

Digital TV as a Tool to Create Multimedia Services Delivery Platform

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INTRODUCTION

Digital TV-based communication systems provide cost-effective solutions and, in many cases, offer capabilities that are difficult to obtain by other technologies (Elbert, 1997). Hence, many books and papers on digital television (TV) and content distribution networks have been published in recent years (Burnett, 2004; Collins, 2001; Dreazen, 2002; ETR, 1996; Hulicki & Juszkiwicz, 1999; Mauthe & Thomas, 2004; Scalise, Gill, & Faria, 1999; Seffah & Javahery, 2004; Whitaker & Benson, 2003). None of them, however, provide an exhaustive analysis of the service provision aspects at the application layer. Therefore, this contribution aims to fill that gap with a comprehensive view on the provision of services on digital TV platform which can serve as the multimedia service delivery platform (MSDP) that can provide a unified tool for the optimized exchange of services between users, operators, and service and content providers.

MULTIMEDIA SERVICES ON TV PLATFORM

Digital video broadcasting (DVB) is a technology readily adaptable to meet both expected and unexpected user demands (DVB, 1996; Raghavan & Tripathi, 1998) and one can use it for providing the bouquets of various services (Fontaine & Hulicki, 1997; Hulicki, 2001). Because it is still unclear exactly which multimedia services will be introduced, and how the advent of digital technology alters the definition of the audio-visual media and telecoms markets and affects the introduction of new services, one has to consider a number of various aspects and issues dealing with definition, creation, and delivering of digital TV services. The article does introduce common technology features of DTV and describes different perspectives on SDP as well as the business and technical influences that drive its evolution. Two most important factors

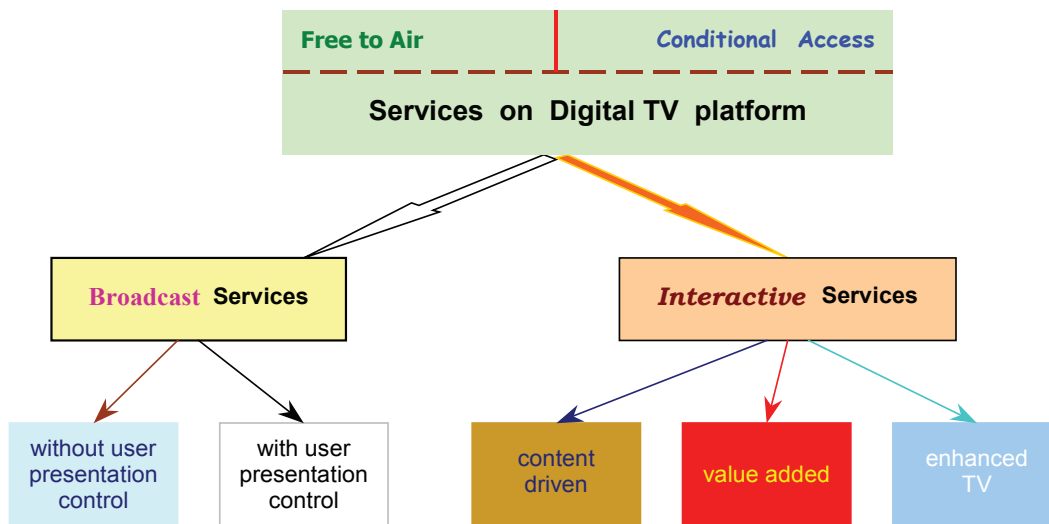
that can be used to package network capabilities and services into offerings are the management and sales of services. One can also use them to track service usage, in order to identify opportunities for improvement and additional sales. Under consideration will be also a question of the possible substitutions of products and services which, previously, were not substitutable, and now result in new forms of competition.

Digital Multimedia TV Services

The advantage of digital TV (DTV) platform is the ability to provide a rich palette of various services, including multimedia and interactive applications, instead of providing only traditional broadcast TV services (Hulicki, 2000). In order to explore different services that can be provided via DTV systems, a generic services model is to be defined. This model will combine types of information flows in the communication process with categorization of services.

Depending on different communication forms and their application, two categories of telecommunications services can be distinguished on digital TV platform, that is, broadcast (or distribution) and interactive services (cf. Figure 1). These categories can be further divided into several subcategories (de Bruin & Smits, 1999); that is, the distribution subcategory will include services with and without individual user presentation control, while the registration, conversational, messaging, and retrieval services will constitute a subcategory of the interactive services. The interactive services will be the most complex because of numerous offerings and a widely differing range of services with flexibility in billing and payment (Fontaine, 1997). The huge popularity and commercial success of the content and media-based services, such as music and ring-tone download services, video-clip services, and combinations of these services, has created a unique set of forces that influence the evolution of service delivery platforms. Therefore, MSDP must today be able to (Johnston, 2007):

Figure 1. TV services categorized according to the form of communication



- Add content assets to operator service offerings;
- Manage transcoding, adaptation, and digital rights management (DRM); and
- Provide business intelligence, in order to show content owners how their content is performing in operator channels.

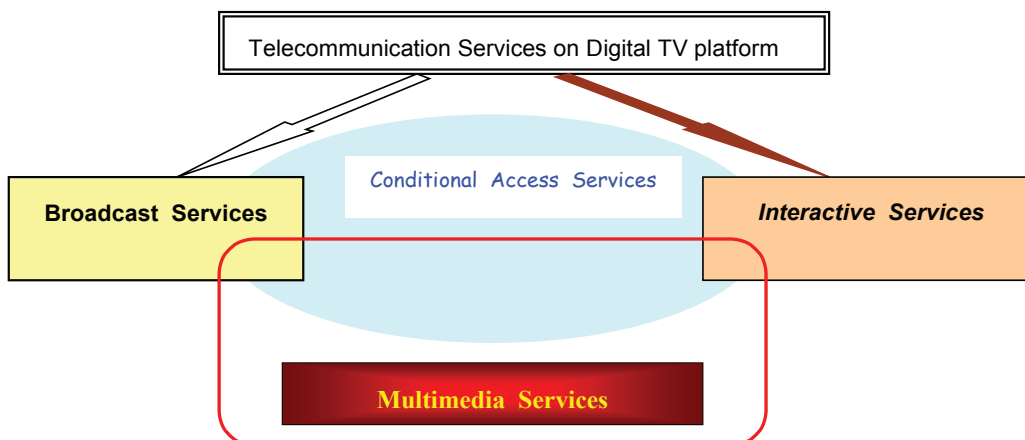
However, based on the object and content of services some of them will refer to multimedia services whereas the others will continue to be plain telecommunication services (cf. Figure 2).

On the other hand, depending on the content’s economic value, some of these services may be provided

via a conditional access (CA) system and will constitute the category of conditional access services. CA system ensures that only users with an authorized contract can select, receive, decrypt and watch a particular TV programming package (EBU, 1995; Lotspiech, Nusser, & Pestoni, 2002; Rodriguez & Mitaru, 2001). None of the networks currently in operation gives the possibility of providing all these services, but digital TV seems to have a big potential for this (Hulicki, 2002).

The traditional principle of analog television is that the broadcaster’s content is distributed via a broadcast network to the end user, and with respect to these kinds of services, television can be considered a passive medium. Unlike analog, digital TV enables more

Figure 2. A generic service model on digital TV platform



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