

DELIVERABLE

Project Acronym:	TV-RING
Grant Agreement number:	325209
Project Title:	Television Ring - Testbeds for Connected TV services using HbbTV

D3.3.2 Services and applications

Revision: 1.6

Authors:

Franz Baumann (IRT)

Sven Glaser (RBB)

Nicolas Patz (RBB)

Isaac Fraile (TVC)

Susanne Heijstraten (NPO)

Project co-funded by the European Commission within the ICT Policy Support Programme		
Dissemination Level		
P	Public	
C	Confidential, only for members of the consortium and the Commission Services	x
Abstract: This deliverable gives an overview of the developed and broadcast HbbTV applications and services from the three national TV-Ring Pilots and shows how to have access to these by HbbTV-devices or a PC.		

Revision History

Revision	Date	Author	Organisation	Description
1.0	30/04/2015	Franz Baumann	IRT	Added ToC and Introduction
1.1	02/06/2015	Franz Baumann	IRT	Added Content from the German Pilot
1.2	09/06/2015	Nicolas Patz	RBB	Added Content to the German Pilot and some corrections
1.3	10/06/2015	Isaac Fraile	TVC	Added Content from the Catalan Pilot
1.4	19/06/2015	Susanne Heijstraten	NPO	Added Content from the Dutch Pilot
1.5	22/06/2015	Franz Baumann	IRT	Error corrections
1.6	14/07/15	Joost Negenman / Susanne Heijstraten	NPO	Review

Disclaimer

The information, documentation and figures available in this deliverable, is written by the TV-Ring (Testbeds for Connected TV services using HbbTV) – project consortium under EC grant agreement ICT PSP-325209 and does not necessarily reflect the views of the European Commission. The European Commission is not liable for any use that may be made of the information contained herein.

Statement of originality:

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.



1 Executive Summary

This deliverable gives an overview of the developed and broadcast HbbTV applications and services from the three national TV-Ring Pilots and shows how to have access to these by HbbTV-devices or a PC.

From the Dutch pilots there is an app for quality differentiation by using Digital-Rights-Management and an in-house recommendation app. The German pilot application shows stream High-Quality streaming (up to UHD) by using HbbTV. Furthermore there is an LiveBlog with connections to Social Media services and DASH streaming support fully integrated. A second screen service with multi camera streaming by using HbbTV is shown by the spanish pilot application.

2 Contributors

First Name	Last Name	Company	e-Mail
Franz	Baumann	IRT	baumann@irt.de
Sven	Glaser	RBB	Sven.Glaser@rbb-online.de
Nicolas	Patz	RBB	Nicolas.Patz@rbb-online.de
Isaac	Fraile	TVC	iafraile.w@ccma.cat
Susanne	Heijstraten	NPO	Susanne.Heijstraten@NPO.nl
Joost	Negenman	NPO	Joost.negenman@npo.nl

Content

Revision History.....	2
1 Executive Summary.....	3
2 Contributors.....	4
3 Introduction.....	7
3.1 Access by HbbTV-devices through the TV-App-Gallery.....	7
3.2 Access by the FireHbbTV Browser-Plugin.....	7
3.3 Access by the Opera HbbTV Emulator.....	8
4 Dutch Pilot.....	10
4.1 Pilot application “Quality differentiation by using Digital Rights Management (DRM)” 10	
4.2 Pilot application “In house Recommendations for HbbTV”.....	11
4.3 Pilot application ‘HbbTV as a central interface for second screen competition’.....	12
5 German Pilot.....	14
5.1 Pilot application “Abenteuer Liebe” - Phase 1.....	14
5.2 Pilot application “Abenteuer Liebe” - Phase 2 (with UHD and Social Media).....	15
6 Spanish Pilot.....	16
6.1 Pilot application 1.....	16
6.2 Pilot application 2.....	17
7 Bibliography & References.....	18

Table of Figures and other objects

Image 1: Screenshot from DRM pilot “Choice for a HD (paid) or SD (free) item”	10
Image 2: Screenshot from “Rating of recommendations on relevance”	11
Image 3: Screenshot from “Abenteuer Liebe” – Phase 1.....	14
Image 4: Screenshot from “Abenteuer Liebe” – Phase 2 with UHD and Social Media (LiveBlog)	15
Image 5: Screenshot from “Oh Happy day!”	16
Image 6: Screenshot from second screen application	17

3 Introduction

In the following chapters there are the links to the HbbTV applications and services, which were developed for the Dutch, German and Spanish TV-Ring pilots.

