Best Practices In Digital Accessible Media

mada
digital access for all
نقلة رقمي للجميع

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About Mada

Mada Center is a private institution for public benefit, which was founded in 2010 as an initiative that aims at promoting digital inclusion and building a technology-based community that meets the needs of persons with functional limitations (PFLs) – persons with disabilities (PWDs) and the elderly in Qatar. Mada today is the world's Center of Excellence in digital access in Arabic.

Through strategic partnerships, the Center works to enable the education, culture, and community sectors through ICT to achieve an inclusive community and educational system. The Center achieves its goals by building partners' capabilities and supporting the development and accreditation of digital platforms in accordance with international standards of digital access. Mada raises awareness, provides consulting services, and increases the number of assistive technology solutions in Arabic through the Mada Innovation Program to enable equal opportunities for PWDs and the elderly in the digital community.

Vision

Enhancing ICT accessibility in Qatar and beyond.

Mission

Unlock the potential of persons with functional limitations (PFLs) – persons with disabilities (PWDs) and the elderly - through enabling ICT accessible capabilities and platforms.

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List of abbreviations

ACMA Australian Communications and Media Authority
ADA Americans with Disabilities Act
AVMSD Audiovisual Media Services Directive
ADHD Attention deficit hyperactivity disorder
CC Closed Captions
CEN European Committee for Standardization
CENELEC European Committee for Electrotechnical Standardization
CVAA Communications and Video Accessibility Act
DARE Digital Accessibility Rights Evaluation
DCMP The Described and Captioned Media Program
DFI Doha Film Institute
DTV Digital Television
EAA European Accessibility Act
EPG Electronic Program Guide
ESCWA United Nations Economic and Social Commission in Western Asia
HbbTV Hybrid Broadcast Broadband TV
HBKU Hamad Bin Khalifa University
ICT Information and Communication Technologies
IMSC Internet Media Subtitles and Captions
ITU International Telecommunications Union
ISO International Organization for Standardization
MAG Media Access Group at BGH [United States]
NCAM National Center for Accessible Media at BGH [United States]
OTT Over-the-top video service providers
PC Personal Computer
RNIB Royal National Institute of Blind People [United Kingdom]
RPwD Right of Persons with Disabilities Act (India)
SC Success Criteria
TV Television
UNCRPD UN Convention on the Rights of People with Disabilities
VoD Video on Demand
W3C World Wide Web Consortium
WCAG Web Content Accessibility Guidelines

I. Executive Summary

The executive summary synthesizes the main aspects of the report and provides a simple answer to the objectives of this project.

This guide defines media accessibility as a way to make audiovisual contents enjoyable and understandable by all users and audiences. Media accessibility is necessary to guaranteeing users the right of access to critical areas of their lives, such as education, emergencies, cultural life, and information. However, people with disabilities frequently find crucial barriers in this field when trying to access media in different domains: films & cinemas, television, video on demand and streaming services, Internet and social media. Therefore, this chapter shows a summary and outline of main barriers found when interacting with media from a sensory, physical, and cognitive point of view, and presents the main accessibility services used to overcome those barriers: transcripts, subtitles and captions, audio descriptions and sign language.

The following sections present the most relevant international, regional and national accessibility regulations for the media. This is followed by an analysis of the different approaches used to make media accessible: universal design, personalization, indirect interaction, as well as other technology trends that are contributing to improve media accessibility. To finalize the section, some requirements for different user groups are presented, together with some international best practices. Section number 5 analyses the different perspectives and strategies used by governments, the media industry and user organizations to enhance media accessibility.

Following, a chapter on the status of media accessibility in the State of Qatar is presented. It analyses the current regulatory framework and policies, presents examples on the status of media accessibility in each media domain and highlights some expectations and prospective for the media sector in Qatar.

The last chapter of this guide presents some conclusions and recommendations to enhance media accessibility in Qatar. With this aim, a set of commendations were put around seven objectives:

- Objective 1. Contribute to national and international legislation, regulations & standards.
- Objective 2. Foster the use of accessible media in the government and the public sector.
- Objective 3. Liaison with Qatar media industry.
- Objective 4. Support capacitation and professional training.
- Objective 5. Improving communication, dissemination and awareness rising.
- Objective 6. Fostering research and innovation.
- Objective 7. Involvement of user groups.

II. Introduction

This section starts with a definition and scope of media accessibility. It covers the benefits of availability of accessible media in Qatar and the international accessibility laws, standards and guidelines that could serve as a reference, outlining the main barriers found in the media domain.

2.1. What is media accessibility?

Media can be broadly defined as the communication means and tools used to create, deliver, store, and consume information. Traditionally it was related to the mass media communication industry (i.e., publishing, newspapers, cinema and radio and television broadcasting). But, in the 21st century, media have become mostly audio visual, and this report focus on audio visual works or products, and how they are created, exchanged, distributed, and used. The industry is living a rapid transformation from analogue to digital video format: there will be near 3,000 million digital video viewers worldwide in 2022 (200 million in Middle East and Africa)[1].

However, some people, mainly those with sensory impairments, experience vital barriers when trying to access both traditional and digital media. For example, a person who has a visual impairment will not be able to perceive the information conveyed through an image or animation, and a person who has a hearing impairment will not be able to access information conveyed through the spoken word or sound. For these persons, it is important that media is provided having accessibility in mind.

[1] eMarketer Global Digital video https://www.emarketer.com/content/digital-video-2019

Accessibility commonly refers to the inclusive practice of removing barriers to ensure equal access to built environments, information and communication technologies, goods and services, and facilities. It can benefit a substantial portion of the world population, but especially to the more than one billion people with disabilities (15% of the population according to the World Bank[2]).

The ultimate goal of making audiovisual media accessible is the enjoyment and / or content understanding of audiovisual works by all users and audiences. In achieving this objective, linguistic accessibility must be considered, since the world's nations are culturally and linguistically diverse: some countries have two or more official languages as well as other widely spoken dialects by immigrants and minority groups. Here, audio visual translation, subtitling and dubbing practices are also necessary to reach potential audiences and achieve full accessibility. They can be also a vehicle of social integration and promote social cohesion.

In order to achieve media accessibility, all the steps in the full audiovisual content service chain should be considered (ITU, 2013):

1. Audio visual works and their creation.
2. Media exchange & distribution.
3. Devices for rendering audio visual media.
4. Devices for interacting with media.
5. Using / consuming media.

Barriers at any point of this chain can make the entire experience inaccessible. For example, a movie can be created with subtitles, but these cannot be perceived by the person if the TV channel does not include them during broadcasting or if the TV equipment cannot receive or display them properly.

2.2. The importance of media for inclusion

Media accessibility is necessary for guaranteeing users their right of access to critical areas of life and their full participation in society, in diverse ways and places. These areas have a strategic social value for inclusion and societal development:

- **Education:** Audio visual contents are increasingly complementing, when not directly replacing, textbooks, and there is the risk of creating a new divide between those learning with audio visual contents and those that are not able to access them.
- **Emergencies, safety, and health risk prevention:** Information about situations that could affect people lives or health are frequently broadcasted using audio and video. In such situations, such as that caused by COVID-19, those with sensory impairments would be especially vulnerable if there are not accessible alternatives. Other examples can be found in safety instructions that are commonly transmitted using video by airlines and railway operators.
- **Access to cultural life:** Television programs and movies create a shared cultural experience beyond the mere entertainment value and serves as a medium for information and communication of history, traditions, science, and innovative ideas.
- **Right to be informed:** People with disabilities have the right to be informed about important news and recent developments in their countries, as a way to achieve participation and full inclusion in their societies.

Although media accessibility is especially regulated and enforced in many countries to address the specific needs of people with disabilities, it has the potential to benefit a large group of population. For example, the number of people using subtitles outnumbers three or four times those with severe hearing loss. Eventually, and considering the aging population, everyone may benefit from the accessibility of media at some point of their life. Moreover, media accessibility is not only relevant at individual, but also at family, community, and societal levels.

[2]World Bank – Disability https://www.worldbank.org/en/topic/disability

2.3. Domains of media accessibility

2.3.1. Films & cinemas

Watching a film in a cinema is an important social activity in a lot of countries. Traditionally, it also has been used as a mean to foster and disseminate culture and language. Moreover, watching an international film in their original language, frequently showing subtitles, is a powerful tool to learn foreign languages and to access to universal knowledge. Showing subtitles does not only helps hard-of-hearing individuals, but also those with a limited knowledge of language (e.g., tourists and immigrants).

When considering accessibility in cinemas there are two aspects to consider: the accessibility of the film contents and the accessibility of the venue. Modern digital films can include accessibility services that are delivered for everyone, but they can also be delivered to devices installed in certain seats or individually to each person mobile phone.

Figure 1. Assistive listening, audio description and closed captioning devices. Source: AMC Theaters

Some technologies allowing this are:

- **Headphones & listening devices: Different audio channels delivered directly to the user headphones can suit the needs for different languages, sound volume, and audio description.**
- **Smart glasses: These glasses will exhibit the captions directly superimposed in front of the person eyes while watching a movie.**
- **Caption stands: A device with a small screen that can be placed in the cup holder and can be adjusted to better suit the person line of vision when looking at the movie screen.**
- **Accessible cinema mobile apps: The person can use an app in their own mobile phone which is then synchronized with the film shown. These app can also function as a hub for information on the accessibility of the venues and movies, as well as an online ticking app.**

2.3.2. Television

There are three main aspects to be considered when addressing accessibility in the television domain: broadcasting, TV equipment & devices, and Electronic Program Guides (EPGs).

2.3.2.1. TV broadcasting

Television broadcasting is the transmission of television programming and electronic program guides. Nowadays there are different technologies and platforms that coexist, that could be categorized into three groups:

- Traditional broadcasting networks: Analogue or digital channels delivered through cable, satellite, or Digital Terrestrial TV (DTTV), that requires set-top-boxes (STBs) or integrated TV receivers that are standard compliant.
- IPTV systems: Channels delivered through the Internet and received by an app installed in the user device: smart TVs, laptop, PC, mobile phones, etc.
- Hybrid solutions: There are different systems and standards that combines both broadcast and Internet connection. For example, HbbTV[3] is a European enhanced broadcast system including some on-demand services and interactive components.

Accessibility services can be provided besides TV contents. For example, subtitles can be provided via teletext in analogue TV, together with the digital signals in DTV, or as a specific file or service through the Internet.

[2]HbbTV 2.0 https://www.hbbtv.org/

2.3.2.2. TV equipment

TV devices and receivers render the signal provided by broadcasters to the users. The type and quality of the equipment affect the viewer experience in diverse ways. For example, the equipment should be able to receive accessibility services such as subtitles and audio description and deliver them to the users in an appropriate way. Moreover, the interaction with the TV menus and information should be also barrier-free.

2.3.2.3. Electronic Program Guide (EPG)

EPGs are used to provide a list of channels and programs (current and scheduled). This is linked to additional information, such as a summary for programs and films metadata. In some countries, there exist regulations that oblige EPG provider to include features allowing people with disabilities to operate EPGs and to include information on the availability of accessibility services.

