Deliverable 7.2 Dissemination and Standardisation Plan

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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: Dissemination and Standardisation

As usual with an EU project, LinkedTV will seek to disseminate widely its results during the project duration and actively participate in the opportunities that arise to standardize data models, APIs, vocabularies, ontologies or other specifications created by or amended in the project. This deliverable presents thus the plan in place in LinkedTV for both these aspects:

- Plan to disseminate project activities and results as widely as possible in all relevant and effective channels, adapted appropriately to differing target groups;
- Plan to standardize data models, APIs, vocabularies, ontologies and other specifications created by or amended in the project.

1.1 History of the document

Table 1: History of the document

Date	Version	Name	Comment
2012/02/15	V0.2	Lyndon Nixon	Created initial structure, general content of deliverable
2012/02/17	V0.4	Lyndon Nixon	Initial content
2012/03/01	V0.6	Lyndon Nixon	Completed sections. Added inputs from partners RBB and CERTH.
2012/03/14	V0.8	Lyndon Nixon	Further inputs from BEELD EN GELUID, CERTH and CONDAT.
2012/03/19	V0.9	Lyndon Nixon	Completed standardisation section. Sent to QA.
2012/04/13	V1.0	Lyndon Nixon	QA comments: (i) reflect that there can also be publications by LinkedTV in more specific fora. (ii) reflect more clearly the future plan for dissemination activities (iii) tabular illustration of foreseen LinkedTV results and their relation to standardisation activities. These comments were reflected in a final update of the document.

2 LinkedTV Dissemination Plan

One of the aims of the LinkedTV project is to disseminate information about the project, its objectives, the approaches chosen and its results in a professional and high quality manner, using a variety of means and channels. Dissemination is a vital part of any project, since the activities and results performed are only of wider value if the larger community is made aware of them, beyond the initial and early adoption of results within the project consortium itself.

For a dissemination plan, two axes of relevance are identified: the means and channels to be used for dissemination, **and** the target groups to be addressed by dissemination via those means and channels. Finally, first proposals are made at this early stage in the project for **concrete** dissemination actions that are or can be undertaken during the remaining project duration where one or more of the target groups are addressed via a specific means or channel.

The means and channels identified by LinkedTV for dissemination of project activities and results are:

- The website at linkedtv.eu
- So-called Web 2.0/Social Web channels, e.g. Twitter
- PR materials about the project: leaflets/flyers, brochures, posters, videos/films
- Participation at clustering activities initiated by the EC
- Participation at conferences, seminars, trade fairs
- Organisation of academic and industry events (e.g. workshops, info days)
- Publications in scientific / trade journals

The target groups that we have characterized in LinkedTV for addressing through appropriate dissemination means and channels are:

- Potential end customers of future LinkedTV products and services
- Potential future industry collaborators (software/hardware)
- Content owners, producers and licensees
- Developers and programmers in academic and industrial organisations
- Complementary EU and national funded R&D projects
- Scientific and academic research community in areas related to LinkedTV

2.1 LinkedTV website

The website at www.linkedtv.eu has been introduced in deliverable D7.1 Project website.

Description: The goal of the website is to provide highly visible and regularly updated information and news about the project. It should present LinkedTV as a 'story' grounded in non-expert, real world, meaningful language. Visitors seeking specific information should be able to find easily the texts and resources that address their particular interest. The website, identified by an easy to remember URL, should become the main point of call for external enquiries about the project and serve as its "business card". Website content should concentrate on use of key phrases and words, and become a 'front page' result on search engines like Google when searching for LinkedTV relevant topics.

Target groups: Mainly general public, which are the potential end customers of future LinkedTV products and services. Specific sections should address other groups, such as industry collaborators and content owners (use cases/demos), developers (APIs/tools/documentation), researchers (research news/publications/presentations), and other projects (deliverables/contacts).