You will find a summary of all applications and links online in the TV-App-Gallery as well:

<http://www.tv-app-gallery.net/>

The following tutorials show how to display and interact with HbbTV applications in a browser on a PC. They were written for the HbbTV-Developer site and are available under the following URL:

http://www.hbbtv-developer.com/site/wiki/index.php/Setting_up_a_development_environment

3.1 Access by HbbTV-devices through the TV-App-Gallery

The URL of an HbbTV application can be entered directly in several HbbTV-devices. You will find the links to TV-RINGS applications in the description of the pilot applications. Furthermore, it is possible to insert the URL of the TV-App-Gallery into your device (<http://www.tvappgallery.net>). The TV-Ring apps can be accessed choosing the category "TV-RING".

3.2 Access by the FireHbbTV Browser-Plugin

FireHbbTV is an easy and fast solution to display your application directly in a Firefox browser window. FireHbbTV uses a browser profile that is, to some extent, similar to HbbTV devices. This browser profile enables Firefox to interpret the CE-HTML language and display your application.

To get started, download the plugin and follow the installation guide. Use this [link](#) or simply navigate to Firefox -> Add-Ons and enter "FireHbbTV" into the search bar.

After installing the plugin, Firefox will be able to recognize HbbTV applications and to interpret them similar to an HbbTV browser on a TV set. In addition to the FireHbbTV plugin, it is very handy to use a debugging tool that displays errors or problems. FireBug, a debugging plugin for Firefox, will provide you with feedback about any syntax or runtime errors that the browser encounters. Get the plugin [here](#), or navigate to Firefox -> Add-Ons and enter "FireHbbTV" into the search bar.

By clicking on the FireBug symbol that appears after the installation on the right upper side of your browser, Firefox will open a debugging window that will give you information about syntax or runtime problems within your app. Now Firefox is ready to interpret and display HbbTV applications. To demonstrate this, you can use this very basic "[Hello world](#)" application and try to open it with Firefox. Simply drag the HelloWorld.html file into a browser tab. Now Firefox will automatically display the application using the FireHbbTV plugin.

Furthermore FireHbbTV is able to emulate some of the functionalities of a SmartTV. On the upper part of the window there is a tool bar with many useful settings, for example the remote

control that gives you the possibility to navigate through your application or the possibility to send Stream Events.

As described earlier, FireHbbTV is a useful tool that can give you a feeling of what the HbbTV browser profiles are capable of. But it does neither provide a fully compliant HbbTV browser profile nor should it be taken as a reliable testing environment for HbbTV applications. For example, the application manager that needs to be interpreted by an HbbTV compliant browser will not be interpreted by FireHbbTV. Also when it comes to videos, FireHbbTV does not bring as many capabilities to play back different codecs or video formats as a SmartTV. So if your application will work with FireHbbTV, it does not necessarily run on HbbTV devices.

3.3 Access by the Opera HbbTV Emulator

The software company Opera is implementing and developing an HbbTV compliant browser for SmartTVs. Hence, there are some HbbTV devices that integrate and use the Opera HbbTV browser. In order to run and test applications, Opera provides a virtual machine image that emulates a SmartTV. The emulator can be retrieved [here](#). Unpack the provided files and store them on your local file system. The emulator needs a virtualiser like VirtualBox in order to run. So download the appropriate version of VirtualBox for your operating system [here](#) and follow the installation guide. The next step is to open the Opera HbbTV Emulator.vbox-File with your VirtualBox. This file can be found in the folder where you stored your Opera HbbTV Emulator files.

Before you can start the emulator, you have to decide where your application is stored. HbbTV and therefore Opera are providing two delivery ways that can be used to load the app:

- The first one is, to store the application on a server and access it over the internet. If this is the case, no further adjustments in VirtualBox have to be applied.
- The other way is to define a shared folder where the application will be stored that can be accessed by VirtualBox. To do so, you have to create two folders on your local drive system. Name the first folder 'share'. The second should be created within the share folder and should be named 'carousel'. It doesn't matter where you store these folders, as long as you don't forget the folder paths. Your application has to be stored in the 'carousel'-folder in order to access it by VirtualBox. Therefore, VirtualBox has to be configured. Click on settings -> shared folders and add a new shared folder. Add the path to the shared folder you just created and make sure that the read-only option is unchecked. Now the folder can be accessed.

