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## 1. Introduction

For the purposes of this document Dissemination' is defined as a planned process of providing information on the quality, relevance and effectiveness of the results of programmes and initiatives to key actors. It occurs as and when the results of programmes and initiatives become available.

The dissemination activities of DTV4All seek to target all groups with a stake in the outputs of the project. These groups have been identified as the users of television access services, the consumer electronics manufacturers of television set top boxes and integrated digital televisions, the broadcasters, the creators of access service content, the relevant regulators, politicians and the European Commission, academia, and the general public.

The general public have a stake in the project as taxpayers and as their hearing and sight deteriorates with age as potential users of the access services DTV4All is promoting. For the most part the general public want to know about the project generally and are not seeking highly targeted information. Consequently, for the general public a project web site has been set up, see: <http://www.psp-DTV4All.org/> . A flyer on DTV4All has been produced which is available from the project web site. All of the deliverables of DTV4All are public and are made available for download from the project web site when they are submitted to the European Commission. Currently, deliverables D1.1, D2.1, D2.2, D2.3, D2.4, D2.5, D3.1, D3.2, D3.3, D3.4, D4.1 and D4.2 are available.

Although academics working in fields related to access service provision need more specific and detailed information than the general public they are easily addressed through relevant conferences, seminars and workshops<sup>1,2</sup>.

For those groups with a more pressing interest in the outputs of DTV4All more specific measures have been put in place. This document describes the processes put in place by DTV4All for providing information on the quality, relevance and effectiveness of its results to broadcasters, the creators of access service content, consumer electronics manufacturers, users, relevant regulatory bodies, politicians and the European Commission. These processes take effect as the results of the project become available.

Section 2 describes the main dissemination tasks of DTV4All and section 3 the role of the project deliverables in dissemination. Section 4 explains how the results of the project are being

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<sup>1</sup> Peter Looms, Access Services & Harmonisation, 2nd International Conference "Television For All", 7-9th November, 2007 Polytechnic Institute of Leiria Portugal

<sup>2</sup> S Braun and P Orero, "Audiodescription with Audiosubtitling: an emergent modality of audiovisual localisation", ESIST Conf., Berlin October 2008

disseminated to its target user groups through their user associations. Section 5 outlines the events laid on by DTV4All for the creators of access service content. Section 6 specifies how DTV4All interacts with the participants in the digital television access service value chain. Section 7 explains how DTV4All informs politicians and the European Commission of its outputs. Crucially, section 7 also describes how the project targets the relevant regulators. So that the project partners have a common view of the aims of dissemination an exploitation plan was developed for the project which is given in section 8. The plan outlines the need for dissemination, the current situation with regards to access services on digital television, and the short and medium to long terms needs to be addressed through dissemination.

## 2. The main dissemination tasks of the project

Dissemination in DTV4All involves three main elements:

### 2.1 Memorandum of Understanding for dissemination

The European Broadcasting Union (EBU) is the largest association of national broadcasters in the world. It promotes cooperation between broadcasters and facilitates the exchange of audiovisual content. The EBU works to ensure that the crucial role of public service broadcasters is recognised and taken into consideration by decision-makers.

A Memorandum of Understanding (MoU) forms the basis of the project's collaboration with the EBU, and through the EBU potentially other bodies covering standardisation, interoperability and other dissemination measures; The MoU details the project deliverables that can be used by the EBU in their own ongoing dealings with European and international standardisation bodies.

The EBU has undertaken to encourage the practical aim and approach of the DTV4All consortium to helping broadcasters provide access services in a sustainable way. The DTV4All project fits well with related work carried out in the EBU.

An important part of the work of the EBU is sharing of experiences and best practices amongst its Members. The EBU welcomes results from the project being made available for sharing with the wider EBU Membership and the broadcast industry at large. The EBU assists this process by providing:

- Presentations to and discussion with the EBU Subtitling/Txt group
- Organisation and hosting of presentations of work of DTV4All at the EBU Eurovision Summit Teletext and Subtitling Group in Lucerne in May 2009
- The EBU's technical work is predominantly carried out in Project Groups. These Groups are created when EBU Members express a minimum level of interest in certain topics. In the recent past two Groups on Access Services have been active:
  1. P/AS "Access Services" studied the deployment of Access Service in Digital Television environments and provided a report with information on the available services, technology and recommendations for broadcasters
  2. P/MAS "Monitoring of Access Services"

Representatives of DTV4All met with representatives of the EBU to discuss dissemination and standardisation issues in Geneva, October 27, 2009.

In the technical area the EBU publishes recommendations for its Members/the industry at large to improve interoperability of equipment and working practices, such as for example the EBU Recommendation on Subtitling<sup>3</sup>.

Interoperability is helped greatly by having open standards. The EBU is very committed to and active in the area of standardisation, typically by gathering user requirements from its Members and bringing them to the relevant standards bodies (Digital Video Broadcasting (DVB), European Telecommunications Standards Institute (ETSI), Society of Motion Picture and Television Engineers (SMPTE), etc.).

Through EBU, with their more than 100 members worldwide, practical experiences and new service concepts can be shared, spreading 'best of breed' solutions. Continuation of the taken into operation additional access services at a national level can be encouraged. Close links to the EBU have been established by various partners in the project. DR, RAI, and RBB are active EBU members and IRT is heavily involved in the joint technical work of the EBU. The EBU participated in the DTV4All proposal preparation process and explicitly supports the project through the Memorandum of Understanding with the project.

