

## Interactive Television

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***Digital Interactive TV and Metadata: Future Broadcast Multimedia*, Arthur Lugmayr, Samuli Niiranen, and Seppo Kalli, Springer, 2004, \$80, 254 pp., ISBN 0-387-20843-7.**

In the 1930s, television gradually found its way into consumers' homes. With the introduction of color TV in the 1960s, it became a widespread and highly accepted consumer product. It has taken another 40 years to bring a new innovation into the world of TV: the digitalization of broadcasting and the introduction of interactivity. This new technology requires that we rethink how broadcasting will evolve during the next few decades in terms of service concepts, interactive services, and broadcasting processes. Services such as video on demand, file downloading, and electric program guides are just the beginning. Interactivity lets the consumer directly interact with content and change the narrative flow of a presentation.

Besides digital interactive TV, the buzz word *metadata* (or data about data) has emerged in the world of multimedia. Metadata enables media management, content annotation, content packaging, and media search and retrieval. As the first book to deal with metadata in broadcasting, *Digital Interactive TV and Metadata* presents a new way to look at digital interactive TV. A special focus of the book is on the relationship between the consumer and broadcaster in the time of interactivity. The book nicely reflects standardization processes, new paradigms in broadcasting, metadata architectures, and visionary application developments.

The book also illustrates many new metadata-driven ideas from the technology, consumer, and content points of view. It conceptualizes a metadata-based broadcast architecture. The authors show a deep understanding of broadcasting and how to use metadata throughout the broadcast value chain. Even so, the book discusses more than technological issues—it also deals with application scenarios and service concepts.

### Part 1: Theory

*Digital Interactive TV and Metadata* is structured into two parts. The first part focuses on technology for metadata and includes a comprehensive overview of standardization efforts (including Multimedia Home Platform [MHP], MPEG-2, Digital Video Broadcasting [DVB], and Advanced Television Systems Committee [ATSC]), metadata fundamentals (such as MPEG-7, MPEG-21, Scalable Vector Graphics [SVG], and DVB-HTML), and system architectures for metadata (such as Web deployment architectures, the Simple Object Access Protocol [SOAP], and network protocols for metadata transmission).

This part is especially suited for teaching purposes and gaining an in-depth view of digital interactive TV. It gives a nice overview of metadata in broadcasting, which is currently hard to find in existing works. The MPEG-21 sections are especially interesting because they provide so much detail; descriptions in other literature remain rare. In addition, this book includes the first real-world application scenario of MPEG-21 that led to the idea of the digital broadcast item (DBI)—an MPEG-21-based, value-chain spanning metadata framework for delivering digital services to the consumer while minimizing production costs.

Chapter 3 gives a nice look into the theoretical foundations of metadata. It describes formal language theory and how metadata models are derived that manifest today in XML.

Chapters 4 and 5 give an excellent overview of how to deploy metadata in digital broadcasting systems. The chapters present complete system architectures of broadcast stations or Web-based feedback channel networks including their network protocols.

### Part 2: Applications

The second part focuses on innovations in digital TV, especially metadata-driven service concepts. This includes an overview of interac-

tive narratives as a potential for creating interactive story-telling environments. It also covers conditional access schemes, digital production and delivery, and consumer profiling and personalization. The second half concludes with a visionary scenario of *ambient TV*—that is, intelligent computer systems that are hidden from the consumer. In this scenario, a technical system will estimate what the consumer wants, rather than the consumer telling it what to do.

This second section nicely works out the concept of interactivity and narratives with views from different angles and includes how interactive narrations will evolve with the introduction of digital interactive TV. The authors illustrate their argument with application scenarios and accompanying examples relevant to the multimedia industry, especially digital rights management and personalized content.

For decision makers, this part offers an interesting discussion about digital TV as an innovation. S-curve models, business models, and customer research results make the metadata revolution a disruptive technology.

### Further considerations

This book, together with the accompanying Web site (<http://www.digitalbroadcastitem.tv>), provides a rich resource for educators. The book is especially suited for the engineering audience in the broadcasting world. For decision makers, the second part of the book dealing with business models and consumer research is especially interesting. Also, because the second part has so many embedded nuggets and pieces of knowledge, it's a nice resource for references and further reading.

As I read through this book, I found myself wondering, What will ultimately be the role of the TV environment? The book's last chapter forecasts that digital TV will be associated with different revolutions. The authors anticipate that the next revolution will be media convergence, followed by TV as an immersive and ambient experience. **MM**

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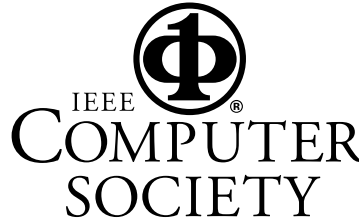
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