promote positive perceptions and greater social awareness towards persons with disabilities;

        iii. To promote recognition of the skills, merits and abilities of persons with disabilities, and of their contributions to the workplace and the labour market;

    b) Fostering at all levels of the education system, including in all children from an early age, an attitude of respect for the rights of persons with disabilities;

    c) Encouraging all organs of the media to portray persons with disabilities in a manner consistent with the purpose of the present Convention;

    d) Promoting awareness-training programmes regarding persons with disabilities and the rights of persons with disabilities.

Article 9, Accessibility

1. To enable persons with disabilities to live independently and participate fully in all aspects of life, States Parties shall take appropriate measures to ensure to persons with disabilities access, on an equal basis with others, to the physical environment, to transportation, to information and communications, including information and communications technologies and systems, and to other facilities and services open or provided to the public, both in urban and in rural areas. These measures, which shall include the identification and elimination of obstacles and barriers to accessibility, shall apply to, inter alia:

   a) Buildings, roads, transportation and other indoor and outdoor facilities, including schools, housing, medical facilities and workplaces;

   b) Information, communications and other services, including electronic services and emergency services.

2. States Parties shall also take appropriate measures to:

   a) Develop, promulgate and monitor the implementation of minimum standards and guidelines for the accessibility of facilities and services open or provided to the public;

   b) Ensure that private entities that offer facilities and services which are open or provided to the public take into account all aspects of accessibility for persons with disabilities;

   c) Provide training for stakeholders on accessibility issues facing persons with disabilities;

   d) Provide in buildings and other facilities open to the public signage in Braille and in easy to read and understand forms;

   e) Provide forms of live assistance and intermediaries, including guides, readers and professional sign language interpreters, to facilitate accessibility to buildings and other facilities open to the public;

   f) Promote other appropriate forms of assistance and support to persons with disabilities to ensure their access to information;

   g) Promote access for persons with disabilities to new information and communications technologies and systems, including the Internet;

   h) Promote the design, development, production and distribution of accessible information and communications technologies and systems at an early stage, so that these technologies and systems become accessible at minimum cost.

Article 2 - Definitions (excerpts)

"Reasonable accommodation" means necessary and appropriate modification and adjustments not imposing a disproportionate or undue burden, where needed in a particular case, to ensure to persons with disabilities the enjoyment or exercise on an equal basis with others of all human rights and fundamental freedoms;

"Universal design" means the design of products, environments, programmes and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialised design. "Universal design" shall not exclude assistive devices for particular groups of persons with disabilities where this is needed.

Article 21, Freedom of expression and opinion and access to information

States Parties shall take all appropriate measures to ensure that persons with disabilities can exercise the right to freedom of expression and opinion, including the freedom to seek, receive and impart information and ideas on an equal basis with others and through all forms of communication of their choice, as defined in article 2 of the present Convention, including by:

a) Providing information intended for the general public to persons with disabilities in accessible formats and technologies appropriate to different kinds of disabilities in a timely manner and without additional cost;

b) Accepting and facilitating the use of sign languages, Braille, augmentative and alternative communication, and all other accessible means, modes and formats of communication of their choice by persons with disabilities in official interactions;

c) Urging private entities that provide services to the general public, including through the Internet, to provide information and services in accessible and usable formats for persons with disabilities;

d) Encouraging the mass media, including providers of information through the Internet, to make their services accessible to persons with disabilities;

e) Recognising and promoting the use of sign languages.

Article 2 - Definitions (excerpts)

For the purposes of the present Convention:

"Communication" includes languages, display of text, Braille, tactile communication, large print, accessible multimedia as well as written, audio, plain-language, human-reader and augmentative and alternative modes, means and formats of communication, including accessible information and communication technology;

"Language" includes spoken and signed languages and other forms of non-spoken languages.

