

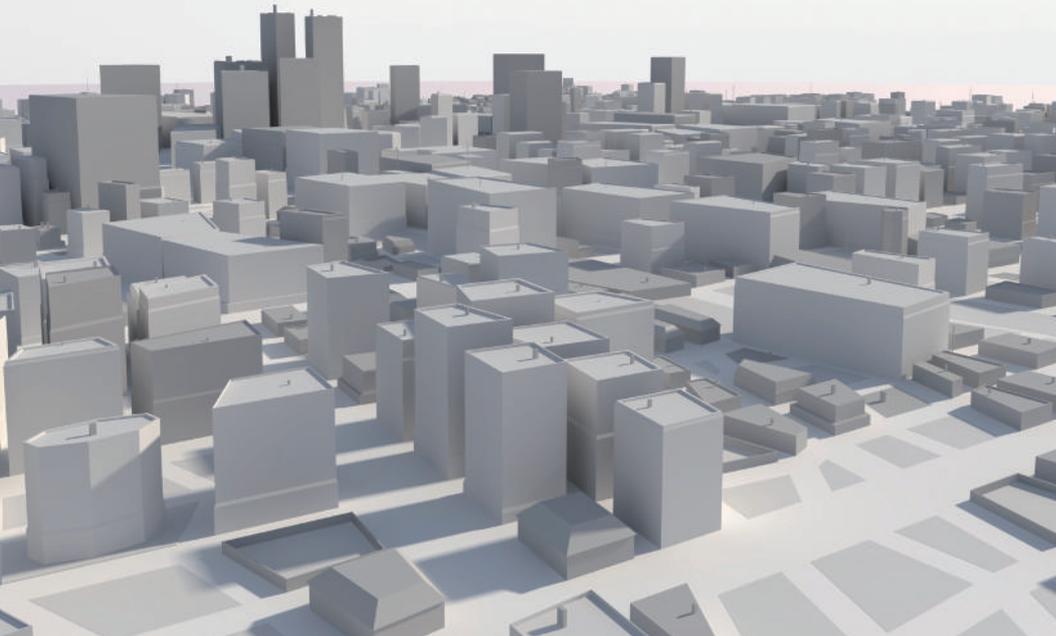
MyAdvantech

The Magazine for Global Advantechers and Partners

Autumn 2014 No.15

The Smart City

Opportunity for a New Industrial Revolution



Evolving the Intelligent Campus

Advantech Increases Traffic Safety for China's Citizens

Digital Signage with Added Soft Power Expands Advantech's FIDS Market Share in China



Embedded Design Completes IoT's Critical Last Mile

Sensor networks are at the forefront of the IoT architecture, but the lack of product customization is a concern for future development. Advantech Wireless IoT Sensing Embedded (WISE) solutions compensate for this deficiency and enable system integrators to construct complete IoT systems.



RISC Software Design-in Services

Embedded QT Package

- Standard SOP for fast installation
- Ready-to-use source code
- Enhanced QT AP

SUSI API for Application Development

- 9 main utilities: H/W monitoring, watchdog timer, I2C control, GPIO control, display power management, brightness control, security, signage API, remote upgrade

Advantech Loader

- Optimized configuration setting
- Multiple boot selections
- Secure software protection

Optimized BSP

- Optimized BSP package
- Unified BSP folder structure

Embedded OS Package

- Evaluative OS image
- Optimized kernel, driver and complete SW services
- Documentation and references

ADVANTECH

Enabling an Intelligent Planet

Standardized and Optimized RISC Software Services

To simplify the hardware and software integration process and accelerate application development, Advantech offers RISC Design-in Services for all Advantech RISC computing platforms to assist customers with system integration. We've focussed on five major aspects to Advantech RISC Software Design-in Service: Boot Code, Board Support Package (BSP), OS services, API Library and QT package. With comprehensive assistance in software, hardware and integration, you can really boost your successful product launch and time-to-market.

Advantech RISC Solutions



RTX 2.0
ROM-3420
Freescale ARM
Cortex-A9 i.MX6



SMARC
ROM-5420
Freescale ARM
Cortex-A9 i.MX6



Qseven
ROM-7420
Freescale ARM
Cortex-A9 i.MX6



3.5" SBC
RSB-4220
TI Sitara AM3352
Cortex-A8



Digital Signage Player
UBC-DS31
Freescale ARM
Cortex-A9 i.MX6



IP-Based Box
UBC-200
Freescale ARM
Cortex-A9 i.MX6



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MIO Modular Systems

Build Up Your Customized Intelligent System Quickly!

Full Selection Ready & Certified

▶ Ultra Low Power ▶ Optimized Performance ▶ Impeccable Performance



20%

Development Cost



50%

Development Time

Selectable I/O Interface

▶ COM Port ▶ CANBus ▶ PoE Ethernet ▶ and more!

ADVANTECH

Enabling an Intelligent Planet

Advantech MIO Modular System tackles complex technical projects with a modular approach that makes it easy to build a system quickly, with less overall development cost. MIO Modular System shortens the time spent on design & validation, making it possible to build a system within 30 days - at least 50% less development time than traditional ODM! A customer satisfaction survey also shows MIO Modular System reduces R&D investment cost by at least 20% compared with previous projects. So leave the complex tasks to Advantech's innovative MIO Modular System!

Key Features



Highly Integrated System



Fanless Thermal Design



Rich I/O Expansion



Wide Range Power Input Option



Various Platform Support



Fast Customization

Product Offerings (Full Selection Certified by CE FCC UL CB)



Ultra Low Power

MIOS-5250 Series

Intel® Atom™ N2600/D2550

Valuable & Optimized performance

MIOS-5251 Series

Intel® Atom™ E3825 & Celeron® J1900

Impeccable performance

MIOS-5271 Series

4th Gen Intel® Core™ U-Series

Supported Extension I/O Modules

MIOe-210

Multiple COM Ports

MIOe-220

Triple Intel® Gigabit Ethernet

MIOe-3674/3672

4 or 2-port 10/100/1000 BaseT(X) 802.3af (PoE) Compliant Ethernet ports

MIOe-3680

2-Port Isolated CAN-Bus Module

MIOe-PWR1

12-24V DC to DC Power Module

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IoT Solutions Alliance
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Partnering for Smart City and IoT Solutions

Because of the rapid population explosion and concurrent economic circumstances, people are increasingly living in large cities. By 2050, over 60% of people in developing countries, and over 80% of people in the developed world, are expected to be classified as urban dwellers. Another increasingly apparent trend is the advancement toward so-called “Smart Cities”. Part of this trend involves Information and Communication Technology (ICT) services becoming widely available through the Internet of Things (IoT) and cloud computing. This will not only contribute to resolving many common social problems, but also reshape the way we work and enjoy leisure time. A sustainable and comfortable living environment enables people to work and live in contentment and contributes to enhancing society as a whole.

Smart buildings are a feature of the Smart City concept. Building designs that emphasize energy saving and carbon reduction not only save substantial financial resources but also reduce the environmental impact of such buildings. Structured management, including data collection by front-end devices with automatic notifications to building facilities management at the back-end, has changed the game rules. Previously, traditional building maintenance involved manual processes and operations, but now, sophisticated computer hardware/software-driven systems are used to perform many everyday tasks ranging from payrolls, to doctor-patient interactions in hospitals, to smart parking systems enabled by wireless sensing technology. In the retail sector, consumer behavior is influenced and guided by multimedia that identifies customers and offers a personalized shopping experience. Apps allow commuters to avoid traffic jams and diners to make restaurant reservations without waiting in line.

However, not all city conditions are the same. Different environments with varying technological requirements must be considered, and solutions

must be tailored to local conditions.

Accordingly, Advantech has focused on four principal areas of Smart City development, that is, intelligent buildings, digital healthcare, intelligent transportation, and intelligent retail. Advantech established intelligent building showrooms at its Kunshan and Linkou campuses to showcase these technologies. The buildings provide a “live” example of smart building systems equipped with many unique intelligent systems such as ambient air controls, smart lighting, parking, and even smart meeting rooms. Advantech also assists upstream and downstream manufacturers and integrators to actively participate in the promotion and establishment of Smart City solutions.

Advantech is accelerating the construction of a Smart City industrial ecosystem by actively establishing smart and vertical alliances with leading industry players. Furthermore, by merging with and acquiring overseas enterprises, Advantech can reinforce its strength in technology for Smart City solutions. At Advantech, we believe that with this new model of urban development, multiple industrial advancements and diverse innovative application features will generate smart opportunities for everyone. In fact, a winner-takes-all oligopoly is not expected to occur under this model. Therefore, full cooperation is a healthy development and mutually beneficial for all.

Large-scale urbanization was once an important sign of industrializing economies; nowadays, the information network economy has made Smart Cities the new milestone. Taking advantage of the recent industrial revolution, Advantech cooperates with partners in accordance with its corporate mantra of “Partnering for Smart City and IoT Solutions” established in 2014. Through collaborative effort, Advantech aims to assist every city in realizing diverse and extensive intelligent applications and services.



Ken Yu

Vice President, Advantech Intelligent Services

Affiliated with Success

ECA UK was founded in 2003 by Mr. Paul Fiander and two close colleagues. Subsequently, ECA has performed impressively as a system integrator working closely with Advantech in the transportation, power and energy, retail signage, and medical markets. Over the years, ECA has continuously expanded its business to better serve customers and cultivate new markets by increasing product offerings and expanding its UK market share. ECA has evolved a close and lasting relationship with Advantech, creating synergies of innovation and effort that enable ECA to reach new markets and ensure customers are equipped with the necessary tools to develop solutions.

**By Martin Marshall with photographs from ECA
Interview with Paul Fiander, Managing Director of ECA**

A recent transportation project provides insights into the benefits generated by this relationship. Automated fare collection systems that sell, collect, and process fares automatically have replaced traditional fare payment schemes in many countries. When an invitation to tender for a replacement system is advertised, intense competition means system integrators must remain alert and responsive to market developments in order to win large, prestigious projects. Recently, a fare collection system that could operate 24/7 in any circumstance

was required for a large metropolitan underground train system, where thousands of passengers depend on machines for fast ticketing. Therefore, a highly reliable solution from an equally dependable system integrator that could provide flexibility and dedicated support was essential for winning this bid. ECA was chosen for this project because they could offer an exact fit at a competitive price with a full local support team.





