

# Media Gallery TV — View and Shop your Photos on Interactive Digital Television

Sabine Thieme  
CeWe Color AG  
Oldenburg, Germany  
thieme@cewecolor.de

Ansgar Scherp  
Oldenburg R&D Institute for  
Computer Science Tools and Systems  
(OFFIS), Oldenburg, Germany  
scherp@offis.de

Melanie Albrecht, Susanne Boll  
Department of Computing Science  
University of Oldenburg  
Oldenburg, Germany  
boll@informatik.uni-oldenburg.de

## ABSTRACT

In this paper, we present the *Media Gallery*, a MHP-based interactive multimedia application on digital TV. This application allows customers to view and order their digital photos and to order physical prints and fun products from these digital photos directly from TV. The Media Gallery opens a new distribution channel and market opportunity for the photo finisher and a platform to comfortably view and order their digital images directly on their TV.

**Categories and Subject Descriptors:** H.5.1 [Information Interfaces and Presentation]: Multimedia Information Systems; H.5.2 [User Interfaces]: Screen design; H.5.2 [User Interfaces]: Input devices & strategies

**General Terms:** Design, Human Factors, Management

**Keywords:** DVB, MHP, digital TV, interactive multimedia application, photo service

## 1. INTRODUCTION

Digital TV has recently reached many households in different countries. Via cable, satellite or terrestrial transmission channel the digital television signal is broadcasted, e. g., using the Digital Video Broadcast (DVB) technology [1], and decoded by digital TV receivers like set-top boxes at the end user's site. Set-top boxes not only allow for watching digital TV, but more and more serve as a platform for interactive TV-based applications. The most promising platform we find here today is the Multimedia Home Platform (MHP) [4], an open standard for interactive TV middleware. This platform enables to run Java applications on set-top boxes in a secure execution environment. These applications can be broadcasted via DVB to the homes, like regular TV programs, and be executed on the local set-top boxes. Consequently, a middleware like MHP moves television from a passive TV consumption device to a highly interactive multimedia platform. In combination with TV program and a return channel (via modem or DSL), MHP provides an infrastructure towards a networked interactive multimedia center. Running applications on a TV comes with specific requirements, especially to the user interface design, as it is no longer a mouse or keyboard but a remote control that is used to navigate and control the applications—a requirement which has to be carefully addressed by the screen and interaction design.

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MHP-based applications pick up the users where they usually spend a lot of time anyway: in front of the TV. In cooperation with CeWe Color [2], Europe's largest photo-finisher, we developed the interactive MHP application *Media Gallery*. The Media Gallery allows the customers to upload and view their digital photos and to order physical prints and fun products, like t-shirts and mugs, directly from the TV. With this application, the photo-finisher CeWe Color achieves a new distribution channel and market opportunity arising from the technology of interactive applications on digital TV.

## 2. DIGITAL VIDEO BROADCAST & THE MULTIMEDIA HOME PLATFORM

Today, the Digital Video Broadcast (DVB) technology [1] is already widespread and commonly used. The analogue broadcast signal is costly substituted by DVB, not only for reasons of technical ability and higher efficiency (up to four digital TV programmes can be transmitted in one analogue channel), but due to the enormous potential DVB offers to build up a new market by providing support to transmit arbitrary digital data, including interactive TV applications, instead of just common TV streams. The purpose of the Multimedia Home Platform (MHP) [4] is to provide a common platform for receiving such digital data and executing Java-based applications on digital TVs (see Figure 1). By this, a horizontal market for TV broadcast and communication networks is enabled.

