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Dear Readers,

Normally July marks the middle of the summer season in Germany (Europe) with high temperatures, sunshine and relaxed people. But this year summertime is a little unusual: sunshine and high temperatures appear only for a short time followed by periods of cool temperatures and cloudy skies. But despite this unusual weather condition for summertime there is a constant in the embedded industry: the publication of the Yellow Pages, the Embedded Companies Directory, in the combined issues of Boards & Solutions and ECE: This year’s edition of our Embedded Companies Directory (starting page 31) is again split into two sections. The first part provides you with short company profiles, including a QR code which leads you to the full company profile (including overview about products & services, contact information, product news,…) on the embedded-control-europe.com portal. The second part of the Yellow Pages is a reference list showing in which product categories the companies are active.

But – also usual as every year – the yellow pages aren’t the only highlight in this summer issue, you’ll find actual information about new trends and developments in the embedded industry. One example is our cover story starting at page 6 which describes “smarter algorithms improve stepper-motor performance”. An important topic in the emerging area of the Internet of Things in which devices and equipment are controlled automatically via sensors and moved by actors to do their job. In principle, two sinusoidal signals, one shifted in phase by 90° from the other, can create smooth continuous motion in stepper motors. In practice, the waveforms are not entirely sinusoidal – the current level for the coil in each position has a discrete level. Microstepping in this way creates smoother motion and can help reduce noise and vibration in the motor compared to shifting between full steps. However, precise current control to the motor is important to maintain, particularly at low speeds precise control falls because it is possible for the motor to miss microsteps unexpectedly. But there is more to achieve improved stepper-motor performance – see the article!

The Internet including cloud computing changes not only the way of controlling microcontrollers but also how to develop them. The article “Cloudy with changes of microcontrollers” (page 14) introduces a cloud-based development environment. For the first time embedded control developers now have a new cloud-based tool which includes a huge number of supported devices as well as integration with rapid development tools. It will be exciting to see how the embedded community uses it and how embedded control will change in the era of the cloud.

But not only technical information you’ll find in our magazine also economical knowledge. The article “the hidden cost of equipment mismanagement” (page 17) informs you why it is important to regain control of your asset using a platform-based approach to condition monitoring and shows you how to do it.

Yours Sincerely

Wolfgang Patelay
Editor

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Cover Story: Smarter algorithms improve stepper-motor performance

Thanks to more intelligent methods for applying current decay to stepper motor coils, it is possible to take advantage of the smoother motion profile of microstepping and ensure that the motor responds well to changes in voltage, operating conditions and even ageing.

Cloudy with chances of microcontrollers

Embedded control developers now have a new cloud-based tool which includes a huge number of supported devices as well as integration with rapid development tools. It will be exciting to see how the embedded community uses it and how embedded control will change in the era of the cloud.

Three pillars to create trust for the Internet of Things

The Internet of Things (IoT) is enabling new opportunities and business models and it is vital that people can trust it to keep their data protected. To earn that trust, three essential elements are required: connectivity, security, and monetization.

Networking the world – the IoT in mobile markets

The Internet of Things and the digital networking of the world are currently the driving factor for technological innovations, in particular under the heading Industry 4.0. Physical networks in passenger and cargo transportation are also benefiting from these developments. Whether for fleet management applications or passenger information – all mobile markets are literally on the move with regard to the IoT.

Yellow Pages 2016

This year's edition of our Embedded Companies Directory is split into 2 sections.

The first part provides you with short company profiles, including a QR code which leads you to the full company profile (including overview about products & services, contact information, product news,...) on the embedded-control-europe.com portal.

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Smarter algorithms improve stepper-motor performance

By Mark Patrick, Mouser Electronics

Thanks to more intelligent methods for applying current decay to stepper motor coils, it is possible to take advantage of the smoother motion profile of microstepping and ensure that the motor responds well to changes in voltage, operating conditions and even ageing.

The stepper motor is a popular choice for intelligent precision motion control. Unlike a standard DC motor, which is designed for continuous rotation, the stepper motor provides the ability to rotate around an axis one step at a time. This makes the motor ideal for applications that call for precise positioning and speed control. However, to ensure that the motor control remains precise at all operating points for the application, it is important to tune the motor to the controller.

A typical stepper comprises a stator, a rotor attached to a shaft and a number of coil windings that are used to generate magnetic fields at fixed positions around the stator. In a permanent-magnet stepper motor, the rotor uses a disk made of magnetic materials. The disk may have just two poles. A more complex disk, generally used in precision motors, may interlace many poles around the outside of the disk. A variable-reluctance stepper motor is, in contrast, entirely electromagnetic.

When power is removed from the motor, it will not resist turning by external forces. In a permanent-magnet stepper motor, where power is applied to the motor, the rotor will seek the most stable position it can find. The electromagnetic field generated in the coil will attract one pole of the magnet formed on the rotor and repulse the other. When the nearest opposite pole on the disk aligns itself with the electromagnetic field generated by the coil, the rotor will stop and remain fixed in this position while the field in the coil remains unchanged. If the current flow in this coil is removed and applied to another at a different position, the magnets will be pulled to the next stable position where the rotor can again come to a stop. Typically, a variable-reluctance motor uses a number of coils in the stator, arranged as opposing pairs. A three-phase motor will have three such pairs. Providing energy to each pair of coils in turn moves the metallic rotor from step to step.

Because of mechanical limitations, the rotor can rotate on demand only up to a certain maximum speed. The torque of the motor will typically be maximized at low speeds. As a result, motors are often used at low speeds to provide maximum control and torque. Resolution can be increased through the use of microstepping. In normal operation, the current from one coil is not removed completely before activating the next. Instead, the current is reduced in one while the current in the other is increased. If this sharing of current is controlled across the two coils the situation creates smaller virtual steps than trying to drive the motor using discrete current transitions.

In principle, two sinusoidal signals, one shifted in phase by 90° from the other, can create smooth continuous motion. In practice, the waveforms are not entirely sinusoidal – the current level for the coil in each position has a discrete level. Microstepping in this way creates smoother motion and can help reduce noise and vibration in the motor compared to shifting between full steps. However, precise current control to the motor is important to maintain, particularly at low speeds. Precise control falls because it is possible for the motor to miss microsteps unexpectedly.

The specific current levels are normally generated using pulsewidth modulation (PWM) chopping techniques. An H-bridge of two pairs of power transistors delivers the chopped current to the motor coils. Typically, the drive current is normally interrupted when the chopped current reaches the threshold for that microstep. After this point, the current will begin to decay. The profile of that decay will depend on the operation of the H-bridge.

With slow decay, current is recirculated using both low-side power transistors. The drawback of this mode is that the slow decay can limit the amount of current that needs to be regulated to drive the motor. Fast decay uses the H-bridge to reverse the voltage across the coil winding, which causes the current to fall...
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Industrial Automation

IndustriAl automatIon often at a fast rate. However, this can lead to large ripple currents that hamper efficiency and may be unsuitable for large current levels that may be needed by the motor being driven.

Mixed decay combines the two decay modes. It begins with a fast decay before switching, after a fixed time, to the slow decay mode. This does allow for most microstepping situations but demands the control algorithm be optimized for the specific motor being used. The tuning depends on the magnitude of load current, supply voltage and stepping rate. Usually, lower load currents call for a different mix of fast and slow decay compared to higher load currents. Traditionally, the best scheme is picked by cycling through the fixed-decay ratios and observing the current profile on an oscilloscope for a given microstepping sequence. The key problem with fixed decay schemes is that they do not react to changes in conditions. Parameters can vary in operation, such as the back electromotive force (EMF) and the microstepping rate that affect current and voltage levels dynamically.

Optimizing for a high step rate, which is usually achieved through the application of a higher ratio of fast to slow decay, can lead to excessive ripple in current when the motor is holding steps or moving slowly through them. If the system is battery powered, the voltage supplied by the cell will decline as its charge is depleted, which if not regulated will lead to different voltage conditions being applied to the motor. And, as the motor ages, the initial decay profile may prove to become increasingly unsuitable.

The answer is to adopt algorithms that adapt to changing conditions in the motor. The stepping commands and the PWM behaviour can act as guides to where to set the decay changeover point on a per-step basis. On each PWM cycle, the controller will switch the H-bridge over at a given point. Adaptive tuning remembers the timing of this switch and uses it to determine the fast-slow decay ratio for the following step. By monitoring the step commands – taking notice of whether the motor is moving quickly or not – the percentage of fast decay can be increased and decreased according to the motor demand. As the motor slows down, the amount of fast decay can be scaled back. Such algorithms can be incorporated into microcontroller firmware but are also available in off-the-shelf stepper-motor controllers such as the Texas Instruments DRV8846. The adaptive-decay scheme used in the DRV8846 compensates automatically for supply voltage, load inductance, load resistance, back EMF and the current magnitude.

Through the use of adaptive decay, the controller no longer needs the control pins that would normally be used to set the decay ratio, which helps save on package cost. Further, the algorithm is designed such that it uses slow decay as much as possible, which results in a more power-efficient design. This is because the current is flowing through the low-side power transistors only, which is typically more efficient than switching the H-bridge into a reverse configuration.

