

# TOSHIBA REVIEW

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## Special Reports-1

### Broadband Network Beginning with Digital Broadcasting toward Ubiquitous Service

## Special Reports-2

### Water and Sewage Treatment Technologies in an Environmentally Harmonious Society

<a href="#">Special Reports I Broadband Network Beginning with Digital Broadcasting toward Ubiquitous Service</a>	<a href="#">Special Reports II Water and Sewage Treatment Technologies in an Environmentally Harmonious Society</a>	<a href="#">Toshiba Technologies for the New Century</a>
<ul style="list-style-type: none"><li>*Next-Generation Digital Broadcasting Starts with ep™ and Mobile Broadcasting</li><li>*Business Trends in Digital Broadcasting and Broadband</li><li>*Basic Technologies Supporting PrimeStation™</li><li>*AD-JIGSAW™ Advanced Data-Broadcasting Advertising Project</li><li>*New Services Using Digital Broadcasting Service and Toshiba's Approach</li><li>*Large-Scale Transaction Processing System of Storage Interactive Service</li><li>*Outsourcing of ep™ Server System</li><li>*Internet Broadcasting Service for PDAs</li><li>*Measures for Home Networking in PrimeStation™ Project</li></ul>	<ul style="list-style-type: none"><li>*Future System Technologies for Water and Sewage Treatment</li><li>*System Technologies for Water and Sewage Treatment in an Environmentally Harmonious Society</li><li>*Measurement of Water Quality in Water Supply Sources and Support System for Water Purification Plant Operation</li><li>*Evaluation of Water Quality Model and Cost Model for Sewage Treatment Plants</li><li>*Improvement of Discharge Water Quality in Combined Sewer Systems</li><li>*Practical Use of Eco-Friendly Energy in Water and Sewage Equipment</li><li>*Environmental Technologies for Electrical Equipment Installation Work in Public Facilities</li></ul>	<ul style="list-style-type: none"><li>*13. Next-Generation Wireless Access System</li></ul>

## Special Reports-1

### Broadband Network Beginning with Digital Broadcasting toward Ubiquitous Service

#### \*Next-Generation Digital Broadcasting Starts with ep™ and Mobile Broadcasting

SUZUKI Osami

#### \*Business Trends in Digital Broadcasting and Broadband

MITSUMI Takahiro

Commercial broadcast satellite (BS) digital broadcasting services have been operating in Japan since December 2000. In addition to digital BS broadcasting, 110° communications satellite (CS110°) digital broadcasting commences in 2002 and digital terrestrial broadcasting is scheduled for commercial service in 2003.

This paper discusses some of the supporting technologies in this field such as multichannel services, high-definition television, and interactive television. These technologies are key factors for innovating the business model of the conventional broadcasting industry and realizing the introduction of many benefits not only for TV audiences, but also for broadcasters and advertising companies. The same trends can be seen in the Internet and cellular phone business areas. Digital services are provided through a combination of contents and applications. Digital broadcasting will be the first example of such trends.

#### \*Basic Technologies Supporting PrimeStation™

NOGUCHI Daisuke FUKUI Takayuki

Toshiba has developed PrimeStation™, which provides multimedia interactive services of various media, including broadcast satellite (BS) digital broadcasting, PC, and cellular phone, to client companies via an application service provider (ASP).

Interactive services are offered through a combination of the application of the server side that processes the response data from contents, such as a program, and the contents themselves. Toshiba has established basic technologies such as an Extensible Markup Language/Simple Object Access Protocol (XML/SOAP) gateway, interactive system wizard, and one-source multi-use as the basic functions and application functions for realizing these services.

#### \*AD-JIGSAW™ Advanced Data-Broadcasting Advertising Project

NOMURA Shigeo

With the commencement of broadcast satellite (BS) digital broadcasting services, the advancement of TV ad insertion has come to the fore as a new advertising marketing style. This has been developed from the conventional TV footage method to a new marketing form that combines images with data broadcasting.

AD-JIGSAW™, which has been developed by Toshiba and Dentsu Inc., provides regional insertion capability for data ads and information. This is a new marketing tool that accommodates the 7-digit postal codes for ad insertion by districts. AD-JIGSAW™ realizes geographical communication of mass media by substituting ad materials in each area in a manner similar to a jigsaw puzzle.

#### \*New Services Using Digital Broadcasting Service and Toshiba's Approach

NINOHEI Akira AOYAMA Takehiro

Data broadcasting and interactive services are characteristic functions of broadcast satellite (BS) digital broadcasting. By means of these features, companies sponsoring a TV program can offer various services to viewers and collect personal profiles through the interactive channel.

Toshiba is offering a solution to bring a new benefit to TV productions through integration of the two characteristics of television; namely, the conventional features with their popularity, and new technological features realized by digitization.

#### \*Large-Scale Transaction Processing System of Storage Interactive Service

MASUNARI Satoru HAYASHI Yoshiyuki YAMAGUCHI Hiroyuki

With the commencement of 110° communications satellite (CS110°) digital broadcasting service in 2002, Toshiba has founded ep™, Inc. as a basic stockholder. ep™, Inc. will start a storage interactive service (ep™ service) integrating broadcasting, the Internet, and a hard disk drive via a television set for the first time in the world. The system has a function to make the set-top box (STB) automatically store contents and a function to process large-scale transactions. This makes possible a transaction-processing system via the Internet utilizing a highly efficient interactive service, thereby realizing a new business model.

