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

D7.1 Early-stage market analysis and initial business model

EasyTV Project

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7	ARX.NET SA	ARX	GR
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Definitions, Acronyms and Abbreviations

ACRONYMS / ABBREVIATIONS	DESCRIPTION
AI	Artificial Intelligence
AVMSD	Audiovisual Media Services Directive
BMC	Business Model Canvas
E&M	Entertainment and Media
EBU	European Broadcasting Union
EU	European Union
HBBTV	Hybrid Broadcast Broadband TV
IoT	Internet of Things
OCR	Optical Character Recognition
SL	Sign Language
STB	Set-Top Box
TVWF	Television without Frontiers
VOD	Video on Demand
VPC	Value Proposition Canvas
WHO	World Health Organization
WP	Work Package

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1. EXECUTIVE SUMMARY

The aim of the document is to illustrate an early-stage market analysis allowing, together with other dimensions considered, to define a preliminary business model for EasyTV that lead to an exploitation plan for each partner involved in the project.

The deliverable is divided into different sections:

- *Market Analysis, European broadcaster scenario and Assistive technologies scenario* present a wide analysis of the main aspects that characterize the Digital Media landscape from a technological and socio-economic perspective;
- *Business model and Individual exploitation plan* focus on the strategies adopted to maximizing the project long-term impacts in technology, society and industry.

The **Market analysis** represents a picture of the current situation on all aspects that EasyTV is going to face. An overview on the main trends in the Digital Media scenario has been conducted, focusing especially on the audio-visual contents and television ecosystem, having implications for the development of Easy TV services evaluation, the business model definition and the process of exploitation of the solutions generated within the project.

From the Market analysis has emerged that the “television experience”, although has changed in the last years, it is still a central activity in people’s lives. Increasingly, “content and media” sector plays a key role that is economic, social and cultural. Consequently, globally, audiovisual media content, and their providers, are subject to certain rules, and recent developments have posed several legal, economic and technical issues. In Europe, the European Commission has assumed the role to put in place the ideal conditions and regulations to create a single market for audio-visual media services. The **European broadcaster scenario** section, starting from the European directives, describes the current situation regarding the effect of rules introduced for accessibility of audiovisual media services for people with disabilities.

Focusing on the two main target users of EasyTV, as *Blind/Visually Impaired* and *Deaf/Hard of Hearing* people, a deeper analysis on the **Assistive technologies scenario** has been led. The overview on systems and services related to the delivery of assistive products allows to better understand the solutions more widely adopted by people with visual or hearing impairments.

Subsequently, starting from the considerations emerged from previous market and scenarios analysis, an “initial” **Business Model** has been proposed, to describe the logic with which Easy TV will create, distribute and capture value. The first draft of the business model has been defined using two principal tools: *Value Proposition Canvas* and *Business Model Canvas*.

Finally, to combine the most promising exploitable knowledge items of EasyTV results to the partner's industrial plan and strategy, an **Individual exploitation plan** has been proposed, specifying the exploitation plans of the project results for each consortium partner.

The sections of the present document are, as expected, in an “early stage”, considering the initial phase of the EasyTV project development. The D7.1 structure and contents, in fact, represent a guidance for the “second stage” that will consist in the final release of market analysis and business model, foreseen for the deliverable *D7.6 Consolidated market analysis and final business model*.

2. INTRODUCTION

The Entertainment and Media (E&M) Industry, in the last few years, has been at the centre of the *digital revolution* that has redefined not only customers habits and consumption choices, but also the business strategies made by technology, media, and telecommunication companies.

The *digital convergence* has enabled people to view the same multimedia content from several types of devices. This process has been allowed mainly by the digitization of content (movies, pictures, music, voice, text) and the development of connections methods. On one side, customers have many connected devices available at the same time, on the other, networks, technologies and content converge on a single device. These various aspects have a substantial impact on the process of creation, fruition, distribution, interaction and personalization of digital media content, especially television contents.

Considering that prime motivation of EasyTV is the necessity of *equal access* to television and audio-visual services, a wide analysis of the main aspects that characterize the current Digital Media scenario is an indispensable step to achieve this goal. In fact, identifying *why*, *how*, *when* and *where* customers today enjoy TV content, and furthermore *how much* they want to pay for it, it is possible define the whole actual “TV experience” which EasyTV services have the purpose to extending to a wider range of people.

One of the main challenge of the project is to reduce access/adoption barriers, and, moreover, design services that fit the needs of the two main target users of EasyTV, as *Blind/Visually Impaired* and *Deaf/Hard of Hearing* people. For this reason, it is strategic understand what kind of services and product are currently available for them, to be aware of technologies they use daily.

Moreover, beside the technologies, it is important to explore also the context of policy maker, broadcaster and content providers, and their role in contributing to make available accessible multimedia content.

EasyTV aims to ease the access to multimedia services by offering an improved user experience related to the accessibility functionalities, but this value proposition of the platform must reach the different target groups. The definition of a Business model will support the process of EasyTV offer presentation, as well as will make the project sustainable.

2.1. Purpose and scope

The document, D7.1, is part of Work Package (WP) 7 aimed to plan and execute communication, dissemination and exploitation actions to maximizing the project long-term impacts in technology, society and industry. One of the main objectives of the WP is to develop business model and exploitation plans for the most promising exploitable knowledge items.

The present deliverable is part of *Task 7.3 Market analysis and business plan definition* that includes all activities foreseen by EasyTV partners for exploiting the knowledge generated within the project's lifetime, with the aim of maximizing the business plan of the innovative solutions. It is composed by a two-level strategy:

- Innovation opportunity identification;
- Business analysis and modelling;

Providing a business model for EasyTV is strategic: it allows both to make the project sustainable and exploit its innovation impact.

2.2. Relation to other tasks

As shown below (Table 1), this document should be considered in directly conjunction with other deliverables:

- it reports evidences from previous tasks achieved so far and, at the same time, give a feedback in terms of coherence of the whole project design;

- it is considered as a guidance for other activities, especially for the final release of market analysis and business model of the EasyTV project (D7.6).

Table 1. D7.1 dependencies and linkages

ID	Title	Remarks
D1.1	User scenario and requirements definition	The end user requirements gathering process of D1.1 has allowed to define more consistently the user needs.
D1.2	EasyTV system requirements specification	The design choices carried out in the context of the requirements design of D1.2 has led to the identification of the main technologies, functionalities, devices and interaction patterns foreseen for the EasyTV platform.
D1.3	EasyTV system architecture	The core set of components identified in D1.3 has been considered as a guideline for the definition of product and services offered by the EasyTV platform.
D7.3	Initial report on dissemination activities	This document will be delivered at M15, and the D7.1 may provide indication about the more relevant product and services of the project from a market and business perspective.
D7.2	Report on identification of standardization bodies	This document will be delivered at M13 and the D7.1 may support, with its outcomes, identifying the main technological trends.
D7.6	Consolidated market analysis and final business model	This document will be delivered at M30 and it represents an update on market analysis, impact creation activities and, furthermore, on the business plans and exploitation plans presented in D7.1.

2.3. Approach and methodology

As mentioned, sections of the present document are in an “early stage”, considering the initial phase of the EasyTV project development. The D7.1 structure and contents, in fact, represent a guidance for the “second stage” that will consist in the final release of market analysis and business model, foreseen for the deliverable *D7.6 Consolidated market analysis and final business model*.

The dynamic changes of market, policies and technologies, that can occur during the duration of the project, lead necessarily to a two-step analysis.

This first phase may provide an initial useful feedback to consolidate the design and specifications of EasyTV platform planned to be developed. Moreover, it may provide hints on market opportunities, as well as opinions and advices about the dissemination and exploitation.

Each section of the document is connected to each other to represent a wide overview on the multiple key element that conduct to the definition of a consistent initial business model and individual exploitation plans.

Published market reports, and widespread tools for building Business model, have been used to support and guarantee more consistency to market analysis and the design of business model.

3. MARKET ANALYSIS

To identify the overall value of the project EasyTV, and foresee its socio-economic impact in a broader way, it means firstly design solutions able to fit the end-user's needs. To achieve this goal, it is crucial to understand the emerging changes of consumer's habits and attitudes in the actual digital media landscape.

Secondly, for the actual achievement of the project's objectives, it is strategic to introduce and develop services consistent with the current technological and economic trends in the digital media market, that represents the reference scenario for EasyTV.

For the mentioned key issues, an overview on the main trends in the digital media landscape has been conducted, focusing especially on the audio-visual contents and television ecosystem. The latter, in fact, presents the leading challenges and implications for the development of Easy TV impact evaluation, the business model definition and the process of exploitation of the solutions generated within the project.

3.1. Digital media market scenario

The rapid digital shift, which involved in the last few years the entire Entertainment and Media (E&M) Industry, has redefined not only habits and consumption choices, but also the business strategies of technology, media, and telecommunication companies, with a substantial impact on the whole E&M segments: Books, Business-to-business, Cinema, Data consumption, E-sports, Internet access, Internet advertising, Internet video, Magazines, Music, Newspaper, Out-of-home advertising, Radio, Traditional TV and home video, TV advertising, Video games, Virtual reality.

According to various digital media industry studies [1] [2], the key global drivers of this notable change have been:

- the expansion of mobile devices that are becoming the principal digital platform;
- the increasing of wireless connectivity and broadband penetration;
- the growing of alternative digital media platforms;
- the inclination to access to content without owning it;

In the Deloitte's 12th edition *Digital media trends survey*¹, key insights are illustrated to better understand the shifting regarding consumers attitudes and behaviours due to the digital transformation. These two main trends involve the whole digital media environment (entertainment devices, advertising, media consumption, social media, and the Internet) and, more specifically, the television and audio-visual services: the centrality of *video streaming* and the expanding of the "*value gap*" of Pay TV.

Regarding the video streaming on demand practice, the adoption of streaming video subscriptions is growing, alongside the request by customers for original content and the new flexibility attitude to consume media wherever and whenever, on any device they want.

The rise of video streaming on demand practice has an impact both on the linear TV consumption (especially for the younger generation) and the broadcasters' strategies of contents creation and distribution.

Streaming services have given to consumers an alternative for their entertainment. They are starting to "*cut the cord*": reviewing or cancelling their subscriptions to pay television or reducing the number of hours of subscription TV viewed, in response to competition from media available over the Internet.

¹<https://www2.deloitte.com/insights/us/en/industry/technology/digital-media-trends-consumption-habits-survey.html#endnote-1>

A sort of “value gap” of pay TV and traditional broadcaster’s offer is driving E&M companies to rethink business models in a marketplace that is increasingly competitive. The key activity for them it will be to increasingly engage the customers, focusing, more intensely, on an innovative user experience that meets their needs [2].

These initial considerations on the current digital media landscape, as new technological/consumption trends and socio-economic changes, lead the present market analysis towards a focus on the most interesting aspects for the Easy TV project. Therefore, considering the pillars of the project, the following main dimensions related to the audio-visual and television market scenario have been examined:

1. Fruition
2. Creation
3. Distribution
4. Interaction
5. Personalization

3.1.1. Fruition

As mentioned, in the last few years new forms of video and TV consumption have arisen, so that, understand the transformation of audio-visual and TV content fruition habits, have become strategic to realize and distribute products successfully.

Eurodata’s *One Television Year in the World* report² found that global individual viewing time for television stood at 2 hours and 56 minutes a day, even though there are disparities between the continents for example between North America (which ranked highest with 4 hours and 3 minutes) and Europe (followed closely behind with 3 hours and 49 minutes per person daily) and developing countries. According to the study, in the last 25 years global TV viewing time has remained steady and seems that “TV has kept its appeal” and is taking advantage of new usages.

In general, the TV is still a central experience in people’s days and life, but something has changed substantially especially in fruition modalities.

Video content, particularly linear television, remains the dominant form of entertainment, despite of the classic linear broadcast network loses audience share, replaced by new forms of consumption.

As the Ericsson’s report [3] displays, except from the youth (age 16-24), that are the main driver of Video on Demand usage (VOD), more than 55% of weekly time is spent to watch live/linear TV, this percentage increases with the increasing of the age group.

Not only consumers are changing the ways in which they watch video and TV content *every time* they want (see Fig. 1) about on-demand Vs linear viewing), but they also access the contents *everywhere*, using different device.

² <http://www.mediametrie.com/eurodatatv/communiques/one-television-year-in-the-world-between-safe-bets-and-innovative-content-trends-tv-has-kept-its-appeal-and-is-taking-advantage-of-new-usages.php?id=1854>

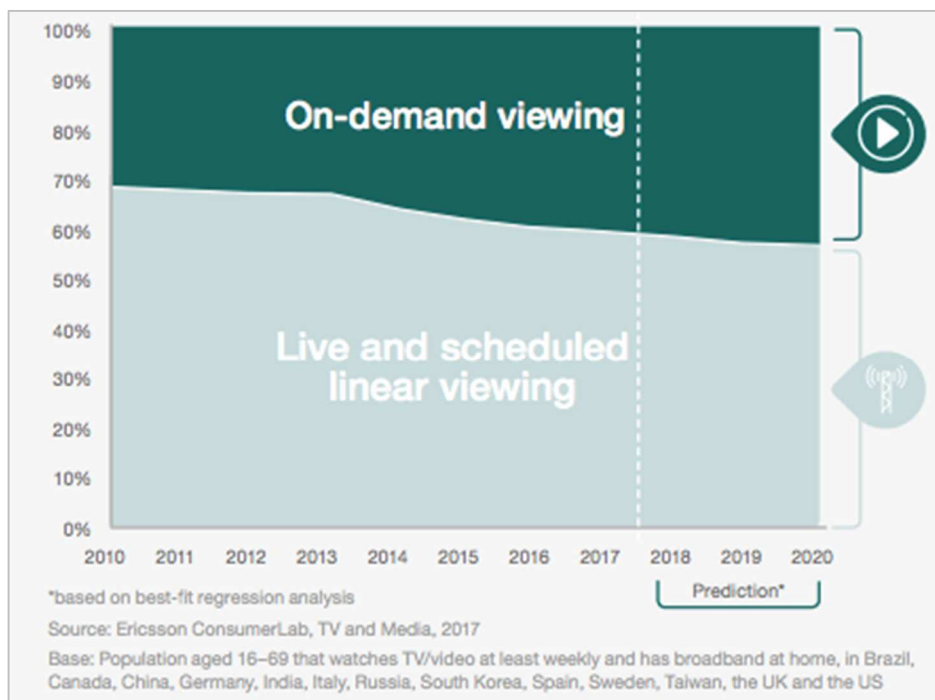


Fig. 1 On-demand vs Live and scheduled linear viewing

As smartphones, tablets, and wearable technologies rise in popularity, consumers increasingly use their mobile devices to watch TV and video (Fig. 2).

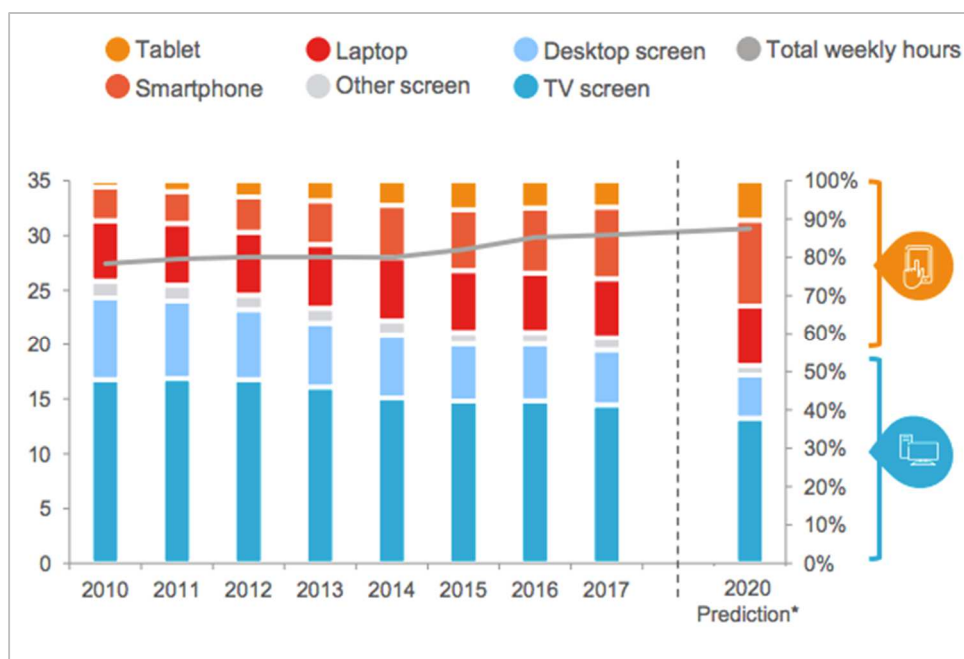


Fig. 2 Share of total TV/video-time done on respective device screen on right axis, and average total hours per week watching TV/video on left axis [self-reported] *source Ericsson

Moreover, Ericsson's study presents six different profile of user group that try to correspond to the actual TV and video habits.

Regarding the profiling of customer behaviour, the main variables to consider are age and types of devices used to access the audio-visual content. The TV-user group segmentation (see Fig. 3) gives an overview on different watching patterns adopted by users: from traditional way to watch the TV and video content (“TV Couch Traditionalist”: broadcaster TV via traditional TV screen) to new practices that are growing (as “Screen shifter” and “Mobility centric”).

Certainly, there are some differences in the demographics between the groups, for example, 35% of “TV Couch Traditionalists” are aged 50–69, compared to 15 percent in the overall sample and in contrast, “Mobility Centric” have a 14 percentage-point over-representation of people aged 16–24.

