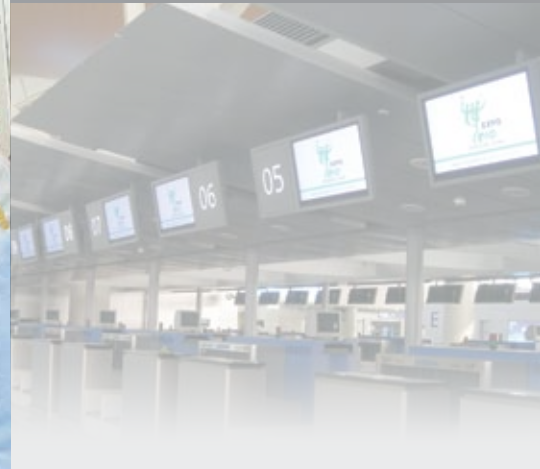


MyAdvantech

The Magazine for Global Advantechers and Partners

Autumn 2009 No.5

Medical Services Upgrade Digitization Enhances Quality



Digital Signage Evolution
Makes Transformers a
Sensory Feast

Fleet Management
Given a Facelift



AMT Solution Steps into Industrial Enterprises

A new type of network operation allows
more applications for the industry



Ruggedized PoE Switches for Industrial Applications



High Reliability Solutions for Networking, IP Security Cameras and Wireless Access Points

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- Supports 25W per port for High Power Applications (IEEE 802.3at)
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- Only 24V_{DC} is Required for PoE Operation with 24/48 V_{DC} Models



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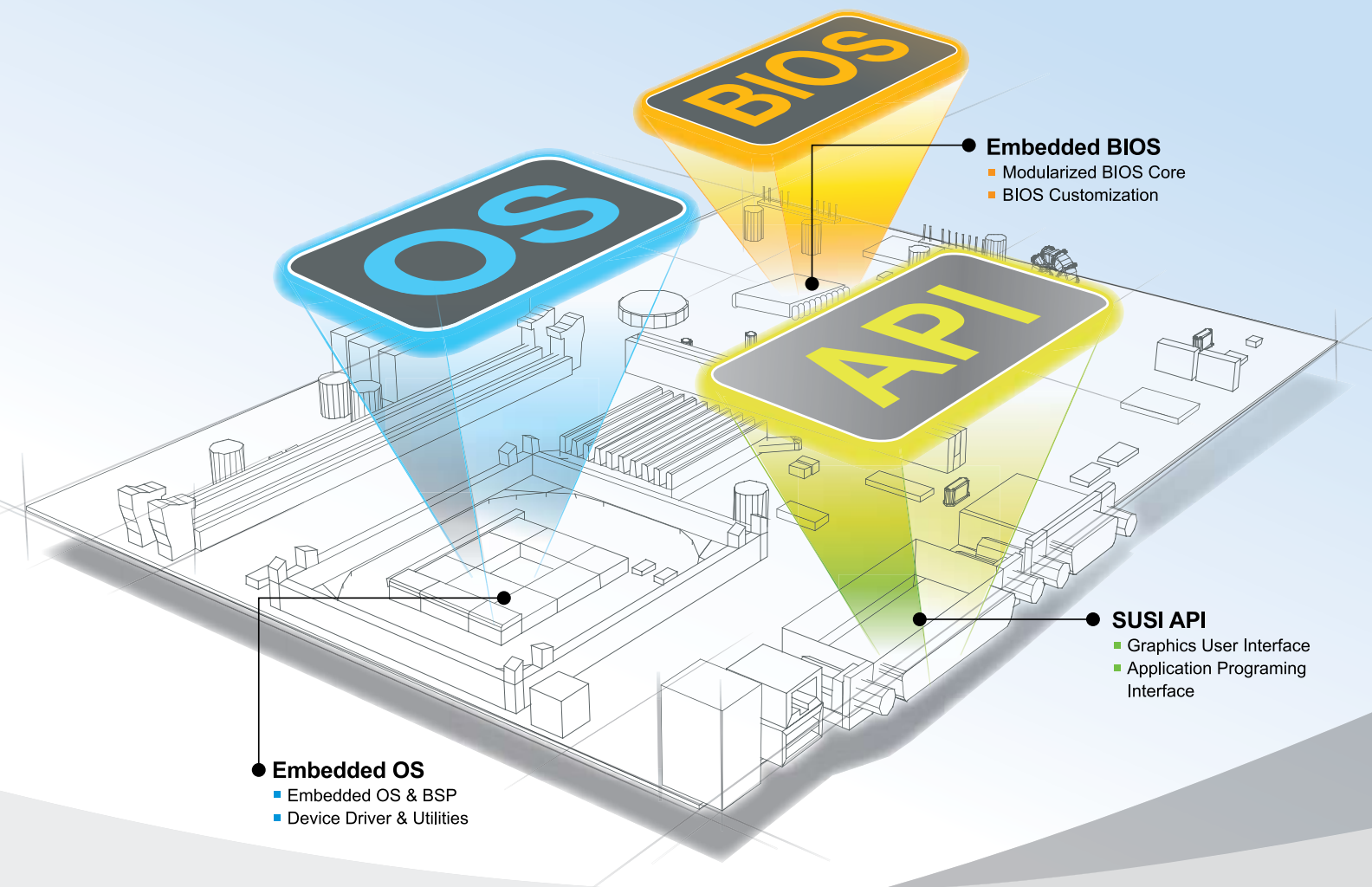
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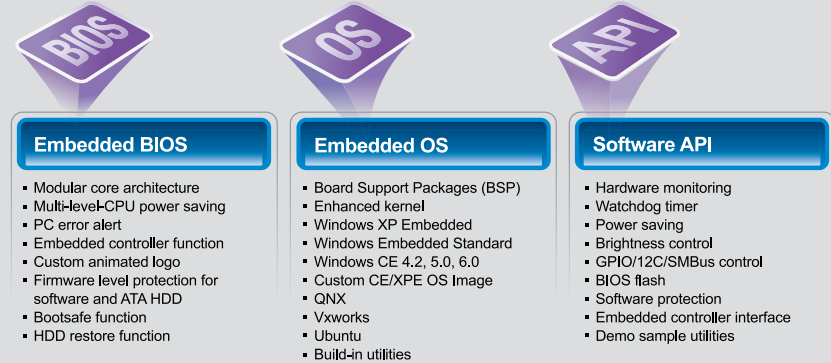
Advantech Embedded Software Services



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Advantech provides Embedded Software Services to customers who integrate Advantech hardware products. Customers can rely on Advantech Embedded Software Services to enable their application's full functionality, and make their products more reliable and competitive.

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- Reduced Project Effort
- Flexible Software Customization



The Business Model Focus and Integration Strategy to Pursue Long-Term Leadership

The range and diversity of applications in vertical markets such as Medical, Transportation, Telecoms, Power & Energy and Industrial automation demands high levels of customization and integration, and this is why Advantech has developed business model specialization to provide better services to meet the demands of customers today. According to the requirements and requests from customers and industries, the new models have specialized and focused on five business models: Embedded Boards & Design-in Services, Design & Manufacture Services, Devices & Computing, Systems and Vertical Solutions, and Advantech Intelligent Services for supporting system integration projects in the Greater China Area. Each specialized model addresses different customers groups. This new formula ensures further professionalization in R & D, sales, marketing, and channel resources.

Embedded Boards & Design-in Services aims at offering comprehensive IPC design-in support. With Advantech's specialty in industrial motherboard and Modular Board Design Services (MBDS), and Component Allied Procurement Service (CAPS), this service model provides all the components, modules, and industrial motherboards with open standards.

In the past few years, Advantech has directed much of its resources to promoting **Design & Manufacture Services (DMS)**, helping find new business growth in areas such as telecommunication, networking, medical services and gaming. The company intends to strengthen its expertise and know-how in design & manufacturing services and client support with its hallmark IPC strengths.

The **Devices & Computing Systems** department is the most historic business in Advantech. A departure from the previous model of categorizing production lines and marketing under ePlatform and Automation—according to their technical attributes, this new approach is about reintegrating external and internal resources. With Devices & Computing Systems maturing into a successful formula, related production lines and marketing channels will undergo a facelift—marketing resources in Greater China, North America, Europe, Japan, South Korea, and emerging markets. Through the Channel Sales Force (CSF) and Direct

Marketing Force (DMF), the new model is intensifying Advantech's Channel Marketing and brand image around the world.

Systems & Vertical Solutions directly addresses those vertical industries with specific needs. The establishment of a specialized marketing team and channel partners is launched to provide hardware and software solutions on demand. Recently, Advantech has targeted some of the vertical applications, such as Digital Signage, Fleet Management, Medical, and Intelligent Transportation.

The Homeland Service Model is the centerpiece for **Advantech's Intelligent Services**, and will be made an independent business group. It will focus on large commercial buildings such as: hotels, department stores and retailers, and apartment buildings in the Greater China region to provide video security monitoring, digital signage, digital medical services, eco-engineering, and intelligent architecture design services—becoming a trusted, smart lifestyle applications provider to end users.

In light of recent trends, the world's financial focus is gradually shifting to China. Advantech has had over 20 years of experience of strategic deployment in that area. Through this fundamental advantage, the company can integrate R & D, manufacturing and technical capabilities between Taiwan and Mainland China to build a leading global ePlatform Service brand in Homeland China. Based on this strategy, Advantech has relocated eAutomation Group's strategic center to Beijing, so as to design China-specific applications and further open up the vertical market there. By providing better research and development support, Advantech aims to become the number one IPC services provider in Greater China.

The new improved business model specialization helps Advantech distinguish its business philosophy from its previous production line formula and redefine its operating systems. Powered by the Homeland Service Model structure for Greater China, a celebration of Advantech's technical strengths in Taiwan and China, Advantech is building new landmarks to secure its leadership and long-term sustainable development. ■

Working with Advantech Trying to Be Better in the IPC Market

Script by Joy
Photos by Machine Drive Company and Imagemore
Interview with Machine Drive Company

Since 1947, Machine Drive Company, a division of B.W. Rogers, has been a successful automation solutions provider. They have the knowledge and experience to provide many types of application solutions ranging from general purpose to complex high performance machine control. From open automation and data collection to engineered drive systems, Machine Drive Company brings suitable products and services to this market.

15 years ago, Machine Drive Company wanted to provide their customers with industrial computer products to expand into the automation business. But this presented some significant challenges. Since Machine Drive Company was a new player to the IPC market, they needed a partner who could not only bring solutions, but also understand how help them enter the market.

