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Advanced Hybrid Broadcast and Broadband System for Enhanced Broadcasting Services

Digital TVs that connect to the Internet are becoming the rule rather than the exception and broadcasters are eager to make use of this expanded functionality to better serve their viewers. A paper, excerpted here, from the 2011 NAB Broadcast Engineering Conference (BEC, April 9-14, 2011, Las Vegas, Nev.) describes an effort underway by the Science and Technology Research Laboratories of the Japan Broadcasting Corporation (NHK) to develop an advanced hybrid broadcast and broadband system called "Hybridcast."

This paper, *Advanced Hybrid Broadcast and Broadband System for Enhanced Broadcasting Services*, was co-authored by Akitsugu Baba, Kinji Matsumura, Sigeaki Mitsuya, Masaru Takech, Yasuaki Kanatsugu, Hiroyuki Hamada, and Hisakazu Katoh, all with NHK. For their efforts, this group of co-authors was awarded the NAB Best Paper Award for "…a paper of exceptional merit published in the 2011 NAB BEC Proceedings." This award was presented at the NAB Technology Luncheon on Wednesday, April 13. Shown in the photo is Mr. Baba receiving the award from BEC Conference Committee Chairperson Dom Bordonaro of Cox Radio.


INTRODUCTION – NHK is developing an advanced hybrid broadcast and broadband system called Hybridcast to integrate broadband technology with broadcasting. Hybridcast provides many features, including precise synchronization of content from different delivery channels, support for third party applications and program presentation by seamless interaction among multiple device types, including mobile terminals. In addition, Hybridcast is designed to simplify the implementation of receivers by using server-side cloud computing technology. Compatibility with existing digital broadcasting systems is also provided.

NEW SERVICES AVAILABLE UNDER HYBRIDCAST – Broadcasting is the fundamental component of all the services described in this paper. Content elements and additional functionalities offered over broadband are for enhancement and enrichment of the existing broadcast services. One service is the multi-device linkage service, the purpose of which is to establish a convenient and personalized viewing environment by seamlessly working across multiple device types, including mobile terminals. To establish such an environment, an application on the terminal communicates and works synchronously with the application on a Hybridcast receiver. For example, a mobile terminal can be used as a remote control to manipulate Hybridcast content as shown in the figure at right. In addition, it can be used to access personalized services such as recommendations and bookmarking. In this case, a mobile terminal acts as a secondary display for watching TV.
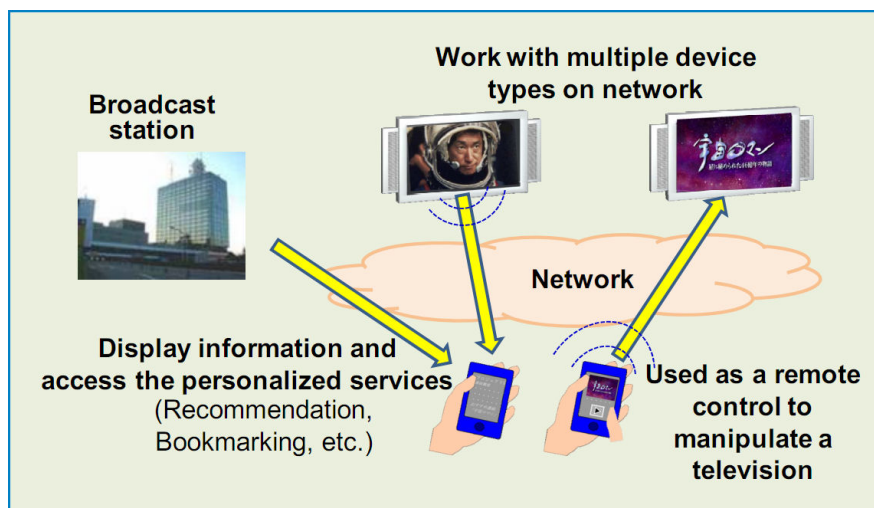
BASIC ARCHITECTURE OF HYBRIDCAST – The Hybridcast system consists of three blocks: broadcaster servers, service-provider servers and receivers (see figure below). The broadcaster servers broadcast content and content-related information, which only the broadcasters hold, to the service provider servers. The service provider servers provide applications, content and the relevant information to the receivers or end users; the broadcasters can provide services in this block as well. Hybridcast receivers execute applications to realize various services. Such an application-centric service enables a rather simple receiver implementation.
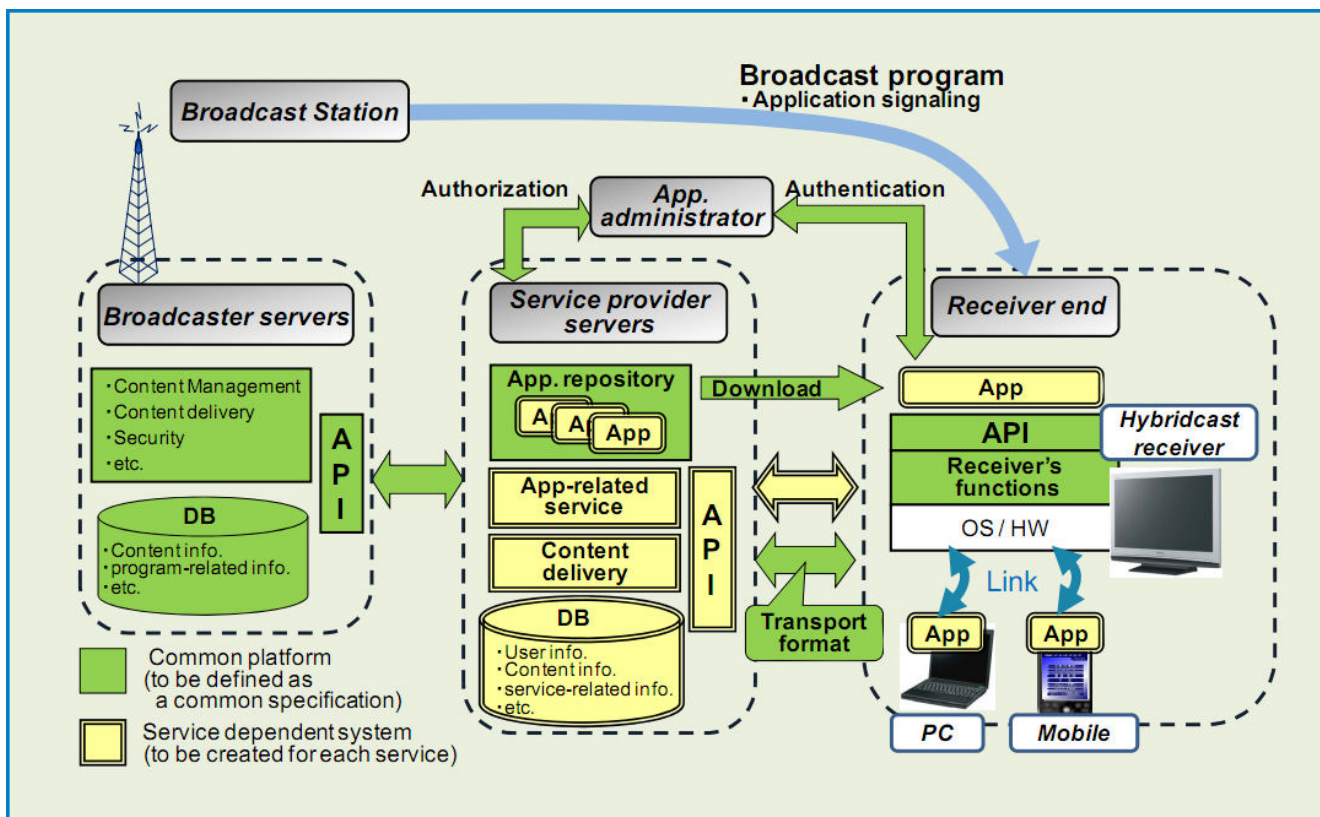
Applications executed on a Hybridcast receiver, called "Hybridcast applications," handle the broadcast content as well as the content and relevant information obtained from the service provider servers. The applications can also utilize receiver functions such as the synchronization and the multi-device linkage. These applications are available from a known application repository, and can be created by third parties as well as by the broadcasters and service providers. The participation of third-party application developers is expected to spawn a legion of developers and thereby increase the number of Hybridcast users. However, the authenticity of such applications is an important issue. In the case of some applications, an application administrator may require to authenticate and authorize them.