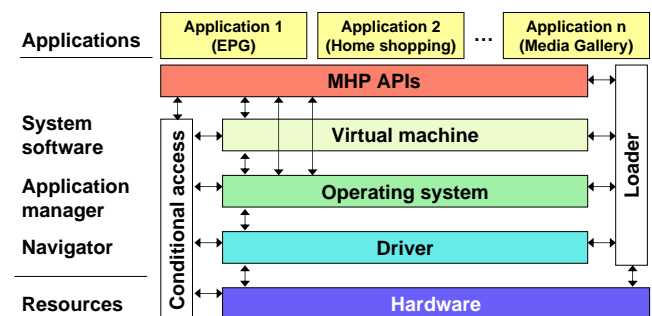


Figure 1: MHP platform architecture

The MHP is supposed to let applications look and used in the same way on any MHP-enabled DVB receiver. The applications are either broadcasted via DVB or can be loaded

with the return channel. To allow Java applications to be executed by the MHP they must implement the so called Xlet-API. This API allows the MHP to control the application's lifecycle, enforces the memory limitations, gives access to service information, and provides for drawing objects on the screen, and gives access to communication resources.

### 3. THE MEDIA GALLERY

With the advent of digital cameras, billions of digital photos are shot. So far, the photo-finisher CeWe Color provides a *Home Photo Service* [2] for their customers to order prints and other physical goods of their digital photos online and have them delivered either by regular mail or to a photo shop near by. With our Media Gallery, this application moves towards digital TV, opening a new distribution channel and market opportunity for sharing and printing digital photos. Using the Media Gallery, a user can view digital photos that have been uploaded to a Web album or copied directly from a digital camera onto the user's set-top box. The Media Gallery allows to browse through the different albums, viewing them as thumbnails, in full screen images as well as in user defined slideshow. Figure 2 depicts a screenshot of the Media Gallery, showing the thumbnail view. In this view, a user can select pictures of an album for ordering prints.



Figure 2: Ordering prints from TV

### 4. USER INTERFACE DESIGN ISSUES

Controlling interactive applications on digital TV by a remote control is a challenging task and requires a very good user interface and usage design. For using the Media Gallery, the user has to log in by entering his or her email address and password. To provide help for inserting letters of the email address and password with a remote control, we created a T9-like<sup>1</sup> text input metaphor as is well known from mobile phones. The four colored keys of the remote control are directly mapped to the main control functions of the Media Gallery such as activating the main menu, switching to another screen, or displaying some help information. The T9 input metaphor still seems to be quite uncomfortable, especially for elderly people. Therefore, we are currently

<sup>1</sup>T9 is a Registered Trademark of Tegic Communications.

implementing different alphanumeric input metaphors and evaluate their usability for interactive digital TV.

### 5. ARCHITECTURE & IMPLEMENTATION

The architecture of the Media Gallery and the client/server communication between the MHP application and the back-end server at CeWe Color are illustrated in Figure 3. The Mediator module in the center of the client application controls the various modules which are responsible for Media Gallery's functionality. These modules realize the different views of the Media Gallery such as Login, Slide(show), Cart, Thumb nail view and Order.

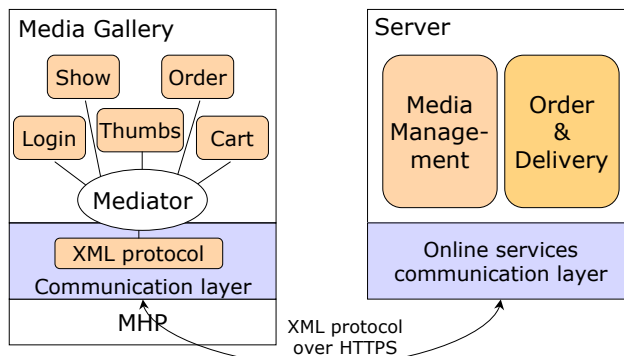


Figure 3: The system's architecture

The communication between the client and the photo finisher's server is processed by a separate communication layer. The server's configuration provides an HTTPS connection to exchange the application data in XML format. A provider-specific XML-protocol encapsulates the requests to the Media Management as well as Order & Delivery interfaces at the server to retrieve the user's albums and thumbnails but also to place orders.

### 6. CONCLUSIONS

In this paper, we presented our interactive MHP-application MeGa: Sitting comfortably with one's friends and family on the settees, users may now watch their pictures and order prints directly from TV. The Media Gallery represents an interactive digital TV application of tomorrow and will be introduced as a commercial service by CeWe Color. With the wider availability of MHP capable set-top-boxes providers such as CeWe Color can offer interactive photo services on the TV and use the techniques to put their economical potential into practice.

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