Figure 2. Example Electronic Program Guide (EPG). Source: SAMSUNG

2.3.3. Video on Demand and Streaming services

The evolution of the television industry brings new actors beyond the traditional, linear broadcasting services. Non-linear broadcasting services offer new features such as program replay and start-over and Video on Demand (VoD). By using VoD services, the user can browse the EPG and decide which program to watch and when. Popular international VoD services are Netflix, HBO, Amazon Prime or Disney+.

Moreover, TV broadcasting can also be delivered simultaneously through the Internet or via third-party video streaming services such as YouTube.

Finally, over-the-top (OTT) service providers offers video contents over the Internet and bypasses traditional distribution. They can distribute a set of national and international TV channels and VoD services, both open and by subscription.

There are several aspects of VoD and streaming services that could affect accessibility: the accessibility of the set-top-box and remote, the accessibility of the specific video player apps, and the accessibility of the media contents themselves.

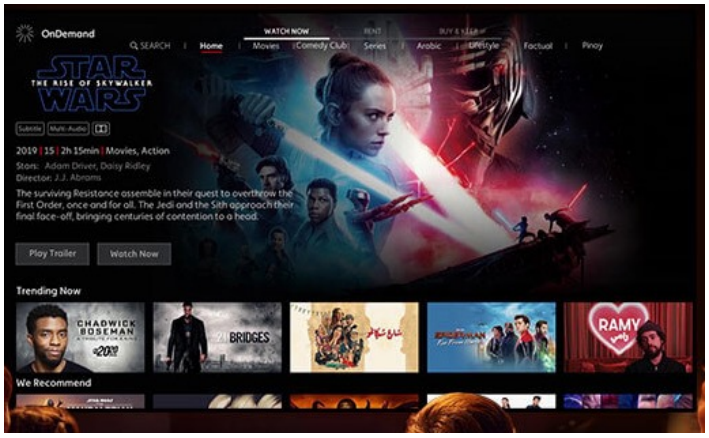


Figure 3. VoD services advertising by regional provider OSN Network.

2.3.4. Internet and social media

The number of users and the time used to watch online video contents is continuously growing each year. Beyond traditional broadcasting, user or corporate generated video contents are delivered directly to the consumers through platforms such as YouTube or Vimeo, embedded in websites and/or shared in social media (e.g., Twitter, Facebook, Instagram). This allows to watch audio visual contents in most computer devices and mobile phones, adapting to different user preferences and configurations.

In order to make online videos accessible, there are three aspects to be considered:

- The accessibility of the devices and operating systems (e.g., blind users using smartphones with a screen reader).
- The accessibility of the webpage (e.g., the video is embedded in a website that is already accessibility compliant).
- The accessibility of media player components (e.g., the interactive controls and menus of the media player should be operable by people with disabilities).
- The accessibility of the video contents (e.g., a video providing captions).

2.4. Accessibility barriers to media contents and services

As it has been shown, the current media environment is fragmented in terms of broadcasting technologies, delivery platforms, user devices and, also, in terms of the accessibility standards that could be expected. This situation causes several barriers affecting people with disabilities when trying to access media, and, as a result, they are unable to enjoy TV contents with family or friends, participate in conversations about social media videos or otherwise take part in important educational and cultural activities.
Some of the most frequent accessibility barriers affecting media are:

- Lack of textual alternative versions for audio and video contents that can accommodate the needs of people with sensory disabilities.
- Non-provision of sufficient media contents with sign-language interpretation, which is key for certain audiences, mainly deaf people.
- Non-accessible TV equipment and EPGs, impeding the interaction and selection of channels, the consultation of program information and/or the activation of accessibility services.
- Websites, apps, and social media used to deliver audio visual contents that does not follow accessibility standards, and therefore impede or create greater difficulties for a considerable number of users even when media are made accessible.
- These barriers do not only affect people with disabilities, and many people have difficulties when trying to understand spoken messages, or visual scenes or feel uncomfortable handling interactive menus and EPGs.

2.5. Media accessibility services

2.5.1. Transcripts

Text transcripts are the simplest way of providing access to both video and audio contents. They can be presented together with media, but they could be also provided as a separate file or service (e.g., a downloadable document or a teletext page). Transcripts can support diverse users' needs (e.g., for those who are deafblind or have reading impairments and cannot use captions as an alternative).

Figure 4. Example YouTube video with dialogue transcript

2.5.2. Subtitling and captioning

Subtitling is the synchronized provision of text on the screen that represent speech. They are often presented in a language other than the one used in the original video, so that it can accommodate the different languages understood by the audience.

Captioning is used to provide an alternative representation of audio in the language of the audience, and includes both speech and the descriptions of sound effects, music, laughter, screams, etc. Captions are provided using distinct colors to differentiate who is speaking and use background colors that do not interfere with the scene.

The main difference between subtitling and captioning is that subtitles are produced assuming that the audience can hear the audio but does not understand the original language, while captions are produced assuming that the audience does not hear the audio and need a textual alternative to both speech and sound.

There are two types of captions considering how they are produced, stored, and delivered:

- Open captions: Text is superimposed or burned-in the original recording, so they are 'open" for all audiences who are watching the video regardless of whether they need them.
- Closed captions (CC): In this system, captions are transmitted as data and delivered through a different channel than video, so they can be switched in or out according to users' preferences by using TV control or specific interactive elements.

Both subtitles and captions can be reproduced word-by-word, as verbatim, or edited and rewritten to produce a simplified text that is easier to read or understand. The verbatim version is preferred, and if an edited version is also provided, this should be marked as such (W3C, 2015)

Depending on the broadcasting system, TV equipment and/or media player used to deliver subtitles and captions, it may be possible to personalize text presentation. For example, the user may adjust font type, size and color and the size and layout of the background window.

Figure 5. Example video with captions and customized text layout. Source: W3C Video captions

2.5.3. Audio descriptions

Audio descriptions are extra audio commentary that explain what is happening in the screen. Audio description techniques include using pauses in speech to describe the scene, characters, costumes, gestures, etc. The described video is normally created as post-production using specialized audio-processing software to add commentaries, but it can be also planned during pre-production (e.g., creating the description besides the program script) or delivered live (e.g., a professional interpreter describes live events or news).

The reception of audio description normally needs that broadcasters and video service providers uses a second audio channel, that users can activate with the appropriate equipment (e.g., multiple audio tracks on a smart TV).

This service is primarily aimed at visually impaired and blind users, but other profiles could also benefit from providing extra details verbally, such as people with cognitive impairments, learning difficulties and the elderly. Moreover, audio description can be used in educational contexts to supplement information in learning materials for everyone.

Figure 6. Example video with enabled text and audio description. Source: W3C Video captions

2.5.4. Sign language

Providing signing to audio visual contents means presenting a visual alternative to speech and non-speech information using sing language. Sign language conveys meaning by using hand gestures, facial expressions, and body language. Sign languages are commonly used for communication by deaf and seriously hearing-impaired people, but there is not one universally recognized sign language, and there is country and regional variations that require a professional sign translation that is tailored to specific audiences. For example, there is an American Sign Language (ASL) and a British one (BSL), and while there are initiatives to unify a standard Arabic sign language, the reality is that the deaf community prefer to use their regional variants, such as the Qatari Sign Language.

Signing in media is primarily delivered open (mixed with the general video). But some technologies and devices also support "closed" sign language (the interpreter can be toggled on and appears alongside the main video, as an overlay).

Figure 7. Video with subtitles and superimposed sign language interpreter. Source: NHS England

2.5.5. Other accessibility features

- **Clean audio:** Sound technology can be used to help people with hearing loss to discriminate between background noise and the dialogues and/or foreground sound. For example, the audio can be processed to enhance speech frequencies while attenuating other such as music o ambient sounds. Clean audio can be delivered through an extra audio channel.
- **Video speed:** Some multimedia players allow to change the speed of the video. This is especially useful for people with cognitive impairments or learning disabilities, as well as for those people who are not proficient enough in the language used in the video.
- **Extended descriptions:** While video descriptions are provided using the pauses in conversations, some complex materials (e.g., science or educational) or specific audiences (e.g., those with cognitive impairments) would require additional explanations. Extended descriptions work by introducing pauses at specific moments to play longer descriptions, which would extend the normal length of the media content.
- **Easy to use menu navigation:** Using remote controls, EPGs and interactive menus imposes additional challenges to those related with the media themselves. Extended usability techniques must be applied to make interaction as much as easy-to-use and understand as possible. Nowadays, universal design is applied in the design of mainstream TV products, such as the voice-controlled remote in the Apple TV[4] or the full set of accessibility features in Samsung Smart TVs (see section 4.3.2.2).

[4]APPLE TV https://support.apple.com/guide/tv/accessibility-features-atvbaeff85db/tvos

III. Regulations and technical standards

The most advanced countries in terms of equal rights for people with disabilities have developed their standards, reports, guidelines and legislation appointing the implementation of digital accessibility criteria in the media domain. This section describes a summary of the most relevant documents.

3.1. International regulations, standards, and guidelines

3.1.1. The UN Convention on the Rights of People with Disabilities (UNCRPD)

The main international human rights instrument on disability is the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) which was adopted on 13 December 2006 and entered into force on 3 May 2008. Accessibility is the main principle in UNCRP to achieve equal access and the effective participation of people with disabilities in society.

As regards to media accessibility, it is specifically mentioned in different articles of the UNCRPD. The summary of the main aspects to consider is as follows:

- **The UNCRPD preamble recognized "the importance of accessibility to the physical, social, economic and cultural environment, to health and education and to information and communication, in enabling persons with disabilities to fully enjoy all human rights and fundamental freedoms." Communication includes accessible multimedia and ICTs.**

- **Article 9 of the convention claims that state parties shall take measures to ensure equal access of people with disabilities to information technologies and systems, considering accessibility and usability features for the protection and promotion of human rights of people with disabilities in all policies and programs. These measures should explicitly apply to information, communications, and other services, including electronic services and emergency services.**
- **The freedom of expression and opinion, and access to information is claimed in Article 21. Specific measures include providing information intended for the general public in accessible formats and encouraging the mass media, including provider of information through the Internet, to make their services accessible to people with disabilities.**
- **Finally, Article 30 recognized the right of people with disabilities to participate on an equal basis in cultural life. State parties should adopt measures to ensure that people with disabilities can enjoy access to cultural materials, television programs, films, theatres, and other cultural activities, in accessible formats. This is an article subject to progressive realization, that is, while this may take time to full realization, state parties should undertake measures to protect this right.**

3.1.2. International standards and guidelines

International and regional standardization bodies have delivered several technical standards that cover various aspects and domains of media accessibility. In addition to existing legal frameworks and technical standards, it is necessary to consider initiatives from and together with industry, manufacturers, and user organizations.

3.1.2.1. W3C work on media accessibility

The World Wide Web Consortium (W3C) delivers accessibility recommendations and guidelines that becomes de facto standards regarding Internet contents. With the evolution from traditional TV broadcasting to the current situation of multi-platform and multidevice TV, those standards are getting much more relevant for any type of media. Some relevant documents from W3C are:

- Media Accessibility User Requirements (2015)[5]

This document introduces the needs of users with disabilities in relation to audio visual contents, explaining alternative content technologies and how these content technologies fit in the larger picture of accessibility, both technically within a web user agent and from a production process point of view.

