

TOSHIBA REVIEW

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Special Reports I Medical Solutions

Special Reports II

Practical Intranet-Based Supervisory Control and Data Acquisition (SCADA) Systems for Power System Use

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Special Reports I Medical Solutions

*New Developments in Medical Solutions

KOMATSU Kenichi

*Trends in Healthcare Solution Business Conforming with "Patients First"

ASAHINA Hiroshi SATO Kozo

The health services of advanced nations are being driven by the pressure of a paradigm shift due to the growth in the elderly population and progress in healthcare technology. All health services should be conscientiously performed putting patients first. Health policies, healthcare systems, case management and other aspects are therefore being reformed in line with the stream of global standardization, while medical equipment and healthcare systems are being developed in an environment of global competition.

The healthcare solution business is classified into three layers: "Imaging" solutions, "Hospital" solutions, and "Healthcare Enterprise" solutions. In this paper, technology development to enhance the added value of equipment and solution development to address users' requirements are performed for each of these healthcare solution business layers.

*Advanced Multislice X-Ray CT Scanner

NOBUTA Yasuo

The recent introduction of multislice X-ray computed tomography (CT) scanners has led to significant advances in CT diagnostic capabilities, including high-speed scanning up to approximately 10 times faster than in conventional single-slice helical CT scanners. In addition, advanced multislice CT systems will permit data for 8 or 16 slices to be acquired simultaneously in a single scan due to the incorporation of an 8-row or 16-row detector. The outstanding diagnostic capabilities of these systems will be based on the technology developed for current 4-row multislice CT systems, permitting scanning to be performed over a wide range with a thin slice thickness.

It is expected that the number of rows of the detector will be further increased, leading to the development of a "4D-CT" that will make it possible to display dynamic three-dimensional images.

*From Morphological to Functional Diagnosis : User-and Patient-Friendly Diagnostic Ultrasound Systems

HARA Kiyoshi

It has been only 30 years since the introduction of diagnostic ultrasound system in clinical practice. Diagnostic ultrasound system is a user- and patient-friendly diagnostic imaging method that permits examinations to be performed repeatedly with excellent safety and minimal patient discomfort. It has therefore become an indispensable imaging modality and has undergone remarkable advances. Diagnostic ultrasound system is useful in a wide range of diagnostic applications such as fetal growth assessment; examination of the heart, liver, kidneys, and gallbladder (in both children and adults); and real-time blood flow evaluation.

Toshiba has recently introduced two next-generation diagnostic ultrasound systems called Aplio™ and Nemio™. These systems can provide images with greater resolution and higher quality than ever before due to the incorporation of the latest computer technology, and can support both morphological and functional diagnosis.

*MRI Diagnosis Expanded by New Fast Imaging Technology

USUI Yoshiyuki MACHIDA Yoshio HANAWA Masatoshi

The development of fast imaging techniques has been significantly contributing to improved quality of image diagnostic information and wider diagnostic application of magnetic resonance imaging (MRI) examinations. Recently, however, the traditional approach of fast imaging techniques has almost reached its limits, so that there are few prospects for further improvement of fast imaging.

Toshiba has developed a new parallel imaging technique that is expected to make a breakthrough in the further development of MRI diagnosis. Toshiba is now developing a high signal-to-noise ratio (SNR) receiving coil which is considered the most effective solution for widening the clinical scope of the parallel imaging technique.

*Radiology Department System Supporting User Workflow

YOSHIZAWA Tetsuya TOSHIMITSU Akihiro IWAI Shunsuke

This paper presents the features of a radiology department system developed by Toshiba from the perspective of the user's workflow by describing one of our routinely used systems. The features of our system, including hybrid image distribution and a data integration mechanism, contribute to improved efficiency of imaging and report preparation as well as image distribution and report reading by WWW technology. This results in time-saving for physicians and reduced length of stays at medical facilities.

*Hospital Information System for Patients

NOMURA Seiji TSUDA Toyoshi AIDA Satoshi

In the 21st century, patients will be able to choose the hospital that best meets their needs and satisfies their high standards for medical care requirements. Hospitals must therefore be prepared to offer medical services tailored to patients' needs. Minimizing total medical expenses and striving for financial soundness will also become increasingly important in hospital management. Although solving all these issues simultaneously is highly desirable, the complexities involved make it more practical to provide and plan for these matters on a daily basis in ways appropriate to the scale of the hospital, its local circumstances, and the current legal regulations.

*Toward Developing Healthcare Enterprise Solution

SHINODA Hidenori FUJIMOTO Toshio

Information technology (IT) has proven its usefulness for improving productivity in various business areas. With Japan facing increasing medical expenditures amidst the era of less children and the graying of society, IT is expected to be an effective means of improving productivity in the medical field and suppressing further increases in expenditures. The key will be the use of integrated clinical information and the sharing of information among medical personnel. The integration of healthcare systems will be the solution to achieve this goal.

Special Reports II

Practical Intranet-Based Supervisory Control and Data Acquisition (SCADA) Systems for Power System Use

*SCADA Systems for Power Systems in the Deregulation Era

KAWAI Michio

*Rapidly Increasing Application of Intranet Technology for Power System Control to Large-Scale Systems

MASUDA Fumio EBATA Yoshio HAYASHI Hideki

Toshiba launched the innovative eTOSCAN series energy management system/supervisory control and data acquisition (EMS/SCADA) system three years ago, and it is now being increasingly applied to large-scale systems for power system control and other fields. This technology realizes cost reduction, flexible power system operation, and restructuring of the overall scheme for power system control. In addition to power system control, this technology is being introduced in various fields including financial systems and transportation systems, which require real-time performance and high reliability.

This paper describes the actual status of application of intranet technology in the field of power system control, and predicts future system conceptions.