"We knew we needed to have an industrial PC product offering and found Advantech to have a broad line of product solutions and thus were a good partner to grow with," recalls Jim Verona, VP Sales and Engineering for the Automation Group at Machine Drive Company.

Machine Drive Company decided to work with Advantech on the basis of their outstanding products and technical capabilities. Today, Machine Drive Company is a full-service, high tech distributor providing manufacturing solutions to the industrial, commercial and water treatment markets, providing automation solutions to an extensive list of industrial and commercial customers. "This relationship has grown over the years because of Advantech's clearly defined channel strategy, competence with products and strong solutions for our industrial consumer base," Mr. Verona notes.

Always trying to be better

According to Mr. Verona, "Advantech is always trying to do better, that's key to their ongoing customer satisfaction. Advantech's efforts show results in better product

development, better value to the market, better customer service and partnering, and it all matters, especially these days."

Machine Drive Company is heavily focused on discrete manufacturing. Through Advantech's assistance, however, they have established a complete automation and control product line to support its customer base. Currently the company offers Advantech's Industrial Automation Group products, including: Automation Controllers & Software, Programmable Automation Controllers, Embedded Automation Computers, Distributed I/O Modules, Open HMI Platforms, Industrial I/O, USB-based Data Acquisition Modules, Distributed Motion Control Modules, and Industrial Ethernet Switches & Media Converters.

Aside from hardware and software solutions, Advantech and Machine Drive Company have teamed together to help their customers solve the technical challenges of moving from Linux to Qunix that included a packaged solution for the hardware, processor and BIOS that would provide a good, stable platform

In the IPC field, there are always a lot of technical challenges from the customer. For instance, one customer wanted to move their proprietary hardware platform to a new Pentium III Dual Core platform for data collection. The professional support from Joe Miller, of Advantech Cincinnati, helped solve this and many similar technical issues in the past. This highlights another factor contributing to the success of Machine Drive Company is the seamless cooperation between Advantech and its partners, enabling customers to get superior products, technical support and services.

Advantech's corporate culture

After working with Advantech, Machine Drive Company's description of Advantech's corporate culture is "Focused".

There is definitely a focus on growing the business, growing markets, growing product offerings, or anything else that it takes to grow business.

As a leader in IPC manufacturing, Advantech has a wide product portfolio range, from embedded boards and design-in services, applied computing systems, and medical computing as well as networking/telecom products. With this level of component quality, product bandwidth and market reach, Advantech can continue to be a leader.

Future expectations

Looking to the future, Machine Drive Company expects this relationship with Advantech to continue to grow. "The industrial and commercial markets that we serve are in-line with products and solutions that Advantech is bringing to market. With a continued partner approach, we can grow the relationship as well as the business," Mr. Verona continues, "Respecting each others goals and having them in alignment

allows us to grow successfully together. "

With the IPC market entering a maturity period that requires high performance architectures, highly integrated systems, and high speed connections, this market presents enormous growth opportunities for key players, including equipment manufacturers, semiconductor vendors, platform providers and distributors.

There has been growth for demand of newly IPC systems worldwide, and with all of this in place, Advantech and Machine Drive Company expect to offer competitive products and services to encourage customers to upgrade their existing systems while reducing costs. Furthermore, with the rising availability of various innovative new generation IPCs, both companies are promoting added value products to customers, rather than just standard hardware and software solutions. ■

Corporate Overview

Machine Drive Company provides automation and data collection solutions, engineered drive systems, and manufacturing solutions to the industrial, commercial, and water treatment markets. Its products include AC motors and vector drives, DC motors and variable speed drives, eddy-current drives, fieldbus networks, gear reducers, industrial computers, line reactors and harmonic filters, linear motors, transformers, and variable frequency drives, as well as motor, PC based, programmable, and Web tension controls. The company also offers clutch and brake products, motion and position control, SCADA, HMI, and safety products. It serves automation, material handling, HVAC and waste water, and Web processing and tension control industries. Machine Drive Company was founded in 1947 and is based in Noblesville, Indiana.

MACHINE DRIVE
C O M P A N Y
A Division of B.W. Rogers Co.



Digital Signage Evolution Makes Transformers a Sensory Feast

Advertising blitz for this summer's blockbuster, "Transformers – Revenge of the Fallen" kicked off in early May; included in the marketing campaign was a Digital Signage player which plays exclusive clips, and can be interactively manipulated on a touch-screen, providing the audience with a sneak peek into the new lineup of robots.

Interview and script by Wen Run
Photo by Shi Jihong
Interview with Zhang Wenkui, Manager of i5 Co., Ltd.



Due to the flourishing Optoelectronics industry, Digital Signage has grown into a mature market segment of its own and is "the" thing to replace traditional advertising and display products. In the real market, Digital Signage has already become the fastest growing LCD application outside of television and computing. When you walk on to the MRT or a bus, step in an elevator, hypermarket, discount store or fast food restaurant, it is noticeable that LCD displays have gradually replaced traditional advertising boards and spaces. Since TFT-LCD panel production technology has quickly increased in sophistication, product prices have gradually stabilized. LCD monitors and touch panel-related products are rapidly expanding applications, which include: industrial control, medical, PoS (Point of sales), KIOSK (self-service machine), gaming, wall mounted televisions, billboards and so on. The story below is a typical digital signage application example used in today's marketing activities. Such products lead the way for consumers to enjoyably browse for products & services while watching customized product content and information for a more enjoyable experience.

Digital Signage vs. Transformers

The raptor jet and the Peterbilt truck go through their "Rubik's Cube" style transformation and have a go at each other in midair. The crashes and explosions of the numerous mechanical pieces morphing render the robots more realistic and dynamic. The audience is amazed at the extraordinary stunts. "Transformers – Revenge of the Fallen, showing in theaters everywhere on June 23rd" runs across the screen. The viewer in front of the Digital Signage display touches the screen to get a glimpse of the magnificent robots in all their glory.

Beginning in May, groups gathering by such digital displays increased in number in some of our busiest shopping centers. With the second Transformers franchise in such demand, these movie-driven promotional campaigns presented on Digital Signage have whetted the audience's appetite. Zhang Wenkui said that the campaign's success with the movie franchise put interactive Digital Signage on the map, and its applications are bound to continue diversifying in the foreseeable future.

As the title, Transformers suggests, Digital Signage models are undergoing their own transformation. Citing the cooperation formula with the film company as an example, Zhang said that when Universal Pictures approached his firm, the initial plan was to launch the campaign in a conventional way, showing the previews on large LED displays in public venues. Recalling i5's previous work with Advantech, Zhang told the production company of another interactive IT signage to enhance display effects. It was Advantech's interactive Digital Signage Zhang had in mind.

Taking a look into Digital Signage's development history

will reveal just how quickly the display's structure has evolved. Its most basic version was simply a LCD mounted with a player – In the very beginning, most were equipped with just a CD player, and the content was manually controlled. After Advantech branched out into this sector, CD players were replaced by remote controls, putting more capabilities into new and improved Digital Signage products. Capabilities such as internet connectivity, remote control and programming are making these products more sought-after. The new accessories quickly launched Digital Signage into the stratosphere and won a large following in the market. In addition a designated area was set up during Computex 2009 which brought together dozens of vendors to showcase Digital Signage related products.

From the first stage of CD-Players, to the second phase of integrated PC controllers, makers have gained momentum in powering the new digital displays with IT-inspired add-ons, resulting in the third-generation Digital Signage products. Zhang said, "interactivity is essential to the development of third-generation Digital Signage products." During Web 1.0 era, the Internet was a one-way platform, with portal providers dictating what the messages would be. The birth of Web 2.0 adds a new technical dimension, letting users have the freedom to decide on the content.

Evolution in Digital Signage is similar to that of the Internet in that IT inspired add-ons have triggered a transformation in Digital Signage. The collaboration with the Transformers franchise highlights the touch-screen as the focus point in this technological integration effort. User can touch the icons on the screen to view different robots from different angles. Other application possibilities – not utilized in the Transformers collaboration – include camera, scanner, and barcode and RFID reader installation. The inclusion of these input capabilities render the new digital displays a two-way communication tool, while inspiring a fresh thinking on Digital Signage applications and operating models.

From One-Way Street to Two-Way Thinking – A Touch of Dazzle

While information exchange using Digital Signage has yet to permit users to edit content as Web 2.0 does, its current interactive offering still spells a completely new experience for users. The input programming in interactive digital signage builds a direct connection with the user. For instance, the user will know of promotions at nearby stores through the RFID reader, wired to the GPS-powered cell phone, and virtual coupons can therefore be transmitted to the phone via RFID. In addition, businesses can add a printer to output the actual coupon for users to use in the nearby stores.

Marketers can input an IP camera into the signage device to determine client groups and design client-driven



broadcast content. Digital signage has been hailed as the fifth largest medium, ranking it behind print, television, broadcasting, and the internet. Termed as “narrowcasting” by some advertisers, content and messages on Digital Signage are displayed to deliver targeted messages to specific locations at specific times. Using an IP camera with facial recognition, marketers can hone in on their target shoppers and set the displays at certain locations to deliver consumer-specific messages. For instance, at shopping centers, the IP camera revealed that female shoppers are more drawn to the messages displayed and that allows retailers to run targeted promotions and discount information on the Digital Signage displays.

The Transformers campaign served as the perfect example. Film marketers set up displays in Shinkong Mitsukoshi and Neo 19 in the Xinyi commercial district in Taipei, Taiwan, as well as several installations in department stores in close proximity to cinemas in Taichung and Tainan. This strategy found the right viewers and heightened consumer awareness of these displays.

The technology has clearly proven itself, but the main obstacle to Digital Signage’s future development is cost, noted Zhang. Since this type of IT equipment is not yet widely applied, there are not enough compelling results for reference and therefore companies are less willing to rush to spend money on new technologies. As a result of which i5 launched a Digital Signage rental program to attract interest, and collaboration with Universal Pictures was executed using this model. The production house provided a wish list, and i5 made the delivery. Advantech then supplied the hardware for integration with i5’s software.