- Web Content Accessibility Guidelines WCAG 2.1. (2018)[6]

WCAG 2.1. are the recommendations of reference for Internet contents. They define four guiding principles, thirteen guidelines, and seventy-eight success criteria. In order to meet the needs of different groups and situations, three levels of conformance are defined: A (lowest), AA, and AAA (highest). The recommendations include nine success criteria related with audio and video media. They define which specific accessibility features (transcripts, captions, descriptions, sign languages) needs pre-recorded and live content, depending on the type of media. A summary of these features is shown in the following table:

[5]W3C Media accessibility requirements https://www.w3.org/TR/media-accessibility-reqs/
[6]WCAG 2.1 https://www.w3.org/TR/WCAG21/

Table 1. Summary of WCAG 2.1. success criteria related to media contents accessibility

	Live	Pre-Recorded
Audio-only	A: Transcripts (SC 1.2.1)	AAA: Live stream or accurate transcript when live (SC 1.2.9)
Video-only	A: Transcripts (or audio track) (SC 1.2.1) AAA: Transcript (SC 1.2.8)	
Video with audio	A: Audio description or transcript (SC 1.2.3) A: Captions (SC 1.2.2) AA: Audio description (AA 1.2.5) AAA: Sign language (SC 1.2.6) AAA: Extended audio description (SC 1.2.7) AAA: Transcripts (SC 1.2.8)	AA: Captions (SC 1.2.4)

In addition to criteria related to media contents, there are also other general requirements that should be applied to the functionalities of media players:

1. Provide keyboard support (A: SC 2.1.1, A: SC 2.1.2, AAA: SC 2.1.3, A: SC 2.1.4)
2. Make the keyboard focus indicator visible (A: SC 2.4.7)
3. Provide clear labels (A: SC 3.3.2, A: SC 1.3.1)
4. Have sufficient contrast between colors for text, controls, and backgrounds (AA: SC 1.4.3, AA: 1.4.11, AAA: 1.4.6)

- TTML Profiles for Internet Media Subtitles and Captions 1.2 (IMSC)[7]

IMSC tries to improve the interoperability between the different formats used for subtitles and captions in broadcasting systems and web media. The specification defines two profiles: a text-only profile and an image-only profile, which are intended for subtitle and caption delivery worldwide, including dialog language translation, content description, captions for deaf and hard of hearing, etc.

3.1.2.2. ISO/IEC standard for multimedia

The International Organization for Standardization (ISO), and concretely their committee ISO/IEC JTC 1/SC 35 User interfaces[8], has published different standards related to media accessibility. These are the most relevant ones:

- ISO/IEC TS 20071-21:2015, Information technology – User interface component accessibility – Part 21 Guidance on audio description

This document describes how live and recorded audio descriptions are created. Contents include how to develop an audio description, the styles of narration, the levels of importance, and how to describe relevant sounds and text on screen. It also proposes how to describe objects, characters, spatial-temporal settings, and relationships.

- ISO/IEC 20071-23:2018, Information technology – User Interface component accessibility – Part 23 Visual presentation of audio information (including captions and subtitles)

[7]IMSC 1.2 https://www.w3.org/TR/ttml-imsc1.2/
[8]ISO/IEC JTV 1/SC 35 https://www.iso.org/committee/45382.html

The document describes the several types of presentations, access, and display, and discusses the question of how to prioritize information, and refers to issues such as quality, end user involvement, and visual design. Special emphasis is made on how to subtitle speech and non-speech information and describes the different means of identifying speakers.

- ISO/IEC TS 20071-25:2017, Information Technology – User interface component accessibility – Part 25 Guidance on the audio presentation of text in videos (including captions, subtitles, and other on-screen text)

This standard provides guidance on how captions or subtitles and other on-screen text can be transmitted auditorily. It gives recommendations on how to create and deliver audio presentations of text in videos, and refers to specific aspects such as synchronization, establishing levels of importance or identifying the audio presentation of text in videos, among other aspects.

3.1.2.3. ITU standards and guidelines

The International Telecommunication Union (ITU) is the UN specialized agency of ICTs. ITU includes the working group IRG-AVA[9] that studies those topics related to audiovisual media accessibility and aims at developing draft recommendations for "Access Systems" that can be used for all media delivery systems, including broadcast, cable, Internet, and IPTV. ITU (2019) has several recommendations on accessibility of audiovisual media, especially for broadcasting services and TV equipment. Some relevant documents are:

- ITU T Rec. F.790: Telecommunications accessibility guidelines for older persons and persons with disabilities. Series F: Non Telephone Telecommunication Services. Audiovisual services. 2007[10].

Provides general guidelines for all forms of telecommunications equipment, software, and services in order to incorporate accessibility in product and services.

- 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, 2020[11].

This document defines three profiles for accessibility features in IPTV systems: 1) Basic (it only provides captions, and the user can personalize some setting); 2) Enhanced (it also includes sign language and audio description and additional personalization options), and 3) Main (in addition it includes accessibility synchronization features for recorded video and video on demand).

- Report ITU-R BT.2207-5 (10/2020) Accessibility to broadcasting services for persons with disabilities[12]

This document starts by acknowledging that reasonable measures on media accessibility depends on local conditions in each country, and present examples of the kind of technology that may contribute to accessible services for different user groups.

[9]IRG-AVA Intersector Rapporteur Group Audiovisual Media Accessibility https://www.itu.int/en/irg/ava/
[10]ITU T Rec. F.790 https://www.itu.int/rec/T-REC-F.790-200701-I/en
[11]ITU T Rec. H.702 https://www.itu.int/rec/T-REC-H.702-202008-I/en
[12]ITU R BT 2207-5 https://www.itu.int/pub/R-REP-BT.2207-5-2020

3.2. Regional and national regulations

The state of media accessibility in the world is variable and is highly affected by existing regulations in each country and region. The existence of these regulations responds to the initiative of governments, but they are influenced by other factors such as the prevalence of a specific broadcasting system in each country or the level of demand from user organizations.

Either way, an increasing number of countries are developing media accessibility policies. The following figure shows a world map charting the landscape of legislation, standards, and guidelines on media accessibility.

Figure 8. World map of media accessibility regulations. Source: Accessometer [13]

As this map shows, while regulations for media accessibility are frequent in America, Europe, East Asia, and Oceania, they are very scarce in Africa and the Middle East.

Although audio visual media are related with ICT and digital contents, country regulations do not equally cover areas such as TV and video programming in comparison with mobile communications and web accessibility. In 2019 ITU found that 20,5% of the countries have a regulatory framework on web accessibility,18,5% on mobile communications, but only 16,9% on TV and video programming[14]. Therefore, there are countries with high standards of ICT accessibility but with lower adoption of audio-visual accessibility. On the other hand, some countries have a strong regulation of media accessibility but rank lower in terms of ICT accessibility. As an example, the following table show the top ten countries according to the DARE index with a summary of media accessibility regulations.

Table 2. Country and regional media accessibility regulations according to DARE Index

Country	DARE Index	Media accessibility regulations
Qatar	1st	eAccessibility policy mention subtitles, but there are no obligations from service providers
Australia	2nd	Television captions are ruled by law since 1992
Israel	3rd	The Television Broadcasting Law regulates Subtitles and Sign Language use since 2005
European Union[15]	Italy (4th), France (6th), Ireland (7th), Malta (10th)	The European Accessibility Act affect ICT and television equipment. The Audiovisual Media Services Directive approved in 2018 introduce new requirements for media.
South Africa	5th	Electronic Communications Act of 2014 establish obligations for broadcasters to provide access services
Brazil	8th	Different rules and standards, including obligation to broadcasters to provide 24 hours of captions.
United States	10th	ADA standards affect movie theaters, the Communications and Video Accessibility Act (CVAA) affects video programming.

[13]MAP – Accessometer https://mapaccess.uab.cat/accessometer

The case of Qatar can be used as an example. The country ranks number 1 in the DARE index of digital accessibility, but the area of TV and Multimedia was underscored.

The following sections shows a summary of regulations on media accessibility from selected countries: Australia, Canada, European Union, India, and United States.

3.2.1. Australia

The Broadcasting Services Act from 1992 is the law ruling access services in television, which is regulated by the Australian Communications and Media Authority (ACMA)[16]. Captions must comply with requirements set out in legislation, industry codes of practice and a Television Captioning Quality Standard. In the last years there is an improvement process to reform the captioning regulation, and funding have been provided to introduce audio description in public broadcasting.

3.2.2. Canada

The Canadian Radio-television and Telecommunications Commission (CRTC) is responsible of the accessibility policies in broadcasting services, which include provisions related to the quantity and quality of closed captioning and audio description in TV programs[17].

The CRTC mission on television accessibility have been reinforced with the new Accessible Canada Act that became law in 2019. It is considered an overarching disability and accessibility legislation covering built environments, ICTs, communication, public procurement, and transport, and also affects the broadcasting and telecommunication sectors. The Canadian Radio-television and Telecommunications Commission will be responsible for enforcing the Act. The act also creates Accessibility Standards Canada to develop and revise standards, provide recommendations, conduct research, and share information and best practices.

3.2.3. India

The Right of Persons with Disabilities Act (RPwD) came into in 2017. Regarding media, its section 29 requires measures to promote and protect the rights of all persons with disabilities to have a cultural life, which includes ensuring that persons with hearing impairment can have access to television programs with sign language interpretation or subtitles. Moreover, section 42 regarding ICTs, also requires measures to ensure that persons with disabilities have access to electronic media by providing audio description, sign language interpretation and close captioning.

The Section 40 of RPwD act call for formulation accessibility rules, and the Ministry of Information and Broadcasting have issued the Accessibility Standards for Persons with Disabilities in TV programs[18]. As a summary, these standards include the following provisions:

- **Awareness and customer service: The public should be aware of TV programmer's accessibility requirements; service providers should publicize and create awareness, train the customer service, designate a single point of contact for info and complaints on accessibility, and use standardized language and symbols.**
- **TV programs access: Service providers should offer subtitles, closed captions and/or sign language, at their discretion. The ministry may mandate on regulations, targets, codes of good practices, guidelines for TV services and equipment, etc. Closed captions should be**

[14]ITU statistics – ICT accessibility https://www.itu.int/net4/itu-d/icteye/#/topics/2009

[15]The European Union is not listed in the DARE index, but their regulations are mandatory in several countries included in the ranking.

[16]Accessible television in Australia https://www.communications.gov.au/what-we-do/television/accessible_television

[17]CRTC Accessibility policies https://crtc.gc.ca/eng/television/acces/

[18]Ministry of Information and Broadcasting Accessibility Standards for Persons with Disabilities in TV programmes

delivered when technically feasible and provide sign language with quality.

- **Some contents are exempted:** Live and deferred live contents / events (e.g., sports), live news, music shows, music shows, debates, reality shows, advertisement.

