



Connected TV Accessibility

HBB4ALL: access services for a smart convergent environment

Carlos Alberto Martín, José Manuel Menéndez and Guillermo Cisneros Universidad Politécnica de Madrid (Spain)

NEM Summit 2016
Porto, 24th November 2016

HBB4ALL project

- HBB4ALL is a European project co-funded by the CIP programme (Competitiveness and Innovation Framework Programme)



- Aim: deployment of access service **pilots** based on HbbTV, the standardised Connected TV technology



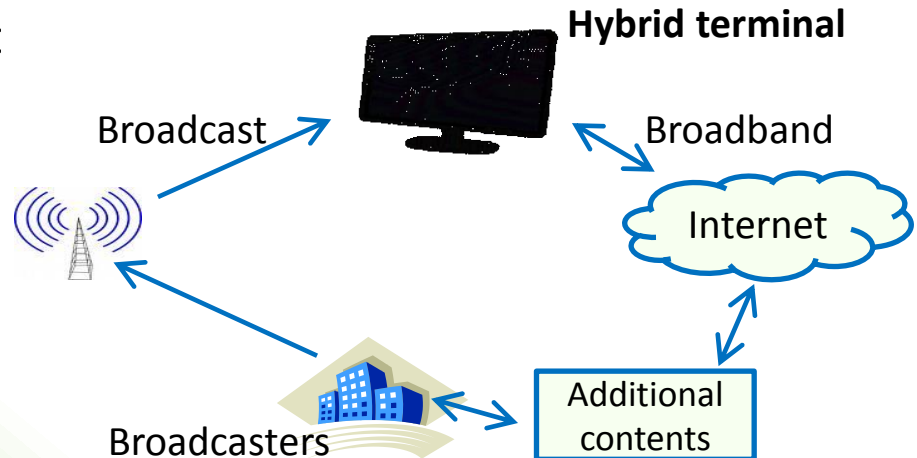
The consortium

<p>2 Academic Institutions</p>	 Universitat Autònoma de Barcelona  
<p>4 Public Broadcasters</p>	 RUNDFUNK BERLIN-BRANDENBURG  RADIOTELEVISÃO PORTUGUESA  
<p>2 Research Institutes</p>	  IK4 Research Alliance
<p>4 SMEs</p>	   



Connected TV

- Connected TV or Hybrid TV: current paradigm of smart media convergence, characterised by hybrid terminals able to receive and to play multimedia contents coming from:
 - A "traditional" broadcasting network (e.g., DTT)
 - A broadband network (Internet)
- Great opportunity to deploy new contents and services for all the users!!!
 - Including personalised content



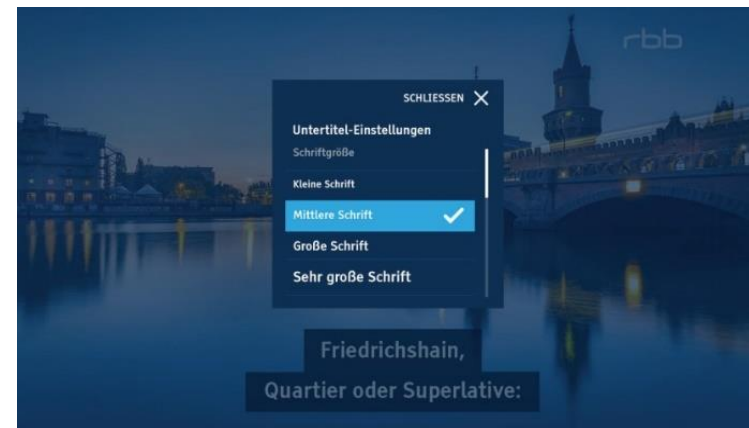
Connected TV

- ... and the people with disabilities? Can they take advantage of these opportunities?
- HBB4ALL - Hybrid Broadcast Broadband **For ALL**
- Two challenges:
 - ➔ The challenge of making broadband content accessible (if a piece of content has included access services in the broadcast emission, accessibility must be preserved in broadband exploitation)
 - ➔ Using HbbTV as a technical tool for the provision of innovative access services (e.g., new signing services)
- HbbTV is an open, standardised technology to provide interoperable Connected TV services
- HbbTV is the key technology in HBB4ALL, but not the only one.
- Near-market project: pilot deployment

- The project has consisted of four pilots focused on different access services:
 - ➔ Pilot A. Multiplatform subtitle services
 - ➔ Pilot B. Alternative audio production and distribution
 - ➔ Pilot C. Automatic user interface adaptation and accessible Connected TV applications
 - ➔ Pilot D. Sign language interpretation
- Each pilot comprises several "subpilots" (service pilot deployed by a broadcaster)
- The project ends in a few days (30th Nov 2016) after three years of execution