A strategy employed by another device with adaptive decay control, the STMicroelectronics L6472, is to monitor the PWM switchover signal on rising and falling steps to determine whether it happens before or after a set minimum on each microstep. If the target current threshold is reached before that minimum

![Figure 1. Pair of stepped sinusoidal waveforms for controlled microstepping](image1)

![Figure 2a. H-bridge current flow for fast decay mode (Image courtesy: Texas Instruments)](image2a)

![Figure 2b. H-bridge current flow for slow decay mode (Image courtesy: Texas Instruments)](image2b)
time, a fast decay is used in place of the normal slow decay up to a point determined by a programmed maximum fast-decay time. If two fast decays are encountered during a series of rising steps, the algorithm will continue to inject them until the motor stops or the sine wave zero is crossed. On falling steps, the algorithm in the L6472 will, at first, use fast decay rather than slow to reach the target level as quickly as possible. But, to avoid strong ripple currents forming, the algorithm will adjust over time to increase the fast-decay threshold which will lead to moving into slow-decay mode unless the current demand changes enough to demand fast decay. The result is a continuous balancing of the fact and slow decay modes.

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Product News

Mouser signs global distribution agreement with IEI
Mouser Electronics announce a global distribution agreement with IEI Technology. The IEI product line, now available from Mouser, features three embedded systems that provide interoperable solutions for industrial automation and Internet of Things applications. The WAVER-BT single-board computer fits the PICO-ITX form factor and supports an on-board Intel Celeron system-on-chip with DDR3L; VGA, LVDS, and iDP connectors for dual independent displays; USB 2.0 and USB 3.0 connectivity; and SO-DIMM support up to 8GBbytes or 4GBbytes (depending on the model).

News ID 4148

Mouser: sensor reference design for weigh scale and 3D interface systems
Mouser Electronics is now offering the MAXREFDES82 smart force sensor reference design from Maxim Integrated. The MAXREFDES82 reference design features a next-generation industrial, smart force sensor that helps designers rapidly evaluate and deploy new human-machine interface devices. The design measures mass up to 780g, as well as the center of mass of the object on it, allowing it to operate as both a weigh scale and a touch interface with force sensing for instrumentation and industrial control.

News ID 4261
Embedded real time in industrial automation systems

By Andreas Schwope, Renesas

This article introduces the R-IN32M3 SoC family for industrial Ethernet applications suited for the automation area. With the HW-RTOS accelerator inside the chip, it is the first family using this technology to accelerate embedded software processing.

Today distributed industrial automation systems require more and more real-time behaviour with extremely short cycle times in different network protocols. These real-time requirements can be seen in many cases in the system parts, the system communication part and the application part. While the communication part is responsible for the high speed data transfer between the nodes inside the distributed system, the application part processes the data and generates the application results. The input data is received from the system via its communication channel and from its local inputs like sensors. The results on the other side are communicated back to the system via the communication channel or drive the outputs (actuators) in the local node. Generally the term real time is often identified as high speed, but this is not the full truth. Speed requirements in distributed real-time automation systems with many network nodes are much more complex, and need dedicated hardware solutions to be real-time capable. High speed data transfer and data processing is just the basis.

High speed in the communication channel or in the application part can be directly translated into the time parameter low latency or low delay. A low value allows a system to react very fast upon external events. This feature is indeed very important to many applications, but on the other side this is just the basis of real-time behaviour in distributed industrial automation systems. Two further essential real-time characteristics have to come along with low latency/low delay. These are explained in the following.

The reaction time on certain events must be on the one hand as fast as possible – that’s clear. On the other hand it must be guaranteed that the reaction always happens within a defined narrow time span independent from the current system state and independent from any other event influencing the system. For system-wide precise time management it is very important that all system delays are well known or can be exactly measured. It’s generally true that the faster the processes to be controlled inside an industrial automation system, the shorter the delays which can be tolerated to run without any problems.

Unfortunately the delays are generally not constant and vary around a normal delay time. The variation is often based upon unpredictable events and has a certain dependency upon the current system state. This time characteristic is known as jitter and stands in contrast to the real-time requirement of accurately calculated delays. In an ideal scenario the jitter is zero, meaning the system timing in all nodes shows no variations. But that’s a dream and is not possible. In a real scenario the jitter must be small enough not to stress the allowed system timing tolerances. These two behaviours with parameters delay and its jitter are opposed in figure 1.

This directly implies that without specific measures to control or reduce the jitter on the hardware and software levels as much as possible, real-time behaviour can hardly be achieved for a high speed application. This is true even if the different system parts are generally fast enough for that application. These kinds of measures need to be applied for both parts: system communication and application processing. At the end the interaction of all system parts has to fulfil the speed and jitter requirements, leading us directly to the next important real-time characteristic of distributed systems.

Industrial automation systems often consist of some or many system nodes which are more or less placed far away from each other. Thus they need to communicate with each other via a well-tailored communication channel. In most cases IEEE 802.3 Ethernet-based industrial protocols are used to support the speed requirements of real-time systems for the communication part. Well known industrial Ethernet protocols like Profinet IRT, EtherCAT, CC-Link IE and other protocols running at
100 Mbps or above can span several hundred meters, if so required in huge automated production systems. Looking again to the overall system time management for separated nodes in distributed systems, one can easily imagine the importance of time synchronization between the network nodes. The high speed processes running in the different nodes need to be strongly synchronized with each other to build the overall high speed deterministic system. They cannot correctly work together when the nodes are just estimated to act at the same time. In reality there is often a time deviation between the nodes which is unknown and which is probably not fixed and can change with the time (long term jitter). Such a scenario can eventually crash the high speed application. Simply stated, all network nodes have to run the identical timebase and have to act at the same clock cycle ideally without any fluctuations. This ideal synchronized task scenario inside a distributed system is also known as isochronous behaviour and is shown as one of the real-time requirements in figure 2.

Industrial Ethernet protocols named already require a dedicated controller which takes care of the high speed low delay and low jitter data transport. On the other hand they implement certain communication functions of the lower OSI levels of the related protocol. This includes certain functions to measure the delay and keep the communication jitter as small as possible. They also take care for the exact time and clock synchronization between the connected and distributed network nodes to form the isochronous system. Often this synchronization function is based upon IEEE 1588, Precision Time Protocol (PTP). This also requires dedicated hardware functions to exactly measure the communication delays between the connected network nodes. Such a low-jitter and isochronous time management definitely cannot be achieved by a pure software solution.

With the integration of a specific industrial Ethernet protocol controller all real-time requirements are more or less automatically fulfilled for the system communication. But this is just one part of the solution as introduced already. The same requirements must also be taken into account for the application side in each and every network node of the whole system. So how can you achieve this real-time application performance?

Typically the applications run on embedded CPU systems and control sensors and actors in dedicated programs with special algorithms. Sensors and actors are connected with the CPU by serial or parallel interfaces. Some of the interfaces are generic while others implement a very special feature set with a dedicated controller tailored for a certain application area only. Increasingly, the CPU core and all required system components like memory, DMA, interrupt controller and several interfaces with specific controllers are integrated in one single semiconductor device. Such System on Chip (SoC) devices for industrial automation or industrial Ethernet applications are equipped with one or more network controllers for specific Ethernet protocols. When looking at the application processing, we basically have to distinguish between two options. The communication SoC is connected to a host system which runs the application. This divides the node into two separate parts introducing additional delay and jitter with the interface in between. Or the communication SoC has to run both the communication and the application. Both operate very close together, minimizing the negative timing influence on delay and jitter.

From this perspective the latter option is clearly the best choice for real-time systems. When applying the described requirements from above to a generic software structure with different processes and tasks, the software has to be executed fast enough. This represents the high speed characteristic of real
time. More important, and crucial for isochronous system behaviour, is deterministic switching of the CPU tasks with short delays and low jitter. Comparably with the communication level, these two parameters are also the basis for isochronous application operation between all nodes in the industrial automation system. The second row in figure 2 compares the conventional node implementation approach with the real-time requirements.

One direct requirement is the use of a real-time operating system (RTOS). Typically CPU systems use more powerful CPU cores running at a higher clock speed. In order to get enough real-time margin for each and every system condition, the CPU performance has to exceed by far the performance required to satisfy the application as such. Often communication and application parts are intentionally separated and run on different sub-systems with independent CPUs. Aside from the negative timing impact, such a solution can dramatically increase the board space. This comes with more complex system design and non-straightforward efforts for CE and EMV certification with a lot of potential problems. In addition to increased cost and time-to-market, all these solutions have higher current consumption. The result of this would normally be higher chip temperature, generating problems in small housings with passive cooling measures.

With respect to their runtime requirements, many algorithms and control structures in the application software can be implemented more or less in a deterministic way (speed, delay, latency). On the other hand the interaction between the different software tasks often depends upon the internal states and external events. Based upon this, the system timing is hardly and sometimes even not predictable. Whenever an event forces the application software to switch from the active software task to another task, the CPU needs to identify the next task, save the current and load the new task context (CPU registers). Even in an optimised RTOS software environment such kinds of effects occur and cannot be neglected.

The complexity of this context change process directly introduces a certain amount of CPU runtime delay before the new task can start or continue its work. Typically this effect can be compensated when using a higher CPU clock speed or having a more powerful CPU (see the disadvantage described above). Seen on a higher task level (e.g. non-interrupted CPU run time between starting and ending a certain computation) an undefined number of context switches introduce an average runtime delay which is naturally combined with a certain amount of jitter. This makes it very clear that software context switching is often the weak point in well balanced real-time systems as. But how to optimise task switching, especially with the background that the real-time operating system (RTOS) is already highly optimised in that sense?

