Discot: A Platform to Approach Information Society to Everyman Users

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ABSTRACT

Information society offers the possibility to access content and services, to make business, to communicate people. However not everybody have the skills required to use a PC in order to access these new services. The group of users that are let out of this information society is called the digital gap. On the other hand, we have television sets, a platform with a huge penetration that everybody is capable of using, but with not so many applications.

Actions taken to reduce the digital gap, usually imply trying to make PCs more accessible to everybody. In this paper, in the contrary, we propose an approach where applications are moved into the television environment, so that users do not require new skills to interact with this new content. In this paper we present the architecture of an advanced media center that makes this approach possible.

Categories and Subject Descriptors

H.5.1 [**Multimedia Information System**]

H.5.2 [**User Interfaces**]

General Terms

Design, Experimentation

Keywords

Advanced media center, Digital gap, Interactive TV, smart homes, Internet TV

1.INTRODUCTION

Advances in personal computers and Internet connections have made possible what is now known as Information Society. However, not everybody is included in this digital society. In order to have access to these new contents, it is necessary to have access to Internet and some skills with computers. Although the possibilities offered are huge, the number of persons that have access to them is limited. This is known as the digital gap.

The traditional way to reduce the digital gap is adding "accessibility options" or adding new items to the different menus that should do things easier. In [1] a new approach is presented in which software complexity is reduced to offer just the functionality required by unskilled users. In this work we go a step further; in addition to maintaining the interface simple and giving very specific functionality, we think that changing the platform in which the services are offered is crucial. People are afraid of the PC, but they feel comfortable wit the television.

Moreover there is still an interest in the success of television as a platform to execute applications. Governments see it as a good way to offer services to everybody. The fact that almost 100% of the population has access to a television set and 80% of the population has a telephone line to be used as a return channel makes this platform a very attractive way to offer t-government and t-health services [5].

A lot of research has been done on how to design interfaces for television. It is well known by anyone who designs applications for television that it is a complete different world from PC [2]. Not only the attitude of the user is different, as in the television he is more relaxed and passive, known as lean-back attitude, but also the characteristics of the monitors are also different. Thus, the graphical design must be done taking these facts into account [3] [4].

With the lack of massive deployment of standard broadcasted applications (deployment of MHP was a failure in Europe), the responsibility to fulfill all these expectations of the television being a platform for interactive applications relies on media centers. Devices as MythTV, Tivo and Windows Media Center are popularizing the concept of having a computer connected to the television. These media centers, which up to date are centered on media content, in combination with the concept of smart homes, intelligent devices and the protocols related to them (such as UPnP: Universal Plug and Play [7] and OSGi: Open Services Gateway initiative [8]), provide the perfect environment on top of which a set of useful and easy to use applications for everyman user can be built.

In this demo we present Discot, a media-center-like software that provides the adequate platform to offer new applications and services on the television. In contrast with other media centers that focus in the media content, and delegate other tasks to the operating system, Discot aims at offering a full solution for set-top boxes, trying to depend as less as possible on other
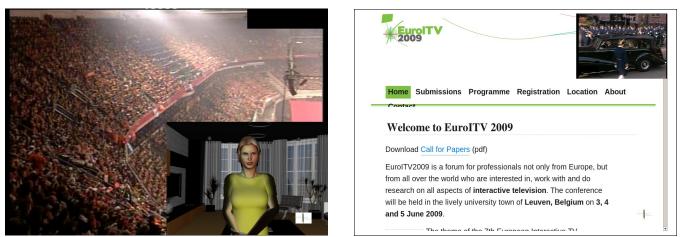
Figure 1. Two examples of scene composition. On the left the avatar is scaled to one quarter of the screen area. On the right the television widget is scaled to keep the focus on the browser.

applications available on the underlying operating system. The platform tries to use as many standard protocols and specifications as possible to make it compatible with an horizontal market.

2.SYSTEM DESCRIPTION

Two applications have been integrated: a web browser and an avatar. The web browser offers the possibility to present already existing information on the television. Even though the web browser is capable of rendering HTML and executing some JavaScript code, existing web content is not adapted to be presented on television, and therefore the browser should not be considered as a general purpose Internet browser, but as tool to access specific adapted portals. The avatar will offer a multi-modal human computer interface [6] that complements the traditional menu-based system.

More functionality can be added by providing new plug ins to the platform. The API available to develop new plug ins, automatically makes them controllable with UPnP protocol, and offers an easy way to compose the scene with the TV screen.

3.Demo Scenario

The scenario where this demo takes place is in a relatively intelligent environment, i.e. a house with a home network, with some smart devices interconnected. In this intelligent environment the TV would be used as the interface to interact with the system.

In this scenario we will present two different use cases. A screen shot of each of them can be seen in Figure 1.

◆**Doing exercises:** In the first use case, the user actively initiates an interaction with a service provided in the platform. In this case the user is an elderly person to whom the doctor has told to do some exercises to keep fit. But this time, instructions to do the exercises are not given in a paper with some images, but he can follow a virtual monitor (an avatar) on the TV that does the exercises at the same time as he does. With a text to speech synthesizer, the avatar gives adequate instructions, and it is also possible to select different point of views.

◆**Supervising home status:** The user has configured the smart home to keep some comfort values. For example it has been set to

keep the temperature over 20ºC. However, and even the central heating is on, the temperature keeps going down and now it is on 19ºC. The central systems analyses the information from all sensors in the house and detects that a window is opened. It then presents a warning on the TV indicating this situation. The user then can close the window. Other kind of notifications are possible in this scenario. Note however, that the demo presents the possibility to use the TV as an interface for the whole system, but that the sensors and the intelligence of the system is emulated in an OSGi framework.

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