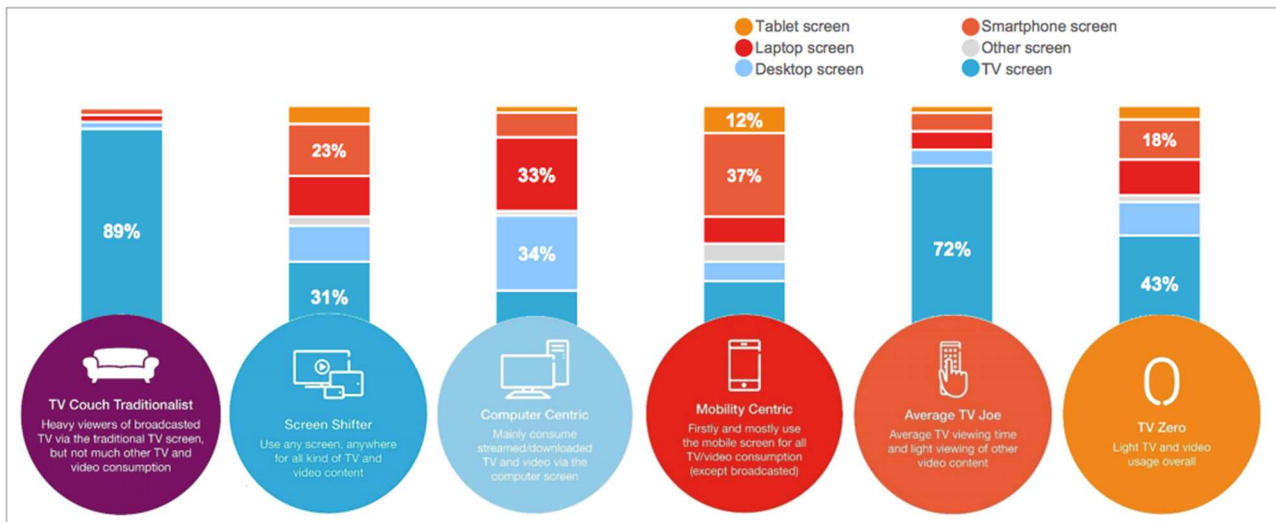


Fig. 3 Definition of TV-user groups based on total weekly TV and video active viewing time spent on each device/screen [self-reported] *source Ericsson

The new global widespread habits and needs of consumers, regarding video and TV content consumption, lead to a first consideration: the video experience is no longer constrained by schedules, location, devices or a narrow choice of content.

3.1.2. Creation

The first preliminary consideration is that *content is (still) the king*. In the mentioned Ericsson’s study over 70% of consumers agree that content and price remain at the top of their priority list when evaluating new TV services.

Content providers are increasing their investment in original video. For example, Netflix announced an increase in its content budget for 2018 to between \$7.5 billion and \$8 billion, up from \$6 billion in 2016. It is evident that original contents, and their quality, are strategic and their availability will make the difference for consumers when they decide to subscribe a service.

It is important to consider that the digital shift has changed how people watch TV or video content and, consequently, it has changed the process of content creation itself.

Today, content’s creation process must take into account the new practices of consumption since user behaviour and consumption (especially among younger users) trend more toward social media, mobile devices and streaming. Contents delivered should be more “spreadable” [4] among the different media and available devices. Multi-screening practice (during the view there is a compresence of multiple screen and devices), alongside the social networking activities related (or not) to the TV content (sharing the viewing experience and TV contents - the so-called Social TV), have completely transformed the way of content creation.

It is what Henry Jenkins have defined *Transmedia storytelling*: “Transmedia storytelling represents a process where integral elements of a fiction get dispersed systematically across multiple delivery channels for creating a unified and coordinated entertainment experience. Ideally, each medium makes its own unique contribution to the unfolding of the story³”.

It’s important to highlight that television, and its content, are still the key driver of social conversation and interaction [5]. At this point it is strategic, for broadcaster, to carry out social media strategies for TV content, able to engage audiences on the different social media platforms.

A consequence of this new process of content creation and media convergence, able to create a high level of audience engagement, is the arise of form of content co-creation: “Viewers increasingly want to be a part of the experience. Content producers will need to convince the creative community of the merits of choice-based stories, and the IT community of making it technically scalable and cost effective⁴”. It is the fulfilment of the transitions, for viewers, from “consumer” to “producer”, realizing a new hybrid form of empowered category of users, the *prosumers*.

3.1.3. Distribution

The various TV consumption practices emerged in the last years have had an inevitable impact also on the distribution mechanism and have affected how TV is made.

To better understand how TV content distribution is changing, it’s necessary to give an overview of the actual consumer’s home configuration. The current setting of “connected living room”, in fact, allows to analyse how and in which way consumer needs, different digital devices, linear television on one side, and new forms of content and new channels of distribution on the other, have met.

The modern living room is the most popular location for several, diversified and connected media devices, from mobile to ones that allows consumers to deliver content from the Internet.

An interesting study [6] (involving the U.S. market⁵) illustrates that today multiple screens on which to stream video content at the same time and in the same place are available for consumers: computer, smartphone and tablet and devices which allow on demand television content delivered via streaming over the internet (OTT) such as: smart TV, streaming players (such as Apple TV, Roku, Chromecast, Amazon, Fire TV), or gaming console.

Streaming box and stick devices like Roku (the largest player highlighted in the U.S. market), Amazon Fire, Chromecast, are propelling the OTT category forward, allowing new choice to consumer and new distribution for program and channel owners.

Fruition of Internet-based video content on TV is increasingly a daily habit, and connected TV are becoming widespread. Smart TVs allow streaming of digital video and enable new forms of interaction and convergence of contents and technologies. It is important to highlight that Internet-based TV contents are available also through gaming console, enough mainstream in the household environment.

According to *The state of video* report, connected TV and OTT represent an expanding part of how viewers consume television contents. As the study affirms, it is possible OTT will become the dominant form of distribution by the middle of the next decade.

³ http://henryjenkins.org/blog/2007/03/transmedia_storytelling_101.html

⁴ <https://www.wired.com/insights/2013/12/six-trends-directing-future-television/>

⁵ American market data are used as an example of market that forecast global technology trends

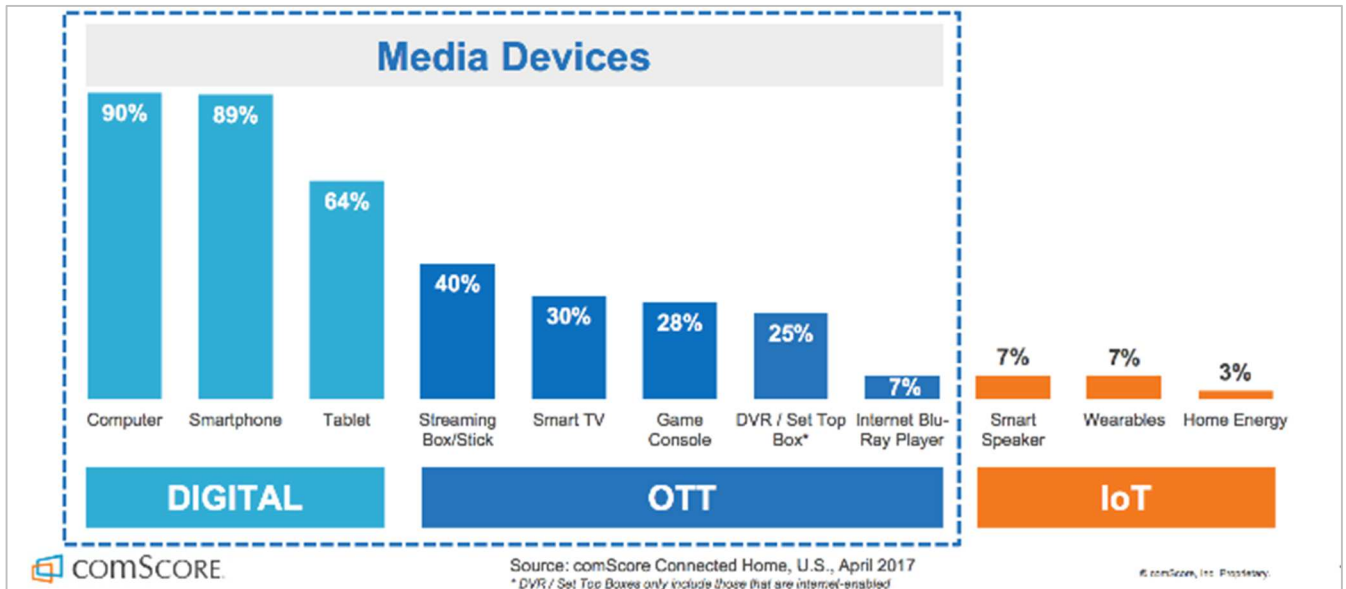


Fig. 4 Connected Home device penetration among U.S. Wi-Fi households *source ComScore

Furthermore, in the era of “ubiquitous computing” paradigm [7], consumer’s home is increasingly becoming “Smart home”, through the opportunity to easily create a network of physical devices, home appliances and other items, embedded with electronics, software, sensors, actuators, and connectivity which enables these objects to connect and exchange data (Internet of Things).

Connected home, made up by the IoT ecosystem, allow users to interact across devices in household environment. It follows that the living room (see Fig. 4) is the location of other kind of devices, such as smart speakers (Amazon Echo, Google Home, Apple HomePod etc.).

These Smart home devices enable other forms of interaction with TV and video content, for example assisting users in watching, or finding contents through intuitive and natural speech [8].

Direct consequences of the growth of connected devices inside the modern living room is the increase in:

- multi-screening practices;
- TV contents delivered over the internet;
- devices enabling users to interact with TV.

This new “home setting”, together with the emerging needs for broadcasters, operators, STBs and TVs Multisource providers to find a shared standard for distribution of contents and services, have allowed the rising of international standard for interactive TV as HbbTV. Hybrid broadcast broadband TV (HbbTV) is a global initiative aimed at harmonizing the broadcast and broadband delivery of entertainment services to consumers through connected TVs, set-top boxes and multiscreen devices. The HbbTV specification is developed by industry leaders to improve the video user experience for consumers by enabling innovative, interactive services over broadcast and broadband networks. The specification uses elements of existing specifications from other standards including OIPF, CEA, DVB, MPEG-DASH and W3C. HbbTV brings a range of new possibilities to consumers through broadcast-related application⁶.

⁶ <https://www.hbbtv.org/overview/>

3.1.4. Interaction

Availability of digital mobile devices and broadband connection are changing how audiences interact with and consume video content. It is important to point out that the interaction experience between users and the TV content must consider the technological platforms involved in the fruition process, and the quality of user experience. Watching TV today means, indeed, moving across different digital devices in different ways, so that the consistency of experience has to be guaranteed. Besides this, it is important to consider the sequential usage of fruition devices, because users move from one device to another at different times.

Furthermore, *multi-screening* practice is now consolidated: consumers use more than one device at the same time for activities either related or unrelated to audio-visual content viewing.

In the next years a more immersive experience of interaction with audio-visual contents will be designed both by content and technology provider.

Following are specified the leading trends regarding the future interaction experience to consider.

3.1.4.1 Virtual reality

The expected presence of VR experience in the TV's future is foreseen by analysed digital trend research. The Edelman' report [9] observes how "out of home experience" of virtual reality (as airports, shopping centres, landmarks, gaming) will educate consumers on how impactful immersive content can be. Consumers are becoming more educated on virtual reality.

As also affirmed in The Economist special report *Winner takes all*⁷ (2017) "the best time to gain (or lose) audience - and to challenge the dominance of an established platform - is when technology makes a leap. That is why media, gaming and tech companies are investing billions in virtual reality and augmented reality. Such technologies can change the way that people experience storytelling and persuade them to suspend disbelief".

The already mentioned Ericsson's report [3] advises that VR is starting to arrive in people's living rooms. Most VR headsets available today were released within the last 2 years, yet 10 percent of consumers are already using a VR device, and over 25 percent are planning to get one. Even though VR headsets are mostly tied to gaming today, 30 percent of consumers say that they will use VR for TV and video viewing in 5 years' time.

3.1.4.2 Image recognition

Another important trend registered in the interaction practices is the growing use of image recognition for quicker and easier interactions.

The image is the centre of a culture based on the "visual": smartphone use, cheaper cameras, social networks (Facebook, Instagram, Pinterest, Snapchat etc.), exposed people to an increasingly number of photo and video daily. Supported by the development of deep learning techniques, computers can "read the word" [10] interpreting images, video or code.

Image recognition enables a new form of input information for computers. In the context of machine vision, it is defined as the ability of software to identify objects, places, people, writing and actions in images. To achieve image recognition, machine vision technologies are used in combination with a camera and artificial intelligence software.

The drivers of digital media market (Google, Facebook, Microsoft, Apple and Pinterest) are among the many companies that are investing significant resources and research into image recognition and related applications.

⁷ <https://www.economist.com/special-report/2017/02/11/mass-entertainment-in-the-digital-age-is-still-about-blockbusters-not-endless-choice>

According to the analysis of market trends, images will be increasingly used for a variety of purposes, the most important are contributing to realize interactive media and enhanced access capabilities (i.e. to find, record, unlock, activate, identify, match, buy etc.), especially for the visually impaired people.

The key primary areas of development are:

- **Visual Search:** using images to search instead of using text as the input to search;
- **Facial Recognition:** identify people faces through more powerful cameras added to smartphones;
- **Scanning Codes:** providing fast links for identification, payments, personalized offers or easy access to entertainment and media content.

3.1.4.3 Speech interaction

As seen so far, today consumers have many devices at their disposal, often these technological objects are present in the same place (the living room) and are connected.

According to *MINDSHARE trends 2018*, in the future it is expected that the access to different devices will increasingly be done by voice through the help of Intelligent Personal Assistant. Consumers will be moving from clicks to conversations, from individual apps to synchronous experiences, from latent actions to predictive intelligence.

Currently consumers are aware of voice search functionality, they are accessing it daily in different environments and situations. Regarding the interaction with TV contents, voice search functionality expands across multiple devices in the living room, including TV remotes, iPad/tablets, smartphones and smart home devices.

Smart speakers are a kind of smart home device coming into the market with some success: Google Home and Amazon Echo grow in popularity and will increasingly be common devices in the consumers home. Intelligent Personal Assistants (IPAs) like Google's Assistant, Amazon's Alexa, Apple's Siri, Microsoft's Cortana, Alibaba's Duer, are currently integrated into Smart speakers and also into different devices as smartphones and tablets and actually voice search is becoming a routine for users.

In the *TIVO video trends report's* findings, given to users the opportunity to use voice commands to perform tasks (i.e. find something to watch on TV) and to have a sort of "conversations" with the set-top boxes, is a must-have feature for TV device and content providers.

3.1.5. Personalization

One of the main pillars of the EasyTV project is the centrality of user's preferences through the personalization of the content experiencing (EasyTV proposal p. 4).

In the current digital media scenario personalization is a key topic. Actual actors of personalization activities and processes are both consumers, through their direct choices of consumption, and broadcaster/content provider, through the analysis of data provided by users. In the E&M industry, indeed, "data is evolving into a form of currency" [2] and its principal value is allowing companies and broadcasters activities of personalization, customization and segmentation addressed to consumers.

Therefore, there are two prospective from which observe the personalization of the audio-visual viewing experience, but it emerges that currently the key issues to overcome for users and broadcasters are the same: *fragmentation* and *content discovery*.

3.1.5.1 Within the fragmentation

With the advent of more affordable technology now than ever, new broadcast platforms are launched by telecommunication company, small media company and some non-traditional media players.

This means the availability of abundant content resources for consumers.

Free from the time and space constraints of the traditional and linear TV, consumers today, beside the making of a personal daily TV program schedule, create their own “channel” made by different kind of content coming from several distribution channels (linear TV, on demand, OTT etc.).

When possible, users create their own profile setting their preferences or they are automatically profiled by systems on the different platforms.

However, fragmentation of platforms (each with its own interface and pattern of interaction), leads to a more fragmented user experience. For this reason, it is foreseen that a growing need by users will concern the integration of platforms to search and move among all contents in a fully integrated solution that gives viewers the ability to find and access multiple video services [8].

3.1.5.2 The content discovery crisis

The access to more content than ever, represents an opportunity for consumers, but, at the same time, the platforms and offer fragmentation, corresponds to a threat for them: they are struggling to find something to watch. Content discovery is becoming a challenge: “So much content, so little time”. According to Ericsson study [3] consumers spend every day nearly an hour searching for content on scheduled linear TV and on video on-demand services.

Content discovery is a challenge also for broadcasters called to improve content discovery functionality to help viewers find something to watch on TV. Collecting data of user behaviour enables companies to further refine, target, and engage their core audiences in ways that delight [2].

In this regard, the use of data, Artificial Intelligence (AI) and machine learning is a point of attention for the next coming years with the purpose of analysing and predicting human behaviour. Through algorithms, broadcaster platforms will increasingly shape and guide the decisions of consumers with more adequate and personalized recommendations, and they will improve search functionality, affecting viewer engagement and satisfaction.

3.2. New business strategies

As emerged, audience (or better “the audiences”, as resulted by fragmentation) now has empowered by the ability to enjoy TV content how, when and where they want. Moreover, they have the opportunity to decide how much they want to pay for it among a variety of offers.

Companies and broadcasters are moving in a marketplace that is increasingly competitive, slower-growing and dependent on personal recommendations. They must develop strategies that engage, grow, and monetize their most valuable customers [2]. Big and small players, old and new media companies, will fight for market share and subscribers, and it will become increasingly a challenge to develop successfully business, strategy and product.

Some principal aspects, illustrated below, have to be considered for the design of affective business strategies.

Firstly, the *Long tail* phenomenon must be considered. In the book “The Long Tail”, published in 2006, Chris Anderson observed that the internet has opened to potential markets for any niche product. Starting from this consideration, market’s niches are a model to be considered also for the digital media market since there is evidence that fragmentation arises, not only in terms of platforms multiplication, but also appearing regarding consumer segments. Consequently, to this target segmentation it will correspond an increase in “niche broadcast services”.

There will be more launches of services that target only a certain segment of the market. Evaluating the current trend, it seems that “diversity” is conceived as an opportunity⁸, so that probably these niches can be along demographic lines, ethnicity, interests, behaviour, etc. Content produced for different niche communities, or related to specific thematic areas, will find more easily audience acceptance and, hence, will communicate to customers an added value of the product.

In fact, a central issues and challenge in a long-tail economy model is not only to actual meet the needs of target segment but also to reach the final audience among a wide offer.

One of the argumentation of *Economist’s report* is referred to this theme “there is almost no limit to the supply of entertainment choices in every category, but people’s awareness of these products and their ability to find them is constrained by the time and attention they can spare. Overwhelmed by the abundance of choice, they will generally buy what they are most aware of⁹”.

As well as the consumer’s self-schedule phenomenon, the long-tail segmentation of multimedia market represents a threat to consider for companies and broadcasters [6] to turn it into an opportunity of business.

As suggested in the PWC report [2], two further aspects must be considered for new business strategies: *Fan-centric businesses* and *Improve user experience through emerging technologies*.

In the article “How to Make Entertainment and Media Businesses “Fan’-tastic”, by Christopher Vollmer, he affirmed: “In today’s hypercompetitive landscape, entertainment and media businesses designed around and for fans command multiple strategic advantages. They know more about who their users are, what they want, and how and where to deliver it. Fans spend more per capita and are less likely to churn. Today’s fans recruit tomorrow’s¹⁰”.

