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EasyTV: Easing the access of Europeans with disabilities to converging media and content.

Report on Identification of Standardisation Bodies

EasyTV Project

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| 4 | Mediavoice SRL | MV | IT |
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DEFINITIONS, ACRONYMS AND ABBREVIATIONS

| ACRONYMS / ABBREVIATIONS | DESCRIPTION |
|--------------------------|--------------------------------------------------------------|
| 3GPP | The 3rd Generation Partnership Project |
| AENOR | Asociación Española de Normalización y Certificación |
| AFNOR | Association Française de Normalisation |
| API | Application Programming Interface |
| ARIA WG | Accessible Rich Internet Applications Working Group |
| AVMSD | Audiovisual Media Service Directive |
| BSI | British Standards Institution |
| CE | Conformité Européenne |
| CEN | Comité Européen de Normalisation |
| CENELEC | Comité Européen de Normalisation Electrotechnique |
| CSS | Cascading Style Sheets |
| DCAD | Dynamic Coalition on Accessibility and Disability |
| DECT | Digital Enhanced Cordless Telecommunications |
| EEA | European Economic Area |
| EFTA | European Free Trade Association |
| EG | ETSI Guide |
| EN | European Standard, telecommunications series |
| ERGA | European Regulators for Audiovisual Media |
| ES | ETSI Standard |
| ESO | European Standardisation Organisations |
| ETSI | European Telecommunications Standards Institute |
| FG AVA | Focus Group on Audiovisual Media Accessibility |
| GS | Group Specification |
| GSM | Global System for Mobile communications |
| ICT | Information and Communication Technology |
| IEC | International Electrotechnical Commission |
| IPC | International Paralympic Committee |
| IPTV | Internet Protocol TV |
| IRG-AVA | Intersector Rapporteur Group Audiovisual Media Accessibility |

| | |
|----------|----------------------------------------------------------------------|
| ISO | International Organization of Standardization |
| ISP | International Specification Groups |
| ITU | International Telecommunication Union |
| JCA-AHF | Joint Coordination Activity on Accessibility and Human Factors |
| LPD | Low Power Device |
| MPEG | Moving Picture Expert Group |
| NSAI | National Standards Authority of Ireland |
| OneM2M | One Machine to Machine |
| SP | Special Report |
| SVG | Scalable Vector Graphics |
| TETRA | Trans European Trunked Radio |
| TR | Technical Report |
| TS | Technical Specification |
| UNE | Una Norma Española |
| W3 | World Wide Web |
| W3C | World Wide Web Consortium |
| WAI ARIA | Web Accessibility Initiative – Accessible Rich Internet Applications |
| WCAG | World Content Accessibility Guidelines |
| WOFF | Web Open Font Format |
| XML | Extensible Markup Language |
| OCR | Optical Character Recognition |
| UIDL | User Interface Definition Language |
| HbbTV | Hybrid Broadcast Broadband TV |
| DVB-SUB | Digital Video Broadcasting Subtitles |
| GUI | Graphical User Interface |
| SDK | Service Development Kit |
| AAL | Active Assisted Living |
| SyC | Systems Committee |
| WG | Working Group |

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EXECUTIVE SUMMARY

This document is the second deliverable in WP7. It has been written by UAB, with the collaboration and the help of the other six technological partners from the project: MV, UPM, CERTH, ENG, ARX and CCMA and the two user associations FCNSE and UICI. After the introduction it has two sections. The first presents the different standardization agencies both worldwide and in Europe, and their area of expertise. The second presents in each agency the work where EasyTV participates and may potentially participate during the life of the project. This document contains in the annex a sample of the type of participation EasyTV has taken to two standardisation agencies in the form of “contribution” to ITU IRG AVA and ISO.

1. INTRODUCTION

Standardisation plays a leading role in creating the EU Single Digital Market. Standards support market-based competition and help ensure the interoperability of complementary products and services. EasyTV is aware of the importance of working within the framework of standards since they reduce costs, improve safety, and enhance competition. The EU has an active standardisation policy that promotes standards as a way to better regulate and enhance the competitiveness of European industry.

The European Union promotes an active standardisation policy because standards are viewed as a means to improve regulation and as a way to enhance European industry competitiveness. As explained in the dedicated website¹ on standardisation policy, standards at the European level “support market-based competition and help ensure the interoperability of complementary products and services. They reduce costs, improve safety, and enhance competition”.² The Joint Initiative on Standardisation³ published on 13th June 2016 is a good example of such interest, as it sets out a shared vision for European standardisation. A set of actions is being drafted based on three priorities: awareness, education and understanding of the European standardisation system; coordination, cooperation, transparency, inclusiveness, competitiveness, and international dimension.

Standards are a pre-requisite for laws. Unless there is a standard to refer to, a law will be meaningless, and this has a direct implication in media accessibility. In Europe, following the Audiovisual Media Service Directive (AVMSD), all countries had the obligation to pass legislation regarding accessibility services offered in public broadcasting⁴. Since there is no EU standard for subtitling, sign language interpretation or audio description the AVMSD could only measure the quantity of programmes to be broadcast with each service. An exception is the Spanish Standard on subtitling (UNE135020), audio description (UNE135010), and easy reading (UNE/PNE153101 EX) issued by UNE (formerly AENOR). To reflect on the EU diversity, each EU country has its standardisation agency: AFNOR in France, BSI in the UK, NSAI in Ireland, just to mention a few.

EasyTV would like to work through standardisation awareness in maintaining and improving the presence of EU industry in international markets. These are keys to creating jobs and growth in Europe. EasyTV has also pledged the interest in standardisation using the new accessibility icons developed by the Danish Public Broadcaster DR.

¹ https://ec.europa.eu/growth/industry/policy/ict-standardisation_en [retrieved 31/08/2018]

² https://ec.europa.eu/growth/single-market/european-standards/policy_en [retrieved 20/12/2017]

³ http://ec.europa.eu/growth/content/joint-initiative-standardisation-responding-changing-marketplace-0_en [retrieved 20/12/2017]

⁴ To consult AVMSD transposed to each EU country, please see <http://avmsd.obs.coe.int/cgi-bin/search.php> [retrieved 20/12/2017]

2. STANDARDISATION AGENCIES

In this section a description of the agencies relevant to this project and the developed technologies and services are described.

2.1. Global standardization agencies

There are some agencies working at a global level, some agencies which join efforts for certain topics at global level as is the case for accessibility ISO/IEC, and there are agencies which are as we write this deliverable joining global actors such as ISO/IEC and ITU.

2.1.1 International Electrotechnical Commission (IEC) [1]

Millions of devices that contain electronics, and use or produce electricity, rely on IEC International Standards and Conformity Assessment Systems to perform, fit and work safely together. Founded in 1906, the IEC (International Electrotechnical Commission) is the world's leading organization for the preparation and publication of International Standards for all electrical, electronic and related technologies. These are known collectively as "electrotechnology".

IEC provides a platform to companies, industries and governments for meeting, discussing and developing the International Standards they require. All IEC International Standards are fully consensus-based and represent the needs of key stakeholders of every nation participating in IEC work. Every member country, no matter how large or small, has one vote and a say in what goes into an IEC International Standard.

The IEC is one of three global sister organizations (IEC, ISO, ITU) that develop International Standards for the world. When appropriate, IEC cooperates with ISO (International Organization for Standardization) or ITU (International Telecommunication Union) to ensure that International Standards fit together seamlessly and complement each other. Joint committees ensure that International Standards combine all relevant knowledge of experts working in related areas.

The following group within IEC are relevant to EasyTv.

SyC AAL Active Assisted Living [9]

This group has the objective to:

- Create a vision of Active Assisted Living that takes account of the evolution of the market
- Foster standardisation which:
 - enables usability and accessibility of AAL systems and services
 - enables cross-vendor interoperability of AAL systems, services, products and components
 - addresses systems level aspects such as safety, security and privacy
 - communicate the work of the SyC appropriately to foster a strong community of stakeholders

There are two working documents of interest to EasyTV:

- IEC TS 63134 ED1 Active Assisted Living (AAL) use cases
- IEC 63168 ED1 Cooperative multiple systems in connected home environments - Functional safety of electrical/electronic safety-related systems - AAL aspects

2.1.2. International Organisation for Standardisation (ISO) [2]

In technical committees, participants take different roles: there is a committee chair whose role is to help the committee reach internationally accepted agreements. At working group level there is a convenor, who leads the work and also tries to work towards consensus. Both delegates and experts take part in meetings: delegates, with a head of delegation, represent a national body and are accredited by such. Technical committees also have liaisons with various organisations and many ISO members belong to other organisations and help to coordinate.

