HBB NEXT
NEXT GENERATION HYBRID MEDIA

Applications

TV SERVICE CUSTOMISATION

Inter-Media and Inter-Device Synchronisation

- Inter-Media Synchronisation of broadcast (TV) and IP content with cloud support
  - Customizable Subtitles and sign language interpreter on TV
- Inter-Device Synchronisation on TV and 2nd Device
  - Audio description or additional language track via smartphone
  - Customizable Subtitles plus TV programme on Tablet 2nd device
- HbbTV front-end application

The HbbTV settings application bundles access to a range of customisable services, mainly for better accessibility to TV. All services are provided via IP and synchronised to the DVB-TV programme: This includes customisable subtitles or signing and also the option to hear the audio description track with your smartphone. Synchronisation is based on the DVB broadcast timeline approach, enabling inter-media and inter-device synchronization in HbbTV. Inter-device synchronisation is based on constant exchange of timing information between devices.

APPLICATION STORE

- Retrieval of current active users on the device in use
- Multi-modal authentication by means of voice or face recognition
- Multi-level authorization indicating the authentication mechanism required for each action (install an application, etc.)
- Customized reputation scores for each user depending on their preferences similarities

This demo shows the functionality of all the enablers developed within WP3 – Identity, Security and Trust of the FP7 Research Project HBB-Next. It consists of an AppStore for HBB-TV users where they can download, install and run applications on their TV. The main enhancements with regards to traditional AppStores are threefold: multi-modal authentication, multi-level authorization and customized reputation scores for each user. The demo shows a user selecting a profile to be authenticated from a list of current active users on such TV. First the system tries to authenticate such user through voice recognition and, if it fails, through face recognition. If finally successfully authenticated, the user is presented with the customized reputation scores for each application. Finally, to install an application the user is requested to enter the PIN.

INTERACTIVE TV SHOW

- Live Interactive TV Application
- HbbTV front-end
- Identity Management System: More than one viewer can vote on the same TV-set