Making businesses that are fan-centric means capturing the strategic advantages from audiences that are more engaged, are more committed, and spend more per capita. To achieve this goal some points are strategic:

⁸ <http://www.globalmediaconsult.com/television-dark-times-industry-trends-2017/>

⁹ <https://www.economist.com/special-report/2017/02/11/mass-entertainment-in-the-digital-age-is-still-about-blockbusters-not-endless-choice>

¹⁰ <https://www.strategy-business.com/article/How-to-Make-Entertainment-and-Media-Businesses-Fan-tastic?gko=3a2bc>

- *Know who the fans are*: be able to distinguish fans from casual users and analyse the relative value of different audience or user segments;
- *Increase business agility and flexibility*: respond faster to new user preferences, new business models, and recent technologies;
- *Monetize the total fan relationship*: identify new revenue opportunities;
- *Adopt a user-/fan-centric focus*: adopt a direct-to-consumer strategy delivering end-to-end experiences directly to users, consumers, and fans.

The last main aspect to consider, because of his impact on business strategies, is improving user experience through emerging technologies. A great User Experience (UX) is a key factor to engage and delight consumers in new ways. Furthermore, increasing engagement and attention lead companies and broadcasters to get more data and, consequently, more understanding about what customers want. As part of a virtuous circle, from these users' insight the experience can be further improved.

4. EUROPEAN BROADCASTER SCENARIO

The previous digital media market analysis has allowed to identify the main trends regarding the creation, fruition, distribution, interaction and personalization of digital media content, especially television contents.

In general, it emerges that the “television experience” has changed in the last years, but it is still, and increasingly, a central activity in people’s lives. This consideration corroborates the importance of the prime motivation of the EasyTV project: “the necessity of equal access to television and audio-visual services so to ensure that all users, especially persons with various degrees disabilities including sight and hearing, the growing ageing population of Europe, and users with special needs, could derive maximum benefit in terms of choice and quality of media content and services” (EasyTV proposal, p. 3).

For this reason, it is important is to examine what the Media industry, and broadcasters, offer in terms of availability of audio-visual services targeting users with disabilities.

To conduct an analysis able to be actually useful for the development of the EasyTV project, and, secondly, to provide a wider and deeper overview on EasyTV target’s needs and challenges, the present analysis will focus on the European scenario.

Particularly, the European policies and broadcasters’ actions regarding the accessibility improvement of audio-visual media products and services will be identified.

4.1. EU policies for accessibility of Audiovisual media services

The content and media sector plays a key role that is economic, social and cultural. For this reason, globally, audiovisual media content, and their providers, are subject to certain rules. Furthermore, recent developments into the audiovisual landscape have posed several legal, economic and technical issues.

Since content industries are both crucial to cultural diversity and economic development, in Europe the European Commission has assumed the role to put in place the ideal conditions and regulations to create a single market for audio-visual media services.

International agreements and constraints in the Audiovisual sector play a key role on how the European Union and the member states develop this policy and frame as well the options to cooperate with third countries¹¹.

The first framework of minimum common rules for EU-wide television broadcast regulation was provided by the Television without Frontiers (TVWF) Directive in 1989. In 2010, the TVWF directive and its subsequent 1997 and 2007 amendments were incorporated into a single text, the *Audiovisual Media Services Directive (AVMSD)*, which is at present the cornerstone of media regulation in the EU¹².

To follow the evolution of the audiovisual market, on 25th April 2017, the European Parliament’s Committee on Culture and Education voted to amend the proposal for an updated EU Audiovisual Media Services Directive, presented by the Commission in May 2016.

The European Union’s audio-visual and media policy, and more particularly the *Audiovisual media services directive*, aim to ensure they can circulate freely and fairly in the single European market, regardless of how they are delivered (traditional TV, video-on-demand, internet, etc.)¹³.

¹¹ <https://ec.europa.eu/digital-single-market/en/international-dimension-audiovisual-policy>

¹²

http://www.europarl.europa.eu/RegData/etudes/BRIE/2016/583859/EPRS_BRI%282016%29583859_EN.pdf

¹³ https://europa.eu/european-union/topics/audiovisual-media_en

Among the objectives of the *Audiovisual media services directive*, each European Union country is encouraged to follow minimum standards for accessibility: media companies should make their audiovisual content accessible to people with visual or hearing impairments.

Sight- and hearing-impaired persons as well as elderly people should be able to participate in the social and cultural life of the European Union. Therefore, they shall have access to audiovisual media services. Governments must encourage media companies under their jurisdiction to do this by *sign language, subtitling, audio-description or easily understandable menu navigation*¹⁴.

Member States were required to transpose the AVMSD in national legislation by 2009. While all European Union countries have notified transposition measures, issues of implementation are still ongoing in some countries.

The changes in the new proposal of AVMSD provide that the provisions on accessibility are deleted with reference to the proposed *European Accessibility Act* which sets accessibility requirements for a wide range of products and services including AVMS.

The proposed Accessibility Act is intended to set common accessibility requirements for certain key products and services that will help people with disabilities at European Union level to participate fully in society [11]. It aims to improve the functioning of the internal market for accessible products and services by removing barriers created by divergent legislation. This will facilitate the work of companies and will bring benefits for disabled and older people in the EU¹⁵.

Among the products and services covered by the Accessibility Act there are specifically:

- TV equipment related to digital television services
- Audiovisual media services such as television broadcast and related consumer equipment

The Directive will tell “What” needs to be accessible in terms of functional requirements but will not impose detailed technical solutions telling “How” to make it accessible, allowing for innovation.

Furthermore, according to the purposes of the European Commission, the initiative will generate growth of market opportunities for businesses, developing accessible products and services.

Moreover, in the last years the European Commission has proposed other important initiatives regarding accessibility of Audiovisual media services. For example, it introduced the necessity for a more efficient funding for, and use of, subtitling and dubbing by public funds. In 2015 and, later, in 2017, the Commission launches a €1 million call for proposals to find innovative solutions for film translation and for tracking language versions of films.

The aim is to increase the availability and circulation of European films by reducing the costs of subtitling and making better use of public funding for film translation¹⁶, more specifically:

- a) Find innovative solutions for high-quality film translation (e.g. crowdsourcing, machine translation etc.). These innovative solutions/processes/models should be applied to a curated catalogue of European works which should be then made available to VOD services.
- b) Enable tracking of language versions of films online and enable service providers (e.g. VOD services, catch-up TV services or cinemas) to easily find the language version of their choice.

4.2. EU Public Service Broadcasters

Starting from the European directives, almost all EU countries have introduced rules effecting on accessibility of audiovisual media services for people with disabilities.

¹⁴ <https://ec.europa.eu/digital-single-market/en/content-distribution-rules-avmsd#accessibility>

¹⁵ <http://ec.europa.eu/social/main.jsp?catId=1202>

¹⁶ <https://ec.europa.eu/digital-single-market/en/news/preparatory-action-crowdsourcing-subtitling-increase-circulation-european-works>

The implementation of rules, however, follows different paths. While some Member States have detailed self-regulatory rules, others have only very general provisions, or limit the accessibility obligation to the services of Public Service Broadcasters. For this reason, focusing on Public Service Broadcasters means identify the subjects of media industry more involved by European regulation regarding accessibility interventions.

The report *Access Services Pan European Survey 2016*, conducted by EBU (European Broadcasting Union) gives an overview of the situation in Europe with regard to public service broadcasters providing accessibility services to people belonging to minorities or with disabilities.

As the document explains, in recent years the demand for access services is growing, thanks also to new national and international standards. The provision of these services does not depend only on the broadcasters. In fact, broadcasters, who try to provide this type of services, must face daily issues of costs and technological solutions that the market offers.

The research was carried out between May and September 2016, covering 4 key areas, namely:

1. *Subtitling*
2. *Audio subtitling*
3. *Audio description*
4. *Signed programs*

Data were collected on 36 broadcasters distributed in 24 markets (Fig. 5).

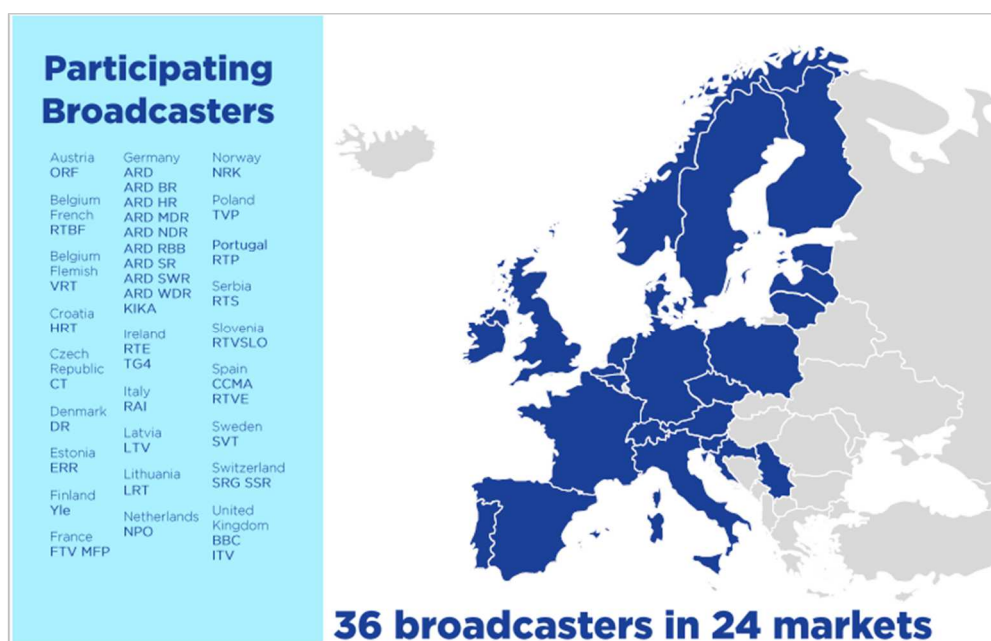


Fig. 5 Broadcasters participating in *Access Services Pan European Survey 2016*

The document can help to answer many questions about access services produced by European public broadcasters and to make an analysis of the actual European situation.

It is possible to understand, for example, how these services are outsourced, how they are distributed, how much budget is allocated to these activities and how broadcasters offer part of their programs.

In general:

- 72% of the broadcasters outsource their access services and most of these are subtitling services, immediately followed by audio description, signing and live subtitling services;
- only the remaining 28% produce in-house contents;

- on average, only 0.44% of the budgets of the PSM Organizations are destined to the production of accessibility services;
- 89% of broadcasters offer part of their programs as VOD (Video On Demand) and 67% of these have a HbbTV app (or connected TV) and offer part of the programs on demand.

Analysing the areas taken into consideration, it certainly emerges that the subtitling is the most offered access service by European broadcasters and that they prefer to spread the content on their own websites instead of on external platforms.

The request from the associations of the hearing and associations of the blind, however, is to spread the access services on all the devices.

Many countries are certainly more advantaged than others, but the **limits of resources** are a huge obstacle. The intent of broadcasters is certainly to predict in the coming years the exponential increase in access services.

1. Subtitling

The addition of subtitles to a program is the service most offered today in Europe. In fact, 100% of the interviewed broadcasters of this survey deliver subtitled programs on own website.

On average, public broadcasters deliver subtitles on over 66% of programs, half of broadcasters on 80%. Some are committed to subtitling 100% of all content while other broadcasters have more limited resources, and this is one of the most important obstacles to the growth of this kind of services despite the request is very high.

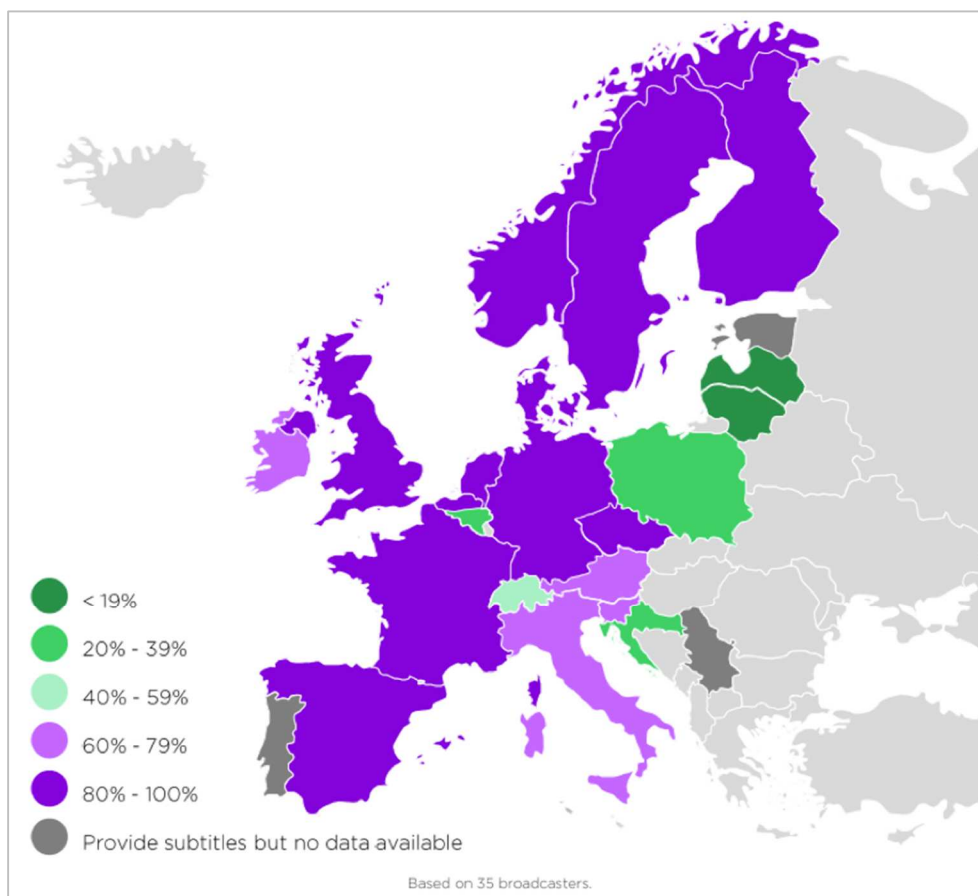


Fig. 6 Percentage of total programmes with subtitles

The most relevant data in this area are:

- the concentration of issuers that subtitle content is in the north-west of Europe;

- all PSM Organizations make subtitles available on their websites. Not the same for external platforms on which instead there is a decline (HbbTV, VOD and mobile devices);
- only 1/3 makes them available on social networks;
- in 87% of countries surveyed associations of the hearing impaired have requested or demanded subtitles on all devices.

2. Audio subtitling

The audio subtitling is the service less offered in Europe. In fact, only 8 of the 36 broadcasters interviewed offer it.

There are many differences between the interviewed broadcasters. For example, Nordic and Belgium Flemish broadcasters offer almost all programs with audio subtitling, in contrast to Spanish broadcasters that offer less than 19% of programmes.

Another data to underline is the availability of content on the platforms. In fact, only 2 out of the 36 broadcasters have made audio subtitles available on online platforms (own website, mobile devices, HbbTV). About 3 broadcasters intend to provide it in 2016.

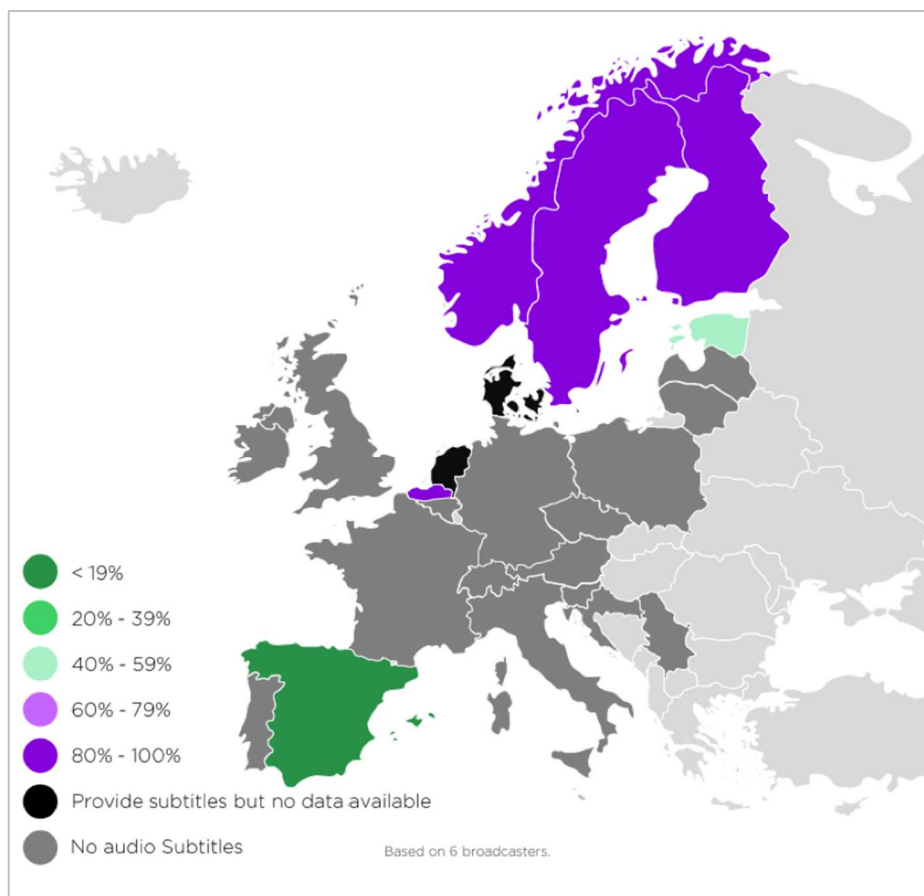


Fig. 7 Percentage of total programmes with audio subtitles

3. Audio Description

Audio description is widely provided from broadcasters. In fact, 30 out of interviewed broadcasters offer this service. Broadcasters that do not offer this service are mainly located in northeastern Europe. In Ireland RTE offers audio description, TG4 does not.

In general:

- audio description is deliverable only on 13% of their total numbers of programs. England,

- Spain, Germany and the Czech Republic are the countries that mostly do this;
- own website and mobile devices are the most used platforms for audio description;
- 25% of interviewed broadcasters have not audio description available online. 4 broadcasters intend to provide it in 2016;
- in 50% of the interviewed countries, the associations of the blind have requested or demanded audio description on all devices;
- 72% of selected countries think that it's very important to deliver audio description on HbbTV and other connected TV services;
- pre-mixed is the most common method used to deliver audio description, followed by receiver-mix, but in a much lower percentage.