For over ten years ECA Services have been supplying longlife industrial and embedded computing in the UK and Ireland, based on Advantech technology. We have used our experience as a Systems Integrator to supply both individual products and configure, integrate and support systems to meet customer requirements in a variety of markets from telecomms and engineering to manufacturing, test & measurement, factory automation and control, and many more. Our capabilities extend from re-design and customisation to ensure a perfect fit, and then service and extended warranty options to provide the maximum lifespan in operation. Our premises in Reading include a large configuration & test facility where we build systems using Advantech and any additional third party products to agreed performance specification, and then 24-hour soak test to ensure every product leaving our building has been thoroughly checked prior to shipment. To ensure continuity of supply we also provide a full range of options including buffer stock and local repair facilities, and full documentation to guarantee design & build stability.

Market Demand Efficiently Translated into Tangible Solutions

A key factor in winning the ticketing machine project was ECA's considered and frequent communication with the customer to define their specification and customization needs and identify changes in the early stages of the project. Results were achieved through back-and-forth communications, engineering discussions, testing, and quick turnarounds throughout Advantech's manufacturing chain. This ensured that all of the customer's requirements were satisfied. Thus, market demand was efficiently translated into tangible solutions. Fiander explained, "Every year, Advantech continues to design cutting-edge products and devices with substantial appeal in the markets we serve. For each of these markets, at least one, and in numerous cases many, Advantech products have been designed. This provides a better sense of how the diverse products produced by Advantech allows distribution, integration, and design companies, such as ourselves, to continue acquiring new customers because the technology has such extensive capabilities."

Finding a Good Partner to Grow With

Because ECA is also a full system design service provider, the company required an industrial PC partner with a broad product offering and found that Advantech fit this description, making it a good partner to grow with. The relationship between ECA and Advantech has progressed over the years because of Advantech's clearly defined channel strategy, advanced product offerings, and strong design solutions. Fiander stated, "Advantech has strong sales people, but

equally importantly, they have great product management teams that comprise individuals with a wealth of information. We talk with them most days; if we have a very specific technical question and we need to "drill down" on a product, they are just a phone call away. Although we are proficient at supporting the technology independently, occasionally we do have detailed questions or require special customizations to better integrate our customers' solutions. Thus, being a manufacturer that implements minor, as well as major, modifications for us makes Advantech unique—and that is crucial for our company."

Innovation for the Future

As global business confidence and manufacturing output continues to rise, the future for ECA looks positive. Since its establishment, ECA has evolved and diversified to meet market challenges. Currently, the company boasts strong system integration and design capabilities, passionate and committed engineers, as well as effective sales and marketing personnel. Fiander said, "We try to follow high-growth markets and are developing our own marketing materials to target vertical markets where our penetration is limited, for example, the transportation and medical markets. You must innovate. However, if you have the ability to customize designs or integrate full technology for a target market, while providing substantial value, then you have a real edge. This capability allows us to penetrate new markets and, combined with our commitment to support customers throughout the entire process, will enable us to continue raising the standard for industrial system integrators." ■



Evolving the Intelligent Campus

Advantech's Linkou Campus has implemented customized technology and innovative thinking into their new building to showcase the potential of intelligent systems, energy-saving applications, and optimized building systems. Highly sophisticated smart technology enables Advantech to not only provide more intelligent services, but also to develop the future potential of smart buildings.

By Stacy Yu with photographs from Advantech
Interview with LH Chou, iBuilding Solutions BU Director; Gary Chen, Manager of Advantech Service Ready Platform IT Division



Construction of Advantech's Linkou Campus (Phase 1) was completed in April of 2014. The corporate vision for this campus was to provide an example of intelligent buildings. Advantech collaborated with several partners to install various solutions at the campus. Since opening, many people, including corporate investors, architects, and researchers, have visited the campus every week to experience the many different innovative services and witness the cutting edge of modern building design.

Automatic Intelligent VIP Parking Privileges

When a meeting is arranged at the Advantech Linkou campus, visitor license plates and phone numbers are registered in the iParking system prior to the meeting date.

On the specified meeting day, the system automatically sends a text message reminder to all registered visitors.

When a visitor slowly approaches the parking lot entrance, they do not have to lower the car window to show their ID to the guard because the parking lot gate opens automatically. This occurs because the license plate recognition system correctly identifies the license plate of the car.

Most of the parking lot signage schematically indicates recommended driving directions; visitors are not personally assisted with parking. Advantech's intelligent parking guidance system provides visitors with clear instructions for navigating to specific spaces. Visitors can also use the car searching system to locate their cars easily.

Information Sharing Stimulates Interaction

Unlike the standard content typical of public broadcast systems, Advantech's digital signage displays promote system and information integration within enterprises to ensure that the multimedia content is regularly updated and topical. The interactive TV wall located in the lobby is used to present corporate videos and multimedia content that explain the company's history and global vision. Several digital signage displays in the hallway show dynamic information, and for displays equipped with infrared sensors, when a person approaches the display the original image changes into text to provide additional information.

With the e-Catalog system, product catalogues can be updated and displayed in real time. Additionally, visitors can download catalogues to mobile devices by scanning a QR code, or they can request the catalogue be sent via e-mail.

Smart Building Geared for Employees' Working Efficiency

Gary Chen, Manager of Advantech Service Ready Platform IT Division, asserted, "In an office-based work environment, the most important task is to improve efficiency and productivity." Accordingly, Advantech has devoted considerable effort to developing a meeting room system.

Several meeting rooms equipped with a "Human Sensing Control system" are located on the first and second floors of the Linkou Campus. When a room is occupied, the indicator on the door emits a red light. If the room is reserved but not occupied, the light is green; and if the room is available, the light is white. Thus, the status of any room can be determined at a glance. The air conditioning and lighting settings are already configured for each room. When the meeting is concluded, the system automatically turns off the lights and air conditioning. All processes are controlled by the system, which not only enhances



the quality and efficiency of meeting scheduling, but also reduces energy consumption automatically. Furthermore, with Advantech's scenario control system, users can activate the remote conferencing mode and begin a video conference call with the simple press of a button.

The mobile office on the second floor was specifically designed for personnel on business trips. Advantech's UTC touch computer with its Call Forwarding function can be used to forward telephone calls to employees' personal mobile phones or the nearest desktop IP phone via Wi-Fi, thereby ensuring that important calls are not missed.

Single Smart Card Offers Multiple Features

Employees can use a single smart card in public areas, including the cafeteria, meeting rooms, and restaurants, for a high level of convenience. For example, employee ID cards are linked to the access-control security system using Advantech's IVA Intelligent Image Analysis and Power View Image Integration software programs to enhance building safety. Employees can also use this card, which is linked to the salary system, to make purchases in the cafe without cash transactions.

Intelligent Services Keep Energy Conservation in Mind

All these intelligent applications do not increase the system's overall energy consumption. LH Chou, iBuilding Solutions BU Director, attributed this to each system's built-in energy conservation features. Take office environments for example, energy consumption efficiency can be improved by over 20% by utilizing a human sensing control system, air conditioning sensor, and Advantech's I/O controller. With Advantech's IPC scheduling system and a Region and Time Distributed option, the energy consumed for lighting can be greatly reduced.

The Micro Weather Station Feature is linked to the Building Energy Management System (BEMS) and can be set to automatically reduce air conditioning loads as the weather becomes cooler. By cross-analyzing data obtained

from the micro weather station regarding computer scheduling and sunshine, the lighting system can be adjusted according to climatic changes. Advantech also established a prominently located central control room that allows staff and visitors to view the building's energy consumption to demonstrate their commitment to saving energy whilst working in the building.

Remote Management for 30% Greater Energy Efficiency

According to relevant data regarding daily energy consumption, the Linkou Campus averaged 14,000 kWh, which is approximately 30% more efficient than standard buildings of similar square area. This equates to a 30% improvement in building Energy Use Intensity (EUI).

The significant benefits discussed above can be attributed to the bi-directional remote management of Advantech's BEMS and WebAccess systems. After local information is collected using a building energy data collector, the data are transmitted to the main information processing center. Building data are then collated in the enterprise cloud to enhance analysis and increase the value of information for centralized management.

Advantech also constructed a mobile app that allows managers to monitor the company's energy management systems at any time from any place via mobile devices. This functionality can be further extended to the cross-site management of all Advantech office buildings.

Collaborative Innovation and One-Stop Service

As society continues to develop, people are increasingly expecting superior esthetics as well as more comfort and convenience from buildings. In response to such demands, Advantech established an intelligent building real demo site at their Kunshan-China and Linkou-Taiwan campuses to showcase innovative designs that implement IoT Smart City technologies.

Intelligent buildings are not merely the latest construction trend; instead, the concept is based on providing greater energy efficiency, cost savings, and improved user experiences by using existing and new technologies. Although many solutions on the market use the latest cutting edge technologies, Advantech was the first company to combine all the various technologies together to achieve full integration.

From hardware and software, to back-end management, and equipment maintenance, Advantech provides a one-stop service. Products that satisfy industrial specifications deliver better, more stable system operations and quality assurance for intelligent buildings. Advantech hopes that its evolving, intelligent, green buildings will continue to stimulate and lead international developments in the future. ■

Modular iDoor Technology Gives Embedded Automation Computers The Flexibility To Meet Your Needs



CANopen

EtherCAT

EtherNet/IP

PROFIBUS

PROFIBUS NET

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Compact Design with a Wide Range of Product Form Factors

Advantech's UNO-2000 series of fanless highly ruggedized Embedded Automation Computers include an embedded operating system (Windows CE, Windows XPE, WES7, WES8, Linux- Embedded). They also include Advantech iDoor technology which supports automation feature extensions such as industry FieldBus communication, Wi-Fi/3G, digital I/O, including Palm, Small, and Regular-size form-factors with indicated market segments in terms of entry, value and performance product positioning, which can fulfill a diverse range of requirements.