This innovative application shows how a live TV Show can be enriched with HbbTV. Conceived for a so called "Science Slam"-Show, a live edutainment format where candidates compete with 5-minute science presentations, the app might be applied to any format where voting or additional info on a certain programme is involved. The HBB-NEXT app was broadcast by RBB very successfully nationwide on May 31st 2013: It enhanced the RBB Science Slam Live Show and allowed for voting for your favourite candidate and for accessing additional content right on the TV screen. It now also allows multi-user voting after integration of HBB-NEXT Identity Management.
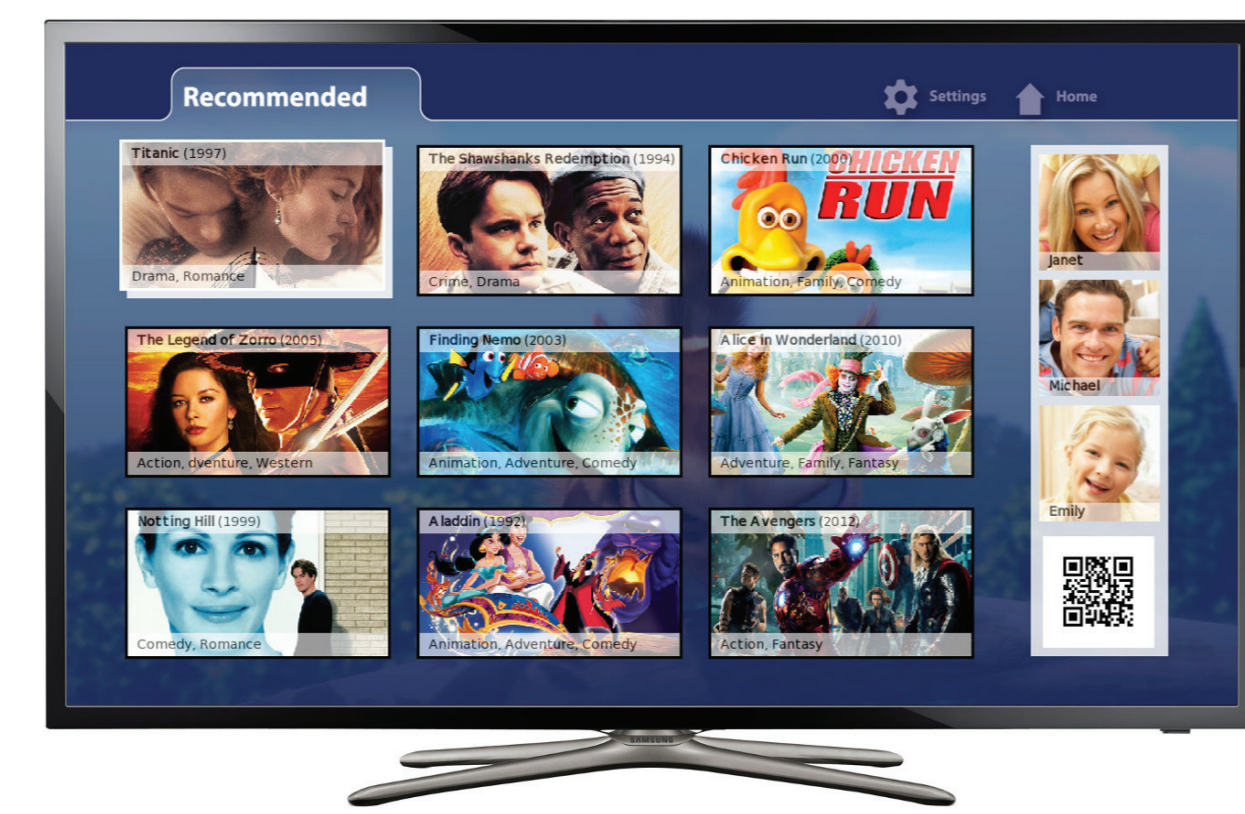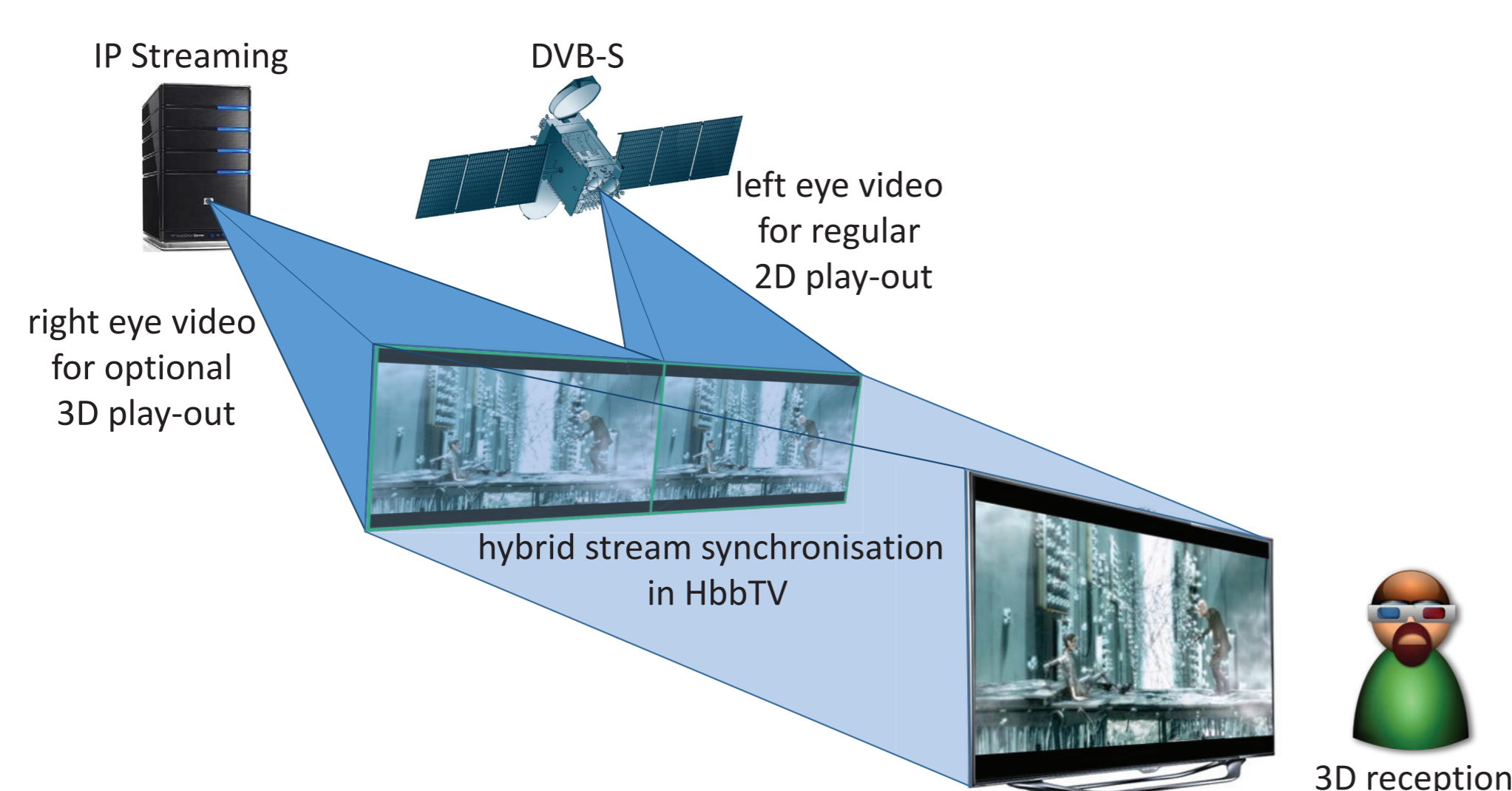
GROUP EPG

