

The Essential Guide to Digital Set-top Boxes and Interactive TV

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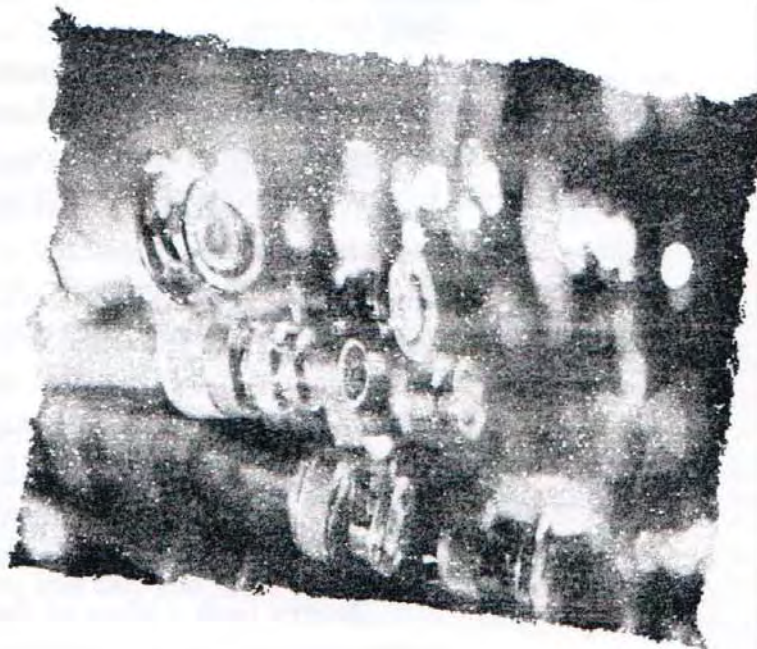
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1

Overview of Digital TV

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The tremendous potential of digital television is attracting interest from telecommunications providers, computer manufacturers, network providers, consumer electronic companies, and broadcasters around the world. Pay Per View, high speed Internet access, video on demand, cable telephony, and e-commerce represent a portion of the new money spinning ventures in which industry firms are investing increasing amounts of dollars and resources. This chapter acts as a foundation block for the technology discussions that follow in later chapters. Here, we introduce the basic concepts and benefits of digital television. Then we introduce the various international standard bodies that are involved in establishing sets of technical specifications for implementing digital TV systems throughout the world. Finally, this chapter provides you with some detailed information about how the components of the digital broadcasting environment work together.

TERMINOLOGY

Before entering a detailed discussion about digital television systems, it is important that you understand a number of industry-specific terms. Here's a short list of the most important ones.

Head-end • An industry term that is used to describe a TV operator's main operations center.

Set-top box • A set-top box may be defined as a consumer electronics device used to decode and tune digital signals and convert them to a format that is understood by your television.

MHz • MHz is an abbreviation for megahertz. One MHz represents a million cycles per second. The speed of a processor in a digital set-top box (defined below) is measured in MHz.

Bandwidth • If you have ever waited for a page to download into your PC on a Saturday evening, then you're already familiar with the concept of bandwidth. Think of bandwidth as a pipe that carries information. The less bandwidth you have, the longer the time it will take to download a Web page onto your PC.

Return path • Many of the digital TV services on offer require some form of interaction between the subscriber and either the program provider or the network operator. This interaction may consist of transmitting a couple of user commands but can be as extensive as the communications required by a telecommunications link to the Internet. The term "return path" is used to describe the physical channel that facilitates this two-way interaction.

Protocol • A protocol is a formal description of the messages that need to be exchanged and the rules that need to be followed for two or more systems to exchange information.

Network service provider • Many of the cable, microwave multipoint distribution services (MMDS), terrestrial, satellite, and broadcasting companies are beginning to move into the telecommunications sector to offer a variety of services that have not been associated with their traditional TV-based offerings. Consequently, in this book we sometimes refer to this group of companies as service providers or network service providers. A network service provider will not only manage the network infrastructure, but will also control the various services that run over its high-speed networks.

WHAT IS DIGITAL TELEVISION?

Digital television, commonly known as digital TV, is a completely new way of broadcasting and is the future of television. It is a medium that requires new thinking and new revenue-generating business models. Digital TV is the successor to analog TV and eventually all broadcasting will be done in this way.

Around the globe, cable, satellite, and wireless operators are moving to a digital environment. Affiliates of the four major networks in the United States—ABC, NBC, CBS, and Fox were slated to begin digital broadcasts by November 1999. By 2006, the Federal Communications Commission (FCC) in the U.S. has mandated that no more analog television signals be broadcast. In Europe, the digital TV train is also rolling out of the station, with broadcasters in France, Ireland, Spain, Germany, Holland, and the U.K. planned to launch digital technologies in 1999. Most industry analysts are predicting that the transition to digital TV will be an evolution rather than a revolution, changing the way of life for hundreds of millions of families around the world.

Companies are acknowledging that the convergence between personal computers, TV sets, and the Internet has already begun and are positioning themselves to maximize revenue from this new computing paradigm.

For consumers, the digital age will improve their viewing experience through cinema-quality pictures, CD-quality sound, hundreds of new channels, the power to switch camera angles, and improved access to a range of exciting new entertainment services. Digital TV also gives subscribers the opportunity to enjoy more programming through cinema-style wide screen TVs. Gone are the days of choosing between a small range of channels. Television will become more fun and powerful to use, yet at the same time simpler and friendlier.

For the broadcaster, a move to a digital environment decreases the bandwidth utilization per channel, facilitates the offering of Internet applications to their subscribers, and opens a new era of business opportunities.

The new digital technologies will allow cable companies, satellite providers, and wireless broadcasters to offer a variety of powerful revenue-generating services, including:

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