The application software with its algorithms and control structures is already in a good shape and close to an optimal implementation. The solution to the negative effects of software context switching can only be a type of a hardware-based task scheduler. Such a scheduler would take over certain RTOS functions performing its work in hardware much faster with much less delay and thus with less jitter. As a matter of form such a kind of hardware function can be described as an RTOS accelerator. The advantages in the time domain of such an accelerator are directly visible: reduction of processing delay and jitter in the application and protocol stack software while the isochronous capability of the distributed automation system is optimised. But such an implementation improves other parameters as well. The resulting CPU performance inside an SoC using such a kind of RTOS accelerator appears to be higher compared to the same system without this accelerator. From the application perspective this advantage can generically be used in two opposite ways.

Firstly, reduce power consumption. The increased SoC performance processes the application tasks much faster. This results in more idle times and saves power when the CPU is stepping into a sleep mode. Alternatively a reduced system clock can be applied to process the same application with fewer idle times for even more power savings.

Secondly, increase software functions. The increased SoC performance can be used to compute even more complex software. Especially the combination of protocol stack combined with application software easily allows an industrial automation system running on a single chip device. With this it is possible to build very small, low-power and fully functioning network nodes for industrial automation.

Renesas has developed the ARM device family R-IN32M3 (Renesas Industrial Network) with a completely new RTOS accelerator. This HW-RTOS (Hardware-RTOS) supports the embedded ARM CPU with the RTOS task scheduling and other typical real-time OS functions which are normally implemented on the software level. With this the
CPU processing speed can be dramatically improved while reducing the typical software jitter. Aside from pure task scheduling with priority options, HW-RTOS can also perform task synchronization with event flags, semaphores and mailboxes, and support general task and time management. Further, HW-RTOS allows to directly execute certain functions triggered by an interrupt without any CPU involvement. Typically this implementation increases the task switching speed by a factor of five compared to similar architectures with a pure software RTOS approach. As the hardware implementation works more efficiently than software, the Renesas SoC architectures with HW-RTOS come with reduced power consumption and improved stability (figure 3).

In principle HW-RTOS is an independent functional block connected via an internal system bus to the ARM Cortex-M3 CPU. This avoids making any kind of adaptation to the CPU itself or the software which is running on it. Only a special HW-RTOS interrupt signal is connected to the CPU interrupt controller to allow direct and low latency interaction between the HW-RTOS and the CPU (figure 5). With an interrupt the HW-RTOS informs the CPU to directly exchange the current task context with the new context without the typical long delays found in software scheduling. This acceleration reduces the CPU load and allows saving performance for the application software. In addition to many other parts like drivers, middleware and sample code, the R-IN32M3 software package includes a HW-RTOS µItron library. This library allows making completely transparent use of the accelerator without any deep know-how about its details and how to run it in software.

**Product News**

**u-blox: cellular NB-IoT module combines global connectivity with over 10 years’ battery life**

u-blox announced forthcoming availability of its SARA-N2 Narrowband IoT module, compliant to the 3GPP Release 13, Narrowband IoT (LTE Cat. NB1) standard. Designed for use in applications such as smart buildings and cities, utilities metering, white goods, asset tracking, and agricultural and environmental monitoring, the module will operate for between 10 and 20 years from a single-cell primary battery. Its 16 x 26 mm LGA form factor, using u-blox nested architecture, facilitates simple upgrades from u-blox GSM, HSPA or CDMA modules and ensures future-proof, seamless mechanical scalability across technologies.

**Bosch Sensortec: small 9-axis motion sensor for smartphones and other wearables**

Bosch Sensortec is launching the BMX160, a compact 9-axis motion sensor that is ideally suited for a wide range of applications such as smartphones, smart watches, fitness trackers, smart jewelry – e.g. rings, necklaces – as well as Augmented/Virtual Reality devices.

**Innodisk: USB 3.0 expansion cards with 2 and 4 ports**

Innodisk launches a new series of USB 3.0 expansion card EMPU-3201/EMP3401. When upgrading industrial systems, users encounter problems expanding the original system because industrial PCs are legacy solution and SOC platform is lack of USB 3.0 port. Furthermore, users prefer high speed and internal power. USB 3.0 is a fast, bidirectional, low-cost, dynamically attachable interface widely used in data transferring. The EMPU-3201/EMP3401 with 2 and 4 ports selections can be used in various storage and communication applications.
Cloudy with chances of microcontrollers

Lucio Di Jasio, Microchip Technology

Embedded control developers now have a new cloud-based tool which includes a huge number of supported devices as well as integration with rapid development tools. It will be exciting to see how the embedded community uses it and how embedded control will change in the era of the cloud.

In the past few years, several integrated development environments (IDEs) have moved to or been created first in the cloud. But while this was perhaps natural for web application development (using Javascript, HTML, CSS, PHP…) and later for more general computing (Java, Python, Ruby…), the embedded development industry has been lagging behind. Perhaps this is because of the target system in embedded applications being intrinsically more physical, or perhaps it is because of the excessive hype surrounding the term cloud, but anyway developers have been greeting cloud product announcements with either apparent indifference or cautious scepticism. These reactions come from two opposing points of view. There is a generation that is entering the workforce today that has lived its entire life connected. For them being online is part of the natural order of things. Vice versa, a service or tool that is not available around the clock, everywhere and from any computing platform, represents an anomaly.

The other perspective comes from a more pragmatic group, perhaps still representing the majority, that is wondering what kind of benefits could be had by moving the development environment to the browser. They have many concerns about security and performance and they need proof and reassurance before they can accept any such new technology. For this group the greatest motivation could actually come from the realisation that modern IDEs have grown to become very powerful but also very large and complex objects. They need frequent updates and careful maintenance.

For example MPLAB Xpress - which is based on the Netbeans open-source IDE project - covers thousands of different microcontroller models and is updated on a monthly cycle, requiring a download of approximately 400 Mbyte. The C compilers that plug into it – MPLAB XC compiler suite – have a less frequent cycle but require approximately 100 Mbyte on top of that. Adding a few more plug-ins can quickly take the tally beyond the half-gigabyte quota.

On top of that is the time spent to perform the actual installations and general maintenance. Anyone who runs a small lab in an educational environment or supports a team of professional developers knows how much work is required to keep it all up to date and in good shape. In such environments there are also great concerns about the permissions management required to install applications on shared computing equipment. When adopting a cloud-based tool-chain, all that work turns into a simple online login. Instantaneously, the most up-to-date revision of each component of the tool-chain – or a selected archived one – becomes available to the user inside a browser. But being online can add a totally new dimension to the embedded development experience. Once an IDE is virtualised, projects can move quickly from workstation to workstation and work started in one office or class can move to any new (work) location. Sharing and communicating among close or geographically dispersed teams becomes more natural in addition to being easier to set up and maintain.

With the recent launch of the cloud-based MPLAB Xpress IDE, Microchip has given a strong signal to the embedded development community. While perhaps not the first to offer editors and compilers in the cloud, the new web based tool-chain is perhaps the most complete from a hardware and software support point of view. In fact, from the get-go it includes support for around 400 microcontroller models and is claimed to be soon expanding to cover the entire portfolio of 8-, 16- and 32-bit products, potentially including more than 1000 unique devices.

As per the software debugging capabilities offered, the list includes support for online simulation but also direct access to in-circuit debuggers and programmers. Most importantly the long list includes a novel rapid
tools & software

development tool named MPLAB Code Configurator, which lets expert and novice designers save the many long hours spent studying the device (datasheet) and/or its peripheral libraries (API reference) documentation and focus more on the creative part of their applications.

The development environment accessible through a simple web login is that effectively what used to be a tall barrier of entry has been flattened to the ground. There is virtually no commitment required to give a new microcontroller a try. Even the actual act of logging in is spared to those that choose to take the system for a quick and practically anonymous test-drive! Testing a new feature, be it a microcontroller peripheral or a new rapid prototyping software tool, is only a few mouse clicks away.

However, MPLAB Xpress is not a toy or a beginner’s-only tool. Both the user interface and the underlying tools have been made to look and behave exactly like the real desktop equivalent – the two are often indistinguishable. This means there won’t be a second learning curve if or when the user decides to graduate from the cloud to the desktop. In fact, the cloud tool is equal in capabilities to its desktop alter ego and a project transition between the two is not only possible but seamless.

When thinking about a development environment that requires constant presence online, many will be immediately worrying about the speed and bandwidth and resulting cost of the connection. But most modern cloud tools are based on AJAX technology. That means they make the most use of the browser ability to run code locally – asynchronously and using Javascript, hence the "A" and "J" part of the acronym – so the application (AX) can be very responsive and does not require every single keystroke to be sent up to a server on the other side of the planet. File transfers do occur, but only when a file is saved or opened for editing. These are typically small text files (.c, .h, .hex) that are easily surpassed in number and size by the average images and ads loaded by a browser when accessing any modern website. When compiling the application code instead, the server is working entirely on the local copies and the process is surprisingly fast. In fact, in the daily experience it is common to observe how the cloud compiler can regularly outperform a laptop, the more so as the project complexity and size increases.

The concerns about security of cloud applications are a very delicate subject. Large corporations are spending enormous amounts of money in advertising to convince us all that data – or code in this case – are perfectly safe once in the cloud. The best arguments so far from the two opposite sides go more or less like this. Doubters: if there is sufficient value or motivation, attackers will eventually find a
way in. This is a rule that is generally true for all things, and includes any private corporation code vault too. Believers: companies that provide cloud services are also very motivated and in the best position to put very specialized resources – human and equipment – to work to keep the data secure. These are probably far superior to the resources that the average business organisation IT department can afford.

