White Paper

Integrated with SIP Cores, Complete SoC Solution Expands IoT Coverage

The development of System on Chip (SoC) technology has increased significantly due to the increasing demands of lower power and smaller form factors in mobile devices, which are gaining widespread popularity in recent years. Throughout this period, the performance of SoC processors underwent significant improvements in performance and design simplicity, while still retaining the advantages of low power consumption and miniaturization, making them suitable for a range of industrial applications.

For example, smaller SoC processors help miniaturization of embedded computers, panel PCs, embedded boards, in-vehicle computers and even dedicated network security appliances. Thus, they can be used as factory automation controllers, machine automation controllers, data acquisition systems (DAS) or human machine interfaces (HMI) in factories, self-service kiosks or point of sale (POS) terminals in retail, in-vehicle computing platforms in transportation and switching devices in machine-to-machine (M2M) networks.

Embedded ARM Solutions Trigger the Next Revolution of Intelligent Systems

The rise of Internet of Things (IoT), cloud computing and network communication has pushed the evolution of traditional embedded devices into a drastic change, transforming them into intelligent systems that are gradually becoming adopted and deployed in both general and special workplace environments, as well as environments in the everyday lives of people. These systems all have attributes including their low cost and low power consumption, and their ability to provide network connectivity.

The Super SoC Module

In the era of specialized knowledge economy, the challenge of integrating multiple silicon intellectual property (SIP) cores require complex verification of various elements, including from SoC processors, firmware, drivers to operating system kernels. Therefore, a highly integrated SoC module, comprising both hardware and software elements, is a shortcut to reducing the development lifecycle of SoC solution and time to market.

NEXCOM's SoC modules come with pre-verified software and hardware and support Coretex™-A8, Cortex™-A9 and Cortex™-A15 SoC processors. The SoC modules are based on Ultra Low-Power Computer-on-Modules (ULP-COM) standard in Qseven form factor, and feature rugged, heatsink-free designs capable of operating in wide temperature environments.

Furthermore, NEXCOM's SoC modules provide graphical user interface (GUI) and contain Board Support Packages (BSP) that include device drivers for a wide range of operating systems such as Windows Compact, Linux and Android, allowing customers to migrate freely between different applications to determine the feasibility of the initial prototype as early as possible during project evaluation.

NEXCOM has also established Computer-on-Module Competence Center (CCC), a comprehensive service center that aims to simplify ODM design processes and assist clients in designing a tailored solution. Backed by a talented pool of software and hardware professionals, CCC provides Evaluation Starter Kits, expert advice, application development assistance, system integration and verification services at every stage of the product development

lifecycle to ensure smoother process, faster time-to-market.

In addition, throughout the entire product development lifecycle, from initial product development, acceptance to final delivery, each process is strictly tracked and managed by product lifecycle management (PLM) to ensure the highest level of quality.

Besides the talented engineering team, NEXCOM's project managers are dedicated to service clients around the world, working closely with local design partners and customers to provide rapid responses to any types of issues.