3.2.4. European Union

- **European accessibility act**

In 2019, the European Accessibility Act (EAA) became a law. One of the main motivations of the regulation is to avoid the fragmentation both in country-level legislation and the market. This act provides a common framework for accessibility requirements and a clear definition of the legal obligations.

The EAA covers several ICT products and services, including audio visual media devices, such as TV equipment, and audiovisual media services, such as television broadcasting. To this regard, the EAA states:

> 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.

The directive includes an annex on the technical accessibility requirements for products and services, with some items related to media accessibility:

> 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.

- **Audiovisual Media Services Directive (AVMSD)**

At the end of 2018, the revised Audiovisual Media Services Directive (AVMS) became a law. It establishes that public and private TV channels, as well as video on-demand platforms will have to make their services "continuously and progressively more accessible to people with disabilities". Member states must encourage media companies to do this by delivering sign language, subtitling, audio description or easily understandable menu navigation. The directive pays special attention to emergency information, which should be always made accessible to persons with disabilities.

Media companies are encouraged to create and publish action plans regarding its accessibility, and states should provide regular reporting and establish a single contact point to provide information for consumers and receive complaints.

- **Adoption of AVMSD in the United Kingdom**

Although the UK will not be part of the European Union in the future, the country has adopted main EU regulations and maintains an important level of commitment with media accessibility.

In 2020, the **Audiovisual Media Services Regulations** was adopted to make amendments to different Communication and Broadcasting Acts in the United Kingdom. Ofcom, the National Regulatory Authority in charge of audiovisual services in UK, adopted the Code on television access services[19] that applies to television services licenses in accordance with these regulations.

[19]Ofcom's Code on Television Access Services https://www.ofcom.org.uk/tv-radio-and-on-demand/broadcast-codes/tv-access-services

The Code sets out guidance and requirements for EPGs and accessibility services (subtitling, audio description and signing), setting minimum targets in terms of hours of programming, claiming for the promotion of awareness to the potential audiences.

3.2.5. United states

Accessibility legislation in the United States is quite broad. Besides the Americas with Disabilities Act and the Section 508 of the Rehabilitation act, there are other specific regulations affection media accessibility. In the following paragraphs, the most relevant regulations are highlighted.

- **Americans with Disabilities Act (ADA) and rules for movie theaters** [20]

The Americans with Disabilities Act (ADA), signed in 1990 and amended in 2008, prohibits discrimination and guarantees that people with disabilities have the same opportunities as everyone else to participate in State and local government programs and services, to enjoy employment opportunities, and to purchase goods and services. There are requirements for movie theatres to provide assistive listening systems and information about their availability.

ADA adopts accessibility standards called the "2010 ADA Standards for Accessible Design". They set minimum requirements for newly designed and constructed or altered State and local government facilities, public accommodations, and commercial facilities to be readily accessible to and usable by individuals with disabilities. Chapter 7 of these standards are devoted to communication elements and features and includes a specific subsection 706 on the technical features for "Assistive listening systems" (e.g., compatibility with hearing aids).

ADA was revised in 2016 to also require movie theaters to provide movies with closed captioning and audio description when showing a digital movie that is distributed with such features. Moreover, entities should also have a minimum number of captioning and audio description devices.

- **Twenty-first Century Communications and Video Accessibility Act (CVAA)**[21]

The Communications and Video Accessibility Act (CVAA) was enacted in 2010 and aims to ensure that persons with disabilities can fully utilize emerging communications services and equipment and better access video programming.

- **Standards for the Section 508 of the Rehabilitation Act and Section 255 of the Communications Act** [22]

The Rehabilitation Act requires Federal agencies to make their electronic and information technology accessible to people with disabilities. Some examples of ICTs include computers, software, websites, information kiosks and other. Those devices can deliver audio and video, so the regulation is relevant for media accessibility.

The Section 255 Guidelines cover telecommunications equipment, such as telephones, mobile phones, set-top boxes, and computers and software needed to operate the telecommunications function of such equipment.

[20]ADA movie captioning rule https://www.ada.gov/regs2016/movie_captioning_rule_page.html

[21]CVAA Consumer Guide https://www.fcc.gov/consumers/guides/21st-century-communications-and-video-accessibility-act-cvaa

[22]Access board ICT standards https://www.access-board.gov/ict/

IV. Making media accessible for people with disabilities

This section describes different approaches that are used nowadays to provide accessible contents in the media domain for different user profiles, introducing international best practices.

4.1. Different approaches to inclusive media

4.1.1. Universal design and Design for all

Universal design and/or design for all refer to methods, processes and techniques used to design products, environments, programs, and services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. The aim is to build solutions that are equally usable by people with and without disabilities, although this does not exclude the use of assistive devices for groups or persons with disabilities where this is needed.

Several international standards and guidelines adopt universal design as a general approach (e.g., CEN-CENELEC Guide 6, 2014). According to the Center for Universal Design in North Carolina State University, there are seven principles than can be applied to guide universal design:

- **Principle 1:** Equitable use. The design is useful and marketable to people with diverse abilities.
- **Principle 2:** Flexibility in use. The design accommodates a wide range of individual preferences and abilities.
- **Principle 3:** Simple and intuitive use. Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.
- **Principle 4:** Perceptible information. The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.
- **Principle 5:** Tolerance for error. The design minimizes hazards and the adverse consequences of accidental or unintended actions.
- **Principle 6:** Low physical effort. The design can be used efficiently and comfortably and with a minimum of fatigue.
- **Principle 7:** Size and space for approach and use. Appropriate size and space are provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

Addressing media accessibility from a universal design perspective means applying all these principles considering the whole media value chain: program production techniques, TV receivers and equipment, media players and interfaces, etc. (ITU, 2020).

4.1.2. Personalization

An approach that is complementary to universal design is that of personalization (also known as individualization). It brings to the next level the principle of "flexibility in use", acknowledging that the whole society is compound of individuals with differences, and accessibility tools can be seen as personalization options that can be used by anyone who wish, and not only by people with disabilities.

Physical products and environments are not modifiable by users, but technologies and digital contents can be designed in a way that allow users to decide the way in which they interact with the system, the format of the contents and the cognitive strategies used to access the information.

One example of personalization applied for the media context would be the use of closed captions. Any user can choose to active or deactivate them depending on the situation (e.g., when viewing a video on a noisy or quite environment) or to select a preferred language depending on the context (e.g., in the mother language when being relaxed or in the original version when trying to learn a new language).

4.1.3. Indirect interaction

We have seen that universal design and personalization tries to allow all users to directly interact with a system, independently of their needs. The approach called "indirect interaction" shifts the user interaction to the Internet and the user interface, so users can operate on their own devices which are already configured according to their needs and preferences, and have the corresponding assistive technologies installed when necessary.

In the context of media accessibility, this is especially convenient in the cinema and television domains, where several people with different requirements can be accessing media through the same device (i.e., the movie screen or smart TV). In those scenarios, an individual secondary device (e.g., a tablet or smartphone, or a specific listening device) can be used to control and deliver accessibility services.

Indirect interaction can be complemented with personalization, so user profiles can be created with specific configuration setting for each person.

4.1.4. Technology trends contributing to media accessibility

There have been some remarkable tech innovations in recent years that bring new opportunities to media accessibility. In this section, there are some examples that would bring a new level of accessibility to media solutions in the short term.

- **Real-time closed captioning using speech recognition**

Automatic speech recognition allows to provide subtitles and closed captions in real time. A typical speech recognizer software in trained with dictionaries, acoustic models and language models

that does not work well in live situations where there are different speakers, background noise and emotional utterances. One technique to overcome this barrier is re-speaking, where a trained person (e.g., a professional interpreter) repeats what is heard in the live program into a speech recognition software trained for their voice and pronunciation. The reliability of speech recognition software is progressing, and there are new commercial systems that can provide automatic captions with high quality like APPTEK system[23] or SONIX (this system also claims to provide automatic closed captions in Arabic[24]). This is a great advance for media accessibility in live TV programs and shows, such as news or sport events.

Moreover, main video sharing platforms such as YouTube are providing automatic subtitle generation for the contents. Although the quality of results depends on the language, it is an alternative to provide text alternatives when edited subtitles or captions are not available.

- Machine translation to sign language avatars

Computerized sign language production is more complex than speech-to-text machine translation. Like spoken languages, sign languages have their own grammatical rules and linguistic structures, and therefore it is not simply an exercise of mapping text to gestures word-by-word. Moreover, sign language is not a concatenation of isolated glosses, and any context and meaning are also conveyed by non-manual features.

However, there have been important advances in the last years, both at academic research and commercial product & services. One example is the European project Simax[25] that uses a semi-automated sign-language translation system and make it available as a cloud service. Simax received the World Summit Award in 2019 in the category of Inclusion and Empowerment.

[23]APPTEK https://www.apptek.com/solutions/live-closed-captioning-appliance

[24]SONIX in Arabic https://sonix.ai/easiest-way-to-create-closed-captions-in-arabic

[25]Simax https://simax.media/?lang=en

Figure 9. Sign language avatar provided by the Simax system

In September 2021, Mada launched Bu Hamad[26], the first realistic avatar that interpret in real time written text to Qatari Sign Language, taking in consideration all components of Sign Language (hand movements, hand shapes, facial expression, body movements, eye gaze, etc...). Bu Hamad can be added to any website to reach the AAA accessibility level.

Figure 10. Bu Hamad sign language avatar provided by Mada

The World Deaf Association and the World Association of Sign Language Interpreters made a statement in 2018 about the use of avatars[27], highlighting that computer generated signing avatars cannot render culturally appropriate translations,

[26]Bu Hamad https://mip.mada.org.qa/solution/bu-hamad-sign-language-avatar/

[27]Statement on the use of signing avatars https://wfdeaf.org/news/resources/wfd-wasli-statement-use-signing-avatars/

and therefore they are not sufficient as a substitute for human signers. However, they may be relevant in certain situations, such as pre-recorded customer information. Research advances would make it more practical at some point in the future.

- **Real-time synchronization of accessible services in personal devices**

With new mobile devices, smartphones, and tablets, together with the advent of streaming video platforms, the concept of cinema and television is an entire ecosystem in which hardware, software, broadband networks, and broadcasting intervene to provide a new type of entertainment. Applying the indirect interaction approach, accessibility services such as subtitles, audio description or sign language interpretation can be delivered directly to the user device.

However, while indirect interaction is a promising approach, there have been some challenges impeding their implementation and use. One of these challenges is that of synchronization, for example, how to provide subtitles that appear in the user devices while the action is taking place in the main screen.