Article 30, Participation in cultural life, recreation, leisure and sport

1. States Parties recognise the right of persons with disabilities to take part on an equal basis with others in cultural life, and shall take all appropriate measures to ensure that persons with disabilities:

   a) Enjoy access to cultural materials in accessible formats;

   b) Enjoy access to television programmes, films, theatre and other cultural activities, in accessible formats;

   c) Enjoy access to places for cultural performances or services, such as theatres, museums, cinemas, libraries and tourism services, and, as far as possible, enjoy access to monuments and sites of national cultural importance.

2. States Parties shall take appropriate measures to enable persons with disabilities to have the opportunity to develop and utilise their creative, artistic and intellectual potential, not only for their own benefit, but also for the enrichment of society.

3. States Parties shall take all appropriate steps, in accordance with international law, to ensure that laws protecting intellectual property rights do not constitute an unreasonable or discriminatory barrier to access by persons with disabilities to cultural materials.

4. Persons with disabilities shall be entitled, on an equal basis with others, to recognition and support of their specific cultural and linguistic identity, including sign languages and deaf culture.

5. With a view to enabling persons with disabilities to participate on an equal basis with others in recreational, leisure and sporting activities, States Parties shall take appropriate measures:

   a) To encourage and promote the participation, to the fullest extent possible, of persons with disabilities in mainstream sporting activities at all levels;

   b) To ensure that persons with disabilities have an opportunity to organise, develop and participate in disability-specific sporting and recreational activities and, to this end, encourage the provision, on an equal basis with others, of appropriate instruction, training and resources;

   c) To ensure that persons with disabilities have access to sporting, recreational and tourism venues;

   d) To ensure that children with disabilities have equal access with other children to participation in play, recreation and leisure and sporting activities, including those activities in the school system;

   e) To ensure that persons with disabilities have access to services from those involved in the organisation of recreational, tourism, leisure and sporting activities.

Appendix G
EU law on accessibility of AVMS

Audiovisual Media Services Directive

Directive (EU) 2018/1808 of the European Parliament and of the Council of 14 November 2018 amending Directive 2010/13/EU on the coordination of certain provisions laid down by law, regulation or administrative action in Member States concerning the provision of audiovisual media services (Audiovisual Media Services Directive) in view of changing market realities, OJ EU, L 303, 28 November 2018, p. 69–92.[123]

Recitals:

(22) Ensuring the accessibility of audiovisual content is an essential requirement in the context of the commitments taken under the United Nations Convention on the Rights of Persons with Disabilities. In the context of Directive 2010/13/EU, the term 'persons with disabilities' should be interpreted in light of the nature of the services covered by that Directive, which are audiovisual media services. The right of persons with an impairment and of the elderly to participate and be integrated in the social and cultural life of the Union is linked to the provision of accessible audiovisual media services. Therefore, Member States should, without undue delay, ensure that media service providers under their jurisdiction actively seek to make content accessible to persons with disabilities, in particular with a visual or hearing impairment. Accessibility requirements should be met through a progressive and continuous process, while taking into account the practical and

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[123] Available at: eur-lex.europa.eu/eli/dir/2018/1808/oj; see also: data.europa.eu/eli/dir/2010/13/oj.

unavoidable constraints that could prevent full accessibility, such as programmes or events broadcast in real time. In order to measure the progress that media service providers have made in making their services progressively accessible to people with visual or hearing disabilities, Member States should require media service providers established on their territory to report to them on a regular basis.

(23) The means to achieve the accessibility of audiovisual media services under Directive 2010/13/EU should include, but need not be limited to, sign language, subtitling for the deaf and hard of hearing, spoken subtitles, and audio description. However, that Directive does not cover features or services providing access to audiovisual media services, nor does it cover accessibility features of electronic programme guides (EPGs). Therefore, that Directive is without prejudice to Union law aiming to harmonise the accessibility of services providing access to audiovisual media services, such as websites, online applications and EPGs, or the provision of information on accessibility and in accessible formats.

A recital from the Directive 2010/13/EU

(46) The right of persons with a disability and of the elderly to participate and be integrated in the social and cultural life of the Union is inextricably linked to the provision of accessible Audiovisual media services. The means to achieve accessibility should include, but need not be limited to, sign language, subtitling, audio-description and easily understandable menu navigation.