Concrete actions:

- **Regularly add news to the website**. It is structured as a blog, so that the latest news items are always available from the frontpage. Older news items are automatically archived. Also every news item has categories and tags, allowing for topic-based search. Every news item maintains its own URL and can be indexed by search engines.
- **Expand and keep up to date the website sections**. The site at launch has distinct sections for "About the project" (to target mainly other projects), "Scenarios "(to target mainly industry collaborators and content owners), "Research" (to target mainly interested researchers) and "Development" (to target mainly interested developers). Over time these sections will grow and be filled with the activities and results of the project.
- **Keep an eye on Search Engine Optimisation (SEO)** with the goal that LinkedTV web content is 'front page' results for relevant search terms.

2.2 Social Web / Web 2.0 channels

LinkedTV has a RSS feed at www.linkedtv.eu/feed/ and a Twitter stream at twitter.com/linkedtv. It also can share video material on its YouTube channel at youtube.com/user/LinkedTVeu and presentations using SlideShare at slideshare.net/linkedtv.

Description: The goal of the Social Web / Web 2.0 channels is to more widely distribute LinkedTV news and activities on the Web to interested persons and organizations.

Target groups: while Twitter, YouTube and SlideShare can often have good search engine visibility for searches on mentioned topics, and hence these channels can often present LinkedTV to a wider, general public, who can become potential end customers, primarily individual users choose to follow / subscribe to the channel because it covers a domain of their interest. So we will aim to reach via these channels potential future collaborators, developers of LinkedTV solutions and researchers in LinkedTV-related topics. Both YouTube and SlideShare can be very effective to disseminate explanatory materials – video more for demonstrating/showcasing (e.g. to potential industry decision makers like CEOs) and slides for explaining (e.g. to developers and researchers in the area).

Concrete actions:

- **Distribute news regularly via RSS and Twitter**. This is set up automatically from the news blog on the website. There will be also cases where additional information may be shared by Twitter, e.g. tweets by LinkedTV members at events, retweets from related Twitter accounts.
- **Highlight the social channels of LinkedTV**. The value of these channels lies not only in their content but also in their visibility. We have added clearly logos to the website frontpage for example to show visitors that these channels exist. However their visibility will also be improved by LinkedTV individuals and external interested people also following/subscribing to the channels, which often has a ripple effect as their followers see LinkedTV and also follow it, and so on.
- **Use Twitter and Facebook to make LinkedTV more visible**. Both are social networks used widely by millions of people, and a powerful means of sharing links to LinkedTV content. Twitter is public by default, and increasingly a source of Web search results or following of certain topics. So LinkedTV tweets should take care to be visible outside of the LinkedTV circle, e.g. by using hash tags (#) of common topics related to the tweet which are seen by people outside of LinkedTV. Facebook on the other hand works mainly by sharing of content between friends, so LinkedTV will rely on LinkedTV people sharing information about the project via their Facebook accounts with the hope of resonance among their friends. Finally, Google+ is not mentioned since – currently – it has rather stagnated as a social network a la Facebook. However we expect that its added value will rather be Google integrating Google+ content preferentially in its search results and will continue to monitor the usefulness of Google+ as a further dissemination channel.

2.3 PR materials

The LinkedTV project will attend relevant industry and academic/scientific events and the distribution of materials at those events is an effective way to remind people met at the event of the project.

Description: While later in the project a focus may be made on more content in the materials (e.g. to produce a brochure) as project results mature, initially the main purpose of such

materials is to provide for a physical, takeaway reminder of the project. Hence the focus is less on textual content and more on an attractive graphical illustration of the project which can catch attention and work to "brand" the project in people's minds (so that they will remember the name, and look into the project later on).

Target groups: Main target groups are potential future industry collaborators (at industry events) and the scientific/academic research community incl. other EU projects (at scientific/academic events). It is thus desirable to consider 2 versions of each type of PR material, one more high level focused on (social, economic) benefits of LinkedTV for an industry audience, and one more low level highlighting R&D innovation and results in LinkedTV for a scientific / academic audience.