Interactive Digital Signage: From “Place-Based Media” to Ubiquity

Zhang said the displays designed for Universal Pictures were installed mostly in semi-outdoor areas such as

verandas and building entrances. Although there were roofs overhead, the area was not fully protected and half of the space was still exposed to the outdoors. In other words, since the facilities were still vulnerable to the weather, they would have to be superior mission-critical systems to withstand everything from the summer heat to torrential rain, while running as efficiently as always. On the day of the interview, there was a thunderstorm in Taipei, but as Zhang led the reporters for a tour, not only was the Digital Signage functioning just fine, but both the content and messages on the display were clear and dazzling.

In addition to stability and ruggedness, Zhang says that Advantech’s distinctive exterior designs for its place-specific IDS products worked beautifully in this particular project. The LCD and controller modules are embedded seamlessly into the housing like a one-piece fixture. The LCD luminance is modified automatically, depending on the sunlight. Under the glaring sunlight, display luminance is automatically adjusted so viewers can see the content better, and rollers thoughtfully attached to the displays allow easy relocation and repositioning.

The Transformers digital merchandising campaign suggests that Digital Signage has enormous future potential, with interactivity being one of the most crucial elements. Zhang predicts that, powered with IT’s versatile applications, Digital Signage will make great strides. The central part in conquering the market lies in creative applications, facilitating Digital Signage’s ubiquity in our everyday life.

What Advantech Offers?

Digital Signage is at the forefront of digital media distribution and can transmit digital images, information or advertising in single or multiple locations simultaneously. Advantech’s development of Digital Signage into a hardware platform focuses on the needs of different customer groups to develop a full range of products, including digital signage-player devices (Digital Signage Player), digital signage displays (Digital Signage Display) as well as interactive digital electronic signage (Interactive Digital Signage Station). Along with traditional high image quality full-HD video playback, Flash’s interactive-based special effects can be easily demonstrated, and in addition, the multi-touch screen also significantly reduces functional differences between an interactive digital signage product and a self-service machine.

Advantech’s digital signage products are able to satisfy the need for playing multiple types of information at the same time essential for digital advertising, public transportation displays, emergency notification systems, and for multi-purpose displays used in universities and colleges, electronic billboards, and other types of public and private applications. ■



Fleet Management Computing Solutions

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Dispatching, Navigation, Driver Productivity &
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Trusted ePlatform Services

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Industrial-grade Fleet Management Computing Solutions Meet All Your Needs

Focusing on the requirements of car power management, anti-vibration/shock, wide working temperature range; providing GSM/GPRS networks, OTA, OBDII technology support; and helping you stay competitive by saving valuable time and reducing costs.



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- IP54 sealed for water and dust resistance
- Built-in Bluetooth, WLAN, GSM/GPRS/EDGE
- Mobile design with battery



TREK-743
Vehicle Mounted Computer

- Integrated 7" WVGA LED display and touchscreen
- IP65 sealed for water and dust resistance
- Built-in Bluetooth, WLAN, GPS, GSM/GPRS
- DC9-36V wide power range



VITA-350P + TREK-305
Mobile Data Terminals

- Separate 5.7" compact display with touchscreen
- Built-in GPS, GSM/GPRS
- DC12/24V
- E-mark, ISO7637-2 certified

Fleet Management Given a Facelift

AOTA and OBDII Deliver High-performance, Cost-effective Solutions

Advantech's OTA (Advantech Over the Air) is a remote information update service that eases fleet management configuration and integration; and OBD-II is a fleet-specific On Board Diagnostics system. The two work together cost-effectively to strengthen fleet management, offering the transportation sector a solution of decisively greater value.

Interview by Wen Run

Photos by Advantech

Interview with Elizabeth Wang of Advantech eServices & Applied Computing

Mr. Zhang has spent his lifetime in the freight business. He started out with a small truck, and now he owns a fleet of over a hundred trucks. A few years back, Zhang's son took over the business, which has continued to prosper. On his last day at the office, Zhang recalled a major conflict with his son. The young man insisted on implementing a combination of new fleet management systems that old Zhang had never heard of: OBD-II and AOTA. But six months later, the new systems were already bearing fruit, and old Zhang was happy to relent.

The company has grown in business scope in the past years, and new management challenges ensued. The whole process of cargo selection and packaging in the initial stages, followed by inventory, distribution, customs declarations, shipping, warehousing, order processing, stock management, and around-the-clock assignments had left old Zhang exhausted.

Formerly, dispatch and itinerary could be roughly determined through mobile communications; but as soon as other assignments came up, the company had to alter routes or dispatch times - a clumsy practice that compounded communications and management as the operator rushed to mobilize other moving assets. With the new management system, fleet locations are tracked via GPS, and nearby vehicles dispatched to expedite delivery and enhance mobilization efficiency, all thanks to AOTA's instant updates on navigation charts and fleet status.

OBD-II allows managers to command drivers' traveling

and vehicle status to ensure safety and minimize failures. The integration of the two systems maximizes performance: the best fuel and time-efficient routes can be gauged via OBD-II's estimates of fuel consumption data and delivery sites.

Zhang was pleasantly surprised by the greater personnel discipline and efficiency. From experience, Zhang knew that truck drivers had limited education, but strong opinions. He and his staff had been through thick and thin together but he couldn't muster much disciplinary action against them. But the induction of the new management system allowed for instant displays of driver status, and the men now made an effort to reform bad habits; reports regularly produced by the systems were objective and credible, reducing problems during performance reviews. The system has turned Zhang from a skeptic into a believer in the systems as the business thrived.

AOTA Technical Strengths Advance Fleet Management

Zhang's case provides a simple picture of AOTA and OBD-II's many benefits; in fact, these two systems have much more to offer.

AOTA, Advantech Over-the-Air, is a protocol solution developed by the company. It's a client/server development tool for system integrators that permits viewing fleet systems as terminals scattered across the map. FTP directs terminals in the vehicles to conduct updates via GPRS; the server host supports concurrent transfers to multiple

clients. And in the event of file transfer interruption or failure, the file manager will continue at the point it left off during its next check in. The managers can thus conduct long distance file transfers and updates via the host.

"Such systems are arguably very cost and time efficient for fleet operators' daily tasks and management," Elizabeth Wang of Advantech's eServices & Applied Computing noted. Fleets handling freight transport spend most of their time traveling, and the in-vehicle terminals are scattered and on the move, posing an issue for effective system management and upgrades. With the rising demands in fleet operation, it's impossible to conduct simultaneous updates for the traveling fleets using current manual systems. The launch of AOTA was a godsend to address such issues: the administration of data updates in moving fleets is much more efficient than the one-by-one processing after the fleet vehicles return, which by today's standards is a waste of time and manpower. AOTA's wireless transfer reduces fleet down time. Additionally, AOTA allows all fleet data to become more transparent and digitized. The systems integrate the navigation mechanisms to log itineraries, assignments and travel - much more precise than the manual micromanaging of fleet dispatch and maintenance.

Keeping Tabs on Your Fleet with OBD-II

OBD-II is a state-of-the-art diagnostics system for fleets. OBD stands for On Board Diagnostics, and was approved by the Environmental Protection Agency (EPA) in 1994 as a new set of criteria for emissions control. Vehicles made on US soil since 1996 must comply with these EPA criteria.



Fleet operation data are transmitted to the PC for analysis through a standard connector to the OBDI-II systems.

In Zhang's case, the installation of OBDI-II helps track all fleet data, including engine coolant temperature, mileage, speed, fuel consumption, ignition, battery voltage, engine speed, fuel temperature, and emissions discharge. The data provides insight into driving behavior and fleet status for ready adjustments and precautionary measures.

Formerly vehicle maintenance was conducted on mileage logged; units were sent back to the shop for repairs when they became unserviceable. Vehicles that broke down on the road required towing, and another vehicle





had to take over. Costs were added for tow trucks, repairs, troubleshooting, cargo delays, and personnel expenses. For operators, short-haul breakdown handling takes half a day; long-distance, a whole day. This translates into an onerous burden for cash-strapped fleet operators.

That's why OBD-II is the solution. Young Mr. Zhang said that one of his drivers found the engine indicator flashing during an assignment. There was no way to locate the cause; but with OBD-II, the diagnostics interface and software detected that a faulty temperature sensor had

set off the flashing. On another occasion, a driver's fuel consumption was found to run higher than that of his colleagues for three months straight. OBD-II helped the company monitor his driving behavior, fuel usage and vehicle wear and tear, tracing and analyzing the driver's diesel use. Results showed that the driver tended to put his foot down on the accelerator, drive fast, and stomp on the brakes. This left the company feeling the pinch in both fuel and maintenance overheads. Young Zhang talked to the driver, who was persuaded to mend his ways; other drivers were aptly cautioned and also made improvements.

Keeping Tabs on Your Fleet with OBD-II

Both AOTA and OBD-II are integral to a smart fleet management system, and Miss Wang asserted that as advances in IT and the implementation of sound business administration mature, so fleet management applications in logistics, transport and other related sectors will prosper. For operators, the inauguration of the systems maximizes information and resource use; AOTA and OBD-II generate added value without having operators to update existing systems. They are instantly effective for fleet maintenance and delivery assignments, and can help optimize driving conduct to improve company safety and profitability. ■



New Generation PAC with Dual Controllers



ADVANTECH
eAutomation

APAX-5000 Series Integrates Control, Information Processing & Networking in a Single Control System

- Provides an Intel® Celeron M/Atom CPU with Windows® XP Embedded for computing and a XScale CPU for I/O processing
- A dedicated Digital Signal Processor (DSP) handles all the I/O processing on the back-end, delivering time deterministic performance, regardless of the number of I/O points
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APAX-5570XPE
PC-based Controller with Celeron® M CPU



APAX-5520KW
Micro PAC with XScale CPU



Fieldbus Coupler
• Modbus/TCP
• Ethernet/IP
• Profinet



APAX I/O Modules
• Channel Independent AI/O
• High Density DI/O
• Counter/Frequency



Whatever Floats Your Boat

Advantech Ventures into Marine Vessel Applications

Information technology is changing the designs, operation and management of today's marine industry. Advantech's new array of advanced, vessel-specific displays work beautifully even when viewed under the direct sunlight on the open sea and their integrated applications incorporate back-end controllers and industrial networking products, enabling all marine users to enjoy smooth sailing.

Interview by Hua Yu Yen, Photos by Topphoto and Advantech
Interview with Mr. Jonney Chang, Manager of eAutomation

An exhausted but elated Jimmy lifted his heavy catch from last night's fishing off the ship and onto the pier. His previous trips had been increasingly frustrating, when he had spent the evenings sailing across the ocean without success. Many of those trips had ended with him scraping barely enough money from his haul at the morning fish market to make his way home.

