Deliverable 8.6   Market and Product Survey for LinkedTV Services and Technology

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Work Package 8: Markets, Business Models and Exploitation Strategies

LinkedTV

Television Linked To The Web

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[1] • PU = Public

• PP = Restricted to other programme participants (including the Commission Services)

• RE = Restricted to a group specified by the consortium (including the Commission Services)

• CO = Confidential, only for members of the consortium (including the Commission Services))

| | *Analysis, which provided an initial market analysis focusing on the overall TV industry. D8.6 presents the results of the market analysis for LinkedTV products and services and consists of two parts: an overall analysis of current and future developments in the TV and digital video market and a specific market analysis of potential LinkedTV customers and competitors. Based on the market analysis it was possible to provide a first rough estimation of the LinkedTV market potential and to position LinkedTV on the market.* |

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1 Introduction

1.1 History of the document

Table 1: History of the document

Date	Version	Name	Comment
2014/06/30	V0.0	Stanoevska USG	Proposal for deliverable structure
2014/07/31	V0.1	Stanoevska, Müller USG	Search for market information for all sections and substructure of sections
2014/08/15	V0.2	Stanoevska, Müller USG	First version of summary overall trends (section3)
2014/08/24	V0.3	Rolf Fricke, Condat	Insertion of information about European / German TV market segments
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2014/09/16	V0.5	Fricke, Condat	Further input to chapter 4, clarification of open questions, information on costumer segments and market figures
2014/09/30	V0.6	Stanoevska,USG	Review, correction and iput to whole document, in particular summary of potential market analysis and market volume as inout to D8.7
2014/10/08	V0.7	Stanoevska,USG	Further input to market and competition anlysis. Creation of graphics related to customer segments and competition
2014/10/08	V0.8	Rolf Fricke, Condat	Further input to chapter 4 market and competition analyzsis
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2014/10/24	V1.1	Stanoevska, USG	New input related to news channels in Europe (section 4.2.2)
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2014/11/24	Final	Stanoevska, USG	Final version for final format check and submission

1.2 Purpose of the Document

This deliverable summarizes the work performed in task 8.1 "Product & Market Surveys" of WP8 "Markets, business models and exploitation strategies". It provides an update to D8.2 - First Market Analysis, which contains an initial overall overview of the TV and digital video market. Starting point for D8.6 was the more precise identification of exploitable LinkedTV products in Section 3 of deliverable D8.7 [HaSF14]. The results of this deliverable D8.6 provide input to business model development in D8.7 [HaSF14] and will also be used as basis for the final exploitation deliverable D8.8.

The purpose of this deliverable is to inform the process of business model development and market positioning of the LinkedTV solution by providing, analyzing and interpreting market data about:

1. general trends and developments in the TV and video market
2. general trends on the B2C TV and video market with a special focus on changing viewer behavior related to TV and video consumption.
3. potential customers of LinkedTV as a basis for the quantification of the market volume for LinkedTV
4. potential competitors of LinkedTV.

The results of the deliverable have been input to business model development in deliverable D8.7 (starting from Section 4 of D8.7, [HaSF14]) and will also be further detailed in the final exploitation deliverable D8.8, which is due in M42.

1.3 List of Abbreviations

Abbreviation	Description
ACT	Association of Commercial Television
API	Application programming interface
ARD	**A**rbeitsgemeinschaft der öffentlich-rechtlichen **R**undfunkanstalten der Bundesrepublik **D**eutschland
ASR	Automatic speech recognition
AV	Audio video
B2B	Business-to-Business
B2C	Business-to-Consumer
CMS	Content Management System
DG COMM	Directorate General Communication
DVB-H	Digital Video Broadcasting - Handhelds
FTA	Free-to-Air
HbbTV	Hybrid Broadcast Broadband TV
IPTV	Internet Protocol television
OTT	Over-the-top
PSB	Public Service Broadcaster
RBB	Rundfunk Berlin-Brandenburg
S&V	Netherlands Institute for Sound and Vision
SaaS	Software-as-a-Service
SMT	Springfield Multiscreen Toolkit
TKK	Tussen Kunst & Kitch
TV	Television
USP	Unique Selling Proposition

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2 Introduction to the Market Analysis

2.1 Overall Introduction

Besides the development and testing of the LinkedTV solutions one additional goal of the LinkedTV project is the identification of its market potential and positioning. After 36 months of development and an intensive ongoing discussion within the consortium, a more precise idea about a potential exploitable LinkedTV solution was developed. A detailed description of the components and the end-to-end LinkedTV solution as it was presented at IBC 2014 is provided in Section 3 of D8.7 [HaSF14]. The identified potential exploitable common LinkedTV product was the starting point for the market analysis presented in the deliverable at hand. It enabled a more precise delimitation of both questions that should be answered with the market study and of the companies that should be considered in the customer and competition analysis.

Against this background, the goal of the market analysis in the deliverable at hand is to collect market data that will provide the basis for positioning the LinkedTV solution on the market and for assessing its market potential. In order to achieve this goal, it was necessary to answer two major questions:

- What is the current and future demand for applications that are enabled by the LinkedTV solution? To answer this question, it was necessary to analyze the overall trends in the TV and video market as well as to analyze from the B2C perspective which and how users are consuming TV and video content at present and in the future.
- How can the LinkedTV solution be positioned on the market and what is its market potential? In order to answer this question it was essential to identify and analyze the specific LinkedTV customers and competitors in the B2B market for TV and video technologies.

To get an overall overview of the current and future TV market from B2C perspective the following data was collected:

- Published studies and statements about future trends in the TV industry. Based on these data it was possible to identify and provide an overview of future market developments and scenarios for the TV market.
- Published studies about current and expected user behavior and consumption of TV and video offerings.
- Information about prevailing and future second-screen applications for the TV market.

The collected data enabled a general big picture on the TV market as well as future opportunities and risks for the LinkedTV product. The precise positioning of LinkedTV within the market was identified based on the customer and competition analysis. The analysis of the potential customers enabled furthermore the first rough calculation of the potential LinkedTV market share.

The work in this deliverable extends and details the findings from the first market analysis that were described in D8.2 and was interwoven with the work on D8.7 [HaSF14] – LinkedTV Business Model, v.2. Similar as D8.7, the deliverable at hand required as a starting point a more precise identification of the potential exploitable LinkedTV solution. Figure 1 illustrates how the work on the two deliverables is interrelated.
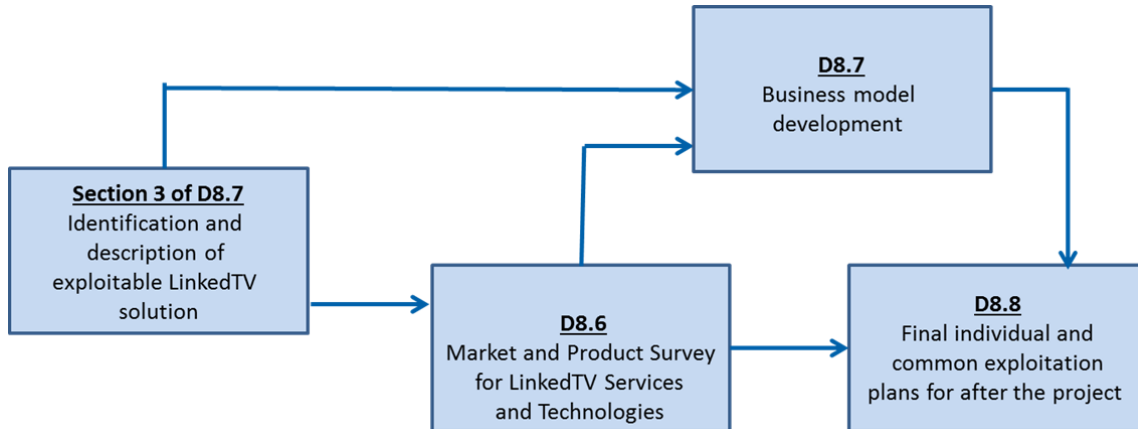
Figure 1: Interrelationship of the deliverables D8.6, D8.7 and D8.8

The results of both deliverables as well as the discussion of LinkedTV exploitation will be continued until the end of the project and will provide the input for the final exploitation deliverable D8.8.

2.2 The LinkedTV Solution – A Short Summary

After three years of development and an intensive discussion among partners the consortium was able to identify the LinkedTV solution that has potential for commercialization. The components comprising the LinkedTV solution and the solution itself are described in a detailed manner in Section 3 of Deliverable D8.7 (see [HaSF14] page 10-19.). They were the starting point for the identification of potential LinkedTV customers and competitors that were subject of analysis in this deliverable. To set the contexts for the market analysis a short summary description of the LinkedTV solution is provided in this chapter.

The LinkedTV solution is a B2B solution that addresses content owners and is enabling a new generation of (Web)TV applications that can interweave TV and Web content for the benefit of both content producers and consumers. The LinkedTV solution can be provided to the market in two ways:

- The LinkedTV video enrichment platform, which provides an end-to-end workflow support and orchestration for ingestion of audio-visual content, video analysis, video annotation, video enrichment (i.e. linking of video to relevant online information), storage of the resulting richer content metadata as well as provision of access to the related content for companion LinkedTV applications. The result of the process is

video content enriched by enhanced metadata that can either be input to end consumer applications and/or stored in an existing editorial or content management system of B2B customers.

- The LinkedTV video enrichment platform accompanied with a complementary LinkedTV application. Examples of LinkedTV applications are provided at the LinkedTV showcase: http://showcase.linkedtv.eu/.

The end-to-end LinkedTV solution has a modular structure and offers the following functionality each supported by dedicated software components:

- A set of accurate multimedia analysis algorithms that can be adapted in number and kind to customer needs
- Enrichments using knowledge from online domain ontologies and other web resources based on a customer defined whitelist
- A dedicated tool for verification of annotations and enrichments by an editor
- A toolkit to easily create companion applications aligned to TV programs
- Optional personalization features to further improve the LinkedTV experience
- A seamless end-to-end workflow with video ingest and administration dashboard.

During the project two demo applications were implemented: the LinkedNews demo, which is an example LinkedTV application for news shows in German and is supported by the German partner broadcaster RBB; and the LinkedCulture demo, which is an example application for the cultural program Tussen Kunst & Kitch (TKK) in Dutch and is supported by the Dutch archive partner Netherlands Institute for Sound and Vision (S&V). During the process of the creation of the two demo application as well as the respective user trials, in-depth knowledge was developed related to specific user needs for related Web information in context of news and cultural programs. This knowledge provides an additional advantage for LinkedTV and points to relevant LinkedTV application areas and markets.

The LinkedTV application of the German news show involves as additional component automatic speech recognition (ASR) for German language. Given also the fact that several partners have already established relationships in the German TV B2B market, the German market is considered of special importance for the LinkedTV solution.

3   Future Trends and Scenarios for the TV Market

The LinkedTV solution is targeting players in the TV market. The traditional TV sector is continuing to change rapidly mainly influenced by technological developments and major changes in consumer preferences and viewing behavior. A first detailed overview of the TV industry and its transformation was provided in D8.2. With the deliverable at hand an update is provided based on an analysis of secondary data. Published studies and statements about developments and future TV scenarios are analyzed and summarized.

The goal of this first part of the market analysis is to answer the following question:

> *What is the current and future demand for application that is enabled by the LinkedTV solution?*

In order to answer the question first general future trends of the TV market are assessed. Than current and future user attitudes and preferences for TV and video consumption are analyzed based on published surveys and statistics. Finally, the published descriptions of the current and future trends for the market for TV and video apps are consolidated. The analysis of the current and future TV market from the three perspectives provides a comprehensive picture on the current and future TV and video market.

3.1   The Future of the TV Industry – Major Trends

Ericsson considers television to be in 2020:

> "*A $750 billion dollar industry serving over 8 billion connected mobile broadband subscribers and over 50 billion connected devices all plugged into a global IP network.*" [Eric14].

This numbers are quite impressive and point on the first glance to a promising global market. However, as Roland and Berger [RoBe14] state in their study about the future of TV: "*It is quite certain that television as we know it today will no longer exist in 2020.*" But, how will future TV look like? The rapid changes in the TV sector have motivated market analysts, scientists, bloggers and media to develop ideas and scenarios how the TV industry will look like in the future as well as to propose strategies how various players on the TV market should prepare for the future. Several studies have explicitly considered the future of television in year 2020 and beyond. These are: the study of the European Broadcast Union [EBU14], the Ericsson media vision [Eric14], the Roland Berger Media 2020 Study [FeCL14], the Publisuisse study [PubS14], and the z-punkt study [NeSH11]. Besides these studies that explicitly target the future of television in year 2020, there are also several reports that consider the future of TV from the perspective of general trends and developments that have been emerging in recent years and will influence the developments in the TV sector. Starting from the studies considering the future of television in 2020 and beyond, in the deliverable at hand the major trends and scenarios are summarized and enhanced with findings from the more general reports. The considered studies have been developed from the specific

perspectives of the companies that have created them. For example the study from Ericsson [Eric14] focuses more on the future of TV from perspective of telecomm television providers, while the European Broadcasting Union [EBU14] from the perspective of public broadcasters. Nevertheless, our analysis of all studies reveals that the main findings and forecasts of the studies converge with respect to the following aspects:

- Main future players in the TV market
- Major trends in future TV consumption
- Future TV and video content
- Growing future importance of big data about customer.

The findings related to all four aspects are summarized in the subsequent sections.