UNO-2362G
AMD® Dual Core T40E
Small-Size Automation
Computer w/ 1 x GbE,
2 x mPCIe, HDMI/DP



UNO-2483G
Intel® Core™ i7/i3/Celeron
Regular-Size Automation
Computer w/ 4 x GbE,
3 x mPCIe, HDMI/VGA



FieldBus iDoor
PCM-26D1PB
Hilscher netX100 FieldBus,
Profibus, DB9 x 1

PCM-26D2CA
SJA1000 CANBus,
CANopen, DB9 x 2



Communication iDoor
PCM-24D2R2 / PCM-24D2R4
OXPCle-952 Isolated RS-232,
isolated RS-422/485, DB9 x 2

PCM-24D4R2 / PCM-24D4R4
OXPCle-954 UART,
Non-Isolated RS-232,
Non-isolated RS-422/485, DB37 x 1



DI/DO iDoor
PCM-27D24DI
Digital I/O, isolated 16DI / 8DO, DB37 x 1



Advantech Increases Traffic Safety for China's Citizens

Providing effective management and control tools for increasingly busy road traffic across the most populous nation in the world is truly a challenge. Additionally, the substantial disparity between the least and most developed areas further increases the difficulty. However, with assistance from Advantech, an “ePolice” solution that provides authorities with advanced video detection and license plate recognition technology is being established to meet China’s growing traffic needs. ARK fanless video surveillance embedded systems integrate hardware and software to deliver one-stop, integrated NVR/DVR solutions.

by Jill Lai with photographs from Advantech
Interview with Nick Wu, Advantech Shanghai Product Sales Manager

With rapid economic development and urbanization accelerating in China, interactions between people and motor vehicles are increasing. Heavy traffic, as well as a high incidence of accidents/collisions, is becoming commonplace in not only major cities but also less developed areas throughout the country. In response to manpower limitations, an “ePolice” solution for conducting electronic surveillance is being implemented to compensate

for policing deficiencies. These “ePolice” solution units stand on duty 24/7 all year round to accurately record traffic dynamics.

Video Surveillance for Various Needs

Actual configuration depends on specific needs, with the two main divisions being traffic management systems and “ePolice”. Units are composed of some combination of a

motor traffic camera, exposure-assist light, induction coil, wired/wireless network module, switch, and electronic control unit. For a traffic management system, the video units monitor locations with wide viewing angles, but do not perform immediate image recognition or analysis; instead, their purpose is to collect image records. The instrument panel clusters integrated into the system are fanless low-power models. Unlike the traffic management modules, “ePolice” cameras have a narrow viewing angle and require immediate high-definition video capture to facilitate identification and analysis, and this requires fanless, high-performance systems. “ePolice” have been distributed across China to realize intelligent video identification at traffic intersections, thereby enhancing urban security.

Platform Selection: Low Power vs. High Performance

Traffic management systems have been installed at main on- and off-ramps and important intersections, as well as other urban sites that require 24-hour surveillance. As for “ePolice”, they are installed at city intersections to collect evidence of traffic violations, such as running red lights, illegal turns, etc. To collect and analyze vehicle paths and plates within a target area, these installations require powerful, multi-computing functions; thus, high-performance systems have been adopted. Because license plate recognition applications are connected to high-speed monitors with a special video capture card, an embedded system with flexible scalability is essential. The “ePolice” solution is already yielding results, enabling police departments to conduct flexible traffic scheduling/management and reinforce public safety.

Advantech’s highly stable, fanless, low-power video surveillance systems have been successfully deployed across China. Although compact in size, they feature a unique thermal design that delivers wide voltage tolerance, wide temperature range, and low power consumption. They can also withstand harsh weather conditions typical of outdoor environments.

Regional Differences Result in Differing Needs

A wide range of development projects are in progress across China, with the requirements for equipment varying considerably. The systems installed in Beijing and central and eastern China specify mature, intelligent identification technology that emphasizes image quality and immediate identification. In northeast, southwest, and northwest China, by contrast, low-power products with standard definition monitors are the norm. Thus, the specifications for “ePolice” differ according to location. However, because demand is more limited in sparsely populated areas, independent tenders are typically adopted.

To address various consumer needs and outdoor

environmental protection demands, Advantech launched the ARK-2120 fanless, low-power, embedded system; the ARK-2150 fanless, high-performance embedded system; and the ARK-3500 robust fanless embedded system with flexible expansion, port protection, and dust resistance. Because of their differing designs, these systems offer varying advantages. For customers considering alternative systems, Advantech provides multiple options.

ARK System for Monitoring and Locking

In 2014, in addition to introducing the ARK-S series for use in outdoor “ePolice” and traffic management systems, Advantech continues to develop in-vehicle, fanless embedded systems based on ARK-V series products with in-vehicle certification. An in-vehicle video surveillance system must be able to endure harsh environments and provide stable operation. In-vehicle video surveillance systems can be installed in police cars and public transport buses to monitor both the vehicle interior and exterior. In Shanghai, some buses have already been outfitted with ARK-V series units that record driver and passenger behavior while monitoring traffic outside the vehicle. This helps prevent unauthorized persons from driving illegally in bus-only lanes.

Early surveillance cameras are often used for low-resolution CCTV or analog signal surveillance. With increasing market demand for high-definition video, IP camera monitoring has gained popularity. Thus, Advantech has launched several IP solutions that incorporate Power over Ethernet (PoE) features for in-vehicle monitoring. This is hugely beneficial for customers because now they can easily install and manage IP surveillance devices and achieve high-definition images using just one network cable. By using an Advantech PoE in-vehicle video surveillance system, additional cards are not required, which effectively resolves power supply, cooling, and stability issues.

Experienced video surveillance system suppliers provide not only hardware, but an integrated hardware/firmware/software solution with rich SDK and APIs that relieve system integrators of the complex programming required to make low level system calls; this allows them to develop intended applications and functions with great ease and faster time-to-market benefits. Remote management software like Advantech’s SUSIAccess is convenient for developing in-vehicle systems with intelligent manageability. And advanced applications like VMS or IVA can easily be integrated by system integrators with SDK and APIs.

Advantech’s fanless ARK-S and ARK-V series video surveillance systems provide robust, flexible, and highly integrated NVR/DVR solutions that satisfy widely varying requirements throughout mainland China. ■

行李提取引导 Baggage Claim Guide

航班号 FLIGHT	起飞站/经停站 FROM/VIA	转盘 BELT
MU3914	Shenyang	39
MU3994	Haikou	39
HO1186	Changchun	38
MU4018	Chongqing	38
MU3902	Harbin	38

航班号 FLIGHT	起飞站/经停站 FROM/VIA	转盘 BELT
MU3325	Haikou	33
9C8852	Changsha	35

航班号 FLIGHT	起飞站/经停站 FROM/VIA	转盘 BELT



Digital Signage with Added Soft Power Expands Advantech's FIDS Market Share in China

For all airports regardless of size, the immediate provision of flight information is a crucial service that enables passengers to board the correct flights. As airport traffic continues to increase, demands for flight information display systems (FIDS) have risen considerably.

By Jill Lai with photographs from Advantech
Interview with Nick Wu, Advantech Shanghai Product Sales Manager

Since the opening of Terminal 1 in 1999 and Terminal 2 in 2008, Pudong International Airport has ranked first in China and third in the world for passenger volumes. With 371,222 aircraft take offs and landings, and 47,190,000 passengers served last year, Pudong International Airport is the busiest international airport in China. The total air traffic volume alone makes Pudong International Airport one of Asia's major transportation hubs.

In response to high passenger volumes, eye-catching electronic display boards have been installed at the airport entrances, check-in counters, cross passages, and boarding gates to provide passengers with real-time information, including check-in counter numbers, flight information, traffic information, weather, airport announcements,

and service information. FIDSs are important airport service tools for guiding passengers as they embark or transfer between flights. Nick Wu, product sales manager at Advantech Shanghai, China, reported that the Pudong International Airport FIDS update at the end of 2013 prompted Advantech to develop the ARK-DS762 digital signage player.

Information Needs Drive FIDS Business

Nick stated that in 2012, China boasted 183 civil airports. This number is expected to reach 247 by 2020, suggesting substantial opportunities for FIDS business in the future. Advantech first penetrated the international airport FIDS market in 2006, and has since focused primarily on

China's airport FIDS market. Advantech's digital signage players are currently employed at many airports that serve as transportation hubs. Nick typically asks customers, "Which airports use Advantech digital signage players?" before answering with a smile, "Simply speaking, all first-class airports use this product." According to statistical data, Advantech's FIDSs are employed in not only first-class airports, but also comparatively smaller airports, for an overall market share of 88%. However, unsatisfied with anything less than a 100% market share, Nick plans to continue promoting Advantech products. Additionally, upgrades and replacement engineering will be conducted in airports to increase the efficiency and performance of FIDS applications.

Advantech Launches ARK-DS762 at Pudong International Airport

Nick emphasized that Pudong International Airport was constructed to international standards from the beginning; thus, highly specified and precise FIDSs were integrated into the airport design. From Advantech's perspective, the installation of ARK-DS762 at Pudong International Airport has produced considerable benefits and provides a model for new airport construction in China. Regarding Pudong International Airport's terminal expansion and 5-year renewal plans, Advantech also confirmed that its 2013 Terminal 1 FIDS improvement bid was successful. The installation and updating of all ARK-DS762 devices for superior integration and efficiency is expected to be completed in 2014.

ARK-DS762 is equipped with a third-generation, Intel® Core™ i7 processor that delivers high computing performance and supports three HDMI channels. These signage devices are compact, similar in size to a notebook computer, and can be installed behind display screens that feature a module design and VESA mounting capabilities. These features enable convenient installation and maintenance, while reducing the implementation times and human resource costs for system integrators.