Concrete actions:

- **Produce a project factsheet.** This is to be done at the start of the project. The one page factsheet is a requirement of the EC as project funder and is distributed both via the EC's own website (CORDIS) as well as the projects website. It provides an one page overview of all the main project details, such as objectives, consortium, budget, duration, and website. It is mainly addressing other EU projects and used in dissemination by the EC.
- **Produce a project postcard and leaflet.** This is to be done in the first months of the project. A postcard addresses mainly the industry audience and is largely for "brand awareness" purposes at the beginning of the project, since mature results to be shown to industry will be available only later in the project. It will be highly visual and focus on a high level explanation of the project as well as encouraging people to keep informed about the project work. A leaflet addresses mainly the academic / scientific audience and will highlight the research topics of the project, the consortium members and means of contact to the project. Both will be used in the events attended by LinkedTV consortium members in the early stages of the project. We expect these materials can remain the same throughout LinkedTV as their content will focus on the agreed description of work of the project.
- **Produce project posters.** In the first year of the project two posters will be generated for LinkedTV. One will be intended for an industrial audience and focus on the media workflow in LinkedTV, the actors in the media value chain, the innovation of the project and the foreseen value offer in LinkedTV to the industry (e.g. based around the LinkedTV scenarios). The other will be intended for an academic / scientific audience and focus on the architecture of LinkedTV, the research topics, and the (actual or foreseen) research results and development outputs (APIs, tools, services). We expect to use these posters subsequently in events, either via sponsorship/co-organisation of events or via submission to the posters track of conferences. We expect at least once a year to be updating these posters and new posters will be created when relevant (e.g. to focus on one scenario, or a particular research aspect).

- **Produce a project flyer and brochure.** Subsequently (after the first year of LinkedTV) as project results are being made public, we expect we can generate new materials with more content than what is possible via a leaflet or poster. These materials are specifically for being given to interested representatives of industry or academia, as opposed to general distribution for project awareness as the prior materials are. They will go into more depth on project results, whether in form of a flyer (for industry representatives, with the focus on the scenarios, business models and opportunities for results exploitation) or a brochure (for academic representatives, summarizing research and development results).

2.4 Clustering activities

The LinkedTV project will work together with other EU projects where common goals, research topics, or complementary activities can be identified.

Description: The goal of clustering activities is to achieve synergies between the many research projects being funded within EU Framework Program 7. Often, complementary activities take place between projects which benefit from exchange of knowledge and technology.

Target groups: Other EU projects.

Concrete actions:

- **Concertation meetings of Networked Media unit.** Once a year, these meetings involve representatives of all the projects in Networked Media. Besides LinkedTV, 18 other projects are funded in the last Call[2]. At the concertation meetings, common activities, themes and means for collaboration can be identified.
- **Participation in a projects cluster.** LinkedTV, together with the IP hbbNEXT, has been invited to participate in a cluster on "Connected TV and Media Applications" at the last concertation meeting in December 2011. Together, we will define future R&D for Connected TV, and expect to be joined by further projects after the next call (Call 10, in 2013).
- **Coordination with the hbbTV consortium.** Given the importance of hbbTV as an end platform for interactive TV solutions developed by LinkedTV, we will coordinate with the hbbTV consortium, particularly through the consortium partner RBB and the external partner IRT.
- **Consultation meeting on FP7 Call 10, January 2012.** As part of this definition of future R&D for Connected TV, LinkedTV presented its vision for television at the consultation meeting, which is a first step towards defining the key research

[2] http://cordis.europa.eu/fp7/ict/netmedia/project/project-list-call7_en.html

challenges to be addressed in the next Networked Media call in 2013. LinkedTV will continue to contribute to this consultation.

- **NEM Summits.** Once a year, these meetings involve projects from all units which share a R&D focus on Networked and Electronic Media (NEM) topics. The NEM Summit 2012 will take place in October and papers may be submitted to a conference track by 14 May. Projects also have the opportunity to exhibit in a dedicated exhibition space.