In recent years, technological innovation has allowed the creation of commercial services that support the provision of real-time synchronization. Some examples of media accessibility apps in the media context are shown in the following table:

Table 3. Selection of media accessibility apps according to services. Source: Oncins & Orero (2020) Services offered - Subt: Subtitles; AD: Audio description; SL: Sign Language

App	Subt.	AD	SL	URL
Cinema Connect	X	X		https://en-us.sennheiser.com/news-cinemacon-nect-a-new-cinema-experience-with-sennheiser-
Cine Para Todos	X	X	X	https://cineparatodos.gov.co/671/w3-propertyval-ue-34249.html
Earcatch		X		https://earcatch.co.uk/
Go Theatrical	X			https://theatrecaptioning.com.au/
GalaPro	X	X		https://www.galapro.com/
Greta	X	X		https://www.gretaundstarks.de/greta/GretaAnd-Starks
Movie reading	X	X	X	https://www.moviereading.com/
Speakie		X		http://www.accessibility-service.info/speekie/
Whatscine / Whatsmedia	X	X	X	http://whatsmedia.tech/english.html
Verbavoice	X		X	https://www.verbavoice.de/english

One of these services is Whatsmedia[28], a company with branches in Spain and United States that delivers cinema and television accessibility services directly to the user mobile phone. The user downloads the accessibility service file in their device and uses the device microphone to listen the sound of the main screen and synchronize both plays.

[28]Whatsmedia http://whatsmedia.tech/english.html

Figure 11. Accessibility services offered by the Whatsmedia mobile app

4.2. Addressing user needs

People with sensory impairments (people that are deaf, hard-of-hearing, blind or visually impaired) are frequently named as those experiencing more problems accessing the media. However, there are different barriers that are related not only with the perception of audiovisual contents, but also with the way in which the media products and services are operated and understood.

The next section reviews the needs and user requirements for media accessibility from several reference sources (G3ict, 2011; ITU, 2020; Ofcom, 2021; W3C, 2015). They are presented organized as regards to four different user groups:

- People with hearing impairments.
- People with visual impairment.
- People with cognitive disabilities and learning difficulties.
- People with physical and mobility impairments.

4.2.1. People with hearing impairments

Hearing impairments are characterized by a total or serious loss of hearing (mild, moderate, severe, or profound loss). People with hearing impairments may have difficulties or inability to detect low intensity sounds and/or the full range of sound frequencies, require higher cognitive effort to understand speech or discriminate sounds, especially in noisy environments, as well as reduced ability to orientate in the space using sound location. This has consequences on the strategies used for communication: some people use hearing aids or cochlear implants, others can communicate through oral language and lip-reading, while there are also deaf people whose native language is sign language. Moreover, there is an increasingly portion of the population with slight hearing loss (e.g., due to incorrect use of headphones). Older people also suffer from presbycusis, a hearing loss related with aging that makes some sound more difficult to hear. Regarding media, people with hearing impairments experience difficulties to follow spoken conversations or listen important sound effects in movies or TV programs. Part of the deaf community will also have problems to access media if sign language interpreting is not provided.

These are some of the key issues to be considered to provide accessible media for people with hearing impairments:

1. Cinemas or theaters showing digital movies should provide assistive listening devices and display subtitles and captions by any method.
2. Broadcasting services should include subtitles and captions for movies, TV programs and Internet videos.
3. Make the presentation of subtitles and captions optional by offering closed versus open captions.
4. Provide sign language translations for the most important programs (e.g., news) and emergency and public service information.
5. TV equipment and user controls. TV devices and receivers should be compatible with accessibility services standards and being capable of displaying closed captions. User should be able to control volume and activate / deactivate accessibility features.
6. Quantity and quality in TV programs. Certain international standards required TV broadcasters to provide a minimum number of hours of programming with captions and sign language. Beside quantity, it is also important to ensure that people with hearing impairments can have access to quality programs such as news, documentaries, and top ranked movies.

7. EPG and interactive menus. Information on how to use accessibility services and the availability of subtitles, captions, and sign language should be included. In order to facilitate navigation, those programs with accessibility services should be highlighted or listed apart.
8. Video on demand and streaming. Those digital programs and films that includes captions in their original format should be also included when distributed through video on demand. If the VoD platform allow to play back recorded or stored programs, viewers should be able to turn on/off the closed captions.
9. Internet videos and social media. Comply with web content accessibility guidelines related to audio visual contents: provide subtitles, allow volume control independently of the device controls. Follow the platforms' best practices when sharing videos in social media.

4.2.2. People with visual impairments

Visual impairments can be of quite different nature, but people with these conditions can be categorized in two segments, total blindness, and low vision. Blind people are those who are not able to perceive any information by their sight, or only have a slight perception of light (may be able to distinguish between light and dark, but not the shape of objects). People with low vision are those who, with the best possible correction, could see or distinguish, though with great difficulty, some objects at close range. This group includes conditions as the loss of visual acuity, contrast sensitivity, color perception, central field, or peripheral vision. In the best of conditions, some of them can perceive part of moving scenes, but with considerable effort and using special aids. These are some of the fundamental issues to be considered to provide accessible media for people with visual impairments:

1. Cinemas or theaters. Digital movies should provide audio descriptions by any method.
2. Broadcasting services. Movies, TV programs and Internet videos should include audio descriptions.
3. Optionality. Make the presentation of audio descriptions optional by using a secondary audio channel.
4. TV equipment and user controls. TV devices and receivers should be compatible with accessibility service standards and being able to pass through accessible audio descriptions and emergency information, if technically feasible. User should be able to control volume and activate / deactivate accessibility features.
5. Quantity and quality in TV programs. Certain international standards required TV broadcasters to provide a minimum number of hours of described programs. Beside quantity, it is also important to ensure that people with visual impairments can have access to quality programs such as news, documentaries, and top ranked movies.
6. EPG and interactive menus. The information displayed should be accessible for blind and visually impaired, who also should be able to navigate and interact with the menus (e.g., personalizing text color, size, and contrast, and providing text to speech). Information on how to use accessibility services and the availability of audio description should be included. In order to facilitate navigation, those programs offering audio description should be highlighted or listed apart.
7. Video on demand and streaming. Those digital programs and films that includes audio description in their original format should be also include when distributed through video on demand. If the VoD platform allow to play back recorded or stored programs, viewers should be able to turn on/off the audio description.
8. Internet videos and social media. Comply with web content accessibility guidelines related to audio visual contents: provide audio descriptions, avoid sound interferences with screen readers and allow user to control media players using keyboard-only. Follow the platforms' best practices when sharing videos in social media.

4.2.3. People with physical / mobility disabilities

Physical and mobility disabilities affect people who are not able to move by themselves or to operate with objects, or that have difficulties to do so. Some physical ability and characteristics that could impact accessibility for these users include body size, upper and lower body movement and strength and endurance. As regards to media accessibility impairments, impairment in the movement of upper limbs may include tremors, lack of coordination and paralysis, and would impact the interaction with remote controls, menus, and media players. Some requirements for the media context include:

1. Cinemas or theaters. As a first step, the physical accessibility of the venues should be ensured, but also other steps in the process. For example, the ticketing machines or online booking services should be already accessible.

2. TV equipment and user controls. Remote controls should be easy to hold with large well-spaced buttons, or one that can be laid on a flat surface and operated using one hand.

3. EPG and interactive menus. Operating the media interface should not require performing double clicks or fast movements. If the technology allows voice interaction, the main functions required to operate media should be made available using speech recognition.

4. Internet videos and social media. Media players used in websites and social media should conform with WCAG 2.1., with especial consideration to those success criteria related to keyboard support.

4.2.4. People with cognitive disabilities

Cognitive disabilities refer to a wide range of conditions that may include intellectual disabilities, developmental and autism-spectrum disorders, attention deficit hyperactivity disorder (ADHD), as well as learning difficulties such as dyslexia and dyscalculia.

The accessibility supports for these different conditions are cross-domain, and may include:

1. Personalization of text in subtitles. Some people with dyslexia read and understand the text better when specific fonts type, size and color are selected to accommodate their needs.
2. Video speed. User may be able to adjust the playback rate of the time-based media tracks to between 50% and 250% of real time. Some online media players, such as YouTube, offer this possibility.
3. Enhanced subtitles. According to W3C (2015) subtitles can be enhanced for people with cognitive disabilities including timed text cues that have been enriched with further information (e.g., glossary definitions, foreign terms, jargon, or descriptions for other difficult language).
4. TV equipment and user controls. TV remotes, interactive menus should be easy-to-use and support learnability. Help guides and tutorials should be made considering the literacy and readability level of all audiences).

4.3. International best practices

4.3.1. Films & cinemas

4.3.1.1. The Accessible Film Festival (Turkey

Derived from the simple fact that every individual has the right to participate in the cultural life, Accessible Film Festival started its journey in 2013 as an event where everybody can watch films under equal conditions. Some accessible features provided during the festival:

- Turkish audio description for those who are vision impaired.
- Turkish caption subtitling for those who are hearing impaired or hard of hearing.

- Turkish sign language translation during the Q&A sessions following the screenings.
- All venues selected for the screenings are accessible.

The festival presents over 30 recent and classic examples of Turkish and world cinema, every year in an accessible structure, either feature films, documentaries, or short films. These films are collected in the Accessible Film Library, which aims to be an accessible film archive.

More information: http://www.engelsizfestival.com/en

4.3.1.2. Accessible Screenings (UK)

ACCESSIBLE SCREENINGS UK

Accessible Screenings UK is an initiative of the UK Cinema Association (UKCA), a trade body that represents well over 90 per cent of UK cinema operators. It collects information on inclusive films and venues and provides a comprehensive and searchable listings database for accessible screenings, considering the following types of accessibility features:

- Audio descriptions
- Subtitled
- Autism friendly
- Dementia friendly

Accessible Screening also provides information about the CEA Card, a national scheme allowing people with disabilities to get a free extra ticket for an accompanying person.

More information: https://accessiblescreeningsuk.co.uk/

4.3.2. Television

4.3.2.1. AMI (Canada)

AMI ACCESSIBLE MEDIA INC.

AMI is a media company established in 1989 that entertains, informs, and empowers Canadians who are blind or partially sighted. AMI provides different media accessibility services though their channels:

- **AMI-tv:** Is the world's first television network to broadcast all programs with open described video and closed captioning. The channel is included as part of the basic digital cable package from most television providers across the country, as wells as through their website and mobile app.
- **AMI audio:** Is an accessible television channel and streaming service offering a variety of compelling stories and engaging original content. It can be accessed on television, AMI website or by downloading AMI-audio podcasts.
- **Described video guide:** The DV Guide is a comprehensive list of all described programming in Canada (not only those of AMI) that enables viewers who are blind or partially sighted to plan their TV viewing in advance.

More information: https://www.ami.ca/

4.3.2.2. Samsung Smart TVs (International)

SAMSUNG is a worldwide leader in smart TV equipment that has a strong commitment to accessibility. Their SMART TV equipment includes:

- **Voice Guide:** Voice Guide enables the television to read on-screen text and EPG information, providing verbal feedback about the selected volume, current channel, and program information.
- **Audio Description:** Support for an additional audio track which provides a verbal description of the scene.
- **Video adjustments:** High Contrast menus, enlarge text, grayscale and color inversion accommodate to the needs of different visual impairments.
- **Learn Remote Control and Menu Screen:** Through this feature visually impaired or blind users can quickly learn the location and operation of the buttons on their remote control and menu screen without affecting normal TV operation.
- **Multi-output Audio:** If one member of your family has hearing difficulties and needs to listen through their own headphones, Multi-output Audio facilitates this without automatically disabling the audio from the TV speakers.
- **Subtitle:** Support for subtitles displayed as text on the TV screen.
- **Sign Language Zoom:** Automatically recognizes and enlarges the sign language area for the hearing-impaired.
- **Accessibility Shortcuts:** An easy, one-touch route to an on-screen menu which allows to view or adjust the status of the TV's Accessibility features.