Nick asserted that the continued use of Advantech products at Pudong International Airport for several years evidences their stability and reliability. Advantech recognizes that the need for regular software updates is among the biggest obstacles customers encounter. Consequently, Advantech endeavors to anticipate potential obstacles and develop optimal strategies that assist customers with software updates. The integration of SUSIAccess Signage with ARK-DS762 is an example of such strategies and provides customers with an ideal solution.

Exclusive Software Enhances FIDS Intelligence

The FIDS requirements of Pudong International Airport have progressed from simple information displays

to full display systems with additional font options and multiple fade-in and fade-out effects. The integration of ARK-DS762 with SUSIAccess Signage exclusive software offers users the three functionalities of content editor, device management, and remote dispatch. The intuitive editing interface allows system administrators to arrange the broadcast schedule by simply dragging and dropping content files. Content of varying formats, such as videos, webpages, PDF, and Flash, can be played back, with support for multi-language marquees.

ARK-DS762 uses remote KVM management to monitor every system. Nick was pleased to report that this is a favorite function for most customers. Using KVM management, if a system discrepancy is identified, the situation can be understood immediately, and should onsite maintenance be required, the appropriate tools can be prepared in advance, reducing the overall repair time. Additionally, remotely controlled on/off switches and automatic backup functions are vital for operational management and maintenance.

According to Nick, one primary concern for open information display systems is the accidental broadcast of confidential data. Accordingly, ARK-DS762 is equipped with McAfee security solutions that provide complete data protection. In addition to requiring authorization for all content broadcast, the displayed content can be strictly controlled with the establishment of a management white list.

FIDS Integration Generates New Business Opportunities

"Anticipating user requirements and developing customized solutions enable us to satisfy customer needs" said Nick regarding Advantech's corporate strategy. Nick also stated that onsite support, comprehensive specifications, low failure rates, and optimal cost-performance are the key reasons that Advantech remains customers' first choice for digital signage products.

Presently, airport informatization is undergoing rapid development. Contemporary airports serve as distribution centers for people, logistics, capital, and information, increasing the demand for FIDS devices and technology upgrades. Considering the development of FIDS in the future, Advantech aims to exceed its previous role of hardware supplier by continuing to integrate software and providing application-ready platforms. This allows customers to effectively reduce the development time following FIDS installation. ■



One hundred years ago, the largest city in the world was London, with a population of approximately 6.5 million. However, nowadays, numerous cities have populations of 10 million or more. According to a statistical report by the United Nations, the world's population is approximately 7 billion, 50% of whom live in cities. This figure is predicted to exceed 65% by 2050. The number of mega-cities with populations in excess of 10 million, such as Tokyo, Delhi, Seoul, Shanghai, Mumbai, Mexico City, Beijing, London, Paris, and New York, has already exceeded 30. The ongoing dramatic increase in population densities places a heavy burden on city infrastructures, local resources, and public security.

A Smart City Leads to Happier Lives

Advantech Intelligent Services Vice President Ken Yu said, "It is very difficult to make life better for everyone because when there are a lot of people living in a city, problems with traffic, healthcare, commerce, education, and public security all increase exponentially." These problems include commuters having to squeeze onto crowded trains or wait in traffic jams, fake goods and dishonest food practices destroying public trust in manufacturers, and seriously ill patients not having access to adequate treatment or hospital beds.

These problems affect everyone and Ken further asserted, "Smart City technologies are a necessary measure in response to urbanization because the services provided by Information and Communication Technologies (ICT), the Internet of Things (IoT), and cloud computing reduce inconvenience and improve the urban quality of life, which results in citizens leading happier, more fulfilled lives."

Not all Cities Are the Same

What is a so-called Smart City? What services can a Smart City provide? According to statistics from the market research institute IDC, over 1,000 smart cities are currently in various stages of development. However, because the regional characteristics differ between cities, the initial services introduced in these cities also differ. Thus, some cities are developed to be environmental-friendly by emphasizing energy savings, carbon reduction, water resource management, resource recycling and reuse, whereas other cities emphasize tourism or public transportation.

According to Ken, no universally acknowledged standard exists, "We should understand that it is impossible

to use the same Smart City blueprint in multiple locations. Additionally, because communication protocol standards may differ between cities, cross-field communication is not viable. The optimal strategy is to deconstruct a city into multiple vertical industries, for example, traffic, medical, retail, and architectural industries. This enables smart service applications to be replicated among regions. For example, the successful establishment of the YouBike public bike sharing system in Taipei City provides an installation example that can be directly referenced for other cities".

Key Techniques Optimize Smart Services

Although such cities feature different smart applications, the purpose of every application is to increase the convenience and comfort of all citizens and enterprises in the city. Ken asserted that the sensor, network, and application layers of the IoT can completely support all industries in a Smart City; however, many techniques are still required to achieve the final goals of comprehensive sensing, reliable transmission, and intelligent computing. For the lowest layer, compact batteries are crucial for front-end sensing devices. Long-life batteries are required to power mobile nursing carts for example. Regarding the interconnected second layer, Ken commented that, "Wireless transmission has entered the high-speed 4G and 5G generations. However, certain applications cannot tolerate connection interrupts of even 1%; thus to achieve 100% accuracy, a stable and reliable network system is necessary for Smart City applications. Regarding processing in the top layer of the IoT, Ken stated that, "As each industry introduces various innovative, smart applications one by one, the big data sets accumulated will facilitate further discovery."

Working Smarter to Serve the Masses

The ultimate purpose of technology is to serve people. With more innovative discoveries made and new applications developed, Smart City implementations have become opportunities to redesign and reconstruct cities for the current information and networking age. Finally, Ken stressed Advantech's strategy to continue implementing its corporate strategy of Partnering for Smart City and IoT Solutions by cooperating with industry partners to develop smarter, more convenient applications, solutions, and services. ■



Advantech Focuses on Four Major Industries to Facilitate Smart City Development

Development toward smart cities is progressing rapidly worldwide. Eager to participate, Advantech is focusing on the following four major industries: Intelligent Buildings, Digital Healthcare, Intelligent Transportation, and Intelligent Retail. Advantech aims to cooperate with its partners in implementing various smart applications and services to facilitate smart city developments.

By Yu Sharlene with photographs from Advantech, Fotolia and iStock
Interview with Ken Yu, Advantech Intelligent Services Vice President

The Massachusetts Institute of Technology first proposed the concept of the Internet of Things (IoT) in 1999. Subsequently, the International Telecommunication Union (ITU) proposed a vision outline for the IoT age. Then, in 2008, IBM introduced the idea of a “smarter planet.” Continuous technological developments and innovations have expanded the initial concept to more than just a slogan. In recent years, the governments of

many countries have adopted advanced technologies to resolve city issues, ensure sustainable development, and establish new city services and smarter infrastructures. This is the reason that the shift toward smart cities is progressing at full speed worldwide.

Real Demo Sites to Promote Economic Development

For several years, Advantech’s Smart City strategy

targeted the Intelligent Buildings and Digital Healthcare industries. However, Advantech has currently expanded its focus to the following four fields: Intelligent Buildings, Digital Healthcare, Intelligent Transportation, and Intelligent Retail. Advantech Intelligent Services Vice President Ken Yu said, “Advantech always pays a lot of attention to market development trends in order to plan the future direction of the company; we understand that the Smart City concept is a necessary industrial development; however, the evolution of the Smart City ecosystem has not yet matured and related system providers have not yet appeared. Thus, one of our responsibilities as an industry leader is to demonstrate our initiative and expertise, so we decided to showcase real examples of projects to encourage upstream and downstream companies to participate enthusiastically in this industrial development trend. We hope these project demos will also accelerate the implementation of Smart City solutions.”

With this in mind, Advantech established the Kunshan Advantech Technology Campus (A+TC) and Taiwan Linkou Campus, both formally opened in 2014; they provide two examples of intelligent building solutions in action.

Ken explained that part of the reason Advantech is emphasizing intelligent building applications is because most applications are executed inside buildings. Therefore, Advantech constructed two campuses to showcase these solutions. For these campuses, Advantech introduced its own building energy management solution (BEMS) and WebAccess graphical control software with remote monitoring functions, and collaborated with third parties to establish real demo sites that allow people to personally experience optimized building management.

Optimized Management Processes

Currently, several global issues have attracted substantial public attention; these include rising energy costs as well as carbon footprint reduction. Energy conservation must be actively promoted in all industries, so intelligent building management projects at venues such as hospitals, hotels, and factories should address this need. Advantech intelligent building solutions enable a building’s hardware to be connected to a subcontractor’s system, which allows service providers to actively assign engineers to configure or repair the system according to requirements and alerts generated by the system. In hospitals for example, this can reduce the amount of time that nurses spend dealing with non-medical issues because

patients would only have access to care services from a system located near their beds, meaning nurse workloads can be effectively reduced.