Moving Picture Experts Group (MPEG) [3], a working group of ISO/IEC with the mission to develop standards for coded representation of digital audio and video and related data. Since 1988 when it has been established, the group has produced standards that help industry offer end users an ever more enjoyable digital media experience. In its 30 years of activity MPEG has developed an impressive portfolio of standards and technologies that have created an industry worth several hundred billion USD.

In a world where information technology, consumer electronics, entertainment and telecommunication products and content variously converge by incorporating increasingly sophisticated technologies and the need for timely available standards is as strong as ever, MPEG provides a proven mechanism to bring research results into standards that promote innovation for the benefit of all.

EasyTV will participate in ISO/IEC JTC 1/SC 35 “User interfaces accessibility”.

ISO/IEC JTC 1/SC 35 is a subcommittee and deals with standardisation “in the field of user-system interfaces in information and communication technology (ICT) environments and support for these interfaces to serve all users, including people having accessibility or other specific needs, with a priority of meeting the JTC1 requirements for cultural and linguistic adaptability”. So far it has published 69 ISO standards and it has 19 standards under development, with 17 P-members and 17 O-members. It meets for a week twice a year, and it is structured in various working groups (WG). WG6 specifically works on “User interfaces accessibility”, and it is within this WG where various documents concerning access services have been developed.

Previous work from EU funded projects DTV4ALL and HBB4ALL lead to the production of the three following items in the bullets below. During Easy TV it may be possible that we shall rework on some of these items, and perhaps generate a New Working Item in line with ISO/IEC 24786 Information technology — User interfaces — Accessible user interface for accessibility settings on TV.

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

Published in 2015, this technical specification is 24 pages long and was led by Canadian experts, with input from members of the WG. The document describes how different types of audio descriptions are created, namely live audio descriptions and recorded audio descriptions. The guideline touches upon various aspects such as how to develop an audio description, the styles of narration, the levels of importance, and how to describe relevant sounds and text on screen. Specific guidance on how to describe objects, characters, spatio-temporal settings, and relationships is proposed. This standard includes a wide array of examples that clarify its recommendations.

- 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 is a 12-page technical specification that was led by Ester Hedberg and Anna Matamala, with input from multiple experts. The proposal was initially suggested at a meeting in Barcelona in 2014. In 2015 a presentation was made in Denmark and consensus on the interest of the proposal and its scope was reached. After two-year discussions and successive versions, the document was published in February 2017. This document provides guidance on how captions or subtitles and other on-screen text can be transmitted auditorily. In fact, it is not limited to captions/subtitles but can also be applied to other types of video texts, as described in section 4.2 of the specification.

It is interesting to note that the document does not include the term “audio subtitles” in the title, although in section 4.1.1 it acknowledges different terms such as “audio subtitles”, “spoken subtitles”, “spoken captions”, “audio captions”. This was the result of lengthy discussions during its development. First of all, we wanted the document to refer not only to captions or subtitles on screen but also to any other type of text that appeared in video content. Moreover, as this document is related to Part 23 (see next sub-section), it was agreed that a parallel structure referring to the type of presentation (audio/visual) should be followed in the title. This is why Part 25 refers to “audio presentation” (in this case of text on screen) whilst Part 23 refers to “visual presentation” (in this case of audio information).

The document gives recommendations on how to create and deliver audio presentations of text in videos, and refers to specific aspects such as synchronisation, establishing levels of importance or identifying the audio presentation of text in videos, among other aspects.

- ISO/IEC DIS 20071-23 Information technology – User interface component accessibility – Part 23: Guidance on the visual presentation of audio information (including captions and subtitles).

This International Standard is in the final stages of its development and it has been led by Japanese and Canadian experts. The different approaches to subtitling and/or captioning, including the definition of such terms, has been controversial but consensus has been reached to put forward a document that deals with various aspects of subtitling. It recognises the different types of presentations, access and display, and discusses the question of how to prioritise information. It makes a distinction between predictable and unpredictable audio content, which has an impact on what users can expect. The document refers to issues such as quality, end user involvement, and visual design. It also defines the correspondence of captions/subtitles with the audio information of the content and refers to synchronisation aspects. Special emphasis is made on how to subtitle speech and non-speech information such as sound effects, music, emotions and silence. It also describes the different means of identifying speakers.

2.1.3 International Telecommunication Union (ITU) [4]

ITU is the United Nations specialized agency for information and communication technologies – ICTs. ITU allocate global radio spectrum and satellite orbits, develop the technical standards that ensure networks and technologies seamlessly interconnect, and strive to improve access to ICTs to underserved communities worldwide. ITU is committed to connecting all the world's people – wherever they live and whatever their means. Through their work, they protect and support everyone's fundamental right to communicate. 700+ leading ICT organizations and Academia are part of ITU. They represent a cross-section of the global ICT sector, from the world's largest manufacturers and

carriers to small, innovative players working with new and emerging technologies, along with leading R&D institutions and Academia. They are all engaged, involved and empowered by ITU activities.

ITU works to increase access to information and communication technologies (ICTs) for persons with disabilities: by raising awareness of their right to access telecommunications/ICTs; mainstreaming accessibility in the development of international telecommunications/ICT standards; and providing education and training on key accessibility issues. The ITU Secretariat offers an advocacy platform with global reach (ITU and Accessibility). In addition, the Secretariat oversees the accessibility work undertaken across ITU's three Sectors, thereby ensuring the efficient coordination of activities carried out in the spheres of development (ITU-D and Accessibility), radiocommunication (ITU-R and Accessibility), and standardization.

The following bodies take care of accessibility in ITU, and EasyTV reports to IRG-AVA.

- **IRG-AVA - Intersector Rapporteur Group Audiovisual Media Accessibility** studies 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. The IRG also addresses matters contributing to the coordination of the standardization work of the involved ITU-T and ITU-R groups and collaborates with other SDOs and other audiovisual media organizations (e.g., forums and consortia, research institutes and academia).
This group meets twice a year, and EasyTV attends meetings and has proposed contributions (see Annex). The way it operates is the following. EasyTV informs of the work developed, and technology pertinent to be standardised is identified. Then more information is requested in the shape of a "contribution" for the next meeting. This is the way it will be contributed during the life of the project.
- **Joint Coordination Activity on Accessibility and Human Factors (JCA-AHF)** acts as the first point of contact for those interested in ITU's accessibility-related activities, with its chief responsibility being the coordination of accessibility work undertaken within ITU (across ITU-D, ITU-R and ITU-T) and in concert with other United Nations organizations, activities and specialized agencies, ISO, IEC, regional and national SDOs, industry groups, academia, disability organizations and telecommunication user groups for persons with disabilities. Reporting to TSAG, JCA-AHF works to ensure a comprehensive approach to accessibility in close collaboration with ITU's various expert groups, especially Question 24/16, 26/16 in ITU-T Study Group 16, and Question 7/1 in ITU-D Study Group 1.
- **Joint IEC/ISO/ITU Policy Statement on Standardization and accessibility** - ITU and IEC, ISO encourage the development of standards that take account of the widest range of characteristics and abilities of persons, including in particular those of older persons, children and persons with disabilities.
- **ITU-T Study Group 16 (Multimedia)** is the lead ITU study group on telecommunication/ICT accessibility for persons with disabilities and it works to mainstream the consideration of accessibility in the development of multimedia standards, technologies and services. SG16 organizes accessibility work under Question 24/16 (continuation of ITU-T Q4/2) "Human factors related issues for improvement of the quality of life through international telecommunications" and Question 26/16 "Accessibility to multimedia systems and services".
- **Dynamic Coalition on Accessibility and Disability (DCAD)** is a body that works to ensure that ICT accessibility is included in discussions related to Internet governance. DCAD came into being at the 2007 annual Internet Governance Forum (IGF) and remains a crucial mechanism to ensure that persons with disabilities are consulted and included in meetings of the IGF.

- ITU-T Focus Group on Audiovisual Media Accessibility (FG AVA) (concluded) worked to stimulate the development of international standards that improve the accessibility of audiovisual (AV) media to persons with disabilities. FG AVA enjoyed a strong relationship with its parent group, ITU-T Study Group 16, and particularly with its Question 26/16. It was successfully concluded in October 2013.
- Joint ITU and IPC IPTV Application Challenge "Better Quality of Life with Global Standards: an Accessible World for All" (concluded) - The Challenge wishes to raise awareness and increase media and audiovisual accessibility for persons with all abilities.