CONCLUSION – We propose the Hybridcast system that will provide new services using a broadcast–broadband combination. In this paper, examples of services enabled by Hybridcast, basic system architecture, and the key technologies used in the Hybridcast system are described. The feasibility and usability of Hybridcast services and the flexibility of the Hybridcast system architecture are verified by means of prototypes.

This paper is included in its entirety in the *2011 NAB Broadcast Engineering Conference Proceedings*, available on-line from the NAB Store. For additional conference information visit the NAB Show web page.

FCC to Conduct Training for Consultants on Communications Towers and Environmental/Historic Preservation Compliance

The Federal Communications Commission (FCC) is conducting a session for consultants on Tuesday, June 21, 2011 at their headquarters in Washington, DC on Communications

Towers and Environmental/Historic Preservation Compliance. Training will be provided by staff from the FCC, USDA Rural Utilities Service, NTIA, FEMA and the Advisory Council on Historic Preservation.

For additional information contact Steve DelSordo and to register contact James Swartz who are both at the FCC. To attend the session you must preregister.

Now Available: *2011 NAB Broadcast Engineering Conference Proceedings*
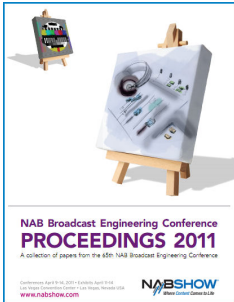
The selection of papers presented at the 65th NAB Broadcast Engineering Conference at the 2011 NAB Show include a variety of topics from ways to further implement and improve existing digital broadcasts to cloud-based technologies, emergency operations, 3DTV and the impact of innovative technologies on the broadcast industry.

Available as a book with CD. List price: $142. NAB member price: $120. CD-only list price: $95. NAB member price: $80. For details and to purchase, visit the NAB Store. Quantities are limited.

IEEE Broadcast Technology Society Extends Call for Papers Deadline

The deadline for the Call for Papers for the 2011 IEEE Broadcast Symposium has been extended to May 15, 2011. This year's Symposium will be held October 19-21, 2011, in Alexandria, Va. The Symposium Committee seeks timely and relevant technical papers relating to all aspects of broadcast technology, in particular on the following topics:

● Digital radio and television systems: terrestrial, cable, satellite, Internet, wireless
● Mobile DTV systems (all aspects, both transmission and reception)
● Technical issues associated with the termination of analog television broadcasting
● Transmission, propagation, reception, re-distribution of broadcast signals
● AM, FM, and TV transmitter and antenna systems
● Tests and measurements
● Cable & satellite interconnection with terrestrial broadcasters
● Transport stream issues – ancillary services
● Unlicensed device operation in TV white spaces
● Advanced technologies and systems for emerging broadcasting applications
● DTV & IBOC reception issues and new technologies
● ATSC & other broadcast standards developments
● Broadcast spectrum issues – re-packing, sharing

See the Call for Papers for additional information. This Symposium is produced by the IEEE Broadcast Technology Society.