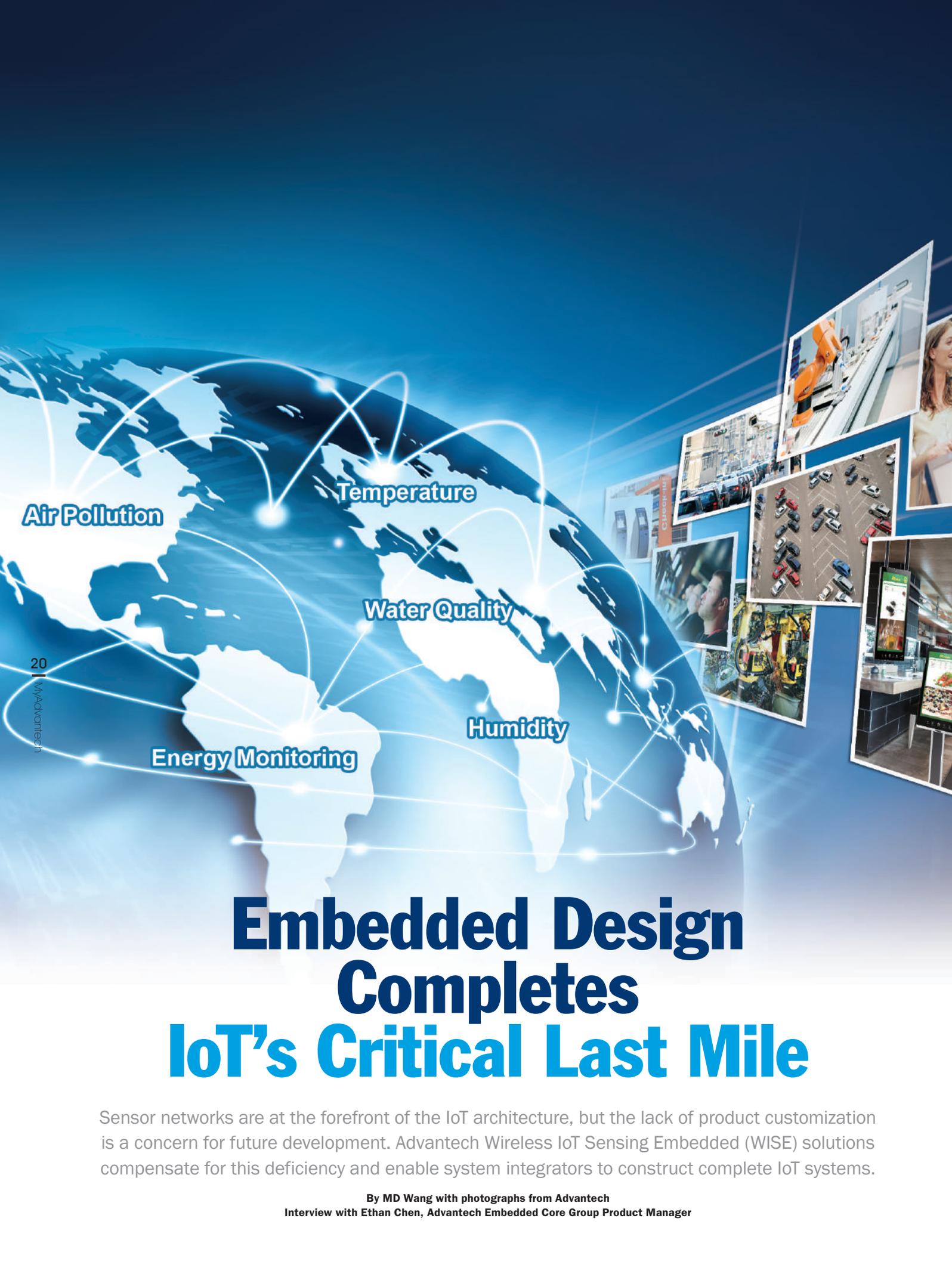
In addition, intelligent building solutions can increase the efficiency of medical care processes, which subsequently improves the relationship between doctors and patients. For example, during a surgical procedure, surgical processes can be classified into several stages and be displayed on a signage in the waiting room in an effort to soothe the patient’s family, thereby reducing nurse workloads and improving the service offered to patients and their families.

Understanding Operating Processes

Advantech also provides solutions for many other industries/uses, such as surveillance and iParking, reservation management for office meeting rooms, smart household systems that connect household appliance monitoring with community security, mobile medical care, and nursing carts. Advantech also provides services related to intelligent transportation and intelligent retail to many government departments and private enterprises, respectively. An example application developed by Advantech provides real-time information on the traffic conditions of Taiwan’s national highways to enable drivers to avoid traffic jams. Advantech also provides smart, solar-powered, multimedia bus station displays for e-bus systems; broadcast systems for chain stores and signage in public spaces; interactive kiosks for shopping malls; and various other application services. Ken commented, “Suppliers should depart from the conventional business mode of merely selling products and emphasize solving problems for customers instead. Many common services may be managed differently because of varying user habits.”

Cooperation to Create New Opportunities

Ken emphasized that although the Smart City concept does generate substantial opportunities, gaining a monopoly on the Smart City market is impossible. “To successfully realize the Smart City concept, we need professional knowledge in specific domains to produce appropriate solutions.” Advantech is an enthusiastic participant of various industry collaborations that promote the development of an industrial ecosystem. With ongoing internal development and ever-evolving external collaborations, Advantech hopes to become a leading global provider of Smart City and IoT solutions. ■



Air Pollution

Temperature

Water Quality

Humidity

Energy Monitoring

20
Madvantech

Embedded Design Completes IoT's Critical Last Mile

Sensor networks are at the forefront of the IoT architecture, but the lack of product customization is a concern for future development. Advantech Wireless IoT Sensing Embedded (WISE) solutions compensate for this deficiency and enable system integrators to construct complete IoT systems.

By MD Wang with photographs from Advantech
Interview with Ethan Chen, Advantech Embedded Core Group Product Manager



The Internet of Things (IoT) has been hailed as an epoch-making, disruptive technology that follows on from the PC and Internet revolutions. A central concept is to acquire data via sensors and then store, analyze, and transfer the collected data over a network to independent devices capable of intelligent decision making.

In this architecture, sensing, communication, and management functions are performed by uniquely identifiable devices. However, communication between the sensing and processing layers still requires development. To address this need, Advantech has proposed several embedded solutions that comprise software, intelligent systems, gateways, and nodes; all of which demonstrate substantial potential for overcoming the “last mile” bottleneck and ensuring smooth system operations.

Integrated Intelligent Parking System Solution

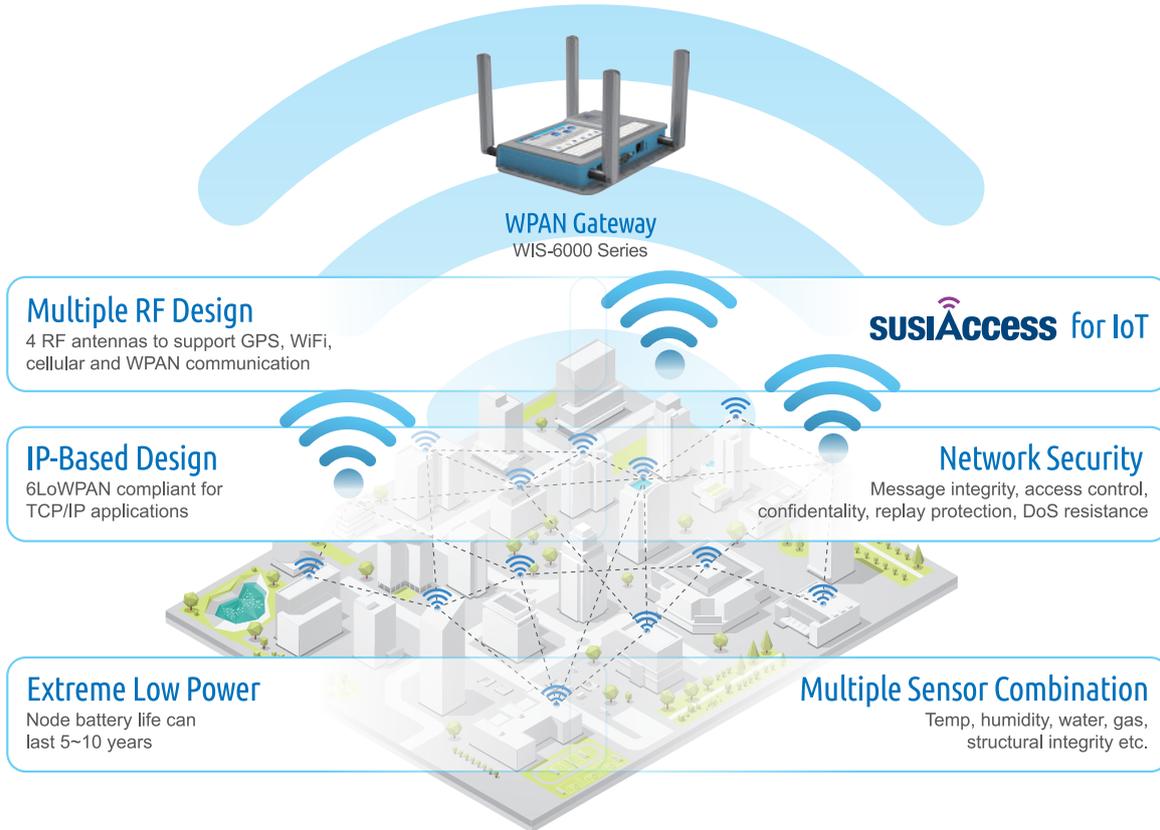
With the integration of relevant software and hardware, Advantech’s WISE solutions provide complete sensor networks. Ethan Chen, product manager of Advantech’s Embedded Core Group, highlighted that the bottom layer layer of the IoT requires numerous sensors to effectively realize the concept of “everything being connected to everything else.” This is especially true for environment monitoring applications that measure various factors such as air pollution, water quality, temperature, and noise. Effectively managing hundreds of devices can pose quite a challenge. Fortunately, each controller included in Advantech’s WISE solutions is capable of controlling 200 nodes, which facilitates the establishment of comprehensive environment monitoring systems.

Such systems have been implemented at Advantech’s Kunshan and Linkou campuses. At the Linkou Technology Center, Advantech also combined a sensor network with RFID to create an intelligent parking management system. In this system, each parking space is equipped with a sensor that monitors whether or not the space is occupied by a vehicle; this information is then transmitted to the backend management system for overall parking lot management. A signage system at the parking lot entrance displays the number and location of available parking spaces to facilitate driver navigation.

Related systems and applications have been developed in numerous countries. Considering street parking for example, Ethan explained that following the model of Advantech’s parking management system, street parking spaces can be equipped with sensors connected to networks, and all information collected by the sensors can be uploaded to the cloud. Thus, drivers can use a mobile phone app to identify the nearest available parking space. Car park attendants can also use handheld devices to determine the status of each parking space. Additionally, the system can notify attendants to issue parking tickets to vehicles occupying a parking space.