Let's start the emulator by simply clicking on the start button in the upper menu of VirtualBox. After launching the virtual machine, a new window with a video will appear. This window is your emulated SmartTV where your application will be shown.

Opera provides also a remote control that can be used to navigate through the app or to load new applications into the emulator. To access this remote control open a new browser tab and enter '<http://localhost:5555>'.

To open applications, click on the small "globe" button in the web section of the remote control to open the "Generate AIT" window.

- if your app is stored on a web server, the URL has to be entered in the upper field and the lower field where the transmission type is specified has to be set to "HTTP"



- if your app lies in a shared folder, enter the name of your HTML file (e.g. 'HelloWorld.html') into the upper field. The field for the transmission type has to be set to "Object Carousel". Make sure that all files of your application are copied into the carousel folder.

By clicking on the "Generate AIT"-button the application will be loaded and displayed within the emulator window.

Also the Opera TV Emulator does not bring all facilities that a SmartTV will provide and therefore cannot be seen as a proper test environment for HbbTV-Applications.

4 Dutch Pilot

4.1 Pilot application “Quality differentiation by using Digital Rights Management (DRM)”

For the first phase of the DRM pilot we created a special filter-application inside the existing HbbTV Catch-up platform of NPO. The testpanel received about 90 items in 5 different genres to watch. They held a virtual budget of 9 euros and each item was offered in HD (3 Mbps HLS) and SD (1 Mbps HLS) quality. HD items were price differentiated, depending on in which (sub) test group they were marked. This was mainly to investigate the willingness to pay for HD quality per genre and to investigate the technical possibilities to offer the same content in different qualities.

For the second phase of the pilot the testpanel has been asked to keep a diary of their viewing habits. The first few days on their current offer of on demand television (public, commercial, netflix etc). After that they all received free subscription on NLZiet (a paid service from NPO, RTL and SBS for 9 euros a month) and they were asked to fill their diary of their viewing habits. At the end of the month they did this one more time for a few days. KUL analysed the diaries and offered the testpanel members, who joined the three sprints: 1) keep NLZiet but pay for it 2) nothing extra 3) a paid subscription on genres. The goal is to discover the different kind of subscriptions models and preferences that existed

URL:

Not available.

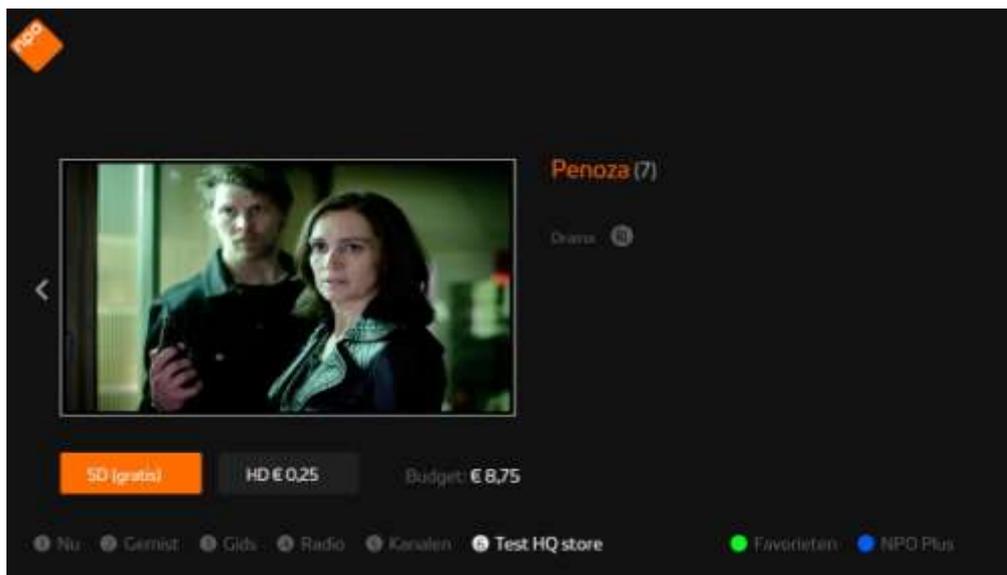


Image 1: Screenshot from DRM pilot “Choice for a HD (paid) or SD (free) item”

4.2 Pilot application “In house Recommendations for HbbTV”

The goal of this pilot scenario is to scan household video content consumption by a family and present recommendations for individual persons, or sets, on the central HbbTV television set. NPO, PPG and KUL developed an intelligent recommendation-engine that presents the recommendations based on viewing habits and using variables as time of day, device status and historical data.