More information: https://www.samsung.com/us/accessibility/televisions/

4.3.3. Video on Demand and Streaming

4.3.3.1. Movistar 5S (Spain)

Movistar+ is the VoD platform of Telefónica, which has more than 4 million subscribers in Spain. Their services include Movistar+ 5S, the first TV to offer accessible prime content (more than 2000 titles including films, episodes, and documentaries) with subtitles, audio description and sign language for people with visual and hearing disabilities.

More information: Movistar+ 5S

Figure 12. Screenshot from a Movistar+ 5S movie with captions and sign language services.

4.3.3.2. BSL zone (United Kingdom)

The British Sign Language Broadcasting Trust (BSLBT) commissions television programs made in British Sign Language by Deaf people for Deaf people. These programs are broadcasted in specific time slots in channels Film4 and Together TV, and made available online through BSL Zone website.

Figure 13. Screenshot of an online video with captions and sign language in BSL Zone website.

More information: https://www.bslzone.co.uk/about

4.3.4. Internet and social media

4.3.4.1. Described and Captioned Media Program (United States)

Described and Captioned Media Program

The DCMP is funded by the U.S. Department of Education and administration by the National Association of the Deaf. It provides services designed to support and improve the academic achievement of students who are blind, visually impaired, deaf, hard of hearing, or deaf-blind. Their services include more than seven thousand high quality educational videos.

They also maintain a YouTube channel with short videos and an archive of described and audio described classic movies.

More information: https://dcmp.org/

V. Strategies to promote media accessibility

This section discusses the importance of promoting media accessibility, presenting different perspectives, strategies, and best practices.

5.1. Perspectives and strategies from governments and policy makers

5.1.1. International e-accessibility policy toolkit (ITU-G3ict)

This toolkit was designed to address policy makers and regulators in the development of e-accessibility policies. It also identifies several best practices related to different ICTs, including radio and television. Regarding the television broadcasting and audiovisual domain, it recommends promoting accessibility in both TV equipment and programs, improving the use of audio description, captioning and sign language.

Some horizontal practices such as public procurement are also included, highlighting that this is also an incentive to vendors to also provide accessible ICTs to the general public.

More information: http://www.e-accessibilitytoolkit.org/

5.1.2. UN ESCWA Arab Digital Inclusion Platform (ADIP) project (Middle East)

The advancement of e-accessibility, which focuses on technology access and use for all, at national level through policy is necessary to ensure that the surrounding environment deploys technology and innovation efficiently to ease their access. United Nations Economic and Social Commission in Western Asia (ESCWA), under the Arab Digital Inclusion Platform (ADIP) project, have developed two templates to support Arab countries in the development of e-accessibility policies. the templates are:

- ESCWA template on national policy of e-Accessibility for the Arab region.
- ESCWA template on technical guidelines of e-Accessibility for the Arab region.

These templates were presented during an online consultation in November 2020 and made available through the ADIP platform.

More information: https://www.unescwa.org/arab-digital-inclusion-platform

5.1.3. Ofcom (United Kingdom)

Ofcom is the regulator for the communications services, including radio, TV, and video on demand. Regarding TV access services, their work is guided by the Code on Television Access Services that sets out the guidance and requirements for subtitling, sign language and audio description. Their activities include:

- Promote best practices and guidelines for public and private broadcasters in terms of television access services.
- Carry out consultations and run consumer panels with people with disabilities in order to study their needs and improve the communications and TV services.
- Make studies and provide annual reports on the extent to which broadcast television channels and on-demand program services carried subtitles, audio description and/or signing.

More information: https://www.ofcom.org.uk/tv-radio-and-on-demand/broadcast-codes/tv-access-services

5.2. Perspectives and strategies from the media industry

5.2.1. GBH (United States)

GBH Educational Foundation is a public broadcasting service based in Boston. Established in 1951, it had a significant role in the development of closed captioning and audio description technologies for broadcast television. They host two world-leading units in media accessibility:

- Media Access Group (MAG): As pioneers in closed captioning for audiences who are deaf or hard-of-hearing, MAG provide services to the media industry in the US, producing thousands of hours of live and taped broadcast and cable television programs, streaming content, documentaries, music and videos, museums, and attractions.
- National Center for Accessible Media (NCAM): NCAM provide strategic planning and advising, training, accessibility evaluation and contribute to the main international standards and regulations concerning media accessibility.

More information: https://www.wgbh.org/foundation/what-we-do#accessibility

5.2.2. Media Access Australia (Australia)

MAA is an independent not-for-profit charitable organization dedicated to increasing web and digital accessibility for people with disability. It was formed out of the Australian Caption Centre in 1982, and since 2017 it works under the umbrella of the Center for inclusive design.

More information: https://mediaaccess.org.au/

5.3. Perspectives and strategies from user organizations

5.3.1. Broadcasting Accessibility Hub (Canada)

The Canadian Hard of Hearing Association, The Broadcasting Accessibility Fund and The Canadian Radio-Television and Telecommunication Commission runs collaborate in this initiative to increase awareness and information about media accessibility. The website provides information and resources to people living with hearing loss, featuring information on accessibility in broadcast media such as television programming, talk based radio, and internet multimedia.

More information: https://chha.ca/baf/

5.3.2. European Blind Union – Accessible films (Europe)

The European Blind Union has started a campaign to call for funding of accessible films. Only a fraction of television or cinema content in Europe is produced in an accessible version in the first place, which means that films do not include audio descriptions and subtitles. Their proposal is:

- Include audio description and audio subtitling among the selection and award criteria of European funding opportunities.
- Set a target of at least 25%of films that receive media production or distribution funding to have an audio description and audio subtitling in the languages of the production.

More information: http://www.euroblind.org/new-ebu-position-paper-media-funding-european-film-industry-promote-equal-access-culture-persons

5.3.3. Royal National Institute of Blind People (RNIB) (United Kingdom)

One of the most important aspects to improve media accessibility is to inform the beneficiaries, promote the use of access services, improve public awareness, and empower consumers to claim for their rights. RNIB maintain a section of their website with specific information about audio description, television, cinema, and broadcasting accessibility.

More information: https://www.rnib.org.uk/information-everyday-living-home-and-leisure/television-radio-and-film

VI. Status of media accessibility in the State of Qatar

This is a core section in this report, as a result of the fieldwork conducted with online interviews and consultations with relevant stakeholders. First, it introduces the regulatory framework and policies affecting media accessibility in Qatar. Second, it describes the different perspectives (governmental, media industry and user organizations). Finally, it will conclude summarizing stakeholders' main expectations and prospective on media accessibility.

6.1. Regulatory framework and policies

6.1.1. Legislation on disability in Qatar and the implementation of UNCRPD

The reference law covering the needs of people with disabilities in Qatar is law No. 2 of 2004 in respect of People with Special Needs. This law set the ground for the recognition of the rights of people with disabilities in Qatar, and regulates aspects of education and health, as well as economic and social aspects concerning persons with disabilities. However, The law does not incorporate specific provisions related to accessibility.

The UN Convention on the rights of persons with disability (UNCRPD) was ratified by Qatar in 2008 and submitted its initial report to the Committee on the Rights of Persons with Disabilities in June 2012. The Committee considered this report and published a list of Concluding Observations on September 3, 2015. The Committee recommends "a comprehensive accessibility plan with the allocation of sufficient resources, enforceable and effective sanctions for noncompliance, and a road map based on detailed data with a defined timeframe. The Committee also recommends that the State party promote universal design for all buildings and public services, information and social communication media, transport and services open to the public, and that it incorporates accessibility standards into public procurement criteria."

On 20th October 2020, the Committee published a list of issues prior of the submissions of the next Qatar national reports. In the document, they request information about some topics that are related to media accessibility:

- Measures taken to promote universal design for all new and existing buildings and public services, information and communications and social media, transport, and services open or provided to the public.
- Existing broadcasting services that are accessible to deaf persons, (...) and the provision of audio description, interpretation and captioning of video content.
- How far it has gone in taking appropriate measures to ensure the accessibility of libraries, audiovisual materials, and broadcast services to persons with disabilities.

6.1.2. Qatar National eAccessibility Policy

Qatar's eAccessibility Policy (2011) set the basis for an accessible ICT ecosystem, enabling persons with disabilities to take full advantage of ICTs and improving the general usability of ICT for everyone. This policy highlighted barriers in five key areas, including accessible digital contents and, within them, accessible video programming.
The Ministry of communications and Information Technology consider that "increasing the availability of accessible video programming, will benefit the country as well as the whole of the Arabic speaking world. It therefore calls upon local publishers, media producers and distributors to make digital content and video programming more accessible, usable and available.".

The policy required all producers / distributors of digital video programming in Qatar to develop a plan that enables them to deliver their programming with captions. The plan should include provisions for:

- Open captioning of pre-recorded videos, including commercials, until closed captioning features are widely supported by video display equipment in Qatar.
- Providing at least 450 hours per year of captioned video programming in 2013 (equivalent to 0.5 hour per day per company)
- Providing at least 900 hours per year of captioned video programming in 2015 (equivalent to 1 hour per day per company).
- Providing captioning of digital video programming displayed in public areas such as the airports, public parks, shopping malls, exhibition centers, museums and sports stadiums by 2015.
- Providing captioning of any emergency messages broadcast to the public within 6 months of the effective date of this policy.
- Giving preference to digital video programming that includes either open or closed captioning as part of procurement processes.
- Collaborating with hardware and software vendors to ensure that set-top boxes, remote controls and the software on screen menu systems can accommodate accessible digital video programming features.

However, this policy is not mandatory.

6.1.3. Qatar ranking in DARE index

The Digital Accessibility Rights Evaluation (DARE) Index is an initiative from the G3ict organization to benchmark and trace the progress of countries in ICT accessibility. The index measures three categories

of variables: country commitments, capacity, and outcomes. Qatar efforts in digital accessibility have been awarded with the 5th place in 2018 and with 1st place in the ranking in the 2020 edition, which is an extraordinary achievement.

However, it should be noticed that the TV and multimedia domain is an area that could be improved, since it was not possible to collect information about the outcome in this domain and it only achieved 3/5 points in terms of level of implementation.

6.2. Status of accessibility in each media domain

6.2.1. Films & Cinema

Accessibility provisions are not very frequent in Qatar cinemas. Movies have been mostly imported from foreign countries and, while some movies can be seen with subtitles in Arabic, English and other languages, they are provided as open captions. As the viewing audience could speak various languages - due to Qatar's demographic being made up of a largely non-domestic workforce - a large segment of the viewing audience can be excluded if a method to read different languages are not provided (e.g., closed captioning through mobile apps).