- Automatic identification of users
- Multi-user recommender algorithms
- Automated metadata collection
- HbbTV front-end application

Content recommendations are important in the HbbTV context. Not only do users have access to a plethora of TV channels and carrousel content through broadcast, they also have an overwhelming choice of content that is available through broadband. A recommender system helps by selecting a relevant subset of content items. As TV content is typically consumed by groups of users, the recommender provides multi-user content recommendations. HBB-Next has developed an integrated system for multi-user recommendations, including automatic identification of users (face, voice), a recommender framework that calculates the multi-user recommendations, automated metadata collection for the content, and a user-friendly HbbTV compliant front-end application.
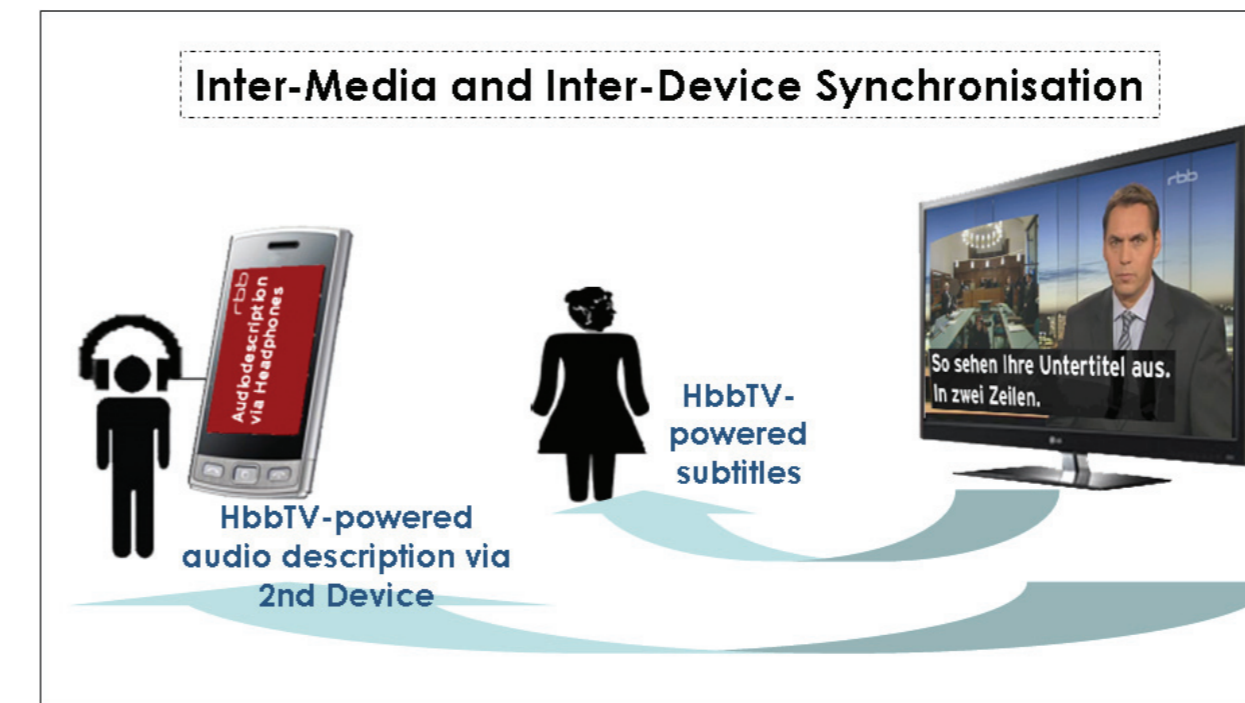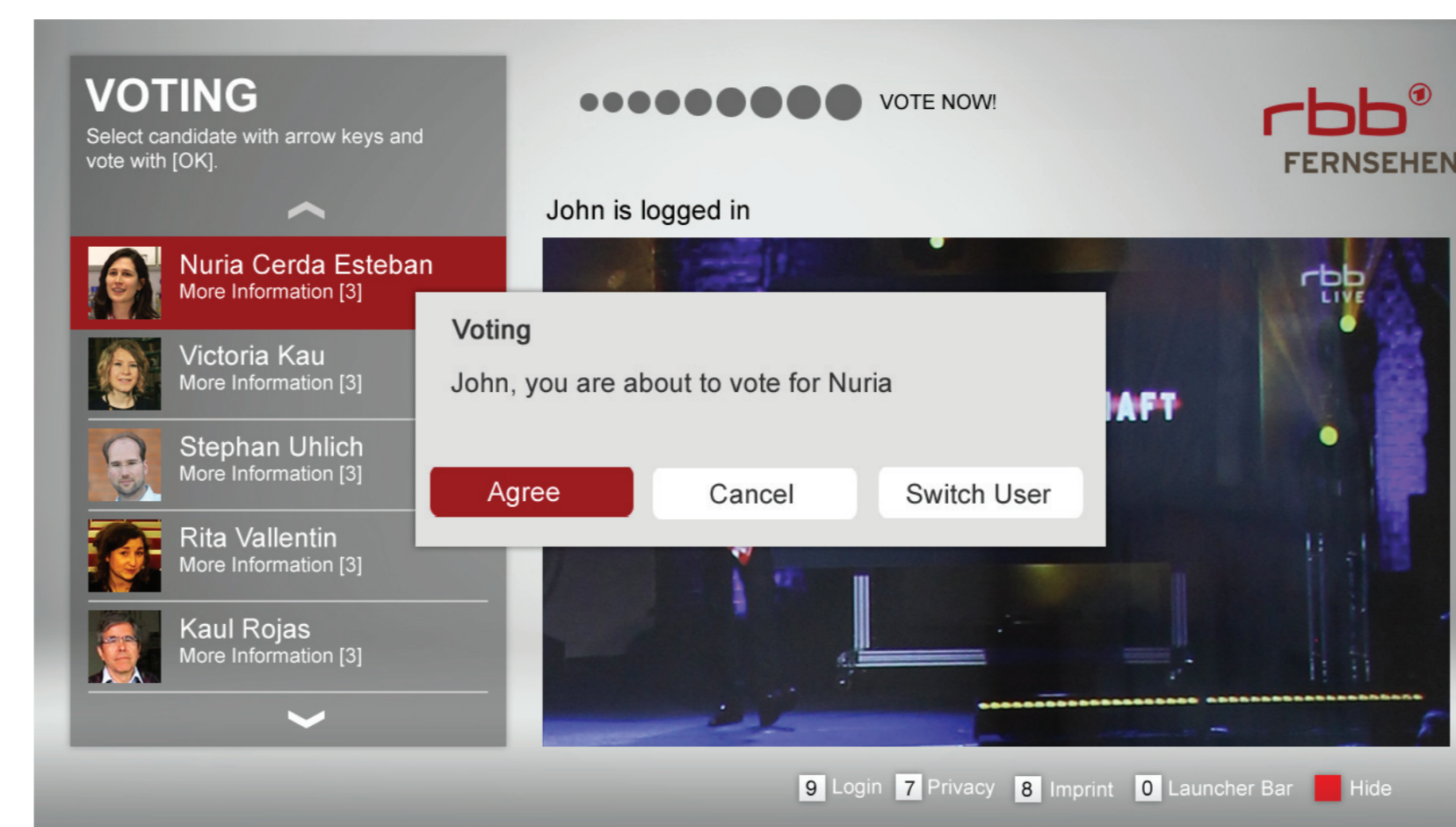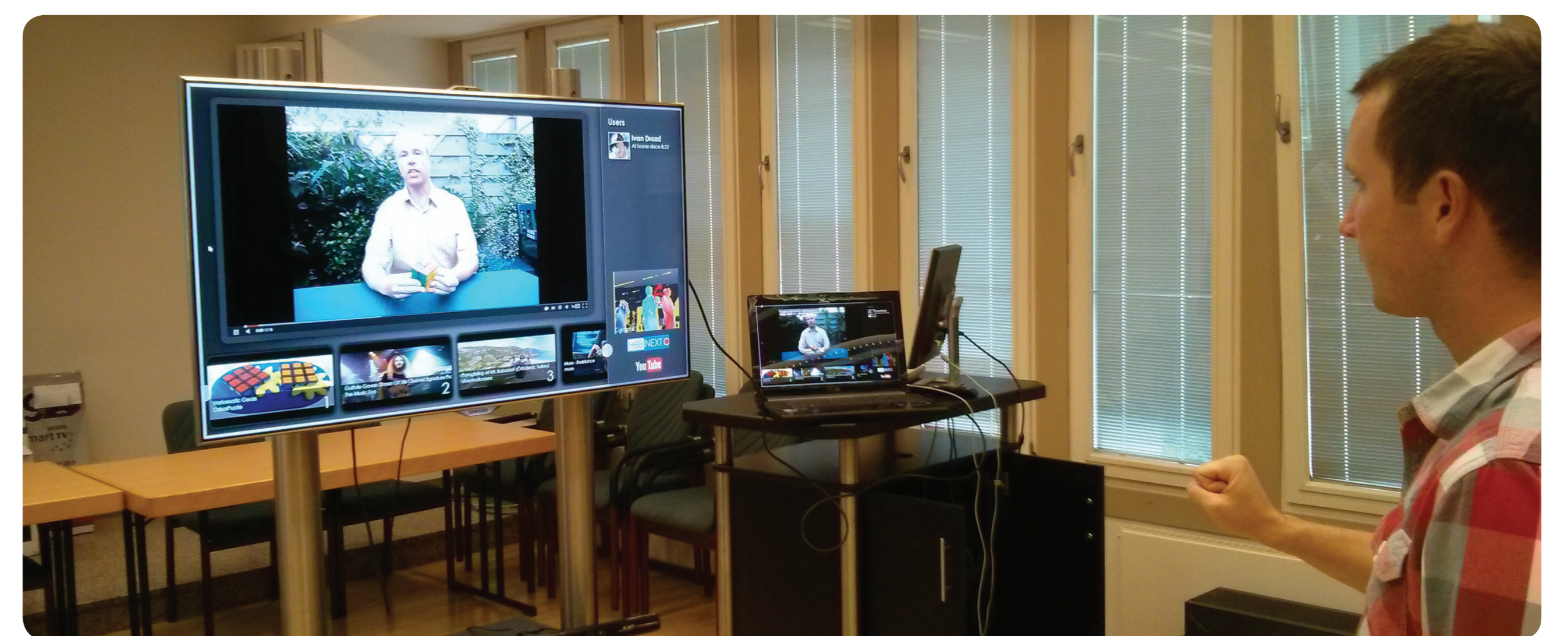
GESTURE CONTROL