MPLAB Xpress adopts advanced encryption technology – the same used by the best online banking systems – to protect connections and each user’s sensitive data and applications. In the end, in the coming years each of us will be exposed to this technological dilemma and we will have to make the choice whether the risks will be greater than the benefits offered by a multitude of new cloud services.

The MPLAB Simulator has been included in the online tool-chain providing basic debugging capabilities, but most users will want to use hardware prototyping and debugging tools. Various paths are available. For example, the MPLAB Xpress evaluation board offers the latest PIC16F18855 general-purpose microcontroller that sports what is perhaps the largest selection of core independent peripherals to date. The evaluation board connects to a host PC, Mac or Linux computer as a USB mass storage device and allows the user to simply drag and drop an application executable (.hex) file to programme the target. This has the advantage of not requiring any driver installation. The board also automatically registers with the host computer as a virtual serial port (USB-CDC) allowing any terminal programme to connect directly to the target PIC microcontroller UART. Windows users will need to install a small (.inf) file to enable this feature the first time; Linux and Mac users get a free pass instead. A USB bridge, launched as a Java plug-in, can be used to connect to Microchip universal hardware programmers and debuggers such as the PICKit3 or the PICDEM Curiosity. This option opens the door to the entire set of Microchip and third party demonstration boards and of course any user custom board.

### Product News

- **Solid Sands announced SuperTest Mondrian Release with MISRA-C Compilers can now be tested for conformance to MISRA-C:2004**
  
  Solid Sands, the supplier has shipped the SuperTest Mondrian Release to its users. This SuperTest Mondrian Release is now commercially available. In addition to the new MISRA-C:2004 conformance suite, a novel feature in the world of compiler testing and validation, this Mondrian Release also offers an enhanced Depth Suite and many other improvements.
  
  News ID 4188

- **PLS: UDE 4.6.1 supports NXP’s MPC5746R Power Architecture microcontroller**
  
  PLS Programmierbare Logik & Systeme has now introduced version 4.6.1 of its Universal Debug Engine including a specifically optimized testing and debugging environment for MPC5746R high end multi-core controller – the newest member of NXP’s Power Architecture family. The high performance dual-core MPC5746R System-on-Chip, optimized for automotive engine/transmission control as well as industrial applications, offers users comprehensive features to ensure the highest level of functional safety.
  
  News ID 4130

- **Vector Software: zero-instrumentation source level coverage for VectorCAST**
  
  Vector Software announced a further enhancement to their integration with Lauterbach’s TRACE32. Lauterbach now enables VectorCAST users who are working in development, test, quality, and certification teams to perform source-level test coverage with no instrumentation of object code. Thus, achieving test execution without impacting code size or performance.
  
  News ID 4193

- **Teledyne LeCroy adds Eye Diagrams to serial trigger and decode solutions**
  
  Teledyne LeCroy is offering the widest range of Trigger (T), Decode (D), Measure/Graph(M or G) and Eye Diagram and Physical Layer (E or P) options and they nearly universally available across their entire oscilloscope product line.
  
  News ID 4310

- **IAR extends code analysis for applications based on TI MSP430 MCUs**
  
  IAR Systems announces a new version of its development tools IAR Embedded Workbench for Texas Instruments MSP430, version 6.50. The version offers extended capabilities for code quality control through the powerful static analysis tool C-STAT, extended inline assembler and support for the latest MSP430 devices.
  
  News ID 4328

- **WITTENSTEIN: SafeRTOS now available pre-certified to ISO 26262 ASIL D by TÜV SÜD**
  
  SafeRTOS, a safety critical real-time operating system from WITTENSTEIN high integrity systems, has now achieved new certification from TÜV SÜD, and is available pre-certified to the automotive standard ISO 26262 ASIL D. SafeRTOS is an excellent fit for the automotive sector, due to its high performance, reliability, and ability to support the most popular automotive platforms.
  
  News ID 4323
The hidden costs of equipment mismanagement

By Brian Phillippi, NI

It's time to regain control of your assets using a platform-based approach to condition monitoring. This article shows you how.

The days of unabashed and frivolous capital expenditures are over. Companies depend on maintenance managers to ensure that investments like top drives, mixers, pump and cement trucks operate more efficiently and last longer than ever before. Maintenance managers also face many daily operational challenges, including machine repair costs, machine replacement costs, worker safety concerns, aging equipment, and aging just-in-time inventory that sits in the corner if failures occur. Maintenance managers implement an assortment of maintenance techniques, known as the maintenance mix, with more advanced maintenance techniques usually saved for only the most critical of assets due to up-front costs.

Maintenance managers most commonly rely on a regularly scheduled (preventative) maintenance program. This is a practice we have all subscribed to in our everyday lives, as well: from brushing our teeth each day to changing our vehicle oil every three months. Therefore, it's no surprise that this is the default practice applied to equipment maintenance.

A regularly scheduled, or preventative, maintenance strategy, in actuality, is one of the worst techniques in the maintenance mix to keep stimulation and extraction equipment working properly. The cost of this type of maintenance program is actually more than a strategy in which machines are run to failure. Think of all the wasted time, effort and money spent fixing something that was in perfect working order in the first place. Fortunately, there is a better way to detect and repair small problems before they grow into costly catastrophes, all without unnecessary or excessive tinkering with the equipment.

This problem is bigger than you might think. It is not restricted to oil and gas applications but can be found in almost all applications with critical equipment. The Electric Power Research Institute (EPRI) has calculated comparative maintenance costs for different maintenance techniques in US dollars per horsepower (HP) per year. Researchers found that a scheduled maintenance strategy is the most expensive to run at $24.00 per HP. A reactive maintenance (run-to-failure) strategy is the second most costly at $17.00 per HP, but has the additional cost of compromising safety. Drawing a parallel to pumps used within oilfield stimulation, maintaining a 1,500 HP motor with a scheduled maintenance strategy would cost approximately $36,000 per year, while a reactive maintenance strategy would cost $25,500 per year, according the EPRI study. That cost might not seem like much, but when multiplied by the number of rigs across the entire fleet (1,500), the cost skyrockets to $54M per year for a scheduled maintenance plan and $38M for a reactive strategy.

When multiplied by the number of assets across an entire fleet, maintenance costs skyrocket to $54M per year for a scheduled maintenance plan and $38M for a reactive strategy.

To identify the true cost of equipment mismanagement, we must first take a closer look at the issue. There are many costs associated with maintaining a pump, such as a yearly cost of $36,000 or the capital costs of a new triplex or quintaplex pump, which can be upwards of $350,000. However, these losses pale in comparison to the true loss of a machine going down, which is a loss in production. In oil and gas, equipment uptime is directly correlated to the company bottom line. When drilling stops at a well site, virtually all cash flow associated with the well stops. This is further compounded when you consider operational costs for fracturing crews on-site. At risk are not only money, but also jobs and reputations. And, the same can be said for downstream rotating equipment. Reliability, therefore, is critical. So much so, that it is a standard practice for companies to have several backup
equipment trucks onsite that may or may not be needed, because they have no idea if their pump is about to fail - even if the pump was just serviced. There has to be a better way than just hoping machinery doesn’t go down and having backups in case it does.

In the same EPRI study mentioned already, researchers identified a much more reliable strategy. They found that a predictive maintenance strategy is the most cost-effective at only $9.00 per HP, and all but eliminates the risks of secondary damage from catastrophic failures. By using a predictive maintenance strategy, operations and maintenance managers can have the insight to determine when their machines will fail and have enough advanced notice to make the necessary preparations to fix the problem with as little downtime as possible. On the surface, this seems like the optimal approach with no downside, because the company can save money on maintenance and ensure longer uptime.

However, several factors keep companies from adopting and enjoying the benefits of such a predictive maintenance strategy. These shortcomings are primarily associated with the traditional approaches that have been used to implement predictive maintenance strategies, not with predictive maintenance itself. These two traditional approaches are 1) a complete end-to-end automated solution that covers everything from the site survey to installation to remote monitoring, and 2) a manual route-based solution where technicians and experts regularly visit each asset to collect measurements, and then return back to perform the analysis.

To understand the issues surrounding the two techniques, think of equipment health as analogous to our own health. Imagine you go to your doctor’s office and after sitting in the waiting room for half an hour, you finally see the doctor who checks your temperature and only your temperature. To be thorough, he checks the temperature at multiple locations on your body and gives you a diagnosis of good health. In this scenario, everything seems viscerally wrong from a healthcare standpoint. However, this is the exact approach many companies take with machine health. They outfit their machines with only accelerometers and use only vibration analysis to monitor the machine health. Although this is a great indicator of wellness, it is not the only one. The practice of using a limited number of diagnostic tools is a problem for both traditional methods – manual route-based and automated. The two approaches fall short, either because of the route-based technician’s lack of expertise to measure and analyze other vibration sensors, or the measurement platform’s lack of flexibility in integrating or expanding to new or custom sensors.

