

# Location Based Video Flipping: Interactive Prototype navigated by HbbTV remote control

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## ABSTRACT

We present a geospatial navigation concept for browsing videos according to their tagged geographic location. The proposed application is derived from two modi operandi for selecting video content: While continuous, yet one-dimensional flipping through listed video clips can be controlled with a regular HbbTV remote control, the discrete selection of video clips that are positioned on maps according to their tagged location is usually done with mouse and cursor. The proposed concept combines the ease of use of a remote control in a lean-back setting and the precision of selecting videos on maps.

## Author Keywords

Devices & Interaction Techniques, HbbTV, Location Flipping, Location Based Services, YouTube API, Remote Control, Lean Back Setting

## ACM Classification Keywords

H.5.m. Information interfaces and presentation

## INTRODUCTION

Combining the ease of use to navigate small amounts of video clips with simple navigation devices with the benefit of accessing huge numbers of clips is a challenging task [1]. We introduce the term “location flipping“, which stands for toggling through videos on geographical maps while benefitting from the ease of use of a remote control sufficient in lean back settings. Universally known flipping corresponds to hopping through lists of television channels. In more interactive settings as in Web TV users are able to choose from videos that are positioned according to the videos geospatial location on a geographic map. However, the ease of use of a remote control is not provided. Thus, location flipping aims to combine those both paradigms for navigating geospatial content with a regular HbbTV remote control in a lean back setting. Since standard HbbTV remote controls are equipped with a four way navigation and four colored buttons for additional functions, they will be used for the proposed application.

We present the prototype of a novel interface for lean back remote control navigation and selection of videos on maps and the corresponding implementation for retrieving video clips depending on their geographic content on a map.

## RELATED WORK

Flipping through a finite variety of channels on a TV set is a well-known task during habitual video browsing. Here, a remote control offers few buttons and is favourable for that kind of lean back environment. In contrast, lean forward settings allow the navigation of an infinite amount of potentially more suitable video clips. However, a more advanced navigation and consequent user involvement will be necessary [2]. The already existing approaches for selecting video content that are presented on maps with the use of a remote control lack among other things the feature of video previews.

## USER CENTERED DESIGN PROCESS

To determine user expectations of location based zapping and generate insight for developing this novel lean back interface, first a questionnaire was conducted. While gaining insight into user behaviour, adequate participants for the following workshop were recruited. Subsequently an analog prototype was developed and evaluated. Following the workshop the here presented interactive prototype was implemented and evaluated.

## USING A HBBTV REMOTE CONTROL

To navigate interactive items on a TV screen, most applications use the remote controls four way navigation consisting of four cursor keys grouped around a center button as well as four colored keys. Also the workshop proposed navigating the four cardinal directions with the four cursor keys on the HbbTV remote control.

## INTERACTIVE PROTOTYPE

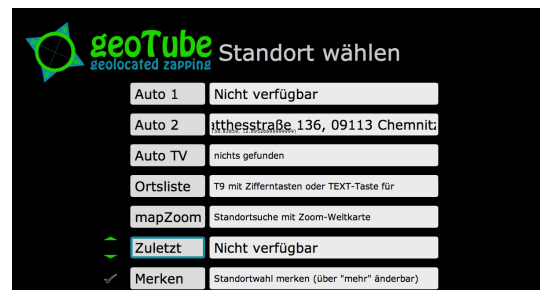


Figure 1. Digital Prototype – Selecting Locations

The application is started by the menu of the receiver. The text input is realized by the receivers remote control numeric keys. To ensure the readability of the font, overlong text is scrolled like a ticker.

The application offers a variety of modes to select a location. After an initial location is selected, surrounding clips can be navigated by the remote controls four direction pattern (figure 1).

- *Auto 1 and 2*: With the help of the receivers IP address and two free usable services, the geographic position of the viewer is detected by a database. Any queries will only be send in case of a changed IP adress.
- During a continuous TV program, the function *Auto TV* will search for specified words in the description of the current watched show.
- The *List of locations* enables the search of available locations through text input via an on screen virtual keyboard.
- The active selection of locations and zooming in a map by numeric keys is available by choosing the function *mapZoom*.
- The function *last* makes the latest used geoposition available.
- Users are able to *save* their current geoposition within the application by selecting the function.

represent the nearest video clips to the selected clip and are overlaid by their titles. More functions can be accessed with the four colored menu items present in the lower third of the screen, that are refered to by the four color buttons on the HbbTV remote control. By pushing the red button, a navigable map of the currently picked area is shown. The green key offers several filtering options for the retrieved video clips and the yellow one a list of all search results. The blue button is reserved for yet to be determined features like favorites, location selection or other informations.