2.1.4. World Wide Web Consortium (W3C) [5]

W3C standards define an Open Web Platform for application development that has the unprecedented potential to enable developers to build rich interactive experiences, powered by vast data stores, that are available on any device. Although the boundaries of the platform continue to evolve, industry leaders speak nearly in unison about how HTML5 will be the cornerstone for this platform. But the full strength of the platform relies on many more technologies that W3C and its partners are creating, including CSS, SVG, WOFF, the Semantic Web stack, XML, and a variety of APIs. W3C develops these technical specifications and guidelines through a process designed to maximize consensus about the content of a technical report, to ensure high technical and editorial quality, and to earn endorsement by W3C and the broader community.

Regarding accessibility, W3C has the following guidelines which apply directly to EasyTV:

- Web Content Accessibility Guidelines: Web Content Accessibility Guidelines (WCAG 2.1) was published in 2018 as a "W3C Recommendation" web standard. All requirements ("success criteria") from 2.0 are included in 2.1. There are additional success criteria in 2.1.
- WAI-ARIA Graphics Module and Graphics Accessibility API Mappings: The ARIA WG has published WAI-ARIA Graphics Module 1.0 and Graphics Accessibility API Mappings 1.0. The Working Group targets to complete the testing process and produce the implementation report.
- Accessible Name and Description Computation: the ARIA WG has published a wide review draft of Accessible Name and Description Computation 1.1. This document describes how user agents determine the names and descriptions of accessible objects, where information comprising that name can come from various characteristics of the content, in order to lead to a consistent result across implementations. The document previously included Accessibility API Mappings, which have been moved to Core Accessibility API Mappings, so this document only describes the procedure to determine accessible name and description, not how to expose it.

2.2. European Standardisation Organisations (ESO)

In the European Union, only standards developed by CEN, CENELEC and ETSI are recognised as 'European Standards'. Hence, CENELEC closely cooperates with CEN and ETSI; working jointly in the interest of European harmonization, creating both standards requested by the market and harmonized standards in support of European legislation.

CEN, CENELEC, ETSI are the regional mirror bodies to their international counterparts, i.e. ISO (the International Organization for Standardization), IEC (the International Electrotechnical Commission) and ITU-T (the International Telecommunication Union, telecommunication standardization sector) respectively.

2.2.1 European Committee for Standardization (CEN) [6]

The European Committee for Standardization (CEN, French: *Comité Européen de Normalisation*) is a public standards organization whose mission is to foster the economy of the European Union (EU) in global trading, the welfare of European citizens and the environment by providing an efficient infrastructure to interested parties for the development, maintenance and distribution of coherent sets of standards and specifications. The CEN was founded in 1961. Its thirty-four national members work together to develop European Standards (ENs) in various sectors to build a European internal market for goods and services and to position Europe in the global economy. CEN is officially recognised as a European standards body by the European Union; the other official European standards bodies are the European Committee for Electrotechnical Standardization (CENELEC) and the European Telecommunications Standards Institute (ETSI).

More than 60,000 technical experts as well as business federations, consumer and other societal interest organisations are involved in the CEN network that reaches over 460 million people. CEN is the officially recognized standardisation representative for sectors other than electrotechnical (CENELEC) and telecommunications (ETSI). On 12 February 1999 the European Parliament noted in a resolution that CEN, CENELEC and ETSI co-operate smoothly and that a merger of the three standardisation bodies would not have clear advantages.

The standardisation bodies of the thirty national members represent the twenty seven member states of the European Union, three countries of the European Free Trade Association (EFTA) and countries which are likely to join the EU or EFTA in the future. CEN is contributing to the objectives of the European Union and European Economic Area (EEA) with technical standards (EN standards) which promote free trade, the safety of workers and consumers, interoperability of networks, environmental protection, exploitation of research and development programmes, and public procurement. An example of mandatory standards are those for materials and products used in construction and listed under the Construction Products Directive. The CE mark is a declaration by the manufacturer that a product complies with the respective EU directive and hence the harmonized standard(s) referenced by the directive(s).

CEN (together with CENELEC) owns the Keymark, a voluntary quality mark for products and services. A product bearing the Keymark demonstrates conformity to European Standards.

2.2.2 European Committee for Electrotechnical Standardization (CENELEC) [7]

The Committee for Electrotechnical Standardization is responsible for European standardization in the area of electrical engineering. Together with ETSI (telecommunications) and CEN (other technical areas), it forms the European system for technical standardization. Standards harmonised by these agencies are regularly adopted in many countries outside Europe which follow European technical standards. Although CENELEC works closely with the European Union, it is not an EU institution. Nevertheless, its standards are "EN" EU (and EEA) standards, thanks to EU Regulation 1025/2012.

CENELEC was founded in 1973. Before that two organizations were responsible for electrotechnical standardization: CENELCOM and CENEL. CENELEC is a non-profit organization under Belgian law, based in Brussels. The members are the national electrotechnical standardization bodies of most European countries.

CENELEC creates market access at European level but also at international level, adopting international standards wherever possible, through its close collaboration with the International Electrotechnical Commission (IEC), under the Frankfurt Agreement.

In an ever more global economy, CENELEC fosters innovation and competitiveness, making

technology available industry-wide through the production of voluntary standards.

Through the work of its members together with its experts, the industry federations and consumers, European Standards are created in order to encourage technological development, to ensure interoperability and to guarantee the safety and health of consumers and provide environmental protection.

2.2.3 European Telecommunications Standards Institute (ETSI) [8]

The European Telecommunications Standards Institute (ETSI) is an independent, not-for-profit, standardization organization in the telecommunications industry (equipment makers and network operators) in Europe, headquartered in Sophia-Antipolis, France, with worldwide projection. ETSI produces globally-applicable standards for Information and Communications Technologies (ICT), including fixed, mobile, radio, converged, broadcast and internet technologies.

ETSI was created by CEPT in 1988 and is officially recognized by the European Commission and the EFTA secretariat. Based in Sophia Antipolis (France), ETSI is officially responsible for standardization of Information and Communication Technologies (ICT) within Europe.

ETSI publishes between 2,000 and 2,500 standards every year. Since its establishment in 1988, it has produced over 30,000. These include the standards that enable key global technologies such as GSM cell phone system, 3G, 4G, DECT, TETRA professional mobile radio system, and Short Range Device requirements including LPD radio, smart cards and many more standards success stories.

Significant ETSI technical committees and Industry Specification Groups (ISGs) include SmartM2M (for machine-to-machine communications), Intelligent Transport Systems, Network Functions Virtualisation, Cyber Security, Electronic Signatures and Infrastructures etc. ETSI inspired the creation of, and is a partner in, 3GPP and oneM2M. All technical committees, working and industry specification groups are accessible via the ETSI Portal.

ETSI technology clusters provide a simple, easy to grasp overview of ETSI's activities in ICT standardization. Each technology cluster represents a major component of a global ICT architecture and covers the work of a number of ETSI technical committees and working groups that share a common technological scope and vision. The work of a single Technical Committee may be represented in several clusters. Clusters facilitate easy identification of an area of interest based on business relevance or application domain rather than purely on specific technical work areas. ETSI is a founding partner organization of the Global Standards Collaboration initiative.

The various types of standards produced by ETSI are as follows:

- European Standard, telecommunications series (EN): Used when the document is intended to meet needs specific to Europe and requires transposition into national standards, or when the drafting of the document is required under an EC/EFTA mandate.
- ETSI Standard (ES): Used when the document contains normative requirements and it is necessary to submit the document to the whole ETSI membership for approval.
- ETSI Guide (EG): Used when the document contains guidance on handling of technical standardization activities, it is submitted to the whole ETSI membership for approval.
- Special Report (SR): Used for various purposes, including giving public availability to information not produced within a technical committee. ETSI SRs are also used for "virtual" documents, e.g. documents that are dynamically generated by a query to a database via the web. An SR is published by the technical committee in which it was produced.

- ETSI Technical Specification (TS): Used when the document contains normative requirements and when short time-to-market, validation and maintenance are essential, it is approved by the technical committee that drafted it.
- ETSI Technical Report (TR): Used when the document contains mainly informative elements, it is approved by the technical committee that drafted it.
- ETSI Group Specification (GS): Used by Industry Specification Groups according to the decision-making procedures defined in the group's Terms of Reference. This deliverable type is approved and adopted by the Industry Specification Group that drafted it.

Related to accessibility

European Standard EN 301 549 on accessibility requirements for ICT products and services⁵

This document was approved on 24/08/2018.