Main future players in the TV market

According to all studies considered traditional media companies and linear TV will remain on the market in year 2020 [tdg14a], but they will lose their strong market position. Over the top (OTT) delivery will become applicable to all TV service providers or content owners [Eric14]. Over-the-top providers are already initiating the process of delinearization and make content independent of channels and broadcasting time. New global OTT players have arrived on the market [EBU14] and will gain foothold [RoBe12], [tdg14]. The established broadcasters are increasingly experiencing and will further experience competition from OTT offerings such as the Big 4: Apple TV, Amazon's instant video, Google's Chromcast and Microsoft's xbox [tdg14a]. Global OTT providers are expected to have gained market shares in year 2020 and the power on the market will shift to their favor [tdg14a], [eBU14], [FeCL14]. OTT are considered as game changer in the TV industry as their upraise makes edition and distribution/broadcasting mere commodities while customer knowledge and content generation are at the heart of traffic and monetization [FeCL14]. The success of global OTT providers will be due to several advantages they have compared to traditional TV providers: they have broad customer knowledge, they deliver content directly to viewers by bypassing the present value chain, they have high investment power and they have already established app stores [tdg14a], [RoBe12]. "*Operators have been accustomed to owning the user experience by means of the set-top box and its electronic program guide (EPG) and remote control. The Big 4 have repeated this formula, only on IP-enabled devices.*" [tdg14a]. In these new emerging ecosystems, the winners will be those companies that control the customer access to the ecosystem, as for example app stores [tdg14a]. Roland and Berger expect in their study that OTT together with Video on Demand (VoD) will have risen on the same level as live/linear TV (see also [Eric14] and [LUMA14]). About 50% of all viewed content will be on-demand versus live and linear TV [Eric14].

All studies agree that in the future, traditional broadcasters have to develop new roles and capabilities in order to be able to compete on the market. It is expected that they will specialize in local content. Another major business model foreseen for broadcasters is the station broadcaster as "content store" [FeCL14]. The broadcasters will have to open the

content production process and will have to move from exclusive, professional production to joint creation, curation, sharing and partnership embedded in the national creative industry [EBU14].

TV Consumption

In total viewing time is expected to rise in the future [EBU14], [FeCL14]. TV consumption is expected to increase from 230 minutes to 250 minutes starting from year 2015 [FeCL14]. Linear viewing is expected to decline, but total viewing time will increase as well as the share of non-linear viewing in total viewing time. It is expected that linear, i.e. scheduled viewing will remain relevant for genres like breaking news, major events, sports matches, daily talk shows, game shows, contest and all other live programmes that derive from the urgency and exclusivity, from watching simultaneously with others and the feeling of being part of the event. On-demand viewing is expected to grow especially for genres like drama, comedy, film and documentary [EBU14].

The trend to growing penetration of mobile devices such as smartphones and tablets will remain until 2020. It will even be further enforced by new mobile devices as wearables and the Internet of Things. All studies expect an increased number of mobile devices [EBU14] per person and household. The growing number of mobile devices will further impact viewing behavior. One expected change is that remote controls will be replaced by devices with touch screen [RoBe12], [Wrap11]. [Quar14], [LUMA14].

Another major change that is anticipated is the change from a push to a pull market for content [FeCL14]. While in the past broadcasters were defining the schedule and were pushing content to audiences, in year 2020 users will pull together what they want to see. As [Wrap11] states it: "*All TV will be á là Carte*". Personalization will become more important [FeCL14]. It is projected that users will create personal playlist of linear and non-linear offerings even based on user recommendations [RoBe12]. Selected content can be furthermore stored in the cloud and users can schedule and view recordings from everywhere [Quar14]. Overall there will be a shift towards on-demand and personalized content [EBU14]. This might even change current business models that are based on household subscriptions to personal subscription even within the same household [Quar14].

Due to increasing cross-device consumption [FeCL14], in year 2020 viewing patterns that are emerging at present will become mainstream. These are media meshing [NeSH11], [FeCL14], [EBU14] and binge viewing [EY14]. Binge viewing is the practice of watching several episodes of a TV series at the same time. Media meshing is defined as using multiple devices simultaneously to enhance a media experience (e.g. interacting or communicating on a smartphone about TV content being viewed). In this context, the study of Z-punkt about TV trends 2020 explicitly mentions automatic meshing of TV and online content (e.g. discovery of words with automatic speech recognition and connecting with related content) as a relevant future trend.

The increasing penetration of mobile devices per household and user will increase the importance of apps. App stores support personalization and individuality [tdg14a] and the á là carte choice of content. "*The video app – which blends on-demand and live content and almost always places the content (an individual show or movie) first, is replacing the channel as the preferred way of interacting with video content.*" [tdg14a]. In the growing offering of various video and TV apps, established brands will provide orientation for users and will matter more than ever [tdg14a].

As a result of all this changes, customers will be reachable at any time and through all sorts of services and huge amounts of information regarding their preferences and personal life will become available [FeCL14].

Future of TV Content

All considered studies expect that in year 2020 there will be a mix of equal parts of linear and non-linear content on the TV market (see for example [EBU14], [FeCL14]). Based on recent observations of Netflix, it is predicted that in the future also OTT providers will invest more in content production.

Given the fact that users will use various devices, future content has to be "liquid". Liquid content means that the same or similar content is being produced, edited and packaged for different platforms and devices [EBU14]. The race for multi-device services and content is just beginning and will rapidly intensify with new additional devices as wearables [FeCL14].

Storytelling will evolve to make better use of multi-screen environments [EY14] and even involve viewers. Omniplatform programming will impact digital supply chains even further [EY14a]. The ability to develop inclusive and cross-genre formats on linear channels with multi-layered storytelling over several devices will be of decisive importance for positioning on the market.

Delivery of content will furthermore become more context-aware [EBU14]. Content will have to adjust according to the current viewing situation and device of the user. Furthermore, to better serve the customer in a personalized and context-dependent way, abilities to split content into bite-size segments to facilitate peer recommendation and choice will be of importance. Overall "…*content suitable for multi-platform use and personalization from the outset and hybrid services with new ways of storytelling within an overall branding strategy"* [EBU14] will become a key success factor.

In order to provide all the above mentioned additional features (splitting content, cross-reference of content, synchronization of content on several screens and new storytelling), suitable, relevant and detailed metadata of content will become the key enabler to this new viewing experiences [EY14].

Given the growing penetration of mobile devices and second screen usage, mobile apps will increase in importance. Apps are expected to replace channels [NeSH11], [Ttdg14a] and channels will become an outdated way to organize TV [Quar14].

Given the growing offerings of content there will be a shift to personalized and on-demand content [EBU14]. From the perspective of users, distinction between linear and non-linear content will blur as new devices allow easy switch. It will become more common to compose – automatically updated – personal playlists [EBU14]. In this new environment of over-supply of content, search and navigation as well as recommendation options are becoming increasingly important. Only high quality content and brands, so called lighthouse content [RoBe12], [pubS14], can create exclusivity [RoBe12]. Thus, content providers will have to engage in "content discovery optimization" [Ey14]. Again here relevant metadata will play a decisive role.

Overall, all considered studies agree that in the future TV content and experience will be a networked experience. In the future content will have to be more like an integrative ecosystem that links content, commerce, gaming, branding and the community together (see [NeSH11], [RoBe12], [EBU14], [Eric14], [FeCL14], [PubS14], [EY14] and [NeSH11]).

Growing Importance of Big Data

The ability to gather, generate, organize and analyze viewers' data will become a key success factor to address customers and monetize media offers [FeCL14], [LUMA 2014]. Data about viewers' and their behavior will be the basis for:

- Decisions in which content to invest. The popular "House of Cards" show of Netflix is considered the first one to be designed based on analysis of customer data. It is the result of cross-referencing viewers' preferences and habits as observed on Netflix's website [FeCL14], [LUMA14].
- For providing personalized services and recommendation
- For providing the recommendation to the user

In addition to big data also supporting the new customer experiences through cloud offerings will increase in importance as well [Eric14].

3.2 Changing User Behavior

Enabled by technical developments, the changing user behavior has been one of the major drivers for disruptive changes in the TV industry.

The following statistics illustrate these changes in Europe:

Increase of mobile traffic:

According to the Cisco Netindex, mobile traffic has increased in general, but because of mobile video consumption (see Figure 2):
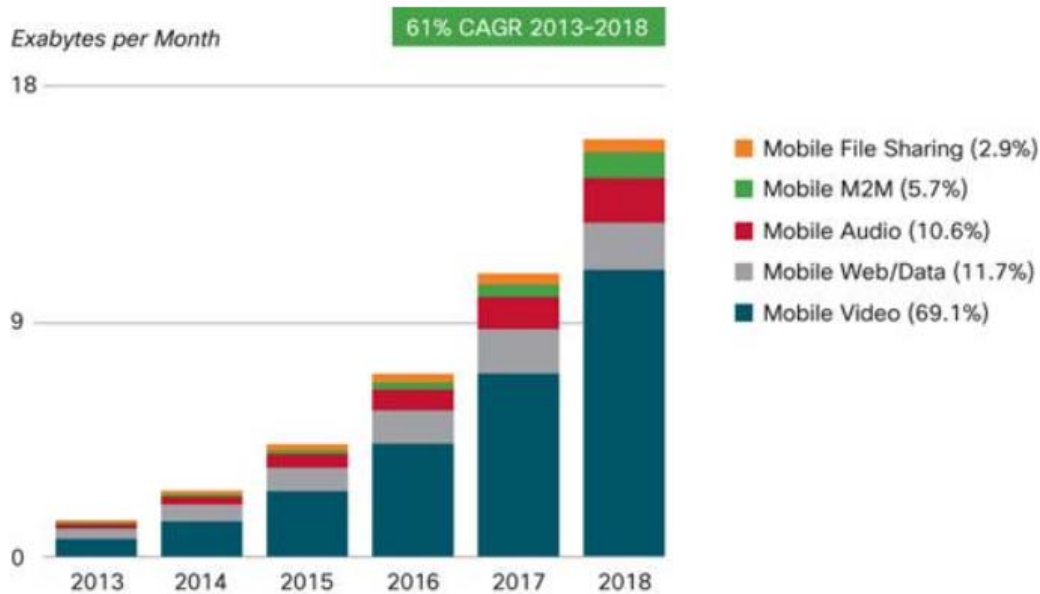
Figure 2: Development of mobile traffic (Source: [Cisc14])

Steady Growing of penetration of smartphones and tablets

As the newest report of the European Audiovisual Observatory shows, there is a steady growth of penetration of smartphones and tablets in Europe (see Figure 10).

Increasing multi-screen, multi-device viewing and device-hopping

According to the study of Publissuisse [PubS14] the use of multiple screens while watching TV is becoming is the normal behavior in front of the TV (see also [LUMA14] for the US market and ARD/ZDF study for the German market [VEFr14]).

The various screens of multi-screen households are not competitive to each other but complementary. Users use them to different time and at different places (see also Figure 3). For example the mobile phone is typically used during commuting from home to work or back from work to home. Tablets are basically used in the evening time during watching TV or in order to entertain in general. This means that the user is actually using different devices depending on what is most suitable at the place and time and for the content that he likes to watch.
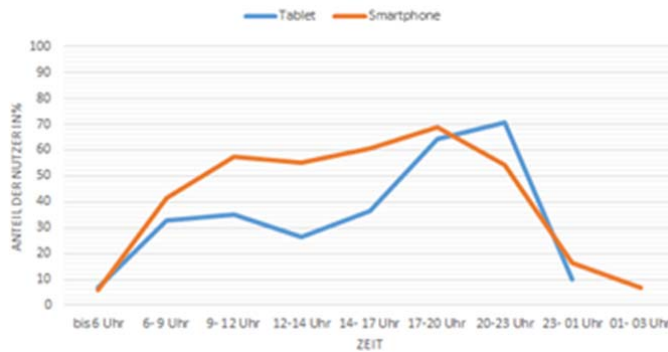
Figure 3: Switching use of smartphones and tablets based on the results of the usage study of Tomorrow Focus Media [TFM14]

Looking for additional information related to the programme and talking about the programme the most important activities of users on the second screen.

Overall, the developments of the user behavior patterns are still creating a favorable condition for applications that can be enabled by the LinkedTV solution.

3.3 The TV App Market

One of the major TV future trends is the shift towards apps. As was mentioned in Section 3.1, apps are becoming the major way to present video content and to bind customers. TV apps can be divided in two major categories [Fuch12] (see also Figure 4):

- Apps that provide the first screen TV service on the second screen. At present all broadcasters and OTT providers provide apps that offer the main first screen service on mobile devices. Thereby, a trend to channel apps can be observed (see for example a short overview of new channel apps in Table 4). Thus, most providers offer more than one app providing the first screen service.
- Second screen apps that provide an added value to the programme on the first screen and thus different content on the second screen.

From the perspective of LinkedTV, of interest are second screen apps. Depending on the added value and functionality that they offer, second screen apps can be further classified in [Fuch12] (see also Figure 4):

- Apps that specialize on providing SocialTV, i.e. program related interaction with users over social media. These kinds of apps are provided by broadcasters and OTT providers as well as by independent new players. Some of the broadcasters' social TV apps go beyond interaction about the program on social media and provide the viewers the opportunity to get involved into the programme. Thus. Social media interaction becomes part of the programme.