In the first phase a test panel of 40 participants got different recommendations presented on different timeslots per day. They had to rate these recommendations on relevance for them at that particular time of the day. For the second round of recommendations we improved the algorithm of the recommendations, based on an analysis of the first period. Also we offered the recommendation in three different UI formats: long, short and kids. The test panel again rated the recommendations on relevance.

URL:

Not available.

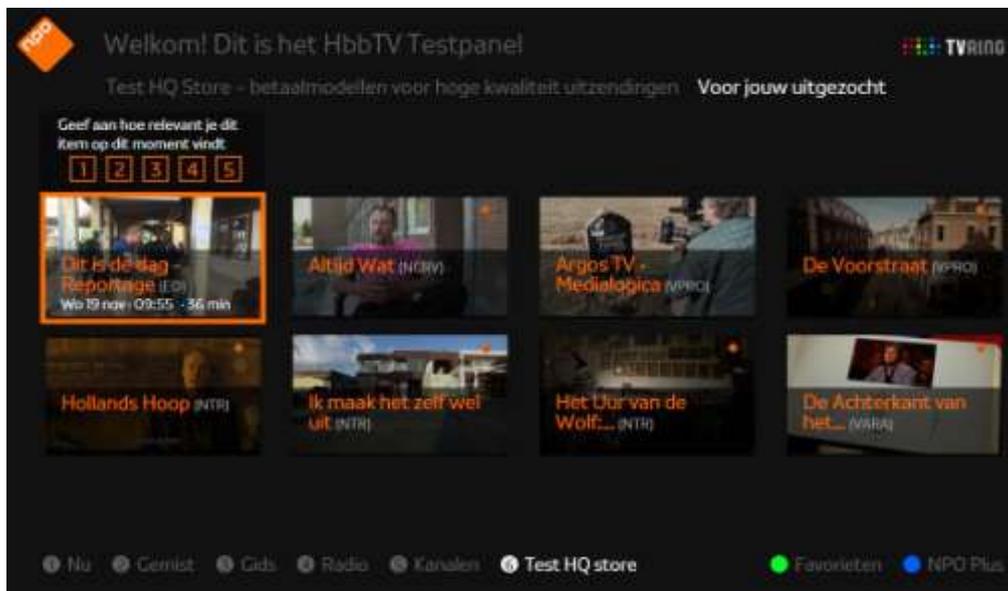


Image 2: Screenshot from “Rating of recommendations on relevance”

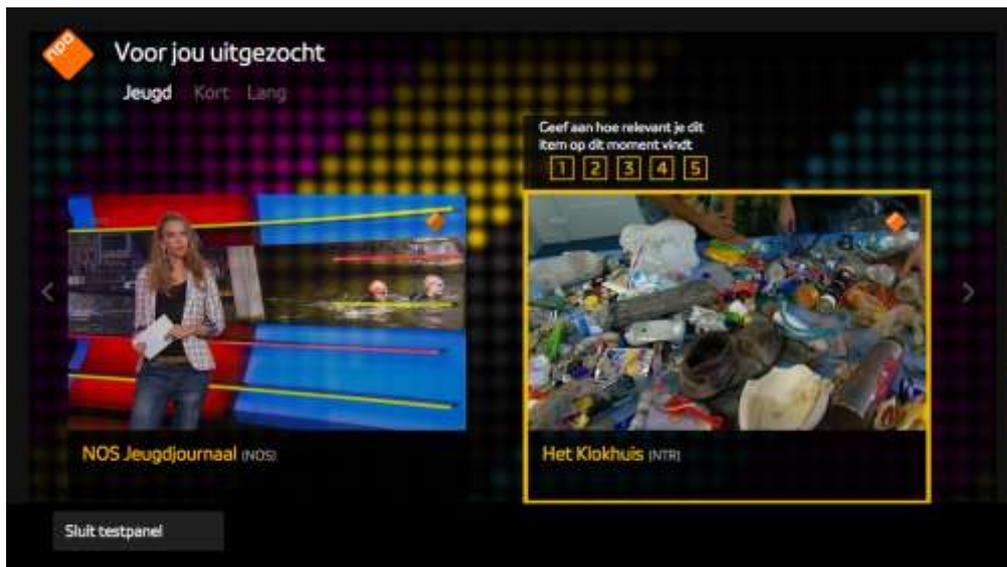


Image 3. 'Presented format for kids recommendations'