This Harmonised European Standard (EN) has been produced by ETSI Technical Committee Human Factors (HF), and the eAccessibility Joint Working Group (JWG) of CEN/CENELEC/ETSI.

The present document has been prepared under the Commission's standardisation request C (2017) 2585 final [i.27] to provide one voluntary means of conforming to the essential requirements of Directive 2016/2102 [i.28] on the accessibility of the websites and mobile applications of public sector bodies.

Once the present document is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of the present document given in tables A.1 and A.2 confers, within the limits of the scope of the present document, a presumption of conformity with the corresponding essential requirements of that Directive and associated EFTA regulations.

The present document has been developed from ETSI EN 301 549 [i.29] V1.1.2 (2015-04). The changes are limited to those necessary to comply with the requirements of a Harmonised Standard, inclusion of requirements for mobile applications, updating to reflect the state of the art in W3C WCAG, updating of clause 6.1, and corrections of errors.

⁵ https://www.etsi.org/deliver/etsi_en/301500_301599/301549/02.01.02_60/en_301549v020102p.pdf

3. EASY TV CONTRIBUTION TO STANDARDISATION

EasyTV will take an active role in standardisation. In the first phase of the project there has been a work of identification of the possible existing standards where EasyTV can contribute. This is the work presented in this Deliverable. EasyTV in the second phase, once technology is developed and prototypes are created, will draft a list of standards used in the development, and identify any possible areas where EasyTV can develop further or contribute in other standards. This will be the work of the second iteration.

3.1 EasyTV contribution in standardisation to ITU

Pilar Orero is a member of the ITU group IRG-AVA - Intersector Rapporteur Group Audiovisual Media. Through her meetings in the group, Easy TV project was presented to the members of IRG-AVA (see Annex 1). The group will send the information regarding EasyTV user interaction to other Study Groups within ITU dealing with Accessibility topics. It is hoped they will request further information and interaction will start as soon as there are some prototypes developed to be shown.

3.2 EasyTV contribution in standardisation to ISO

Pilar Orero is a representative from the Spanish standardisation agency AENOR CT 135 to ISO ISO/IEC JTC 1/SC 35 “User interfaces accessibility”. She has identified two open documents where EasyTV can contribute:

- Revision of ISO/IEC 24786 “Accessible user interface for accessible settings”
- ISO/IEC 30113-11:2017 (en) Information Technology – Gesture-based interfaces across devices and methods – Part 11 Single for common system actions

EasyTV has made an analysis of the possible contribution towards ISO/IEC 24786 “Accessible user interface for accessible settings” and will present a contribution in the Japan 2018 meeting in August (see Annex).

3.3 EasyTV contribution in standardisation to ICONS

There is a great discrepancy between accessibility service icons. It is important to mark the accessibility provisions of any accessibility service. The most efficient way to inform of the different access services is to use pictograms or icons. Right now, icons are not universal, and they vary from country to country, and also within countries, as can be seen in the following figure from the US legislation 508⁶ where Audio Description has two different associated icons, and five icons are represented by letters and not images.

⁶ <https://www.section508.va.gov> [retrieved 28/07/2018]

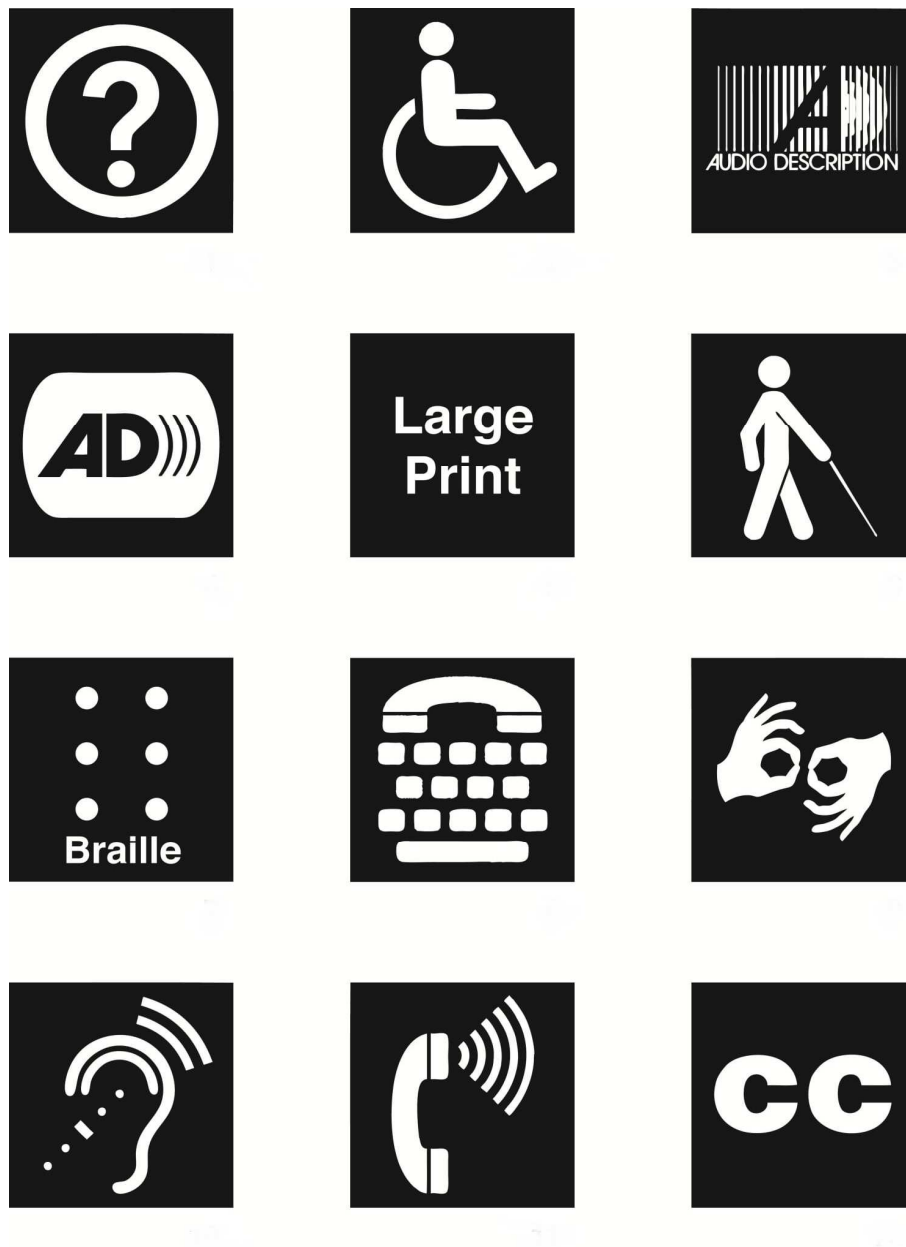


Fig. 1 Icons from US Section 508

ISO⁷ has not defined any accessibility icons beyond the following found in Fig. 2. At the time of writing this Deliverable ISO/IEC is developing the ISO/IEC WD 22607 Information technology -- User interfaces -- Icons for setting interaction modes.



Fig. 2 ISO accessibility icons

⁷ <https://www.iso.org/obp/ui/#search> [retrieved 28/07/2018]

ETSI, the European Telecommunications Standards Institute, ETSI EN 301 462⁸ Symbols to identify telecommunications facilities as follow in Fig. 3:



Fig. 3 ETSI icons

The public broadcaster DR has proposed a new set of icons, developed by and for broadcasters (Fig. 4).