- Mobile TV apps specializing in recommendation of video content
- Mobile TV Apps specializing in providing content and commerce related to the TV program
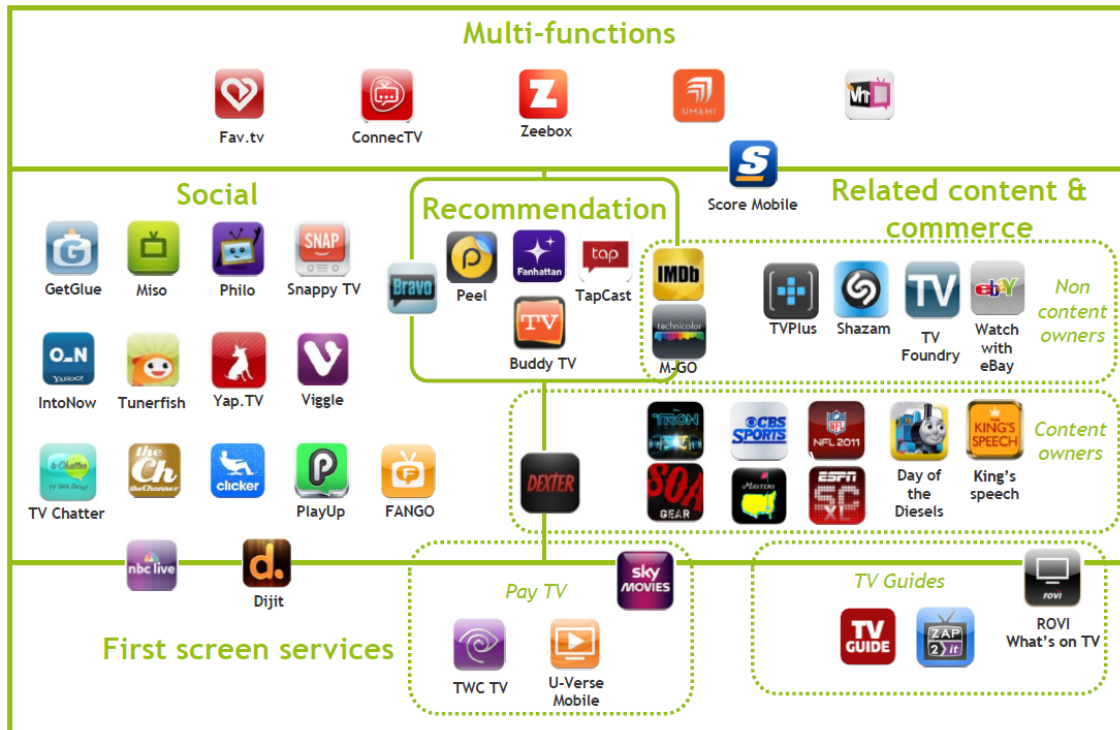
Figure 4: Classification of TV Apps on the market (Source: [Fuch12])

The app providers pursue various app business models – from business models where the app is offered for free to business models based on advertising, commerce, leveraging content and consumer analytics [Fuch12] (see also Figure 5):

Figure 5: Overview of TV app business modes (Source: [Fuch12]).

According to [Fuch12], there is also a new ecosystem emerging around second screen TV apps (see Figure 6).
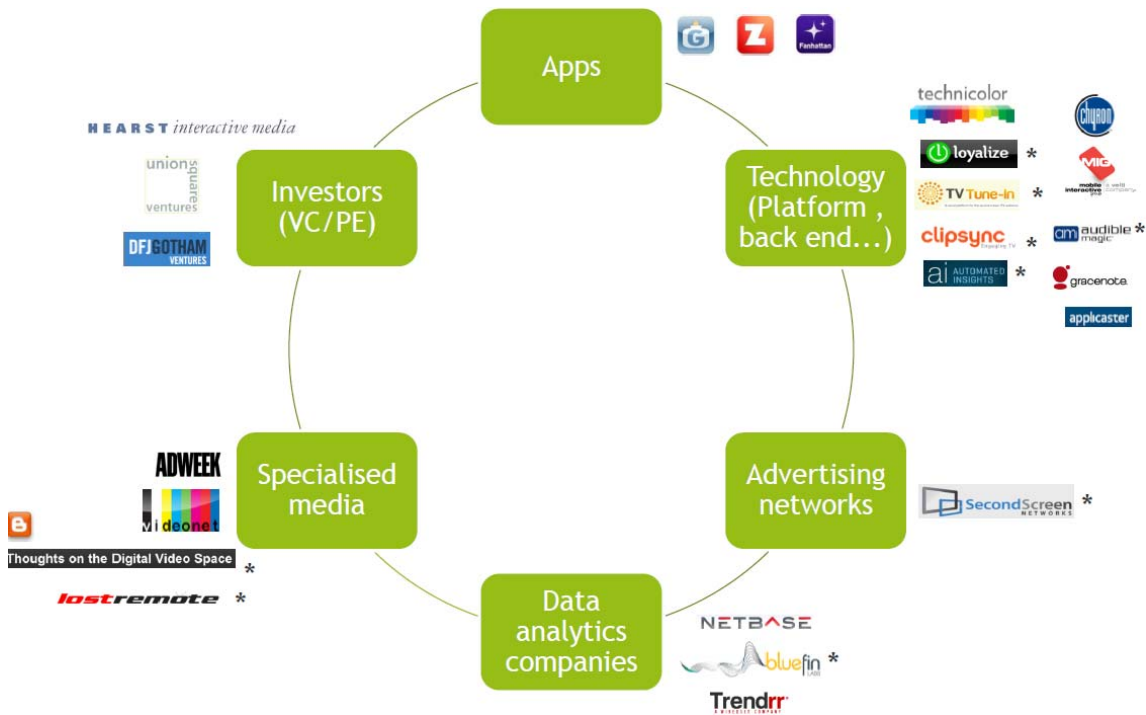
Figure 6: The emerging ecosystem around mobile apps (Source: [Fuch12])

As the overview of apps shows, current second screen apps can be considered as a first generation of apps that mainly replicate the first screen experience and provide first additional services and interaction possibilities on the second screen. Even though first steps towards more integrated and synchronized second screen apps with the first screen can be

observed (see for example Zeebox[2]) Second screen apps that provide a more integrated and synchronized experience with the first screen are still missing on the market. There is a growing demand for mobile TV apps that provide a new viewing experience and enhance content (see also Section 3.1) and at the same time provide a better synchronization among first and second screen. This is a favorable development for LinkedTV.

The growing demand for enhancing the TV experience has also motivated innovations that go beyond second screens and try to enhance TV viewing through other approaches. One such approach that needs to be observed by LinkedTV is the so called augmented TV approach, where TV content is enhanced with additional information on the first screen. One example of these products is the inAIR product offered by the company SeeSpace. Their inAir[3] product places an additional layer of information in front of the TV programme, taking away the control of the first screen from the broadcasters. Even though, in contrast LinkedTV offers to the broadcaster a way to fully control which additional information is presented and on which screen and still fulfilling the information needs of their audience, developments in the area augmented TV need to be observed in the future.

3.4 Summary of Future TV Trends and implication for LinkedTV

The main trends and developments resulting from the analysis presented in the sections above can be summarized as follows:

Main future players in the TV market

The TV market is becoming highly competitive among all players. In order to sustain on the market traditional broadcasters need to open up content production and to develop towards ecosystems. New and emerging global players need to move in content production. Both players need lighthouse content and sophisticated second-screen apps and applications. All this will increase the demand for a 2nd generation of second screen apps that better synchronize first and second screen and enable multi-device applications and storytelling. In the background modular content enriched with metadata will be the basic prerequisite. All this creates a favorable market for the LinkedTV solution.

TV consumption

The main keywords describing emerging and future TV consumption are:

- Change from push to pull content consumption
- Parity of linear and non-linear consumption
- Replacement of remote control by mobile devices and touchscreens
- Personalized and context-aware á là cart content

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[2] Recently renamed in Beamly: https://us.beamly.com/

[3] http://inair.tv

- Second screen has become the normal way of watching TV
- Media-meshing and binge viewing are becoming mainstream
- Increased importance of apps as entering point for TV consumption

All this changes of the TV consumption again create a favorable and inspiring condition to LinkedTV.

TV and video content

- The need for "liquid" content and cross-device storytelling
- Context-aware delivery of content
- Growing importance of metadata
- Replacement of channels with apps
- Need for second generation of second screen apps providing better synchronization of first and second screen and more attractive and interesting application
- Networked content linking content from different sources, commerce, gaming, branding and the community together

Also these trends related to the future TV content create a favourable market for LinkedTV. This is in particular the result of the need for "liquid" content as well as the growing importance of metadata are important for LinkedTV.

Overall, the future years will bring considerable changes in the TV market. Most of them create demand for new functionality that can be offered by LinkedTV. This shows that even after three years of development LinkedTV is still special and relevant for the market. However, growing demand will also attract growing competition. Thus, a fast market entrance of LinkedTV is needed. Thereby, the LinkedTV consortium has to be careful to invest in relationships to the expected winners on the market.

4 Market Analysis of the B2B LinkedTV Market

The second part of the deliverable at hand is dedicated to the following question:

How can the LinkedTV solution be positioned on the market and what is its market potential?

To answer this question the focus in this section is on the B2B broadcast and broadband. The analysis of the B2B market comprises two parts: the identification and evaluation of the potential LinkedTV customers and of the LinkedTV competitors. The goal of the B2B market analysis is to position the LinkedTV solution on the market by both evaluating its market potential and by delimiting it from competitors. During all analysis' steps, implications for the LinkedTV products were assessed.

4.1 Analysis of Potential LinkedTV Market

4.1.1 Scope of the LinkedTV Market Analysis

The target market for the LinkedTV solution is the B2B broadcast and broadband TV market. As described in D8.3 potential customers are audiovisual content producers like in-house production divisions of public or commercial broadcasters, content producers working on behalf of either broadcasters or other content aggregators and audiovisual archives. The various kinds of potential LinkedTV customers differ in terms of content ownership as well as in the degree to which they pursue the entire end-to-end workflow from content production to content distribution. It is assumed that content owners will have the right and interest to enhance their content with Web information and to create innovative LinkedTV application. Furthermore, it is assumed that LinkedTV can add value to existing content production and distribution workflows by providing support for enhanced enrichment as well as by linking the video content with Web information. Based on these two criteria the potential customers of the LinkedTV solution among the already determined category of content producers and providers, can be divided in two categories:

- Potential customers that are involved in frequent content production and support the whole workflow of content production and distribution. These are public and commercial broadcasters with their in-house content production and distribution as well as archives that manage and organize content and provide it as input for the content production and distribution processes. This category of customers is of highest importance for LinkedTV because of the following reasons: 1) the intensive daily repeating content production and/or management activities; 2) the need and pressure for innovative application; 3) the need to support content production and management in an efficient manner with suitable technology; 4) the fact that these are customers whose representatives are involved in the project and to whom consortium partners have already established relationships (see also Chapter 4.3 in

D8.7 [HaSF14]). These potential customers will therefore be considered as LinkedTV core target customers, which will be the basis for creating the core customer base of LinkedTV.

- Potential customers that have rather limited content ownership or rights to modify content and that rather focus on one aspect of the LinkedTV workflow. These are content producers that are creating content on behalf of others, OTT providers that focus on content distribution and large organizations that produce high quality video content in order to communicate for example with customers or employees or to explain their products, but for which content production is not the core business. This group of customers will be considered as the extended target customers of LinkedTV.

Given the European roots of the LinkedTV consortium the main target market for the LinkedTV solution is the European B2B broadcasts and broadband market, i.e. the European broadcasting and audiovisual industry and market. Within the European market the consortium has in particular generated in-depth knowledge about news and cultural shows. Furthermore, there is particular concentration of knowledge and relationships of LinkedTV consortium partners to the German market. Thus, besides European market data, wherever possible also details about the German as well as the markets for news and cultural shows were provided. Figure 7 summarizes the scope and focus of the market analysis of potential LinkedTV B2B customers and markets.
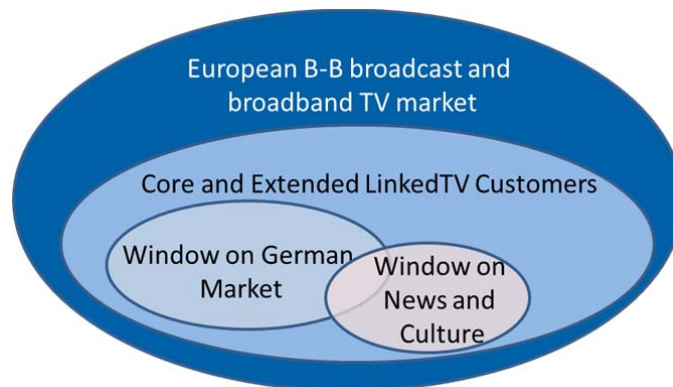
Figure 7: Scope of the market analysis of potential LinkedTV customers

4.1.2 Approach of the LinkedTV Customer Analysis

The analysis of the potential LinkedTV customers and markets is based on a mix of several approaches. First, potential B2B customer categories and markets were analyzed based on published secondary sources such as market-, yearly- and statistical reports. Thereby, the focus was on the European market with special insights for the German and/or the news and cultural markets. Than expert interviews with 5 representatives from potential customer companies were conducted. The list of conducted expert interviews including the role of the interview participants is provided in Table 2.

Company	Position of Interviewee	Type of Company
Swiss Radio and Television	Project leader Program strategy / Market and Audience Research	Public broadcaster
Zattoo	Vice President Content & Consumer	WebTV
Deutsche Welle	Head of Innovation Projects	Public global broadcaster
Netherlands Institute for Sound and Vision	Sales	Archive
RBB	Program Editor	Regional public broadcaster

Table 2: Overview of conducted interviews

The findings from the literature analysis and from the expert interviews were supplemented with findings from the contacts with potential customers at IBC 2014 and with existing experiences and customer knowledge from LinkedTV partners.

Based on the combined results of the various activities of the customer analysis, it was possible to provide the following market information:

- Characterization of the potential market from European perspective
- Characterization of the German market
- Characterization of the market for news and cultural shows to the extent to which data was available
- Description of prevailing customers' workflows.

Two customer processes to which LinkedTV can provide added value were described: one describing the workflow of content production in the newsrooms of Rundfunk Berlin-Brandenburg (RBB), and one describing the workflow of archives based on the example of S&V. The described workflows served as starting point for the assessment of how LinkedTV would fit in such customer workflows, and if competing technologies are already applied to support these workflows. Based on the analysis' results, it was furthermore possible to provide a first quantification of the potential market volume and potential market share of the LinkedTV solution. All these analysis' results provide a detailed and in-depth picture of the potential LinkedTV market as well as implication for the commercialization of the LinkedTV solution.