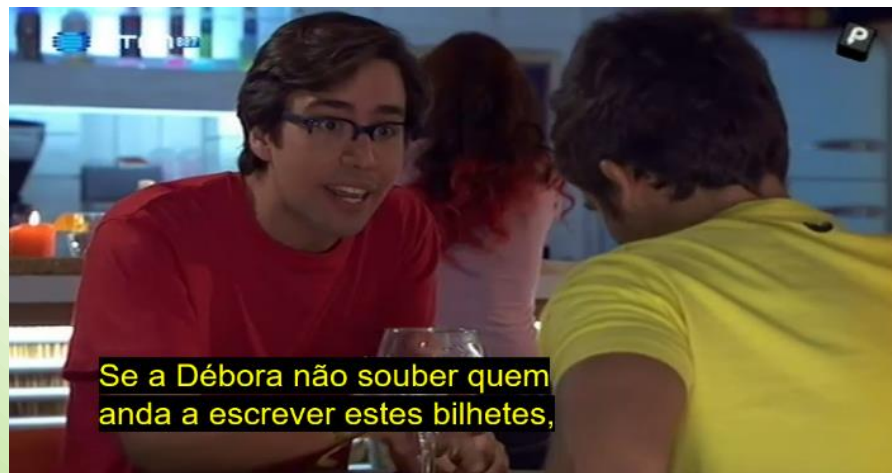
Subtitles

- RBB, CCMA and Swiss TXT have deployed HbbTV subtitling applications for catch-up contents.
- Customisation options, such as subtitle position and size



Subtitles

- UPM and RTP have worked on the provision of subtitles in web players (JW Player, VideoJS) -> used in a variety of devices via web browsers.
- This tool has integrated customisation options, too.
- Available for a set of programmes in the accessibility area of RTP website.



Subtitles

- The mentioned subtitling services are based on EBU-TT-D, the EBU open specification for subtitle distribution via Internet.
- IRT has developed several tools to promote usage of this new subtitle format in the market.
- Vicomtech-IK4 has worked on the generation of live (almost real-time) subtitles using speech to text technologies and automatic translation from English into Spanish.

Alternative audio services

- CCMA has integrated audio description and original sound track in its HbbTV portal. Additional tests to deliver the content via MPEG-DASH.
- IRT has created a clean audio generator software to increase speech intelligibility. Promising results.
- UAB has worked on the improvement of audio description intelligibility if programme volume increases.

Accessible user interfaces

- Vsonix and UAB have created a MOOC (massive open online course) about accessibility
- And of course it is accessible
- Available in Internet after registration:
<http://www.accessguide.tv/course/>

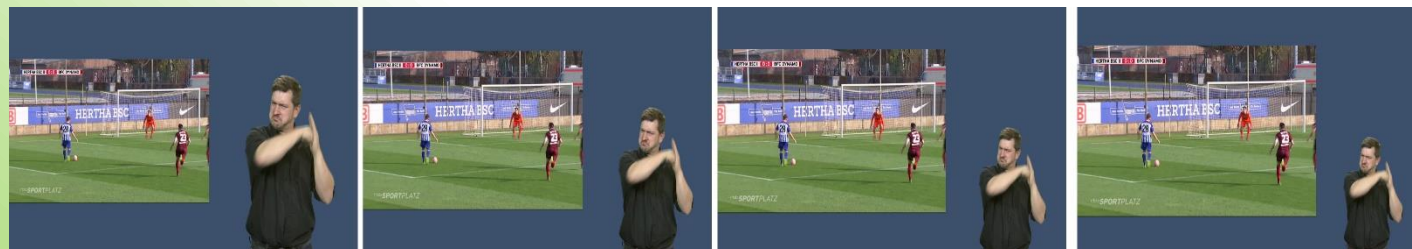


Unit 3: Introduction to Audio Description

Sign language

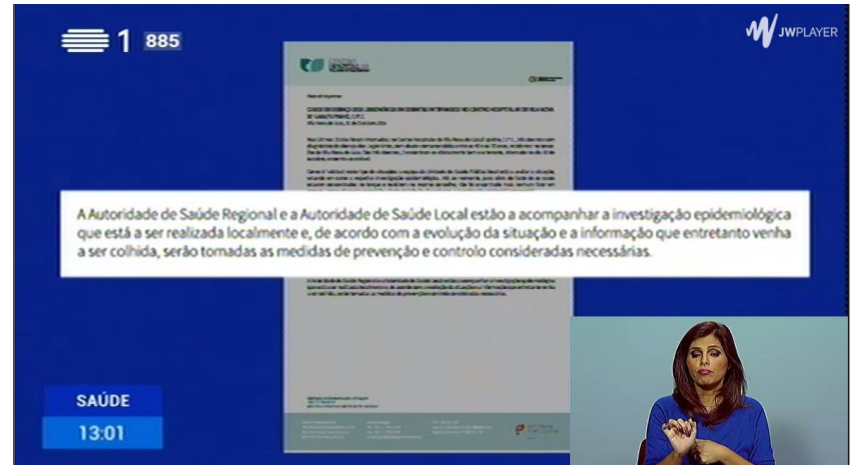
- RBB has deployed an HbbTV signing application for catch-up content.
- Tested with a sample of 30 users.
- Closed (elective) implementation and customisation options: size, position and layout. A pre-mixed picture-in-picture video (programme + signing window) is delivered via Internet.
- A truly hybrid approach would require double-decoder receivers (not usual in the competitive consumer electronics industry).

