



LINKEDTV



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LinkedTV

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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)

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1 LinkedTV Newsletter

Dissemination is very important in the LinkedTV project. Hence to mark the first year of the project activities and reflecting on its results and achievements, a 4 page newsletter has been produced which can be distributed in print form at events and to interested contacts, as well as provided online via the project website <http://www.linkedtv.eu/newsletter>.

1.1 History of the document

Table 1: History of the document

Date	Version	Name	Comment
2012/09/20	V0.1	Simeona Pellkvist	Created initial template
2012/09/27	V0.4	Simeona Pellkvist	Set up content structure within template, generated front and back pages
2012/09/30	V0.8	Lyndon Nixon	Inserted content on R&D for inner pages
2012/10/04	V1.0	Simeona Pellkvist	Minor connections following partner comments and QA

2 Attachment: Print version of Newsletter (Issue 01)

FutureTV workshop outcomes: sharing our vision

LinkedTV held on the pre-conference day of the EuroTV 2012 the 3rd edition of the Future Television workshop. After a full program of talks, we finished with an interesting demo and a group discussion around what Future TV would be like. The outcomes have been summarized on this poster. Drawing on keynote speaker Silvia Pfeiffers call to consider the possibilities of HTML5 for the future of television, we began by noting the probable co-existence of the classical, broadcast TV with a new generation of Web-based TV offers. While Web TV will continue to grow as an alternative source of video material, many attendees defended the experience of TV as lean-back, turn-off-and-relax viewing. As the Internet makes our daily content experiences ever more lean forward and interactive, this traditional role of TV will remain relevant to consumers. In the Web TV world, in turn, there is an ongoing struggle between main screen offers and second screen offers. While pure Web content may be transferred to the main screen alongside/replacing the broadcast material, enrichments and interactions will be more likely to be used on a personal, second screen close to the viewer.

Analysing the contents of the workshop talks, the following adjectives were found to cover the foreseen characteristics of Future TV: social, immersive, crowdsourced, remixed, cross device, multi device and augmented. In the closing discussion, the focus came back to the still existing barriers to Future TV – mentioned were content rights, infrastructure, the tv “culture” (resisting more interactivity) and complexity of FutureTV offers.

The good discussion provided a satisfactory close to the day, and let’s see what changes come in television and in our expectations for future television in the next year, also with the research and development work of the LinkedTV project providing first insights into our LinkedTV vision of deeply interactive and enriched TV viewing!

LinkedTV Newsletter 1st Year Issue

Selected Publications from LinkedTV’s First Year

• Semantic personalisation in networked media: determining the background knowledge.

Dorothea Tsatsou, Vasileios Mezaris and Ioannis Kompatsiaris. In proceeding of 7th International Workshop on Semantic and Social Media Adaptation and Personalization (SMAP 2012), December 3-4, 2012, Luxembourg.

• What Fresh Media Are You Looking For? Extracting Media Items from Multiple Social Networks.

Giuseppe Rizzo, Thomas Steiner, Raphaël Troncy, Ruben Verborgh, José Luis Redondo Garcia and Rik Van de Walle. In proceeding of International Workshop on Socially-Aware Multimedia (SAM’12), October 29-November 2, 2012, Nara, Japan.

• Antiques Interactive.

L. Baltussen and J. Oomen. In proceeding of PATCH’12: Workshop on Personalized Access to Cultural Heritage, Nara, Japan, 2 November 2012.

• Creating Enriched YouTube Media Fragments With NERD Using Timed-Text.

Yunjia Li, Giuseppe Rizzo, Raphaël Troncy, Mike Wald and Gary Wills. In proceeding of 11th International Semantic Web Conference (ISWC’12), Demo Session, November 11-15, 2012, Boston, USA.

• Audio Fingerprinting for Media Synchronisation and Duplicate Detection.

R. Bardeli, J. Schwenninger, and D. Stein. In proceeding of Media Synchronisation Workshop, Berlin, Germany, October 2012.

• Enrichment of News Show Videos with Multimodal Semi-Automatic Analysis.

D. Stein, E. Apostolidis, V. Mezaris, N. de Abreu Pereira, J. Müller, M. Sahuguet, B. Huet, I. Lasek. In proceeding of NEM-Summit, October 2012, Istanbul, Turkey.

• Association Rule Mining Following the Web Search Paradigm.

Radek Škrabal, Milan Šimůnek, Stanislav Vojří, Andrej Hazucha, Tomáš Marek, David Chudán, Tomáš Kliegr. In proceeding of European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD 2012), Bristol, UK, 24-28 September 2012. Springer-Verlag.

• Contextualised user profiling in networked media environments.