Because such IoT systems are primarily installed outdoors, all nodes must be capable of withstanding environmental exposure. As a case in point, the sensors used in Advantech’s parking lot system were carefully designed to tolerate and resist damage from cars driving over them. Because of their convex shape, they can be easily positioned on pavements without requiring additional integration. Each node is equipped with a sensor and transmission module. Regarding transmission, Advantech adopted the IEEE 802.15.4e standard rather than the commonly used Zigbee standard. This is because transmissions that adhere to the Zigbee specifications are prone to interference, whereas the IEEE 802.15.4e specifications deliver superior transmission performance by enabling channel hopping between several transmission channels.

Connect to 200 Node Devices with 99.999% network reliability



Mesh Network Links All Sensors Together

The Advantech WISE solution also adopts time synchronization technology and the IPv6 protocol over the Low-Power Wireless Area Networks (6LoWPAN) standard to maintain node operation with reduced power consumption. Sensor nodes are generally in standby mode during normal operations, only “waking up” when a change occurs. In other words, if a parking space is empty, the sensor hibernates in sleep mode; however, when a car approaches the parking space to park, the sensor is activated. This approach ensures that nodes consume as little power as possible. The battery of each node in Advantech’s Linkout parking lot is expected to last for 5 to 7 years.

The parking management solution uses Advantech’s SUSIAccess 3.0 to develop the IoT functions and maintain compliance with the IPSO specification. Ethan emphasized that IoT products gain credibility by adhering to industry standards; thus, node packet transmissions must also comply with existing standards to provide both stability and scalability. Notable points regarding node design are listed as follows: The interface between the sensor node and backend system must adhere to relevant standards; the application environment should be considered when designing the outer casing; and nodes must have wide

temperature operating ranges for harsh application environments.

Because the deployment of numerous sensor nodes is a common feature of IoT systems, a good network topology is essential to effectively control sensor data transmissions. Advantech’s solution uses a mesh topology to ensure continuous connection. In this topology, all nodes are connected. Thus, if any node fails, messages can still be transmitted between nodes. This topology is ideal for a wide range of environmental monitoring applications.

The Final Piece of the Puzzle

Regarding the transmission interface, each Advantech node contains 4 analog I/Os, 16 digital I/Os, and 1 UART to connect diverse sensing devices. Equipped with built-in Modbus, Advantech’s sensor network is capable of not only acquiring data, but also remotely controlling a range of equipment. This transforms the IoT system from one-way transmission connections into an advanced two-way network.

As the IoT continues to mature, numerous types of applications have emerged. By addressing current market needs, Advantech’s WISE solutions provide the final piece of the puzzle for system integrators involved in the IoT. ■

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PAC Redundancy Solution Reduces Controller Failure Risk

Many critical industry sectors, such as electricity, transportation, water, construction, and manufacturing, are highly dependent on automated equipment for maintaining cost-effective production. At the core of most systems, controllers must be equipped with low fault tolerance and superior redundancy mechanisms to ensure adequate protection.

**By Min with photographs from Advantech
Interview with Axel Chou, Advantech Industrial Automation Group Assistant Manager**

Generally, most automated applications require high availability. Controller failure, for whatever reason, impacts production, causing economic losses. In the worst case scenario, such failures can endanger lives and property, both of which are unacceptable outcomes.

Therefore, when considering controller reliability, users should establish a mechanism for high system availability. The redundant configuration, where the standby controller is used for managing operations in the event of a system failure, is undoubtedly the most appropriate method. However, despite the number of available redundancy schemes for traditional programmable logic controller (PLC) systems, users remain unwilling to adopt such schemes because of cost and complexity concerns.

Axel Chou, Assistant Manager of Advantech's Industrial Automation Group, explained that two types of PLC redundancy exist - software and hardware. "Compared to PLC software redundancy that involves rewriting logic programs, hardware redundancy is relatively easy to implement. However, users are required to obtain numerous

synchronization modules and communication devices, and to execute complex procedures in order to install and configure such components. Consequently, the costs of implementation may increase four or five fold. Furthermore, the user interface and manual developed for both PLC redundancy approaches are confusing to navigate, and complex status indicator signals increase the difficulty of maintenance."

Enhancing Performance with Additional Controllers

Rapid advancements in semiconductor and IT technologies have resulted in increasingly compact PC hardware that delivers enhanced functionality and performance and networks capable of providing greater stability and reliability. Accordingly, Advantech has used these enhanced components to create new, more economical, redundancy solutions that offer greater intelligent control capabilities. Based on the collaborative and interlocking nature of IoT, a digital signal processor (DSP) was embedded in a new product design to serve as a master and backup mechanism. This design concept was implemented in the

APAX-5620KW programmable automation controller. The ingenuity of this design resulted in APAX-5620KW PAC receiving a Taiwan Symbol of Excellence award.

Axel highlighted that the architecture of the IoT comprises cloud-based platforms and numerous terminal devices. Because the cloud platform primarily computes and processes big data to generate useful information, the end device must be intelligent. Although the concept of “intelligent systems” is somewhat vague, systems that offer automatic backups provide a simple manifestation of this idea. With dual controllers for monitoring the status of data and maintaining information coherence, APAX-5620KW can be used to assume control from a failed master. The operational principles of APAX-5620KW are identical to the application demands of intelligent terminals.

The built-in DSP redundancy of APAX-5620KW is a standard PC-based feature. Compared to closed PLCs, this DSP provides a unique price/performance ratio. Thus, users no longer need to sacrifice redundancy because of cost considerations. Besides cost, complexity is another factor that reduces user intentions to adopt controller redundancy schemes. Consequently, Advantech applies simplified, humanistic, i-generation concepts to product designs to provide users with an optimized computing experience.

Superior Operation and Minimal Design

Axel also asserted that because DSP firmware can automatically identify and synchronize data, users are not required to rewrite high-level programs. Instead, users only need to purchase another APAX controller to serve as a backup; the installation of additional communication modules is not required. By selecting the redundancy option on the utility settings page, users can synchronize two controllers and initiate the redundancy function. This DSP like a shadow of the main controller, monitoring its status while synchronizing data. Thus, in the event of the backup DSP assuming operation, existing data collection and transmission tasks can be executed without time

delays or data continuity problems.

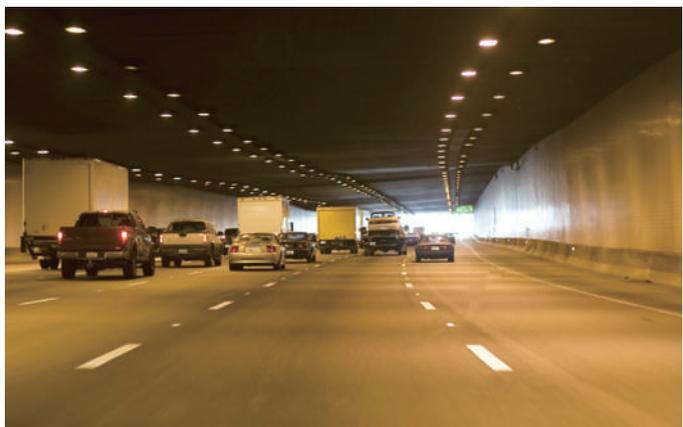
To avoid confusing users with excessive signaling, APAX-5620KW is equipped with a limited number of indicators that denote the main/standby controller state and synchronization status. Although this strategy offers superior operation and easy configuration, Advantech plans to further modularize this solution to increase the PAC redundancy benefits and availability for all users.

Continuous Operation Reduces Emergency Repair Efforts

Advantech’s PAC redundancy solution is suitable for application in a wide range of industry sectors. Axel asserted that immediate effects can be achieved with two application types. The first type is remote use applications, such as in unattended machine rooms, tunnels, and water treatment stations, all of which can benefit from redundancy. Considering spillway facilities for example, by continuously monitoring pipeline vibrations, administrators can easily detect abnormal conditions and conduct regular maintenance to prevent flooding rather than reactively and repeatedly resolving system failures caused by heavy rains or typhoons.

Another potential application is equipment monitoring systems; such systems are designed to improve system availability and prevent data inconsistencies. Similar to a semiconductor factory, the various process parameters must be monitored and relevant data integrated to conduct regression analysis and optimize operations. If data losses occur because of a controller failure, the process yield may be adversely affected. Advantech’s PAC redundancy technology eliminates this concern.

For most automation applications, controller problems typically cause data losses and operating difficulties. Thus, failure to implement a redundancy mechanism because of high costs or implementation difficulties must be avoided. By adopting Advantech’s innovative redundancy technology, users can avoid significant risks and effectively maintain critical systems without interruptions in operation. ■



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Time

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Advantech MI/O Design Delivers Cost Advantages and Fast Time-to-Market

Embedded system applications have become increasingly diverse and each field requires different system features. Thus, achieving both cost and time-to-market benefits is challenging. However, using a simple yet flexible approach, Advantech's MI/O Design Services enable system integrators to resolve such problems easily.

By M.D. Wang with photographs from Advantech
Interview with Brian She, Product Manager of Advantech Embedded Core Group



Interface

PoE Ethernet ▶ and more!

Because embedded system applications have become increasingly diverse, embedded boards with fixed specifications no longer meet customer and market requirements. Previously, suppliers designed embedded board products according to market demands and only changed their designs if customers had special requests. With this approach, suppliers could still consider cost and time-to-market because only a few classes of applications existed. However, as the demand for design updates increases, the conventional approach has ceased to be cost-effective, especially for a small number of highly varied applications. Occasionally, projects are even cancelled because of excessive design costs.

In addition, embedded products tend to be “long tail” products, that is, the majority of their revenue results from low-quantity sales across a long market lifespan. Once the product plan is abandoned, the portfolio benefits decline and business operations are drastically affected. Consequently, Advantech introduced MI/O modular system design services.

