

TOSHIBA REVIEW

2000. VOL.55 NO.12

Special Reports

Digital Satellite Broadcasting Services

Special Reports Digital Satellite Broadcasting Services	Feature Articles	Techno Notes	Epoch-Making Toshiba Technologies
<ul style="list-style-type: none">*Digital Broadcasting Services Leading a New Era in IT Infrastructure*Trends in Digital Broadcasting Services*Overview of Digital Satellite Broadcasting System*Video/Audio Transmission System and Server System*Automatic Program Control System*Service Information/Electronic Program Guide System for Digital Satellite Broadcasting System*Conditional Access System for Digital Satellite Broadcasting Services*Studio Equipment for Digital Satellite Broadcasting System*Authoring System for Data Broadcasting*Data Broadcasting System for Digital Satellite Broadcasting System	<ul style="list-style-type: none">*Cost Estimation System Using 3D-CAD Data*New Power Supply System Using UPS Integrated with Fuel Cell Power Plant*TOSMEC MEPIO™ Medical Billing Computer*"PLASMA SENZOU" Model GR-472K Refrigerator*Development of Helical Compressor for New Century*WHY Research Service: Marketing Service Based on VOC	<ul style="list-style-type: none">*Batteries	<ul style="list-style-type: none">*11. Opical Submarine Cable System

Special Reports

Digital Satellite Broadcasting Services

*Digital Broadcasting Services Leading a New Era in IT Infrastructure

MIYABE Yasuo

*Trends in Digital Broadcasting Services

TANAKA Makoto TANAKA Yutaka

Digital satellite broadcasting services start in December 2000. Digital satellite broadcasting enables broadcasters to provide high-definition television (HDTV) service with advanced audio coding (AAC) digital surround sound or multicasting of three standard-definition television (SDTV) programs, as well as data-casting.

This paper gives an overview of the development of digital satellite broadcasting services, and also introduces digital terrestrial broadcasting which will be launched in Tokyo, Nagoya, and Osaka from 2003.

*Overview of Digital Satellite Broadcasting System

BABA Toshio SHIMADA Masataka

After many years of experience in broadcast system development and studies of digital broadcasting technologies, Toshiba has developed a digital satellite broadcasting system with the concept "a broadcasting system based on digital and information system technologies." Data processing, encoder, multiplexer, and system switchover technologies were developed for the system. The system also includes subsets to provide electronic program guide (EPG) service, data broadcasting service, and conditional access service.

This paper provides an overview of Toshiba's digital satellite broadcasting system.

*Video/Audio Transmission System and Server System

NAGAIISHI Atsushi SHIMADA Hideyuki

Among the advantages of digital satellite broadcasting services are high picture quality, high audio quality, and multiple channels. High-quality broadcasts with digital high-definition television (HDTV) and surround sound become possible. Moreover, in the case of standard picture quality of the conventional broadcasting level, one broadcasting station can transmit a multiple number of programs up to a maximum of three and expand its service. Toshiba has developed the VIDEOS™ semiconductor memory unit for HDTV, incorporating a bit flash memory device of 256 Mbits.

We have developed and delivered a video/audio transmission system which realizes the advantages mentioned above, as well as a video/audio server (video audio file: VAF) system for high-quality HDTV pictures.

*Automatic Program Control System

NAGAI Kozo KOGURE Masaru MUNECHEKA Nobuhisa

We have developed an automatic program control system, which consists of data server (DS) equipment, an automatic program controller (APC), and alarm equipment. The DS handles various types of control data for broadcasting programs, and sends these data to the APC. The APC controls other equipment for broadcasting programs in 1-second units. The alarm system monitors the system and notifies an operator if a critical error occurs.

This system realizes automatic transmission according to the program schedule and can also handle urgent programming changes.

*Service Information/Electronic Program Guide System for Digital Satellite Broadcasting System

ISHIKAWA Takashi YAMAGUCHI Hideaki HARA Keiichiro

The electronic program guide (EPG) is one of the most distinctive functions in digital broadcasting. This function enables the TV monitor to display a program guide so that viewers can select the programs they wish to view or record via the EPG screen.

Toshiba has developed a system to transmit service information (SI) for a digital satellite broadcasting system in order to provide EPG. The system has such features as quick response to sudden program schedule changes, high flexibility to adapt to the expansion of the number of services expected in the near future, and high availability by means of a duplex system.

*Conditional Access System for Digital Satellite Broadcasting Services

YONETANI Toshiko YAMASHITA Mikio FUJIWARA Junichi

A conditional access system is a system that allows broadcasters to restrict their services so that they can be accessed only by their subscribers. There is strong demand from digital satellite broadcasters for such systems in order to provide pay-TV services, so that their services can be distinguished from various other services.

Toshiba has developed the Conditional Access System for Digital Satellite Broadcasting (D-CAS), based on the experience accumulated in developing conditional access systems for analog broadcasters. The system is designed to flexibly meet the different requirements of each customer, with minor modification of the application software and without changing the hardware components of D-CAS.

*Studio Equipment for Digital Satellite Broadcasting System

SASAKI Nobuyuki SHINOHARA Nobutaka YAMAGUCHI Susumu

Digital satellite broadcasting, which begins in December 2000, offers several new functions and services that take full advantage of the features of digital broadcasting and has much greater possibilities compared to the current analog broadcasting system.

We received several orders for digital studio equipment from customers in order to realize such a digital broadcasting system, and developed original equipment including Rate Free Matrix™, an MPEG2 encoder, and a multiplexer. Using this equipment, switching, encoding, and multiplexing of the video and audio signals of contents are performed, and digitized bit stream signals are generated and output as broadcast signals via a modulator, thus realizing a total digital broadcasting system.