2.5 Conferences and other events

The LinkedTV project will attend conferences and events covering topics relevant to the project.

Description: The goal of the attending / presenting at conferences and other events is to raise awareness of the work of the project, distribute promotional materials, communicate latest results and outputs of LinkedTV and establish the project in the industrial and academic communities.

Target groups: Primarily potential industry collaborators and the academic/scientific research community.

Concrete actions:

Some of the conferences and events where LinkedTV partners are typically active and which are highly relevant for LinkedTV related presence and presentation: (non-exhaustive list)

- GMF - The Global Media Forum primarily highlights the rapid technological development in the world of media and debates the ensuing questions related to modified usage.
- ESWC - The Annual European Semantic Web Conference, sponsored by STI International, presents the latest results in research and applications of Semantic Web technologies
- SemTechBiz – the Semantic Technologies and Business Conferences take place annually in London, Berlin, Silicon Valley and New York.
- ISWC - The International Semantic Web Conference is a major international forum where visionary and state-of-the-art research of all aspects of the Semantic Web are presented.
- BIS – Business Information Systems conference
- WIAMIS - International Workshop on Image Analysis for Multimedia Interactive Services
- SAMT - International Conference on Semantics and Digital Media Technologies
- CBMI - International Workshop on Content-Based Multimedia Indexing

- ICMR - ACM International Conference on Multimedia Retrieval
- ICIP - IEEE International Conference on Image Processing
- ICME - IEEE International Conference on Multimedia & Expo
- EUSIPCO - European Signal Processing Conference
- IEEE ICSC - IEEE International Conference on Semantic Computing
- Museums and the Web
- International Federation of Television Archives (FIAT-IFTA) annual conference
- International Broadcasting Convention (IBC)
- Internationale Funkausstellung (IFA)
- European Conference on Digital Libraries
- ACM Multimedia
- IPTV World Forum
- IWSSIP - International Conference on Systems, Signals and Image Processing
- World Wide Web (WWW) conference
- RecSys - ACM International Conference on Recommender Systems
- Medienwoche @ IFA Congress
- Media 3.0 Berlin - EPG, Navigation, Recommender
- CeBIT 2012 Hanover - Connected Living e.V. with HbbTV Solutions

2.6 Organization of events

The LinkedTV project will also organize events which focus on LinkedTV-specific research and development topics.

Description: The goal of organizing events is to fill a gap, since LinkedTV focuses on a very specific vision of Web-TV interlinking which is only partially addressed by other events (e.g. which aim to cover a more general domain such as Interactive TV, or cover a subset of LinkedTV's work such as media annotation). Thus to identify a community around LinkedTV specifically it is necessary to create own events on LinkedTV topics. Such an event can help build the research or industrial community around LinkedTV which can lead to future collaborations, research uptake and exploitation.

Target groups: For academic events, the research community relevant to LinkedTV. For industry events, the potential future industrial collaborators or the potential future participating content owners.

Concrete actions:

- **The FutureTV workshop at EuroITV 2012** is an example of an event dedicated to the overall goals and vision of LinkedTV. The first workshop will take place June 2012 and we hope it will become an annual event to build up a mixed academic and industry community interested in the LinkedTV vision and contributing with their ideas and research, while potentially collaborating on or taking up LinkedTV work. Being present at the EuroITV conference gives LinkedTV a high visibility in the Interactive TV community.
- **The Social Event Detection (SED) Task at the MediaEval 2012 International Benchmarking Activity** is an example of an event dedicated to a specific strand of R&D within LinkedTV. In this case, it is the media analysis work of Work package 1. Such events help raise awareness of LinkedTV within the research community, give the opportunity for LinkedTV to compare its work with the state of the art and lead to potential collaboration on future solutions.
- **Events for the industry sectors** relevant to LinkedTV, such as information days, will be planned later in the project with mature results to communicate and demonstrate.