Sign language



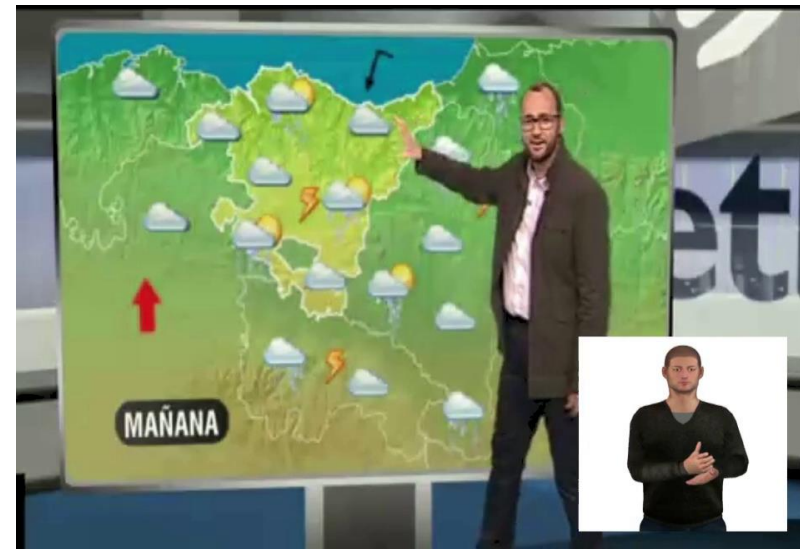
- UPM and RTP have created a customisable signing service for web players:
 - ➔ JW Player. Picture in picture. Different positions and sizes
 - ➔ VideoJS. Two screens. Four different options
- This implementation has extended the current double-screen signing service provided by RTP for live content.
- Tested in a focus group.

Sign language

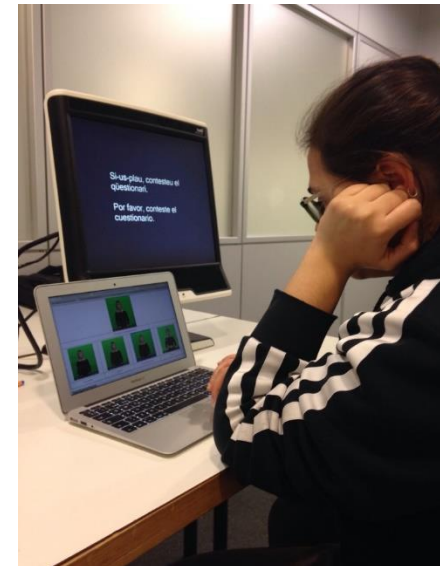


Sign language

- Avatar or virtual interpreter to create automatic signing (Vicomtech-IK4)
- This service has not been deployed in a large-scale pilot but tested with users
- Involving modules like text to sign language translation, a sign dictionary and an animation engine
- Limited to a specific semantic domain (weather forecast) but extensible to cover other fields (with the suitable sign dictionary)



- Key aspect in HBB4ALL
- Which are the optimum conditions for the service provision?
- Two different user test typologies
 - ➔ During the large-scale subpilots
 - ➔ In lab conditions (UAB)
- In the case of signing tests, innovative sign languages questionnaires (UAB and UPM).



Conclusions

- The current smart convergence ecosystem enables the cooperation between different networks: broadcast and Internet.
- HbbTV is a valid tool for the provision of accessibility in the convergent environment.
- TV accessibility has always taken advantage of new TV services and technologies: teletext subtitles, multiple audio tracks, Connected TV...
- **And this is just a quick introduction to our project! Most of HBB4ALL deliverables are public: www.hbb4all.eu**

Thank for your attention!!!

Carlos Alberto Martín, José Manuel Menéndez, Guillermo Cisneros
Universidad Politécnica de Madrid (Spain)

cam@gatv.ssr.upm.es, jmm@gatv.ssr.upm.es, gcp@gatv.ssr.upm.es