4.2 LinkedTV Core Customers

The LinkedTV core customer category comprises companies that have frequent processes of content production or management for which LinkedTV can provide added value. These are in particular:

- Public and commercial broadcasters who create and transmit content on a daily basis. As the two demo applications developed during the LinkedTV project show, there are several units of broadcasters that might be interested in the LinkedTV solution: the newsrooms with their daily production of news and other units producing documentaries, cultural and educational programs.
- Audiovisual archives, in particular production archives, as the LinkedTV technology can be used to automatically enrich and organize content available at archives.

Each type of customers in the core customer segment will be described in more detail in the next sub-sections.

4.2.1 The European Broadcasting Market

The European broadcasting market consists of various national and regional public broadcasters and private or commercial broadcasters. The commercial broadcasters can be furthermore divided in: advertising TV, thematic channels, home shopping channels and local TV. Based on data from the newest report of the European Audiovisual Observatory [EAVO14], Table 3 summarizes the size of the European broadcasting market.

	2008	2009	2010	2011	2012
Public broadcasters	**32'370**	**33'434**	**33'815**	**33'687**	**32626**
Private Broadcasters	**34'734**	**33'865**	**36'148**	**38'490**	**37'858**
Advertising TV	21'664	20'096	21'139	21941	21057
Thematic Channels	9'021	9'791	10'859	12'334	12'578
Home Shopping Channels	2'442	2'423	2'577	2'719	2'800
Local TV (est.)	1'607	1'555	1'573	1'496	1'423
Pay TV	**26'448**	**27'609**	**31'342**	**32'676**	**34'952**
Cable	11'201	11'314	12'050	12'338	12'952
Satellite	13'255	13'298	14'954	15'470	16'219

	2008	2009	2010	2011	2012
IPTV	1'395	2'042	2'899	3'343	4'168
DTT	598	954	1'439	1'525	1'613
VoD online	**124**	**220**	**415**	**582**	**956**
Online VoD TV	97	161	298	392	575
Online VoD Film	26.8	59	117.2	189.2	380.9
TOTAL	**61'306.8**	**61'693**	**67'905.2**	**71'747.2**	**73'765.9**

Table 3: Overview of revenues in the European Broadcasting market in EURO mil. (Source [EAVO14, p. 19])

According to [EDTV14], digital TV penetration will reach 81.9% in European TV households by end of 2014. TV is broadcasted over 5 different platforms [EAVO14] (see also Figure 8). Due to the growing importance of Smartphones and mobile TV apps of various kinds, there is a clear decline in number of platforms that provide Mobile TV. Many Digital Video Broadcast (DVB-H) platforms have been closed and play a minor role. At the same time the number of Internet Protocol Television (IPTV) operators has increased with the same speed. It is expected that in the future IPTV will further increase on behalf of mobile TV and cable operators [EAVO14].
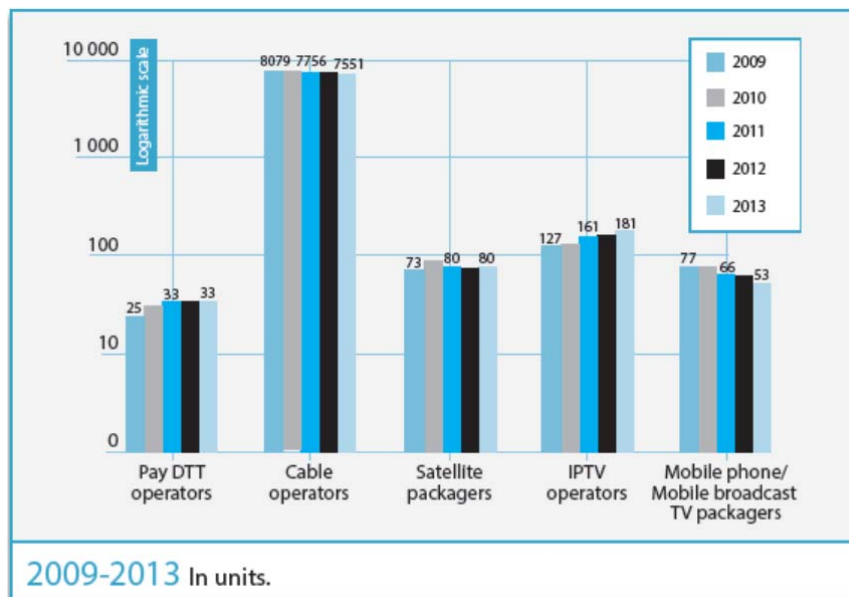
Figure 8: Number of TV distribution platforms in 37 European countries (2009-2013) (Source [EAVO14, p. 33)

In the last years also an increase in the number of households with Smart TVs could be observed (see Figure 9) [EAVO14, p. 79].
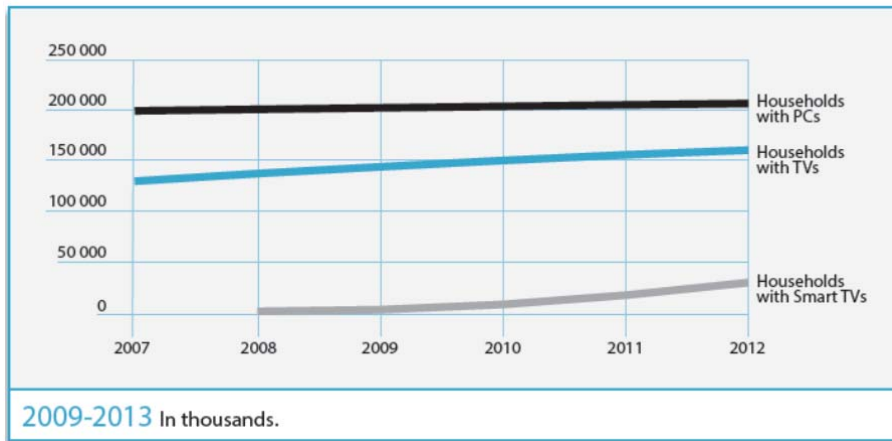
Figure 9: Households installed base for PCs, TVs and Smart TVs in EU27 countries (source [EAVO14, p. 79])

At the same time there was a fast increase of tablet penetration. In EU14 European countries the increase was in a range from 120 up to 192% [EAVO14, p. 80] (see Figure 10).
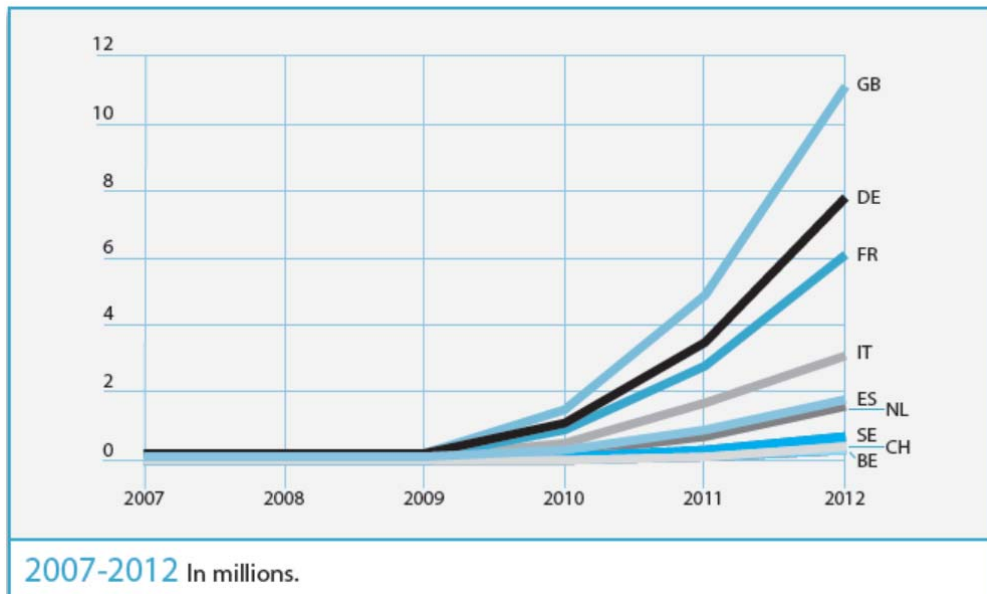
Figure 10: Tablet installed base in EU14 countries in millions [EAVO14, p. 80]

At the end of 2013, there were 10897 television channels available in 37 member states of the European Audiovisual Observatory (8'817 in the EU28) [EAVO14] (see also Figure 11). The three most predominant genres are HD simulcast (1001), sport (742) and entertainment channels (590). Other important genres include general entertainment TV channels without

specific thematic content, i.e. generalists (527), film (505), music (416) and children's channel (376) [EAVO14] (see also Figure 11).
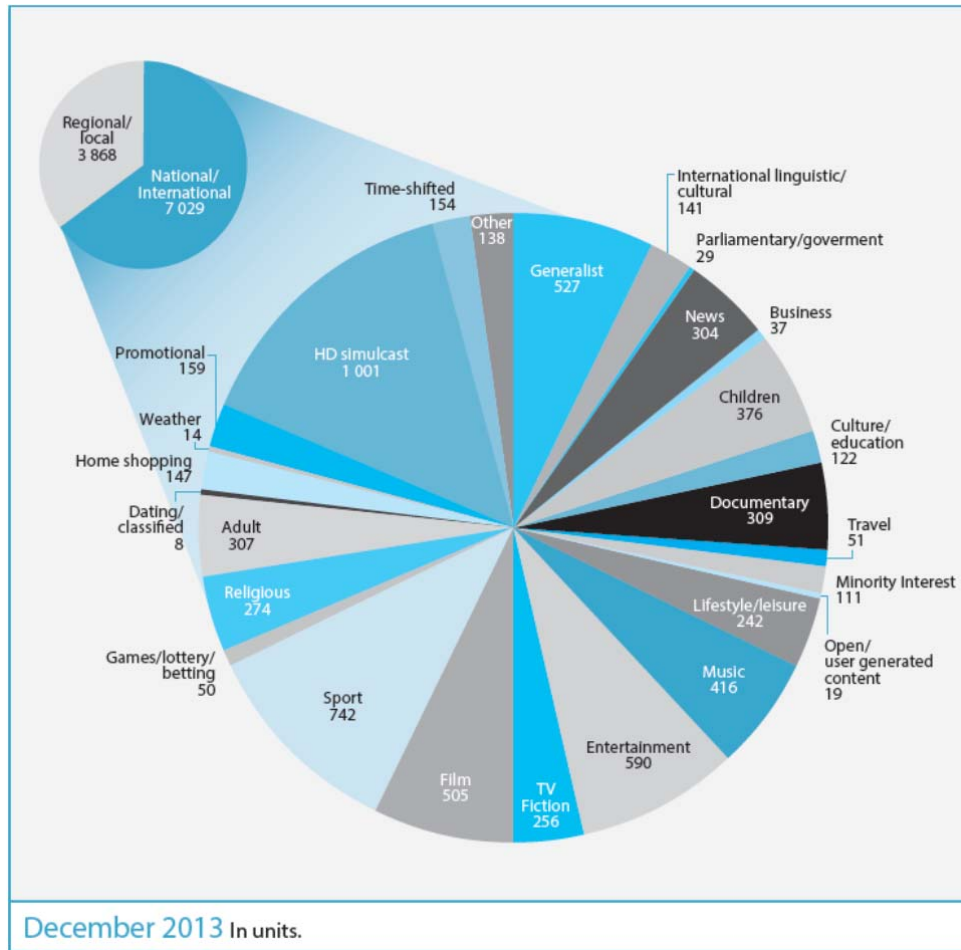
Figure 11: TV channels by genre available in 37 member states of the European Audiovisual Observatory (source [EAVO14], p. 117])

As our trials showed, the LinkedTV solution can in particular provide added value through linking TV content to web information for sports, entertainment, film, music and children's channels (see [STAN13]). From the perspective of the two demo applications created during the LinkedTV project, valuable information is the availability of 304 news and 122 culture/education channels. Overall, in addition to the specific thematic units of the full programme channels (news, sports, education, …), there are a considerable number of specialized thematic channels where knowledge and experiences gained in the LinkedTV project as well as the available demo application can be leveraged.

4.2.2 News Channels in Europe

Receiving news from a variety of reliable sources is fundamental to the process of information-gathering, decision-making and opinion-forming of European citizens. Given this the Directorate-General Communication (DG COMM) of the European Commission has initiated a census of TV news channels in 2009 that has been repeated since then until present. The census is carried out by the European Audiovisual Observatory and the newest report published relates to year 2012 and 2013 [KePS13]. Given the experience of LinkedTV with news applications, news channels might be an important sub-segment of the customer segment comprising broadcasters. The summary of found data about news channel is the basis for assessing news channels as potential customers.

According to [KePS13] in September 2013, there were almost 300 news channels in Europe, out of which 171 were established in the 28 European Union member states. Two types of news channels can be distinguished: Pan-European channels and national channels. Both basic types can be further distinguished in public and private channels. An overview of the news channels with the biggest reach is given in Figure 12 [KePS13, p. 11].