#### \*Outsourcing of ep™ Server System

KIMURA Kazuo IWATA Masaru AKIMOTO Norio

Toshiba is providing an outsourcing operation for ep™ (e-platform) server systems, which realize ep™ service, at the Toshiba Shinjuku Data Center. In addition to system operations, the new Operation Center contains facilities for the server system to maintain availability and monitor the system 24 hours per day, seven days per week.

The Toshiba Shinjuku Data Center functions as an integrated center for servers that must meet the need for ubiquitous computing using the broadband network, with the ep™ server system and the PrimeStation™ core. This will be a strong point for outsourcing services for systems related to digital broadcasting and contents businesses that will be realized from now on.

#### \*Internet Broadcasting Service for PDAs

SATO Kazuhide

In the broadcasting field, interactive functions with users have been actualized by broadcast satellite (BS) and 110° communications satellite (CS110°) digital broadcasting services, while in the telecommunications area as well, rapid expansion of the broadband network is producing many types of interactive services such as the distribution of motion pictures. Broadcasting and telecommunications are tending to become integrated, with the point of contact being interactive contents and service models.

Toshiba has launched an Internet broadcasting service for personal digital assistants (PDAs) at a certain Internet cafe in order to verify the state of contents applicable to both broadcasting and telecommunications, and of the service model.

#### \*Measures for Home Networking in PrimeStation™ Project

KANAI Hideyuki ANDO Yoichiro

Since the commencement of broadcast satellite (BS) digital broadcasting, the PrimeStation™ Project has embarked on the world of TV commerce as one of the solutions in this field. The target domain of the project is beyond the world of broadcasting. The next step in the development of the PrimeStation™ Project is ubiquitous service, which has already been taken into consideration. This service, which aims at the innovation of a new lifestyle, is being realized by putting home networking information appliances into the basic cycle of distribution and response.

## Special Reports-2

### Water and Sewage Treatment Technologies in an Environmentally Harmonious Society

#### \*Future System Technologies for Water and Sewage Treatment

HONDO Kojiro

#### \*System Technologies for Water and Sewage Treatment in an Environmentally Harmonious Society

KATO Takao

Water and sewage treatment are activities that contribute to preservation of the water environment. However, they also have external environmental effects. For example, they consume energy and have an impact on the natural environment. In an environmentally harmonious society, it is important when implementing water supply and sewage treatment to consider the balance of these activities and the environmental effects.

This paper analyzes the effects on the environment from three viewpoints—the viewpoint of water, the viewpoint of substances, and the viewpoint of energy—and shows how system technologies have brought about a breakthrough in dealing with environmental problems.

#### \*Measurement of Water Quality in Water Supply Sources and Support System for Water Purification Plant Operation

NAMEKI Hideaki HIRAMOTO Akira

The problem of water pollution in water supply sources has recently arisen. To ensure a stable supply of high-quality drinking water, it is therefore important to operate water purification plants appropriately based on data from the continuous monitoring of water quality in water supply sources.

Toshiba has developed new water quality measurement technology, river pollutant dispersion simulation technology, and water purification process simulation technology in order to meet the above requirements. We have also been studying a system created by integrating these technologies to support water quality management and water purification plant operation.

#### \*Evaluation of Water Quality Model and Cost Model for Sewage Treatment Plants

TSUTSUMI Masahiko OBARA Takumi YAMANAKA Osamu

Demand has recently arisen among sewage treatment plant operators for a tool that can search the best conditions with respect to not only operational management to improve effluent water quality, but also environmental evaluation to reduce energy consumption. Toshiba has developed a water quality simulator for sewage treatment plants that predicts effluent water quality and energy costs, and has also investigated a new cost model that converts effluent water quality data into running costs and adds these to operating costs.

#### \*Improvement of Discharge Water Quality in Combined Sewer Systems

KUNIMI Masaki NAGAIWA Akihiro MATSUBARA Shinichiro

Deterioration of the water environment has now become a problem, and it is thought that discharge water from combined sewer systems is a cause of this. The use of storage facilities is an effective solution to this problem. In such storage facilities, an operating system to schedule operations ahead of time according to the changing rainfall situation is highly effective. This operating system gives the operator support information based on rainfall information, other weather information, and some forecasting technologies.

#### \*Practical Use of Eco-Friendly Energy in Water and Sewage Equipment

TAMURA Toshio INOMATA Yoshinori OKAZAKI Yoshimichi

Accompanying the rapid industrial development that has taken place in recent years, global warming by greenhouse gases such as carbon dioxide generated by the consumption of fossil fuels has become a problem. At the 7th Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP7) held in Marrakech, Morocco, in November 2001, agreement was reached on the provisions of the Kyoto Protocol concerning the curtailment of greenhouse gases by industrialized nations.

In this paper, technology including an example is proposed and important considerations and effects at the time of system selection are discussed for the introduction of eco-friendly energy in water and sewage equipment.

#### \*Environmental Technologies for Electrical Equipment Installation Work in Public Facilities

MIYAZAKI Kenji TOYODA Yasushi KATO Takao

Environmental issues are an area of common concern for humanity in the 21st century. To solve these issues, it is necessary to consider the environmental impact of every activity.

This paper describes environmental technologies applied to electrical equipment installation work in public facilities. As a result of assessing the environmental impacts of several factors, we have found that the amount of industrial waste generated is the most serious factor in installation work. We have therefore made efforts to apply eco-materials to such work and reduce the environmental burden.

## Toshiba Technologies for the New Century

### \*13. Next-Generation Wireless Access System