White Paper

Intelligent Embedded Computers Lead the Way for Life Automation

Early embedded computers were primarily designed for industrial automation to improve process control and productivity for instance. Now, with the emergence of Internet of Things, cloud computing and mobility, new market opportunities arise for life automation. This new application will transform embedded computers into intelligent systems that improve the aspects of everyday living, including food, clothing, shelter, transportation, education and entertainment.

For example, an intelligent coffee vending machine in Europe has provided consumers with the scent of warm coffee aroma after processing an order to simulate a brewing experience similar to a coffee shop. Likewise, to provide a personalized coffee blend that can only be found in coffee shops, the vending machine can add sugar and milk according to the customer's preferences.

This intelligent vending machine is made up of an embedded computer with integrated cameras, NFC (Near Field Communication) sensors and network interfaces. It can, at any time, connect to the cloud and retrieve customer information from the CRM (Customer Relationship Management) database. It can satisfy the requirements for operation management, stock management and stock replenishment, exceeding people's expectations of a traditional vending or kiosk machine.

YC Cheng, NEXCOM Industrial Computing Solution Business Unit, Assistant Vice President of Product Development, points out that intelligent systems are not only used for intelligent vending machines, other applications are present as well, such as virtual fitting rooms in retail, showing that life automation is indeed taking place in various parts of everyday living. From industrial sectors

to the general public, embedded computers are becoming a supply hub for numerous lifestyle applications and services.

Cheng observes that the growth of cloud computing and mobile devices have driven intelligent systems toward mainstream, reaching to applications in daily life. To move from "embedded" to "intelligent embedded" and become an intelligent service platform, development for embedded computers must take account of various application integration requirements with emphasis on intelligence, miniaturization and human-centered designs.

The Pillars of Intelligent Service Platform: Hardware, OS and Management Utility

An intelligent service platform, in addition to its hardware and operating system, needs to be connected to the cloud of Internet of Things to assist users in remote management and monitoring. Hence, management utilities are indispensable components of the platform. Furthermore, in order to provide tailored solutions for specific service models, intelligent service platforms require high flexibility with the different architectural components of the cloud computing models.

Identifying that high flexibility, high performance, low power consumption and miniaturization are required for intelligent lifestyle applications and services, NEXCOM offers a full range of solutions with different levels of hardware and software integration. For hardware, NEXCOM provides x86, ARM and many other processor platforms. For operating system, in addition to providing Windows, Linux and Android, NEXCOM also offers real-time operating systems. These include RTX (Real-Time Extension) for Windows, QNX and

VxWorks for deeply embedded devices such as microcontrollers, mobile POS machines, in-vehicle infotainment and other customized and real-time applications.

Management utilities become indispensable for intelligent service platforms because these platforms pose information security and management issues as they connect machines, systems, and people together on the public internet, embedding into the facets of web and everyday life. Acknowledging that a secure management utility is required, NEXCOM, a provider of intelligent service systems, offers Xcare™ Utility to enable users to monitor, manage and diagnose intelligent service platforms remotely and securely. In addition, NEXCOM's Xcare™ Store offers various utilities from third party providers such as McAfee

and Acronis to offer data security, backup and recovery mechanisms.

Embedded computers are gradually reaching to the daily lives of people. The evolution towards intelligent, miniaturized and human-centered designs has transformed standard and integrated solutions into highly customized service systems. To facilitate development of such systems, NEXCOM offers a one-stop service from providing mini-ITX, COM Express, 3.5" embedded boards to a diverse selection of hardware platforms and BSPs (Broad Support Package), application development assistance and even manufacturing assistance. NEXCOM is dedicated to support customers in developing an intelligently tailored service platform to stay ahead in the large intelligent systems marketplace.

About NEXCOM

Founded in 1992, NEXCOM has five business units which focus on vertical markets across industrial computer, in-vehicle computer, multimedia, network and communication, and intelligent digital security industries. NEXCOM serves its customers worldwide through its subsidiaries in seven major industrial countries. NEXCOM gains stronghold in vertical markets with its industry-leading products including the rugged fanless computer NISE series, the in-vehicle computer VTC series, the network and security appliance NSA series and the digital signage player NDiS series. www.nexcom.com