Dorothea Tsatsou, Lyndon Nixon, Matei Mancas, Miroslav Vacura, Rüdiger Klein, Julien Leroy, Jaroslav Kuchar, Tomáš Kliegr, Manuel Kober, Maria Loli, Vasileios Mezaris. In proceeding of 2nd International Workshop on Augmented User Modeling in conjunction with 20th Conference on User Modeling, Adaptation and Personalization (UMAP 2012), Montreal, Canada, 16 - 20 July 2012.

• Semi-Automatic Video Analysis for Linking Television to the Web.

D. Stein, E. Apostolidis, V. Mezaris, N. de Abreu Pereira, and J. Müller. In proceeding of FutureTV Workshop, June 2012, Berlin, Germany.

• Antiques Interactive.

Lotte Belice Baltussen, Mieke H.R. Leyssen, Jacco van Ossenbruggen, Johan Oomen, Jaap Blom, Pieter van Leeuwen and Lynda Hardman. In proceeding of EuroTV demo session, June 2012, Berlin, Germany.

• NERD meets NIF: Lifting NLP Extraction Results to the Linked Data Cloud.

Giuseppe Rizzo, Raphaël Troncy, Sebastian Hellmann and Martin Bruemmer. In proceeding of 5th Workshop on Linked Data on the Web (LDOW’12), April 16, 2012, Lyon, France.

LinkedTV Events

• 3rd International Workshop on Future Television (FutureTV 2012).

Making Television Integrated and Interactive. A full day workshop at the 10th European Interactive TV conference in Berlin, Germany, on July 4th, 2012. The workshop is co-located with the EuroTV 2012. <http://www.linkedtv.eu/event/FutureTV2012/>

• Social Event Detection 2012

LinkedTV co-organized, jointly with EU projects GLOCAL, SocialSensor and Chorus+, the Social Event Detection Task of the MediaEval 2012 International Benchmarking activity. <http://www.multimediaeval.org/mediaeval2012/sed2012/>

For more info please visit: <http://www.linkedtv.eu/>

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ISSUE

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LINKEDTV

Factsheet

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Consortium:

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Rundfunk Berlin-Brandenburg (DE)

STI International Consulting and

Research GmbH (AT)

Stichting Centrum voor Wiskunde

en Informatica (NL)

Stichting Nederlands Instituut voor

Beeld en Geluid (NL)

Université de Mons (BE)

Universität St. Gallen (CH)

Vysoka Skola Ekonomicka v Praze

(CZ)



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What is LinkedTV?

LinkedTV is an integrated and practical approach towards experiencing Networked Media in the Future Internet!

Networked Media will be a central element of the Next Generation Internet. Online multimedia content is rapidly increasing in scale and ubiquity, yet today it remains largely still unstructured and unconnected from related media of other forms or from other sources.

This cannot be clearer than in the current state of the Digital TV market. The full promise and potential of Web and TV convergence is not reflected in offerings which place the viewer into an Internet closed garden, or expect PC-like browsing on a full screen Web, or offer interesting new functionalities which however lack any relation to the current TV programme.

Our vision of future Television Linked To The Web (LinkedTV) is of a ubiquitously online cloud of Networked Audio-Visual Content decoupled from place, device or source. Accessing audio-visual programming will be “TV” regardless whether it is seen on a TV set, smartphone, tablet or personal computing device, regardless of whether it is coming from a traditional or new media broadcaster, a Web video portal or a user-sourced media platform.

Television existing in the same ecosystem as the Web means that television content and Web content should and can be seamlessly connected, and browsing TV and Web content should be so smooth and interrelated that in the end even “surfing the Web” or “watching TV” will become as meaningless a distinction as whether the film is coming live from your local broadcaster, as VOD from another broadcaster, or from an online video streaming service like Netflix.

As a result, not only commercial opportunities but also opportunities for education, exploration and strengthening European society and cultural heritage arise. Imagine browsing from your local news to Open Government Data about the referenced location to see voting patterns or crime statistics, or learning more about animals and plants shown in the currently viewed nature documentary without leaving that show, or jumping from the fictional film to the painting the character just mentioned to virtually visiting the museum when it can be seen, or seamlessly accessing additional information that has been automatically aggregated from multiple sources in order to get better informed on an important event that was just mentioned in the news.

Technologically, this vision requires systems to be able to provide networked audio-video information usable in the same way as text based information is used today in the original Web: interlinked with each other at different granularities, with any other kind of information, searchable, and accessible everywhere and at every time. Ultimately, this means creating hypermedia at the level of the Web.