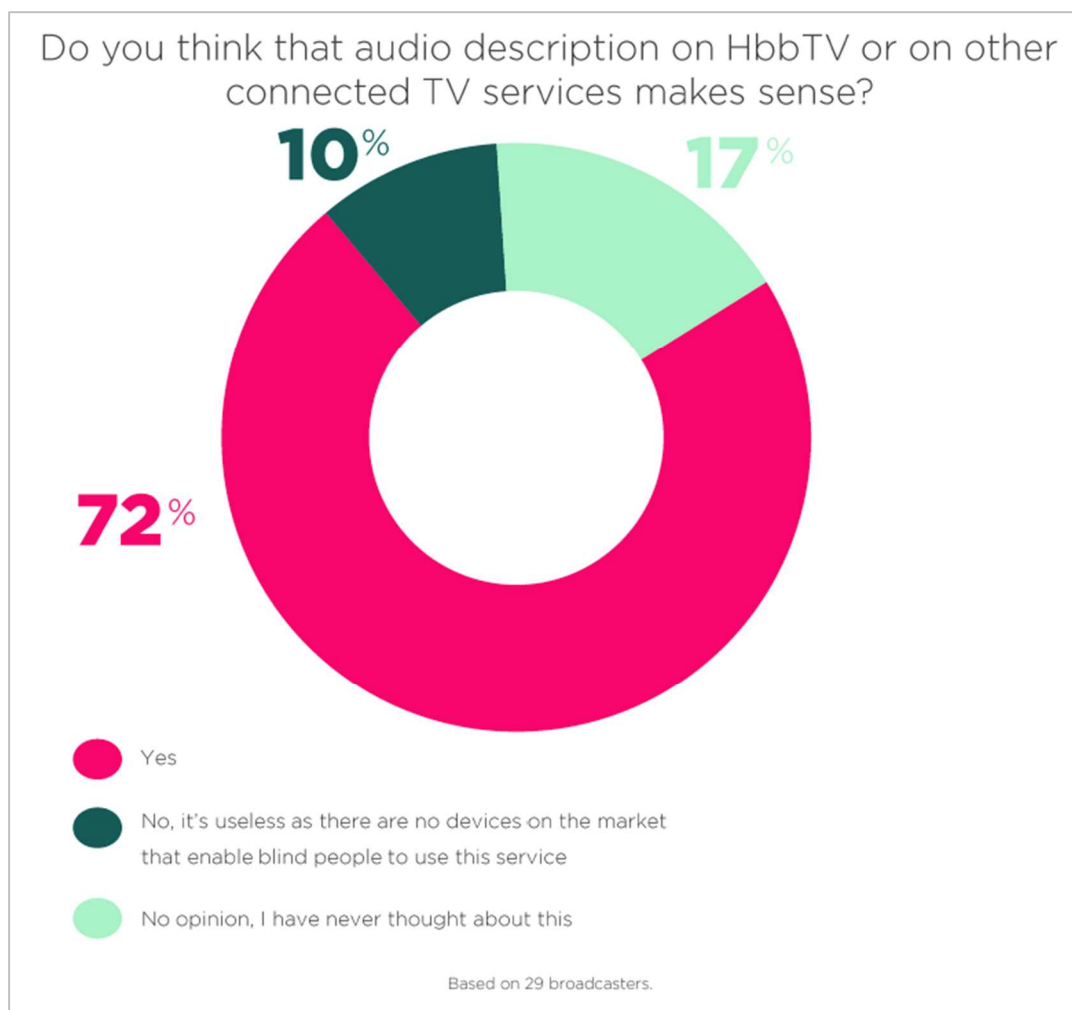


Fig. 8 Audio description on HbbTV or on other connected TV service

But, the most interesting data concerns the availability of such content: nobody is using it on social networks.

4. Signed Programs

Signed programs are provided from 32 out of interviewed broadcasters.

In particular:

- in Ireland RTE offers audio description, TG4 does not;
- in Germany ARD offer signed programs but not from all regional broadcasters;
- France offer signed programs, but data are not available;

- in Denmark, however, around 18% of programs are signed.

On average, public broadcasters deliver sign language on 4% of programs and in over half broadcasters less than 4% of programs are signed.

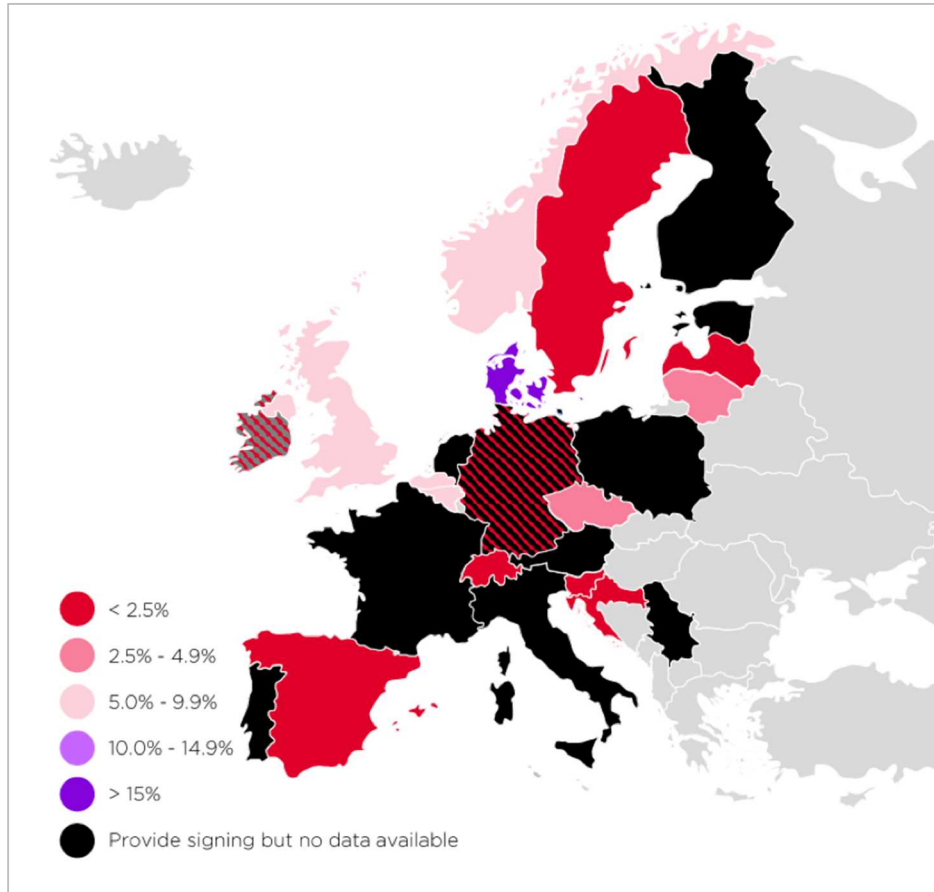


Fig. 9 Percentage of total programmes with signing

In conclusion:

- in all countries, the main public broadcasters make a signed daily news program available;
- in addition, other types of sign language programs are offered, such as special programs, children's programs, entertainment programs, sports and documentaries.
- 90% of broadcasters make sign language programs available on their websites, mobile devices and HbbTV.

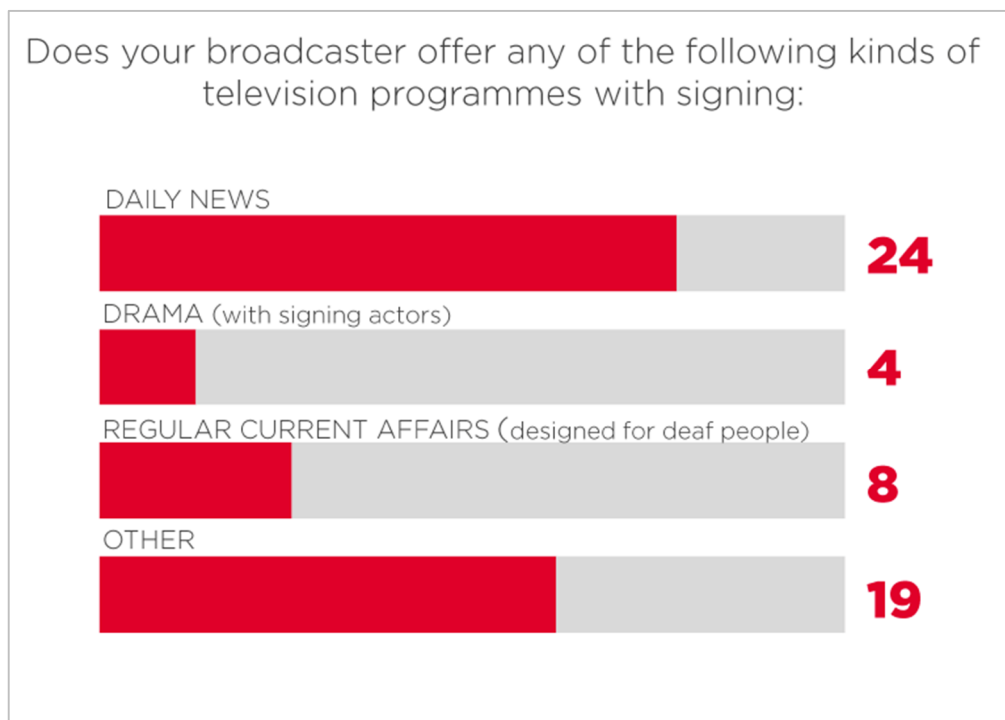


Fig. 10 Kinds of television programmes with signing

In conclusion, for the European Broadcaster the most important **challenges** to win are:

- Costs
- Engagement of the on-line services providers with the accessibility
- Access service online
- Switch over to digital

Difficulties for delivering access services in the next years are foreseen to come from financial cuts of 17 broadcasters (55%).

Other aims of the member's organizations are:

- *enhance awareness in their organizations;*
- *improve quality of access services;*
- *anticipate the impact of an ageing population;*
- *beware the constant change of technology;*
- *increasing quotas and regulations.*

Other foreseen developments are:

- *Read me button on websites*
- *Easy-to-read content*
- *Font size options*
- *Slowly spoken language*
- *App with inclusive access*
- *Accentuate an easy accessibility*
- *Personalized subtitles on HbbTV*

As displayed by the mentioned study, the demand for accessibility services is growing significantly in recent years.

However, there are many difficulties encountered by public broadcasters, such as high costs and technological supports that do not live up to the situation. Certainly, there are more advantaged markets but not enough.

The main services chosen for the survey (*Subtitling, Audio subtitling, Audio description and Signed programs*) are unfortunately not guaranteed by all public broadcasters.

However, many are the objectives that the members of the organizations have set themselves, such as enhancing the awareness, increasing the portion of accessible content and improving regulations.

5. ASSISTIVE TECHNOLOGIES SCENARIO

The World Health Organization (WHO) defines **Assistive technology** as an umbrella term covering the systems and services related to the delivery of assistive products and services. It refers to any product that has the purpose to maintain or improve an individual's functioning and independence to facilitate participation¹⁷. Furthermore, assistive technologies can enhance the health and well-being of a person and their family, as well as broader socioeconomic benefits.

According to WHO, globally, more than 1 billion people need one or more assistive products. With an ageing global population and a rise in non-communicable diseases, more than 2 billion people will need at least one assistive product by 2030, with many older people needing two or more.

The increasing aging population, together with the support of government initiatives and independent agencies, are impacting on the growth of elderly and disabled assistive devices market.

The global elderly and disabled assistive devices market was valued at \$14 billion in 2015 and is expected to surpass \$26 billion by 2024¹⁸.

To better understand the assistive technologies scenario for the two main target users of EasyTV, as *Blind* and *Deaf* people, a deeper analysis on these two segments has been led, focusing on:

1. *Solutions*
2. *Competitors*
3. *Market drivers*
4. *Customers habits and relative needs*

5.1. Blind

5.1.1. Solutions

The low-vision products are classified into several types. Below there is a list of product categories¹⁹. Some products fall into more than one category, such as an electronic notetaker with speech and braille output that can also work as a braille display connected to own computer. Some products require another product to work; for example, a speech synthesizer needs a screen reader to tell it what to say.

- Accessible Mobile Apps
- Accessible Software
- Audible and Tactile Signs and Warning Surfaces
- Braille Printers
- Braille Translators
- CCTVs/Video Magnifiers
- Deaf-Blind/Multiple Disabilities
- Digital Talking Book Players (Hardware)
- Digital Talking Book Players (Software)
- Educational Technology

¹⁷ <http://www.who.int/disabilities/technology/en/>

¹⁸ <https://www.forbes.com/sites/tjmccue/2017/03/21/elderly-and-disabled-assistive-technology-market-to-surpass-26-billion-by-2024/2/#2ed5fced2d0b>

¹⁹ Source *American Foundation for the Blind*

- Electronic Notetakers (Braille)
- Electronic Notetakers (Speech)
- Games and Activities
- GPS (Hardware)
- GPS (Software)
- Household, Personal and Other Independent Living Products
- Lighting
- Low Vision Optical Devices
- Miscellaneous Speech Products
- Optical Character Recognition Systems
- Refreshable Braille Displays
- Screen Magnification Systems
- Screen Readers
- Speech Synthesizers
- Windows-Based Tutorials

The EASYTV project straddles some of these categories.

5.1.2. Customers habits and relative needs

Following a recent research (*"Magnitude, temporal trends, and projections of the global prevalence of blindness and distance and near vision impairment: a systematic review and meta-analysis"*; Bourne et al. Lancet Glob Health, 2017, globally, of the 7,33 billion people alive in 2015, an estimated 36,0 million were blind, 216,6 million people had moderate to severe visual impairment, and 188,5 million had mild visual impairment. The estimated number of blind people increased by 17,6%, from 30,6 million in 1990 to 36,0 million in 2015. This change was attributable to three factors, namely an increase because of population growth (38,4%), population ageing after accounting for population growth (34,6%), and reduction in age-specific prevalence (-36,7%). The number of people with moderate and severe visual impairment also increased, from 159,9 million in 1990 to 216,6 million in 2015.

Visually impaired users use the TV systems and contents, both alone or with family. They access usually by TV-sets, but also by mobile, tablet and PC, with a lot of difficulties/needs such as:

1. It's not easy to access the TV;
2. It's very difficult to use the remote control without audio feedbacks;
3. there is not enough audio description available, only few programs are described;
4. it's very difficult to change and tune to the specific audio channel;
5. It would be useful to have a standard button on the remote to activate/deactivate audio descriptions;
6. teletext is not accessible. It cannot be read. Would be useful to read teletext;
7. overlay text during live programs/adv/movie are not readable. It's very interesting to read aloud this information;
8. it would be very useful to manage audio and video playback. Manage volume differently on every audio track; for example, it lowers the audio of the movie and increases the audio level of the description (text to speech) and so on;
9. it would be very useful to have the possibility to save the screen image or to stop the image

on the screen to read well what the user is looking at.

5.1.3. Market drivers

Some of the main market drivers for the EASYTV business may be the following:

1. the accessibility gap still existing nowadays in the TV market and the strong added value of the EASYTV Platform to fill this gap;
2. the growing numbers of potential users, due to the increased longevity;
3. the growing needs to improve the accessibility to meet regulatory targets;

5.2. Deaf

5.2.1. Solutions

The CNSE Foundation identifies the following services of interest to deaf and hard of hearing people:

- *Image magnification*: face zooming, by which the system, based on an automated face detection algorithm, can enlarge the area where a face is detected. This is useful for hard of hearing people which need to read lips. Also, it is useful for deaf people who want to zoom the sign language interpreter window.
- *Image adaptation*: changing the subtitle parameters such as colour, font and size to increase their personal preferences.
- *Clean audio*: increasing the opportunities to hard of hearing for better speech understanding.
- *Sign language 3D realistic avatar*: using it to translate speech to sign language.
- *Crowdsourcing platform for sign language interpretation*: increasing the signs database available to use with the sign language avatar.

These services must be retrieved from different devices and platforms:

- Digital TV
- Live video streaming
- Mobile devices
- Web

5.2.2. Competitors

5.2.2.1 Image magnification

No projects or solutions are known for this service.

5.2.2.2 Image adaptation

Between 2007 and 2008 INDRA and the Universidad Politécnica de Madrid (UPM) developed a project called 'ACANTO full accessibility to digital TV' with the collaboration of the Universidad Carlos

III, Drake Europe, CNSE Foundation and the ONCE²⁰ [12]. One of the goals in this project was the improvement of subtitling presentation for deaf and hard of hearing people as follow:

- Transparency level of the box on which the subtitles are displayed
- Screen position of subtitles
- Font size
- Font type

No efforts are known of the technology developed in this project after its ending.

On the other hand, between 2013 and 2016, a consortium of twelve European partners carried a project coordinated by Universitat Autònoma de Barcelona (UAB), called 'Hybrid Broadcast Broadband for All' (HBB4All), who evaluated the impact for the user to make selections of aspects of the subtitle presentation such as the font, the colours used, the location of the subtitles, the duration of subtitles and the temporal presentation style [13].

5.2.2.3 Clean audio

Between 2010 and 2013, a consortium of eleven partners from Europe carried a project called 'FascinatE' [14], in which one of his goals was to develop an "object-based approach that can be implemented within MPEG-H that can give users control of their audio mix and hence facilitate enhancements to be made for hearing impaired viewers".

The above-mentioned project HBB4All also offered users the possibility to adjust the dialogue intelligibility to personal preference and transmit clean audio enhanced streams by exploiting HbbTV 2.0 features [15].

5.2.2.4 Sign language realistic 3D avatar

In Spain, the most realistic 3D avatar ever known was developed in the framework of the project "Consignos, automatic sign language converter and player" lead by Indra in a consortium formed by Institute for the Spanish Turistic Quality (ICTE), the Universidad Politécnica de Madrid (UPM), the Universidad de Castilla-La Mancha (UCLM), Ambiser company and the CNSE Foundation [16] [17].

There are a lot of sign language avatars developed around the world, but all of them has the following issues:

- The lack of enough in-depth knowledge about the logical and internal functioning of sign languages. More linguistic researches are needed.
- The challenge of giving a hyper-realistic facial expression and body movements to the avatar, both of them crucial linguistic components.

A review of different sign language avatars can be seen in Wolfe et al. [18].

5.2.2.5 Crowdsourcing platform for sign language interpretation

No projects or solutions are known for this service.