But the gamble of investing in new equipment for the ship has already paid off, vastly improving the success of

his fishing trips. A new Global Positioning System (GPS) and radar navigation tool helped him steer his boat into the areas where other ships hadn't already trawled, and the new fishfinder equipment helped him locate the spots of greatest marine activity, leading to his greatest catch of the year.

Actually, Jimmy was a little late to adopt this technology. GPS and other communication components for marine use is nothing new. But in the past, many of



these systems were large and highly expensive, and unavailable for smaller ships and crafts. Recent breakthroughs in technology and product designs have allowed these technologies to be adopted by even common seafaring vessels.

Moreover, ordinary computer products won't cut it in nautical applications due to the unique operating circumstances; the system needs to withstand constant heavy winds, salt corrosion, splashing seawater, direct sunlight and power supply instabilities. Simply put, it's nearly impossible to find affordable navigation equipment rugged enough to withstand the extreme conditions of the open sea.

Information Technology at Its Best

The current economic downturn has also significantly impacted global shipbuilding production. But it's been forecast that in 2009, investment in marine vessels will prosper. Aware of the needs of fisherman like Jimmy above, and hopeful in the forecast that the marine industry will soon be on the rise, Advantech recently unveiled two new marine-grade monitors, the FPM-8192V and FPM-8232V. Designed for the harsh conditions of everyday nautical use, these sunlight readable displays are IP65 certified and corrosion-resistant, a perfect fit for marine integration.

These transfective marine-grade monitors feature 19" SXGA and 23" UXGA displays, respectively. Boasting fully dimmable backlight controls, 0 to 100% duty ratio, and anti-salt/corrosion protection with aluminum housings these displays are fully suitable for seafaring purposes. Plus, they feature front panel OSD controls with multi-scan PIP (picture-in-picture) functionality to allow users to monitor multiple

inputs simultaneously.

"The key in breaking into this niche market lies in our technological capabilities. Rugged marine-grade monitors are just the first step for Advantech to make inroads into the nautical community," notes Jonney Chang, HMI Product Manager for Advantech's Industrial Automation Group.

Large commercial vessels require automated identification, positioning, navigation systems and control applications on the marine bridge; they also demand reliable turbines, power, engineering control and numerical displays. Advantech's Industrial Automation Group is working on comprehensive solutions for nautical information facilities.

DNV Certification for Marine-grade Components

Mr. Chang also cites the strict DNV certification as an excellent example to highlight the quality of materials needed in marine use. It took nearly eight months for Advantech's products to win this stamp of approval, and the end result shows. Thankfully, Advantech's status for reliable industrial applications also lends itself well for this sector. In fact, some shipbuilders have already placed orders with Advantech for these monitors to use in radar navigation systems on their ship bridges.

Advantech now hopes to foster a steady stream of clients from different nautical service areas through their reputation for proven, reliable, rugged and certified industrial products. In this way they will not only break into this niche market, but also thrive in it, providing marine customers from all sectors with something to feel proud of. ■

Enhancing the Hospital Stay Experience

Hospitals are impressed with
Advantech's PIT bedside terminal system

Script by Ling Ping
Photos by Advantech and Hong Kong Sanatorium & Hospital



The trend towards digitized medical records has driven the demand for patient infotainment terminals. The Patient Infotainment Terminal (PIT) is a console installed at bedsides to provide patients with interactive entertainment, communications, and educational applications. Moreover, it is also part of a hospital-wide electronic medical information system allowing caregivers to perform medical care at the bedside. The terminal is built-in with easy-to-use practical applications that help patients ease their discomfort or anxiety as well as stay in touch with family and friends in a variety of ways. A growing number of hospitals list PIT as “must have” equipment in wards and patient rooms.

Patient satisfaction is one of the key factors for successful hospital management. Thus, hospitals now-a-days are shifting from provider-centric to patient-centric medical services. Advantech foresaw this trend and developed the versatile infotainment system, which is widely adopted by hospitals around the world, such as St Olav's Hospital in Trondheim, Norway, National Maternity Hospital (NMH) in Ireland, and Hong Kong Sanatorium & Hospital.

PIT Has Become the “Must Have” Equipment in Hospitals

“PIT originated in Europe where hospitals are highly professional and appreciate the benefits and importance of bedside care and services” said Joy Chiu, Advantech's eServices & Applied Computing Product Planning Assistant Manager. In Europe, this type of system is installed in all kind of wards helping patients stay in touch with their family and friends.

St. Olavs Hospital in Trondheim, Norway, was the first hospital in the world to install the bedside infotainment system. In order to improve patient's satisfaction and improve the hospital's image, in 2002 the hospital decided to shift their service focus from “provider-centric” to “patient-centric” by implementing patient information systems in all parts of the hospital. This process took almost a year, and Advantech coordinated with their software vendor to develop a total solution that accomplished the project brief successfully.

Advantech's PIT is also installed in Ireland's National Maternity Hospital (NMH). Seven maternity and postnatal care rooms are installed with PITs to help new moms and dads get educated in taking care of newborn babies. New moms can watch the videos on PIT devices to learn about bathing their babies, breastfeeding, tips for easing any postnatal discomfort, or the correct way to use car seats.

Established in 1922, Hong Kong Sanatorium & Hospital, has provided the best quality healthcare services in Hong Kong. The hospital has kept expanding and renovating to

build up a hi-tech digital and paperless hospital with top of the line facilities. Four hundred PIT systems were installed in all patient rooms providing cable TV, wireless internet access, medical education and services. Patients now can stay connected while they are recuperating away from family and work.

The “Great Helper” in Quality Medical Services

“A growing number of hospitals in the United States, Taiwan, Hong Kong and China are aware of the benefits of installing PIT systems and are planning to implement them into their future hospital projects,” said Joy Chiu. Advantech's eServices & Applied Computing Product Planning Assistant Manager. “Each hospital has different IT infrastructure and services, so each system has to be customized.” Joy said. To choose an adequate bedside terminal, the terminal has to be all-in-one, ultra thin, fanless, IPX1 drip-proof, IP65 water-and-dust-proof, UL60601-1 and EN60601-1 certified, and with anti-bacteria housing. Advantech's 17” PIT-1702 and 15.6” PIT-1501W are built with all those features and are the ideal equipment for the hospitals.

Tiffany Chou, Marketing and Planning Assistant Manager, said that “PIT-1702 is a versatile system that can incorporate Windows XP Embedded or Linux architectures. The built-in Intel Celeron M or Core 2 Duo processor provides 1280 x 1024 pixel resolutions on a 17” touch screen. It also has three USB ports, a built-in mini-PCI WiFi module, headset support, microphone, and CMOS camera. PIT-1702 works well with the DVBT tuner, a wired remote controller, and a phone receiver, making it a versatile system combining entertainment, diagnosis, information and telecommunication applications.”

The PIT-1501W is a state-of-the-art multifunction patient infotainment terminal with a 16:9 aspect ratio wide-format display that provides HDTV-standard 1366 x 768 pixel resolution. The device is powered by low-voltage, extremely efficient Intel Atom Z5xx series processors, enabling silent, fanless operation and very low power consumption. Weighing less than ten pounds even with the optional handset, and being just 2.5 inches thick, the compact PIT-1501W can be used and mounted just about anywhere.

Joy Chiu emphasizes that Advantech has over ten-years experience in the medical computing market. Developed by a group of professional and dedicated engineers, Advantech's PIT will help hospitals improve their efficiency, accuracy, and also increase patient satisfaction. It is the ideal system for post-natal care centers, dialysis centers, treatment centers and plastic surgeries. They help hospitals establish a paper-free digital medical information system, and also provide patients with quality medical care and assistance when they need it most. ■

Medical Services Upgrade Digitization Enhances Quality

Patient Infotainment Terminals Get Future-Proof

Hospitals are charged to provide innovative, trustworthy and quality medical services, and a majority of them are building a paperless service environment for their patients. The brand-new "Patient-Infotainment Terminals" were launched to do just that - make patients' hospital stays cozier.

Script by Lin Ping, Photos by Advantech

Interview with Advantech's eServices & Applied Computing Product Planning Assistant Manager, Joy Chiu, Marketing and Planning Assistant Manager, Tiffany Chou



Sickbed-bound Joanna is video conferencing with her coworkers on the new Patient Infotainment Terminal; during hospitalization, she keeps a finger on pulse of what's happening in the office. Annie, a new mom, learns how to bathe the newborn from instructions shown on PIT. And Mike, a newcomer in the children's ward, manipulates PIT's remote control and breezes through the second obstacle in "Speed Racer". PIT is an amalgamation of TV, phone, movies, videogames, the internet, and education facilities, so every patient's hospital stay is as convenient and comfortable as possible.

PIT Takes Hospitals and Medical Facilities Worldwide by Storm

PIT is an advanced portable hospital infotainment system, and has been hailed as the next big thing by medical facilities in European countries and the US. Their Asian counterparts are also catching on. The growing universality of information technology and broadband internet access contributes to PIT's popularity.

PIT allows patients to watch TV, movies, surf the internet, send and receive emails, and phone their loved ones during hospitalization; its internet connectivity and audio/visual versatility work as a diversion from the distress of sickness and recuperation. Also, PIT gives hospitals a welcome uplift to their rather cold and impersonal image - adding value and convenience to medical service facilities.

Entertainment, Leisure, Medical Services All-In-One

In sum, PIT is the integration of an all-in-one portable computer on the bedpost or by the sickbed, featuring an easy-to-use touch panel. PIT's many applications include: TV programs, movies, radio, internet surfing, sending and receiving emails, voice calls over the Internet (VoIP or Skype), and videogames.

PIT also works as a information service to patients for relevant pathological information, healthcare, hygiene advice, medication administration, and meal reminders. The system is connected to the Hospital Information System (HIS) so doctors or medics can easily access anyone's electronic case histories, X-rays, ultrasonic data, and test results when making their rounds, permitting them to provide detailed analysis and suggestions to patients. In other words, the system upgrades workflow and improves care service for doctors and nurses, and patients.

PIT is also suitable for versatile applications and interface according to the nature of the application and environment (regular ward, maternity care, or children's ward). The system can also accommodate a hospital's specific layout and peripheral facilities for full-scale customization.

Reforming Hospitals Stereotypical Image to Promote Quality Hospital-Patient Relations

European and American hospitals have long been fans of PIT. St. Olavs Hospital in Trondheim, Norway boldly installed a set of medical information-centric PITs throughout its facility in 2001 so the facility can become truly "paperless".