Now back to the doctor analogy. You decide to do your due diligence and ensure that you actually are in good health, and continue your physical evaluation by visiting another doctor who can measure your blood pressure and cholesterol. Again, you have to pay this doctor and the only thing you receive is a diagnosis based on the narrow scope of your blood pressure and cholesterol. Although this sounds silly, this scenario mimics the real-world approach to traditional machine health assessments. Maintenance managers try to give their machines a more complete health diagnosis, but are left with a less than holistic machine health assessment. This is a result of disparate vibration monitoring systems being cobbled together to take the measurements. In the end, just like the case of going to separate doctors, this makes it costly and difficult to scale a monitoring solution across all assets because of the high up-front costs of the initial system, the cost of adding on subsequent systems and then integrating everything together.

On the opposite end of the spectrum, companies can perform manual measurement rounds, which are less expensive in theory, but, in reality, cannot be scaled to cover a large number of assets. The technical prowess required to take and analyze measurements coupled with an aging workforce, prevents companies from solving the problem by indiscriminately placing more people on it. Even if this weren’t the case, there are no economies of scale to be gained with this method. Monitoring five times more assets would result in five times the cost and even more logistics. Thirty people performing 60,000 rounds per month to cover 2,000 assets could suddenly become 150 people performing 300,000 rounds per month to cover 10,000 assets. Why? Because people don’t scale. Adding different sensors results in even more people, because of the expertise needed for the different measurement specialties. Specialists can spend up to 80 percent of their time manually collecting the data with only 20 percent of their time left to actively analyze the data and uncover root-cause issues that prevent costly repairs in the future. And because it’s manually collected by a variety of people, there is the potential for dirty, disparate data.
To conclude our analogy, remember that the ultimate goal of this whole journey is to gain a holistic view of your overall health. After visiting multiple doctors and gathering multiple diagnoses you would be frustrated to say the least. Each doctor used a separate tool to assess your health and the ability to integrate all of your health data did not exist. As a result, you would not have a holistic or accurate assessment of your health because the doctors couldn’t be brought together to communicate their findings and give an accurate diagnosis. Added all together, your physical was inconclusive and your time and money was wasted. The doctors are limited by their roles, their instrumentation and their ability to communicate the data with each other or you, the patient. When dealing with separate monitoring systems (and sometimes manually entered data), this is all too often the case. Not only do the systems not talk very well with one another and the enterprise, but there also isn’t an option for you to perform your own analysis because there is no access to raw data.

Overall, traditional approaches present problems in four main areas: flexibility – integration with a multitude of sensors, scalability – financial and logistical possibilities to expand to cover all assets, accessibility – raw data that can be easily integrated and analyzed on an enterprise level, and cost – capital expenditures of the end-to-end solution.

Now is the time to invest in a new strategy. Fortunately, there is a new way forward that takes a platform-based approach to condition monitoring and helps you to regain control of your maintenance mix. To overcome the challenges that the traditional maintenance mix presents, this platform must deliver each of the following: 1) the flexibility of the solution to scale with your evolving needs, such as support for new types of algorithms, support for a wide variety of I/O and emerging sensors, and the ability to scale to large numbers of systems; 2) an openness that allows you to gain access to the raw engineering measurements to adapt to new and innovative analysis techniques and extend the solution to meet your maintenance program requirements; 3) interoperability with third-party hardware and software packages so that you can integrate with existing CMMS and ERP systems and any database historians or process management enterprise software used; 4) rugged mechanicals and a breadth of available algorithms as well as monitoring hardware and software solutions for a price that allows you to scale your online condition monitoring solution to cover the bulk of your rotating machinery assets; 5) the services help to facilitate your end-to-end solution from your asset to your IT infrastructure either directly or through a network of partners.

Product News

**SYSGO**: hypervisor allows development of critical and non-critical applications on one platform

SYSGO has launched a new version of its Hypervisor based microkernel known as PikeOS, which enables development and deployment of critical and non-critical applications on a single hardware platform. PikeOS 4.1 forms an integrated platform for the development of new or the migration of existing and legacy applications. PikeOS 4.1 provides proven technology suitable for Aerospace, Defence, Space, Automotive, medical, industrial and transport industries, where safety is a key requirement.

News ID 4192

**PLS**: UDE 4.6.2 supports rapid analysis of very large amounts of trace data

With highly complex automotive microcontrollers – such as Infineon’s AURIX family or the PowerArchitecture-based SPC58E series from STMicroelectronics – very large amounts of trace data accrue in a very short period of time, especially when the data are recorded through a high bandwidth trace interface like Aurora. For example, PLS’ Universal Access Device 3+ is able to record up to 4 GB compressed trace with up to 500 Mbytes/s from the target through this interface.

News ID 4255

**Qt**: release 5.7 with new Qt 3D module and user interface library

The Qt Company announces the release of Qt 5.7, the latest version of its cross-platform application and user interface (UI) development framework. Now available for download, Qt 5.7 features pioneering UI development framework. The new Qt Quick Controls 2 and Qt Quick Designer. Qt 5.7 follows the evolution of modern C++, leveraging C++11 in Qt APIs.

News ID 4277

**Solid Sands**: partnership with Vector Software for compiler validation

Solid Sands and Vector Software are pleased to announce their partnership. Solid Sands, the supplier of SuperTest, the industry-leading and largest compiler test and validation suite for C and C++ and Vector Software, the world’s leading provider of innovative software solutions for robust embedded software quality, have joined forces to integrate VectorCAST with SuperTest.

News ID 4189
The Internet of Things (IoT) is enabling new opportunities and business models and it is vital that people can trust it to keep their data protected. To earn that trust, three essential elements are required: connectivity, security, and monetization.

Nowhere is the IoT transformation more relevant than in modern transportation systems. Smart cars are greatly enhancing vehicle performance, driver and passenger comfort, convenience, and safety leveraging a network of embedded sensors, connected components, cameras, objects and systems. According to McKinsey, today's connected car has the computing power of 20 personal computers, features 100 million lines of programming code, and processes up to 25 gigabytes of data an hour. And the industry is just getting started. By 2020, it's estimated that there will be 50 billion IoT connections compared to 16 billion today, and 220 million connected cars on the road, each equipped with more than 200 sensors – double the number in cars today.

Smart cars can communicate seamlessly with smart city solutions such as connected street lights and road signs. Smart city applications offer local governments the ability to monitor and improve traffic patterns, manage lights in real time, optimize traffic flow, and reduce road congestion. This provides a clearer picture of how drivers, cars, objects and systems are all part of a holistic connected ecosystem.

The intersection of IoT and the sharing economy is creating a completely new market revolving around shared assets. Car2Go, Zipcar even rental companies are taking advantage of the new market and launching car share programs that allow drivers to locate available shared vehicles and download secure car keys to their smartphone. With all these benefits, why is it then that nearly half of Americans (McKinsey Connected Car Report, http://www.mckinsey.com/industries/automotive-and-assembly/our-insights/whats-driving-the-connected-car) are reluctant to use connected car and IoT technology?

Traditional boundaries of business are fading and change is coming fast and furious. Lines between consumer, manufacturer and service provider are blurring. Mobile Network Operators (MNOs) work with device manufacturers and build their own devices, while service providers are converging with connectivity providers. During this time of rapid innovation, it's no longer obvious who owns the end-customer – which is why trust is so important. As the market evolves, so does the value chain. There are a growing number of IoT stakeholders, including carmakers, Original Equipment Manufacturers (OEMs), system integrators, cloud service providers, public IP networks and many more. Can all these stakeholders converge and succeed? Do they speak the same language? The answers are complex requiring industry standards and collaboration among widely divergent stakeholders who need to trust one another while relying on their individual integrity and capabilities. For example, the auto industry could not have anticipated ten years ago that it would be relying so heavily on software. And yet, in order to realize new revenue streams and enhance efficiency, automotive players need to invest in software. There are three key pillars that form the foundation of trust in IoT: connectivity, security and monetization.

A robust and secure connection is essential since downtime can destroy consumer trust and adversely affect a company bottom line. According to GSMA The Mobile Economy 2015 (http://www.gsmanomobileeconomy.com/GSMA_Global_Mobile_Economy_Report_2015.pdf) the mobile industry already contributes 3.8% of the global GDP, or 3 trillion USD. Reliable, uninterrupted MNO infrastructure will remain the backbone for connected devices. Quality of service, once focused on voice only, will increasingly be required for data as well. New and disruptive business models will require equally new and disruptive solutions for delivering and managing connectivity. Out-of-the-box connectivity will be a norm and users will not have the capability to call customer support centres to complain about dropped connections/calls. With eSIMs and On-Demand Connectivity and Quality of Service solutions,
Gemalto can enable reliable and consistent out-of-the-box connectivity.

While some infrastructure (base stations) is addressable by MNO support engineers, geographically dispersed and mobile infrastructure (SIM/UICC/MIM/Module) is more difficult to address. Preventive maintenance solutions such as Gemalto QoS Platform offer the best mechanism to counter this problem, providing network, device/system monitoring, traffic, mapping and more to conduct proactive customer experience analyses. Gemalto MIM Services Platform enables regular MIM audits and hardware monitoring so that adjustments can be made over the air to pre-empt service failure.

Once a device is deployed, it is challenging to switch subscriptions from one network to the other because it's difficult to replace the SIM card. Gemalto On-Demand Connectivity addresses this issue eliminating physical replacement or displacement of the connected object, thus providing a new subscription scheme remotely. A 3-step approach is needed to secure IoT use cases and defend against hacks. 1) Secure the device to ensure that only authorized users have access and that sensitive device data is protected through strong encryption. 2) Similarly, data leaving the device requires communication encryption to ensure it is protected in motion. 3) Finally, the integrity of application software needs protection. An additional layer of software application security ensures that even if a device is compromised, software cannot be reverse engineered or misused.