²⁰ Spanish National Organization of the Blind. More info here: <https://www.once.es/otras-webs/english>

5.2.3. Market drivers

The last CESyA²¹'s report shows the increment of the subtitles in the bigger broadcasters' groups in Spain (CRTVE, Atresmedia, Mediaset, Vocento, Unidad Editorial). That denotes the interest about the accessibility in the broadcasters' companies so it is supposed that they will have interest in incorporating EasyTv technology²².

Company	Services
36caracteres	Subtitle for cinema, television, theatre and opera
Agils Accesibilitat	Magnetic loop, braille, sign language translation, live transcription, audio description
APTENT	Subtitle, audio description, sign language translation, magnetic loop y cognitive accessibility
Aristia Producciones y Espectáculos	Audio description in films and theatre, subtitle
BANDAPARTE	Subtitles
Best Digital Group	Subtitles
CNSE Foundation	Sign language translation, sign guide and streaming
Edsol Producciones	Sign language translation, subtitles and streaming
Ilunion	Audio description and subtitles
IMAGINABLES, INC.	Subtitles in several languages for television, video and DVD
LASERFILM	Subtitles
M.Q.D.	Live subtitles, Stenotype and sign guides
Multisignes	Subtitles, audio description and sign language
Savinen	Subtitles for live events, video-digital and DVD
SDI Media	Subtitles and audio description
Sonygraf	Subtitles for video and films. Record sound, editing and postproduction
STENOTYPE ESPAÑA	Live subtitles
Subbabel	Audio description, subtitles, sign language translation, audio guide and sign guide
Trágora	Subtitles and audio description

²¹ CESyA is the acroninum of Spanish Center for Subtitutling and Audiodescription. More info: <http://www.cesya.es/>

²² A full list of companies who works with subtitling and audiodescription can be seen here: <http://www.cesya.es/recursos/empresas>

5.2.4. Customer habits and relative needs

All evidence shows that deaf and hard of hearing people use the same technologies and with the same frequency as hearing people, perhaps even more because their need for access to information.

In Spain, a ‘Survey on Disabilities, Personal Autonomy and Dependency Situations’ reveals that watching television or DVD was the main activity they dedicated their free time, followed by sports and reading [19].

In USA, a survey about technology use among deaf and hard of hearing adults suggest that “individuals who are DHH make frequent use of smartphones such as iPhones, Androids, and Blackberrys (71.6%), as well as personal computers (PC) (70.9%)” [20].

Lastly, CNSE Foundation perceives that in recent years there has been an increase of video streaming (such as Netflix, HBO or Movistar+) and social media (Facebook primarily) use by deaf and hard of hearing people, but it wasn’t proved.

6. BUSINESS MODEL

Providing a business model for EasyTV is strategic: it allows both to make the project sustainable and exploit its innovation impact.

Therefore, creating a business model for Easy TV means to achieve two main goals:

1. define a strategy to capture and generate value from the innovative solutions;
2. maximizing the project long-term impacts in technology, society and industry.

To describe the logic with which Easy TV will create, distribute and capture value, in the present document an “initial” business model is proposed. It represents, in fact, a first proposal concerning the early stage of the EasyTV project development.

A business analysis has been developed based on the outcomes of the previous analysis of Market, European Broadcaster and Assistive technologies scenarios, and furthermore, considering the findings of precedent deliverables of the project (see D1.1 and D1.2).

Starting from this analysis, an initial business model has been defined to identify the more appropriate offer for the EasyTV solutions and with the objective of increasing the active participation by a large constituency of stakeholders and lower the barrier of adoption.

6.1. Methodological approach

For its success, a business model, firstly, must reach the potential customers and meet their needs. Consequentially, a *customer-oriented* approach has been used in continuity with the general *user-centered* approach adopted for the whole project.

Two different tools, widespread and widely used in business development, have been utilized for the business development of the EasyTV project:

1. the **Value Proposition Canvas (VPC)**
2. the **Business Model Canvas (BMC)**

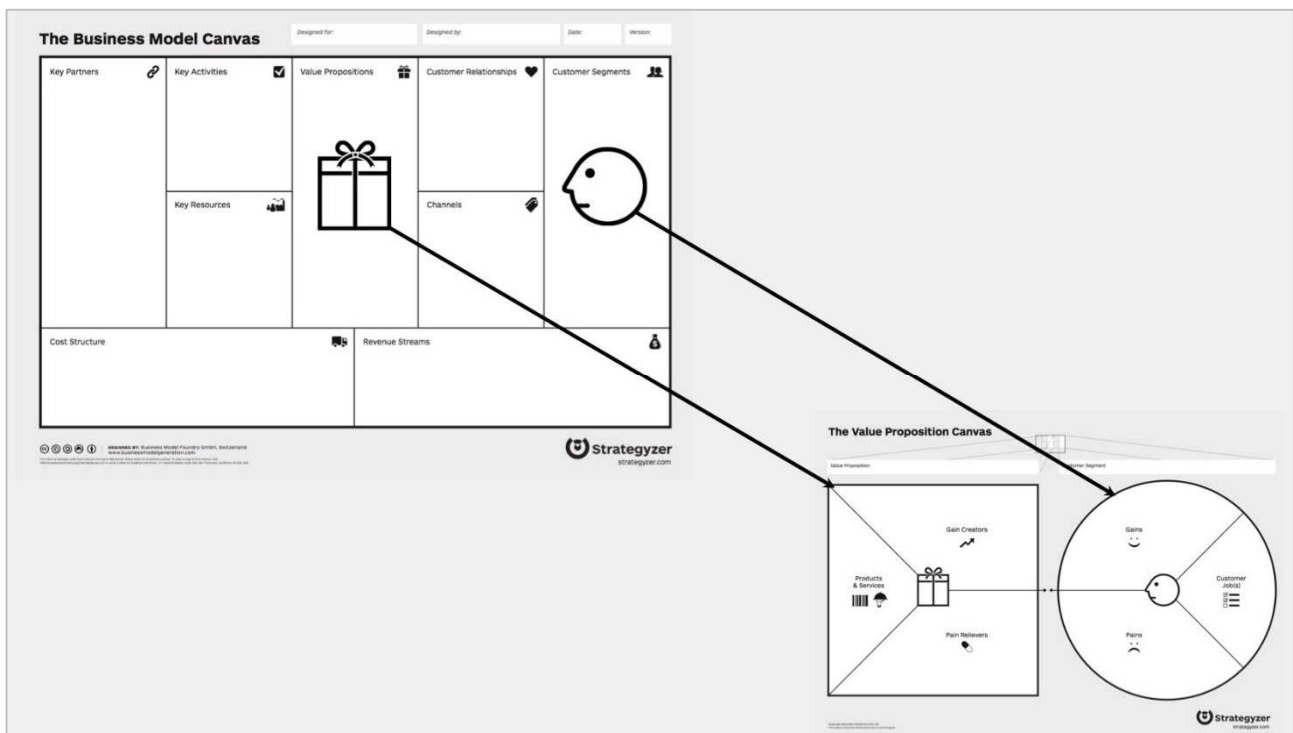


Fig. 11 Connection between BMC and VPC

As better explained below, the Value Proposition Canvas and the Business Model Canvas are connected.

These strategic management tools allow to create a Business model for EasyTV in a structured way and support its description using visual charts. Both canvases captures, the core issues around understanding and finding customer problems and designing and validating potential solutions. Furthermore, a visual representation enables an immediate focus on the more significant items of EasyTV project.

The Osterwalder's BMC²³ is made by nine blocks and every block contain different elements. The most important part of the business model is the relationship between the **Value Proposition** and the **Customer Segment**. To achieve a consistent and effective proposition of value for the different customer segment, the VPC has been used. It zooms into the value proposition and customer segment to describe the interactions between customers and product more explicitly and in more detail.

The process that has leaded to the initial business model for the EasyTV project consisted of two steps: first, define the Value Proposition Canvas, and then complete the Business Model Canvas.

6.2. Value Proposition Canvas

The Value Proposition is a strategic dimension to create an effective Business model and it refers to the bundles of products and services that represent a value for a specific customer segment.

Products and services create value for the different customer segments when, through them, they can satisfy their needs, solve problems or realize aspirations and desires.

Therefore, to create an attractive Value proposition, a customer-oriented design is the most useful approach to consider. Users/customers, with their differences and similarities, needs and difficulties, are at the centre of the design process, as emerged in other phases of the EasyTV project.

The Value Proposition Canvas, consistently with this leading approach, has been used as a business tool to create, design and implement value propositions for different customer segments. It works in conjunction with the Business Model Canvas and it is a key component. In fact, it is a plug-in tool²⁴ that allows to understand customers' needs focusing on their requirements, to design products and services they want.

The VPC is based on two elements of the business model, the "Customer segment" and the "value proposition". Therefore, it allows to map out both in more granularity and show the fit between what is offered and what customers want.

This is the first aspect for two main motivations:

1. new products and services introduced into the market can fail to deliver on expectations and not be successful in the market segment;
2. in the specific context of the EasyTV, realize a valid value propositions for the project's main customer segment means, not only create a successful business model, but also create products and services that fit the actual end user needs to achieve the main goals of the project.

The Value Proposition Canvas helps to systematically understand what customers want, why they need a supplier, what they can perceive as an extra value and what they find profitable or disadvantageous.

It's moreover possible to identify customer needs in a visual and structured way.

²⁴ <https://strategyzer.com/platform/training/crash-courses/business-model-basics#video-learn-the-value-proposition-canvas>

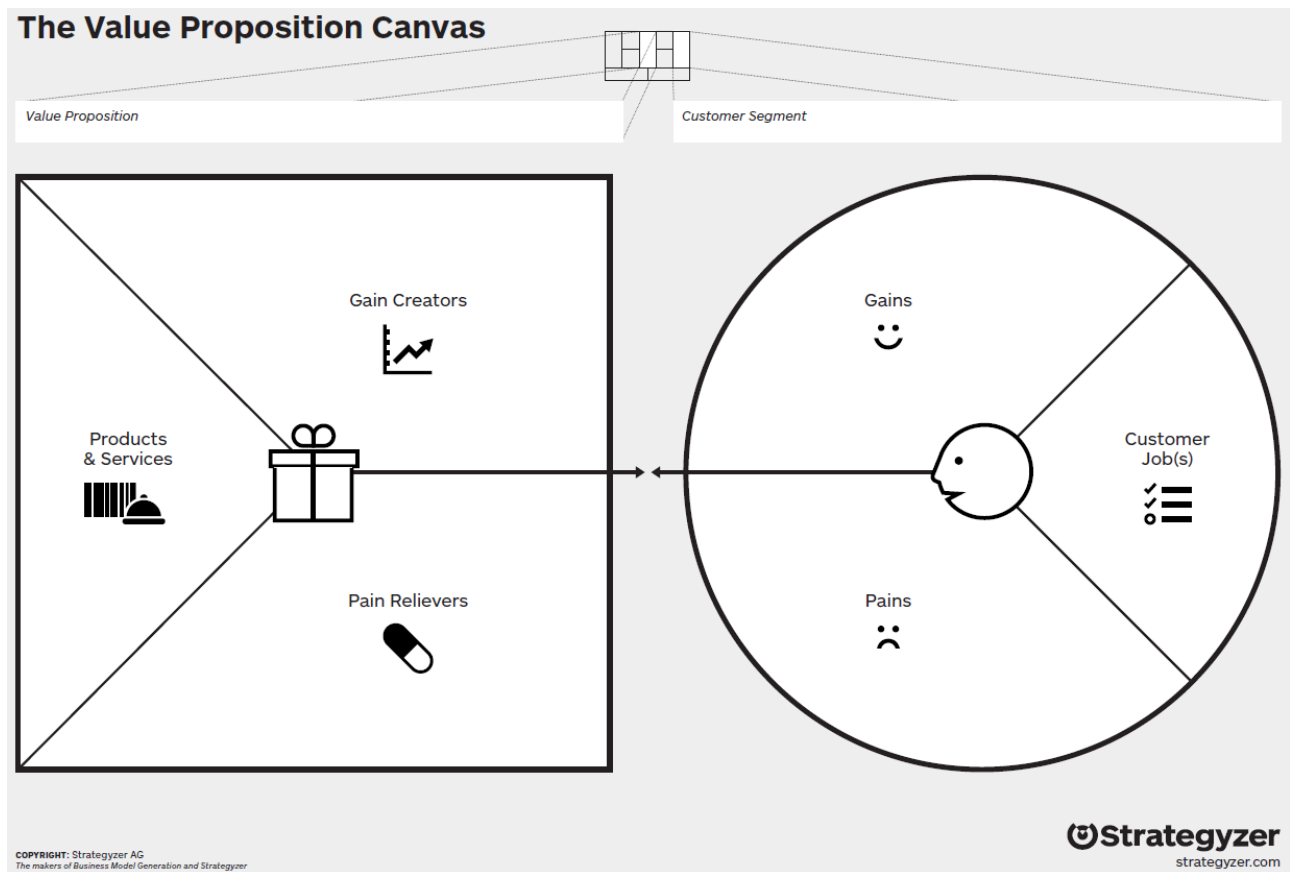


Fig. 12 Value Proposition Canvas

The Value Proposition canvas has two sides that focus on the two key building blocks of the business model canvas:

1. The Customer Segment is broken down into three boxes:
 - a. Customer Jobs
 - b. Customer Pains
 - c. Customer Gains
2. The Value Proposition is broken down into three boxes:
 - a. Products and Services
 - b. Pain Relievers
 - c. Gain Creators

The Value proposition canvas enables to create products and services that perfectly match user's needs allowing to collect, simply and easily, customer's information.

The canvas traces a parallel line between products and services offered and the needs of customers. Moreover, there are correspondence and dependence among the other panels of the canvas regarding "Pains" and "Gains": the problems that users experience and how these can be solved; what expectations they have and how they can be met by products and services.

With the customer profile block is possible to clarify the customer understanding achieved, otherwise, the value proposition map allows to describe how is intended to create value for that customer. The fit between the two is achieved when one meets the other.

The right side of the canvas is the first to be completed, starting from Customer Job(s) box, and then continue with Customer pains and gains.

- **Customer Jobs** describe the things that they are trying to get done in their work or in their lives. A job can be a task they are trying to perform, the problem they are trying to solve or a need they are trying to satisfy. Customer jobs involve functional, social, personal and supporting factors.
- **Customer pains** revolve around undesired outcomes, obstacles, risks and emotional pains that user can faced. The box describes all the negative emotions and undesired situations which the customer could experience before, during and after getting the job is done.
- **Customer gains** can be classified into required gains, expected gains, desired gains and unexpected gains. It is about what the customer expects and what would surprise him.

A clear image of the client emerges, writing and classifying the problems and the elements of the Customer segment boxes. Subsequently, it is important to manage the customer's biggest pain and gain: these elements will then form the basis of the product or service.

In fact, once the right side of the canvas is completed, it is possible to move over to the left side, in particular on the box "Products and services" and then continue with "Pain relievers" and "Gain creators".

- **Products and services** is a list of all the products and services which the value proposition is built around. They can be tangible, intangible, digital, financial etc.
- **Pain relievers** describe how services and products address the challenges needs and the pains of the customer, how they eliminate negative emotions and undesired or avoidable situations.
- **Gain creators** describe how customers can benefit from products and services offered.

In conclusion, starting from what customer wants, it is possible to understand whether products and/or services are in line with the customer needs.

After understanding the Value proposition canvas structure and the objectives of each section and box, the next phase is fill and complete the canvas with the item individuated.

To substantiate and corroborate the choices made, the process of creation and collocation of the item has followed a first phase of recognition of different issues, topic and solutions collected into the previous documentation (D1.1 and D1.2) or emerged from the analysis present in the different sections of the present document.

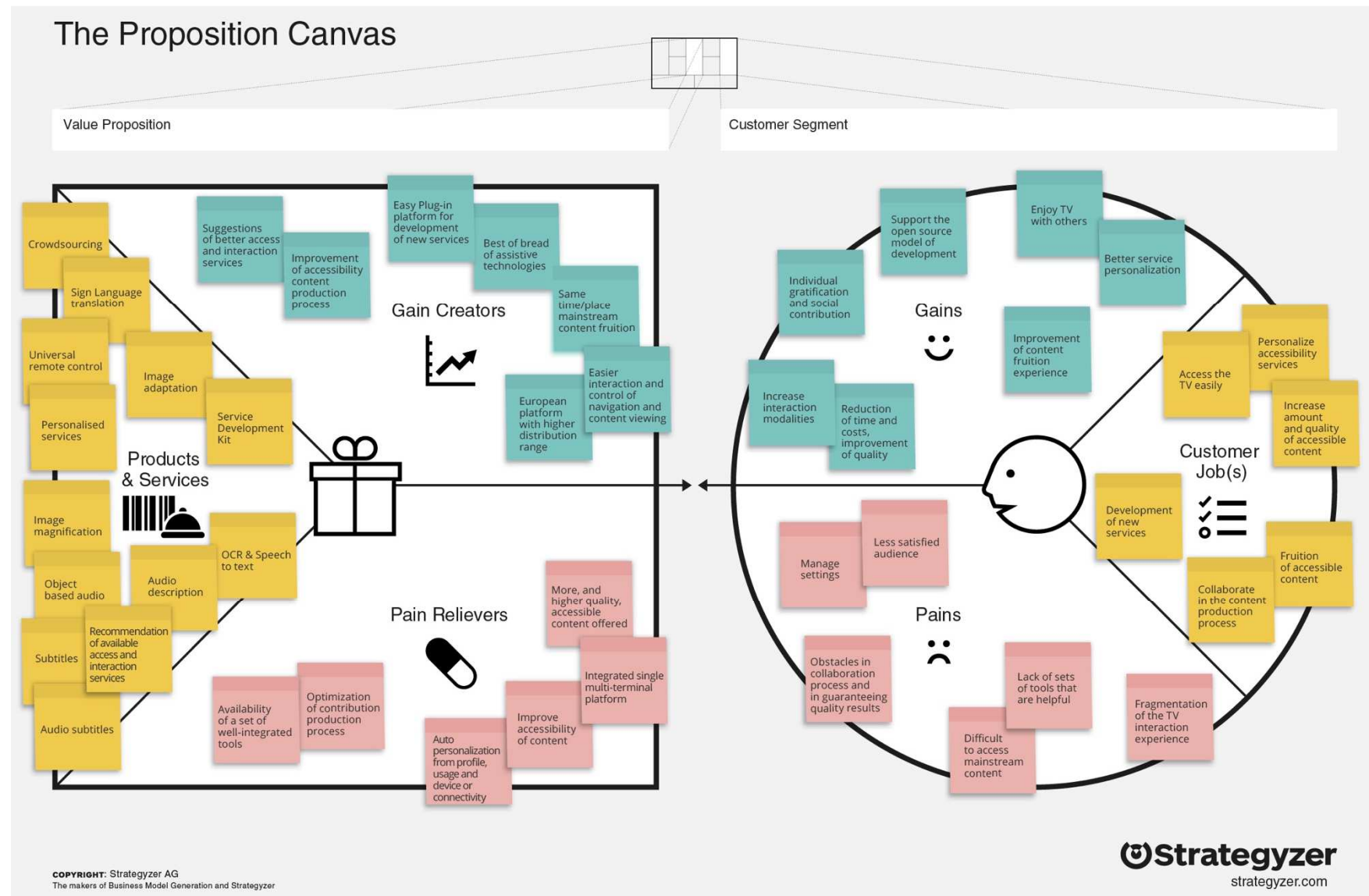


Fig. 13 EasyTV Value Proposition Canvas

6.2.1. Customer Job

Table 2 Value Proposition Canvas: Customer Job

Definition	User	Description
Increase amount and quality of accessible content	BROADCASTER	One of the main jobs for Broadcasters is to make their content available for any type of customer, in order both to reach a wider audience and fulfil policies and regulations regarding media services. But, in many cases, broadcasters are unable to provide all services that allow people (especially people with disabilities) to access media content. This is due mostly to time and cost problems. Consequently, accessible contents cover only partially all of the contents offered.
Personalize accessibility services	END USERS	Customers need to personalize their TV viewing experience, based on their needs that depend on individual skills, context and content type.
Access the TV easily	END USERS	Users need to interact with the TV and the contents in an easy and intuitive way because it is an essential requirement for any type of user.
Fruition of accessible content	END USERS	Customers want to enjoy content made accessible by different services based on their needs and abilities / difficulties.
Collaborate in the content production process	COLLABORATORS OF THE PLATFORM	Expert users want to share their expertise collaborating in the content production process.
Development of new services	COLLABORATORS OF THE PLATFORM	Developers are interested to develop, test and deliver their own services without profit finality.