Major hospitals in Asia have also gotten wind of this new development; Hong Kong Sanatorium & Hospital acted on this new trend and outfitted every ward with PITs in the facility's stage-three construction plan. The PITs served to provide the latest information technology and enhance medical service categories and quality. With PIT, the Hong Kong Sanatorium & Hospital is held up as a beacon for medical facilities in Asia.

Major hospitals and medical service providers in Japan, South Korea, Taiwan, and Mainland China are evaluating the feasibility of PIT installations, hoping to provide patients the best-quality medical aid and increase patients' satisfaction, thus bolstering the hospitals' image and solidifying quality hospital-patient relations. ■

Enhancing the Hospital Stay Experience



Trusted ePlatform Services

ADVANTECH

The All-in-one Patient Infotainment Terminal Provides Communications, Digital Entertainment, and Clinical Services to the Point of Care

- Patient infotainment refers to a variety of “bedside terminals” that allow patients to do anything from watching movies and TV, making phone calls, playing games, or communicating via the Internet. The terminals may also be used to alert staff, call for help, and operate beds, lighting, curtains, and other installations.
- Medical staff and care providers benefit from the terminals by their ability to look up electronic patient records, lab results, tests, as well as monitor vital signs and other signals, document observations and changes, and more.
- The terminal may include RFID, digital cameras, smart card readers for data capture and identification purposes, and other peripherals and sensors.



PIT-1702

- 17" Fanless touch screen
- Intel® Celeron® M 1.06 GHz / Core™2 Duo 1.06 GHz
- 1280 x 1024 pixel resolution
- UL60601-1/EN-60601-1 certified
- Anti-bacterial enclosure
- Emergency call button for service-on-demand



PIT-1501W

- 15.6" Fanless touch screen
- Intel® ATOM™ 1.1 / 1.6 GHz
- 16:9 Wide-format display
- UL60601-1/EN-60601-1 certified
- Anti-bacterial enclosure
- Emergency call button for service-on-demand

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Technology Forum



AMT Solution Steps into Industrial Enterprises

New Type of Network Operation Allows More Applications for the Industry

The popularization of the internet and the increasing number of network applications is continuously increasing the demands on data transmissions and connectivity.

New Active Management Technology (AMT) is not only reducing the difficulties of everyday terminal management, but allowing enterprises to easily build more effective network systems.

Interview by Xiao Bai
Photos by Advantech

Interview with Richard Hung, Product Manager of Advantech's Embedded PC Group



Due to the heavy demands on our current network infrastructure and the increasing number of applications, new methods and technologies for transmitting data through the network are needed. Further complicating this issue is the fact that endpoint control continues to become more and more complex. To help solve these issues, Active Management Technology (AMT) aims to not only reduce the difficulties of endpoint management, but also helps users build large network systems with ease.

AMT has been developed by Intel, and provides remote control and management techniques for networked PCs. With its functionality, users can configure, upgrade, administrate, search problems and easily recover from network crashes. It also helps reduce the human resources needed to perform onsite technical support and eases the workload of the IT assets.

Furthermore, the active anti-virus capabilities of AMT can isolate PCs and protect network systems

in the event of a detected virus infection. This mechanism prevents the virus from infecting other computers on the network.

But the most powerful technology of AMT is the ability to continuously transmit data through the network in the event of a PC problem, regardless of the specific error the terminal PC is experiencing, from crashes, unexpected shut downs or even hard disk failures. As long as the network can still transmit the signals, then the remote administrator can force the network to carry out its operations.

The Technology Continues to Mature

AMT was actually released in 2005, and there are many commercial PCs in the market already carrying this technology. But many industrial computer manufacturers have been slow to adopt AMT, as they rarely operate its related applications.

Richard Hung, Product Manager of Advantech's Embedded Computer Group, points out that while AMT has been issued for a few years now, it tends



to focus on the convenience of network management and in particular the Management Information System (MIS). As many IPC vendors are not too concerned with MIS optimization, the added-value benefits of working with AMT had been limited.

Furthermore, most end users were not really taking advantage of it either. However, "In a bidding project for the Shanghai Airport in China, Advantech realized a tremendous advantage of utilizing AMT for industrial purposes." Richard Hung said. In this application, about 400 sets of computers and displays were widely distributed across the airport. These products are used to continuously update passengers with the latest flight information. They are embedded in the walls, hanging in hallways, and even installed outside the building. "It was here we realized that AMT could be used for remotely managing the entire system, limiting the amount of resources required to manage a large onsite network." Mr. Hung concludes.

Total Solution with AMT

To meet the needs of this unique application, Advantech designed its first product to support AMT, the ARK-3420 fanless industrial computer with an embedded system structure.

Richard Hung indicated that in the case of the Shanghai Airport, the control center can manage the operation of the entire information display system through the assistance of AMT. Moreover, the onsite administrator can easily identify and isolate any errors remotely without having to go to the terminal directly. In addition to repairing various problems, the administrator can setup a new computer, download and update software, and even run an inventory of the IT assets via remote management.

But not all of the remote monitoring and maintenance originates from AMT. The Wake on LAN, Boot from LAN and Watchdog functions can achieve some of the remote management functionality on their own, but those technologies are limited by the status of the computers on the network. Once the device or the system crashes, these mechanisms will shut down too. The most prominent feature of AMT is that all of these functions can work smoothly through virtualization technology even in the event that one of these terminals fails to operate properly. As long as there is the network signal, remote capabilities can be sustained and will not be affected by the non-functioning computer.

A Wider Range of Applications

The key point of the Intel AMT project is not hardware technology, but how to program BIOS and firmware with the appropriate software and hardware. Only then the system can respond appropriately to different situations. Richard Hung pointed out the Advantech's greatest strength in this application was its ability to adopt AMT into its embedded computer and in his words, "Really play to the strengths of AMT by providing a complete firmware that can realize true AMT connectivity."

Aside from this flight information system, the framework of this application can be applied to many industries, including real-time traffic information, traffic control hubs, IT asset management and more. AMT has often been used in commercial business, but with this successful application Advantech expects its usage to expand to include a wide range of industrial applications as well. For example, the PoS industry usually employs widely distributed machines in different locations, and also needs a system to retrieve and update information in real time. AMT can meet these PoS system demands while offering more utilities and more efficiency in real time.

Regardless of large-scale enterprises, AMT can manage the IT assets of enterprises, in addition to doing the different remote control and management. At the same time, system administrators will be able to enhance resource management and efficiency, and significantly reduce system response times. In the future, Advantech expects AMT to be rolled out in a wide range of applications in many different industries, especially in applications requiring a broad network scale. Advantech is ready to provide comprehensive solutions with AMT to meet any customer need. ■

Making the Smart Grid Work

Written by IP Huang, Advantech Corporation, Industrial Automation Group
Photos by Advantech

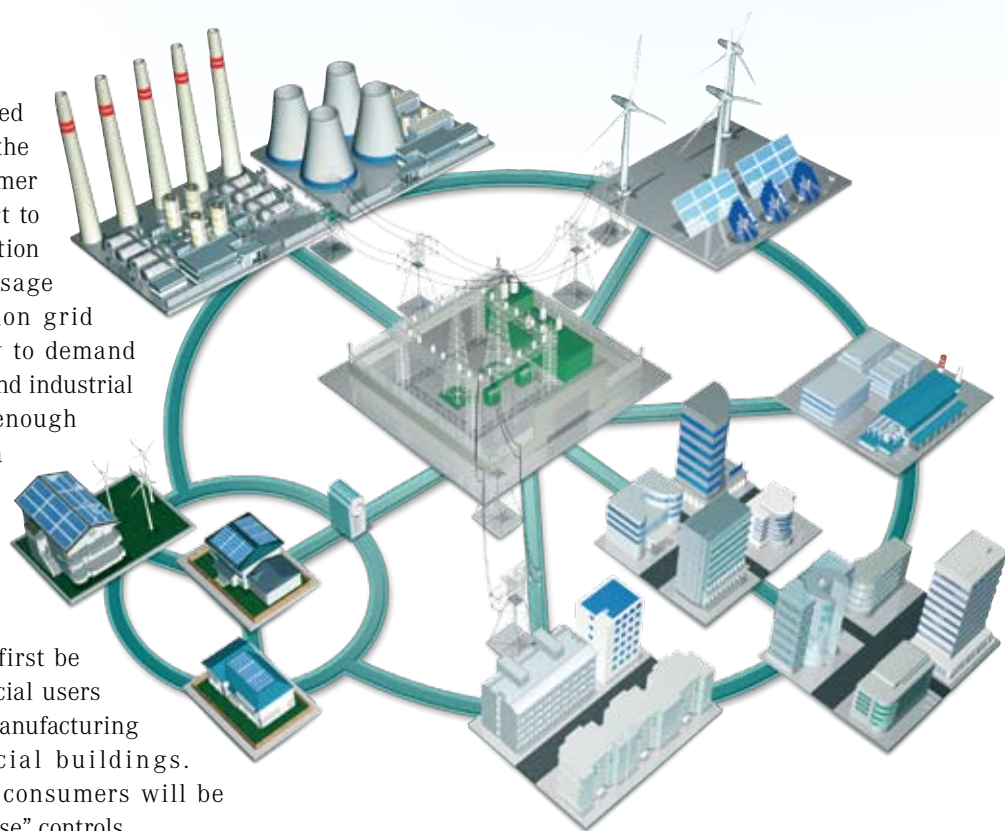
In order to bring down the cost of supplying power and reduce the carbon footprint of the power industry worldwide, many governments and industries have been moving the transmission and distribution of electricity to a new “smart grid” model. This model is expected to produce a real-time responsive power generation system from the grid to end consumers.

The system design is intended to be quite different from the existing grid. From the consumer side, smart controls will report to the transmission and distribution system in real-time about usage and demand. The distribution grid will respond instantaneously to demand changes from both residential and industrial consumers, producing only enough electricity as is required on a real-time basis. The intent is to eliminate distribution power brown-outs as well as the overproduction of electricity.

The consumer side will at first be largely industrial and commercial users such as process and discrete manufacturing plants and large commercial buildings. Eventually, most residential consumers will be retrofitted with “demand response” controls.

But the problem is that the electrical grid is by and large “stupid.” That is, exactly as with industrial automation in the 1970s and 1980s, there are islands in the grid...substations, control systems, auxiliary generation equipment, load balancing systems, etc...that are not fully interconnected in real-time to the rest of the grid.