The Web’s original success was the underlying hypertext paradigm built into HTML. Hypermedia has been pursued for quite a while as an extension of the hypertext approach towards video information. But it needs complex video analysis algorithms and is still an issue of research. Television Linked To The Web (LinkedTV) provides a novel practical approach to Future Networked Media. It is based on four phases: annotation, interlinking, search, and usage (including personalization, filtering, etc.).

The result will make Networked Media more useful and valuable, and it will open completely new areas of application for Multimedia information on the Web.

SmartTV isn't so smart!

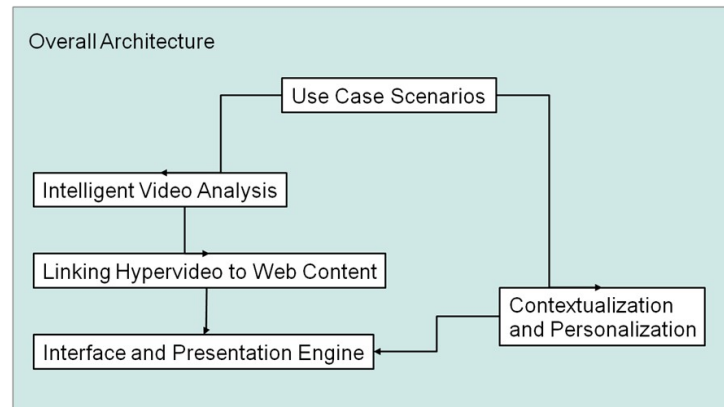
Today's consumers are used to devices which can connect to the Internet and consume online video or TV together with other Web content. All TV manufacturers are selling Internet connected sets (so-called SmartTVs) which compete with separate hardware (Set Top Boxes, games consoles..) which are also providing Web and online video access.

However SmartTVs are not driving growth in the CE industry. Surveys show that consumers do not purchase new TVs because of the Internet connectivity. It seems the current SmartTV offer is not meeting consumer expectations. Platforms are fragmented and the apps do not integrate with the TV content.

Samsung's application platform has seen highest demand from consumers for educational apps (23%) and informational apps (20%). In the meantime, "second screen" access to the Internet is growing – using another device to browse Web content while watching TV – which indicates that the main screen apps do not meet the consumer's need for Web content while watching TV.

Clearly, richer interweaving of TV and Web content into a single experience on one or two screens is a key challenge for Future Networked Media.

LinkedTV: how to solve the interlinking of Web and TV



“Manually connecting TV and Web content is costly both to create and maintain, and it does not scale
 A key goal of LinkedTV is tools and approaches to better automate the preparation of content”

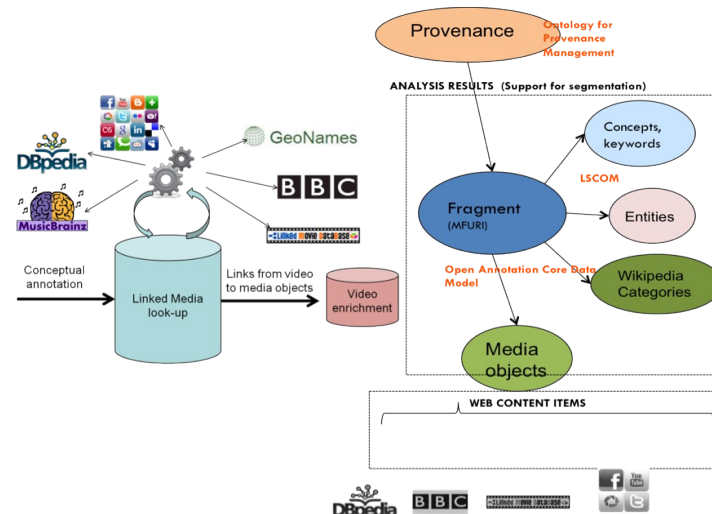
Video Analysis



The concepts in the analysis results are mapped into shared Web based vocabularies, using **Linked Data** sources such as DBpedia or GeoNames.

This Linked Data based annotation is the basis for the **hyperlinking to Web content**, which has been subject to annotation with the same concept vocabularies. As a result, **video is enriched at a fragment level with Web based content.**