6.2.2. Pains

Table 3 Value Proposition Canvas: Pains

Definition	User	Description
Less satisfied audience	BROADCASTER	Audiences do not have a fairly amount of accessible content available. This aspect causes frustration and negative emotions with respect to the broadcaster.
Manage settings	END USERS	Customers have difficulty adjusting device settings (TV, mobile devices, desktop PCs, etc.) through which they access TV content.
Fragmentation of the TV interaction experience	END USERS	Multiple devices and platforms are usually used to enjoy accessible multimedia content, so that people with disabilities have "fragmented" access to television content.
Difficult to access mainstream content	END USERS	Among the major pain there is the difficulty to access the mainstream television content. This represents a limitation for users who are not guaranteed equal access to these contents. This barrier prevents them from developing their maximum potential and their personal, professional and social aptitudes.
Obstacles in collaboration process and in guaranteeing quality results	COLLABORATORS OF THE PLATFORM	Sometimes the process of content production is not well structured and managed, this have an impact on the quality of results.
Lack of sets of tools that are helpful	COLLABORATORS OF THE PLATFORM	Lack of availability of set of tools that enable an easier development of new services.

6.2.3. Gains

Table 4 Value Proposition Canvas: Gains

Definition	User	Description
Reduction of time and costs, improvement of quality	BROADCASTER	Broadcaster's aim is to reduce time and costs for producing accessible content and, simultaneously, guaranteeing a better quality to satisfy their audience.
Better service personalization	END USERS	Every kind of user would like to have guaranteed a better personalization service to have a more comfortable and positive fruition experience of media content.
Increase interaction modalities	END USERS	Increasing the ways in which customers can interact with TV set and media content increases the possibility of overcoming the daily difficulties that especially users with disabilities find in everyday life. To have multiple ways of interaction is useful and desirable for any user increasingly able to use new device and technologies, such as, speech interaction with devices (i.e. "Siri" by Apple, "Echo" by Amazon).
Improvement of content fruition experience	END USERS	To improve their experience of use through the modern technologies used daily represents an opportunity for users.
Enjoy TV with others	END USERS	Watching TV together with other people without interfering with their "television experience" is among the main desires for people with disabilities.
Individual gratification and social contribution	COLLABORATORS OF THE PLATFORM	Opportunity to collaborate for social finalities and for improving personal skills.
Support the open source model of development	COLLABORATORS OF THE PLATFORM	Support a model of development of new services that encourages open collaborations among developers.

6.2.4. Product & Services

Table 5 Value Proposition Canvas: Product & Services

Definition	Description
Crowdsourcing	Crowdsourcing platform will be used by expert and end-user associations to openly contribute with subtitles and sign subtitles that, furthermore, will simultaneously translate to multiple languages.
Sign Language translation	Sign language translation in different languages, through a multilingual ontology that will map signs to ontology concepts, and realistic sign language avatar animation.
Adaptation	Adaptation of level of content description using standardised DASH streaming services
Personalised services	Personalised services for people with disabilities, including self-adaptive and tailored services, which can learn from users' actions to improve the accuracy of the personalisation.
Recommendation of available access and interaction services	Recommendation of available access and interaction services according to the user's profile, different reproduction speed (slow reproduction) of content presentation and simple reading following grammatical and typographic changes.
Universal remote control	Improvement and development of voice and gesture/gaze recognition to control the TV set and TV applications (e.g., eye movement or head movement). These technologies will be delivered as part of a universal remote control, focused on accessibility, which will also be interoperable between TV sets and personal devices (e.g., wheelchair joysticks), establishing easier interaction and control of the TV in both navigation and content viewing.
Image magnification	Adaptation of the image (to present contrast/edge enhancement or magnification, including algorithms for colour highlighting) targeted at improving accessibility for colour-blind people and people with various visual impairments.

Object based audio	Improve content description by narratives of the content which can be adapted to different play pace, in addition to enhancements towards a cleaner audio using Object Based Audio
Optical character recognition (OCR)	Improve content description with the voice presentation of information.
Speech to text	Improve content description with the voice presentation of information.
Subtitles	Transcription or translation of dialogue or narrative and displayed on the screen.
Audio description	Additional narration track which consists of a narrator talking through the presentation, describing what is happening on the screen during the natural pauses in the audio, and sometimes during dialogue if deemed necessary.
Audio subtitling	Also referred to as 'spoken subtitles', it is the spoken rendering of the written (projected) subtitles or surtitles.
Service Development Kit	Kit of tools that facilitating the integration of new services into the platform.

6.2.5. Pain Relievers

Table 6 Value Proposition Canvas: Pain Relievers

Definition	User	Description
More, and higher quality, accessible content offered	BROADCASTER	Increasing the number and quality of accessible content would enable broadcasters to meet the needs of their audiences who are dissatisfied because of low quantity and quality of accessible content.
Auto-personalization from profile, usage and device/connectivity	END USERS	Possibility to have an automatic customization of accessibility services based on user's profile, the usage and, furthermore, the technical characteristics of devices and type of connectivity.
Integrated single multiterminal platform	END USERS	Opportunity to have an integrated platform that offers to customers the same range of services by distributing them on different devices in a consistent way, so that to guarantee them a better user experience.
Improve accessibility of content	END USERS	Availability of a wider offer of accessibility services that improve the accessibility of the contents that are then actually enjoyed by users.
Optimization of contribution production process	COLLABORATORS OF THE PLATFORM	Improvement and optimization of the process of content production that allows to guarantee a better quality of results.
Availability of a set of well-integrated tools	COLLABORATORS OF THE PLATFORM	Enable application/service developers to have, at their fingertips, a tool which helps them create innovative and efficient solutions.

6.2.6. Gain Creators

Table 7 Value Proposition Canvas: Gain Creators

Definition	User	Description
Improvement of accessibility content production process	BROADCASTER	Improving the production process of accessible contents, optimizing times and costs and guaranteeing high quality.
Suggestions of better access and interaction services	END USERS	Providing suggestions of accessibility services available that may be useful to customers.
Easier interaction and control of navigation and content viewing	END USERS	Easier interaction with the TV set and contents through alternative modalities that are more intuitive for customers: daily activities could be carried out more easily, such as search, recording, navigation of Electronic Program Guide (EPG), time shifting, reminder setting etc.
Best of breed of assistive technologies	END USERS	Ensuring the best of the technologies available on the market to allow user with disabilities an improved experience of use.
Same time/place mainstream content fruition	END USERS	Fully sharing the experience of use, allowing users with disabilities to enjoy the same television content with others, at the same time and in the same place, so as to preserve the social component that belongs to the television viewing
European platform with higher distribution range	COLLABORATORS OF THE PLATFORM	Availability of a platform that distributes content on a wide audience.
Easy Plug-in platform for development of new services	COLLABORATORS OF THE PLATFORM	Availability of a platform that allow easier to create innovative and efficient solutions.

6.3. Business Model Canvas

The Business Model Canvas consists of nine blocks. Each block represents a constituent element of the EasyTV project and it's connected to all the others creating an ecosystem where all elements are interconnected.

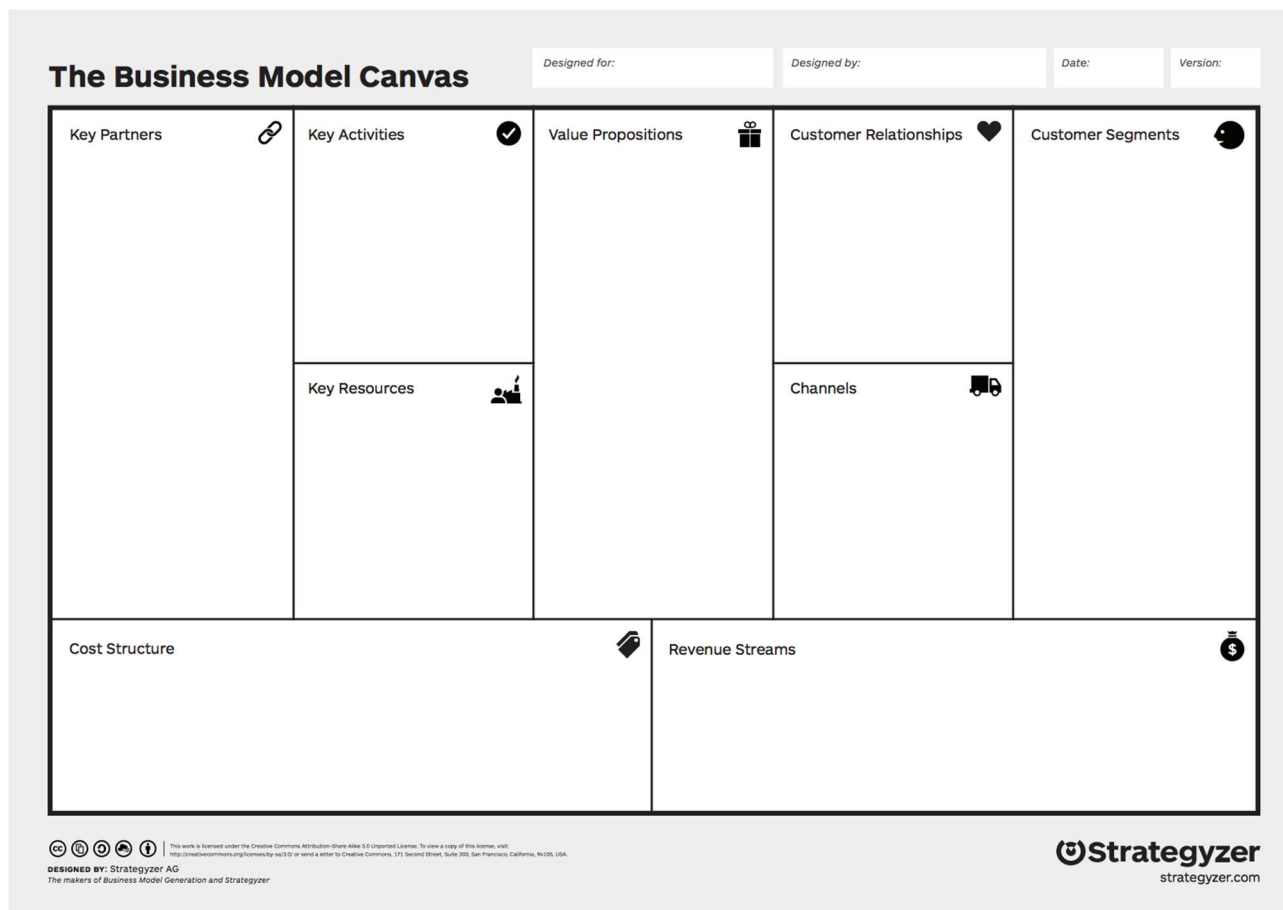


Fig. 14 Business Model Canvas

For the Easy TV business model, the nine blocks are defined as follow:

1. **Customer segments:** the different groups of people, organizations and/or companies that EasyTV is targeting. This block of the Business Model Canvas is fundamental: it allows to build the bundle of products and services around the needs of each specific cluster of customers.
2. **Value Propositions:** the bundle of products and services that represents a value for a specific customer segment.
3. **Channels:** all the channels through which EasyTV reaches a certain customer segment to present, and provide, its value proposition. Channels represent a *touch point* with the customers.
4. **Customer Relationships:** the type of relationship that EasyTV establishes with the various customer segments.
5. **Revenue Streams:** the revenue streams that EasyTV obtains from the sale of products/services to a specific customer segment.
6. **Key Resources:** the strategic assets that EasyTV must have to support its business model. Identify what enables the business model to work.

7. **Key Activities:** the strategic activities that have to be performed to create and sustain value propositions, reach customers, maintain relationships with them and generate revenues.
8. **Key Partnerships:** acting in a larger ecosystem, the network of suppliers and partners is necessary for success of the EasyTV business model.
9. **Cost Structure:** costs implied by EasyTV Business Model. They derive directly from the structure of the blocks related to Key Activities, Key Partners and Key Resources.

The Business Model Canvas is usually divided in two sides. Left side is mainly focused on processes related to products (Resources, Partners, Cost, Activities), instead, the right side focuses on customers and market (Segments, Customer relationship, Revenue). The Value proposition is in the middle to mean that it contains and combines instances both from the market and the development of products.

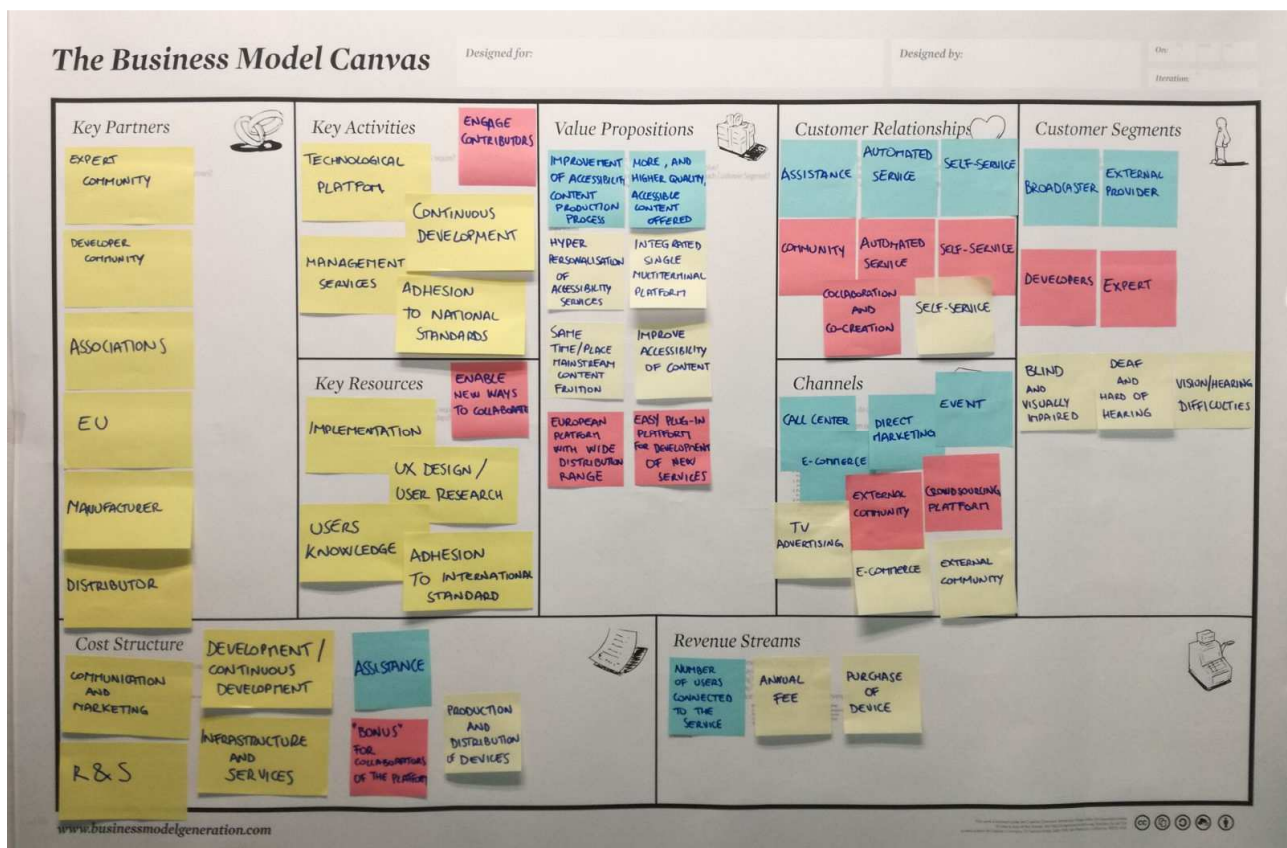


Fig. 15 Design process of EasyTV Business Model Canvas

In the Business Model proposed for EasyTV in each block of the canvas it is possible to find items of distinct colours (Fig. 16). Four colours are present, three of them (blue, red and yellow) are used to discern between the main target segments of the project:

- Broadcaster, media players and companies
- Collaborators of the platform
- End users

This segmentation reflected the multiple directions of the business model suggested for EasyTV.

The first direction is a **B2B (Business to Business) model** that involve services providers and TV content providers: these players will use the EasyTV platform with business purposes.

The second direction is referred to a **B2C (Business to Consumer) model** and it implies the final customers intended as users that will use the platform with personal or social purposes, as respectively end users and collaborators.