Presentations will be made on behalf of the DTV4All project at the Eurovision TV Summit 2010 in Luzern, Switzerland, on 20 April 2010 in a session on Barrier Free Digital Television: First Test Results of the European Project DTV4All as follows:

1. What users would like their DVB-subtitles to look like and: How to make an HbbTV-Text service barrier free, Bettina Heidkamp, RBB
2. Live subtitles and hearing impairments: Making a Difference, Peter Looms, Danmarks Radio
3. Optimising subtitle reception: Subtitles for all - Large scale user evaluation of subtitles in seven European countries, Dr. Pilar Orero, Universitat Autònoma de Barcelona

## **2.2 Consolidated report on mature and emerging access services**

DTV4All project Task 4.2 involves reviewing the contents of deliverables of other tasks to ensure that they are in a form suitable for wider dissemination and collating those parts of the deliverables suitable for wider dissemination. The main deliverables of this task (Deliverables D4.5 and D4.6) are a presentation at IBC 2010 and a report containing descriptions of the mature access services that are piloted during the course of the project and guidelines for their implementation throughout Europe. Deliverable D4.7 will provide recommendations regarding

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<sup>3</sup> EBU Recommendation on Subtitling for Digital Television Broadcasting, R110:

emerging access services for which there is industry-wide support. The recommendations of deliverables D4.6 and D4.7 will address:

- **Devices:** Recommendations will be made for device specifications to be adopted Europe wide based on existing DVB and DIGITALEUROPE (the European Information & Communications Technology Industry Association) draft specifications for digital television receivers (and recorders) and inputs from European territories already at an advanced stage of device and service standardisation using DVB-SI (Service Information), DVB-GBS (Generic Data Broadcasting & Service Information Protocols) and related standards.
- **Content:** Guidelines will be provided for the provision of subtitling, audio description and signing for various content categories on digital television
- **Services:** Guidelines will be provided for the setting up and running of access services for broadcasters and platform operators. These will include service models; business models; a listing of the appropriate standards for commissioning and producing content; business-to-business and business-to-consumer standards and formats for exchanging content and services; training of those involved in developing and producing access services for digital television; evaluation guidelines for services
- **Roadmaps:** Objectives and timetables will be provided on the basis of which objectives and timetables for subtitling, audio description and signing services for digital television platforms can be agreed at national and regional level, taking into consideration the circumstances of the digital television value chains in each territory

The EBU and DIGITALEUROPE will consider how the report can be used in ongoing standardisation and interoperability work in Europe.

### **2.3 Dissemination activities**

As regards the scalability of the results of the DTV4All project, dissemination measures are critical. Here the aim is to disseminate the presentation and reports from task 4.2 (Deliverables D4.5, D4.6, and D4.7) in the form of targeted seminars or courses delivered by project partners for a wide range of stakeholders including broadcasters, production companies, platform operators and regulators, building on the experience and dissemination infrastructure of the service content forums.

A wide range of constituents including universities have been addressed at MEDIA FOR ALL 3 held in Antwerp, Belgium, 23-24 October 2009, see Appendix 1, section 9, and supported by the EBU, DIGITALEUROPE, universities and digital cable and satellite operators. DTV4All



project partner Red Bee was a benefactor of MEDIA FOR ALL 3 and project partner UAB was represented on the organising committee.

Iwona Mazur & Agnieszka Chmiel (Poland) presented the results from across Europe regarding The Pear Tree Project. The countries from which feedback was gathered and analysed are: Spain, Belgium, Ireland, Italy, Poland, Greece, France, and the UK. The presentation “Towards a common European quality audio description: Final report on the Pear Tree Project” was a shorter version of the results presented in Deliverable 2.5.

Verónica Arnáiz (Spain) presented the results from Spain regarding subtitling for the deaf and hard of hearing. The presentation had the title “SDH eye-tracked: WYSIWYG? (What You See is What You Get?)”<sup>4,5</sup>, and final data has been presented in Deliverable 2.5.

Pablo Romero (UK) presented partial results from the project under the title “Quality in respeaking: The reception of respoken subtitles” which were gathered by RNID<sup>6,7</sup> and reported in Deliverable 2.5.

DTV4All participation at IBC 2009 and IBC 2010 (IBC is the leading international forum for the electronic media industry) ensures a wide cross section of the industrial players in the access service value chain are addressed.

The International Funkausstellung (IFA), held every year in Berlin, is one of the world’s largest consumer electronics trade fairs. It is a “showcase for innovation and the technology of tomorrow”. The trade fair is used as a platform by RBB and ARD in general to inform audiences about and promote programmes and services. New and emerging access services will be showcased at IFA 2010 as part of RBB’s presence at the fair.

IRT has contributed relevant results to the EBU Working Group P/AS “Access Services” which studies the deployment of Access Service in Digital Television environments. IRT will publish DTV4All results in pertinent trade magazines such as FKT (Fernsehen- und Kinotechnik) and will hold a relevant symposia/colloquia towards the end of 2010. These dissemination activities are a prerequisite for the exploitation of DTV4All results by broadcasters and Consumer Electronics manufacturers.

In the Danish context: Peter Looms of DR participated in a Danish Ministry for Science and IT meeting to discuss e-inclusiveness in the light of the results from DTV4All inputs, reporting on

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<sup>4</sup> [http://www.mediaforall.eu/pal\\_6b\\_arnaiz.html](http://www.mediaforall.eu/pal_6b_arnaiz.html)

<sup>5</sup> [http://www.mediaforall.eu/pal\\_6d\\_romero.html](http://www.mediaforall.eu/pal_6d_romero.html)

<sup>6</sup> [http://www.mid.org.uk/howyoucanhelp/join\\_rnid/member\\_community/volunteering\\_campaigning/volunteering\\_campaigning\\_news/eu\\_funded\\_subtitling\\_survey\\_results.htm](http://www.mid.org.uk/howyoucanhelp/join_rnid/member_community/volunteering_campaigning/volunteering_campaigning_news/eu_funded_subtitling_survey_results.htm)

<sup>7</sup> [http://www.mid.org.uk/VirtualContent/96626/What\\_do\\_you\\_think\\_of\\_subtitles\\_on\\_TV\\_Feb26.pdf](http://www.mid.org.uk/VirtualContent/96626/What_do_you_think_of_subtitles_on_TV_Feb26.pdf)

the provisional reports of the DTV4All studies in Denmark, Ministry of Culture conference on Digital TV and Accessibility, 30 October 2009, Copenhagen.