Video Annotation and Linking



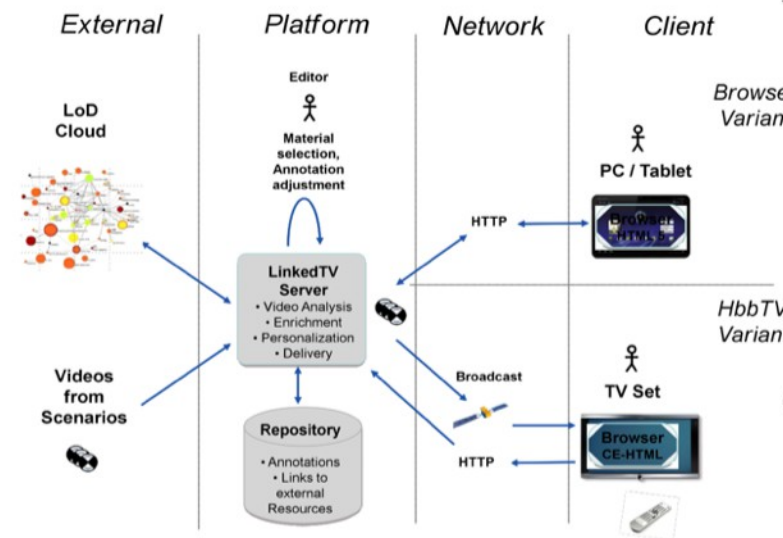
To enable a new generation of online applications which can interweave TV and the Web several research challenges need to be overcome. These are the subject of the collaborative research in the LinkedTV project.

Manually connecting TV and Web content is costly both to create and maintain, and it does not scale.

A key goal of LinkedTV is tools and approaches to better automate the preparation of content via shared annotations, and the creation of links between content based on those shared annotations.

Firstly, **intelligent video analysis** can identify concepts of interest in the spatial and temporal segments of video. Hybrid approaches combining textual, audio and visual feature extraction maximize the accuracy of automated analysis, lowering the overall cost of generating annotations of large scales of video material.

LinkedTV Implementation



The LinkedTV platform will encapsulate a set of components into an end-to-end workflow, which cover the research challenges of the project: media analysis, annotation, hyperlinking, enrichment personalization and integrated playback. The platform is complemented by two end user applications to check and correct annotations and linking outputs.

A LinkedTV platform will provide access to the functionalities of the LinkedTV experience: annotation, linking and playback

Client LinkedTV players will run across devices (HTML5) or on SmartTVs (HbbTV)

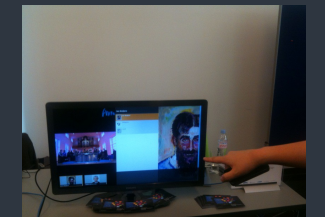


A HTML5 based hypervideo player will enable the LinkedTV experience across different devices include SmartTVs and tablets. The player will be implemented for both single and dual screen usage, providing an intuitive interface to the LinkedTV scenario enrichments.

FIRST LINKEDTV DEMO

The first demo of LinkedTV was produced using content from the Sound and Vision scenario "hyperlinked documentary". Based on content from the TV series Antiques Roadshow, it is called "Antiques Interactive". Objects of interest in the show are hyperlinked to further information and via simple remote control interaction, the viewer can browse to webpages, Wikipedia articles, maps etc. The demo has been shown at EuroTV 2012 and ACM Multimedia 2012 and a video will be online at

<http://www.linkedtv.eu/demos>



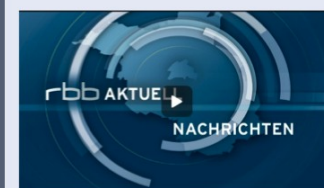
REALISING LINKEDTV

Three scenarios guide and inform LinkedTV in terms of the content to use and the experience to offer. With public broadcaster RBB the regional news can be enriched with topical content addressing different viewers interests. With cultural heritage archive Sound and Vision, Europe's rich heritage is brought closer by linking to it from TV programming. Finally, more explorative usage of interactive TV will be performed by the U of Mons, for example by making use of the possibilities of gesture control and behavioural tracking in front of TV.

The LinkedTV Scenarios

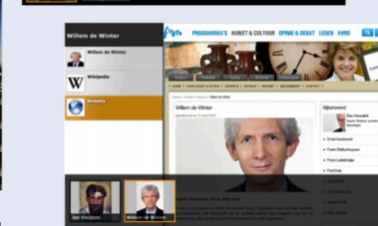
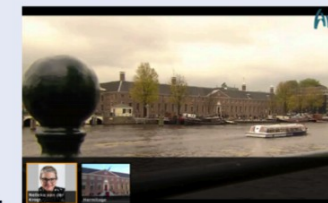
Scenario 1: Interactive News Show

- Professional news content produced by RBB
- Seed content: local news show "rbb Aktuell"



Scenario 2: Hyperlinked Documentary

- Cultural content from S&V (1700 hours of cultural heritage AV-content under CCL)
- Seed content: "Antique Roadshow"



Scenario 3: Media Arts

- Content and Performance by NUMEDIART Institute for New Media Art Technology
- Mons: European Capital of Culture 2015.