⁸ https://www.etsi.org/deliver/etsi_en/301400_301499/301462/01.01.01_60/en_301462v010101p.pdf
[retrieved 28/07/2018]

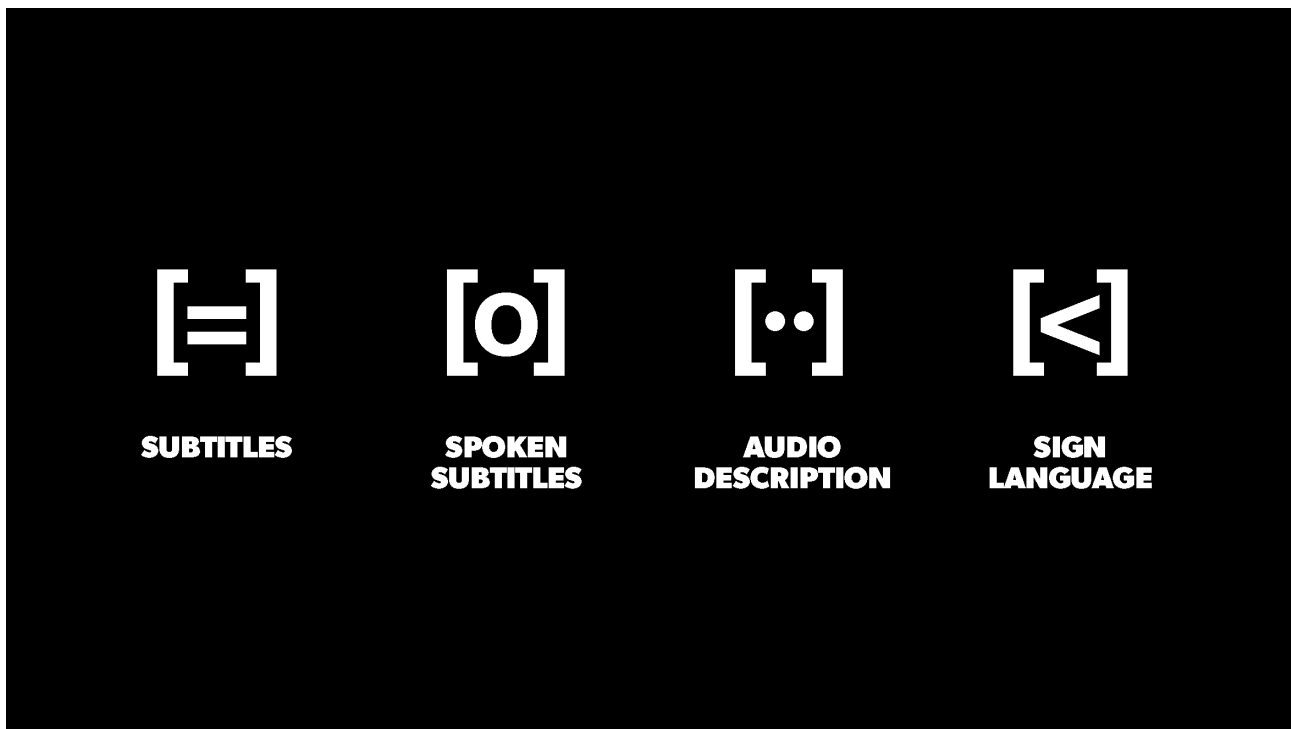


Fig. 4 DR iconography for broadcast access services

These icons⁹ are free and can be typed anywhere - on listings in print media, web tv, streaming tv, info channel, etc.

How to type an icon:

- Choose a sans serif typography in bold version (ex. Arial, Helvetica)
- Enter the desired icon
- Use contrasting colors to maximize readability (ex. black and white)

[=] AltGr + 8 Shift + 0 AltGr + 9

[o] AltGr + 8 Shift + o AltGr + 9

[··] AltGr + 8 Alt + 0183 Alt + 0183 AltGr + 9

[<] AltGr + 8 < AltGr + 9

These icons will be used in EasyTV.

3.4 EasyTV contribution to EN 301549

EasyTV sent a list of comments (Annex III) towards the European Standard WD EN 301 549: Accessibility requirements for ICT products and services. The present document specifies the functional accessibility requirements applicable to ICT products and services, since many issues regarding interaction developed in the project are directly pertinent to the standard.

⁹

<https://www.dr.dk/om-dr/about-dr/smart-icons-design-common-european-standardization>
28/07/2018]

[retrieved

4. CONCLUSIONS

The document presents the standardisation agencies panorama, and the committees and groups where EasyTV will interact. EasyTV works actively on standardisation and aims at pushing further standardisation on TV by promoting and adopting when possible Danish Broadcasting accessibility service icons. A sample of EasyTV collaboration towards one standardisation agency is shown in the Annex 1.

5. REFERENCES

- [1] IEC < <http://www.iec.ch/about/> > (last accessed 26 July 2018)
- [2] ISO < <https://www.iso.org/home.html> > (last accessed 26 July 2018)
- [3] MPEG <<https://mpeg.chiariglione.org/>> (last accessed 26 July 2018)
- [4] ITU <<https://www.itu.int/en/about/Pages/overview.aspx>> (last accessed 26 July 2018)
- [5] W3C <<https://www.w3.org/standards/>> (last accessed 26 July 2018)
- [6] CEN <<https://www.cen.eu/Pages/default.aspx>> (last accessed 26 July 2018)
- [7] CENELEC <<https://www.cenelec.eu/>> (last accessed 26 July 2018)
- [8] ETSI <<https://www.etsi.org/>> (last accessed 26 July 2018)
- [9] IEC http://www.iec.ch/dyn/www/f?p=103:186:0::::FSP_ORG_ID:11827 (last accessed 31 August 2018)

ANNEX I



INTERNATIONAL
TELECOMMUNICATION UNION
**INTERSECTOR RAPPORTEUR
GROUP**
on Audiovisual Media Accessibility

IRG-AVA-1804-010
IRG-AVA

Original: English

| | | |
|---------------------|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Question(s): | N/A | Geneva, 17 April 2018 |
| DOCUMENT | | |
| Source: | UAB (Spain) | |
| Title: | Easy TV | |
| Purpose: | Information | |
| Contact: | Pilar Orero Universttat Autònoma de Barcelona Spain | Tel: +34622751958 Fax: +34935812271 E-mail: pilar.orero@uab.cat |
| Contact: | Francesc Mas Corporació Catalana de Mitjans Audiovisuals Spain | Tel: +34 Fax: +34 E-mail: fmas.z@ccma.cat |

Keywords: Media Accessibility, Interaction, TV

Abstract: This document describes the needed technical architecture of the EasyTV platform, providing the specification for the functionality and basic architecture based on the results of user centred design and the resulting requirements. This document describes the overall EasyTV technical system specification. This includes an initial functional description, leading to a detailed platform related specification for each EasyTV services to be implemented, including production modules, delivery and end-user equipment.

EasyTV follows a user centred design, where project developments are driven by real user needs. This is achieved by involving these users in each step of the design and implementation of the EasyTV project. A group of end consumers and professional users were consulted in order to define the accessibility requirements needed with the aim to provide an equal access to TV and audio-visual services to all citizens, including those with different sensorial issues, like for example low vision or deaf persons.

These consultations allowed collecting a detailed list of requirements which were considered to define the EasyTV platform satisfying the required functionalities and defining a basic architecture.

1 Introduction

Despite the barriers, however, and what may surprise many, most studies show that blind and visually impaired persons watch TV as much as normally-sighted persons and of their great desire to improve the television experience [Woods11]. Some older studies have found that people with vision impairments reported TV watching as an important family time activity. Older people (e.g. over 65 years of age) tend to spend more time watching TV than others [Depp10].

The prime **motivation** of EasyTV (http://easytvproject.eu/?page_id=49) is the necessity of **equal access** to television and audio-visual services ensuring that all users^{10 11}, especially for persons with various degrees disabilities including sight and hearing, the growing ageing population of Europe, and users with special needs derive maximum benefit in terms of choice and quality of media content and services.

From the age of 65 and on, the issues of sight and hearing loss increase those needing access services exponentially (e.g. above age 65 there is 50% probability for hearing impairment), including those who work and live within an EU area where their language is not spoken and also need access services in the form of translation. Further, there are also numerous people with learning difficulties, such as. Dyslexics or people whose first language is not that from the country they live as immigrants. EasyTV aims at enhancing users' experience in content consumption.

The project has a duration of 30 months and has been funded by the European Commission.

Partners:

| |
|-------------------------------------------------------|
| Universidad Politécnica de Madrid, Spain |
| Engineering Ingegneria Informatica, Italia |
| Centre for Research and Technology Hellas, Greece |
| Mediavoice, Italy |
| Universitat Autònoma Barcelona, Spain |
| Corporació Catalana de Mitjans Audiovisuals, Spain |
| ARX.NET, Greece |
| Unione Italiana dei Ciechi e degli Ipovedent, Italy |
| Fundación Confederación Nacional Sordos España, Spain |

1 Discussion

The main aspect of the EasyTV platform is the multiple functionalities it provides with the aim to allow users with different disabilities accessing broadcaster content in an easy way. In this regard, each platform-based service module that is going to be developed represents an innovative service which can be considered easy to use, low cost and useful for improving the interaction with terminals and to access multimedia content.