Article 7

1. Member States shall ensure, without undue delay, that services provided by media service providers under their jurisdiction are made continuously and progressively more accessible to persons with disabilities through proportionate measures.

2. Member States shall ensure that media service providers report on a regular basis to the national regulatory authorities or bodies on the implementation of the measures referred to in paragraph 1. By 19 December 2022 and every three years thereafter, Member States shall report to the Commission on the implementation of paragraph 1.

3. Member States shall encourage media service providers to develop accessibility action plans in respect of continuously and progressively making their services more accessible to persons with disabilities. Any such action plan shall be communicated to national regulatory authorities or bodies.

4. Each Member State shall designate a single, easily accessible, including by persons with disabilities, and publicly available online point of contact for providing information and receiving complaints regarding any accessibility issues referred to in this Article.

5. Member States shall ensure that emergency information, including public communications and announcements in natural disaster situations, which is made available to the public through audiovisual media services, is provided in a manner which is accessible to persons with disabilities.

Article 30

1. Each Member State shall designate one or more national regulatory authorities, bodies, or both. Member States shall ensure that they are legally distinct from the government and functionally independent of their respective governments and of any other public or

private body. This shall be without prejudice to the possibility for Member States to set up regulators having oversight over different sectors.

2. Member States shall ensure that national regulatory authorities or bodies exercise their powers impartially and transparently and in accordance with the objectives of this Directive, in particular media pluralism, cultural and linguistic diversity, consumer protection, accessibility, non-discrimination, the proper functioning of the internal market and the promotion of fair competition.

    National regulatory authorities or bodies shall not seek or take instructions from any other body in relation to the exercise of the tasks assigned to them under national law implementing Union law. This shall not prevent supervision in accordance with national constitutional law.

3. Member States shall ensure that the competences and powers of the national regulatory authorities or bodies, as well as the ways of making them accountable are clearly defined in law.

4. Member States shall ensure that national regulatory authorities or bodies have adequate financial and human resources and enforcement powers to carry out their functions effectively and to contribute to the work of ERGA. Member States shall ensure that national regulatory authorities or bodies are provided with their own annual budgets, which shall be made public.

5. Member States shall lay down in their national law the conditions and the procedures for the appointment and dismissal of the heads of national regulatory authorities and bodies or the members of the collegiate body fulfilling that function, including the duration of the mandate. The procedures shall be transparent, non-discriminatory and guarantee the requisite degree of independence. The head of a national regulatory authority or body or the members of the collegiate body fulfilling that function within a national regulatory authority or body may be dismissed if they no longer fulfil the conditions required for the performance of their duties which are laid down in advance at national level. A dismissal decision shall be duly justified, subject to prior notification and made available to the public.

6. Member States shall ensure that effective appeal mechanisms exist at national level. The appeal body, which may be a court, shall be independent of the parties involved in the appeal.

    Pending the outcome of the appeal, the decision of the national regulatory authority or body shall stand, unless interim measures are granted in accordance with national law.

Article 30b

1. The European Regulators Group for Audiovisual Media Services (ERGA) is hereby established.

2. It shall be composed of representatives of national regulatory authorities or bodies in the field of audiovisual media services with primary responsibility for overseeing audiovisual media services, or where there is no national regulatory authority or body, by other representatives as chosen through their procedures. A Commission representative shall participate in ERGA meetings.

3. ERGA shall have the following tasks:

    (a) to provide technical expertise to the Commission:

- in its task to ensure a consistent implementation of this Directive in all Member States,

- on matters related to audiovisual media services within its competence;

(b) to exchange experience and best practices on the application of the regulatory framework for audiovisual media services, including on accessibility and media literacy;

(c) to cooperate and provide its members with the information necessary for the application of this Directive, in particular as regards Articles 3, 4 and 7;

(d) to give opinions, when requested by the Commission, on the technical and factual aspects of the issues pursuant to Article 2(5c), Article 3(2) and (3), point (c) of Article 4(4) and Article 28a(7).