2.7 Publications

The LinkedTV project will demonstrate the value of its research and development work through peer reviewed publication of papers at conferences and other events.

Description: Especially from an academic perspective, peer reviewed publication of results is a valuable means to demonstrate the value of the work done, as well as get good feedback from one's peers in the research domain. Publication in conference proceedings, and widely read and regarded books or journals in particular, is a strong confirmation of the scientific value of the published results, and makes those results visible and available to the wider academic and scientific communities.

Target groups: Mainly academic/scientific community.

Concrete actions:

Besides the conferences covered in section 2.5 which usually publish accepted works in their own proceedings, publications can target academic or trade journals. Some journals known to LinkedTV partners which could be addressed are: (non-exhaustive list)

- IEEE Transactions on Circuits and Systems for Video Technology

- IEEE Transactions on Multimedia
- IEEE Transactions on Image Processing
- IEEE Signal Processing Letters
- Computer Vision and Image Understanding, Elsevier
- Signal Processing: Image Communication, Elsevier
- Journal on Advances in Signal Processing, Hindawi
- Multimedia Tools and Applications Journal, Springer
- Journal of Web Semantics, Elsevier
- IEEE Transactions on Knowledge and Data Engineering
- ACM Transactions on the Web
- Data & Knowledge Engineering, Elsevier
- Knowledge & Information Systems, Springer
- Information Processing & Management (Elsevier)
- Journal of Digital Information (University of Texas)
- Ariadne (UKOLN)
- D-LIB (Corporation for National Research Initiatives)
- Communications of the ACM

This list is just a selection of publication channels suggested by the LinkedTV partners, and many of these channels are better suited to the publication or presentation of the integrated results of the project than to specific, focused aspects such as the user interface design, or development of business models. Thus, partners will choose also additional publication channels depending on their area of specialisation.

2.8 Future plan for activities

A number of dissemination activities have been established as described above. A dissemination workflow is now needed to define how these activities will be coordinated throughout the project, and in particular with the goal to ensure regular activity and results in dissemination. This workflow defines how a LinkedTV partner with a dissemination result to report (e.g. has been at a conference and made a presentation) can ensure that this result is reflected in the dissemination channels, e.g. in this case Website and Social Web channels. For each dissemination activity, the responsible partners are identified in the below table together with the dissemination workflow and intended result.

Channel	Responsible partner	Workflow	Intended result
LinkedTV website	STI (Dissemination manager Lyndon Nixon)	Any news from the project, including future and past events (publications, presentations etc), are reported to the dissemination manager. A short news item should be written by the reporting partner which is posted on the website. Any related information about the news item (e.g. presentation slides) will be requested and included in the appropriate website section.	Regular news in the website and regular update to the website sections. The website will reflect continually all the results of the LinkedTV project in an accessible and informative way.
Social Web channels	STI (Dissemination manager Lyndon Nixon)	See above. Project news and contents will be also posted to other Web 2.0 channels as appropriate. For example, presentation slides can be added in Slideshare and embedded on the website. News posts are automatically tweeted via the LinkedTV twitter account.	The news and contents published on the website are likewise made visible online via other channels where others, who have not visited linkedtv.eu, will also find them.
PR materials	STI	At key milestones in the project (where deliverables are being provided reflecting the current status of the work) we will generate (updated) PR materials.	Availability of materials as up to date as feasible to all partners to distribute at relevant events
Clustering activities	Fraunhofer IAIS	Such events are reported to the project coordinator who then coordinates the LinkedTV participation.	LinkedTV presence and input at all clustering activities.