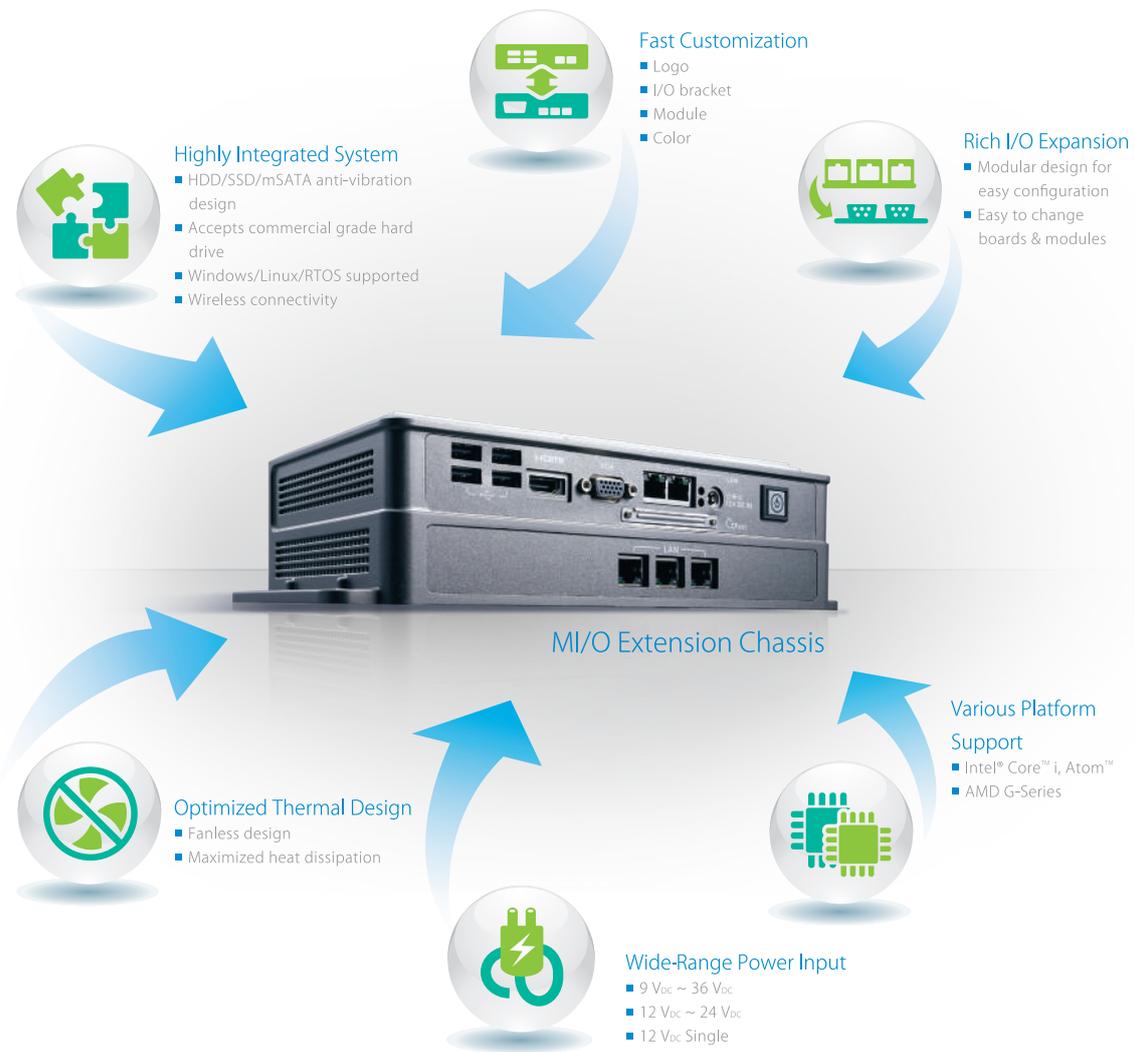
Specialization Accelerates Time-to-Market

Advantech’s MI/O brand name is a combination of “multiple” and “input/output”, and incorporates a modular design concept. Because most customization demands involve changes to the peripheral I/O with relatively few requests for specialist CPUs and PCB alterations, Advantech designed a CPU motherboard with modular I/O expansion capability that allows customers to choose the required CPU motherboard and I/O boards according to their particular needs. Advantech also provides DC power supplies of differing voltages. Using the numerous options and through flexible integration, customers can create dedicated niche systems in limited time.

“Currently, embedded systems are widely used in various vertical markets,” said Product Manager of Advantech Embedded Core Group Brian She. “To implement special features for different fields, we offer a variety of purpose-specific embedded platforms and I/O modules. Additionally, customers are encouraged to lead the development projects while Advantech assumes a supporting role, providing assistance if additional product design adjustments are required. Applying the accumulation of our professional experience in embedded technology, we provide customers with design references and assist them in creating dedicated I/O modules.” Brian also indicated that this new approach significantly reduces design time. “Traditional design processes necessitated repeated corrections, fine tuning, and a total design time of approximately 6 to 8 months. By adopting a customer-led model combined with support from Advantech, the design time can be reduced to only 3 to 4 months.”

Designed for Flexible System Upgrades

Advantech has also proposed other services/features for delivering a fast time-to-market; the removable I/O shield is an example of such a feature. Brian explained that the primary reason for creating a customized embedded platform is typically to accommodate a specific connector type, often with requirements for water or dust resistance, and/or electrostatic isolation. Previously, these special requirements necessitated a system panel change or even a redesign of the entire shell mold, leading to the expenditure of substantial time and money. To maintain both efficiency and flexibility, Advantech designed a removable I/O shield that allows users to replace only the shield, without changing other system components, when the connector or cable must be modified. With the proposed requirements, including sample confirmation and system assembly, projects can now be completed within 30 days.



As embedded product applications continue to expand into new markets, the corresponding working environments increase in diversity, generating unique demands for specific, high-priced components suited for the special circumstances. This escalation in specifications increases the complexity of the entire process, from material preparation before manufacturing to device delivery after completion. Consequently, Advantech designed systems with superior memory, thermal properties, and hard drives to provide customers with standard certified components for more precisely controlling costs and delivery time. In addition, upgrading old systems has become easier because users can now replace specific components.

Brian noted that MI/O systems have a high degree of reusability. Apart from their modularity, Advantech's embedded single-board computers (SBCs) exhibit a consistent design. Consequently, unique system design configurations, including custom shields, I/O modules, and cables, can be applied directly instead of replacing the entire system. This not only protects customers' original investment by retaining still-worthy parts, but also reduces

the overall cost and development time.

Applying our extensive experience, Advantech has designed in many detailed system features. For example, adding a cable-fix clip prevents unexpected power cord disconnects, and enhancing ground separation minimizes noise and reduces the influence of equipment ground noise during operations.

"For system integrators, time and cost burdens are increasing more than ever before. Furthermore, balancing such burdens is challenging; one can either use more time to reduce cost, or spend more money to save time. Advantech's MI/O products and services allow customers to do both. By providing a simple approach with enhanced system flexibility, our solution reduces development costs and allows developers to achieve fast results," Brian said. Advantech's MI/O products and services have been officially launched. These products and services enable customers to accelerate their time-to-market while simultaneously controlling costs, ultimately enhancing their competitiveness. ■

Empowering Connected Signage Solutions



ADVANTECH

Enabling an Intelligent Planet

Application-ready Turnkey Solutions for Digital Signage Networks

Advantech's turnkey signage solution provides a reliable platform with an application-ready software solution for customers. All Advantech digital media players come pre-loaded with an embedded OS, and at no extra cost, Acronis data protection, McAfee system security, and content management software. Advantech helps customers reduce complexity and capitalize on digital signage networks with the result of faster time-to-market and lower total cost of ownership.



Content Editor

- Layout Editing
- Playlist Scheduling
- Remote Dispatch



Signage Manager

- Status Monitoring
- Remote Content Syncing
- Emergency Message



Remote Management

- Remote KVM
- Remote On/Off
- System Security
- System Recovery

Ultra-Slim



DS-060
3rd Gen. Intel® Core™ i7/ i3/
Intel® Celeron®/ Intel® Atom™
with 19 mm slim design

**Open-Pluggable
Specification**



ARK-DS262
3rd Gen. Intel® Core™ i7/i3/
Intel® Celeron® with OPS
design

Cost-Effective



ARK-DS306
AMD® G-Series T40N
with fanless design

**Graphic
Enhanced**



DS-570
Intel® Celeron® N2930/J1900
Quad-Core™ supporting
4K2K content

Multi-Display



DS-862
3rd Gen. Intel® Core™ i7 with
discreet GPU, supporting 4
independent displays

Advanced Solutions Fulfill Expanding Industrial Storage Needs

The Internet of Things is driving massive data growth and pushing the market toward storage products with greater capacity, higher efficiency, and superior security. As ICT continues to mature, it is increasingly incorporated into various industrial computer application fields.

By Yan with photographs from Advantech
Interview with Gallante Wan, Product Manager of
Advantech Intelligent Systems Group



The intelligent buildings industry and Internet of Things (IoT) have become new market opportunities due to strong advocacy from Intel® and several other leading companies. With changing markets and user needs, the boundary between industry and consumer products is becoming increasingly blurred. The concepts of intelligent applications and the IoT introduce mature information and communication technologies (ICT) into various industrial computer application fields. Of which, storage-related products and techniques are the most obvious examples.

As the Product Manager of Advantech Intelligent Systems Group, Gallante Wan highlighted that, “Big Data is set to change storage methods and concepts. Although storage is not a new demand, we are actively developing industrial cloud and IoT applications related to storage products.” Because storage requirements are expected to continue growing, the provision of relevant products that meet market and customer demands is currently one of Advantech’s main objectives.

IoT is Changing the Concept of Storage

Most enterprises typically lag behind current trends and are unaware of new storage technologies that have been widely adopted and can benefit their business and solution-development efforts. Gallante stated that connecting and communicating with many devices over the Internet is the basic idea behind IoT, and that related application data is provided by numerous sensors of varying type, in other words, machine-to-machine rather than human-to-machine. Because instead of conventional text-based data, large amounts of image, audio, video, and alphanumeric data are generated, traditional storage solutions are no longer sufficient.

Regarding the storage server, emerging applications typically generate new challenges. For example, highway monitoring systems are now expected to not only record vehicle numbers and speed, but to also capture images and perform real-time image processing. These huge data demands exert pressure on standard storage configurations and computing capabilities.