With respect to the roll out of DVB-Subtitling in Germany: Current on-going roll-out of DVB subtitling in Germany is not only happening at DTV4All project partner rbb but also other ARD local stations such as BR and WDR while most DVB subtitling in Germany is actually on ZDF. rbb is the leader of the PTKO (Produktions- und Technik-Kommission von ARD und ZDF) new group on access services that was formed in October 2010. rbb is therefore responsible for a number of reports that will be constantly updated in the course of 2010. The topics of these reports are 1.) Subtitling (the first was published already, for the next update Bettina Heidkamp will include rbb's results of the DVB-Subtitle tests, 2) Signing (Once rbb have the results of its signer tests - probably in the summer of 2010 - Bettina Heidkamp also plans to include them there 3) Audio description and 4) Emerging services (this Bettina will write in the course of 2010 with IRT's input). It will include Clean Audio, Audio Interfaces and barrierfree HbbTV-services. All this will guarantee that DTV4All's results will be disseminated to the other ARD-affiliates. In turn, rbb's director Mr. Goudarzi who is a member of the PTKO and who will present the above reports to the committee will communicate the affiliates' experience to rbb's DTV4All project team.

In addition Christoph Dosch was asked to act as IRT coordinator for the work IRT are contributing to the PTKO with respect to barrier-free TV. Via PTKO, all German public service broadcasters including ZDF are informed as well as the Austrian and Swiss public service broadcasters (ORF and SRG/SSR) who are permanent guests in the meetings of PTKO (ORF and SRG/SSR are also co-owners of the IRT).

In addition, the EBU is a European dissemination platform for DTV4All. David Wood and Christoph Dosch are currently preparing for an ITU Workshop (to be held in autumn this year) which has the sole subject of barrier-free access. David Wood is acting as Chairman of ITU-R WP 6C (Programme production and quality assessment) and Christoph Dosch is acting in his capacity as Chairman of ITU-R Study Group 6 (Broadcasting service).

Brunel and UAB, as the academic partners in the project, will publish monographs, technical and scientific papers in appropriate conferences and workshops. A list of such publications to date is provided in the Appendix 1 to this report. Some of these papers will be published by leading international publishers.

TVC will make a contribution to D4.8 Final Workshop on Access Services at the EBU if it is needed. An outline plan for this workshop is provided in Appendix 3.

The project undertakes to contact appropriate organisations and provide them with Deliverables D4.6 and D4.7.

### 3. The role of project deliverables in dissemination

The deliverables of the pilot of mature access services carried out in the DTV4All project will be fed into existing consultative mechanisms at the European, national and regional level:

- At the European level, the deliverables will provide the European Commission with tangible information for use in the existing DIGITALEUROPE/ EBU/ European disability association forum that is working on access issues in digital television.
- The EBU is a self-funding associate of the project that has mechanisms for promoting technical and service standardisation, interoperability and dissemination of actions aimed at achieving widespread consensus about access services in digital television.
- The existing consultation mechanisms that have been used by the partners to develop, validate, and offer access services in Denmark, Germany, Spain and Italy will be used to expand the body of good practice on which national initiatives are based without compromising the principle of subsidiarity.
- The criteria for success of the project are based on recent European Commission studies on the digital content industry.
- Users from different European Union countries are being surveyed for their views on the reception and quality of the accessible content provided. Results from all the project tasks will contribute to the project obtaining all the data needed to draft a good practice report which will, for the first time, take into consideration the entire value chain: its users, the broadcasters and the available or emerging technologies

The main deliverables of the pilots of mature and emerging access services carried out in the DTV4All project are:

- A. A detailed work plan (D1.1) for the full-scale deployment of mature access services for digital television in four territories of the European Union for a minimum of 12 months' in each territory. Available for download from the project web site:  
<http://www.psp-DTV4All.org/>
- B. A report (D2.6) containing short-term recommendations on the ways the effectiveness and efficiency of existing services can be improved and the ways in which key technical, organizational, and legal obstacles to their wider introduction across Europe can be overcome.

- C. A report (D3.6) containing medium-term recommendations on emerging access services that merit wider adoption in Europe and the devices and platforms needed to support them.
- D. A report (D4.6) containing descriptions of the mature access services, guidelines for their implementation throughout Europe and recommendations (D4.7) regarding emerging access services for which there is widespread industry support.
- E. Dissemination actions on mature and emerging access services in the form of presentations, proof-of-concept materials, scientific papers and lectures. Such dissemination actions will be organized and held by bodies such as, DIGITALEUROPE, the EBU, the NEM initiative and the committees behind international conferences. (D4.2 and D4.3 currently available from the project web site and D4.6)

All the deliverables of the DTV4All project are public and are made available for download from the project web site as soon as they are submitted to the European Commission.

The deliverables that will assist standardisation and dissemination work by the EBU and DIGITALEUROPE are main DTV4All project deliverables B(D2.6), C (D3.6), D (D4.4) and E (D4.2, D4.3, D4.6). Progress towards the twin goals of scalability and sustainability in the short term requires the outputs of deliverables B, D and E. Achieving these goals in the medium term requires the outputs of deliverables D and E.