Channel	Responsible partner	Workflow	Intended result
Conferences and other events	All	Any partner may choose to submit to or attend an event. Any partner may also highlight potential events for participation. The dissemination manager coordinates the overview of these events and makes a note to encourage partner participation and collect news about the event before and after, check the participant has LinkedTV PR materials with them etc.	All partners should be actively attending events, especially those in their domains of expertise, making visible the LinkedTV activities and results
Organization of events	All, led by STI	There are a number of specific opportunities for event organisation: a workshop at EuroITV conference, for example, which is already an established event by STI. Partners may continue events within LinkedTV or have ideas for new ones. STI as dissemination manager is available to support event co-organization.	A number of LinkedTV specifically driven events each year, highlighting specific LinkedTV topics.
Publications	All	All partners should be active in publishing about their work in LinkedTV and collaborative publications about joint work (e.g. within a WP) will be strongly encouraged. Successful publications will also be publicised on the website and online.	While the first year of LinkedTV is more formative, we expect inside the project duration to see a significant number of publications each subsequent year by and across the work packages.

3 Standardisation plan

Activities towards standardisation of the project results will also be explored and coordinated in the Dissemination activity, so that LinkedTV may have the best possible impact both in the scientific and commercial communities. In terms of current standardization efforts, LinkedTV will actively participate in and contribute to various standardization bodies in activities of relevance to LinkedTV R&D activity. Furthermore, LinkedTV will seek to identify emerging new requirements in the project which are not (yet) covered by any known standardization activity, and where possible propose and chair new standardization activities.

We can consider current activities in a number of standardization bodies - often consortium partners are already participants in specific technical working groups within these bodies – with the expectation of having significant impact on their future development.

3.1 W3C

The W3C is an international consortium, which primarily pursues the creation of Web standards and guidelines. (http://www.w3.org/). W3C is currently driving standardized specifications for the implementation of support for HTML5 and related technology in TV and tablet devices so that mobile and TV Web applications may be truly cross-platform and provide a consistent user experience. It is also an important host of specification activity for multimedia semantics on the Web, given the increased use of audio-visual media online and the W3C's own strong support for the vision of a Semantic Web. The W3C will be a key organisation for the LinkedTV standardisation effort, since its specifications have strong visibility in the Web community and many form the basis for core data models and languages on the Web, such as HTML.

The principle driver for the relevant specifications in LinkedTV has been the W3C Video in the Web activity which was set up in 2008 to make video a "first class citizen" on the Web. (http://www.w3.org/2008/WebVideo/Activity.html). We look at the latest developments in two consistuent working groups of this activity, as well as a new activity which goes beyond Web video and addresses the increasing convergence between TV and the Web as a 'special case of video'.

3.1.1 Media Fragments WG

The mission of the **Media Fragments Working Group**, is to address temporal and spatial media fragments in the Web using Uniform Resource Identifiers (URI). The Media Fragments Working Group Charter ends on 31 December 2011. Therefore an extension is needed to reach Recommendation. The Candidate Recommendation for Media Fragments URI 1.0 was published on the 1 December 2011. Co-chair of the WG is Raphaël Troncy, who is a LinkedTV consortium member. We expect to use Media Fragments in LinkedTV to refer to the spatio-temporal parts of TV and video as an early adopter of the specification, and will support ongoing specification work in this WG.

3.1.2 Media Annotations WG

The mission of the **Media Annotations Working Group** is to provide an ontology and API designed to facilitate cross-community data integration of information related to media objects in the Web, such as video, audio and images. This is a step towards addressing the heterogeneity of multimedia semantic description schemes that have been developed in recent years. The Ontology for Media Resources 1.0 is a W3C Recommendation since 9 February 2012. The intent of this vocabulary is to bridge the different descriptions of media resources, and provide a core set of descriptive properties. This document defines a core set of metadata properties for media resources, along with their mappings to elements from a set of existing metadata formats. Besides that, the document presents a Semantic Web compatible implementation of the abstract ontology using RDF/OWL. LinkedTV will consider the Media Ontology as part of its multimedia schema decision making in WP2. The WG has also produced an API for the Media Ontology, a specification of an API to access metadata information related to media resources on the Web. The overall purpose is to provide developers with a convenient access to metadata information stored in different metadata formats. The API provides means to access the set of metadata properties defined in the Ontology for Media Resources 1.0 specification. These properties are used as a pivot vocabulary in this API. It is Candidate Recommendation since 22 November 2011 and should reach Recommendation before the WG Charter ends on 30 June 2012. We expect to benefit from the specification of this API also in the work in LinkedTV WP2 accessing different multimedia metadata sources.