Advantech has considered what system type is ideal for this purpose. Gallante said, “Previously, most of our products (approximately 90%) featured two hard disk drives (HDDs), only 10% of our products were equipped with four HDDs, and those with more than four HDDs amounted to less than 1%. With changing market trends, an increasing number of customers require advanced product portfolios.”

Consequently, Advantech developed new storage server products that feature more than 12 HDDs as well as hardware RAID (Redundant Array of Independent Disks) configurations for industrial cloud applications. In addition to delivering server-grade motherboards, applying industrial components, and providing excellent expandability through support for traditional PCI and new PCI-Express cards, products in this latest range are also equipped with Advantech’s SUSIAccess for remote management capabilities.

External Disk Array Meets the Needs of Big Data

Advantech has developed storage servers and external disk array solutions tailored to users’ actual needs to achieve the goal of Big Data management. According to Gallante, the conventional strategy involved overwriting data in the machines or terminals in order to reuse memory space. However, now IoT and Big Data applications require both short-term data space as well as long-term data capacity.

Gallante cited a factory automation system that collated data for further analysis as an example. Typically, data from monitoring devices is stored on the machine. If equipment problems occur, relevant data is retrieved from the machine for analysis; otherwise, the data is overwritten after a specified period of time. However, the current application environment has changed drastically. Thus,



machines are typically used to perform real-time on-site monitoring and store substantial amounts of data. With long-term data accumulation, users or system providers can evaluate production processes and/or maintenance requirements before proposing an improvement plan. This new approach is more beneficial for suppliers and increases demand for disk array products. Gallante said that another advantage to implementing an external disk array is the centralization of diversely located storage servers, which significantly reduces management and maintenance costs while improving hard disk capacity utilization.

Enhancing Product and Market Competitiveness

Advantech’s storage solutions comprise many advanced techniques such as thin provisioning for flexible use of storage space, FlashCopy for performing data backups and restoration without affecting system operations, EasyTier for using a limited number of SSDs to enhance overall performance, and Remote Mirror for conducting remote synchronized backups. In Gallante’s view, these techniques, although necessary functions in the storage sector, are still regarded as fairly high-end technologies for the industrial cloud and industrial computing industries.

Gallante asserted that although the concepts of storage servers and external disk arrays exhibit certain similarities, their practical arrangements and application fields differ substantially. Through proper configuration and integration, suppliers can develop more complete product lines to meet market demands. However, small- and medium-sized enterprises appear to not require the consideration of such storage applications. Nonetheless, Gallante emphasized that the provision of equipment with new storage solutions can facilitate critical operations, and the benefits obtained will certainly exceed the investment in equipment. ■



Pax Chiu
ITS PM, Advantech China

Hi, I am Pax from A+TC. It is my pleasure to introduce myself to you through MyAdvantech. Breakthrough technology and excellent design have always interested me. As a product manager (PM), I certainly hope that the products I incubate would also have these traits. Currently, I work as a PM in the ITS product division who is responsible for developing appliances specifically for intelligent transportation. Applications in rail transportation, including rolling stock controller, wayside controller & station equipment, are the main markets we address ourselves to. I am proud to work with my solid and robust team. Thanks to a colossal effort by ITS team, more than 50% of the projects for new-built metro stations in China by 2014 use ITS- 1 series products from our team for Automatic Fare Collection systems. I think our team should really be proud of this achievement.

Working in Advantech is full of challenges and fun. Because of the business model for niche markets, each product division functions as an individual firm. When talking about products, planning, development and cost control should be considered; for operation, material preparation and product manufacturing should draw the attention; and for sales, marketing, pricing strategy and customer relations are the key factors. During my time in Advantech from 2007, I think my experiences helped me to grow from an engineer to a CEO (for this small company of ITS). I appreciate the stage offered by Advantech and the colleagues who have helped me all the way along to this point. I see this fascinating culture as the reason for attracting so many talented people to Advantech. Last but not least, I wish all of you to enjoy your Advantech Beautiful Life and welcome everyone to bring business opportunities to A+TC.

Hello from Amersfoort! This is my home town in the middle of The Netherlands. My name is Reinier Middel, Key Account Sales Manager for Medical & Retail for North- and South-EU.

I was grateful to get the opportunity to write something in 'MyAdvantech' magazine. Well, I was born in Eindhoven which is not far from our European HQ (AESC), but I grew up in the north of the country, where I met my wife. We have 3 sons, 2 daughters-in-law and 1 lovely granddaughter. We have lived in other places in the country for a few years but we have now settled in Amersfoort for 27 years. I joined at Advantech as a PSM for the medical team in March 2008, for the MCD and UCD product portfolios working from the Breda office. I became BDM for the Digital Healthcare team in 2010 to help develop new medical business throughout the EU. Recently in July this year I was promoted to my current role. Back in 1981, I started my career as an electronic engineer and since 1984 till now in different sales positions in the embedded market. First 10 years at distributors and the last 20 years as direct sales for Manufactures, like Advantech. I was mainly active in the Telecom and Medical market segments. What I like about Sales is being the consultant and listening to the needs and requirements of the customer. Then I discuss the economics and risk, and give them directions, before I finally advise which solution the company can provide to solve their needs. Let me know when you are around in Eindhoven or Breda, and we can say hello.



Reinier Middel
Key Account Sales Manager for
Medical & Retail, Advantech Europe



Rose Meire
Commercial Manager,
Advantech Brazil

Hello everyone, I'm Rose Meire, Commercial Manager at Advantech Brazil, and greet you all directly from the one of the most emblematic places for Brazilian History. The Independence Park, located in São Paulo City, seventh biggest city around the world and national economical-financial center, where is also located the office of Advantech in Brazil.

And is with the same idea of the 1822's Independence, that is the definite belief of Brazilian people had the capacity of expand markets and increase capital around the world, that I've been working 14 years for Advantech Brazil, combining my academic formation in Electronic Engineering, Business Management and Marketing and my previous professional experiences in large companies, in order to train our employees for the teamwork and maximum results, conquered the new consumers that increasingly are connected and attached to our products, convinced of their quality as well as the reconciliation of interests and expectations between the headquarters in Taiwan, and the local office.

The integration efforts have been growing since the beginning and, every new year, gives more and more potential results, so that today Brazil Advantech provides its products to the major markets of the country, daily in rising, because the government and private efforts to cover the country with a network of health, transport and energy.

Because of all the effort made day-by-day overcoming constant challenges and making big progress, with the company among the largest and most prominent of its sector, I can say I'm extremely proud to represent my country and Latin America in general here in MyAdvantech Magazine. Hope our success with the Brazilian experience can be an example to continue developing.

Hello everybody! Warm Greetings from Indonesia. This is Yopyy from AID. I joined Advantech in August 2012, which is just 4 months after AID was legally established as a local company in Indonesia. I started my job as an inside sales (AOL).

Being a new eSales in a newly established company was very challenging, not only because our brand was not widely recognized yet, but because we still had very minimum infrastructure and experienced people to support us.

At the time I joined, AID only had one phone line and fax. We also didn't have a VOIP infrastructure to call other RBU, HQ and customers. There were also some periods when our team consisted of only three people including myself. But of course no matter how big the limitations we faced, we always tried our best. And we were lucky that finally last year AID could catch up and be a fully functional RBU. This year we are trying to go full throttle on building up market share. Indonesia is a big country with strong economic growth, while AID revenue is still very small compared to the potential market available.

So our big task has not yet finished, it will still need much effort to grow the market; and with a lot of support from HQ and all of Advantech teams worldwide we hope to emulate your success.

And last but not least, if you have a plan to visit Indonesia for a holiday, don't hesitate to contact us, we might be able to give you some recommendations of beautiful places to visit!



Yopyy Sundawa
Sales Manager,
Advantech Indonesia



Linkou Campus Demonstrates Smart Multi-functionality

Advantech Linkou Campus began operating in April of 2014. It is near to the downtown area in Linkou, and it's also close to the highway, Taoyuan International Airport, and the soon-to-be-completed airport MRT. Linkou campus includes a total land area of 34,470 square meters, and will open in three phases. Phase 1 is already completed, and consists of an R&D center, factory and office. The second and third phases will continue to expand the office areas and will add a warehouse distribution center. When complete, the Linkou campus will be able to accommodate over 1,000 employees and will provide one-stop services, from design and development to sampling and manufacturing. Linkou campus has a strategic significance for Advantech, it is also a demo site for intelligent buildings; and it is also the headquarters of Embedded Core Group (ECG) and a center of manufacturing.

Advantech Linkou campus was built to be a working demonstration of intelligent buildings. Visitors including government officials, researchers, architects, and system integrators who come to Linkou campus can see for themselves the energy saving BEMS (Building and Energy Management Systems) and innovative intelligent space management solutions. By experiencing real solutions and

sharing each other's domain knowledge, the concept of intelligent buildings will be promoted and the smart city concept can evolve further.

Advantech has two manufacturing sites, one in Kunshan, China, the other in Taiwan. Apart from the two SMT lines in Xindian and one in Donghu, there are three SMT lines and more than 300 workers and staff located in Linkou already. After the completion of Phase 2, the Linkou campus will become the manufacturing center in Taiwan; the overall production capacity will increase, and the ratio between Kunshan and Linkou is expected to achieve 50:50. In the near future, it will gradually integrate board and system production and manufacturing services. It will also produce high level, high complexity and customized products and complete solutions for global key account customers.

Linkou campus is also the headquarters of Advantech ECG. Miller Chang, the vice president of ECG commented that, "Linkou will be our starting point; we start from here, and look beyond. As the headquarters of ECG, we will continue developing reliable and innovative embedded solutions to support every region, and cooperate with partners and customers to truly realize the Advantech vision of Enabling an Intelligent Planet". ■



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Advantech holds “Enabling an Intelligent Planet” as our corporate vision, and “Partnering for Smart City & IoT Solutions” is our concrete goal; we will continue collaborating with various partners to build new paradigms in each vertical field. Advantech will consistently follow our LITA (Altruistic) spirit, positively cooperating with partners and engaging in innovation to develop every Smart City opportunities.

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