

Special Reports

Evolving LCD TV Technologies

Evolution of REGZA™ High-Definition LCD TV

TOKUMITSU Shigenori

Trends in and Prospects for High-Definition TV

ABE Hirotooshi

Digital terrestrial television broadcasting was launched in Japan in December 2006, and the current analog broadcasting services are scheduled to be discontinued in 2011. The era of real digital broadcasting has therefore arrived.

Toshiba has developed the REGZA™ global brand name for its lineup of digital liquid crystal display (LCD) TVs equipped with various differentiating features including high-resolution, network, and internal hard disk technologies. These technological developments embodied in the REGZA™ are receiving high evaluations in the market.

Network Streaming Technology for REGZA™ Digital High-Definition LCD TV

MUGURUMA Kazuhiko

Home networks that are continuously connected to the Internet have become increasingly popular in recent years. Moreover, a shift to higher speed connections such as fiber to the home (FTTH) is progressing. The acTVila Video Full video-on-demand service, which requires high-speed Internet access of more than 10 Mbps continuously, was inaugurated in 2007 and a real broadband environment has begun to be realized in Japan.

In response to these circumstances, Toshiba has released the REGZA™ Z3500 series digital high-definition LCD TV with a network streaming function that enriches the broadband experience. This top-of-the-line model offers various features through functions such as high-definition video sharing, digital media player, and high-definition video-on-demand.

Image Reproduction Technologies for High Picture Quality

SUMIYOSHI Hajime

The advent of digital high-definition broadcasting in recent years has made it possible for high-definition contents to be easily accessed. Highquality image processing is advancing in the field of LCD TV due to the adoption of various technologies including full high-definition television (HDTV) pixel resolution (1920 x 1080 pixels), wide-range color reproduction, 10-bit gray scale, 120 Hz frame rate up-conversion panel, and so on. Since high-definition contents are being increasingly viewed on digital HDTV services, a real HDTV world has appeared in which image reproduction technologies have become more important than ever.

Toshiba has been continuing to focus on these image reproduction technologies. As part of these efforts, we have developed the metabrain PRO™ high-definition image-processing engine and incorporated it into the REGZA™ digital LCD TV, thereby realizing the optimal images for every scene.

Advancements in Digital TV Technologies for High-Quality Image Processing

YAMAUCHI Himio

Flat-screen TVs, such as liquid crystal display (LCD) and plasma display panel (PDP) models, have rapidly disseminated in recent years. With the progress of production technologies and lowering of prices, consumers are tending to select TV sets with larger screen size. At the same time, there is increasing emphasis on high picture quality since high-definition contents can be easily accessed by means of digital high-definition broadcasting, next-generation DVDs, and so on.

To meet the demand for high-level picture quality suitable for such large-screen and high-definition TVs, Toshiba has developed the POWER meta brain™ image-processing engine and incorporated it in the REGZA™ digital LCD TV. The POWER meta brain™ features a variety of digital process technologies, supporting the high picture quality of the REGZA™.

Worldwide Digital Broadcasting Technologies and Toshiba's Efforts

MIYAZAKI Toru

Since the launching of digital TV broadcasting in the world in the 1990s, it has been applied not only to satellite services but also to cable, terrestrial, and Internet Protocol(IP) network services. Digital TV broadcasting offers higher quality service than analog TV broadcasting in weak signal areas, and makes multichannel service possible in a single radio frequency(RF) channel. Most analog TV broadcasting services are therefore expected to be replaced by digital TV broadcasting. Subsequently, high-definition TV broadcasting services and data services started in Japan and other countries utilizing the high level of band efficiency and flexibility of data characteristics. Although only about 15 years have passed since the introduction of digital TV broadcasting services, a number of the technologies in this field have been improved. Many digital TV broadcasting standards have now been established in various countries according to the conditions there.

Toshiba has been devoting efforts to the development of picture and sound compression technologies for both hardware and software, which are core technologies for digital TV broadcasting receivers, taking environmental protection into consideration.

Futuristic TV Features Brought by Cell Broadband Engine™

ISHIKAWA Tadashi / KATO Nobuhiro / DONIWA Kenichi

With the growth in sharing and distribution of images via networks or bridge media, support for various types of images and diversification of functions is also required in the field of TV technology.