4.3 Pilot application 'HbbTV as a central interface for second screen competition'

NPO, PPG and Angry Bytes developed an HbbTV application that makes it possible to play along a second screen quiz within a household where the results of all individual players are presented on the central TV screen HbbTV overlay. We did several tests with different TV-shows like 'de Rijdende Rechter' and 'Een-tegen-100'. We also did an international test with the Eurovision Song Contest. A few households in Spain and the Netherlands played along and could see their group results presented on the TV-screen. The application is now being developed as a commercial product and put into the market.

www.see2gather.com

<http://nu.omroep.nl/eentegen100.mp4>



Image 4. Second screen app 'Een-tegen-100' and the results of individual players displayed on TV



Image 5. Results of Spain and the Netherlands during the Eurovision Song Contest displayed on TV

5 German Pilot

5.1 Pilot application “Abenteuer Liebe” - Phase 1

The first phase of the German TV-RING pilot “Abenteuer Liebe”¹ is based on a teenager documentation format with 20 broadcast episodes. The documentation is focused on the topic “love” from a teenager’s point of view. Therefore the accompanying HbbTV application was developed for the target group of young people up to 12 years. The pilot includes the broadcast of the TV series itself as well as the parallel provision of the HbbTV-based application offering additional content and features, like picture galleries, personal descriptions (from actors, guest stars, film team), votings, SD/HD video content and MPEG-DASH video distribution.

URL:

(application was updated and enhanced for Phase 2 and thus is no longer available)



Image 3: Screenshot from “Abenteuer Liebe” – Phase 1

¹ „Abenteuer Liebe“ was a working title which we use here for the sake of consistency, i.e. because we have used it in earlier documents. The actual title of the broadcast series was “verknallt & abgedreht”.

5.2 Pilot application “Abenteuer Liebe” - Phase 2 (with UHD and Social Media)

The second phase of the German TV-RING pilot “Abenteuer Liebe” consisted of an enhancement of the Phase 1 application with UHD video (up-scaled for the episodes and one additional video, natively produced in UHD), a Social Media blog feature and minor RBB dependent design adaptations. The new version of the HbbTV application was developed for the target group of young people between 12 and 16 years. The pilot includes the broadcast of the TV series itself as well as the parallel provision of the HbbTV-based application offering additional content and features, like picture galleries, personal descriptions (from actors, guest stars, film team), votings, Social Media blog, video content and MPEG-DASH/UHD video distribution.

URL:

<http://hbbtv.verknalltundabgedreht.de>



Image 4: Screenshot from “Abenteuer Liebe” – Phase 2 with UHD and Social Media (LiveBlog)

6 Spanish Pilot

6.1 Pilot application 1

The first application of the Spanish TV-RING pilot is based in the second season of the musical program "Oh Happy Day!" with a total of 6 different episodes.

The HbbTV application offers additional content which is a second camera which offers a different view regarding the original production. The selection of the different content it is from a video mosaic that reflects the different productions of the program. All content are offered in three different qualities, ranging from the 7Mbps at HD to 3Mbps at SD using MPEG-DASH. Finally the client can be seen the different episodes using the Vod content or the simulated live.

URL:

<http://www.tv3.cat/iptv/recerca/tvring7/index.html>



Image 5: Screenshot from "Oh Happy day!"

6.2 Pilot application 2

The second phase of Spanish TV-RING pilot consists of the improved first stage using the second screen from a mobile device. This enhancement allows users to control the HbbTV application with a tablet like the remote control.

This new phase incorporated new content, both sporting events like the party of the quarterfinals of the Champions - FCB PSG, or events such as the election debate of the municipal elections of Barcelona. That new content offers the possibility to select from four different cameras to the end users.

As in the first phase of the HbbTV application, content is offered in three different qualities using MPEG- DASH.

URL:

http://193.104.51.238:8080/hmc/Prova_tvring2/index.html



Image 6: Screenshot from second screen application



Image 7: Screenshot from Tablet application

7 Bibliography & References

EC. (n.d.). *DIGITAL AGENDA FOR EUROPE*. Retrieved 4 2013 from <https://ec.europa.eu/digital-agenda/node/6763>

EC. (2008). *Good Communication Practices for ICT PSP Projects*.

EC. (2013). *Guidance Notes on Project Reporting*.