

# TOSHIBA REVIEW

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## Special Reports

### Knowledge Management

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## Special Reports

### Knowledge Management

#### \*Management with Good "Form"

NONAKA Ikujiro

#### \*Technological Trends in Knowledge Management

MINAMI Masana SUMITA Kazuo

The knowledge of each individual has been recognized to be the source of an enterprise's power. Advanced enterprises that realize the importance of knowledge have been introducing knowledge management (KM). Using KM, they create new knowledge, accumulate it as organizational knowledge, transfer it, and deploy it, thereby transforming themselves into a so-called knowledge creating company leading the way in the 21st century. The introduction of information tools by itself does not lead to the achievement of real KM. Rather, the deployment of information technology is also very important to support effective KM.

This paper provides an overview of KM including its definition and objectives. It also discusses KM technologies and tools supporting Japanese-style KM processes, their roles in KM, and their trends that best suit Japanese office culture.

#### \*Toshiba Knowledge Management Solutions

NOZAWA Yukiteru MIZUHARA Toru SATO Minoru

Precise analysis of the wealth of information that exists in multiple forms has become the most important key to rapid decision-making by corporate management. For this purpose, the knowledge and experience possessed by the organization and the individuals in it must be accumulated. The need for knowledge management (KM), which supports the creation of new knowledge, is increasing due to such sharing and analysis.

In response to these circumstances, Toshiba is offering KM solutions consisting of consulting, systems integration (SI) for both applications and platforms, and change management. These solutions are based on the concept that management strategies and information technology (IT) strategies have to be integrated from now on.

#### \*Platform for Community-Based Collaborative Knowledge Creation

UMEKI Hideo HORIKAWA Masayuki

Communication tools such as e-mail and bulletin boards are essential for sharing thoughts and ideas in a community such as a section-transverse project team in a company or a grassroots organization on the Internet. However, knowledge created through such communication is difficult to extract, organize, and maintain.

We have therefore proposed a new knowledge management model for extracting knowledge from communication and stimulating communication by sharing knowledge. Using this model, we have developed a platform for community-based collaborative knowledge creation. A prototype system has been experimentally used in Toshiba. The experiment has verified that the model works effectively for community knowledge management.

#### \*Text Mining and Its Application

ICHIMURA Yumi SUZUKI Masaru

There has been increasing demand in recent years for automatic analysis of large quantities of text data such as salespeople's daily reports, questionnaires, and call center inquiries. Text mining is one of the natural language processing technologies that is attracting attention as a promising solution. To meet the above requirements, we have proposed a method of text mining based on information extraction, and developed a system for analysis of salespeople's daily reports to support decision-making by sales managers using this method. It analyzes "best practice" cases and "missed opportunity" cases from daily reports of storefront management, as well as key success factors and unsuccessful factors from daily reports of business negotiation management.

This system not only enables important information to be quickly accessed without the need to read large volumes of reports, but also makes daily reports a resource to support decision-making.

#### \*XML Processing Engine for Knowledge Management

HATTORI Masakazu SUEDA Naomichi

Toshiba has developed an XML processing engine which manages and accumulates XML-based information in an organization. This engine can search and process XML data on-line at high speed. Individual analysis processes are automatically stored in this engine. These processes can be shared and reused by other users in an organization. Using this engine, various types of information-sharing and analysis systems, such as claim information, daily reports, and patents, can be efficiently developed.

#### \*Improvement of Help Desk Operation by Q&A Case Referencing

TAKADA Seiya SUZUKI Masaru

In help desk services, it is important to be able to promptly answer questions from customers. The accumulation of question and answer (Q&A) cases and efficient referencing of a database of such cases is an effective method of shortening the response time.

At the Toshiba Computer Information Service Center (Toshiba ISC<sub>TM</sub>), examples of Q&A cases are stored in a database and can be searched by natural language using a knowledge sharing system developed by the Toshiba R&D Center. The rate of retrieval of Q&A cases by the system is 23%. The response time to questions about operating systems has been shortened to about 38%.

#### \*Database Analysis System for VOC--Development and Application to Toshiba Customer Call Center

YAGI Keiko NANAO Tomoyuki

The increasing diversity of customer needs and their changing sense of values make it more important than ever that we conduct business activities based on the voice of the customer (VOC) to offer products and services truly achieving customer satisfaction. To do this, we have to ensure that the many customer views and requirements that come into the Toshiba Customer Call Center every day are quickly and efficiently shared throughout the Toshiba organization.

In response to this need, we have created the "Database Analysis System for VOC." This system has an automatic word search function that allows analysis of the 1,000 or more calls, the voices of our customers, that come into our call center every day. One particular advantage offered by the system is the ability to program it before the launch of a new product and then track customer evaluations of the product—including the negative comments that help us to make timely improvements.

#### \*Development of Knowledge and Information on Demand System

NAKAYAMA Yasuko MANABE Toshihiko SASAKI Kouichi

We have developed a practical knowledge and information on demand system. The goal of the system is to convert undocumented tacit knowledge into explicit knowledge. Experiments carried out in an actual office have demonstrated the feasibility of knowledge sharing.