Rank	Channel	Statute	Country of origin	Reach
1	CNN International	Private	United Kingdom (US channel)	38 Countries
2	BBC World News	Public	United Kingdom	37 countries
3	RT (Russia Today)	Public	United Kingdom (Russian channel)	35 countries
4	Al Jazeera (English)	Private	United Kingdom (Qatar channel)	33 countries
5	Euronews (English)	Mixed public-private	France	33 countries
6	France 24 (English)	Public	France	32 countries
7	Deutsche Welle	Public	Germany	30 countries
8	France 24	Public	France	27 countries
9	Sky News International	Private	United Kingdom	26 countries
10	Euronews (Russian)	Mixed public-private	France	25 countries
11	CCTV News	Mixed public-private		21 countries
12	Euronews (German)	Mixed public-private	France	21 countries
13	Euronews (Italian)	Mixed public-private	France	20 countries
14	Euronews (French)	Mixed public-private	France	19 countries
15	Euronews (Portuguese)	Mixed public-private	France	17 countries
16	Euronews (Spanish)	Mixed public-private	France	17 countries
17	Canal 24 Horas	Public	Spain	16 countries
18	Euronews (Arabic)	Mixed public-private	France	14 countries
19	Euronews (Turkish)	Mixed public-private	France	12 countries
20	Al Jazeera (Arabic)	Private	Qatar	12 countries
21	Euronews (Persian)	Mixed public-private	France	8 countries
22	Al Arabiya	Private	Dubai	8 countries
23	Al Jazeera Balkans	Private	Bosnia and Herzegovina (Qatar channel)	6 countries
24	Euronews (Ukrainian)	Mixed public-private	France	6 countries
25	France 24 Arabic	Public	France	5 countries
26	RT en Espagnol	Public	Russia	4 countries

Figure 12: Country of origin and reach of the biggest international news channels [KePS13, p. 11]

In recent years there has been some dynamics on the news channel market. Due to the economic crisis, several even public channels, as for example the Greek national news channel has been closed. Nevertheless in total there is a constant growth in the number of channels [KePS13, p. 13] (see Figure 13).
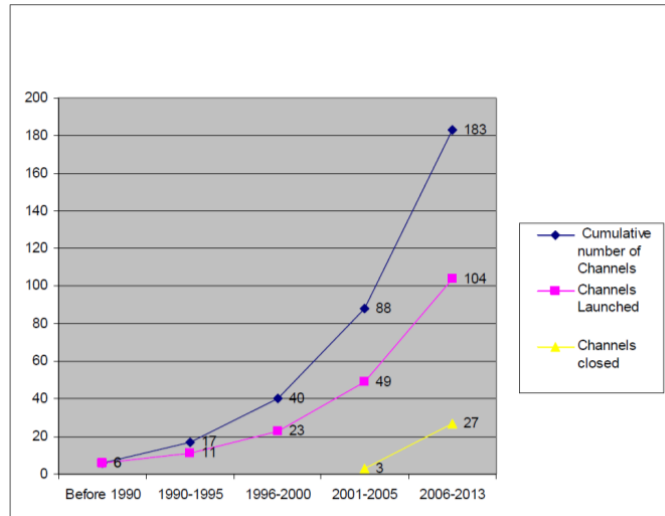
Figure 13: Growth of the market for news channels in Europe [KePS13, p. 13]

There is a broad variety of languages in which news channels broadcast. Most prevailing are news channels in Arabic, English and Turkish followed by French, German and Italian (see Figure 14) [KePS13, p. 15].
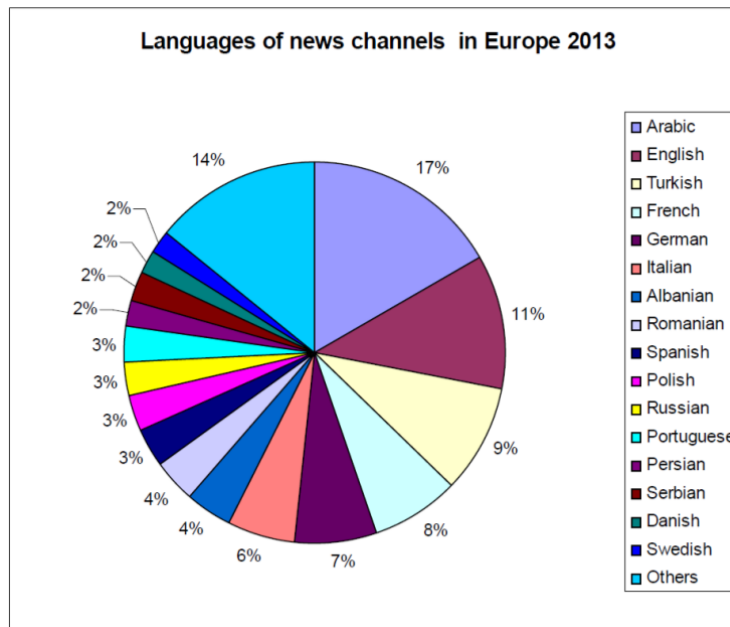
Figure 14: Languages of TV news channels [KePS13, p. 15]

Due to the economic crisis, news channels have been under financial pressure. As already mentioned, many channels, even public funded news channels, have closed in the past. Many news channels were integrated back in the main broadcasting companies that own

them [KePS13]. Nevertheless, channels that aim to remain on the market have to innovate, in particular in order to meet changing consumer needs. For example, most of the news channels have already invested in mobile apps (see Figure 15):

Channel	Google Android (phone, tablet)	Blackberry/ Blackberry Playbook	iOS Apple (iPhone, iPod, iPad)	Nokia Symbian	Samsung Bada	Windows Smart pho-ne	Kindle Fire	Nook
CNN	x		x	x		x	x	x
Al Jazeera (EN)	x	x	x	x		x		
France 24 (FR)	x	x	x	x		x		
France 24 (EN)	x	x	x	x		x		
France 24 (AR)	x	x	x	x		x		
Press TV	x	x	x	x		x		
Deutsche Welle	x		x	x		x		
Fox News	x	x	x			x		
Al Jazeera (AR)	x	x	x					
BBC World News	x	x	x					
Canal 24 Horas	x		x			x		
Euronews	x	x	x					
Russia Today	x		x			x		
Al Jazeera (Balkan)	x		x					
Geo News	x			x				
Sky News International	x		x					
Al Arabiya		x						
CCTV News			x					

Figure 15: Overview of smart phone and tablet apps for international news channels [KePS13, p. 15]

A detailed analysis of news apps published by 8 international mostly downloaded news channels in the AppStore and the GooglePlay store at the beginning of September 2014 revealed that second screen apps of news channels are quite popular (see for example Table 4).

News Channel	Smart-phone	Tablet	Downloads	Average Rating	Number of ratings	Free	Premium
BBC News	yes	yes	10 to 50 mill.	4.3	Over 76'000	yes	no
CNN Breaking US & World News	yes	yes	10 to 50 mill.	3.8	Over 77'000	yes	no
FOX News	yes	yes	5 mil.	4.3	Over 64'000	yes	no

Euronews live	yes	yes	100'000 – 500'000	3.9	Over 4200	yes	no
Euronews express	yes	yes	100'000 – 500'000	4.3	Over 9400	yes	no
France 24	yes	yes	1 mill. – 5 mill.	4.0	Over 8700	yes	no
The Observer – France 24	yes	yes	50'000 – 100'000	4.0	436	yes	no
France24 - Google	yes	yes	10'000 – 50'000	4.3	26	yes	no

Table 4: Overview of 8 most downloaded news apps in GooglePlay in September, 2014

For example at the beginning of September 2014 (see also Table 4), most successful was the BBC breaking news app that was published in Google Play store has been downloaded by more than 10 mill. users, has been rated by more than 76'000 users and had an average rating of 4.3. All apps provide similar services: special option for notification about breaking news, various news categories, weather information, photo galleries related to news, news videos, live news as well as news and streaming from live events. Most apps offer personalization possibilities. The CNN and the France 24 Observer apps provide the possibility to send eyewitness pictures and news to the news channel over the app. Some apps provide connection to social media. Overall existing apps provide access to news over smartphones and tablets, but none of them provide more sophisticated services and enriched news with Web information, yet.

Besides smartphone and tablet apps, news channels are also present on Smart TV platforms. For example Euronews and CNBC have a strong presence on both Phillips and Panasonic platforms, while BBC is stronger on the Samsung platform. The growing number of Smart TVs in European homes increases the attractiveness of these platforms for Smart TV apps [KePS13, p. 15]. Apps for Smart TV might increase in importance as Smart TV sales reached 90 million units worldwide in 2013 and will grow at 21 per cent to reach 228 million in 2018, according to [AdTV14].

News appears to be one of the types of content, alongside sports highlights, weather, etc. for which there is a growing demand for mobile access (phone or tablet) [KePS13], [LeNe14]. Thereby news apps – rather than mobile websites – are often the main way of accessing news [NeLe14]. Several studies claim that multiscreen channels encourage more use of audio-visual content and also increase the viewing of news [KePS13], [LeNe14]. Users who are using tablets and smartphones are watching more and longer news. In particular, tablet

devices are boosting audiences' demand for news and are transforming the way how they consume it ([KePS13] p. 36). According to a BBC study on news that is cited by [KePS13], television remains the most important source of news taking 42% of people's news consumption time compared with laptops (29%), smartphones 18% and tablets 10%. However, the cited BBC survey also found that, in breaking news situations, the primary source tends to be television 42% and most people will then use the internet sources to investigate stories further (see also [KePS13], p. 36). In general, Internet is the second source of information for exploring news in more depth.

The Reuters Institute study on digital news for 2014 also reveals that using smartphones and apps encourages fewer news sources [NeLe14]. In UK for example BBC and SKY seem to be benefiting from this smartphone effect, while aggregators brands as Yahoo and MSN are losing out [NeLe14]. Because of the growing importance of single apps, there is a battle for attention in the news apps market. Studies reveal that users that download a news app and use it regularly get actually bond to that app and don't look for other apps. As soon as they get used to a certain brand and a certain app they don't leave the app in order to look for additional news apps. This means that with apps the news broadcasters can get the full attention of viewers and only highly innovative apps and functionalities can trigger a switch to a competitive news app. Thus, in the market for news the major trend towards competition over apps is already present (see also Section 3.1). In the future innovative and attractive apps will be the main mean to keep existing customers and gain new ones.

Finally, the Reuters study on digital news also revealed that the number of people paying for digital news has remained stable around 11% over the past 12 months. However, there was an increase in more valuable subscriptions [NeLe2014].

Summary on the news market and implication for LinkedTV:

- The news market is very dynamic and competitive. Competition among all players providing audio visual news as national and Pan-European as well as full program news providers is increasing.
- The news channels are characterised with low profitability but nevertheless experience high pressure for innovative offerings that will enable them to make a difference on the market.
- Mobile access of news is steadily growing. In particular mobile apps are creating a strong lock-in effect for users. Apps are becoming critical for the mobile channels of news providers.
- The news market has a stable percentage of paying users.

Overall the news market can be considered as an interesting and important market for the LinkedTV solution. This in particular, as LinkedTV can be applied in the backend processes of news production and at the same tame for the creation of attractive news apps. Furthermore, LinkedTV can also be applied by news providers to better and more efficiently use productive archives of news content (see Section 4.2.5 for more details). Thus,

newsrooms and news channels should be considered primary customers and as interesting pilot customers and partners for future projects.

4.2.3 Public Broadcasters

Public broadcasters have a long tradition in Europe. The majority of European Public broadcasters – 73 public broadcasters in 56 countries – are members of the European Broadcasting Union (EBU) which is an alliance of public service media. Public broadcasters receive their funding usually from an obligatory television license fee, individual contributions and government funding. Given the public financing, they are obliged to provide public service content. This are on the one hand daily news shows, which are produced in the in-house newsrooms and on the other hand programmes that are not commercially viable to the mass market, such as public affairs shows, documentaries, and educational programmes. All of those kinds of TV programmes could benefit from a companion LinkedTV application providing additional information as we learned from our user trials (for more details see [STAN14]. Furthermore, public broadcasters have accumulated huge archives of TV and video material mainly for production purposes (see also Section 4.2.5 for more details). This material has not been leveraged for end consumer products in a sufficient manner yet. The LinkedTV solution can add value to broadcasters also with respect to their archives by providing support for automatical creation of rich meta-data as well as automatic enrichment and organization of the available material.

Given that public broadcasters are financed by obligatory public licenses, the investment strategies of public broadcasters are influenced by European and national regulation (see for example [KEF14]). Public broadcasters are obliged to procure equipment and technology through Europe wide tendering. Major investments need to be well prepared, planned and approved. Thus, technologies in the high-price segment have an additional barrier to be regarded, while technologies offering smaller incremental investments have a better chance to be considered. This might also cause a market barrier for LinkedTV depending on the price segment in which the solution will be offered. It is also an argument for offering LinkedTV as SaaS solution, as in that case there is almost no upfront investment by broadcasters required.

Due to the disruptive changes in the TV industry and growing commercial competition, there is an ongoing discussion about the need for and role of public broadcasters in many countries (see for example [BaPi14], [BaPi12],). Public service broadcasters around the world are faced with declining budgets, audience fragmentation, and debate over their proper role, all at a time of rapid technological advance in distribution technology. They are under growing pressure to prove the need for their service and have to show that produced content is of relevance for audiences. Thus, they have to carefully watch the changing user behavior and adjust content production and transmission strategies (see also [EBu14] and Section 3.1). They are looking for applications that will help them to create attractive public service content for their audiences, in particular young audiences, and to better leverage existing

content in their archives. Public broadcasters also have to diminish costs (see for example [KEF14] in Germany). The LinkedTV solution can provide support to achieve these goals.