The target outcomes for pay-television access services delivered by digital cable, digital satellite and IPTV, without pan-European mandatory requirements to provide such services, are Europe-wide availability of subtitling, signing, and Audio Description on channels with either a public service remit or a sufficient market share to make such a target feasible. Quantifying of such target outcomes also falls under the Amsterdam Protocol. Achievement of these outcomes will depend on the business case for writing off existing receiver equipment (Set Top Boxes) over a period of at least 3 years and clear guidelines and roadmaps for the introduction of mature and emerging access services. Key stakeholders here are the European cable operators' association, the main satellite operators and the pay TV operators. Achievement of the target outcomes requires the outputs of deliverables D and E.

The deliverables that will assist dissemination work by the bodies named in order to achieve scalability and sustainability goals are D and E.

## 4. Working with users associations

The organisation of the process of identifying the issues of interest to users, gathering, analysing, and reporting user feedback on these issues through the pilots carried out the DTV4All project ensures the timely dissemination of the results of the pilots to the relevant users associations. This process is exemplified by the pilot of mature access services undertaken in Denmark by the project.

DR's user group for the pilot tests those with visual impairments, and those with hearing impairments. DR has a longstanding co-operation with national organisations for those with visual and hearing disabilities, primarily Dansk Blindesamfund and their opposite number for the deaf and hard of hearing. In the spring and autumn of 2008, DR held a series of meetings with organisations representing those with disabilities to discuss future action on access services. They are DR's contacts and helped DR and its partner, the University of Copenhagen, recruit a panel of approximately 90 subjects who can take part in user tests in the course of 2009 through their contacts and existing communication channels. P Looms, P Mølsted and Johnson of DR were involved in a meeting on November 13 with 55 teachers from the Center for Sepcial Education of Adults in Amager, Denmark

The three priorities from DR's perspective are to increase subtitling to 100% in the next two years, agree on new targets for Audio Description on digital terrestrial television and find sustainable solutions for signing before DR's channels on digital terrestrial television migrate from MPEG-2 to MPEG-4 encoding, allowing for High Definition programming. To this end DR had discussions with the user associations and agreed upon the following research topics:

### 1. Subtitling

- How is the current live subtitling service of, say, the main news at 18:30-19:00 regarded by users with hearing impairments? (To what extent does an error rate of 10% which is typical of the current system impair user understanding of the news? What kind of errors does the current approach generate and how does this map with the users' expectations of the service?)
- What are the options for live subtitling of news and events and their implications, given that public service television needs to reach its target of 100% subtitling by the end of 2010? (DR is currently using a re-speaking system coupled with speech recognition to generate subtitles for live programmes and have identified a number of problems. Should DR continue to optimise the current system, find funds for purchasing a competing solution, switch to a labour-intensive solution such as the one currently used by TVC in Catalonia or outsource this live subtitling to a commercial access service provider?)

## 2. Audio description

- What do current users of Audio Description (AD) for fiction think of the service? (Awareness of the existence of the service, ability to find programmes offering AD, access and usability issues associated with finding and using AD on their own or when viewing television with family and friends).
- What are users' priorities for extending the coverage of programming with AD? (content genre)
- What are the relative priorities of offering, say, a limited amount of AD compared with using the same financial resources to increase the percentage of television for which audio subtitles could be offered? (consultations in November 2008 with those representing the deaf and hard of hearing expressed an interest in discussing the trade-offs between AD and audio subtitles, especially if a generic solution using DVB subtitles and speech synthesis could increase the accessibility of television programming).

## 3. Signing

- What are users' wishes and requirements in the transition to MPEG-4/HD solutions on digital terrestrial television? (The current solution is a virtual Standard Definition channel that appears on digital terrestrial television from 17:00 – 20:00 with a signer covering two-thirds of the screen height. A new solution using MPEG-4 encoding to deliver both Standard Definition and High Definition programmes that would not exceed the current bandwidth requirements has to be found before the end of 2010 when the existing multiplex is re-engineered to use MPEG-4. Part of this work would be to document the original participatory development model in which a range of solutions were produced and tested with and for their intended users.

User tests to elucidate the three research topics above will start by the end of March 2009 and will run until July 2010. The advantage for all access services is that subtitling, AD and signing now are all in regular service and will continue indefinitely, allowing for additional tests as and when this suits the target users.

## 5. Events for the creators of access service content

DTV4All project partner UAB organised events for the creators of access service content which disseminate results of the DTV4All project.

UAB organised a two day seminar on eye-tracking and audiovisual translation in association with the Transmedia Catalonia Research Group and Tobii-Alt64 on the 17 and 18 November 2008 to train all the people who are taking part in DTV4All on the need to test services with eye-tracking, see: <http://www.fti.uab.cat/transmediacatalonia/eye-tracking/>

All the tests were simulated so that all the testers have exactly the same information on and approach towards the tests, in order to avoid interpretations of the instructions, or personal input. It was in a sense standardisation event as well as a training session.

UAB and the research group Transmedia Catalonia organised a three-day international seminar with hands-on experience in audio description, at UAB 10<sup>th</sup> -12<sup>th</sup> June 2009 in association with DTV4All (<http://arsad2.uab.cat/main.htm>). The programme for the event is given in D4.2.

UAB organised a two day seminar on respeaking: 2nd International Seminar on Real-time Intralingual Subtitling at UAB 19<sup>th</sup> and 20<sup>th</sup> June 2009. The agenda is given in D4.2 and included a presentation on the work of DTV4All.