*Authoring System for Data Broadcasting

OKAMURA Junichi KITAGAWA Tetsuya

We have developed an authoring system for digital satellite data broadcasting services, which start on December 1, 2000. These data broadcasting services provide weather reports, news, home banking, and shopping services interactively via telephone line connection. The authoring system consists of an authoring function, preview function, and management function for content sources.

This paper outlines the authoring system for data broadcasting and describes its features.

*Data Broadcasting System for Digital Satellite Broadcasting System

OZAKI Nobuyuki SASAKI Youichi

One of the promising services for digital satellite broadcasting services, which are being launched on December 1, 2000, is the data broadcasting system. With this service, data composed of text information and still images are broadcast by means of a carousel system. Its interactive response service is expected to become an infrastructure for e-business. The data broadcasting system provides two types of programs: dependent and independent programs. A characteristic feature of Toshiba's system is that MPEG1 and MPEG2 I-frame video streams and audio streams with smaller bandwidth can be broadcast as independent programs. Eight broadcasters will broadcast programs with our system.

Feature Articles

*Cost Estimation System Using 3D-CAD Data

SUGIYAMA Naomi OUCHI Toshihiro

In order to give a product competitive strength, it is important to shorten the development term. Toshiba has developed a cost estimation system that uses three-dimensional computer-aided design (3D-CAD) data for sheet metal work components. This system has three main features. First, the estimation factors are automatically acquired from 3D-CAD data. Second, automation is achieved for the procedures extending from process setup to man-hour calculation and cost calculation. And third, all-round versatility is improved by having an external database of estimation criteria data to be used for estimation.

As a result, even if there are no drawings an estimate can be made in a short time. It also becomes possible to offer a design review (DR) environment incorporating consciousness of costs in the upstream phase of design. These advantages facilitate shortening of the product development term.

*New Power Supply System Using UPS Integrated with Fuel Cell Power Plant

YABUKI Masanori KONNO Shuji KANIE Naoki

Fuel cell power plants have been attracting attention in recent years as an ecological power system. The number of PC25TMC fuel cell power plants in operation has been increasing because of the high efficiency and environment friendliness of this system. Tokyo Gas Co.,Ltd., Oosaka Gas Co.,Ltd., Toho Gas Co.,Ltd., and Toshiba have jointly developed a new secure power system integrating an uninterruptible power system (UPS) with a PC25™ fuel cell power plant. This system permits simultaneous grid-connected and grid-independent operation, and enables high-quality power to be supplied in the event of grid outage.

The system commenced operation in June 2000 at the Toho Gas Co.,Ltd. head office building, and is currently being used as a power source for personal computers.

*TOSMEC MEPIO™ Medical Billing Computer

YOSHIKAWA Katsumi NAKAMURA Kiminori

Toshiba has developed the TOSMEC MEPIOTM (MEPIO : MEdical PIONeer) medical accounting system, comprising a medical billing computer that can easily handle the division of functions at hospitals and clinics, increasingly complicated medical insurance systems, and informed consent to patients.

The TOSMEC MEPIOTM system, designed as a billing computer for clinics and small hospitals, is a packaged product consisting of a personal computer based on the specific hardware and Microsoft Windows2000. Equipped with new functions to support doctors as well as informed consent by patients, it goes beyond the functions of a medical accounting system to provide a clinical support system targeted at electronic medical records.

*"PLASMA SENZOU" Model GR-472K Refrigerator

ISHIKAWA Yoshichika OKADA Daishin IMAKUBO Kenji

Despite the recent sluggishness of the economy, refrigerators are maintaining stable sales with their strong market demand as one of the necessities of life. Refrigerators of 400 liters or more now account for in excess of 30 % of overall demand, with a strong requirement in the market for reduced electric power consumption together with increased capacity, as well as for freshness preservation functions corresponding to the storage of large quantities of food.

We have developed the "PLASMA SENZOU" model GR-472K refrigerator featuring enhanced deodorizing and antibacterial functions (low temperature, constant temperature, high humidity, and antibacterial environment.) The GR-472K is an energy-saving type, equipped with a powerful plasma deodorizing and antibacterial system.

*Development of Helical Compressor for New Century

OKUDA Masayuki FUKUDA Tetsuo FUJIWARA Takayoshi

The compressor accounts for most of the electric power consumption in refrigerators and air conditioners. To promote energy-saving, Toshiba has been progressively improving compressor efficiency. We have now developed a new "helical" compressor which has a new and unique compression mechanism. The helical compressor utilizes the compression mechanism of a spiral blade, the first such compressor in the world. Since it has no valves and realizes a continuous compression process, it achieves high efficiency, low noise, low vibration, and compact dimensions. This helical compressor is expected to be the next-generation compressor for the new century.

*WHY Research Service: Marketing Service Based on VOC

IWATA Seiji FUKADA Yu MIYOSHI Miyoko

WHY Research is Toshiba's original marketing service based on the voice of customer (VOC) concept. WHY Research provides two services: a questionnaire analysis service and a text information analysis service. In the questionnaire analysis service, the consumption value theory is used to design the questionnaire and analyze the questionnaire results. In the text information analysis service, text mining technology is used.

The WHY Research Service can support executives in formulating strategies using WHY information.

Techno Notes

*Batteries

Epoch-Making Toshiba Technologies

*11. Opical Submarine Cable System