That said, the **system generic services** that have been defined together with their main functionalities are the following:

- **Audio description:** this service will provide different solutions for helping blind and low sighted people for accessing the multimedia content. In particular, it will comprise two different services:
 - o Automatic descriptive narratives: this service will be able to provide additional information about a content derived from the related metadata. Moreover, this service will be also in charge of analysis the video content in order to detect textual information and to extract it in order to give the users some contextual data that may help them to have a more complete experience. This will be done by a OCR service.
 - o Automatic voice synthesis of subtitles: this service will be in charge of providing audio information obtained from the subtitles files. As in the previous one, this service will make use of a OCR solution to enable spoken subtitles for burned-in video subtitles, or simply by parsing them if they are provided in a standard protocol.
- **Clean audio:** this service will help to improve the intelligibility of access services by

¹⁰ BoR (14) 185 Work Programme 2015, 4 December 2014.

http://berc.europa.eu/eng/document_register/subject_matter/berc/annual_work_programmes/4779-work-programme-2015-berc-board-of-regulators.

¹¹ BoR (10) 47 Rev 1, Electronic communications services: Ensuring equivalence in access and choice for disabled end-users, February 2011, http://berc.europa.eu/doc/berc/bor_10_47Rev1.pdf

providing a two way process solution: on the one hand, this service will process the audio information on the server side in order to generate two different sources, one with the main audio information like the voices, and another one for the rest of the audio content. On the other hand, the user will be able to select, in the user side, what channel he/she wants to hear, providing also a tool for making different equalization.

- **Universal remote control:** this service will enable a universal and accessible interaction between users and TV through the recognition of different users' gestures, gaze estimation and speech recognition (voice control).
- **Image enhancement:** this service will be focused on the processing of an image for obtaining a more suitable bespoke service, adapting it to the requirements of the user, especially when this user has impaired-vision. This will include different functionalities such as:
 - Improving the presentation of subtitles and sign language video, in a customizable or an automated manner.
 - Magnifying the image, through custom or automated selection.
- **Crowdsourcing platform:** this service will allow the creation and management of a new sign language framework in which users will be able to upload and collect sign language content, as well as to check their correctness.
- **Realistic avatar for sign language presentation:** this service will include:
 - the generation of automated realistic avatar for sign language content, combining head and hands movements for a closer experience.
 - allow multilingualism by making use of the ontology created for the project, which will link same concepts in different languages.
 - will also allow to add new sign language representations through crowdsourcing by making use of a real-time hand and face motion capture solution.
- **Automated translations among different sign languages:** this service will help the annotation of sign language captures and to translate original sentences in other languages by means of a multilingual ontology that can be populated through the crowdsourcing platform.
- **Subtitling translation:** this service will allow the production of subtitles with tools to automate translation to different languages and human monitoring and improving through a crowdsourcing platform.
- **Hyper personalised access:** this service will be focused on enabling automated services' personalisation and interface adaptation according to users' profile and context information. This will also include matchmaking for personalised DASH streaming services.

Basic Architecture

The basic architecture is divided in three blocks:

- **Broadcaster premises** – this block englobes the main workflows of the broadcaster or a content owner related with the management, storage, broadcast and publication of audiovisual contents.
- **EasyTV platform** – within this block several modules are grouped in service components that will be defined in the next sections.
- **Consumer platform** – end-users will consume the contents with accessible services through multi-platform devices like smartphones, desktops or SmartTV, interacting with their devices through improved accessible interfaces that will ease the access and consumption.

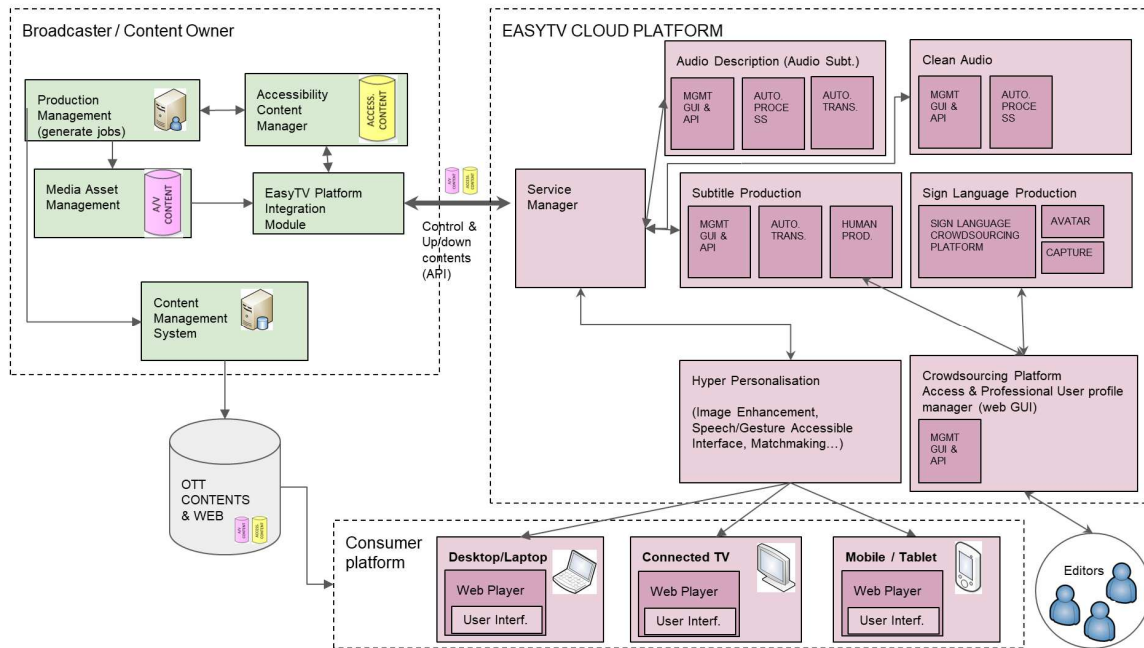


Fig. 5 EasyTV Basic Architecture

Broadcast Premises

In the EasyTV architecture represented in Fig. 5, a Broadcaster or content owner block has been considered as the professional client of the EasyTV cloud platform. This client can be the owner of the audiovisual contents, and/or has the rights for the broadcasting of them.

This client needs the outsourcing of accessibility contents production, and EasyTV platform offers this outsourcing through a range of tools available through its Service Manager which will offer an interface for the requesting of production tasks that can involve one or more tool modules.

Several modules have been represented also within the internal premises of the broadcaster or content owner (Fig. 6). This is a general overview of possible modules involved in the workflow from the content management to the final delivering through digital platforms.

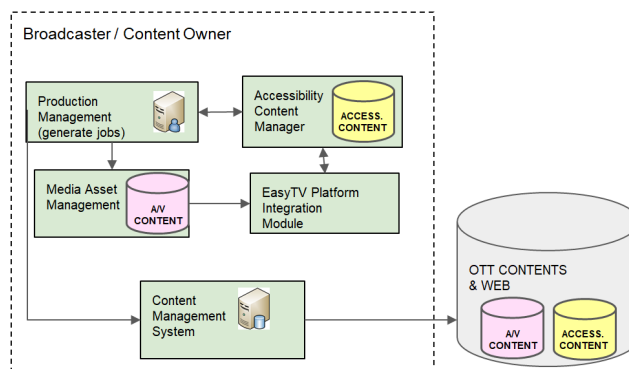


Fig. 6 Broadcaster general architecture

Definition of the modules represented:

- **Production Management** – allows to manage the contents and rights, scheduling for the broadcasting, publishing to digital platforms, and requesting for accessibility contents.
- **Accessibility Content Manager** – Manages the database and archive of accessibility contents, with direct connection to the production management. Keeps the archive of accessibility contents identified with a unique ID related with the original Audiovisual Content to which it belongs. If the requested accessibility content is not available, it will request the job of production of this accessibility content to the EasyTV platform through its EasyTV Platform Integration Module.

- Media Asset Management - A MAM system provides a single repository for storing and managing video and audio files.
- EasyTV platform integration module – will allow the translation of broadcaster or content owner requested jobs to be sent to the EasyTV platform through the Service Manager API. So this EasyTV platform integration module must be developed by the client to allow the adaptation of internal workflows with the platform.
- Content Management System – A CMS is a software application or set of related programs that are used to create and manage digital content allowing, for example, the publishing of the broadcaster contents to digital platforms involving not only the audiovisual and accessibility contents but also the web page graphical and textual contents.

EasyTV Service Manager

The Service manager will be the main communication hub between the broadcasters' premises, and the different components, modules, and services at the internal of the EasyTV platform. It will act as a gateway and orchestrator of the full platform and it will allow an abstraction of the work and processes that can involve multiple modules.