4. ERGA shall adopt its rules of procedure.

Directive on the Accessibility Requirements for Products and Services

Directive (EU) 2019/882 of the European Parliament and of the Council of 17 April 2019 on the accessibility requirements for products and services (Text with EEA relevance), OJ EU, L 151, 7 June 2019, p. 70–115.[124]

Recitals:

(11)The overall aim of the communication of the Commission of 6 May 2015'A Digital Single Market Strategy for Europe', is to deliver sustainable economic and social benefits from a connected digital single market, thereby facilitating trade and promoting employment within the Union. Union consumers still do not enjoy the full benefits of prices and choice that the single market can offer, because cross-border online transactions are still very limited. Fragmentation also limits demand for cross-border e-commerce transactions. There is also a need for concerted action to ensure that electronic content, electronic communications services and access to audiovisual media services are fully available to persons with disabilities. It is therefore necessary to harmonise accessibility requirements across the digital single market and to ensure that all Union citizens, regardless of their abilities, can enjoy its benefits.

[…]

(31)For the purposes of this Directive, access to audiovisual media services should mean that the access to audiovisual content is accessible, as well as mechanisms that allow users with disabilities to use their assistive technologies. Services providing access to audiovisual media services could include websites, online applications, set-top box-based applications, downloadable applications, mobile device-based services including mobile applications and related media players as well as connected television services. Accessibility of audiovisual media services is regulated in Directive 2010/13/EU of the European Parliament and of the Council, with the exception of the accessibility of electronic programme guides (EPGs) which are included in the definition of services providing access to audiovisual media services to which this Directive applies.

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[124] Available at: data.europa.eu/eli/dir/2019/882/oj.

Article 2

Scope

1. This Directive applies to the following products placed on the market after 28 June 2025:

[…]

(d) consumer terminal equipment with interactive computing capability, used for accessing audiovisual media services; and

[…]

2. Without prejudice to Article 32, this Directive applies to the following services provided to consumers after 28 June 2025:

[…]

(b) services providing access to audiovisual media services;

[…]

Article 3

Definitions

For the purposes of this Directive, the following definitions apply:

[…]

(5) 'audiovisual media services' means services as defined in point (a) of Article 1(1) of Directive 2010/13/EU;

(6) 'services providing access to audiovisual media services' means services transmitted by electronic communications networks which are used to identify, select, receive information on, and view audiovisual media services and any provided features, such as subtitles for the deaf and hard of hearing, audio description, spoken subtitles and sign language interpretation, which result from the implementation of measures to make services accessible as referred to in Article 7 of Directive 2010/13/EU; and includes electronic programme guides (EPGs);

[…]

(7) 'consumer terminal equipment with interactive computing capability, used for accessing audiovisual media services' means any equipment the main purpose of which is to provide access to audiovisual media services;

ANNEX I

ACCESSIBILITY REQUIREMENTS FOR PRODUCTS AND SERVICES

Section I

General accessibility requirements related to all products covered by this directive in accordance with Article 2(1)

[…]

(8) User interface and functionality design:

The product, including its user interface, shall contain features, elements and functions, that allow persons with disabilities to access, perceive, operate, understand and control the product by ensuring that:

[…]

(o) the product shall comply with the following sector-specific requirements:

(iv) consumer terminal equipment with interactive computing capability, used for accessing audiovisual media services shall make available to persons with disabilities the accessibility components provided by the audiovisual media service provider, for user access, selection, control, and personalisation and for transmission to assistive devices.

[…]

Section IV

Additional accessibility requirements related to specific services

The provision of services in order to maximise their foreseeable use by persons with disabilities, shall be achieved by including functions, practices, policies and procedures and alterations in the operation of the service targeted to address the needs of persons with disabilities and ensure interoperability with assistive technologies:

[…]

(b) Services providing access to audiovisual media services:

(i) providing electronic programme guides (EPGs) which are perceivable, operable, understandable and robust and provide information about the availability of accessibility;

(ii) ensuring that the accessibility components (access services) of the audiovisual media services such as subtitles for the deaf and hard of hearing, audio description, spoken subtitles and sign language interpretation are fully transmitted with adequate quality for accurate display, and synchronised with sound and video, while allowing for user control of their display and use.