There was a follow up publication of a book after the seminar: *The Computer Whisperer: Real-time Intralingual Subtitling*, Editors: Eugeni, Orero, Romero, Peter Lang/Rodopi, 2009. The book contains an introduction by Pilar Orero of UAB and comprises two parts. The first part consists of a selection of articles from the 1<sup>st</sup> International Seminar on Respeaking and the second part a selection of the papers from the 2<sup>nd</sup> International Seminar on Respeaking.

*Listening to Subtitles: Subtitles for the deaf and hard of hearing*, Matamala and P Orero Eds., Peter Lang AG, Bern, 2010 Matamala and P Orero Eds. Is the first monographic study on subtitles for the deaf and hard of hearing from a multidisciplinary perspective and extensively reports work carried out as part of the DTV4All project.

## 6. Interaction with participants in the value chain

DTV4All interacts with participants in the digital television access service value chain through a number of forums.

### DIGITALEUROPE (formally EICTA)

DIGITALEUROPE combines 40 national digital technology associations from 28 European countries with over 61 direct company members. Altogether it represents more than 10,000 enterprises in Europe with more than two million employees and revenues of over EUR 1,000 billion.

The Coordinator of DTV4All, Dr .T. Itagaki, attended the Meeting eAccessibility of Digital TV, at the EICTA premises, Brussels, 17 September 2008 and gave a presentation on DTV4All.

Dr. T. Itagaki, attended the European Disability Forum (EDF)-EICTA Accessible DTV Meeting, Brussels, EICTA premises, Thursday 30 October 2008, and was involved with the discussion of, and preparation for, the Joint TV experience space at the Vienna e-Inclusion event, the DTV4All involvement in which described in section 7 of D4.2. The meeting included a discussion of the usability and technical aspects for the implementation of the additional accessibility features.

DIGITALEUROPE is invited to contribute to DTV4All.

### UK Digital Television Group (DTG).

The Digital TV Group is the industry association for digital television in the UK. It is independent, platform neutral and technology agnostic. The BDS (part of Red Bee) and DR are all members of DTG and Peter Molsted of DR and participant in DTV4All plays an active part in the working groups that deal with DVB-SI (Service Information) and Personal Video Recorders, both of which are relevant to the work of the DTV4All project.

Dr Tom Owens of Brunel, the dissemination manager of DTV4All, is a member of the DTG Usability group subgroups on: Audio Description, Human Interface, Subtitles, and Text-to-Speech, and has participated in several of their meetings.

### NORDIG T standardisation group

NORIDG T is the Nordic region's equivalent of the DTG in the UK. Peter Molsted of DR and DTV4All participant is chairman of the NORDIG T standardisation group working on a specification for Personal Video Recorders for Digital Terrestrial Television in the Nordic region. This will be based on the Freeview Playback (and Freesat Playback) specifications, both



of which can be viewed as profiles of the European Telecommunications Standards Institute (ETSI) TV-Anytime standard.

#### Networked and Electronic Media (NEM) – a technology platform

Networked and Electronic Media (<http://www.nem-initiative.org/>) is one of the European Industrial Initiatives, also known as Technology Platforms, established by relevant key European stakeholders, which address the convergence of media, communications, consumer electronics, and IT as a wide opportunity for future growth, by taking advantage of generalized broadband access, increased mobility, availability of richer media formats and contents, as well as new home networks and communications platforms.

IRT interfaces with NEM which is prepared to support DTV4All as a European Union funded project in the Information Communication Technologies domain. IRT is participating in the Executive Group of the Networked and Electronic Media (NEM) Initiative and is member of the Steering Board. NEM is an industry-led initiative with about 600 institutional members and promotes the large-scale initiative needed to accelerate the pace of innovation and rate of technology evolution to the level that will place European Industry at the forefront of the technology and give users an incredible choice of services. This includes aspects of accessibility and questions on how to include everybody within an ageing society. In addition, IRT is coordinating the drafting and constant updating of the NEM Strategic Research Agenda document the aim of which is to sketch the medium-term development of the Networked Electronic Media landscape.

#### NHK – a nationwide public broadcaster in Japan

NHK has been invited by IRT into the project, as a non-funded associate partner. A confidentiality agreement has been signed between the DTV4All project partners and NHK. The cooperation with NHK in this project is highly relevant given the importance of barrier-free access to broadcast access services worldwide. The cooperation will be of mutual benefit as technologies developed in Europe could be tested in Japan and NHK developments could become part of the European field tests. This cooperation can encompass all segments of the broadcast access service (audio, audiovisual and data). Dr T. Itagaki of Brunel visited NHK, Japan, on 5 August 2009 on behalf of the project.

## 7. Informing Politicians and the European Commission

### Politicians

The DTV4All project provided demonstrations of mature and emerging access services at the e-Inclusion Ministerial Conference, 30 November - 2 December 2008 in Vienna. The DTV4All involvement in this event is described in Deliverable D4.2.

### European Commission

The following presentations were made on behalf of the DTV4All project to Commission representatives on 14 July 2008:

1. Mature Access Services (Trials Coordinator: Dr Orero, UAB )
  - What is available now and what the issues are
  - What the project will do in its pilots
2. Emerging Access Service (Project Coordinator Dr Itagaki, Brunel)
  - What could be done and what the issues are
3. Dissemination and Relations with the EBU and DIGITALEUROPE (Dissemination Manager: Dr Owens, Brunel)

The Coordinator of DTV4All, Dr .T. Itagaki, attended the e-Inclusion Partnership Meeting 24<sup>th</sup> March 2009, European Commission – DG Information Society and Media, Brussels, and gave a presentation on the status of e-Inclusion in Digital Television. The slides of this presentation are given in D4.2. They highlight the role of national regulators in intervening to drive the roll out of access services. They seek to explain to the Commission the approach of the DTV4All project to ensuring the roll of access services across Europe. This is by dissemination of the need to directly to involve the relevant national regulators if no progress is made by broadcasters at the national level in roll out access services.