There are some provisions available in Qatar cinemas is physical accessibility. Two of the major cinema chains in Qatar (Novo cinemas and Vox cinemas) offer allocated wheelchair seats at the screens according to their FAQ section of their website. However, they do not include any updated information about the general accessibility of the venues or access features such as subtitles for each film.

An exception to the general lack of accessibility in commercial films and cinemas is the inclusive screenings organized by the Doha Film Institute29 during the Ajyal Film Festival. Since 2016, and with the support of the HBKU's Translation and Interpreting Institute, they have provided captions, sign language and audio description for a selection of Arabic films presented in the festival.

[29]Doha Film Institute (DFI) https://www.dohafilminstitute.com/

Source: 'Al-Johara' and 'Kashta' – An Inclusive Experience (2017)

These films were presented during inclusive screening sessions that were attended by the Qatari community of people with disabilities. Qatari deaf and blind people were involved through their societies and informed through dedicated accessible advertising to social media.

Source: Theeb – An inclusive experience (2018)

An additional way to access films is through DVDs, Blue Rays and other physical and digital video delivery formats. Beside private consumption, public libraries also offer access to commercial films, documentaries, and educational videos. The Qatar National Library offer a service for people with disabilities[30] with access to large-print books, audiobooks and books in braille for visually impaired readers, while a dedicated assistive technology space helps people with disabilities access information and library materials, including eBooks, audiobooks, music, and videos. Indeed, their catalogue include a few hundreds of digital films, DVDs and Blue Rays, and is not unusual to find that they include subtitles, captions and audio

[30]Qatar National Library Access services https://www.qnl.qa/en/people-with-disabilities

descriptions in several languages. Unfortunately, "accessibility" is not part of the advanced search, but in the future the library would offer a selection of accessible media from their catalogue.

6.2.2. Television

The presence of TVs in households in Qatar have been increasing during the last years, and it is expected to continue growing.

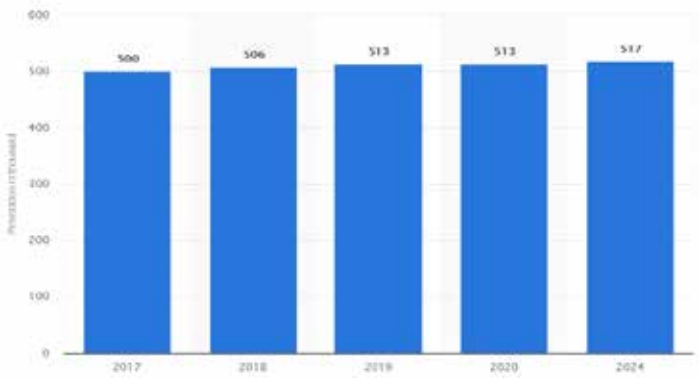


Figure 14. Television household penetration and forecast in Qatar. Source: Statista[31]

In this study, seven media professionals working for different television channels in Qatar were interviewed and most of them have reported a general lack of accessibility provisions in TV programs. Due to the lack of specific legislation and standards, currently there are no obligations or expectations of traditional broadcasters in Qatar to make their services accessible.

This situation results in the general absence of subtitles, audio description and sign language contents for movies and TV programs, with the only exception of the use of sign language in some news or political programs:

- Aljazeera Network offers two news broadcasts daily, each broadcast lasting 20 to 30 minutes, the first being at 11 A.M., and the second being at 5 P.M.
- QatarTV offers one broadcast daily, at 6 P.M., and ensures to consistently provide information from the Ministry of Health on COVID-19.
- Al Kass TV offer some language-interpreted news during news.
- beIN Sports News has recently appointed a sign language interpreter.
- Al Rayyan TV provided sign language-interpretation in some sports-related programs during the world cup.

Figure 15. News with sign language interpretation in Al Jazeera. Source: www.singlingtv.org

The TV professionals interviewed provided some recommendations to improve the status of media accessibility, which are summarized below:

- There is a need to develop national laws and implementing policies on media accessibility. It is necessary to work with top-level decision makers and stakeholders in the media sector, as well as accessibility experts to implement these policies.
- There is a lack of expertise regarding media accessibility in media corporations. Therefore, a first step should be to build capacity and train skills. Experts in accessibility should be hired to provide training, and then designate a department to be responsible of media accessibility inside those companies.
- Raise awareness, both inside the media sector and within the public, about the needs of people with disabilities regarding audiovisual contents. Related with this, hiring people with disabilities in the media sector would contribute to increase their visibility.

[31]Television household penetration in Qatar from 2017 to 2024 https://www.statista.com/statistics/999636/qatar-tv-household-penetration/

- Create a national competition or awards for channels or TV programs that contribute to the inclusion of people with disabilities.

6.2.3. Video on Demand and Streaming

The offer of Video on Demand and Streaming video platforms is growing in Qatar. The three main competitors would be the major telecom providers in Qatar: Ooredoo and Vodafone, as well as BeIN group. They all have their own VoD and streaming platform.

- Ooredoo TV: The basic package includes 190 + popular local and international channels as well as on demand movies and series, and advances packages allow to access international and regional networks such as STARZPLAY or OSN. Although Ooredoo does not provide specific information about accessibility, it seems that some accessibility features are available: language subtitles are available on demand and being an android-based set-top box it offers voice operations and has the potential to support standard Android accessibility tools.

Figure 16. Example remote control and player with subtitles from Ooredoo.

Source: https://www.ooredoo.qa/portal/OoredooQatar/otv

- Vodafone Giga TV: Provides instant access to more than one hundred channels, in addition to a video on demand channel. The set-top-box is based on Android TV, so some accessibility features may also be available.

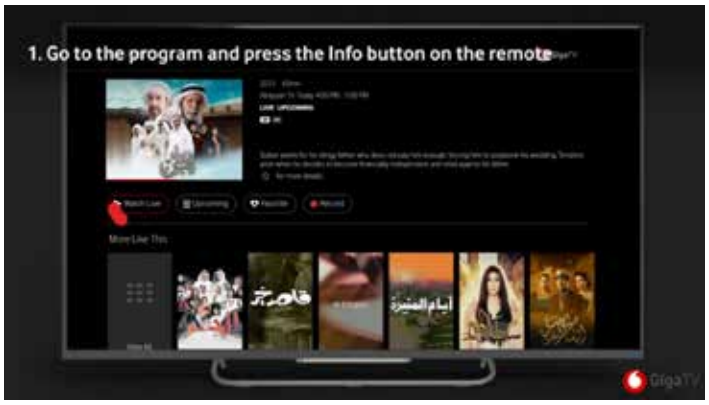


Figure 17. Interactive menu from Vodafone Giga TV. Source: https://www.vodafone.qa/en/gigatv

- Bein Connect: Offers online live streaming of all the biggest games, championships and entertainment, as well as variety of the latest and most popular local and international movies and TV shows on demand. beIN Connect app supports most smart devices and operating systems. The App offers subtitle for on-demand movies in both English and Arabic. Bein Sports does not offer any other information about the accessibility of the app.

Apart from these three national providers, many worldwide platforms such as Netflix or Apple TV can be accessed from Qatar. It can be expected that they maintain the same quality of accessibility services that they offer in other countries.

6.2.4. Internet and social media

Due to the lack of accessibility in TV channels, many disabled people prefer to access media through YouTube and other online streaming services, where it is easier to find captioned or described materials in international videos.

For this project, we explored a list of relevant YouTube channels in Qatar to assess the provision of accessibility features:

Table 4. YouTube channels from relevant organizations in Qatar

Organization	Sector	URL
Ministry of Education & Higher Education	Government	https://www.youtube.com/c/eduqatar/
Ministry of Transport & Communications	Government	https://www.youtube.com/user/ictqatar/
Ministry of Public Heath	Government	https://www.youtube.com/user/OfficialSCHQatar/
Qatar Foundation	Education	https://www.youtube.com/user/qatarfoundationqa
Qatar University	Education	https://www.youtube.com/c/qataruniversity/
Qatar Television	Media	https://www.youtube.com/c/QatarTelevision/
Al Rayyan TV	Media	https://www.youtube.com/user/AlrayyanTV/
The Peninsula Newspaper	Media	https://www.youtube.com/c/ThePeninsulaNewspaper/
Gulf Times	Media	https://www.youtube.com/c/GulftimesVideos/featured
Ooredoo Qatar	ICT & Telecomm	https://www.youtube.com/user/OoredooQatar/
Vodafone Qatar	ICT & Telecomm	https://www.youtube.com/user/vodafoneqatar
MADA Center	ICT & Telecomm	https://www.youtube.com/c/madacenterQatar/
Doha Film Institute	Culture & Sports	https://www.youtube.com/user/dohafilm/
Road to 2022	Culture & Sports	https://www.youtube.com/c/RoadToГ·ГГ/

Few examples of videos with subtitles, descriptions or sign language have been identifies. Moreover, when options such as subtitles in English or Arabic are provided, they are offered open and do not take advantage of the capacities of the YouTube tools to activate or deactivate different language versions of subtitles and transcripts.

However, there are some disability awareness videos distributed by different organizations. These are some examples:

- Vodafone Qatar – International Day of Sign language https://www.youtube.com/watch?v=PcgQm180VXQ
- Sasol - Definitely able campaign – Cinema scenario https://www.youtube.com/watch?v=PvZN8KWaRAI
- Mada Awareness Campaigns https://www.youtube.com/watch?v=-Jcx7xZxfqA

Figure 18. Screenshots from some awareness videos in Qatar with subtitles / sign language.

6.3. Expectations and prospective on media accessibility

From the point of view of accessibility regulations

Despite the lack of legislation in Media accessibility, there are some positive forces that may contribute to improve the importance of this topic:

- Qatar has been recognized as a world leader in digital accessibility by the DARE index, but at the same time the assessment pointed out the lack of information on TV and multimedia accessibility in the country.
- The television, broadcasting and media sector in Qatar are changing. Together with the technical and industry innovations that are bringing new actors to broadcasting, there are new projects that may be strategic for improving media accessibility in the future. This will probably made necessary additional regulations, and accessibility may be one topic to address.

- **Qatar has a center (MADA, Assistive Technology Center) specialized in the field of digital accessibility which aims to support local organizations to comply with the national digital accessibility policy and standards.[AA1]**

From the point of view of the media industry

While normal subtitles from English to Arabic, as well as many other languages, are widely available in cinemas and televisions in Qatar, other accessibility features such as captions or audio descriptions remain largely unavailable. Experts consulted claim that it is still necessary to convince the people in charge of media in Qatar that everyone has the right to knowledge, and hence make attaining it easy and accessible for everyone, regardless of disability.

Besides rising awareness, the media industry should perceive accessibility as a market opportunity, especially when considering the market of media in Arabic and the MENA countries. According to Shahan Akkawi, Senior manager for Postproduction at the Doha Film Institute, "Beyond considering inclusive screenings as a Qatar trial, there is a huge market of accessible media in Arabic. There has been already some interest in the distribution of accessible films from other countries".

One example of the recent changes in the media landscape in Qatar that can contribute to increase the market interest for media accessibility is the Qatar Media City, which has been established by law [32]. The law gives the new Media City a number of powers, including to conduct research and consultancy work related to laws and rules regarding the regulation and promotion of media and scientific research, provide administrative, logistic and technical services to licensed companies that carry out activities of all kinds in the Media City.