The Service Manager will have two main components:

- A web graphical user interface (GUI), which will allow the broadcasters to request content to the EasyTV platform in a centralized and unified way. This web GUI will keep track of their request, status, and serve the contents to the broadcaster premises in a user-friendly way without the need of knowing the underlying structure of the EasyTV modules, services, and components.
- A REST API, acting as a middleware between the user interface (and other possible services that the broadcasters may deploy in the future) and the EasyTV services.

The Service Manager will be able to address the specific content (accessibility and audiovisual contents) request to the appropriate EasyTV component where the repository for that content resides. If the requested content is available, it will be directly served to the broadcaster. If the requested content is not available (or doesn't exist yet), the Service Manager will generate the needed tasks in the EasyTV modules, allowing the broadcaster to know in every moment the status of the request.

As an example to better illustrate the process, let's take in consideration the following example:

If a broadcaster is interested in audio subtitles for an audiovisual production in original language and English which are not currently available, the process which would implicate multiple modules from the EasyTV platform, would be handled through the web GUI of the Service Manager in the following way:

- 1) The broadcaster will request them and, not being available, the request would be broken in multiple tasks:
 - Task1: Automatic generation of the English subtitles.
 - Task2: Human improvement and production of English subtitles through the crowdsourcing platform.
 - Task3: Generation of audio subtitling in both original language and English.
- 2) Once all the tasks are completed, the new accessibility contents would be available for downloading to the broadcaster premises.

As some of the tasks could be dependant of previous tasks, the Service Manager will take care of the correct workflow progress and monitoring.

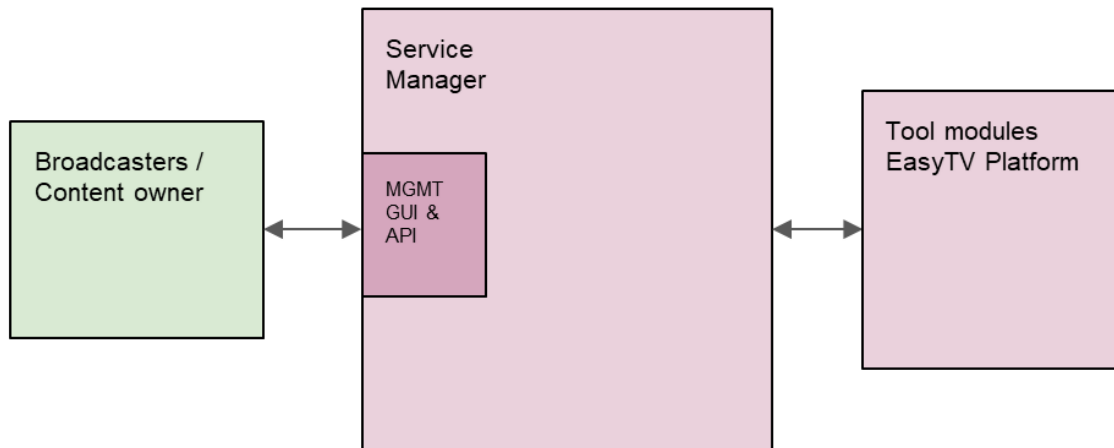


Fig. 7 Service Manager

2 Conclusion / Proposal /Proposals

One of the many challenges people with various degrees of disabilities face (visually or hearing impaired), is their inability and difficulty to access mainstream products and services, and thus end up being excluded from enjoying audio-visual services on an equal basis as others. Marginalizing people with disabilities on this level is a critical and problematic issue, especially in today's "Information Society", where access to information should be freely available to all, in order for each individual to be able to reach his maximum potential, personally, professionally and socially. While these challenges have been identified, they haven't been addressed yet efficiently since existing solutions still inherit characteristics of the Analogue TV or just focus on traditional TV viewing.

In this context, the EasyTV platform aims not only ease to access to multimedia services, by offering novel media delivery mechanisms but also move one step further, by enhancing interaction based on a multi-language approach, and adapt to the user's preferences providing personalized content. Specifically the EasyTV will be based on **four pillars**:

- a) **Improved access services** for enhanced multimedia visual and sound experience for people with disabilities.
- b) **Improved personalization** of the content experiencing and interaction, towards a hyper-personalized experience to all.
- c) **Novel technologies to break the sign language barrier** (based on crowdsourcing techniques).
- d) Improvement and development of voice and gesture/gaze recognition to control the TV set and TV applications (e.g., eye movement or head movement) in the form of a **universal remote control**.

ANNEX II



Easing the access of Europeans with disabilities to converging media and content

Pilar Orero, Spain
Yoshikazu SEKI, Japan 2018



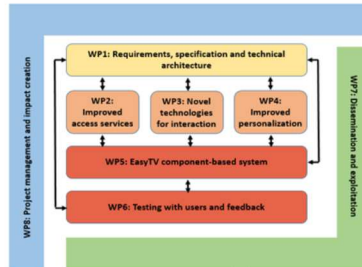
Content

1. Introduction
2. Objective
3. Services
4. Suggested contributions for Revision of ISO/IEC 24786 “Accessible user interface for accessible settings”



EasyTV

- EU funded from Call H2020-ICT-2016/2017, ICT-19-2017 - **Media and content convergence, d) Development and advancement of accessibility solutions**".
- 30 months (1/10/2017 to 31/3/2020).



Partners

- 9 partners (Spain, Italy, and Greece)



Objective






Equal access to television and audio-visual services ensuring that all users , especially for persons with various degrees disabilities including sight and hearing, the growing ageing population, and users with special needs derive maximum benefit in terms of choice and quality of media content and services.



3. Services



Service Environment

| | |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
|  | Improved Access services to enrich visual and audio experience based on image adaptation and audio description |
|  | User centered hiper personalise services to access content. |
|  | Multilanguage accessibility through subtitles and Sign Language |
|  | Universal interaction through speech technologies, gesture or sight. |
|  | HbbTV (2.0.1) and secondary screens |



Audio Description

This service will provide different solutions for helping blind and low sighted people for accessing the multimedia content. In particular, it will comprise two different services:

- Automatic descriptive narratives: this service will be able to provide additional information about a content derived from the related metadata. Moreover, this service will be also in charge of analysis the video content in order to detect textual information and to extract it in order to give the users some contextual data that may help them to have a more complete experience. This will be done by a OCR service.
- Automatic voice synthesis of subtitles: this service will be in charge of providing audio information obtained from the subtitles files. As in the previous one, this service will make use of a OCR solution to enable spoken subtitles for burned-in video subtitles, or simply by parsing them if they are provided in a standard protocol.



Clean Audio

This service will help to improve the intelligibility of access services by providing a two way process solution: on the one hand, this service will process the audio information on the server side in order to generate two different sources, one with the main audio information like the voices, and another one for the rest of the audio content. On the other hand, the user will be able to select, in the user side, what channel he/she wants to hear, providing also a tool for making different equalization.



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This service will enable a universal and accessible interaction between users and TV through the recognition of different users' gestures, gaze estimation and speech recognition (voice control).



Image enhancement

This service will be focused on the processing of an image for obtaining a more suitable bespoke service, adapting it to the requirements of the user, especially when this user has impaired-vision. This will include different functionalities such as:

- Improving the presentation of subtitles and sign language video, in a customizable or an automated manner.
- Magnifying the image, through custom or automated selection.



Crowdsourcing platform

This service will allow the creation and management of a new sign language framework in which users.

It will be able to upload and collect sign language content, as well as to check their correctness.



Realistic avatar for sign language presentation

This service will include:

- the generation of automated realistic avatar for sign language content, combining head and hands movements for a closer experience.
- allow multilingualism by making use of the ontology created for the project, which will link same concepts in different languages.
- will also allow to add new sign language representations through crowdsourcing by making use of a real-time hand and face motion capture solution.



Automated translations among different sign languages

This service will help the annotation of sign language captures and to translate original sentences in other languages by means of a multilingual ontology that can be populated through the crowdsourcing platform.



Subtitling translation

This service will allow the production of subtitles with tools to automate translation to different languages and human monitoring and improving through a crowdsourcing platform.



Hyper personalised access

This service will be focused on enabling automated services' personalisation and interface adaptation according to users' profile and context information. This will also include matchmaking for personalised DASH streaming services.




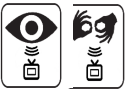


Suggested contributions for Revision of ISO/IEC 24786 “Accessible user interface for accessible settings”



- Voice interaction: voice recognition for interaction of basic commands
- Gaze/Gesture Recognition: Interaction through gaze or gestures detected by image capture to substitute
- Personalisation: automatization of the user’s profile to store the accessibility settings most commonly used
- Audio narratives: format to distinguish extra information from metadata, from additional sources or from text over image, with timing (start and end point when necessary)
- Intelligibility: parameter to measure the distinction of voices over background/environmental sound and music.