Main Results from Expert Interviews with Representatives from Public Broadcasters

Given the importance of public broadcasters as customers for LinkedTV, 3 expert interviews out of the 5 expert interviews, have been with experts from public broadcasters. Even though one expert interview was with a representative from a national public broadcaster, one from a global broadcaster and one from a regional broadcaster, there was a broad consensus among the experts regarding their answers to the questions. The main findings of the interviews can be summarized as follows:

- The experts find the concept of enriching TV programs with online information an interesting idea, but are reluctant to create end user products with external content that they cannot fully control. In particular from the perspective of public service they are very carefully related to providing links to external content. Another reason against external content is the goal to engage the audience as much and as long as possible with the own content. However, they consider enrichment with own archived or online content as a very interesting idea.
- The experts think that searching for additional external online content in the production process of newsrooms could be very helpful and interesting and could speed up the production process.
- At present all broadcaster experts participating in the interview support the news production process with specific programme planning tools and CMS. Despite of the interesting functionality and the end-to-end support, LinkedTV would have to compete with the established infrastructure as some legacy tools are already in place and can cover at least parts of the functionality.
- The organizations represented by the experts differ in the way how content is produced for the different channels – TV, online and mobile. While Deutsche Welle and SF DRS have already integrated newsrooms, RBB has still two separate editorial teams that work independent of each other.
- All experts mentioned that the potential of existing archives was not leveraged yet. Thus, they see potential in better annotation of archived material and also linking programmes with archived material.
- With respect to the future all experts consider the mobile channels, in particular for news as important.
- One expert explicitly mentioned that the applicability and success of the LinkedTV solution will depend on the quality of the automatic video analysis, annotation and enrichment functionality. In the past that particular broadcaster had already commercial projects with ASR and other video analysis technology and the results were considered as not sufficient for practical use.
- All experts did not want to provide any numbers regarding planned future spending in innovation.

Overall, the experts consider the LinkedTV solution as interesting and see potential added value of LinkedTV for their backend processes in the newsrooms and archives. However, LinkedTV has to demonstrate the quality of the functionality. Furthermore, the fear of losing audience by linking to external sources of information has to be clearly addressed in marketing communication. What is the risk of losing the audience, if the access is provided through HbbTV and a dedicated second screen LinkedTV application? Aren't audiences lost anyway, if according to statistics one of the most common activity on the second screen is looking for information related to the main program?

The RBB newsroom workflow

The RBB newsroom creates several news shows during the day starting with the news show at 13 o'clock every day. The production of the first version of the news show is under time pressure. The process is supported with a customized version of the OpenMedia tool by Annova (http://www.annova.tv/en/index.php), which is well integrated in the IT-infrastructure of RBB.

The news editor gets material for news from own reporters and from two news agencies: the German press agency and Reuters. The inputs from the German press agency are mostly in form of text information enriched with links to other relevant online sources. The text is adjusted from the editor. Furthermore, suitable video material is identified to accompany the text information. The video material can either be selected from the own archive or is requested from related broadcasters or from the market. The input from Reuters is reworked in the same way. Segments of the news that are based on materials from own journalists, for example local news, are also adjusted. As needed and suitable the external and internal material is enhanced with material from the own archive. When the news show is completed, it is stored together with all input information. The stored information is then used by the online editorial team to create the online version of the news show.

Major problem areas with improvement potential in this process are:

- The separate production of the TV and online version of the news is less efficient. RBB considers integrating those two processes in the future. It might also be necessary to extend the multi-channel strategy to include the mobile channel as well. Thus, one problem is an efficient support for a multi-channel play out.
- The main approach of RBB is to serve their audience as much as possible with own content and not to lose the audience by linking to outside sources of information. Thus, an efficient search for related content in the own archive is necessary in order to reuse and leverage existing content on the one side and to create more interesting experiences for the audience on the other side.

The LinkedTV solution has potential to partly address the above two problems. With the support for video content enrichment it can enable a more efficient reuse of content and provide the basis for attractive and innovative applications. However, it seems to offer some functionality that is already covered by existing established tools on the market. Thus, the

functionality of LinkedTV that adds value to broadcasters has to be well defined and it has to be well integrated with existing tools. In addition, it has to provide enough added value for RBB to be considered as enhancement to existing systems.

Potential Market Volume of public broadcasters for innovation

According to the newest report of the European audiovisual Observatory [EAVO14, p.19], the revenue of public broadcasters of EU-28 countries for 2012 was 32'626 Mil. This figure includes revenues for license fees, commercial revenues and other revenues. The biggest European TV markets are (see also Figure 16): Germany with 8'782 mil.; Great Britain with 7'193 mil.; France with 4'480 mil.; Italy with 2'761 mil.; Spain with 2'165 mil, Austria with 1'001 mil. Euro) [EAVO14, p. 87-88]. In the period from 2011 to 2012 the total revenues of the European public broadcasters (EU-28) has decreased by 3.1%
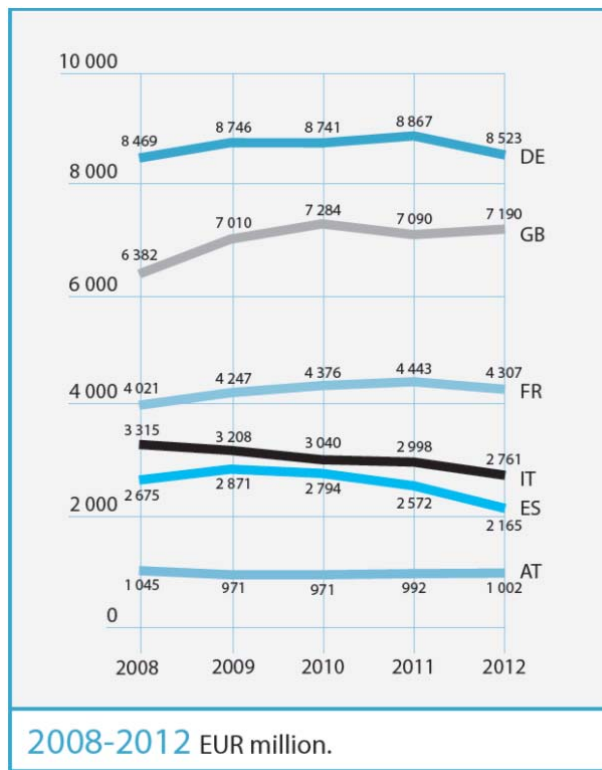
Figure 16: Overview of revenues of European broadcasters with the highest revenue

Public broadcasters reserve approximately 1-2% of this budget for their IT infrastructure (EUR 325-650 million). From this amount about 20% are designated for new software developments in the area of programme planning, editing and newsrooms (EUR 65-130 million). Since Second Screen applications for static and mobile use are one of the most relevant innovations in 2014-2016, we expect that 25% of this sum will be used for the support of providing content for them. This would lead to a market volume of EUR 16.25 million in Europe. The estimation of this budget is based on the experience of Condat from long term projects and the information of tender descriptions.

German window:

In Germany the receipts from viewer fees of the 9 public broadcasters including their regional departments are above EUR 7.6 billion per year [ARZD14], including besides public licenses additional commercial and other revenues, German public broadcasters earned in total 8'782 mil. in 2012.Euro (see [EAVO14, p. 87]). This leads to EUR 70–140 million for the IT Budget, approx. EUR 14–28 million for planning systems and about EUR 3.5–7 million for second screen applications and their maintenance in Germany.

4.2.4 Commercial Broadcasters

All broadcasters that are not funded through public license fees are summarized under the category of commercial or private broadcasters. Depending on the applied business model, there are two types of private broadcasters: free-to-air (FTA) broadcasters and Pay TV. FTA broadcasters and channels are financed mainly through advertising revenues. Depending on the content FTA broadcasters provide, they can be further distinguished in: advertising TV, thematic channels, home shopping channels and local TV. The term Pay TV, or also premium TV, denotes broadcasters that are providing subscription based TV services. The group of Pay TV broadcasters can be further divided in two sub-categories: The so called "mini-Pay TV" or "1st tier Pay TV" and genuine Pay TV (see also [PWC08]). The "mini-Pay TV" broadcasters are mainly content distributors that charge consumers for the access to mainly FTA TV channels and content. Examples of mini-Pay TV providers are for example the telecom and satellite TV provider. Genuine Pay TV services "*give access to a wide range of choice and valued content beyond what is available in a standard cable access TV package.*" [PWC08]. Even though the two sub-categories of Pay TV have different offerings, they are usually considered as one category in studies.

Due to the continuous search for additional revenue opportunities of commercial broadcasters, the market of commercial broadcasters is characterized by high dynamics and blurring borders among the different types of commercial broadcasters. For example, commercial broadcasters that are providing FTA TV and get revenue through advertising have begun to focus on paid access for emerging HD content [RiDS14].

The interests of the leading commercial broadcasters in Europe are represented by the Association of Commercial Television in Europe (ACT). The ACT has 33 member companies active in 37 European countries. They are operating thousands of channels and audiovisual services.

The application potential for the LinkedTV solution for private broadcasters is similar as for public broadcasters. However, private broadcasters might have fewer barriers to provide links to external content sources than public broadcasters.

Revenues of Private Broadcasters

According to the recent yearly publication of the European Audiovisual Observatory [EAVO14, p.19] (see also Table 3), the revenues of FTA advertising TV in Europe in 2012 was 21'057 mil. Euro. In the same year thematic channels achieved 12'578 mil Euro revenues and the revenues of Local TV were estimated to be 1'423 mil. Euro.

Pay TV revenues

The revenues for Pay TV in Europe (39 countries taken into account) in 2014 will reach EUR 32.28 billion Euro, out of which 27.04 billion Euro in Western Europe (EDTV14), with EUR 7.8 billion in GB, in Germany EUR 4.6 billion, in France EUR 4.5 billion, in Italy EUR 4.01 billion and in the Netherlands EUR 2.3 billion [EDTV14. However this is only an increase of 0.6% compared to the revenues in 2013 [EDTV14].

Several experts predict a stagnation of the Pay TV market, in particular in terms of reach and revenues growth in mature markets (see for example [EDTV14] and [TVWS14]). Thus, providers of Pay TV are looking for additional revenues as well as up-selling and cross-selling to their existing customer base. However, up till now the basis for different pricing strategies is based on transmission options as well as capabilities of the hardware and set-top boxes customers lease. For example faster Internet speed, heftier hard drives, more capabilities and more on-demand movie rentals (see also [Bach14]). The potential based on next generation services and business models (i.e. based on social networks as well as mobile apps) are mostly untapped (see for example and [TVWS14]). This provides a favorable condition for the LinkedTV solution.

Estimation of the Investment Budget of Private Broadcasters

The estimation of the IT budgets of the private broadcaster is more difficult than for public ones, since they have less public calls for tenders. But we know that the expenses for planning and editing are below the amount of the public broadcaster, because their planning workflow is less extensive. On the other side, some of them are more open for experimental offers especially for younger viewers with games, mobile offers, votings and second screen applications. Therefore we estimate that the market volume of the commercial broadcasters will be about 30 % of the budget spend by public ones.

German Window:

According to the Study "Die Rundfunkwirtschaft im Überblick" [WoA14], until the 10th of August, 2013, there were 218 private broadcasters active in Germany with 298 channels. Out of them there were: 54 national FTA channels, 73 Pay TV channels, 17 teleshopping channels, 10 national TV-windows, 133 local- and urban TV channels, and 11 local-niche TV channels.

According to [WoA14] see also Figure 17, the total revenue of the private broadcasters in Germany was 8'419 mil. Compared to 2011 this was an increase of 5%. At the same time also the cost recovery rate increased from 115.3% in 2011 to 117.9% in 2012.
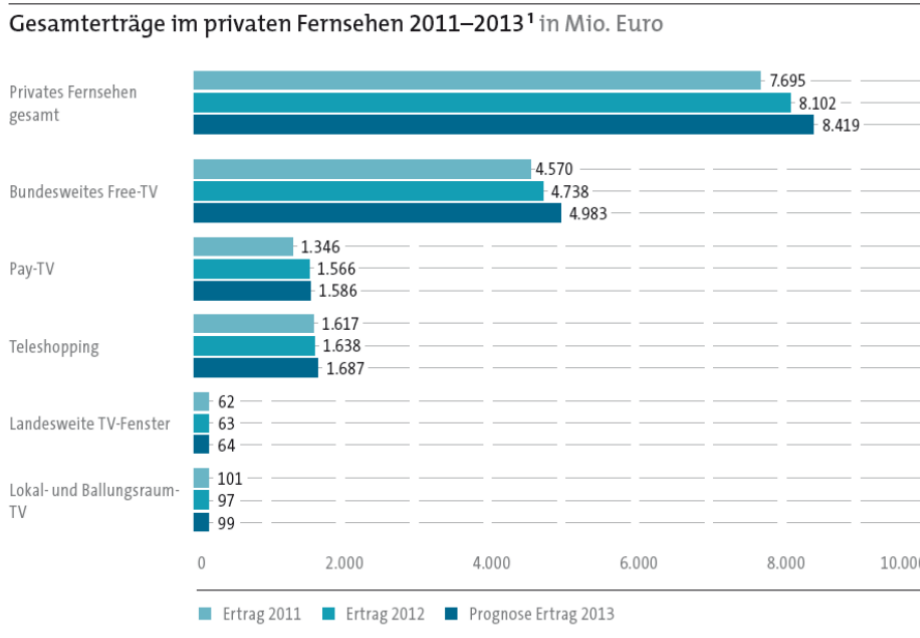
Figure 17: Overview of revenues from German private broadcasters (source [WoA14, p. 27])

According to the same source the total revenues were divided among the different categories of private TV as illustrated in Figure 18:

Figure 18: Overview of revenues among the different categories of German private TV (source [WoA14, p. 28])

4.2.5 Audiovisual Archives

Audiovisual archives depict an own fast changing and constantly growing customer segment. Audiovisual content is dominant not only on TV but also on the Web. The enormous growing rate of YouTube is only an evidence for the fact that audiovisual content is produced and consumed at accelerating speed. More produced and consumed content results in more content to be archived.