### FUTURE WORK

The goal of the proposed interactive prototype was to determine if users find the idea of location zapping useful and whether our proposed navigation concept for flipping location based video clips is suitable for that application. Indeed, the concept is efficient and feasible, however a variety of future functionalities has to be considered due to the constraints of a HBB TV remote controls. Although, parameters like the search distance threshold, duration, creation date as well as search and input of a position need to be included.

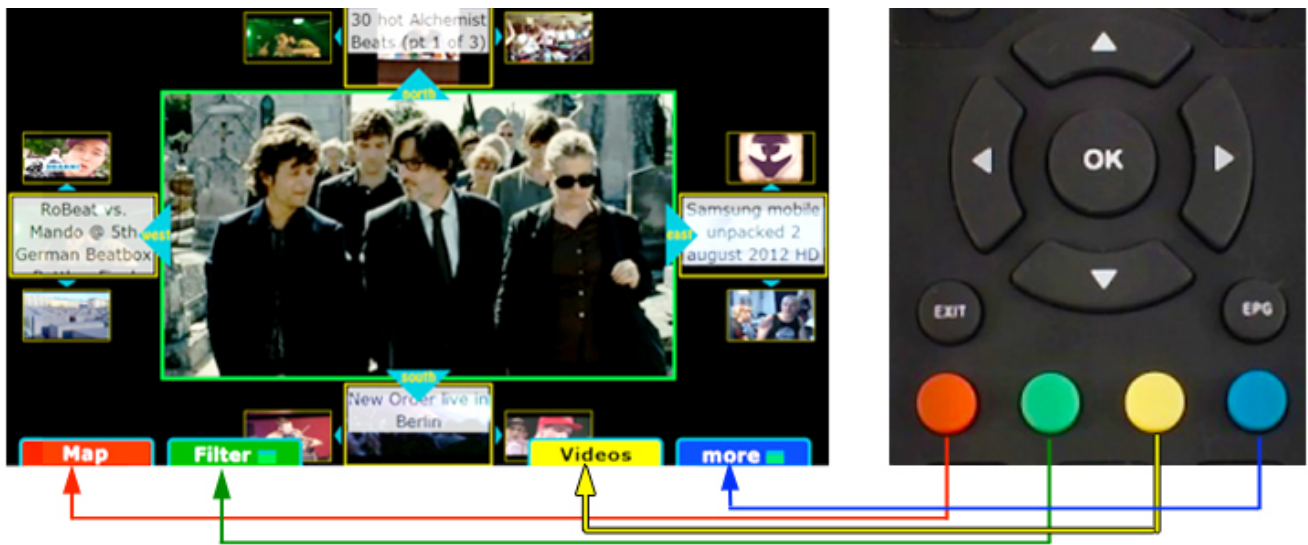


Figure 2. Digital Prototype - Main TV-view

After choosing a location, the main view of the application is started (figure 2). The video clip, that is nearest to the selected geographical position, is provided as the biggest thumbnail in the middle of the screen. This video can be scaled to full screen mode and a provided timeline enables the user to fast-forward and rewind. This centered video clip is surrounded by four more video previews in the north, south, east and west attached to four triangles representing the cardinal directions. Those triangles are marked with the words north, east, south and west to increase their meaning and can be accessed by the remote controls arrow keys. In addition, two more but smaller thumbnails are positioned above and below of each cardinal one, which display a preview of the subsequent video clips. The shown previews in north, south, east and west

### REFERENCES

1. Knauf, R. et al. 2010. Constraints and simplification for a better mobile video annotation and content customization process. *Workshop Proceedings of the EuroITV*.
2. Berger, A. et al. 2011. Moody Mobile TV: Adding Emotion To Personalized Playlists. *Proceedings of the Mobile HCI Conference*.