Secure the network and the cloud by ensuring that data is encrypted to render unautho-
rized access useless. Application layer security must be provided through server protection and cloud application security. Encrypting machines or enterprise applications prevents attacks like code injection.

Managing the security lifecycle ensures that all layers of security are updated over time. Security is not a singular or isolated concept. Software activation and licensing ensures intellectual property is secured when new business models, software upgrades, or features are introduced. Dynamic key management is required for devices and the cloud. With encryption deployed across multiple points, managing keys becomes complex. A secure provisioning solution ensures that keys and tokens are effectively managed both in the device and the cloud. The nature and sensitivity of data governs what level of security is required. This requires careful analysis ensuring the right balance is achieved between regulation and convenience. Using the wrong standards or implementation may achieve short-term gains, but can prove detrimental in the long run. Specifically when a device must migrate from one ecosystem to another, or when one ecosystem integrates new and disparate devices.

An agile monetization framework is essential for trust. In order for stakeholders to have a sense of trust amid a complex and diverse value chain, it is imperative that the parties upstream (suppliers and partners) and downstream (customers and partners) trust that their intellectual property will be valued and preserved. Successful monetization frameworks include five topics. 1) Flexible monetization models like PaaS (Product as a Service) allow customers to pay via flexible subscriptions (metered, monthly, pay-per-use etc.). Gemalto Sentinel Software Monetization solutions allow OEM and CSP (cloud service provider) to implement these monetization models through tried and tested technology for devices and the cloud. 2) License and entitlement management solutions prevent piracy and reverse engineering that can compromise the monetization of intellectual property. 3) Software upgrades for the lifetime of vehicles and devices. In 2015, Tesla announced a software upgrade called Ludicrous Mode for its Model S range. A simple software upgrade triggered the car to accelerate as fast as a sports car and the result was a few thousand dollars of additional revenue per vehicle. 4) Device management helps devices speak to enterprise or cloud resources. Vice versa, IoT platforms like Gemalotos SensorLogic play the role of orchestra maestro leveraging device translators, device on boarding and more drastically reducing time to market. 5) IoT application enablement platforms provide a framework for rapidly developing new applications. The SensorLogic Application Enablement platform includes an array of web services. Flexible, pre-made building blocks help IoT developers speed up development of new use cases.

TQ, an embedded specialist and service provider for electronic assemblies and systems, offers modular gateway solutions as a basis for individual, customized products to enable a Secure IoT. The company focuses on processor technology, hardware, and systems integration for Original Design Manufacturer (ODM) products. Gemalto enables back-end services, security, and industrial-grade global mobile connectivity on 2G/3G/LTE networks. This combination offers an optimal basis for enterprise IoT and industrial 4.0 solutions bringing together M2M and the IoT.

A TPM (Trusted Platform Module) allows for secure boot and authentication while Gemalto
Sentinel technology enables hardware-based software protection and encrypted communication. Secure wireless access is established through rugged Cinterion connectivity module from Gemalto. This package enables comprehensive protection at all application and system levels and reliably prevents data manipulation and system intrusion.

The connection to Gemalto M2M IoT Cloud Services via embedded agent technology enables easy remote access to the gateway, as well as the connected devices and sensors. Real-time access to gateway parameters, such as network status, geolocation and operational information like utilization and temperatures, offer a high level of service friendliness for the operator. Data access and control of connected actuators and systems can be programmed and parameterized automatically. APIs for Windows and Linux are available, which simplify the implementation of applications.

Product News

- **Rutronik includes 2-port EtherCAT Universal PCI master card from Advantech in its program**
  Distributor Rutronik presents Advantech’s new 2-port EtherCAT PCI Universal card, the PCI-1203. It is a ready-to-use EtherCAT development platform for all PC-based industrial automation. The EtherCAT protocol stack is executed autonomously on the PCI card. The PCI-1203 comes with a 650MHz dual-core ARM processor. It allows the host to handle up to two EtherCAT networks with extremely short cycle time for Motion and pure I/O applications. For EtherCAT motion port, communication cycle time is no more than 500µs for connecting 32 axes of servo motors. For fast I/O ports the cycle time is no more than 200µs in a high speed I/O system. To meet the extra high speed I/O requirements, the PCI-1203 provides 4-channel isolated digital outputs with an isolated protection of 1,000VDC, an output voltage of 12 up to 24VDC and a sink current of max. 300mA CH.
  
  News ID 4325

- **CES adopts CoreAVI’s TrueCore software GPU monitor**
  Creative Electronic Systems announces the adoption of CoreAVI’s TrueCore technology, in the scope of its strategic partnership with CoreAVI. CES is currently integrating CoreAVI’s software GPU monitor, TrueCore, on its rugged GPU board: the VGP-2870. The integration of TrueCore on the VGP-2870 provides CES customers with a path to DAL-B certification (DO-254 / DO-178) for safety-critical video applications. Initially designed to comply with DAL-C, the VGP-2870 is a very powerful video processor board for system engineers and program managers looking to reduce cost, risk and development cycle of airborne display applications.
  
  News ID 4141

- **Acceed: PCIe data acquisition cards**
  The German distributor Acceed has added two new digital I/O cards in PCIe format to its portfolio. The PCIe-7432 from Adlink has 32 opto-isolated digital inputs and outputs respectively. In addition to the standard model, a version with particularly high insulation voltage of up to 4500V (RMS) is available. The PCIe-7256, also from Adlink, has 32 self-retaining relay outputs and 16 insulated digital inputs. Event-driven connections can be established via the COS (change of state) recognition for the digital inputs. Typical areas of use for both cards include automation, test applications, monitoring as well as general data acquisition and control.
  
  News ID 4329

- **A.R. Bayer DSP Systeme: embedded OFDM socket modem for 2-wire communication**
  cOSMo OFDM Socket Modem cOSMo is a new socket C-OFDM modem for embedded applications. It features exceptional reliability in problematic environments and very quick synchronisation. cOSMo enables data rates of up to 1000 kbps across simple twisted-pair, co-ax and power cables that may be several miles long. No matter whether in a Point-to-Point or Point-to-Multipoint topology, the modem particularly qualifies for use in existing infrastructure.
  
  News ID 4142

- **Vecow: fanless embedded systems gets E Mark certification**
  
  News ID 4329
**PRODUCT NEWS**

- **Acromag: 6U VME SBC featuring Intel Celeron CPU**
  Acromag's new 6U VME single board computer features a FPGA-based VME to PCIe-bridge that will extend the life of your VME system for cost-sensitive applications. Acromag's XVME-6700 is a high-performance 6U VME single board computer based on the Intel Celeron 2002E processor and utilizes the Intel 8-Series QM87/QM87 PCH chipset for extensive I/O support.
  News ID 4144

- **Seco: UDOO X86 maker board drives up to three 4K screens**
  The UDOO Team takes the world of makers by storm with the new UDOO X86: 10 times more powerful than Raspberry Pi 3, able to drive up to three 4K screens at the same time, with an onboard Arduino 101-compatible microcontroller. UDOO X86 has been launched on Kickstarter for a 55 days campaign. The UDOO Team’s latest creation is an Intel-based x86 maker board coupled with an onboard Intel Curie Arduino 101-compatible microcontroller. It is based on Intel’s new-generation Quad Core 64-bit x86 processors, designed for the PC domain. The application scenarios for UDOO X86 vary from pure multimedia, allowing for example to stream Netflix in 4K, to desktop replacement and workstation purposes or even as a retro-gaming and game-streaming machine.
  News ID 4145

- **congatec fully supports SMARC 2.0 specification**
  congatec has announced its full support of the new SMARC 2.0 specification, which was released by the Standardization Group for Embedded Technologies just a few days ago. This major technology adaption extends congatec’s leading and extensive Computer-on-Module portfolio to include a brand new solution which is perfectly positioned between Qseven and COM Express.

- **IBASE: digital signage player for 3x 4K digital menu and signage boards**
  IBASE Technology release the SI-313 3x 4K digital signage player powered by 3rd Generation AMD Embedded R-series APU integrated with discrete-class Next-Gen AMD Radeon HD graphics. By utilizing AMD Eyefinity technology, SI-313 can be configured to run a video wall of three large HDMI displays with 4K resolution per display.
  News ID 4308

- **Conrad: all-in-one IoT prototyping board XDK from Bosch**
  Conrad Business Supplies has added as the first “authorized distribution partner” a new prototyping platform to its rapidly growing range of over 5,000 development kits and accessories. The XDK I10 is a cross-domain hardware and software kit from Bosch Connected Devices and Solutions. It includes various MEMS sensors for measuring acceleration, rotation and magnetic fields, as well as humidity, pressure, temperature, acoustic and digital light.
  News ID 4330

- **Advantech: embedded fanless modular system for quick equipment integration**
  Advantech announce the ARK-2230, a ruggedized, compact, fanless, embedded modular system with Intel Celeron Quad Core J1900 SoC processor. The ARK-2230 supports Advantech’s iDoor modules and ARK-Plus modules which is suitable for customers who require customized systems for equipment integration.
  News ID 4327

- **Kontron announces strategic partnership with Wibu-Systems for augmented IoT security**
  Kontron’s family of IoT Boards, Gateways, Modules and Systems will be integrated with Wibu-Systems CodeMeter technology. Kontron, a leading provider of Embedded Computing Technology (ECT), announces a multi-year partnership with Wibu-Systems, an innovative security technology leader in the global software licensing market.
  News ID 4285

- **Axiomtek: high-end Mini-ITX motherboard with 6th gen Intel Core processor**
  Axiomtek has launched MANO500, its first mini-ITX motherboard based on 14nm 6th generation Intel Core i7/ i5/i3 and Pentium processor in the LGA1151 socket with Intel H110 chipset. The embedded motherboard supports up to 32GB of speedy DDR4 RAM, and offers three SATA connections.
  News ID 4304

- **Data Device Corporation introduces a modular and scalable DSP-based, full featured motor controller that offers multi-interface position, torque and speed control, and is designed for demanding high reliability industrial, military, and aerospace applications.**
  News ID 4243
The role of NAND flash in emerging connected automotive applications

The increase in complexity of automotive applications will require more sophisticated and accurate solutions. The Internet of Vehicles (IoV) era is bringing the need for enormous data processing and I/O among objects and underlining the importance of data integrity. This article shows how high performance and high capacity NAND flash storage will enable the benefits of IoV.