3.1.3 Web and TV Interest Group

The W3C Web and TV Interest Group was launched in February 2011 to provide a forum for Web and TV technical discussions, to review existing work, as well as the relationship between services on the Web and TV services, and to identify requirements and potential solutions to ensure that the Web will function well with TV. It is in the process of defining Task Forces (TF) to address key requirements in the Web and TV domain, including covering the need to define a (HTML5) media profile for the TV environment. This is still at an early stage and LinkedTV will monitor progress there, including the possibility of consortium members (who are W3C members) joining, to potentially re-use or input on aspects of TV and Web addressed by LinkedTV.

3.2 EBU

The European Broadcasting Union (EBU) is a confederation of 75 broadcasting organisations from 56 countries, and 43 associate broadcasters from a further 25. It is unrelated to the European Union. Members are radio and television companies, most of which are government-owned public service broadcasters or privately owned stations with public missions. Full active Members are based in countries from Algeria to the Vatican State, including almost all European countries. Associate members are not limited to those from European countries and the Mediterranean but include broadcasters from Canada,

Japan, Mexico, India and Hong Kong, as well as many others. Associate Members from the United States include ABC, CBS, NBC, the Corporation for Public Broadcasting, Time Warner, and the only individual station, WFMT.

While it is not yet clear if LinkedTV will make use of standards developed by the EBU such as TVAnytime or egtaMETA, there is openness within the EBU towards the use of semantic technology in TV metadata schema and there may be opportunities to address LinkedTV requirements for semantics, schema and specifications in the EBU, which would help promote LinkedTV work to the European broadcasters.

LinkedTV proposes to involve an EBU representative who is active in the semantic TV work within an Advisory Board to LinkedTV. This will also strengthen the link between LinkedTV and the EBU.

3.3 hbbTV

Hybrid Broadcast Broadband TV or "HbbTV", is a major new pan-European initiative aimed at harmonising the broadcast and broadband delivery of entertainment to the end consumer through connected TVs and set-top boxes. The HbbTV specification was developed by industry leaders to effectively manage the rapidly increasing amount of available content targeted at today's end consumer. It is based on elements of existing standards and web technologies including OIPF (Open IPTV Forum), CEA, DVB and W3C.

Both partners involved in HbbTV development, RBB and Condat, are in close communication with standardization bodies, but none of the two is a member of a standardization organization themselves. As a member of the federal, national organization of Public Service Broadcasters, ARD, RBB is represented by the Broadcast Technology Institute IRT (Institut für Rundfunktechnik, www.irt.de) in all issues of technical standardization. IRT is the primary research institute for public-broadcasting organisations in Germany, Austria and Switzerland and an important member of the HbbTV consortium (www.hbbtv.org). IRT is not only an official representative of RBB/ARD but also collaborating closely with RBB on all developments concerning HbbTV, e.g. as partners in the IST-project HbbNEXT, which is coordinated by RBB and in the same Concertation Cluster as LinkedTV (Connected TV Cluster). Through this close connection, any LinkedTV result and experience relevant for the optimisation and further development of HbbTV will be contributed to ongoing discussions at the HbbTV consortium.

LinkedTV proposes to involve an IRT representative who is active in the hbbTV consortium within an Advisory Board to LinkedTV. This will also strengthen the link between LinkedTV and hbbTV.