The remaining colour, green (which is represented in Fig. 15 above by a wider yellow card), represents more general items. In fact, green cards are mainly placed in the blocks regarding the general infrastructure of the platform that allow to execute the business successfully: Key Partners, Key Activities and Key Resources.

Below, is illustrated in more detail each block of the proposed business model canvas, and each item present is explained.

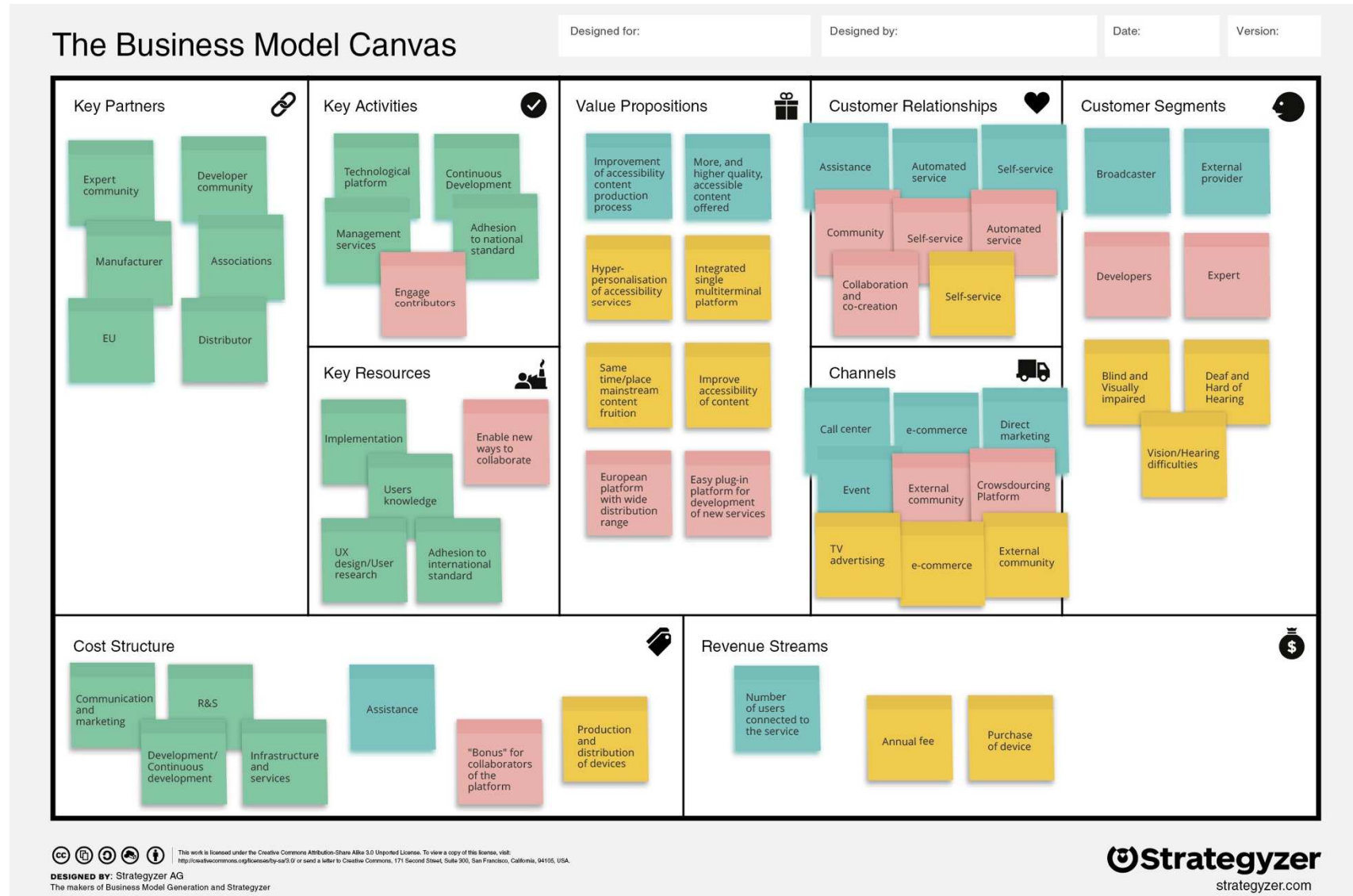


Fig. 16 EasyTV Business Model Canvas

6.3.1. Customer segment

As emerged in the definition of the Value Proposition Canvas, the customer segments identified for the EasyTV platform are divided into three macro categories:

- **Broadcaster, media players and companies:** will use the EasyTV platform and services for business purposes;
- **Collaborators of the platform:** will use the platform mainly for social purposes and, in any case, without profit finality;
- **End users:** will use the platform for personal purposes, as access to TV content having a better user experience.

Below, a more detailed segmentation of the Customer Segment as defined in the Business Model Canvas is presented.

Table 8 Business Model Canvas: Customer segment

Definition	Category	Description
Broadcaster	<i>Broadcaster, media players and companies</i>	Represented by broadcasters, local network television stations affiliates, cable television providers, terrestrial and satellite TV providers, Internet TV's, IPTV's.
External provider	<i>Broadcaster, media players and companies</i>	External software companies that can include, in their business activities, the development and consequently publication of «new» services in the EasyTV multi-terminal technical platform.
Developers	<i>Collaborators of the platform</i>	Developers that might be interested to develop, test and deliver their own services in the EasyTV multi-terminal technical platform without profit finality.
Expert	<i>Collaborators of the platform</i>	People with high level of expertise in Sign Language and proficient in translation activities.
Blind and Visually Impaired	<i>End users</i>	People with high or low visual impairment.
Deaf and Hard of Hearing	<i>End users</i>	People with high or low hearing impairment.
Vision/Hearing difficulties	<i>End users</i>	People with vision/hearing difficulties due to different causes.

6.3.2. Value Propositions

Table 9 Business Model Canvas: Value Propositions

Definition	Category	Description
Improvement of accessibility content production process	<i>Broadcaster, media players and companies</i>	Improving the production process of accessible contents, optimizing times and costs and guaranteeing high quality.
More, and higher quality, accessible content offered	<i>Broadcaster, media players and companies</i>	Increasing the number and quality of accessible content would enable broadcasters to meet the needs of their audiences who are dissatisfied because of low quantity and quality of accessible content.
Hyper-personalisation of accessibility services	<i>Collaborators of the platform</i>	Possibility to have an automatic customization of accessibility services based on user's profile, the usage and, furthermore, the technical characteristics of devices and type of connectivity. Provide suggestions of accessibility services available that may be useful to customers.
Integrated single multiterminal platform	<i>Collaborators of the platform</i>	Opportunity to have an integrated platform that offers to customers the same range of services by distributing them on different devices in a consistent way, so that to guarantee them a better user experience.
Same time/place mainstream content fruition	<i>End users</i>	Fully sharing the experience of use allowing users with disabilities to enjoy the same television content with others, at the same time and in the same place, so as to preserve the social component that belongs to the television viewing
Improve accessibility of content	<i>End users</i>	Availability of a wider offer of accessibility services that improve the accessibility of the contents that are then actually enjoyed by users.
European platform with wide distribution range	<i>Collaborators of the platform</i>	Availability of a platform that distributes content on a wide audience.
Easy plug-in platform for development of new services	<i>Collaborators of the platform</i>	Availability of a platform that allow easier to create innovative and efficient solutions.

6.3.3. Channels

Table 10 Business Model Canvas: Channels

Definition	Category	Description
Call center	<i>Broadcaster, media players and companies</i>	A call center as a dedicated service to support all the Broadcaster, media players and companies to buy and receive assistance and information.
e-commerce	<i>Broadcaster, media players and companies</i>	Web based electronic commerce service for B2B selling and getting information about the product.
Direct marketing	<i>Broadcaster, media players and companies</i>	Reach the main stakeholders through direct marketing actions (by email) to communicate information about the product and services to increase sales and awareness of EasyTV platform.
Event	<i>Broadcaster, media players and companies</i>	Participation in major media industry events to promote the EasyTV platform.
External community	<i>Collaborators of the platform</i>	External community dedicated to topics of interest for the EasyTV project, regarding its main services, to reach the collaborators target.
Crowdsourcing Platform	<i>Collaborators of the platform</i>	Crowdsourcing platform used by expert and end-user associations to openly contribute to the development of accessible content.
e-commerce	<i>End users</i>	Web based electronic commerce service for B2C selling and getting information about the product.
External community	<i>End users</i>	External community dedicated to topics of interest for the EasyTV's end users target: Blind and Visually Impaired Deaf and Hard of Hearing Vision/Hearing difficulties
TV advertising	<i>End users</i>	Commercial messages conveyed through main television network to reach a wide and various audience.

6.3.4. Customer Relationship

Table 11 Business Model Canvas: Customer Relationship

Definition	Category	Description
Assistance	<i>Broadcaster, media players and companies</i>	Customers can communicate with a customer relationship manager to receive assistance during the sales process or after the sale has been completed. It will be possible through a call center
Automated service	<i>Broadcaster, media players and companies</i>	Services that automatically recognize specific user targets and their characteristics and offer them information related to their profile.
Self-service	<i>Broadcaster, media players and companies</i>	No direct relationship with customers but enable them to manage the services offered by EasyTV by themselves in an easy way (for example by user manuals).
Community	<i>Collaborators of the platform</i>	The presence of an online community to involve and support collaborators, reach potential ones and facilitate the connection between members. A Community promotes the exchange of knowledge and the mutual solution of problems. It is a strategic channel to establish and maintain an optimal relationship with collaborators of the platform.
Automated service	<i>Collaborators of the platform</i>	Services that automatically recognize specific user targets and their characteristics and offer them information related to their profile.
Self-service	<i>Collaborators of the platform</i>	No direct relationship with customers but enable them to manage the services offered by EasyTV by themselves in an easy way (for example by user manuals).
Collaboration and co-creation	<i>Collaborators of the platform</i>	Underlining the importance of creating value through the participation of customers and allow them to contribute to the development of new and innovative products
Self-service	<i>End users</i>	No direct relationship with customers but enable them to manage the services offered by EasyTV by themselves in an easy way (for example by user manuals).

6.3.5. Revenue Streams

Table 12 Business Model Canvas: Revenue Streams

Definition	Category	Description
Number of users connected to the service	<i>Broadcaster, media players and companies</i>	Revenue stream coming from broadcaster and media players generated depending on the number of users connected to their services provided.
Annual fee	<i>End users</i>	Revenue stream coming from a fee for the end user that is charged on an annual (yearly) basis. The amount may depend on the number of services accessed.
Purchase of device	<i>End users</i>	Revenue stream coming from the sale/purchase of devices which are an integral part of the EasyTV platform.

6.3.6. Key Resources

Table 13 Business Model Canvas: Key Resources

Definition	Category	Description
Implementation	<i>General</i>	The process that leads to the actual realization of the EasyTV platform with all its component (hardware and software).
UX design/User research	<i>General</i>	The research activities allowing to design a user experience that fits the efficiency and satisfaction requirements for the user.
Users knowledge	<i>General</i>	Access to aspects related to the needs, attitudes, behaviours and aspirations of users.
Adhesion to international standard	<i>General</i>	Following national/international standard to have a reference model and, if possible, improve it or introduce new ones.
Enable new ways to collaborate	<i>Collaborators of the platform</i>	The intellectual resources of collaborators are a strategic resource for the EasyTV platform therefore, is fundamental to enable them to easily find ways to collaborate for the project.

6.3.7. Key Activities

Table 14 Business Model Canvas: Key Activities

Definition	Category	Description
Technological platform	<i>General</i>	The overall integration of software and hardware components of the EasyTV system.
Continuous Development	<i>General</i>	Maintenance of the system and continuous development to guarantee updating of the components and the infrastructure.
Management services	<i>General</i>	Services related to management and problem-solving activities.
Adhesion to national standard	<i>General</i>	Following national/international standard to have a reference model and, if possible, improve it or introduce new ones.
Engage contributors	<i>Collaborators of the platform</i>	Activate actions to engage contributors and find new contributors.

6.3.8. Key Partnership

Table 15 Business Model Canvas: Key Partnership

Definition	Category	Description
Expert community	<i>General</i>	The community of linguistic and sign language expert.
Developer community	<i>General</i>	The community of developers of new services.
Associations	<i>General</i>	Associations and organisations dedicated to disability and accessibility issues.
EU	<i>General</i>	Policy makers at national and European levels who could take advantage of EasyTV outputs. Furthermore, any EU research organisation potentially interested in EasyTV (who could join the community, use facilities contribute to their developments, etc.).
Manufacturer	<i>General</i>	The manufacturers of devices which are component of the platform.
Distributor	<i>General</i>	Actors involved in the distribution process of the devices which are part of the platform.

6.3.9. Cost Structure

Table 16 Business Model Canvas: Cost Structure

Definition	Category	Description
Communication and marketing	<i>General</i>	Costs related to Communication and marketing activities, strategic for the sale of the products and services offered and for their awareness.
R&S	<i>General</i>	Costs related to activities of Research & Development to guarantee innovative solutions and services.
Development/Continuous development	<i>General</i>	Costs related to activities of maintenance of the system and continuous development to guarantee updating of the components.
Infrastructure and services	<i>General</i>	Costs related to activities of building, management and maintenance of the platform infrastructure.
Assistance	<i>Broadcaster, media players and companies</i>	Costs related to activities of support and assistance of Broadcaster, media players and companies intended as a “premium” service for this category of customers.
"Bonus" for collaborators of the platform	<i>Collaborators of the platform</i>	Costs related to “Bonus” given to each collaborator to ensure a deeper engagement and a wider number of collaborators.
Production and distribution of devices	<i>End users</i>	Costs related to production and distribution of devices for end users.

7. INDIVIDUAL EXPLOITATION

Following has been illustrated a first proposal of exploitation plans for each consortium partner foreseen for the project results.

7.1. ARX.NET

7.1.1. Company overview

ARX.NET will exploit the opportunity to explore and develop new technologies and user interfaces in the area of TV/Video application development with special focus on accessibility, personalised content and service delivery and multi-device delivery. The participation in the project will increase the company's capabilities and knowledge in the delivery of next generation applications for TV/Video services that can adapt and target any user, no matter their age or potential disability. The knowledge and expertise that the company will develop can be utilized in the delivery of commercial TV/video applications with any of the paid TV service providers ARX.NET already cooperates with.

7.1.2. Outcome/results from the project

ARX.NET is researching and plans to exploit in the following areas:

- Universal and accessible remote control powered by speech recognition technologies to manage TV set and TV applications for blind and visually impaired people.
- Gesture/gaze recognition technologies that will be integrated in the universal remote control.
- Device interoperability within the user environment making possible to interoperate across different devices.
- HbbTV companion screen application with video synchronization capabilities.
- Service Development Kit that will allow the integration of the accessibility services of the EasyTV project in other platforms. It will include a set of well-integrated open sources libraries and tools that will assist developers to create better applications for people with disabilities.

7.1.3. Individual exploitation plan (early phase)

By participating in this project ARX.NET will utilize the know-how to provide better solutions for people with various degrees of disabilities.

ARX.NET will develop a HbbTV platform that will integrate and exploit all the knowledge gained from the EasyTV project. It will include accessibility services such as speech recognition to manage HbbTV applications, text-to-speech technologies to relay useful information to blind and visually impaired people and a companion screen application that will offer image enhancement capabilities. Moreover ARX.NET will integrate the accessibility services in commercial applications it already develops for TV service providers that it cooperates with. This includes SmartTV applications, set-top boxes, mobile applications, web and desktop applications.

Finally, ARX.NET has and will disseminate the objectives of this project in the form of presentations with several TV service providers that it cooperates with.

7.2. CCMA

7.2.1. Company overview

The CCMA, as a public service, is very sensitized to the difficulties of impaired people for accessing the audiovisual content. With the exploitation of this project, CCMA expects to become a reference broadcaster in the implantation of accessibility services. From CCMA perspective, the pursued target is the growth of the ratios of availability and consumption of accessibility products. The results of this project must confirm the growth in products placed at the disposal of users, consumption of products and so in user's satisfaction.

7.2.2. Outcome/results from the project

CCMA plans to integrate some features of the EasyTV platform on its production and publishing workflows with the aim to offer new accessibility services to the end user, not only during the pilot tests but also beyond the end of the project.

CCMA foresees to improve accessibility in their HbbTV application by including spoken-menus for visual impaired people and subtitle presentation in VoD suitable for colour blind people.

CCMA will also integrate the EasyTV crowdsourcing multilanguage subtitling service to generate subtitles in different languages bringing access into the contents consumption to those people that do not understand its spoken language, regardless of whether they have any impairment. This feature will enable the engagement of audience who normally do not understand the original language of the contents and will also allow promotional actions targeted to integrate immigrants through information technologies.

7.2.3. Individual exploitation plan (early phase)

CCMA plans to integrate the following accessibility services of the EasyTV platform on its production and publishing workflows: spoken-menus for visual impaired people in the corporative HbbTV applications, enhanced presentation for colour blind people of subtitles for VoD offered over the corporative HbbTV service and, finally, the generation of subtitles in different languages using the EasyTV crowdsourcing multilanguage subtitling service.

The development and integration process will be performed in several test cycles until they reach the sufficient maturity for a commercial exploitation during project runtime.

CCMA has performed the following promotion activities of the project:

- Publication of the CCMA's participation in the EasyTV project in the corporative website (<http://www.ccma.cat/corporatiu/en/com-funciona/collaboracio-entitats/>)
- ACAPPS 2017 conference (acapps.org/web), November 4, 2017 at Ford Pienc Auditorium in Barcelona: Conference about CCMA Accessibility Services where EASYTV project was presented. (ACAPPS: Federacio Associacions Catalanes Pares I Persones Sordes)
- Arqiva TV Innovation Forum, March 6, 2018 at IET London: Conference about CCMA HbbTV projects.
- Subtech 1 - Symposium on Subtitling Technology, May 24 & 25, 2018 at IRT, Munich. EasyTV Demo Booth.

The CCMA will also perform the following promotion activities of the EasyTV project:

- EBU Access Services Experts Meeting, November 8 & 9, 2018 at EBU Geneve. Conference about CCMA Accessibility projects.
- ITU IRG AVA – Intersector Rapporteur Group Audiovisual Media Accessibility, April 17, 2018 at ITU, Geneve.

