

# “It’s going to be havoc”: Shared control of a TV display

Will Seager  
University College London  
Gower St, London, WC1E 6 BT, UK  
w.seager@cs.ucl.ac.uk

Hendrik Knoche  
University College London  
Gower St, London, WC1E 6 BT, UK  
h.knoche@cs.ucl.ac.uk

## Abstract

This position paper presents observations from an evaluation study of a novel interactive TV system, in which multiple people used their personal mobile device to control a shared TV display.

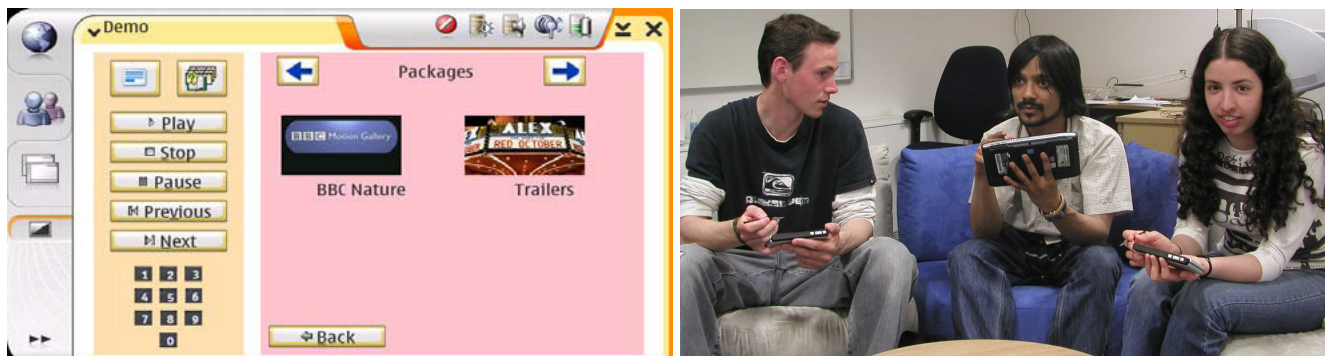
## Introduction

A number of commercial software products and research prototypes allow users to interact with their home television system using a mobile device. Some products allow mobile devices to act as universal remote controls (Clicker). Others provide access to TV-based services outside the home allowing users to programme personal video recorders (Sky + Remote Record) or view content stored at home (Slingmedia). With one research prototype, mobile devices are used as input devices to annotate or edit TV content (Cesar, Bulterman & Jansen 2006). Other potential forms of integration between mobile devices and TV systems include identification of viewers for personalization or billing purposes, or use of mobile devices as additional displays within the household.

One possible implication of mobile phone/TV integration is the presence of multiple remote controls within range of a single shared TV display. Should TV systems simply allow each mobile phone to act as remote control with equal rights to control what’s on the shared TV display? Or should the system employ a more sophisticated control model? This paper presents a user trial of a novel TV system in which multiple users were able to control what appeared on the main TV screen using a personal mobile device. It provides some preliminary results from the user evaluation of the system, focusing on the theme of shared control of the single TV display.

## Method

Twelve groups of friends with up to three people participated in the study as paid subjects. A total of 27 people took part in sessions that lasted for 90 minutes and were audio and video recorded. The viewing environment consisted of a prototype server, three hand-held control devices (activators) and a small library of content.



**Figure 1:** Example browsing interface to the content on an activator (left) and trial participants in a social setting (right)

Each activator had a prearranged set of packages available on it. The content that was available to the group members was overlapping but some content was available to some group members but not all of them. The shared display was a 50" 16:9 screen.

Each group member was given a control device. They were asked to imagine that these were their personal devices that they could carry around with them. They were walked through the necessary functionality on the device and encouraged to explore the system during the scenarios and to comment on the features or any problems they might run into at any time. All of the scenarios implicitly included the parallel use of the activators with the shared display. Use of the system was followed by a group discussion and individual questionnaires.

## Results

**Conflict:** Many participants believed that multiple controls would lead to conflict between viewers, particularly amongst children "If you introduce two or more remote controls, it's going to be havoc". They did not believe that viewers would discuss their viewing choices before triggering changes. "So [normally] when people decide what to watch they talk about what to watch...so in that case it's not adversarial, but in this case it is. Because you're not talking about what you're doing and there's no disclosure. It's just bam and the program has changed". During the viewing sessions, there were very few examples of participants discussing clips before playing them. To the extent that participants did discuss what to watch next, they almost always did so by temporarily sharing a personal device e.g. with one participant leaning over to show another a particular clip on his/her personal device.

**Need for transparency:** Participants in groups of three were keen to know who had triggered a particular event on the shared TV display. They frequently asked who had triggered a particular clip. Even in two person-groups, participants could be confused about who had played a particular clip if both users played clips at the same time. As well as wanting to know who had triggered a particular event, there was a desire for information about the clips triggered by other people e.g. several wanted to see the current clip indicated on their own personal device by a grey perimeter & wanted access to any metadata associated with the clip.

**One control device:** Some participants suggested that one device – e.g. belonging to a parent or host - should act as the single control device. Other devices could be used to browse content and access other STB-based services but only one device could control the shared TV display.

**Control hierarchy:** Several suggested some form of hierarchy between the control devices. In one scenario, one user has a master remote and can give and take control from other users. Another suggestion was to pre-establish a hierarchy between devices so that each was able to control the shared display, but when there was more than one person around a particular display, one device would be designated as the master control. Alternatively, the control device that closest to the shared display could become the master controller.

**Passing control:** In another scenario, control could be passed between devices. This would allow individual users to directly display content that was only stored on their own personal device and also to retain possession of their device.

**Voting and shared playlists:** Other possibilities include a voting system where each viewer was able to vote for the clip they wanted and a version of the traditional pub jukebox where each viewer could add content to a shared playlist.

## References:

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