What has been missing is the same thing that plagued automation systems in manufacturing—a common set of communication protocols and tools. In the final analysis, it isn’t going to be Internet-enabled thermostats and billing



meters that will assure the smart grid’s success, it’s the rapid modernization and interoperation of the transmission and distribution system itself.

The IEC 61850 Trend

More than 70% of the transmission infrastructure in the electric utilities in North America, Australia and Western Europe are over 25 years old. In India, China, the rest of Asia, South America, and Eastern Europe, the transmission

infrastructure is either inadequate for today’s usage and tomorrow’s growth, or there is no infrastructure at all.

Because today’s transmission and distribution grid grew piecemeal, it is a hodge-podge of different communication protocols and islands of control. Up until now, experienced engineers have been managing these legacy systems with their multiple and proprietary protocols, but these engineers are becoming rarer and increasingly unavailable.

Although we have a temporary reprieve in some cases due to the economic recession, we will continue to see a drain of talent but most of all experience, as older engineers and technicians leave the utility space by retiring. They’ve been able to keep the grid running because of their hard learned experience rather than engineering design. The call for a newer “Smart Grid” is really a call for a more reliable and more automatic system for transmission and distribution of electricity.

In addition, the whole generation of electricity is changing. Multiple sources of in-feeds to the grid are being developed, including wind, solar, tidal, and cogeneration. The existing grid infrastructure was never intended to cope with these varying multiple sources that are less reliable than a string of conventional or nuclear power generation plants. But the emerging need for renewable energy sources, and Distributed Energy Resources, will make it necessary for the grid to be able to handle variable feeds from wind turbines, solar power plants, tidal power generators, from large customers pushing excess power back into the grid, and from small cogeneration plants that may or may not be regularly online.

This situation has led to the development of a global standard, IEC 61850, for communications between substations, internal communications within substations, and communications between various parts of the grid and the central control system for that portion of the grid.

The key benefits expected to derive from IEC 61850 are exceptional interconnectivity, using one standard protocol, along with easy interoperability between systems and devices from different vendors. A single common standard should also provide simple, easy to learn design and configuration tools and practices, as well as reliability and cost savings through higher availability of LAN and fiber optic networks.

All About IEC 61850

At the heart of IEC 61850 is standard Ethernet communications—the most common means of electronic communications in use today around the world. The IEC 61850 standard came out of work done at EPRI (Electric Power Research Institute) to create a Utility Communication Architecture, with defined protocols, data models and abstract service definitions, and from the work of the IEC 60870-5 committee, which created a communications

profile for sending basic tele-control messages between two systems that was based on permanent directly connected data circuits.

IEC 61850-enabled IEDs (Intelligent Electronic Devices) get digitalized power grid condition data via an Ethernet process bus and field communication interfaces (also called merge units). These can be varied from Modbus, DNP3, UCA/MMS, RS232 and Ethernet-enabled PLCs and devices with proprietary protocols. Even dialup modem access is provided for.

Field communication interfaces consist of data gateways, protocol translators, communication servers and controllers for legacy SCADA protocols like DNP3. The IEDs communicate with each other by using the substation bus (a standard Ethernet LAN configuration) through a set of redundant Ethernet switches. Legacy devices use a 61850 wrapper around the legacy data protocol transmissions.

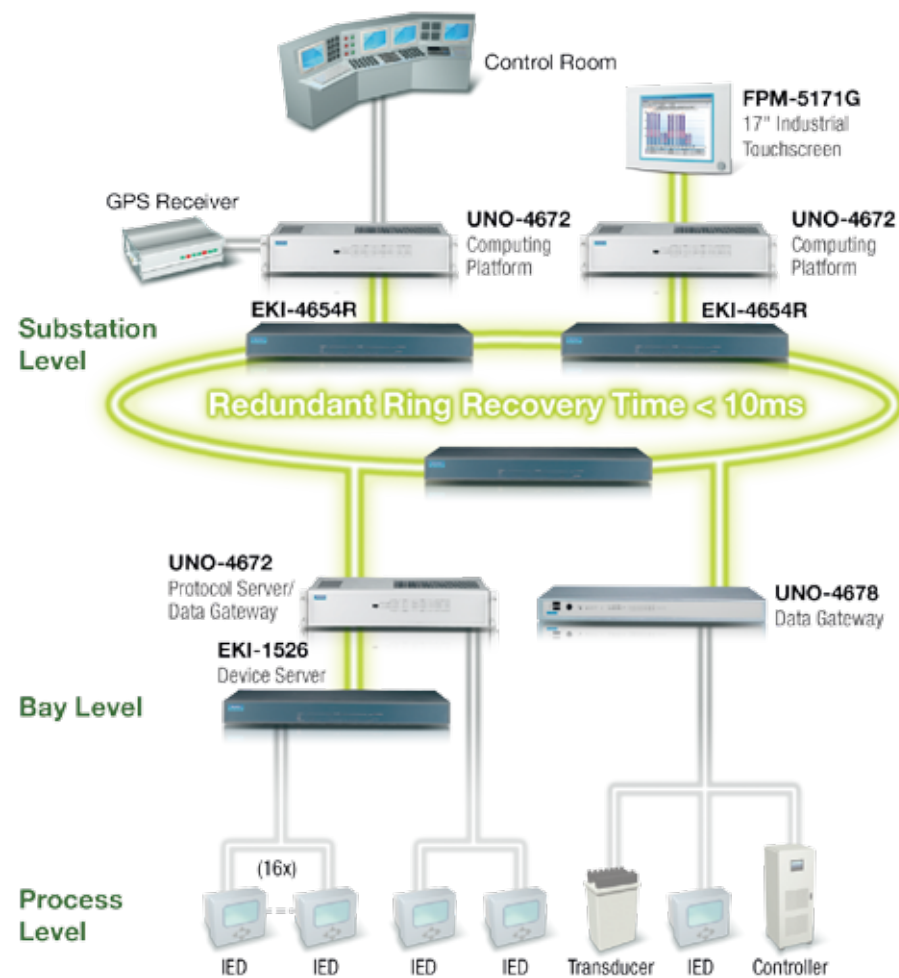
The core of IEC 61850 is an object model that describes the information available from the different primary equipment, and from the automation functions normally performed at the substation level. A specification details the communications between the IEDs of the substation automation system and maps the services to specific protocols via a configuration language. It is a true object oriented approach to substation automation. It is backward compatible with previous attempts at global standardized communications, like the UCA GOOSE, and contains its own GOOSE (Generic Object Oriented Substation Event model) and GSSE (Generic Substation Status Event model) capability to produce accurate event logging and alarm generation and manipulation.

So What Does 61850 Look Like?

In a typical application, shown in the figure below with Advantech products, IEDs connect to a Device Server. The Device Server connects to the process bus (the 100 Mbps Ethernet Substation LAN, based on IEC 61850) through a Protocol Server. At the same time, relays and other field devices also connect to the 61850 Ethernet LAN through a Data Gateway. The LAN is composed of smart managed switches in a redundant architecture for both availability and security of data.

Sitting on the LAN are a variety of Data Servers, such as a Modbus server, an MMS server, a conventional Ethernet data server and possibly 3rd party servers. These use conventional protocols such as DDE/.NET and DDE/OPC to serve data to the various applications in the substation control system, and through either the Internet, or an Intranet, or combination of them, provide data to what could be called a “remote monitoring and diagnostic” layer in the system structure.

Because IEC 61850 is a standard set of protocols that runs over Ethernet, it is possible to use COTS (Commercial



as a long-range redundant power supply.

These features are generally not found in “commercial grade” managed Ethernet switches. The EKI-1526 serial device servers in the example are similarly designed to be able to operate in rugged service and provide connectivity between serial devices such as IEDs and a TCP/IP network.

In the application, the Control System Integrator took advantage of the availability of industrial grade embedded computing platforms such as the Advantech UNO-4678 to serve as protocol converters & gateways and UNO-4672 to simplify system configuration (integration of gateway, GPS and substation server into one station computer) in the system. These devices are low power, high computing capability fanless box PCs running Windows and capable of handling complex tasks while conforming to the physical requirements of IEC 61850-3. These devices have

Off The Shelf) products to provide the device servers, data servers, protocol servers and data gateways necessary to construct the substation automation architecture.

However, the stresses of industrial uses for these devices preclude the use of basic “commercial” embedded computers, managed Ethernet switches, and other devices, in favor of industrially-hardened purpose-designed and purpose-built versions that can handle the industrial environment and provide high duty factor and high availability for many years.

It is for just this reason that IEC 61850 provides specifications for environmental performance for temperature, vibration, shock, static load, electromagnetic immunity, emissions and other parameters, including software parameters regarding data transmission.

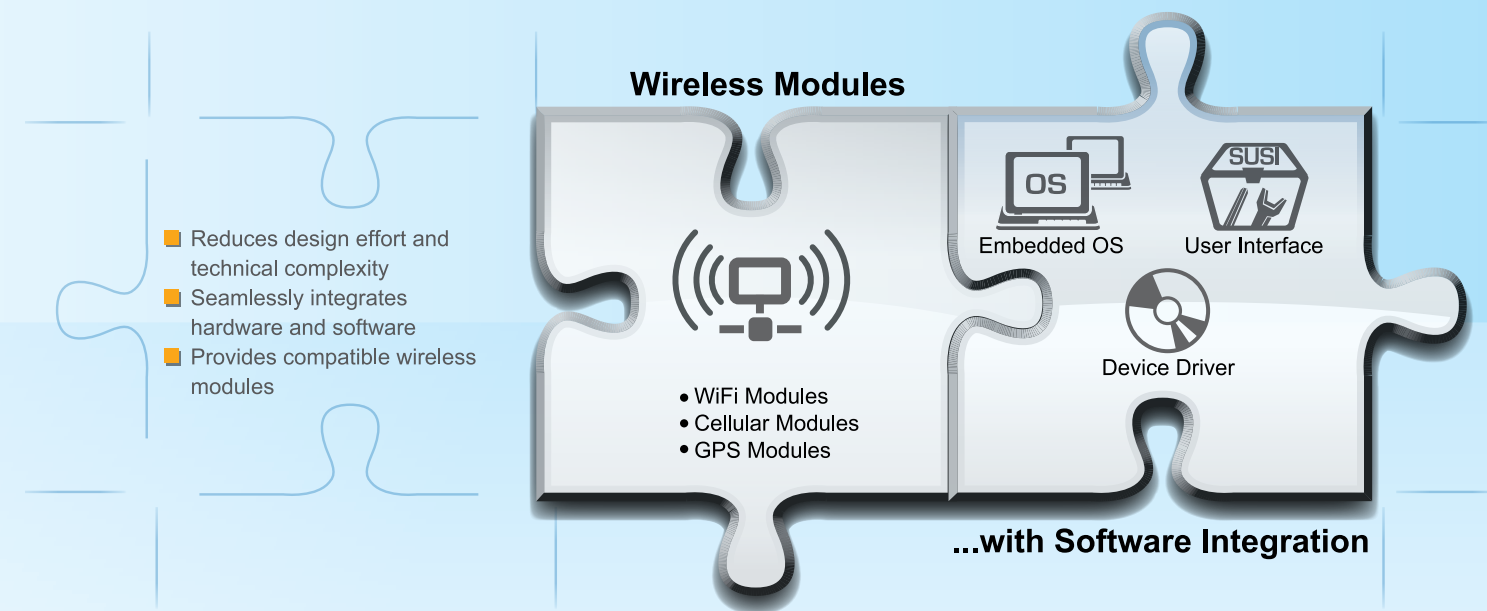
The designer and user should select devices and components for the system that have been designed specifically to meet the requirements of IEC 61850-3. In the application above, for example, the Control System Integrator selected the Advantech EKI-4654R Ethernet Managed Switch because it provides up to 24 Fast Ethernet Ports, two 1000BaseT SFP ports, and operates on a redundant X-Ring architecture providing very rapid recovery from faults and very low packet loss rates, as well