[…]

Appendix H
Key messages from the workshop on making TV accessible

ITU Workshop on the Future of Television for Europe[125]

Session on making television accessible

Geneva, 7 June 2019

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[125] The outcome report of the ITU Workshop on "The Future of Television for Europe" is available at: www.itu.int/en/ITU-T/Workshops-and-Seminars/20190607/Documents/Outcome_Report.pdf

1.	Access to the media by persons with disabilities is a 'right', not a 'privilege'. The social model tells us that a disability arises when the environment does not support a person's capabilities. Whilst this is especially important for people who generally need adaptations to the environment, such as those who have difficulties hearing, moving or seeing, a consequence is that accessibility features are used by all people at different times (including older persons, refugees, illiterates, or based on specific needs or circumstances of any users); for example the number of people who will use subtitles is now actually three or four times the number with severe hearing loss.	The application of accessibility tools
2.	ITU should recognise that accessibility can provide business opportunities that can help pay for services. A key concept that must be taken into account is financial viability of accessibility propositions. Further, it should be recognised that the growing ageing population makes accessibility systems ever more necessary, and work should be planned accordingly.	The application of accessibility tools
3.	It should be recognized that the needs of persons with disabilities with 'interactive media', in addition to conventional media, are becoming important.	The application of accessibility tools
4.	The media needs of persons with cognitive differences, for example 'neuro-atypical' people should also be incorporated in the related accessibility work developed by the ITU.	The application of accessibility tools
5.	The process of creating accessibility services can begin at the design/script stage in programme making, given this is practical	Production Workflow
6.	The potential need for accessibility services for 360VR should be recognised and developed.	Accessibility Standards
7.	ITU-T Rec H.702 should be circulated to ITU-R SG6 and ITU-T SG9 for possible incorporation in their broadcast and cable systems. H.702 has many features including closed sign language, and a system of video relay to provide telephone calls for the deaf.	Accessibility Standards
8.	The ITU should investigate automatic subtitling systems and methods of slowing down audio playback rate to make it more understandable to the aging population.	Accessibility Standards
9.	The relevant accessibility requirements documents of the W3C should be circulated in the ITU groups concerned for possible adoption, e.g. W3C work on Audio Descriptions (TTML).	Accessibility Standards
10	Open source projects to develop software for accessible services should be initiated and encouraged.	Accessibility Standards

11.	The ITU should consider adopting a global standard set of icons for different accessibility systems (e.g. the icon set developed for use in Denmark).	Icon standards
12.	Increase the participation of persons with disabilities in the standardisation process. Standardisation should always be done in consultation with stakeholders and end users representatives	Standards making procedures
13.	ITU should provide accessible remote participation in meetings. It should also look into providing automatically subtitling all meetings, and possibly also automatic signing.	Standards making procedures
14.	All ITU (study) groups should coordinate and examine the related Recommendations it agrees to for accessibility implications.	Standards making procedures
15.	Though the ITU-D does not develop standards, ITU-D SG1 Q7 should become a member of the IRG-AVA, perhaps as an observer, to ensure appropriate coordination of related accessibility work among ITU sectors.	Standards making procedures
16.	We must recognize that convergence of media organisations and media technology is occurring, and this should guide our thinking.	Standards making procedures
17.	Standards developed originally for the web (e.g. W3C standards and WCAG 2.1 requirements) are taking over in all media, and this needs to be recognised for all media. This is the manifestation of 'convergence'.	Standards making procedures
18.	The ITU should provide appropriate ICT accessibility policy and strategy advice and develop and/or make available appropriate resources (including through enabling forums of discussion, raising awareness, sharing good practices, building capacity, develop specific tools and guidelines) – to help members to implement the UN CRPD.	Capacity building
19.	The ITU should consider developing and/or offering training course in development and remediation of digital accessible content, and promote the existing video tutorials made available by Digital Inclusion in BDT.	Capacity building