At the time of the writing of this deliverable the DTV4All project has proposed to the European Commission that the project run a workshop in the European Parliament on access services for MEPs. An outline of the proposed workshop is given in Appendix 2.

## 8. Exploitation plan

### The Need for Dissemination

For the importance of access services to be recognised, it is necessary to emphasise that:

- Access services are not only for deaf and blind, but also for older people with age related impairments, people with cognitive impairments, people with limited education, immigrant and minority communities

For the roll out of access services for terrestrial television to be accelerated, it is necessary to acknowledge that:

- There are two potentially conflicting local policies on the provision of access services for terrestrial television; the traditional approach of providing them by terrestrial broadcast and the Hybrid TV approach where they are provided over a broadband Internet connection
- The remit of Europe’s national broadcast regulatory bodies requires:
  - A country by country approach
  - Coordination of the national regulatory bodies through EU
- A pan-European technical solution for the delivery of access services by terrestrial broadcast may not be needed as existing standards could be used with minor changes to receiver middleware, for an elaboration of this point please see the “Current Situation” below.

### Current Situation

The plan for the deployment of accessible Digital Terrestrial Television transmitters has been completed. On the transmission side:

- The Digital Video Broadcasting (DVB) standard is in use
  - DVB subtitles can be sent
- The MPEG-2 audio/video standard is in use (with some use of the MPEG-4 video standard)
  - Audio (sound only) access services can be sent on an extra audio channel (e.g. Audio Description (AD), clear audio, etc.)
  - An extra video stream (e.g. of a signer) could be sent in the private section of an MPEG-2 Transport Stream or a secondary Transport Stream on another channel could be superimposed over the main content, for this, a secondary tuner and a special function on the receiver middleware might be required.

As long as enough radio frequency resource (spectrum) is available the access services mentioned above could be transmitted for “user mix” reception, i.e. the user can select to use or not to use the services. However, at the receiver end:

- UK and NORDIG member countries have middleware implementation guidelines and receiver compliance validation systems, i.e. The DTG’s “Digital Zoo” in the UK
  - DTV4All does not have to consider these countries from a policy point of view, except perhaps for “quota and priority issues”; quotas for the provision of access services can be abused unless very carefully introduced e.g. by broadcasting programming with access services overnight. Access services enhance the eInclusion immigrants and the poorest in society and action to enhance the social inclusion of these groups is a major political priority

Most of the other EU member countries do not have middleware implementation guidelines

- Receivers in these countries may not be able to present to the user unexpected additional access service content within a DVB transport stream and/or within the encapsulated MPEG-2 streams
- Access service content may confuse the receiver resulting in a complete loss of service, undesired presentation of the service to the user and/or an incorrect presentation of the service to the user, as has already been reported in DTV4All pilot test results from RBB (Berlin, Germany)
- The Commission needs to address the policy actions that need to be taken to remedy the above situation.
- Some EU member countries, in particular Germany and France, may have decided to take another approach toward future TV, Hybrid TV with a broadband Internet connection:
  - In these cases, no further developments are to be expected on existing broadcasting services
  - This is not an option for many EU member countries because of a lack of affordable broadband Internet services to the home

### **Short Term Needs**

- ♦ Dissemination to the general public and MEPs:
  - To raise awareness of possible access services (or of the existence of access services) using BBC content

- leading to increased public demand for access services
- To raise awareness of the wider benefits of access services for social inclusion
  - To provide political justification for budgets necessary for the provision of access services
  - Highlight the need for a Technical Forum for “middleware functionality requirements”, “implementation guidelines” and “compliance validation”
  - Highlight the need to a User Forum for “prioritisation of needs”, “quota setting” and “monitoring of quotas”
- ♦ Dissemination to national broadcast regulators:
  - To raise awareness of technical feasibility of delivering broadcast access services using the existing technologies
    - Political message 1) “Broadcast access services can be introduced relatively easily and cheaply”
    - Political message 2) Advice to the EC from the DTV4All project, in its role of working on a policy support project, is that if broadcasters are not seen to be taking action towards providing access services in the near to medium term pan-European action may be needed that will result in national legislation requiring broadcasters to deliver access services.
  - To raise awareness of the wider benefits of access services for social inclusion
    - Political message 3) “It may be necessary to allocate spectrum specifically for the broadcast of access services”
  - To raise awareness of the Good Practice Guidelines for the implementation of mature access services that will be provided by the DTV4All project.

### **Medium to Long Term Needs**

The policy of the DTV4All project, and its advice to the EC in its role of working on a policy support project, is that there is a need for the Commission to make clear that if member states do not provide unequivocal evidence that substantial progress is being made on the roll out of access services for digital terrestrial television then by a certain date then national legislation will be introduced to ensure that such access services are provided. Currently, any legislation to require the provision of access services for digital television would have to be introduced at the national and not the European level for reasons that include:

- The speed of terrestrial digital TV deployment is different from country to country

- At the national level local conditions such as the availability of spectrum and of high speed broadband connections can be fully and efficiently taken into account
- Only member countries' national regulatory bodies have the power of licensing and funding as the ITU allocates frequency resource to each member country without EC involvement.
- There are no EU-wide regulatory bodies that oversee broadcasting policy.
  - The EC may wish to consider establishing such a body similar to the one that oversees telecoms policy. i.e., the "Body of European Regulators for Electronic Communications (BEREC)"<sup>8</sup>:

National legislation has already had a significant positive impact on the provision of access services in the United Kingdom.