extended temperature, vibration, shock and EMI immunity, and have more inboard diagnostics than typical commercial grade single board computers.

Note that since the heart of the system is a redundant Ethernet LAN, it is easy to add a HMI (Human Machine Interface, in this case an Advantech industrial monitor FPM-5171G) for local monitoring, alarm management and diagnostics while the data moves to the central control facility via TCP/IP. At the central facility, IEC61850 makes it possible to begin to design systems that integrate both the substation controls and the generation and distribution control systems, which are more conventional DCS style systems. IEC 61850 may make it possible to have one standard, one system architecture, for the entire world.

Making the Smart Grid Work

The governments of many nations have seen the advantages of having a smart grid. They have provided funding of various levels to see it accomplished. But in order to produce a smart grid, we need to have a secure, interconnected and interoperable grid. IEC 61850 is the standard that will provide that interconnectivity, interoperability and security.” ■



Innovation Without Boundaries

Enhance Wireless Communication and Integration with Advantech's Embedded Core Solutions

Today, only a handful of wireless standards exist in the market. However, a big problem for system integrators lies in how to integrate these standards into a single solution.

Advantech not only develops a variety of individual products using these different standards, but also has brought to market, dedicated Embedded Core wireless modules to help system integrators increase their competitive advantage.

Interview by Wen Run

Photos by Advantech

Interview with Tawei Wang, Deputy Manager of Embedded Core Service

From fieldbus in its earliest stage to the more recent adoption of Ethernet, communication technology has always been a key factor in industrial control areas. Since this technology develops quickly and can be extended to the field of industrial control, the total number of applications available to the area is also growing fast, although the stability of some of these applications is questionable.

Building Advantage through the Integration of Wireless Standards

From a technical perspective, early wireless communications was dismissed from serious use as it often disconnected, had trouble with interference, and had distance limitations. As the technology matured, these problems were solved. TCP/IP technology uses CRC (cyclic redundancy control) and FEC (forward error correction) to help data streams recover from packet losses. At the same time, redundant topologies are maturing, and with new antenna technologies, and advanced algorithms to prevent interference and propagate packages along multiple paths, the innate drawbacks of wireless technologies can be overcome. Today, wireless communication technology is expected to play a key role in the industrial communications field.

In general, based on distance of transmission, wireless communications can be divided into four discreet segments: PAN (personal area network), LAN (local area network), MAN (metropolitan area network), and WAN (wide area network). There are several representative technologies in each of these segments, respectively: Bluetooth, Zigbee, and RFID for PAN; WiFi for LAN; 802.16 for MAN; and 3G, 3.5G/3.75G for WAN.

“Advantech works to develop the corresponding module for different wireless standards all the time,” said Tawei Wang. In the PAN area, for instance, Advantech is focusing on industrial mobile devices which transmit data via Bluetooth. As well, the Panel PC, Tablet PC, and Rugged notebook for military applications also use Bluetooth to build their own personal area networks. With Zigbee, although its major promoter initially championed the technology and is dedicated to the industrial control field, this standard has not yet been settled. In addition, the wireless sensor networks (WSN) – the signature application for Zigbee, has not yet seen large growth. Therefore, Advantech’s Zigbee solution is being prepared, while waiting for the technical standard to be decided upon.

WLAN standards—802.11a/b/g—are suitable for both

indoor and outdoor applications. Currently WLAN is widely used in industrial control areas, such as factory automation, medical devices, and gambling equipment.

Advantech’s Complete Service Consolidates Heterogeneous Networks

From an application standpoint, since these different wireless standards have different transmission distances and speed, the environment and business demand are the main considerations in choosing the correct technology. At a medical station, for instance, given that a cardiac pacemaker uses the ISM 2.4 GHz band, and other wireless technologies such as Bluetooth, 802.11b/g, must also avoid the same band, turning to the 5 GHz 802.11a band is the solution they must turn to.

In the consumer market, wireless technologies operate more independently; the Bluetooth, GSM or 3G inside a cell phone each operate along separate paths without a need for intercommunication. However, in the industrial vertical market, these technologies must be integrated. In a fleet management system, for instance, GPS is used for vehicle positioning, and return of position data to the central control system is done via GPRS (General Packet Radio Service). Lastly, the system will transform NMEA data to GIS (Geographical Information Systems) formatted to facilitate the logistics of vehicle deployment or real-time message feedback. This is a very common application model in the vertical market, yet for the general wireless devices supplier, it still is a difficult task to achieve.

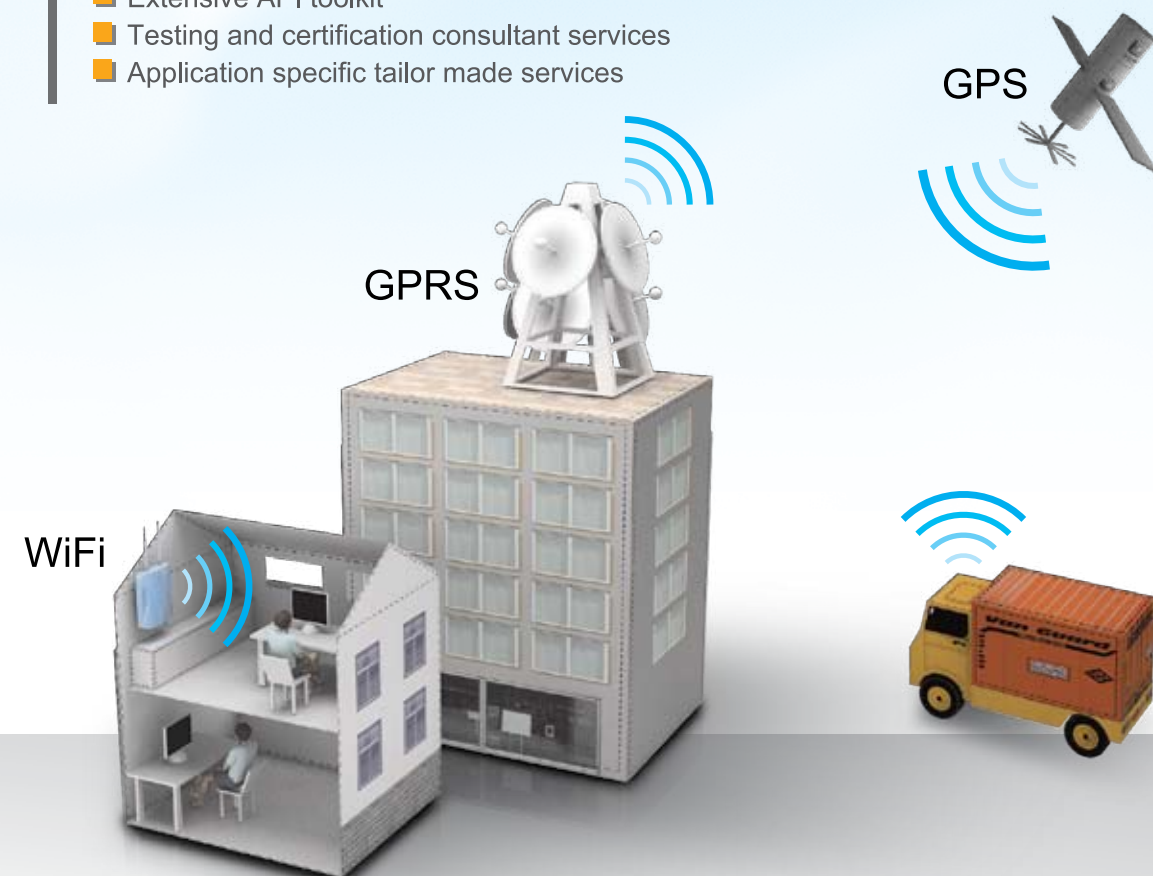
To help system integrators to face these big challenges, Advantech integrates wireless modules on a board level. “Most of system integrators in Taiwan are small and medium business (SMB) with limited resources. They want to use their money where it’s needed most,” Tawei Wang pointed out. Advantech believes that IPC vendors must provide complete solutions to customers, especially in vertical markets which are still trying to integrate separate technologies. The “complete solution” means a “turnkey solution” which allows system integrators to accelerate time-to-market, decrease overall cost and reduce project risk.

Advantech is Invested in Embedded Core Applications

Advantech has established the “Embedded Core” business unit to address the growing demand for the integration of wireless technologies. As the world’s largest IPC vendor, Advantech has a large organization. However, there are big differences between business groups, and in fact, there have been a number of wireless modules

Software That Empowers Your Applications

- Embedded x86/RISC driver compatibility
- Software Development Kit (SDK) support
- Extensive API toolkit
- Testing and certification consultant services
- Application specific tailor made services



which provide the same functionality developed from different departments. This situation, which is not unusual, duplicates engineering efforts on the software side, costs more and wastes both time and resources. After the Embedded Core unit was established, product managers and hardware engineers could easily communicate with each other through the new business unit when they wanted to integrate their products or technology. Once new products, modules or technology is developed, the Embedded Core unit will introduce them to other business units. In this way, Advantech can lower cost by creating a centralized purchasing strategy and provide the most cost-effective solution to the customer.