*Design of SCADA Systems Applying Internet and Intranet Technologies

TSUJI Hisashi KAINO Yasuo

In recent years, there has been increasing demand for cost reduction and restructuring in supervisory control and data acquisition (SCADA) systems due to changes such as the deregulation scheme and partial liberalization of power retailing. At the same time, Internet and intranet technologies have become the base of information technology (IT).

To meet these requirements, Toshiba has been proposing SCADA system solutions applying Internet and intranet technologies offering high reliability and high performance, and is receiving a number of inquiries.

*SCADA System Using Intranet Technologies for UHV Equipment Pilot Plant of TEPCO

TAKABAYASHI Yoshiaki OKA Masaaki TAKAGI Kazunori

The adoption of Internet and intranet technologies has been rapidly spreading in recent years, and existing systems are being replaced with new systems based on these new technologies. In accordance with this trend, in 1999 Toshiba announced a concept of new middleware for power system network control systems including energy management systems (EMS), supervisory control and data acquisition (SCADA) systems, and distribution management systems (DMS). This new middleware is based on the latest Internet and intranet technologies, offering the real-time operation and high reliability required for network control systems. Since then, Toshiba has received many orders from a number of utilities for the new technologies. Several systems are presently being manufactured, some of which are already at the stage of commissioning tests.

This paper focuses on a SCADA system for the ultrahigh voltage (UHV) equipment pilot plant of The Tokyo Electric Power Co., Inc. (TEPCO), which has been in operation since December 2000 and uses intranet technologies, with an emphasis on a functional overview and the features of the newly developed system.

*Application of Intranet Technology to Sapporo Area Distribution Automation System of Hokkaido Electric Power Co., Inc.

NISHI Akinori TOBITA Masahiro

Toshiba has developed an intranet-based supervisory control system for power systems that offers real-time performance and availability, based on Internet and intranet technologies. Some systems have already commenced operation. We are now promoting the application of intranet-based systems in the field of distribution automation, and the Sapporo area distribution automation system of Hokkaido Electric Power Co., Inc. is under development. This system fully demonstrates the merits of intranet technology, especially its flexibility and expandability.

*Wheeling Scheme Management System Applying Internet and Intranet Technologies

TSUZUKI Tatsuo NAKAMURA Kengo HIGASHIDA Emi

Applying Internet and intranet technologies, power producer and suppliers (PPS) can meet the required responsibility between the power supplier and eligible customers using the 30-minute power balancing control function incorporated in their energy management system.

Toshiba's wheeling scheme management system is an energy management system applying Internet and intranet technologies that uses Web servers, browsers, and network computing terminals (NCTs). The first system has been in operation since April 2001 at eREX Co., Ltd., one of the PPS in Japan.

*Evolution of GIGASOLUTION™ Middleware

HASEGAWA Yoshiaki

Toshiba announced the release of GIGASOLUTION™, a middleware for high-performance and high-reliability intranet solutions, in 1999 ahead of any other company. Since then, GIGASOLUTION™ has been applied to a number of mission-critical systems such as electric power control center systems. The next version of GIGASOLUTION™, which is currently being developed, is expected to cover a much wider range of applications. It will also be much easier to use, and will further enhance reliability of the Internet protocol (IP) network. The next version is planned to be released in March 2002.

Feature Articles

*Development of Supply Chain Management System for Retail Information System Business

YAMADA Shu SUZUKI Atsushi OHFUCHI Tsuneco

Toshiba has developed a supply chain management system (SCM) that realizes a smooth flow of information between the sales and production departments in collaboration with Toshiba TEC Corporation, a retail information system company. This system can sensitively grasp information on market conditions and speedily deliver it to the production department. The production department then makes use of this information in purchasing materials and assembling products.

Realized by information technology (IT) breaking through the boundaries of individual departments, this SCM enables a company to keep up to date with the rapidly changing market while carrying the minimum inventory of parts and products.

*Landscape Design Techniques for Public Facilities

SHIMIZU Hideto WATANABE Shinji HAMADA Mikio

The quality of landscape design for large public facilities substantially affects a great number of people, and also has an impact on the environment surrounding the facility. In proposing a plan for a plant system, therefore, it is essential to consider the effect it will have on the landscape design, with due consideration for the technical requirements of facility construction.

On the basis of a recent survey on landscape design for water-treatment facilities, we have presented three new concepts of landscape design focusing on its effects on the environment. In addition, we have performed a quantitative analysis of how people's impressions concerning the landscape relate to landscape elements such as natural features and buildings, and studied the optimal landscape improvement measures that would give form to our concepts. Based on these data, we will apply our developed concepts of landscape design in order to ensure the satisfaction of all those affected.

*Model TW-741EX Automatic Washer Dryer

HIRANO Takayuki NISHIWAKI Satoru

A laundry washer dryer continuously performs all processes from drying in a single operation. Toshiba launched the model TW-F70 washer dryer on the market in 2000. The TW-F70 realized light weight, low vibration, and low noise with new technologies including the direct drive (DD) inverter motor and the liquid balancer, thereby solving former problems such as excessive noise and operating time. This product was accepted in the market because it met market needs such as the reduction of housekeeping labor. The market has recently been expanding due to the entry of competitors and the introduction of the top-loading type. Furthermore, consumers have been requesting further energy saving and shortening of the operating time.

Against this background, Toshiba has now developed the model TW-741EX automatic washer dryer. A short operating time has been achieved in this new model through the development of new technologies such as high-speed spinning that achieves the maximum speed in the industry; a compact, high-performance, water-cooled heat exchanger; and a high-power drying unit.

Toshiba Technologies for the New Century

*11. Web-based Fusion of Electrical and Mechanical Technologies