Audiovisual material is archived at a variety of different organizations: libraries, museums, national archives, broadcasters and even at large organizations and enterprises. Thereby two types of archives are distinguished: historical archives and production archives. For LinkedTV of first priority are production archives. Production archives no longer mean the end of the content lifecycle, but have the goal to preserve audiovisual material with the purpose to make it available and re-usable for new content production [Whel13]. In particular digital audiovisual archives increasingly become an integrated repository of audiovisual assets being repurposed and reused. Furthermore, there is a broad discussion how to make archives broadly accessible and reusable [Kauf13].

All public and private broadcasters are obliged by law and have created such production audiovisual archives. Archives of public and private broadcasters store the created TV programme. Furthermore, the archiving of online and social media content is increasing in importance. Broadcasters are becoming aware that due to multi-channel distribution strategies additional content created for the broadcasters' website or social media channels need to be stored together with the related programme [Moer13], [Joch13]. For example at ARD (**A**rbeitsgemeinschaft der öffentlich-rechtlichen **R**undfunkanstalten der Bundesrepublik **D**eutschland), the German public broadcaster, several editors are blogging and create text with pictures, audio and video material related to the TV programme. One such example is the blog of the "Tagesschau" the daily main news show of ARD[4]. Another example is the "1000 Antworten Blog" of SWR2[5], which provides additional information to educational programmes. Furthermore, increasingly Wikis are used as tools to document and work collaboratively on TV productions [Moer13]. Thus internal Wikis provide also valuable sources of additional information. Broadcasters are already archiving in addition to TV programmes also online sites as well as certain social media content as blogs and Wikis. However, the archived material is scattered over different storage system – for example blogs in CMS – and it is difficult to provide integrated access. In a similar way also content adjusted for tablets and smartphone is of value [Schw13]. Besides blogs and social media content, also Web sites of broadcasters are increasingly becoming own sources of information and need to be archived and related to the specific programme as well [Joch13]. Some broadcasters have also created branded channels in YouTube and provide there clips, videos and fragments from their programme.

Not only storing this increasing heterogeneous data is of importance but also providing adequate technology to enable creation of rich and cross-referencing data as well as integrated access. All archives have the need for metadata to make their content accessible. Having good and extensive metadata is important to ensure that archived content can be found and re-used. Since usage scenarios for archived content change, the metadata has to be as manifold as possible to support access without knowing users and their purpose

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[4] http://blog.tagesschau.de/

[5] http://www.swr.de/blog/1000antworten/

before. For example, metadata manually annotated for accessing the archive by an archivist greatly differs from metadata that is needed to optimize access for users on the Internet.

The LinkedTV solution can provide support for creating rich cross-referencing metadata and enriched archived material that can be better leveraged and provided in suitable form for re-use.

Overall there is a growing need to better leverage archived content in end user applications and to integrate it smoothly into the daily content production of broadcasters. Archives are furthermore under pressure to diminish budgets and to cut costs. It is also necessary to provide an integrated view of TV, online and social media content that might be stored in different systems and formats. There are no integrated solutions yet. This is certainly an opportunity were LinkedTV can provide value to customers by increasing the efficiency of the creation of content enrichment and cross-referencing meta-data.

In many countries it is considered how to create business models and to make archived data broadly accessible. In analogy to commercial services as YouTube, Amazon and similar, estimates are made that the potential business around archives might be worth 40 billion Euros a year in Europe (based on a statement from Neelie Kroes as cited in [Loch13], p. 5). [Loch13] examines in his paper potential models for exploitation of audio-visual archives and related technologies. He considers tools for creating cross-referencing metadata as well as enabling integrated search and recommendation as one necessary technological solution for exploitation of archives[6].

The analysis of secondary material related to archives was enhanced with an interview with one representative of the partner organization S&V. The interview was structured in the same way as the interviews to the other partners and revealed information about current processes and potential of the LinkedTV solution.

The example of Sound and Vision

Sound and Vision ('Beeld en Geluid') has one of the largest audiovisual archives in Europe. The institute manages over 70 percent of the Dutch audiovisual heritage. The collection contains more than 750.000 hours of television, radio, music and film from the beginning in 1898 until today. Individuals and institutions entrust their collection to Sound and Vision as well. The institute ensures that the material is optimally preserved for (re)use. Broadcasters, producers and editors use the archive for the creation of new programs. The collection is also used to develop products and services for a wide audience, such as exhibitions, smartphone applications, DVD boxes and various websites. S&V sells part of the content over its website. However, according to the interview participant, up till present content sales over the Web is a very small portion of the revenues.

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[6] https://www.prestocentre.org/library/tools-catalogue

All programs of the Dutch public broadcasters come into the archive every day about two hours after they have been broadcasted. Besides the programme itself, also all related information that have been applied to create the program is provided. The material already contains meta-data that is further enhanced through the archiving processes in S&V. It takes quite some time to properly annotate prepare and store the content.

The interview participant considered the functionality of LinkedTV as interesting and useful for archives to streamline the processes of meta-data creation and to better cross-link available content. The interview participant also thinks that cross-linked content is necessary for providing better service for online content customers. According to his opinion, archives should be sources of knowledge and provide access to cross-linked material related to certain knowledge areas.

The interview participant also stressed that archives are increasingly under pressure to diminish costs and that the highest priority of near term investments is for technology that can help to streamline processes.

Market Volume

Due to the variety of audiovisual archives there exist no figures about the volume of the market. If audiovisual archives at enterprises are considered, LinkedTV would compete for a share of the enterprise search solutions market. For broadcast archives the same market volume as for all other broadcast systems and solutions is available. In summary we can say that the audiovisual archive market is large and manifold. LinkedTV aims at broadcast archives first, since partners have already established contacts. Further segments of the audiovisual archive market might be considered afterwards.

4.3 Extended LinkedTV Customer Segment

The extended LinkedTV Customer segment contains companies that are positioned differently in the TV ecosystem and which might have a different way of using LinkedTV. The following types of companies are involved in this segment:

- Content producers
- WebTV
- Large organisations and enterprises

Each category will be described in more detail below.

4.3.1 Content Producers

Content producers often create the video content on behalf of a content aggregator. According to [CaGo12] there are two major types of content producers: the content service providers and the "core" content producers. The content service providers are external service units of broadcasters and provide some parts of the content or support certain part of

the content production (i.e. transmission of live events). They do not own the content. The "core" content producers carry the complete risk of overages together with the sole creative and organizational responsibility for the content. Big production companies also work on their own budget without any prior request. They license the produced content on special content fairs. Content producers acting on their own behalf are also content owners and sell licenses that are either limited in time and to geographical markets or offer exclusive owner rights. Lately some content producers also started to provide their content directly to the consumer (usually via some kind of Internet TV); then they act as content provider as well. In the past typically traditional TV broadcasters were the major customers of content providers. Some countries even regulate the volume of content that public broadcasters have to source from external providers. For example, faced with higher cost for in-house productions at BBC and ITV and in order to secure a varied independent production sector in the UK, the British government had introduced a quota, limiting the in-house productions of BBC and other PSB broadcasters [CaGo12]. Furthermore, with the changing TV ecosystem also other market players such as content distributors order content.

The changing end consumer behavior with regards to consumption of video content as well as technical development, pose new requirements on content producers (see also Section 3.1). It is not sufficient to create winning content, but to also create it in a way that end consumers can consume it anytime, anywhere and on any device. This means content producers need to create content suitable for different channels. The LinkedTV solution can on the one hand provide added value for the content production process in a way similar as for broadcasters themselves or by enabling the creation of multi-channel versions of content.

Market Volume

The turnover of the film and video production markets are lower than the TV broadcasters, approximately 25 billion € in Europe[7]. In addition, the budgets of content producers for planning tools and annotation are much less than for Broadcasters, since they concentrate on the production and delegate the preparation for the delivery for certain target groups via several channels. At present there is consolidation in the TV production industry [Swen14]. We calculate, that they have 10 -20 % of the budgets of the public broadcaster group.

The outlook for the European TV production market has improved in the last year since. The market is now over 15 billion Euro in value and a strengthening macroeconomic environment has fed to more optimistic views on. Consolidation as among other reasons large media firms see value in getting involved in production. Due to the entrance of global players in the European market, the industry of increasingly international nature.

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[7] http://www.uis.unesco.org/culture/Documents/IP14-2013-cinema-survey-analysis-en.pdf

German window:

A study of the German audiovisual production industry from 2012 [CaGo12] identified 1700 active companies in this sector in Germany in 2011 with a minimum turnover of 150'000 Euro. In contrast to many other economic sectors in Germany, the film and audiovisual production market is predominantly a national one. For three-fourth of film producers most of their revenues originated from German sources. According to the authors [CaGo12] 900 out of the 1700 are considered as "core" producers that carry the complete risk of overages together with the sole creative and organizational responsibility. They also gain the intellectual property rights of their production. 600 of the "core" producers are specialized on the production of television programmes. 300 are producers whose main source of income is cinema; however they still make 9% of their revenues with the production of TV content.

The total turnover of the entire audiovisual production sector in 2011 was 4.8 billion Euros. Out of that 1.82 billion Euros came from television productions [CaGo12]. 1% of the production companies generate nearly half of the overall turnover [CaGo12].

Regarding the volume of commissioned external products, ZDF and ARD (without the regional public programs) each roughly broadcast 100'000 minutes a year, RTL, RTL2/Vox conjoint around 170'000 minutes and Sat1/ProSieben/Kabel1 230'000 minutes. This means that the private channels taken together commission more from external producers, but per channel the programmes of ZDF and ARD/Das Erste contain a higher production of external commissions. On the ARD/Das Erste, one third of all first-run programmes in 2011 have been external productions. Two-third was in-house productions and acquired programmes. From the external production another third was produced by companies tied to ARD channels.

The net margins (= turnover / income before tax) of the German film and cinema producers in the year 2011 could not fulfill expectations. 18% of producers operated at a deficit, 22 % worked on low net margins between 0 and 2.5%, if also the low margins of up to 5% are also included, it can be stated that more than half of the producers had critically low net margins in 2011. Net margins were constantly declining since 2002 [CaGo12]. Due to the crisis in 2008 private channel groups – RTL and Pro-Sieben-Sat1 – reduced the budgets for commissions after the collapse of the advertising revenues. Producers had to also offer lower prices. Thereby, the non-fictional programs seem to be more affected by decreasing prices.
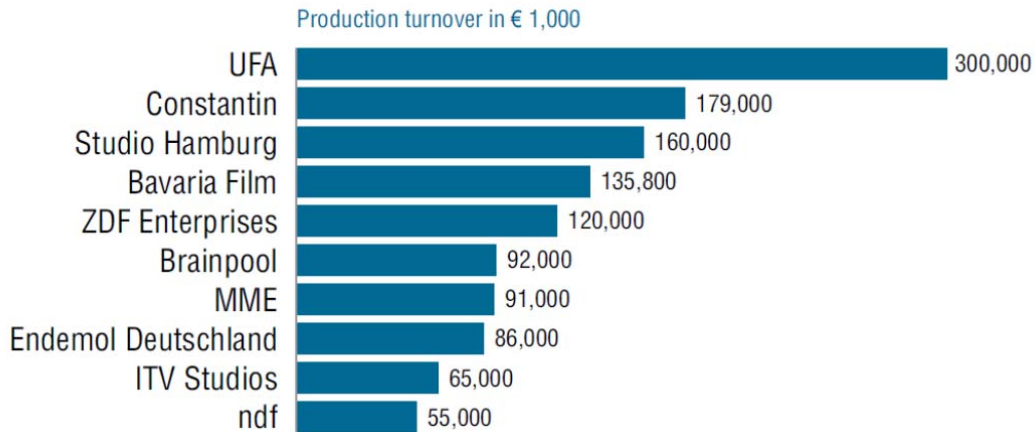
Production turnover in € 1,000

UFA	300,000
Constantin	179,000
Studio Hamburg	160,000
Bavaria Film	135,800
ZDF Enterprises	120,000
Brainpool	92,000
MME	91,000
Endemol Deutschland	86,000
ITV Studios	65,000
ndf	55,000

Figure 19: Top owners/consolidators according to production turnover [CaGo12].

4.3.2 WebTV

An increasing role plays OTT and WebTV[8], since there are more than 5000 TV stream channels available worldwide, which are e.g. accessible via the portals Delicast.com or Online-tv.de. All this streams could also be annotated by LinkedTV and offer additional information to users, e.g. in a separate window. Two very detailed studies by the market research institute Goldmedia from 2012 identify 1424 WebTV [GoLi12] provider and about 3.000 Web Radio [Gold12] services in Germany. A few of the channels are personalized, especially Radio music channels such as Spotify, laut.fm, simfy.de, Last.fm, Aupeo! WebTV services mainly come from classical TV or print (50 %), such as Spiegel.tv, n-tv, with clearly structured and reliable information. There are also providers such as Zattoo (www.zattoo.com), which have license agreements with more than 50 public and commercial broadcasters to offer their program via Web TV channels with over 9 Mil. viewers p.a. worldwide.

Market Volume

The revenues of the WebTV market are not yet very high with 1 Bil € in 2014, but is expected to grow fast in the next years [SaBa13]. We consider the providers for WebTV offers are more open for innovations and calculate, that the market for editing tools for additional offers are 5 % of the budget of the public broadcaster group.

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[8] we regard the WebTV and OTT as similar market segments

4.3.3 Large organisations and enterprises

In addition, the LinkedTV solution could be offered to large organizations, which own and produce vast digital AV materials, which are periodically offered to their own departments, partners and customers, e.g. Daimler (for introduction of new cars to their Europe wide departments and subsidiaries), ADAC (German Automotive Club) for their subscribers, Deutsche Bahn (German railway organization) to their travellers.

Market Volume

They have an increasing budget for the supply and binding of customers, especially interactive offers which allow gaining feedback from users. We calculate that they have 5 – 10 % of the budgets of the public broadcaster group.

4.4 Summary of the Potential Market

In D8.6 estimations for the market volumes of each customer segment are provided. The following table summarises the outcome to give a brief indication of the potential market.