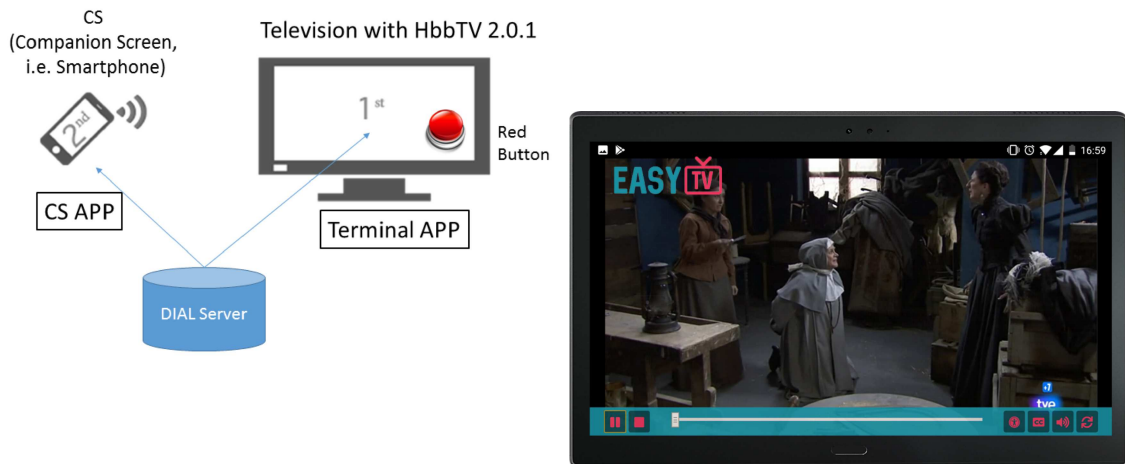


Suggested contributions for Revision of ISO/IEC 24786 “Accessible user interface for accessible settings”

| | |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Voice interaction: voice recognition for interaction of basic commands with the main interface. |
|  | Gaze/Gesture Recognition: Interaction through gaze or gestures Detected by image capture to substitute a physical remote control. |
|  | Personalisation: automatization of the user’s profile to store the most commonly used accessibility settings, for improving the accessibility to the interface. |
|  | Audio narratives automatically generated: to ease the accessibility to the interface and content through extra information from contents metadata, additional sources or text over image, with timing (start and end point when necessary). |



Aplicación HbbTV 2.0.1



EASY TV
easytvproject.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 761999.



ANNEX III

These comments refer to:

WD EN 301 549: Accessibility requirements for ICT products and services

V.2.1.2

Please email comments to:

Mike.Pluke@castle-consult.com
and fmachicado@une.org

| Organisation | Line number/ Clause/Sub Clause/ Annex (e.g. 3.1) | Paragraph/ Figure/ Table/ Note (e.g. Table 1) | Type of comment ¹² | Comment | Commenter's Proposed Change (with justification, if not included with the comment) | Observations Of The Secretariat |
|--------------|--------------------------------------------------------------|-----------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| | 3.1 | | G | Add the accessibility service "audio subtitle" or "audio caption" or "spoken caption" ISO/IEC 20071-25:2017 | Add the definition from ISO | |
| | 3.1 | | G | Add to Audio description the ISO reference | Add (from ISO/IEC71200-21) | |
| | 3.1 | | G | Add to Caption the ISO reference | Add (from ISO/IEC71200-23) | |
| | 3.1 | | G | Add the term Subtitle. In Europe the term used is subtitle and it is used for the translation, not in the same language. This standard is a European standard, so I would add "subtitle" | Add (from ISO/IEC71200-23) | |
| | 3.1 | | G | Add the term Clean Audio to be linked to 4.2.5 | Add to 5.1.3.4 | |
| | 3.1 | | G | Add the term Easy to Read to be linked to 4.2.10 | | |
| | 3.1 | | G | Add the term Personalisation/customisation | | |
| | 4.2 | | G | Add Usage with multiple and combined needs | | |
| | 4.2 | | G | Add Usage with different language | For written and Sign Languages | |
| | 4.2.10 | | | Add the term Easy-to-understand Language to be linked to 3.1 | | |
| | 5.1.3.8 | | G | Add "Speech output for text content" | Where ICT presents text content, the alternative for text content shall be presented to users via speech output unless the text content is pure decoration or is used only for visual formatting. The speech output for text content shall follow the guidance for ISO/IEC70200-25 | |
| | 5 | | G | Sound mix | Where ICT presents audio description or audio subtitles as an added sound file, the complementary sound file shall be presented to users via speech output and the | |

¹² G for General, T for technical, E for Editorial

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| | | | | | sound mix should be able to be personalised to avoid the original sound file to override the new complementary sound file. | |
| | 5.1.3.1 5 | | G | Add “Non-spoken languages” | Where speech output is provided as non-visual access to closed functionality, speech output shall be in the same signed human language | |
| | 7 | | G | Specific assistive technologies can provide benefits in terms of accessibility, and shall be considered in ICT services with video capabilities. Examples are: screen readers, screen magnification, Augmentation, Eye Tracking, Voice Control / Recognition | Somehow reflect this comment in the document | |
| | 7 | | G | Specific video processing techniques can provide benefits in terms of accessibility, and shall be considered in ICT services with video capabilities. Examples are: Scotoma Movement, Color Invert / Transformation; Brightness, Contrast and Intensity; Display Color / Color Filter; Tunnel Vision; Outline (recognize better contours); and Pattern Recognition | Somehow reflect this comment in the document | |
| | 7 | | T | In current day multi-quality video formats, the reception of low-quality video can have a negative impact on accessibility, and shall be avoided for users with visual impairments | Somehow reflect this comment in the document | |
| | 7.1 | | G | Personalization features for the presentation of captions should be considered (e.g. font family, size, contour, background colour, width, position...) | ‘Suggest to add “Personalization of captions” as an additional section 7.1.x. Add access to User Controls for personalization of captions to 7.3. | |
| | Potential Extension to the Document | | G | Multi-Conference Audio/Video Systems: They shall highlight the user who is talking at any moment (e.g. increasing the size of his/her video windows, adding an outline to it...) | Somehow consider this comment in the document | |

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| | Potential Extension to the Document | | G | Specific audio processing techniques / formats / settings can provide benefits in terms of accessibility, and shall be considered in ICT services with audio capabilities. Examples are: combination of channels, frequencies and gain levels, volume settings, audio mixing, spatial and/or object-based audio, distributed loudspeakers, etc | Somehow consider this comment in the document | |
| | Potential Extension to the Document | | G | An additional audio signal with a video, containing processed audio with improved speech intelligibility ("Clean Audio"), can provide benefits in terms of accessibility for users with hearing impairments. Such a Clean Audio version may be provided in parallel to the original audio version. Mechanisms to select, playback should be provided, similar as for Audio Description. This also holds for the preservation of synchronization. | Add this to chapter 7 | |
| | General Comment about the Document | | | The document gives recommendations about limits or reference values regarding technological aspects and parameters, such as bandwidth, frame rates, delays, delay differences, etc. These values should be supported by references to help reader understanding where these values come from and how they were determined | Somehow consider this comment in the document | |
| | 7.2.1 | | T | For an accessible experience users need to be able to turn AD on. | At the end of the first paragraph insert "Mechanisms for selecting and playing content with audio description shall be usable without sight." | |
| | 7.2.1 | | T | If AD is provided as receiver mix (where the AD track and main audio are mixed in the receiver) then attenuation data is provided to enable the main audio to have the volume reduced so that the AD can be heard. Elements such as these form an integral part of the AD and are essential to the usability of the AD track. | After the first paragraph insert "Any ICT which enables an audio description track to be played shall faithfully render characteristics of that track such as positional information of the audio description and attenuation of the main audio." | |

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| | 7.2.1 | Note 2 | G | <p>“Extended Audio Description” is a feature which has been theorised and demonstrated but is very rarely, if ever, used in real life. The standard should be careful not to encourage procurers to select ICT which supports Extended Audio Description over ICT which doesn’t but may be better in other respects.</p> | <p>Amend Note 2 to read ‘NOTE 2: Audio descriptions in digital media sometimes include information to allow descriptions that are longer than the gaps between dialogue. If ICT is likely to be used with content which uses this “Extended Audio Description” then support for Extended Audio Description should be considered alongside other beneficial features.’</p> | |
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