To keep track of such developments, as they can potentially provide templates for other member states, the DTV4All project will make its exploitation plan a living document which it will regularly update to pay attention to digital TV access service regulatory developments in EU countries, for example Spain where a Royal Decree has recently been adopted.

- Medium Term Road Map
  - Targeting existing digital terrestrial television, possibly requiring minor amendments to receiver middleware
  - Addressing the worst case scenario which is that the introduction of access services will mean some receivers will not work. Attention needs to be paid to:
    - Product life cycles = end of product support (a 3 – 5 year span)
    - Legal support at the national level to take into account consumer protection legislation
- Long-Term Road Map
  - Targeting next generation High Definition Television
    - will require being involved at the planning stage (a 7 – 10 year span)
    - Access services as a basic part of the general TV services
    - National and EU level legal support

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[http://ec.europa.eu/information\\_society/newsroom/cf/redirection.cfm?item\\_id=5501%26utm\\_campaign=isp%26utm\\_medium=email%26utm\\_source=newsroom%26utm\\_content=weekly](http://ec.europa.eu/information_society/newsroom/cf/redirection.cfm?item_id=5501%26utm_campaign=isp%26utm_medium=email%26utm_source=newsroom%26utm_content=weekly)

## 9. Appendix 1 Use and dissemination activities up to the end of February 2010

- A flyer on the project was prepared by Brunel which was made available when the project web site went live on 30.08.2008
- A DTV4All related presentation was made by Pablo Romero & V. Arnáiz at: Amadis08, III Congreso de Accesibilidad a los Medios Audiovisuales para Personas con Discapacidad, AMADIS'08. Barcelona – 30th June & 1st July. Auditorio de la ONCE en Barcelona.
- A presentation was made on “Implementing Audiovisual Accessibility through eye tracking” by P.Orero and V.Arnáiz at the Conference: “Tobii Eye Tracking Conference on Psychology and Vision Research” in Berlin, 24th of July 2008.
- P. Orero gave an interview with the Spanish Official Accessibility Centre CESyA –Centro Español del Subtitulado y Audiodescripción” to inform them about the DTV4ALL Project. The outcomes of this were:
  - Details of the DTV4All project have been published on the CESyA web site.
  - CESyA is interested in disseminating the DTV4All project and has offered the project any non-confidential information in its possession the project may require.
- In August 2008 TVC prepared 2 articles for local and national (Spanish) newspapers on the project.
- On 1 September 2008 RBB presented DTV4All to the ARD subtitle representatives at their annual working meeting on occasion of IFA 2008.
- On 19 September 2008 RBB held a meeting with RBB responsible persons in accessibility issues, including a presentation of project plans and preparation of future cooperation.
- In October 2008 Peter Looms mentioned the DTV4ALL project at the Arab State Broadcasting Union seminar on multimedia production and distribution in Tunis, Tunisia at the invitation of the ITU (who paid for his travel and accommodation).
- Sabine Braun and Pilar Orero gave a presentation at the Berlin Conference, Languages and the Media on 20 October 2008. The presentation showed the first step towards audio subtitling presenting the problems which are created when reading subtitles does not take into consideration the cohesion with the image. [http://www.languages-media.com/conference\\_programme.php](http://www.languages-media.com/conference_programme.php)

- Verónica Arnáiz Uzquiza and Anjana Martínez Tejerina, also gave a presentation at the Berlin Conference, Languages and the Media on 31 October 2008. Their presentation “Twofold Approaches on SDH Research: From Personal Information to Scientific Tools” showed the DTV4ALL approach to qualitative questionnaires, since past experience in a Spanish Subtitling project with personal and quantitative questionnaires has made the project go for eye-tracking technology and customized tests.
- 29 November - 02 December 2008 the project demonstrated the 1st phase demonstrator of the synchronous delivery of broadcast digital TV and an accompanying video of a signer provided over an IP connection at the e-Inclusion Ministerial Conference and Exhibition in Vienna
- Anna Matamala, Pablo Romero, and Cristobal Cabeza ran Audio Description and subtitling in real time workshops 3/14 November 2008 at the CITA 2 Conference in Barcelona <http://www.citaudiovisual.com/Programa.html>
- Peter Looms gave a public lecture 3 December 2008 on DTV4ALL in Hong Kong paid for by University of Hong Kong
- Pilar Orero presented the Audio Description part of the project at the MUTRA Conference, 5-7 December 2008, Munich [http://atrc.info/images/2008\\_MuTra\\_Audiodescription.pdf](http://atrc.info/images/2008_MuTra_Audiodescription.pdf)
- In January 2009 RBB made a contribution to the website of Brandenburg's Social Ministry in Cooperation with Associations for the disabled in DTV4All. This is updated regularly.
- On 3 April 2009 RBB presented DTV4All and the RBB Field tests at a meeting of the Berlin Senate's Working Group for Communication and Sign Language.
- On 8 May 2009 RBB gave a presentation of DTV4All and the RBB Field tests at the EBU Eurovision Summit Teletext and Subtitling Group in Lucerne.
- Peter Looms of DR presented statistics on public service broadcaster activities in access services for 2009 gathered as part of the work of DTV4All project at the EBU Eurovision Summit Teletext and Subtitling Group on 8 May 2009 in Lucerne.
- On 3 June 2009 RBB presented DTV4All as an example of a successful ICT PSP project to the Brandenburg Economic Development Board in Potsdam
- P.O. Looms, E-Inclusiveness and Digital Television in Europe –A Holistic Model, C. Stephanidis (Ed.): Universal Access in HCI, Part I, HCII 2009, LNCS 5614, pp. 550–558, Springer-Verlag Berlin Heidelberg 2009
- At the Antwerp Conference on Media Access for all 21-25 October 2009 papers presented on work done in DTV4All on:



- The Reception of Respoken Subtitles (Pablo Romero Fresco)
- SDH Eyetracked ( Verónica Arnáiz Uzquiza )
- Werner Brückner, Digitales Fernsehen zukünftig barrierefrei, Fernseh- und Kinotechnische Gesellschaft, April 2010, pp 1-3.