The automotive industry is moving to a new era with the driving force of the Internet of Things. The Internet of Vehicles (IoV) defines the increasing importance of not only solid connectivity but also abundant data processing amongst vehicles at various stages. Over the years these stages have been evolving from passive safety, active safety, connected vehicle (V2X) and future-trending autonomous vehicle; the level of automation involved is increasing accordingly. Simultaneously, the core of development stages highlights the demands of effective and accurate information transmission and data processing in the network of relevant objects. In pursuit of real-time responsiveness, data accuracy and consistency, data integrity is primarily required through the entire operation process – input, process and output; the need for high performance and high capacity storage devices is ever-increasing.

To cope with emerging automotive applications and technology, NAND flash devices play a critical and fundamental role. Compared to conventional applications, at the present IoV development stage industry applications, such as remote, infotainment service and ADAS (Advanced Driver Assistance Systems), mainly target data exchange/process to optimize the in-vehicle experience and connectivity with external environmental objects. ADAS are classified as diverse subsystems according to their functions. Of these, the Driver Monitoring System (DMS) helps detect driver facial expressions and mitigate the possibility of life-threatening incidents by image capture (camera input). This real-time system with developed algorithms will trigger alerts in the HUD as soon as driver fatigue and distraction is detected via expression interpretation. The Connected Car concept depicts the new leap in innovation in the automotive industry. Anticipating more data processing and effective communication protocol switching, storage devices with higher capacity and endurance advance the requirement of connected technology.

Those applications are sensor-based (radar or camera) and with data-intensive features. A series of operation processes from receiving external data, processing data and subsequently taking actions based on computerized results requires storage devices with a high level of write/read intensive performance. Based on customer mission profiles in actual cases (shock/vibration/storage lifetime/performance test etc.), ATP architects purpose-built solutions and provides customer-oriented service packages. Apart from common large-file data (e.g. graphic capture) accessed sequentially, the challenge for write-intensive operation is to mitigate the impact on endurance and service life of memory resulting from high write amplification when writing small-file data (e.g. log files). As a result, S.M.A.R.T./SD Life Monitor, a health status monitoring tool, assists storage lifetime detection and provides early warnings to prevent wear out/spare block exhaustion. ATP implemented Wear Leveling enables to even the erase count of all blocks and to extend the life expectancy of NAND flash storage.

For an array of conventional read-intensive applications, such as the navigation system, the emphasis on sustaining data integrity is key. ATP AutoRefresh is able to optimize read-only applications by moving data into new blocks prior to possible data loss and corruption. For seldom accessed areas, Dynamic Data Refresh is activated in the background to reduce the risk of disturbance from every read operation and to further sustain data integrity.

With respect to wide-ranging automotive applications, ATP offers the all-inclusive Automotive Solution Set, covering quality, manufacturing, testing, engineering and supply chain capabilities. The requirements for automotive applications call for storage devices with features such as high and consistent performance, durability, and reliability in extreme operating conditions. To meet industry requirements and standards, ATP has been assessed and has obtained certifications for ISO/TS16949, ISO9001 and ISO14001 for product quality control. Apart from that, ATP includes IVI test plan with AEC-Q100 compliant test items and performs stringent software joint development/integration and head-unit joint validation tests to optimize product quality.
Climb aboard the connected Internet-of-Things train

By Valentin Scinteie, Kontron

Connected IoT-based information systems enable transit agencies to implement substantial efficiencies and lower operational costs. Innovative transportation-validated COTS platforms and highly functional software will ensure operators stay on track in meeting their passenger comfort, safety, security and transport reliability goals.

Transit agencies hold passenger comfort, safety, security and transport reliability as their highest priorities. Unforeseen issues that cause unexpected delays and disruptions to normal service impede these goals. Implementing new and smarter transportation control, monitoring, communication and video surveillance systems are seen as the answer. These highly integrated and feature-rich systems provide broad view intelligence giving operators advanced warning of issues. Providing fast Internet connectivity for the video content that passengers request, as well as support for broader network video surveillance, state-of-the-art transit systems can also deliver added monitoring benefits from video analytics and post analysis capabilities.

Up to now, achieving the ideal connected train has been hampered due to high costs and longer time-to-deployment schedules caused by existing incompatible proprietary technology-based systems installed today. Those limitations can be eliminated with the expansion of the Internet of Things (IoT) combined with next-generation embedded computing platforms that provide the interoperability and high performance connectivity to solve these issues.

Connecting disparate and individual pieces of equipment into one powerful network to provide critical decision-making data is the value IoT promises for mass transit agencies. Making this a reality necessitates open architecture embedded computing platforms combined with advanced software solutions that streamline the implementation of massively-connected, real-time information systems providing the functionality needed. Also required for IoT-connected transit are certified solutions fully validated for transportation systems that offer built-in scalability to enable cost effective, full-scale deployment.

Commercial off-the-shelf (COTS) embedded solutions give developers the open architecture approach that makes interoperability between various components and applications, such as those in a video surveillance system, possible. Helping to cut costs too, COTS standards-based solutions are inherently scalable and facilitate customization so operators can more easily maximize or expand their infrastructure investments. Open standards also ensure broad knowledge of the computing architecture, and using a modular COTS approach enables operators to configure based on their needs - from lower end single-core systems to integrating multi-core processors for higher performance requirements.

Using the IP (Internet Protocol) as the foundation for train system evolution allows transit operators to take advantage of the latest digital technologies, faster Ethernet and wireless networks with new IoT-enabled system architectures. For example, the power of IoT can be realized in next-generation video surveillance systems integrated throughout a highly-leveraged wired and wireless network infrastructure giving operators a comprehensive real-time view of trains, tracks, depots and stations. Today video surveillance systems can utilize remote server backhaul capabilities using 4G LTE connectivity and/or Wi-Fi from IoT gateways allowing assets to be monitored in real time through central control center or field-based video management systems, thus enhancing security. Connected IoT-enabled video surveillance systems have the capability to see large networks of cameras and provide video analytics enabling improved identification, locating and recording of incidents.
Transit agencies can also take full advantage of the IoT by securely capturing and analyzing unprecedented volumes of data from each and every vehicle. Control centers will have constant real-time communication with their entire fleet to conduct remote monitoring and diagnostics to ensure smoother, safer, more reliable and cost-effective operation. And there is the opportunity to introduce new revenue-generating services such as paid video content, train TV and Bring Your Own Device (BYOD) for travelers.

There are also new capabilities from computing platform health management monitoring that provide the resource allowing operators to go from reactive to proactive in managing application functionality and uptime. Significant efficiencies from this data enable improved fleet availability, serviceability and proactive maintenance visibility that were not available previously.

A validated, real-world example of an onboard video surveillance system that is entirely IP-based is one that incorporates Kontron TRACe COTS transportation computing platforms and video management software (VMS) from Adetel Solutions. This solution supports multiple high-resolution cameras including the Samsung Security SNV-6012MN2MP 1080p Full HD vandal-resistant network mobile flat camera and utilizes the latest generations of network video encoding and streaming protocols. The whole system is powered by a TRACe network video recorder (NVR) and managed by a TRACe HMI, an EN50155-certified fanless operational panel PC display.

Captured video images and audio signals can be digitized, compressed and streamed over the Ethernet network by different cameras using industry standard real-time streaming protocols such as RTP and RTSP. Enhancing security, associated metadata is also recorded while supporting encryption of the audio and video data. This solution uses standards-based ONVIF-compliant IP cameras to ensure compatibility and interoperability, and supports multiple audio and video streams to be transmitted simultaneously as well as standard encoding formats. The captured streams can be either transmitted to an onboard network video recorder for long-term storage, to a train driver console or to a wayside operations control center (OCC) live video monitoring station. This same configuration can be extended to a wayside station or depot where it can interface to a third party video management system.

Product News

**Murata: SimpleLink Wi-Fi modules simplify IoT connectivity**

Murata announced a series of two 2.4 GHz 802.11 b/g/n compliant wireless modules based around the TI CC3200 and TI CC3100 SimpleLink chipsets. These miniature modules, measuring 13.2 x 21.45 x 2.65 mm significantly ease incorporating wireless internet connectivity to a host of embedded applications and especially internet of things designs.

*News ID 4238*

**ams: digital temperature sensor in 1.6 x 1mm package is easy to design into IoT**

ams launched an integrated digital temperature sensor which offers low power consumption and high accuracy in a small package. The 1.6 x 1mm AS6200’s typical current is 6µA at a measurement rate of 4 samples per second, and its digital measurement outputs are accurate to ±0.4°C.