Customer Segment	Estimated Market Volume
Core Customer Segment	**Euro in mil.**
Public Broadcasters	17
Private Broadcasters	5.1
Content Producers	1.7
Archives	
TOTAL Core Customer Segment	23.8
Extended Customer Segment	
WebTV	0.85
Large Organisations	0.85
Total Extended Customer Segment	1.7
TOTAL Extended Customer Segment	3.4
TOTAL	**25.5**

Table 5: Summary of market volume per customer segment

4.5 Competition Analysis

The competition analysis was based on a summary of secondary information sources of providers of competitive technology. Based on the results, the potential market positioning of the LinkedTV solution was developed.

One main USP of the LinkedTV solution is the seamless support of the end-to-end workflow for the provision of additional information for AV materials shown on HbbTV or Second Screen. This enables content owners and producers on the one hand to better annotate,

enrich and leverage their content and on the other hand to create new end user applications and viewing experiences.

Competition by providers of composed solutions

According to our market investigations there are no products or tools that support the whole end-to-end process of AV content analysis, annotation, enrichment and delivery with a comparable coverage as LinkedTV. However, it is possible to support this process by separate tools for analysis, enrichment, retrieval, collecting additional content and development of HbbTV and second screen applications. The tools can be part of planning and media-asset management systems, content management systems (CMS) or are available as separate products on the market. In order to obtain a similar seamless coverage of the LinkedTV analysis-annotation-delivery workflow, all these alternative solutions would require to identify possible complementary products, which can be combined and integrated on one platform and which support all formats and parameters required by the customers. Furthermore, it would require additional efforts for the customisation, configuration and integration of the tools to allow at least their semi-automatic employment, which may even include some manual steps. Thus, it is necessary to clearly position LinkedTV among the alternative solutions build through combined available tools and it is necessary to identify the advantages and disadvantages of LinkedTV related to the employment of competitive solutions.

Competition for Annotation and Enrichment

Considering the option of solutions alternatively to LinkedTV, we have first regarded the available tools to analyse and annotate AV materials, classify meta data and find related information. Gartner research has analysed in September 2013 the market for Enterprise Video Content Management[9], which covers the facilities to make video materials searchable and generate annotations, including the exploitation of subtitles, ASR and visual analysis. They have identified among the leaders for turnkey solutions Brightcove, Cisco, Ignite, Panopto, Polycom and Qumu. However, all this products only cover single steps of the needed end-to-end workflow, e.g. there are some products which allow for semi-automatic annotation[10], but they do not cover the other steps needed for linking TV and Web.

In addition, there are further commercial systems that concentrate on retrieval and annotation for AV materials such as blinkx Video (Blinkx), QBIC (IBM), Intelli-search (IntelliVision), Video Analytics (3VR), VIR Image Engine (Virage), Image RetrievalWare

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[9] https://www.gartner.com/doc/2597222/magic-quadrant-enterprise-video-content

[10] There are even advanced solutions, e.g. which exploit end user input to extract annotations for video materials

(Excalibur), WebSEEk (VisualSEEk), Netra, MARS and Vhoto. The meta data derived by these tools can be classified by Named Entity Recognition solutions such as OpenCalais, Alchemy, DBpedia Spotlight, Lupedia, SemiTags, TextRazor or Wikimeta. In order to retrieve related materials, the editors can be supported by tools for content and links suggestions such as Zemanta, Proximic.com, Outbrain.com, Yahoo! Content Analysis or by using classical search engines.

Competition for the provision of HbbTV applications

For the development of HbbTV clients, we have observed, that most of the solution providers for programme planning and management systems in Europe claim to support the provision of HbbTV applications, especially in Germany and France. But Condat knows from at least 6 large public broadcasters in Germany, that they still employ provisional IT solutions, which interimly extend their current workflow to feed the HbbTV server with programme related content (e.g. for EPG and Videotext). Accordingly, the main providers for programme planning and management systems in Germany have included HbbTV in their portfolio, but with a limited set of supported features: Sybit with Sophora CMS, Arvato GmbH / Bertelsmann with Digital Media Management and Condat AG with Orbit. Furthermore, there are several separate tools supporting the development of HbbTV applications available, such as OpenHbb [11], screensystems who offer Plasma Gold for both the development of HbbTV and Second Screen [12], HTTV with the HbbTV Starter Kit, Digital TV Labs [13] and Opera offers an HbbTV emulator to support HbbTV application development.

Competition for the provision of Second Screen applications

While HbbTV has become an established standard allowing to build HbbTV applications under clearly defined conditions, the provision of Second Screen applications is more difficult, since the communication between TV and Second Screen and the support of various types of Second Screen devices are not yet standardized for this emergent type of applications. Therefore, at present most of the broadcasters offer mainly social TV applications for the Second Screen, which run in parallel but not synchronized with a TV programme.

Leading players addressing the European and worldwide market for TV programme management solutions offer Second Screen support, but this is mainly limited to the exchange of data between a certain TV programme and the server side Second screen application. This covers the programme planning and management systems such as

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[11] http://www.appmarket.tv/news/591-openhbb-.html

[12] http://www.screensystems.tv/products/plasma-gold-hbbtv/

[13] http://www.digitaltv-labs.com/products/consumer_electronics/details/hbbtv_for_app_developers

MediaGeniX WHATS ´on, David Systems [14], Dalet Galexy [15], Fransat, S&T and the German providers mentioned above, as well as the newsroom systems e.g. from Annova GmbH with OpenMedia and Avid Inc with iNews. In addition, several major broadcasters such as BBC, TV5, ARD, RAI have individual solutions to run at least their second screen pilot applications. Most of this currently offered functions to support the creation of Second Screen contents do not allow to synchronize with the main screen or to refer to meta data from the annotations in the video stream on the main screen.

The upcoming Second Screen applications have raised the attention of several public and private TV broadcasters, who have expensive content such as sports or entertainment, because they see the chance to use the new opportunities to better 1) bind viewers to their program by building communities around their program offers and 2) re-use their large existing materials related to the live programme which can usually not be integrated into the main screen offer. Some of them have already announced that they intend to offer more interactive features to bind users by Second Screen applications. They usually prefer to employ the second screen, which does not hide parts of the offer on the first screen.

But as there is an urgent need for synchronizing TV programme and Second Screen applications, some manufacturers already offer proprietary solutions, such as Google, who provides a framework to develop Second Screen applications for smart phones, tablets, or other devices and TV [16]. Nevertheless, since only interoperable solutions connecting TV sets and Second Screens of different manufactures would significantly expand the market, several worldwide standardization activities have been launched:

- the W3C has established business and community groups for 1) "Web and Broadcasting" [17] and "Second Screen Presentation" [18] to standardize APIs to develop second screen applications". The LinkedTV partners Eurecom, MODUL and Condat are members of the Business and Community Groups and have already provided requirements derived from the LinkedTV project.
- the IRT proposes a framework for HbbTV including the connection of Second Screen devices for the development of manufacturer independent HbbTV solutions [19]. The LinkedTV solution has already employed the IRT framework e.g. for the IFA demonstrator.

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[14] http://www.davidsystems.com/en/

[15] http://www.dalet.com/

[16] https://developers.google.com/tv/remote/

[17] http://www.w3.org/community/webandbroadcasting/

[18] http://www.w3.org/community/webscreens/

[19] http://www.irt.de/webarchiv/showdoc.php?z=NjE2NSMxMDA0MjEzMTAjcGRm

Summary of competition analysis and implication for commercial deployment of LinkedTV.

Based on the above analysis of the current infrastructures and potential customers and the competition analysis LinkedTV can be positioned on the market among the competition as illustrated in Figure 20.
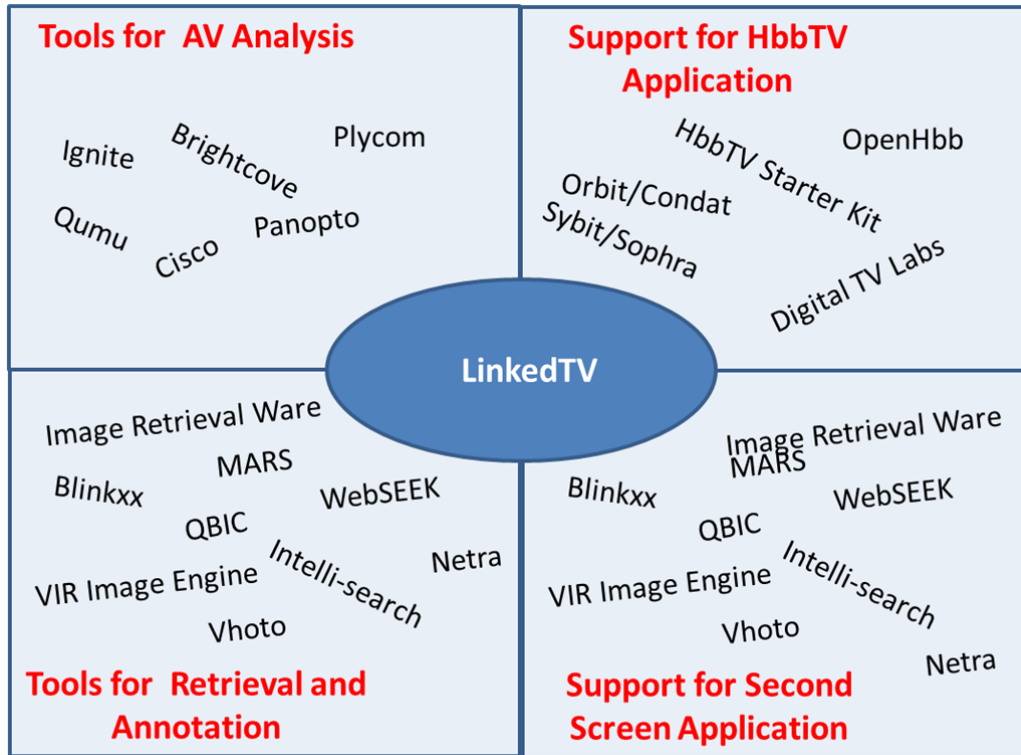

Figure 20: Positioning of LinkedTV among competition

The competitors' products are focused on specific functionalities and cannot cover the whole workflow in an efficient manner. They cannot cover the whole work flow necessary to thoroughly annotate video content and to efficiently analyze, annotate and deliver video content with related online information. However, the competitors are already commercially deploying their tools and have an established customer base. LinkedTV has to compete against the established installations of the single tools and has to provide interfaces to already established basic information technology support as content management systems.

Figure 21 illustrates the necessary integration of LinkedTV in order to fit into the workflow and already established infrastructure, i.e. legacy systems of potential customers.
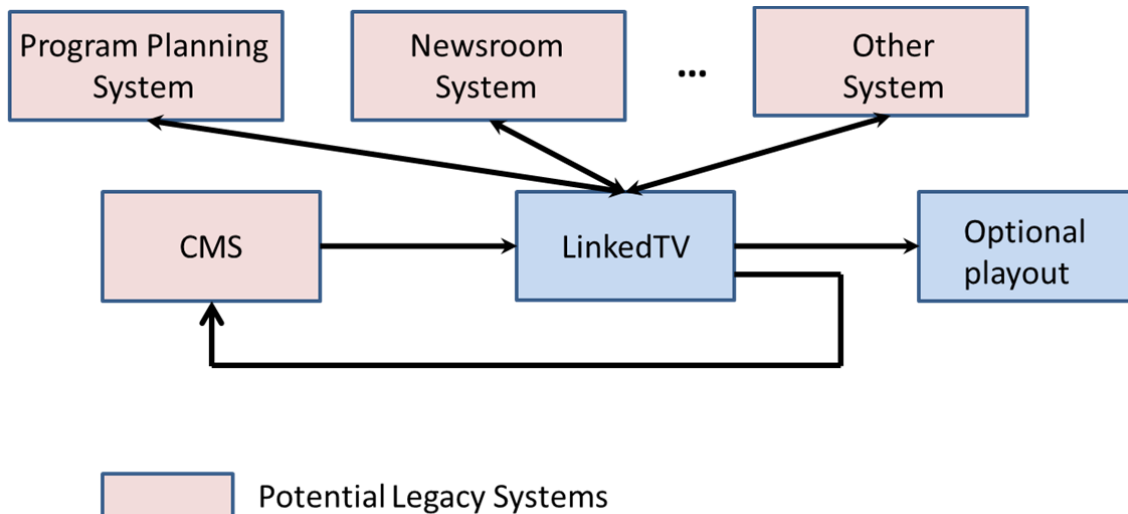
Figure 21: Integration of the LinkedTV solution into existing legacy infrastructure at potential customers

Overall, the support of the end-to-end workflow and the modularity of the LinkedTV solution are clearly an advantage for the integration into the existing IT infrastructure and workflow of the potential customers. The playout could be covered by the customer solution or using the LinkedTV front ends. However, this also shows that tailor-made LinkedTV solutions will be required, which fit into the specific situation of potential customers. It can be expected that each customer might have different existing infrastructure which will be difficult to standardize towards a standardized SaaS offering, but it would be probably easier to approach the customers through customized products. It also shows that further investments in interfaces as well as strategic partnerships with established providers of basic IT-systems, for example content management systems, will be key success factors. Already established relationships of LinkedTV partners to potential customers, as for example through existing installation of other products might speed up this process.

5 Outlook

The market analysis presented in this deliverable focused, on the one hand, on the overall market developments in the TV industry and, on the other hand on the specific market and competition analysis for LinkedTV in the B2B market for TV and video technologies. The market data and the insights gained in the deliverable were input to deliverable D8.7 and will be also input to the final exploitation deliverable in D8.8. Based on this first data collected within this market deliverable, the market will be observed continuously until the end of the project, so that the final exploitation plans can be based on updated market data.

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