We have created an application demonstrating the gesture recognition-based control of the video player. The Kinect sensor allows to capture static and dynamic gestures which are processed by our in-house algorithms. Based on the YouTube API, the application allows to command the player as well as browse through the video recommendations provided by the well-known service. The user-friendly environment provides users with all the necessary information they need to make their choice. In order to allow user-tailored recommendations the application allows user login by means of face recognition (in development). Moreover, if more users are recognized the application provides recommendations to suit all of them, by merging respective recommendations of each user into one common recommendation stream.

3D VIDEO HYBRID DELIVERY

IP Streaming
DVB-S
left eye video for regular 2D play-out
right eye video for optional 3D play-out
hybrid stream synchronisation in HbbTV
3D reception

Hybrid delivery of 3D content enables new economic opportunities for 3D broadcast playout. Broadcasters can play out only one angle, e.g. the left eye video via DVB to reach a maximum audience in 2D. For those viewers, who have next generation HbbTV enabled end-devices the option to switch to 3D-mode can be offered, by streaming the second angle, the right eye video, via IP. The HbbTV application combines the videos and switches the TV to 3D mode. A DVB broadcast timeline enables this technology and provides the ability to synchronize media from different sources in a frame accurate manner – also for other applications. HBBNEXT has developed an integrated prototype, running an embedded set-top-box displaying content transferred over DVB-S and HTTP, played in hybrid 3D.

IMMERSIVE SECOND SCREEN SYNCHRONISATION

- Frame-accurate inter-device synchronization between DVB and HLS streams
- Novel peer-to-peer clock synchronization mechanism
- Automatic device and service discovery, no pairing necessary
- Tiled Streaming technology for scalable delivery of interactive UHD content to mobile devices
- Based on open and standardized protocols for simple implementation on all major platforms

In this joint demo between the FP7 projects HBB-Next and FascinatE we have implemented a second screen application that allows users to freely navigate (e.g. pan/tilt/zoom) around an ultra-high resolution video panorama on a second screen device, which is synchronized with a DVB stream shown on a TV. Using this technology, users have the freedom to navigate spatially through a football match, without missing any of the action on the main TV screen, or can zoom in to specific musicians while watching a concert or festival registration, while watching the director-controlled feed shown on the main TV screen. The demo combines a new method for hybrid media synchronization with peer-to-peer clock synchronization and Tiled Streaming technology.