7.3. CERTH

7.3.1. Company overview

CERTH-ITI is a non-profit research organisation and as such it focuses on research and dissemination by publishing results in well-known and widely read international scientific journals, as well as by presentations in international scientific conferences, workshops and exhibitions, web-based publishing, and small seminars and talks organised for specialised audiences. However, contact with industry and the consequent opportunity to link the activities of Research Organisations with the ability of industry to observe and take advantage of opportunities for exploitation is also sought, as CERTH, a leading academic research institute in Greece, is aiming to exploit the results of the current project both in terms of academic research and commercialisation. Firstly, the evaluation of all the project components by real users is expected to lead in the publication of significant results and allow the institute to create synergies with clinical researchers as well as organisations of people with disabilities in Greece and across the European Union. Furthermore, possible commercialisation opportunities will be investigated specifically for the extension of Greek language interfaces (sign language and speech and text) as well as the positioning of these functionalities in multilingual tools with global usability.

7.3.2. Outcome/results from the project

CERTH aims to exploit the following exploitable results:

- Sign language capturing module
- Gesture/gaze recognition module
- Crowdsourcing sign language platform.
- Realistic sign avatar
- User Model editor
- Mechanism for hyper-personalisation and adaptation of UIs based on user needs & preferences

7.3.3. Individual exploitation plan (early phase)

CERTH as a research organization will drive the exploitation activities of the scientific findings of all related areas of the EasyTV system harvesting the tangible and non-tangible benefits of achieving scientific excellence. Moreover, CERTH is already participating in the D-cube (<http://www.d-cube.eu/>) spin-off company, whose mission is to transform cutting edge research to real-life solutions such as, interactive technologies, motion capturing and analysis, web applications, multi-sensor networks etc.

7.4. Engineering Ingegneria Informatica S.p.A.

7.4.1. Company overview

Engineering Ingegneria Informatica S.p.A. provides a complete offer of business integration, application and infrastructure outsourcing, innovative solutions and strategic consultancy.

With 10,300 employees, 50 sites distributed in Italy, Germany, Spain, Belgium, Republic of Serbia, South America (Brazil and Argentina) and United States, it has a consolidated revenue portfolio in 2017 of more than 1 billion Euro.

Engineering has a firm presence on all vertical markets and operates through its four business units - Public Administration & Healthcare, Telco & Utilities, Industry & Services, Finance - supported by cross-business unit centers of competence and by the Research and Innovation Department.

Telco & Media Market

Engineering's presence in the Italian and international telecommunication market is long-standing: the solutions offered cover the functional and application areas that are typical of this sector (BSS, OSS, VAS for wireless, wireline, converging and broadband services) and support functions in ERP, ECM, EAI, HR and Security environments, etc. Billing platforms to support land-to-mobile convergence management are a key element in their offer.

Referring the media market's segment, in line with its own vocation as a complete IT partner, Engineering supports the various players on the Media market (Broadcasters, Publishers, TV, Portals...) in their interpretation of new business models and relative opportunities, in the realization of operational processes and simplified, efficient infrastructures and in developing innovative, secure modes for managing and using new content. The Media market offer makes use of the Group's Competence Center's know-how and experience: consultancy services, system integration, IT Management services and broadband & media services solutions, enterprise content management and enterprise resource planning.

Engineering offers its skills to mobile and land line telecommunications operators, content providers, media and broadcasters, offering application solutions, platforms and products and forming a reality that can cover the whole multimedia digital services value chain.

Using the synergy between the various areas, offers specialized support to its own clients, which combines management of multimedia content, integration with legacy systems and perfect usability from any channel and any terminal.

7.4.2. Outcome/results from the project

Engineering is involved in several crucial Work Package of EasyTV project:

- WP1: Requirements, specification and technical architecture (*leader*)
- WP3: Novel technologies for the interaction with content and users for breaking the language barrier for people with disabilities
- WP5: EasyTV component-based system (*leader*)
- WP6: Testing with user and feedback
- WP7: Dissemination and Exploitation (*leader*)
- WP8: Project management and impact creation

Therefore, the participation to the project will enable Engineering to achieve a considerable *know how* in multiple domains:

- **Disabilities & Accessibility:** competence in understanding and analyze needs of users with disabilities, to:
 - collect proper requirements and realize a consistent system specification (WP1)
 - validate and improve a system architecture through the user's feedbacks (WP6)
 - foresee the development of innovative technologies solutions aimed at ensuring accessibility (WP3)

- **System integration:** improved capability as system integrator of a complex multi-terminal technical platform containing different services (WP5);
- **Market analysis & impact evaluation:** deep and wide awareness of the current digital media landscape and its socio-economic trends (WP7) along with the strengthening of skills in business management and impact creation activities (WP8).

7.4.3. Individual exploitation plan (early phase)

The know-how achieved during the whole project duration will allow Engineering to propose itself, on Telco & Media market, as a strategic IT partner for the challenges of the digital era.

The participation to the project will enable Engineering to improve its capacity to provide integrated solutions and professional consultancy on IT, to the media sector, focusing strategically, on access services for people with disabilities.

It will also allow it to present its solutions to various European media companies with a significant impact in terms of image return and external communication. This will potentially contribute to improving the company's market share outside the Italian borders.

7.5. Fundación CNSE para la Supresión de las Barreras de Comunicación

7.5.1. Company overview

The CNSE Foundation for the Removal of Communication Barriers is a state-level entity with legal personality, non-profit and associated to the Confederation of the Deaf (CNSE). FCNSE works for access improvement for deaf people at all levels in society, and to promote the development of projects that improve the quality of life of this group. FCNSE aims to carry out R+D to contribute to the development and strengthening of the competitiveness of enterprises, by improving the quality of life and social accessibility of deaf people.

F.CNSE has no profit and his main activity areas are: LSE research, accessibility, dissemination and awareness of issues to Deaf people and LSE, promoting reading among deaf people, training, technological innovation, support for families and education and documentation centre.

7.5.2. Outcome/results from the project

The CNSE Foundation hopes that the results of the project will be adjusted to the real needs of the target users, more specifically the deaf and hard of hearing people in our case. CNSE Foundation expects to acquire knowledge and experience on the state of the matter in terms of accessibility in television that serves to reinforce our organizational position that represents the group and continue to offer expert advice at the user level in future projects.

7.5.3. Individual exploitation plan (early phase)

CNSE Foundation does not carry out a commercial exploitation of the results. CNSE Foundation contributes to the dissemination of the project through participation in congresses and events that have the participation of users of accessible television.

7.6. Mediavoice

7.6.1. Company overview

Mediavoice is today focused only on the internal market. The company is going to exploit the project results for commercial purposes to start new business on international markets. We are also investigating, defining and developing new business models which will exploit the results of EasyTV for the distribution of mobile speech applications for blind people on mobile stores, moving away from the current personal computer-based architecture.

7.6.2. Outcome/results from the project

Inside the EasyTV project, Mediavoice is investigating and defining a new Speech Platform, including the emerging Artificial Intelligence technologies based on Natural Language Processing (NLP) and Machine Learning (ML) techniques. The new EasyTV Platform will help us to develop and exploit new products, open new markets and start new industrial collaborations.

7.6.3. Individual exploitation plan (early phase)

Mediavoice will exploit the results of the new technologies that will be developed in EasyTV project regarding the Speech interaction and the Artificial Intelligence technologies (NLP and ML) to include them in “Speaky Facile” product and improve the accessibility and usability of the whole Mediavoice suite for Blind and Visually Impaired people.

To design our exploitation plan, Mediavoice is carrying out the following dissemination activities, so to have the right advices from international business partners also.

- Published his participation in the EasyTV project in the company website (<http://www.mediavoice.it/ricerca-e-innovazione/>)
- Participated at BIAT 2018 – (Innovation and High Technology Fair) in Naples (Italy) 19-20 April 2018 where EasyTV has been introduced to all new contacts.
- Participated at SIGHCITY 2018 – Exhibition for Aids for the blind and the visually impaired in Frankfurt (Germany) where EasyTV has been introduced to all new contacts.

Mediavoice is also going to participate to “Autonomic Paris” 2018 Paris Expo Hall 4 - Porte de Versailles that will be held in June from 12 to 14 2018. We will be along with a new Business Partner and will present both “Speaky Facile”, the product for Blind and Visually Impaired people, and EasyTV project that we intend to include in “Speaky Facile” in the near future.

Today, developing a new technological semantic layer, we are planning to improve our products suite, including new high level semantic services. So that Mediavoice, at the end of the project, will have both an improvement of the Speaky Software Development Kit, and new services available for the users, representing, with their new functionalities, new products.

Mediavoice in this way will develop and exploit all the following new assets:

- A new SDK Semantic Layer, with Artificial Intelligence and Machine Learning properties, to enable new functionalities;
- A semantic API, to be used in any current Speaky service, first in the current Speaky TV Service;
- A Machine Learning API, to be used in any current Speaky service;
- A new product, namely ‘Speaky Internet’, which will use directly all the new functionalities developed in the EasyTV project.

7.7. UAB

7.7.1. Company overview

UAB is exploiting the project for academic purposes.

Two PhD are part of the project. The first will study the exploitation of a crowdsourcing platform for SL interpreting. The second is looking at the different ways to test with vulnerable users from a new approach: capabilities rather than disabilities.

This project is exploited for the research group image and reputation since it will place us again as leaders and at the cutting edge of research in our field.

The industry-university collaboration is another exploitation for us academics, since it is crucial to have the industry interaction for a meaningful research.

7.7.2. Outcome/results from the project

Academically UAB will study through end user interaction and testing the framework where to test. While the first approach of the project was the Medical Model of Disability (WHODAS 2.0) it will be study the possible move to the Capability model.

7.7.3. Individual exploitation plan (early phase)

UAB has written the following publications:

1. Belén Agulló and Pilar Orero (2017) 3D Movie Subtitling: Searching for the best viewing experience. Studi di Comunicazione e Mediazione linguistica e culturale COME 2 (1) 91-102.
2. Orero, P and Tor-Carroggio, I. (forthcoming). "User requirements when designing learning e-content: interaction for all". In Evangelos Kapros and Maria Koutsombogera (eds), Designing for the User Experience in Learning Systems. Springer.
3. Orero, P and Tor-Carroggio, I. (forthcoming). "User profiling in audio description reception studies: questionnaires for all".

7.8. UPM

7.8.1. Company overview

As the biggest technological University in Spain, the exploitation plan of UPM for research projects is clearly the future exploitation of the knowledge and industrial propriety in two different ways:

First of all, by means of scientific publications and re-using of knowledge in education (which is not an ancillary exploitation) and secondly by means of the technology transfer to the big industry and SMEs, specially to the UPM associated spin-off companies (based mainly on the UPM science and technology park hosting 50+ UPM spin-off companies), which may beneficiate from these innovative solutions.

Moreover, UPM will promote the academic-industry collaboration by signing different agreements to deploy the technology and to disseminate the resulting platform in Broadcasters (UPM has agreements with a suitable number of regional and national broadcasters for R&I), user organisations, media companies and public institutions, as continuation of the exploitation of HBB4ALL

7.8.2. Outcome/results from the project

According to the previous plan, UPM will obtain a complete solution for user interaction that may include all its HbbTV accessibility services developed during this project. Thus, this outcome will be later exploited by means of knowledge transfer to these UPM's spin-offs, which can adapt the framework to other industries.

7.8.3. Individual exploitation plan (early phase)

Firstly, the EasyTV exploitation plan for the UPM will consider the inclusion of the knowledge obtained during the project about not only HbbTV but also about other technologies together with the accessibility research field within the university educational plan. Secondly, UPM will disseminate the outcomes of the project by writing technical papers for the multimedia community. Finally, the knowledge transfer to different UPM spin-offs may help the industrial exploitation of the EasyTV innovative solutions by means of different license schemas.

8. CONCLUSION

In this document has been illustrated an early-stage analysis of the Digital Media market that have led, together with the overview of the European broadcaster and Assistive technologies scenarios, to the definition of a preliminary business model for EasyTV.

With the business model proposed has been defined a strategy to capture and generate value from the innovative solutions that will be developed during the project and offered to customers and other target segments.

Moreover, elements and considerations that allowed to define the business model together with the exploitation plans, enable to verify, although at an early stage, consistency of the EasyTV project in term of:

- *the design and specifications of EasyTV platform planned to be developed*: the services and products foreseen meet the user needs emerged for all the different target of the project;
- *the technological solutions proposed*: the technologies adopted in the project reflecting both technological trends and assistive technologies used by people with disabilities;
- *the main goals of the project*: all the pillars of the project are covered by the design and architecture of the EasyTV platform as it has been planned.

A second step is foreseen for the Task 7.3 *Market analysis and business plan definition*, that will consist in the final release of market analysis and business model (deliverable 7.6 *Consolidated market analysis and final business model*).

The deliverable D7.6, that will follow the present document, may be consider its update. In conclusion, it is suggested to transpose in that document key sections and topics identified in D7.1.

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10. APPENDIX

Below, following business models suggested in the proposal phase, an example of an early stage business planning has been proposed for Blind and Visual Impaired customer segments.

10.1. Appendix A

Business model

The business models suggested in the proposal phase have twofold directions: 1) the business model between the EasyTV platform and services providers and TV content providers (B2B model) as well as, 2) between TV content Providers and Final Customers (B2C model).

With regards of the first case, two main methods for the deployment of the EasyTV technology value proposition have been currently identified considering that Europe has very big media players as well as many small companies that are sometimes unable to invest a large amount of money in:

- **on-premise solutions**, mainly for large media companies (its price will include licensing, consultancy and added value services prices), and
- **“SaaS paradigm” solutions** (under the payment of an annual fee), more adapted for smaller media companies.

In both cases the EasyTV system will run as an internet-based initiative thus making services for users with disabilities available on different terminals connected to the internet (HBB TVs, Android TVs, Desktop PCs). On top of the EasyTV services which are the outputs of WP2, WP3 and WP4, brand new services will then be developed by third-parties developers / companies by using the EasyTV Service Development Kit (T5.4) thus “enlarge” the service portfolio of the media company which will purchase it either as a product or as a service.

For the scenario B2C, a monthly fee cost approach for each final user connected to the EasyTV platform (and profiled on the EasyTV Service Catalogue) could be in line with the current offering trend of the TV content Providers and might be good to attract new clients always considering that the services that are time consuming for professionals might need to charge an additional service cost or at least to consider their impact on the costs. Anyway, the scalability of the platform also helps to make the technologically based EasyTV services economically scalable which will allow fees to be lowered when users increase because the fixed costs of updating and maintain the entire system (platform, service catalogue and services) could be distributed between more users.

The same model can evolve towards a more “ethical” vision of the business with the following two “Offering Options”:

- a **no-fee model** in case of special agreement with local/European associations or unions (for the deaf/blind people); eventually a basic subscription to the EasyTV services might be considered as a sort of “aid” that the association/union would distribute to the disabled person (such as the “walking stick”, the “sounding balloon” or the “talking book” for a blind person); of course, this would work only if these associations/unions are financed by the public administration or by private foundations;
- a **price discrimination model** where the fee varies with the age or with the percentage of certified disability

Revenue model

EASY TV NEWCO is a Technology Service Providers, will provide the platform to:
(B2B: on premise and Software as a Service: SaaS)

- broadcasters
- local network television stations affiliates,
- cable television providers,
- terrestrial and satellite TV providers,

- internet TV's,
- IPTV

and

(B2C: SaaS)

- citizen
- deaf and People with hearing impairment
- blind and People with visual impairments
- elder people
- scholars, students, young people with hearing or visual disability

In the following table, there is a Draft of the forecast for the revenue streams of the future “EASYTV Newco”.

The assumptions are the following:

- the EASYTV services will be delivered in different ways to the different targets: B2B and B2C;
- for the B2B Scenario, it will be possible to sell the full Platform at a price of 30.000 euro, or to sell the Platform services (such a SaaS). In this case the company will buy the EASYTV service for 7.500 € / year;
- for the B2C Scenario only the SaaS is enabled. In this case the user will pay 9 € per month.

		Programming and broadcasting sector																
		UE BLIND MARKET REVENUE MODEL AND FORECAST																
		ver 0.1 DRAFT																
							year 1			year 2			year 3					
B2B	on premise solution		2012 data bill € Rev.	%	# sector companies	EASYTV Full Platform Price	% customers companies	# customers companies	REVENUES	% customers companies	# customers companies	REVENUES	% customers companies	# customers companies	REVENUES			
		Germany	6,8	25%	2.961	30.000 €	0,1%	3	88.827 €	0,5%	15	444.133 €	2%	59	1.776.531 €			
		UK	6,2	23%	2.700	30.000 €	0,1%	3	80.989 €	0,5%	13	404.945 €	2%	54	1.619.779 €			
		France	3,8	14%	1.655	30.000 €	0,1%	2	49.638 €	0,5%	8	248.192 €	2%	33	992.768 €			
		Italy	3,3	12%	1.437	30.000 €	0,1%	1	43.107 €	0,5%	7	215.535 €	2%	29	862.140 €			
		others UE	7	26%	3.048	30.000 €	0,1%	3	91.439 €	0,5%	15	457.196 €	2%	61	1.828.782 €			
		TOTAL	27,1	100%	11.800	30.000 €		12	354.000 €		59	1.770.000 €		236	7.080.000 €			
	maintenance annual fee 10%							35.400 €			177.000 €			708.000 €				
	SaaS				# sector companies	EASYTV Platform SaaS annual fee	% customers companies	# customers companies	REVENUES	% customers companies	# customers companies	REVENUES	% customers companies	# customers companies	REVENUES			
		Germany			2.961	7.500 €	0,2%	6	44.413 €	1%	30	222.066 €	4%	118	888.266 €			
UK				2.700	7.500 €	0,2%	5	40.494 €	1%	27	202.472 €	4%	108	809.889 €				
France				1.655	7.500 €	0,2%	3	24.819 €	1%	17	124.096 €	4%	66	496.384 €				
Italy				1.437	7.500 €	0,2%	3	21.554 €	1%	14	107.768 €	4%	57	431.070 €				
others UE				3.048	7.500 €	0,2%	6	45.720 €	1%	30	228.598 €	4%	122	914.391 €				
TOTAL				11.800	7.500 €		24	177.000 €		118	885.000 €		472	3.540.000 €				
B2C	SaaS				visually impaired people in UE	EASYTV Platform SaaS USER annual fee	% customers /populatio n	# customers	REVENUES	% customers /populatio n	# customers	REVENUES	% customers /populatio n	# customers	REVENUES			
					32.000.000	108 €	0,01%	3.200	345.600 €	0,1%	32.000	3.456.000 €	0,2%	64.000	6.912.000 €			
						9 € / month												
TOTAL REVENUES									912.000 €			6.288.000 €				18.240.000 €		