Complete SoC Solutions for Every Scenario

NEXCOM has successfully applied SoC platforms into a broad range of industries. For example, in medical, NEXCOM's SoC solutions are used in portable medical equipments to monitor information collected by physiologic monitoring systems, acting as data collection devices that enable medical staff to monitor the health conditions of patients or newborns in real-time. The portable equipment can also connect to a USB On-The-Go (USB OTG)
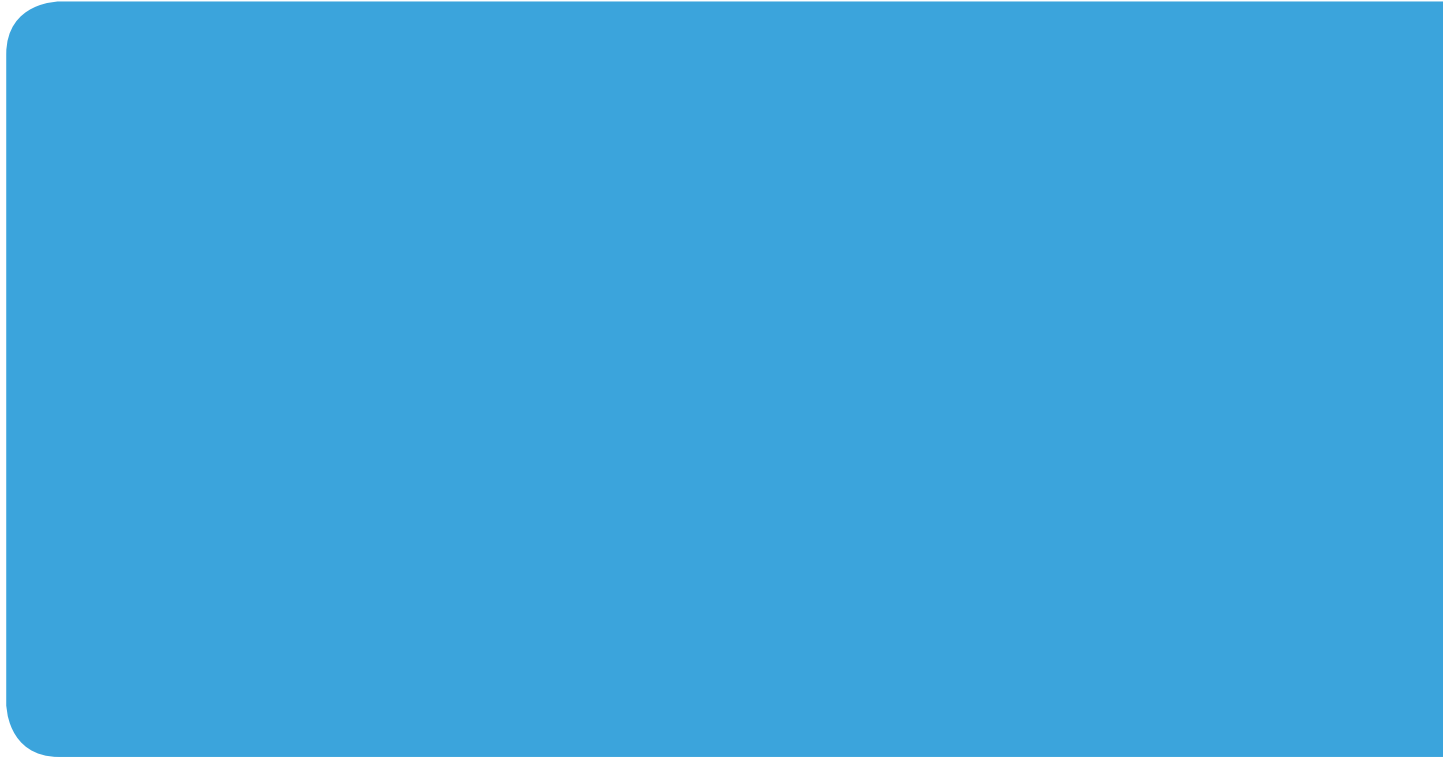
converter to upload simulated data, download software updates, or act as a host when connecting to a USB flash drive.

In fitness centers, NEXCOM's SoC platforms are used to drive interactive fitness consoles with large touch panels, and provide Ethernet and Wi-Fi connections to stream rich, interactive multimedia contents on the displays.

Similar to portable devices in medical, hand-held POS terminals in retail markets are also built with NEXCOM's SoC. This POS terminal helps retail customers to locate the product, streamlining the shopping process from product searching all the way to final payment.

For factory automation (FA), NEXCOM's industrial-grade SoC controllers integrate a multitude of external connections including digital inputs and outputs (DI/DO), serial ports supporting RS232, RS232/ RS422/ RS485 and CAN bus signals, as well as display interfaces supporting VGA and LVDS. An internal mini-PCIe slot is available to turn the SoC controllers into FA gateways by adding fieldbus modules supporting industrial automation protocols such as EtherCAT, PROFINET, PROFIBUS and DeviceNet.

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