## 10. Appendix 2 Outline of a proposed DTV4All workshop in the European Parliament

### Aims of DTV4All

The primary aim of the DTV4All project is to encourage the roll out of quality access services on digital television which will ensure that people with disabilities are not excluded from the switchover to digital television and can enjoy even better access than in the past (e.g. audio description for people with visual impairment, smart subtitles for hearing impaired people. To achieve its aim the project aims to reduce barriers to the roll out of access services by making clear what these barriers are and how they may be overcome.

### Political message to be delivered

The workshop will explain why, for the roll out of access services for terrestrial digital television to be accelerated, it is necessary that:

- All actors in the digital public service television ‘value chain’ step up their cooperation (i.e. manufacturers, broadcasters, content providers, regulators, user organisations)
- The national broadcast regulatory bodies should strongly pursue access services through both:
  - The current coordination of the national regulatory bodies at EU level
  - A focused approach by country.
- Next to traditional approaches to access services (providing them by terrestrial broadcast), a Hybrid TV approach is also pursued (where access services are provided over broadband), in particular as a supplement in countries where there is little or no spectrum available.

### The workshop will for the MEPs:

- Raise awareness of possible access services (or of the existence of access services) and the wider benefits of access services for social inclusion
- Provide insight for the political justification for budgets necessary for the provision of access services
- Highlight the need for various forms of cooperation and provide political encouragement to actors to engage in cooperation (amongst others it is necessary to set up a User Forum for “prioritisation of needs”, “quota setting” and “monitoring of quotas” at the national level and a Technical Forum for “middleware functionality requirements”, “implementation guidelines” and “compliance validation” at the national level)

**The workshop will include:**

- Demonstrations that will make clear what access services are about, how they benefit people with disabilities, and that they will benefit an even much larger population. This includes:
  - Demonstration of mature and emerging access services using BBC and other content.
  - Highlighting of the user perspective through demonstration of the use of access services by a blind user and the participation in the workshop of a representative of the Equality and Diversity Forum.
  - Review of recent developments, in particular in Denmark, that are setting access services in a wider eInclusion context.
- Presentations on the barriers to making accessible digital TV a reality for all in Europe
- Presentations on possible short and long-term road maps for the roll out of access services across Europe
- Presentations of progress in accessible digital television:
  - Review of the results of the mature service pilot of the DTV4All project which include guidelines for good practice in areas such as the presentation of subtitles.
  - An overview of the steps consumer electronics manufacturers have and are taking to support the roll out of access services from a representative of DIGITALEUROPE, which is the pre-eminent advocacy group of the European digital economy acting on behalf of the information technology, consumer electronics and telecommunications sectors.
  - An overview from a representative of European Broadcasting Union (EBU) of the support it can provide to its member broadcasters in rolling out access services with a view to reducing the need to introduce legislation at the national level in this area.
- Panel discussion of barriers to the roll out of access services such as regulatory, technical, and spectrum issues, costs related to the provision of audio description and real-time subtitling, together with possible ways around these barriers.
- A separate discussion will be held on the technical solutions, recognizing that a pan-European technical solution for the delivery of access services by terrestrial broadcast may not be needed as existing standards could be used with minor changes to receiver middleware.

## 11. Appendix 3 Outline plan for workshop with/by EBU

### What's the goal of the workshop?

- To raise awareness of the public broadcasters of mature access services, how easy they are to implement, and how they can be implemented at relatively low cost. The DTV4All pilot results will be used as a source of case studies of effective implementation (private broadcasters would be invited through their union).

### What's needed from EC?

- Keynote speaker: Head of Unit H, Head of H3 or a Project Office together with video message from the Commissioner (e-Inclusion) delivering a political message: the advice to the EC from the DTV4All project in its role of working on a policy support project is that if broadcasters are not seen to be taking action towards providing access services in the near to medium term pan-European action may be needed that will result in national legislation requiring broadcasters to deliver access services

### What will DTV4All do?

- Speeches on
  - The project outline, possible short/long-term road map (T. Itagaki - Brunel)
  - Budgeting for mature access services with a particular focus on the costs associated with delivering mature access services (Peter Looms - DR)
  - Training of staff necessary to create and deliver access services (Pilar Oreó - UAB).
  - Gathering user feedback and the generic lessons learned so far (a member of Pilar Oreó's team - UAB)
  - Guidelines for good practice in rolling out mature access services (Bettina Heidkamp – RBB)
- Demonstration with BBC content (Brunel )
- Demonstration with RBB content (RBB/IRT)

### What has EBU committed to?

- Logistics – room booking, pre-registration, announcement (advertising)
- Speech from David Wood or Ed Wilson of the EBU

### What DE can possibly commit/influence?

As has already been explained DE cannot be expected to have a uniform view of how access services for terrestrial television should be delivered in the near future. However, DE is very open to improving access services. For example, the DTG is liaising with DE by presenting its whitepaper(s) on access services to DE for consideration by DE. Accordingly, DE can provide a useful forum for disseminating news of DTV4All events and DTV4All recommendations on access services to its members. In this way, DE representatives and members will be invited to the event so that receiver manufacturers have the opportunity to express any concerns they may have.