3.4 OIPF

The Open IPTV Forum (OIPF) was created in March 2007, to provide an IPTV solution enabling a plug and play experience for the end-users and filling an industry gap making it independent from the technology behind it. Founding members Panasonic, Samsung,

Ericsson, Sony Corporation, France Telecom, Telecom Italia, Philips and Nokia Siemens Networks have since been joined by 50+ leading industry stakeholder members, defining and publishing free-of-charge, standards-based specifications for end-end IPTV services of the future. As a collaborative industry body the OIPF has incorporated existing standards wherever possible - OIPF standards are also being adopted by complementary groups including hbbTV. Given the strong industry backing at OIPF, it seems unavoidable to seek to incorporate LinkedTV requirements into OIPF specifications at some future point, and achieving initial uptake in the hbbTV specification in one possible route to this.

3.5 ISO

3.5.1 ISO/IEC JTC1/SC29/WG1 (JPEG)

ISO/IEC JTC1/SC29/WG1, also known as the Joint Picture Experts Group (JPEG), is a working group of ISO/IEC in charge of the development of standards for the coded representation of digital images. A significant portion of the still images being created today or found on the web or in restricted collections are encoded according to JPEG standards (e.g. JPEG, JPEG-2000).

LinkedTV may process and link other media to JPEG-encoded still images, but will not contribute to the further development of still image coding techniques, and will furthermore emphasize the manipulation of video content rather than still images. Therefore, we do not plan to contribute to or closely follow the activities of ISO/IEC JTC1/SC29/WG1. Nevertheless, we may revise this strategy at a later stage.

3.5.2 ISO/IEC JTC1/SC29/WG11 (MPEG)

ISO/IEC JTC1/SC29/WG11, also known as the Moving Picture Experts Group (MPEG), is a working group of ISO/IEC in charge of the development of standards for the coded representation of digital audio and video. It is the standardization group that has driven the development of standards that prevail in today's digital video coding for TV applications (MPEG-2, MPEG-4), as well as other important standards which nevertheless have not enjoyed such widespread adoption by the relevant industry (e.g. MPEG-7).

Whilst the core of the MPEG activities, namely video coding, is not a field to which LinkedTV is expected to make contributions, LinkedTV will inevitably work with video content that has been encoded according to MPEG standards. Taking into account that processing such coded video, either following the decoding of it with the use of an appropriate MPEG decoder or without fully decoding it, is a necessary part of the LinkedTV workflow, we plan to monitor MPEG activities and keep track of standardization developments that may affect the way that video content is encoded for storage and broadcasting in the future. We will further monitor activities carried out within ISO/IEC JTC1/SC29/WG11 on the encoding of video complementary data, which could provide support for the encoding and transmission of LinkedTV analysis-generated information, such as object bounding boxes within the video stream.

3.6 Future plan for standardisation

At this stage, it is only possible to return to the expected results of the LinkedTV project which might have potential to provide input to standardisation processes. For these, we can consider which standardisation bodies would be relevant to the result and which existing standardisation activities could be a target for extension / adaptation from the LinkedTV results.

LinkedTV result	**Standardisation body of relevance**	**Possible standardisation activity contribution**
Video analysis algorithms	ISO/IEC JTC1/SC29/WG11 (MPEG)	Reference algorithms for video decomposition, video concept detection, concept-based video event detection
Multimedia content descriptions	W3C, EBU, ETSI	W3C Media Ontology, EBU TVAnytime
Multimedia fragments	W3C, EBU, OIPF, ETSI, DVB	W3C Media Fragments, Storage and management of media fragments, media fragment annotation, timed text annotation
Linked Media layer	W3C	Linked Media APIs
Application of LinkedTV with Web technologies	W3C	W3C Web and TV activity, e.g. HTML5 TV profile, TV APIs
Application of LinkedTV in hbbTV and other Smart TV platforms	hbbTV Consortium Open IPTV Forum DVB	hbbTV 2.0 (or later versions), OIPF specifications, DVB specifications – incorporation of support for spatio-temporal links in video