This paper discusses critical success factors for knowledge sharing such as defining a purpose, building a knowledge culture, and knowledge quality maintenance.

## Feature Articles

#### \*Production Planning System with Assemble to Order and Weekly Adjustment of Supply and Demand

TAKADA Atsushi ISHIZUKA Atsushi NAKAMURA Hiroshige

Information technology is driving the advancement of production control systems. In line with this trend, we have developed a production planning system that allows a production system to rapidly catch up with the changing market with the smallest inventory of parts and products.

This production planning system has two features. The first is a daily assemble to order system that reduces the inventory on site and shortens delivery lead times to customers. The second is weekly adjustment of supply and demand, which enables the production system to easily remain abreast of changing market conditions. With this production planning system, the information database in the factory can be integrated and the information network expanded to realize an effective supply chain.

#### \*CDM-9100 Triple-Mode CDMA/AMPS Handheld Portable Cellular Telephone

NAKANO Motohiro SUZUKI Shigeru HAYAKAWA Hideki

The market for triple-mode phones (800 MHz CDMA/AMPS, 1.9 GHz CDMA) that can provide entire national coverage is growing rapidly. To satisfy this market demand and maintain the top position, we have developed the new CDM-9100 triple-mode cellular telephone, which weighs only 108 g (3.8 oz), 80 % of the weight of the previous model, while maintaining 170 minutes of talking time and 170 hours of standby time.

This cellular/personal communication system (PCS) phone offers a microbrowser, asynchronous data functions, and two-way short message service (SMS) in consideration of business and mobile users.

#### \*Life Assessment of Printed Circuit Boards

TODO Yoko KIMURA Kazushige URANO Masao

In order to prevent operation problems in plants, it is important to predict degradation of printed circuit boards used in electric components. Toshiba has been progressively developing various life assessment methods for printed circuit boards and electronic devices that can meet the needs of users. In addition to precision methods based on tests of samples, we have developed a new life assessment method based on environmental information. The method takes account of the interactive effect on degradation of multiple atmospheric factors. This new method is useful for maintenance and management.

#### \*Stop Bar Light Control System

GOTO Hidenori SUGENO Yukio OKABE Tomonori

A stop bar light control system is a system for preventing aircraft from incorrectly advancing into a runway and protecting runways by turning on and off red lamps installed across taxiways that lead into runways. The stop bar light system is an indispensable light system prescribed by the International Civil Aviation Organization (ICAO) for airports in which the runway visual range (RVR) is less than 500 meters. This stop bar light control system has been installed at the New Tokyo International Airport in Narita, the Tokyo International Airport in Haneda, and the Kansai International Airport in Narita, and is planned to be installed at local airports in Japan from now on.

Since this system is used in conditions of poor visibility, Toshiba constructed it for installation at the above three airports fully taking reliability and responsiveness of the system and aircraft safety into consideration.

#### \*Expandable Train Optimal Control Network (TOCON)

KAMO Yushi TAKAHASHI Hideyuki MATSUMOTO Yasuhiko

In general, the train information control system includes train control, monitoring, diagnosis, maintenance support, and passenger services. The Train Optimal Control Network (TOCON) has been developed for Toshiba's onboard network system, which makes it easily expandable in accordance with further system extension. As an example of its features, useful information based on passenger needs surveys can be easily added and transferred via TOCON to passengers on board.

#### \*Asteion™ Whole-Body Dual-Slice CT Scanner

SUGIHARA Naoki HARADA Tomokazu

Although the introduction of helical scanning and the development of multislice systems have led to many innovative clinical applications for X-ray CT scanners, multislice technology has been available only for the premium-class devices. The newly developed Asteion™ whole-body dual-slice CT scanner, however, has realized multislice scanning in a middle-class device.

Asteion™ is capable of simultaneous dual-slice acquisition and provides faster scanning than single-slice CT scanners. It is also equipped with a new detector that permits slices of 0.5 mm thickness, thereby providing clinical images with finer detail.

#### \*"Super Power Eco"Custom Inverter Air Conditioner

KAWAI Nobuo MAEJIMA Akihiro

There has been an urgent necessity for the air conditioner industry to develop products to adapt to the new refrigerants instead of hydrochlorofluorocarbons (HCFC) for protection of the ozone layer and improvement of efficiency as required by the revised Energy-Saving Act. For environmental protection, the ozone-safe hydrofluorocarbon (HFC) refrigerant R410A has already been adopted as a new refrigerant for residential air conditioners. We have adapted R410A to commercial air conditioners ahead of any competitors and introduced the "Super Power Eco" series of custom inverter air conditioners on the market. The "Super Power Eco" far exceeds the reference coefficient of performance (COP) for FY2007 prescribed under the revised Energy-Saving Act. This series has a lineup of six capacity ranks ranging from 5 kW to 16 kW.

## Techno Notes

#### \*Meeting the Challenge of Medical Solutions

## Toshiba Technologies for the New Century

#### \*2. High-Quality Speech Synthesis