Software is another key issue for the integration of wireless technologies. The Embedded Core Service business unit provides dedicated software to address problems

that cannot be solved by a hardware approach. For instance, a WLAN signal monitoring software package developed by the Embedded Core business unit can be used to understand signal quality in advance, and detect if packet loss is due to collision during the data transmission. The Embedded Core business unit also develops various drivers for different operating systems to meet product demand from different application areas.

Currently, over 90 percent of Advantech’s wireless products contain wireless modules and software from the Embedded Core business unit. Tawei Wang emphasized that the Embedded Core solution from Advantech can help system integrators concentrate on their core business goals, allowing them to provide better applications and higher quality products to meet increased industry demand from clients. ■



Mike Berryman

Market Development Manager,
Advantech Cincinnati

My personal time is invested with my family: Emma (age 10), Evan (age 8), and my wife, Paula (age undisclosed). We enjoy being involved with our kids sporting activities: soccer, baseball, and fast-pitch softball. We are actively involved in our church and its affiliated elementary school, where I serve as the Board of Education chairman and member of the church council. This work is where I find the balance in my life.

Even after nine years with the company, I continue to learn something new every day, which keeps me engaged and excited. Here at Advantech, the opportunities for a rewarding and entertaining career are limitless..

As a native of Cincinnati, Ohio it was only natural for me to attend the University of Cincinnati where I earned a degree in Chemical Engineering in 1991. That training helped me obtain my first position in the industrial automation field as a Control Systems Engineer for Ashland (now Marathon) Petroleum Company. As I gained practical working knowledge of automation strategies for petroleum refining, I also was fortunate to live in other areas of the USA: Huntington, West Virginia and Minneapolis, Minnesota.

In 1996, the lure of a family life drew me back to my home city of Cincinnati where I secured a position with Honeywell Industrial Automation as a Lead Automation Engineer. There, I matured and was promoted to Project Manager with responsibilities for multi-year, multi-million dollar projects. I departed Honeywell as the Specialty Chemicals Program Manager responsible of all project execution in that vertical market.

Joining Advantech IAG in 2000 represented a great new opportunity for me as the Measurement & Control Product Manager for North America. I enjoy Product Sales & Marketing immensely and I gained much knowledge as a PSM. In 2005, I was promoted to my current position of Market Development Manager with the responsibility for IAG's North American PSM and AE teams.



Billy Cheng

QA Manager,
Advantech Milpitas

the importance of an "IT infrastructure" will continue to expand. This means enterprises will have to focus on actively interacting with their customers, and work harder to provide more transparent / virtual information.

My ultimate goal is to complete the global quality management system in which CTOS production, quality control and customer satisfaction are successfully distributed among all Advantech Service Centers, in order to work in concert with the headquarters QMS policy. Overall I would say it's been an amazing experience working for this organization. All of my colleagues from RBUs, RSC, ACL and factories have always been very supportive.

I have been with Advantech now for over 12 years. During my first three years, I worked as a Senior Production Engineer in the Production Department and was later promoted to supervise the Production team. A little over a year after that, I took on more responsibility as a Production Manager. Then in 2003, I was assigned to take on the newly established QA function for AASC, and I have been at this position ever since. Looking back on my years at Advantech, I feel strongly about one very simple truth, "If you try your best, you will eventually find your way."

Aside from finding an excellent career with Advantech, I also found a wonderful wife, whom I met on the job. She works for the AASC OP department, and since I met her my life has been changed for the better. We were married in 2000, and though life hasn't always been easy to us, we've always been happy.

The AASC QA Department has proactively served as a role model for other Advantech service centers. It has become my mission to implement actions through AASC to Global Regional Service Centers (RSC)---ACSC, AESC, and ATSC respectively. I am learning from my Global RSC colleagues across different cultures, viewpoints, and visions. I believe as time goes by, the focus of the Global RSC quality management system will switch from "factory oriented" to "customer and service oriented", and that

I'm Rick de Vries, with over 11 years within Advantech. In my early life I studied, but it wasn't my biggest ambition. Growing up I realized that a proper study in Electronics will be the most satisfying way to enjoy life. So I did, working and studying in the evenings. With my first employer, I managed to become a quality manager, where a high level of automotive and military equipment was produced.

Within this job I learned the sense of total cost of ownership; it all starts in the early beginning of your process, all the way up to the final after sale service. After 12 years I joined Advantech, working in a bigger company with an ambition to become a number one company in industrial and embedded computing felt from the beginning, a very good start.

Over the last 11 years I've served different functions from Services Manager - European Services Manager and now Key Account manager. A salesman requires many of the experiences I have so far, working with the customer from the early stages right to the end. Learning new and different skills and managing them within Advantech is a nice job. But I'm not just a workaholic, I also have spare time; I enjoy life with my wife and two nice teenagers' daughters.

I've been married since 1990 and we are very happy, working as a salesman you need to have a very flexible home situation, what my wife and children gives me. One big passion we share is holidays, especially winter sports. Skiing downhill, with my family and friends is a really exhilarating thing to do, so every year we drive up to the Alps Mountains in the middle of Europe.

Apart from this hobby, I like to do some bicycling, and play squash against my boss Michael B – winning is a must! Just like winning a project for Advantech.



Rick de Vries

Key Account Manager,
Advantech Breda, NL

My name is Lindsay Brown and I currently live in Rosebud Victoria, Australia. On one side is the expanse of Port Phillip Bay and on the other side of the Peninsula is the ocean beach that expands onto Bass Straight. This gives us a wonderful life style boating and fishing and diving in the bay, and swimming and surfing on the ocean.

My working life started as a teller in a bank on leaving school. Then, many odd jobs later when I qualified as a professional diver, I started my first career working on offshore oil rigs doing non- destructive testing and magnetic particle inspection. I was also involved in the construction of well-heads, standard buoy moorings, and mixed-gas bells and stages. I worked in countries as varied as Singapore, Malaysia, Philippines, Brunei, and in Bass Straight, Victoria. This work consisted of 12 hour shifts for 3 months straight but the pay was good. After a while though the work was getting harder and harder to obtain so I noticed that electronics and computers was an area that was growing rapidly so I decided to study that instead. However, at the same time the arrival of the first of three children disrupted those plans and meant juggling my time and commitments!

As a mature student I studied both Electronics and Computer Science at the local TAFE school and landed a job at Priority Electronics which led to an introduction to Advantech. To begin with, I was doing technical support, dispatch, and then sales. Sixteen years later I now work with Key Account sales in Advantech Australia, focusing on the embedded side of the market in Medical and DTOS. I have also been fortunate in my position to travel to Israel and Taiwan.

In my spare time I chase Snapper fish when the season starts in earnest in November. I have a great boat for this and use it to dive, fish, and water ski. Diving is still a passion of mine. I still surf although I use a knee board (referred to as a cripple). I also support the Saint Kilda Football Club with a passion who play in the Australian Rules football league.



Lindsay Brown

Key Account Sales,
Advantech Australia

A Dazzling Performance in India

Script by Anita, Photos by Advantech

Interview with Vijay Kumar, Sales Manager of Advantech India

In India, one of the countries known to have the fastest growing economies, many industries and businesses have been gradually improving efficiency and sales operations, contributing to the tremendous growth and sales for various ICT products. Founded four years ago, the Advantech India Office has been conducting brisk business and improving sales. In spite of the global economic recession, Advantech India managed to profit, and IPC sales skyrocketed in 2008. It was not only due to Advantech's excellent product quality and reputation, but it was also down to the full support from local dealers that jointly brought success like this.

Located in Bangalore, known as India's Silicon Valley, Advantech India Office was established in 2005. Back in 2002, when Advantech first entered the Indian market, the pioneering members first ran the business from only a small home office. The first local sales team was set up in 2003, responsible for branding Advantech. Not long after, with growing sales accomplished by the initial team, the Advantech India Office was formally built in August, 2005. From 2005 to 2008, the local team has continued to push up sales of Advantech India, and made remarkable gains. The annual revenue of Advantech India is US\$ 2.3 million, and the annual growth rate is 28%. In addition, Advantech India won the IPC (Industrial PC) bidding for the VSSC (Vikram Sarabhai Space Centre, Kerala) project in 2008.

Acknowledged as one of the pillars of the four BRIC (Brazil, Russia, India, China) countries, India's economy is among the world's fastest-growing. Needs for IT solutions are robust in India: "As a result of the needs to construct IT infrastructure, various industries are hungry for IPCs," said Vijay Kumar, Sales Manager of Advantech India. "Demand coming from industries like military and government surges. Revenues comprise of public biddings from state-run electricity companies and gas stations representing up to 55% of Advantech India's 2008 income."

Beyond IPCs, more business opportunities are perceived by Advantech India in sectors such as Power & Energy, ITS, Medical, and Telecoms—all can be considered as promising market opportunities within the next few years.

IT solution providers in India tend to introduce low-cost strategies. Undoubtedly, low-priced goods draw attention easily, yet Advantech India believes that only higher-



quality and durable products last longer in the market. Hence, Advantech India has adopted a different tactic from those of other players—highlighting the performance and reliability of our products. "Compared to other manufacturers' products, solutions provided by Advantech India get through the mission critical evaluation more easily," Vijay said.

"The more competent the partners are, the higher customer satisfaction can be attained," continued Vijay. Currently, Advantech India collaborates with 6 partners locally; among which Techincs and Dynalog are major dealers. These partners have been vending Advantech products for over a decade and have acquired a unique understanding toward Advantech solutions. As for the division between distributors, the dealers focus on the marketing of Advantech products, while Advantech India provides all the backend technical support. To strengthen the partners' capabilities on device maintenance and replacement parts services, Advantech India provides extensive training resources. As to the much more complicated RMA service, this is still controlled by Advantech India's technical team.

Advantech India has 9 employees. Each of them runs sales, marketing and technical support separately. Vijay anticipates that Advantech India will keep growing steadily. Looking towards the success of Advantech China—there's still a lot for Advantech India to learn from. "Advantech China has been thriving in recent years, Advantech India's vision is to reach half of the sales volume of Advantech China in a couple of years," concluded Vijay. ■

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