Moreover, as envisioned by this project, Qatar may become the center of excellence for media in Arabic. Although an industry of media access services (subtitling, describing, sign language interpretation) does not exist in the Arab world, it does in countries which official languages are English, Spanish, German, as well as other European languages. Therefore, and beyond the specific impact in Qatar, there is also an opportunity to become the reference in media accessibility services in Arabic.

Currently there are very few examples of companies or individuals in Qatar that can provide quality subtitling, audio descriptions or sign language interpreting for televisions, films, and video in general. This would be a potential barrier to media accessibility in the future. However, the unavailability of services is not due to a lack of trained professionals but to a lack of demand for professional access services.

In relation to this, Dr. Joselia Neves, Associate Dean for Social Engagement and Access in the Translation and Interpreting Institute at HBKU says "We can provide a list of fifty of our alumni, trained in the basic techniques through our specialized Masters in Audiovisual Translation. They work with blind, deaf and hard of hearing audiences, captioning, audiodescription, etc., but to become excellent professionals they need to work in real projects in the media industry".

Regarding sign language interpretation, Dr. Sameer Semreen, Sign Language interpreter for Al Jazeera and Arab representative in the World Association of Sign Language Interpreters, state that "Qatar is considered one of the countries most focused on benefit from sign language interpretation services, having consulted professionals in the field, despite the rather small population of the deaf in Qatar. Hence, there exists a reasonably high demand for sign language interpreters in Qatar. They are trained and have the skills and experience needed to take on the job."

From the point of view of user organizations

People with disabilities in Qatar have not been very demanding about their accessibility rights in the past, partially due to a lack of awareness of which accessibility provisions are available. As an example, ILUNION conducted a fieldwork on accessibility in Qatar in 2015, in which different interviews and group discussions with individuals with disabilities took place. In our conversations at that time, people were not able to name any examples of audio description or sign language in television or cinema. They did not consider that topic as a big issue, also because they did not know that a technical solution exists.

[32] Law No. 13 of 2019 on the Establishment of Media City

But the situation has changed during the last 5 years. The access to online videos and VoD and streaming platforms allowed to search and find media that suits the needs of these user groups. Sign language has been established in Qatari TV news, and the Ajyal Film Festival has provided these user groups an opportunity to experience an accessible film that is relevant for them. In words of Shahan Akkawi, Senior manager for Postproduction at the DFI, "Bringing cinema to these people was not only an inclusive experience, but also a cultural experience since many of them have never seen an Arabic movie".

VII. Conclusions and recommendations for Qatar

This concluding chapter will review project objectives and provide a summary of main findings of this report and provide recommendations and future directions to foster the implementation of media accessibility in Qatar.

7.1. Conclusions

The media is undergoing an unprecedented transformation in the last decade. Analog television is being replaced by digital television, VoD, streaming platforms and other systems to consume online videos through the Internet. Paper newspapers have become online media where audiovisual content increasingly replaces written text. Qatar is no exception to this trend, and in recent years the audiovisual media landscape is opening to new national and international players.

Audiovisual media are important tools in achieving people's rights to information, participation in society, education, health, and access to leisure and cultural life. Despite this importance, there are barriers that limit people's access to traditional media such as cinema, radio and television, as well as the new online media. People with disabilities are especially affected by these barriers. In this respect, legislation, standards, reports and guidelines appointing

the implementation of accessible media have been developed by the most advanced countries in terms of equal rights.

In a broader and international range of application, the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), the American with Disabilities Act (ADA), the European Accessibility Act or the India's Right of Persons with Disabilities Act (RPwD) are examples of national-supranational legislation that provide a general framework for accessibility requirements and clear definition of the legal obligations. Together with these general accessibility regulations, some countries have also developed laws and standards that are specific to media domains, such as the Twenty-first Century Communications and Video Accessibility Act (CVAA) in the United States or the Audiovisual Media Services Directive (AVMSD) in Europe.

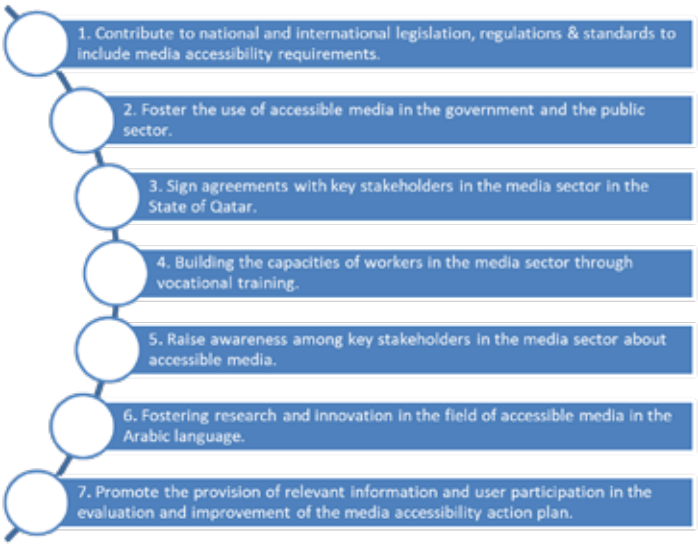
The regulations cover equipment and technologies, broadcasting systems, access services and interactive solutions. The field of application is extremely broad, and includes cinema, television, VoD and streaming systems, and online videos transmitted over the internet and social media.

Functional requirements vary depending on the disability. Some examples follow. People with hearing impairments need an alternative to audio information in the form of subtitles and captions, others even would need a translation into sign language to understand the messages. People with severe visual impairments will need audio descriptions of what is happening on the screen. People with physical and mobility impairments will need television and video controls that are easy and comfortable to operate. Finally, people with cognitive and learning disabilities will benefit from easy-to-use interactive menus and controls, as well as different video personalization options to accommodate their cognitive abilities. Some of these requirements may apply to all systems providing video contents, while others are domain specific.

The level of media accessibility in Qatar is still low when compared with the most advanced countries in this field. Despite the achievements in terms of digital accessibility that have led the country to lead the DARE index in 2020, examples of accessibility provisions in cinema, televisions and online videos are still very scarce. However, the situation has improved during the last years, with some concrete actions that can be considered as best practices and a starting point to enhance the accessibility of the media in Qatar in the medium term.

7.2. Recommendations for Qatar

Based on the analysis of international regulations and best practices and the analysis of the status of media accessibility in Qatar included in this report, a set of recommendations have been put:



VIII. References

A list of references used in the report and links to external resources.

Accessible Media Inc. (AMI) & G3ict (2013). Making Television Accessible to Everyone: AMI and the Canadian Experience. G3ict. Retrieved from https://g3ict.org/publication/making-television-accessible-to-everyone-accessible-media-inc-ami-the-canadian-experience

CEN-CENELEC GUIDE 6:2014-12. Guide for addressing accessibility in standards

EBU (2020). Freedom to Look, Freedom to Listen: Progress in Media Accessibility Technology. Retrieved from http://tech.ebu.ch/publications

EN 301 549 V3.2.1 (2021). Accessibility requirements suitable for public procurement of ICT products and services in Europe. Retrieved from https://www.etsi.org/deliver/etsi_en/301500_301599/301549/03.02.01_60/en_301549v030201p.pdf

European Disability Forum (2016). Audiovisual Media Services Directive. Toolkit for transposition

G3ict (2011). Making television accessible for everyone. ITU. Retrieved from https://www.itu.int/en/ITU-D/Digital-Inclusion/Pages/Digital_Inclusion_Resources/Making_TV_accessible.aspx

G3ict (2015) Promoting Global Digital Inclusion through ICT Procurement Policies & Accessibility Standards. G3ict Publications and Reports

IRIS plus 2014-3 Enabling Access to the Media for All. Barrier-free access to audiovisual content: A fundamental human right. Retrieved from https://rm.coe.int/1680783db1

ISO/IEC TS 20071-21:2015 Information technology - User interface component accessibility - Part 21: Guidance on audio descriptions

ISO/IEC 20071-23:2018 Information technology - User interface component accessibility - Part 23: Visual presentation of audio information (including captions and subtitles)

ISO/IEC TS 20071-25:2017 Information technology - User interface component accessibility - Part 25: Guidance on the audio presentation of text in videos, including captions, subtitles and other on-screen text.

ITU (2020). Report ITU-R BT.2207-5 (10/2020). Accessibility to broadcasting services for persons with disabilities

ITU (2019). Future of accessible audiovisual media services, tv and video programming.

Oncins, E., & Orero, P. (2020). No audience left behind, one App fits all: an integrated approach to accessibility services. Journal of Specialised Translation, 24, 192-211. Retrieved from https://www.jostrans.org/issue34/art_oncins.pdf

U.S. Department of Justice (2010). ADA Standards for accessible design. Retrieved from https://www.ada.gov/2010ADAstandards_index.htm

The Supreme Council of Information & Communication Technology. ictQATAR (Sep 2011). Qatar's eAccessibility Policy

IX. Annex I. Media accessibility checklist

A checklist for quick evaluation of media accessibility in cinema & films, Television VoD and streaming, and Internet and social media domains.

Films & Cinemas

- ☐ Arabic / English subtitles are available (captions are preferred)
- ☐ Provides assistive listening systems
- ☐ Informs about the accessibility of the venue
- ☐ Provide information about the accessibility features of the films
- ☐ There is a way of receiving access services in the personal device (e.g., through a mobile app).

Television

TV broadcasting

- ☐ Captions are provided. Number of hours per year_____
- ☐ Closed (instead of open) captions are provided.
- ☐ Audio description is provided. Number of hours per year_____
- ☐ Sign language is provided. Number of hours per year_____
- ☐ The TV broadcaster inform about the availability of access services
- ☐ Access services are also provided for live contents
- ☐ All information about emergencies is provided with captions, audio description and sign language

TV equipment

- ☐ Receivers are compatible with broadcasting accessibility services
- ☐ The equipment is able to present captions and audio descriptions using a secondary channel
- ☐ Remote controls include options to activate and deactivate accessibility features

Electronic Program Guide (EPG)

- ☐ Provides information about the availability and accessibility of programs
- ☐ A mechanism is in place to filter a list of programs with accessibility features
- ☐ The display is customizable (text size, colors, controls, etc.)
- ☐ The EPG can be delivered through text-to-speech

Video On Demand And Streaming Services

- ☐ Set-top-boxes are compatible with accessibility services
- ☐ The equipment is able to present captions and audio descriptions using a secondary channel
- ☐ Remote controls include options to activate and deactivate accessibility features
- ☐ Films and TV programs that were originally broadcasted with accessibility features should maintain them when distributed on demand
- ☐ The speed of the video can be set to a rate between 50% and 250% of real time

Internet And Social Media

- ☐ Captions are provided
- ☐ Audio description is provided
- ☐ Sign language is provided
- ☐ The media player provides keyboard support
- ☐ The media player allows to control the volume independently of the device controls
- ☐ The website or social media used to deliver video meets WCAG 2.1 recommendations

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