Applying the Cell Broadband Engine™ multicore processor, which offers high technical and cost performance, Toshiba has been making efforts to realize highly efficient and comfortable viewing and functionality, including super-resolution processing of high-definition images, multi-decoding and simultaneous playback of multiple videos, and easy functions for viewing.

Feature Articles

Spectral Simulation Method for Solid-State Lighting Devices with Multiple Phosphor Blend

ISHIDA Kunio / NUNOUE Shinya

There are high expectations on ultraviolet-based white light-emitting diodes (LEDs) as a lighting technology offering high energy efficiency and long lifetime. In order to realize such devices with both high efficiency and high color rendition, it is essential to establish a technique for coating several phosphors, a packaging technique, and a spectrum design technique for the light output.

Toshiba has developed a new simulation method for designing the luminescence profiles of white LEDs with a multicolor phosphor blend, making it possible to calculate various properties, such as the light intensity distribution inside the phosphor layers, which cannot be observed with conventional experiments. This method allows the phosphor packaging of the white light source to be optimized.

PC Unyo Jozu Integrated Security Appliance

WATAKABE Takeshi / FUJIWARA Yuji / YAMASHITA Takumi

Security countermeasures for PCs have become an increasingly important issue in corporate activities in recent years. Toshiba has developed the PC Unyo Jozu integrated security appliance, which provides security functions required for information leakage protection as well as various controlling functions required for system operation and PC management.

In the introduction of a security solution, generally an information technology (IT) administrator with expertise and experience as well as development expenditures for introduction of the system are essential in order to design its security policies. PC Unyo Jozu facilitates the simple design and setup of security policies, and both the introduction and operation of the system can be performed efficiently even if there is no full-time IT administrator.

Automatic GUI Operation Technology for Efficient and Accurate Software Testing

HIRAI Jun / SEKINE Satoshi / KAWANO Shin-ichiro

In the quality management of software with a graphical user interface (GUI), there is a need to improve the efficiency and accuracy of the testing process. However, the conventional software testing tools require advanced knowledge in order to make the test scenarios, and the architecture of the software that can be tested is also subject to limitations.

To overcome these problems, Toshiba Solutions Corporation has developed a software testing technology that performs automatic GUI operation. It has high applicability to the testing of software with various GUI architectures including rich clients, due to the adoption of an image searching technique. This software testing technology, implemented as the GUIPilot™ GUI testing tool, is already being applied to software development in our company.

ESCO Business Activities of Toshiba

KANEKO Kiyotaka

An energy service company (ESCO) provides comprehensive services for investigation and diagnosis, proposal, construction, measurement and verification, and operation and maintenance of systems for energy conservation.

Toshiba has been engaged in the ESCO business since 2002, and has supplied a number of these services to office buildings, hospitals, commercial establishments, universities, municipal offices, and other customers. Our ESCO business services offer a comfortable environment with highly efficient energy-saving equipment and facilities utilizing neuro-PMV control™, which is our original air-conditioning control technique, and providing a total system configuration with the products of the Toshiba Group.

Permanent-Magnet Synchronous Motor Propulsion System for Tokyo Metro Ginza Line Trains

KAWAI Hirotooshi / SUNOHARA Teruhiko / TASAKA Yosuke / FUKASAWA Shingo

The demand for high efficiency, low noise, and reduction of maintenance work has been increasing in the field of propulsion systems for rolling stock, accompanying the rising awareness of global environmental issues and the shift to an aging society with fewer children in recent years.

In response to these conditions, Toshiba has developed a permanent-magnet synchronous motor (PMSM) propulsion system and evaluated this system through running tests on the Ginza Line of Tokyo Metro Co., Ltd. As a result, we confirmed that the PMSM propulsion system has lower noise and greater energy saving compared with the conventional induction motor (IM) propulsion system.

We are now aiming at the establishment of this system as a next-generation propulsion system by carrying out further running tests, evaluating maintainability, and so on.

Frontiers of Research & Development

TV Navigation Map for User-Centric Search