*News ID 4299*
Networking the world –
the IoT in mobile markets

By Angela Bieber, MEN

The Internet of Things and the digital networking of the world are currently the driving factor for technological innovations, in particular under the heading Industry 4.0. Physical networks in passenger and cargo transportation are also benefiting from these developments. Whether for fleet management applications or passenger information – all mobile markets are literally on the move with regard to the IoT.

Although networked controls in a vehicle are usually wired fieldbus connections such as CAN or MVB, outright communication systems are mostly based upon an Ethernet connection. Further wireless communications are then catered for by one of the many transmission standards such as GSM, GPRS, LTE, UMTS or WLAN. This is how dynamic information systems with integrated Internet access points within a fleet management system transmit prevailing weather or traffic conditions with the current location from the vehicle to the control centre via UMTS, for example. From there the vehicles can be diverted to a shorter or less dangerous route.

A similar application is the exact locating of trains, which is used to optimise track utilisation and coordination of the rail network. Here too, data is also sent back to the control centre via UMTS for evaluation. The exact location is determined by an odometer built into a PCIe card, even when the train travels through a tunnel and the GPS signal to the satellite is interrupted.

Long and short-distance public trains and buses are more and more frequently offering entertainment and Wi-Fi services. These systems not only require plenty of storage options for film and music data. They nowadays also require a Wi-Fi access point, in order to connect to passenger end devices and transmit content. Without the networking of trains, buses or commercial vehicles and the transfer of current diagnosis data, the smooth, efficient and safe operation of any kind of transport would be unthinkable. The implementation of ATO (Automatic Train Operation) and ATP (Automatic Train Protection) systems would also be unimaginable without wireless communications. Whatever the reason a vehicle, train or ship is to be networked, the requirements regarding reliability and robustness are higher than for industrial automation.

It’s not only smart software solutions that play a role here. A solid hardware basis is generally required, and it should protect the electronics from weather and the environment, and should also comply with market-specific standards such as EN 50155 for trains, or the ECE mark for vehicles. Depending upon application area and market, the hardware should boast the following 5 characteristics.

1) Extended temperature range: e.g. in the TX class for trains, EN 50155 stipulates an operating temperature of -40°C to +70°C, and 10 minutes at up to +85°C. The requirements are even above this for road vehicles and in the avionic sector. 2) Protection against dust, damp and chemicals: the components of the system should generally be conformal coated. The housings should have the relevant IP protection class, e.g. IP67. 3) Protection against impact and vibration: components must be screwed tightly or soldered; moving parts are to be generally avoided. Robust plug connectors, e.g. M12, that are screwed in tightly and withstand heavy vibrations. 4) Protection against electrical interference: this includes electromagnetic compatibility (EMC) and tolerance with regard to short-term power outages. This is not a problem with the right housing and mains adapters. 5) Maintenance-free or low-maintenance design: for this reason no ventilators or other moving parts should be used, if possible. Furthermore, functions that are known to be more fault-prone should be assembled modularly.

In addition, aspects that may endanger cost effectiveness such as long-term availability or obsolescence must be considered. If the quality is not right, operational costs increase long-term. The available space must also be taken into consideration. And, as if the catalogue of requirements were not big enough, public transport is now demanding increasingly quicker delivery times in order to remain competitive. In order to accommodate all these requirements, MEN is focussing upon robust box PCs based upon a newly introduced build-to-order concept. Thanks to high stockpiling of individual components and the simplified order process through build-
Currently the most robust member of the box PC family – IP65-protected and using exclusively M12 plug connectors

Different markets demand different communication standards – MEN box PCs support them all.

to-order part numbers, small quantities can be delivered for evaluation within two weeks. Preconfigured and equipped with the relevant firmware, all the customer has to do is select coordinated accessories such as mSATA, PCIe cards, interface adapters, aerials or HDDs, etc, and then install their own application.

A continuous outage of electronics or maintenance-intensive components would make no sense of a project, particularly for systems that are meant to enable more efficient vehicle or track utilisation, or to save fuel. In addition, projects that may span a period over 30 years – as is often the case with regard to rail technology – must have reliably functioning electronics over a long period of time. Thus, the box PCs come in a solid, conduction-cooled aluminium housing that enables suitable heat management within an extended temperature range of -40 to +85°C. The design dispenses with the need for repeated maintenance of fault-prone ventilators and also protects the electronics inside from outside influences. Soldered components and conformal coating make the boxes resistant to impact, damp and dust. To be able to ride in buses or trains, the boxes comply with the EN 50155 railway standard and are ready for the ECE mark for road vehicles. The modular structure means not only that they are customisable with regard to I/O configuration and fieldbus connection, but that their performance can be scaled by separate CPU boards and the use of entire Intel or AMD processor ranges.
When talking about the Internet of Things, it's hard to avoid mentioning the term security. Hardware security options are limited – but there are some and, along with robustness, they must be taken into consideration in the design phase. For example, the use of a TPM (Trusted Platform Module) chip enables data to be saved in an encrypted form. This ensures that data stored in a passenger entertainment system is only played to passengers and only during their ride or flight. TPMs also enable secure booting, which ensures the system can only be booted up after its integrity has been checked and the flash has not been changed, thus preventing unauthorised access. Further manipulation prevention is possible by means of password-protected BIOS or protection through whitelisting (the blocking of unauthorised applications). Alongside the hardware measures that can be taken to ensure a secure and robust IoT component, another factor must be considered in the development phase: the use of flexible architectures based upon open hardware standards. Although with the current variety of competing communication standards it’s hard to say what the future holds, widely-used hardware standards will continue to support communication between individual systems. Only established standards that support the gamut of Ethernet, fieldbus and wireless specifications have been used for the robust box PC range. Together with the relevant operating system, they are well armed for all future developments in the Internet of Things – whatever the direction it may eventually take.

### Product News

**Infineon: new FIDO certified Bluetooth solution for secure mobile internet usage**
Online applications on mobile devices require new methods of secured log-in. The FIDO (Fast IDentity Online) Alliance has developed security standards for strong authentication that are simple to use and protect more efficiently from fraud.

*News ID 4313*

**Atlantik Elektronik: intelligent Wi-Fi solution for the Internet of Things**
Atlantik Elektronik presents with the QCA4010/12 from Qualcomm, an integrated and feature-rich intelligent Wi-Fi solution for the Internet of Things. Utilizing the comprehensive ThreadX RTOS network stack this platform provides a full-featured dual band Wi-Fi solution for a wide variety of products. With its large 1.5MB SRAM there is no additional MCU needed. Over 800KB are free for user applications and buffering of video and audio data.

*News ID 4230*

**Renesas: Embedded security solutions protecting IoT endpoints**
Renesas Electronics introduced a new series of embedded security solutions employing general-purpose microcontrollers and microprocessors as completely new security structures for embedded devices that will function as Internet of Things endpoints in homes and buildings. Now, as the first product of this series, Renesas has released the RX231 Communications Security Evaluation Kit.

*News ID 4316*

**u-blox: GPS/GNSS positioning technology in IoT board supports a host of applications**
EVA-7M, a u-blox GPS/GNSS receiver module, has been embedded in the tiny IoT development board LoRaONE by SODAQ, now running a campaign on Kickstarter. The product is a 32-bit Arduino compatible board equipped with Low-Power WAN connectivity that enables development of any kind of IoT solution, anywhere.

*News ID 4134*

**Microchip: hardware cryptography-enabled 32-bit MCU for IoT applications**
Microchip announces a new hardware crypto-enabled 32-bit microcontroller. The CEC1302’s hardware-based cryptography suite offers significant performance improvements over firmware-based solutions. The CEC1302 makes it easy to add security to Internet of Things devices, offering easy-to-use encryption and authentication for programming flexibility and increased levels of security.

*News ID 4167*

**Silicon Labs: multiband wireless Gecko SoCs break new ground in the IoT**
Expanding its Wireless Gecko portfolio, Silicon Labs has launched multiband, multiprotocol wireless system-on-chip devices for the Internet of Things market. The new multiband Wireless Gecko SoCs enable developers to use the same multiprotocol device for operation in 2.4 GHz and multiple sub-GHz bands, simplifying connected device designs, reducing cost and complexity, and speeding time to market.

*News ID 4324*

**ARM extends solutions for Custom SoC development in Embedded and IoT markets**
ARM has expanded its ARM DesignStart initiative to offer simplified and expedited access to EDA tooling and design environments from Cadence and Mentor Graphics. The new partnership, announced at DAC 2016, builds on the benefits of free access to ARM Cortex-M0 processor IP offered through the DesignStart portal.

*News ID 4247*

**ALPS: Bluetooth SMART communication module with built-in antenna**
ALPS has developed the low-power UGMZZ2AA Bluetooth SMART Communication Module with Built-In Antenna. Mass production is already underway. Communication modules are essential for connecting IoT devices to the Internet. Devices powered by batteries or button cells, in particular, increasingly employ communication modules conforming to low-power communication standard Bluetooth SMART.

*News ID 4278*

**Microsemi collaborates with Veracity to support IoT security**
Microsemi announced its collaboration with Veracity Security Intelligence, an innovator in network security delivering an enterprise class security platform for operational technology networks, to develop secure networking solutions for industrial Ethernet deployments. Security and the threat of cyberattacks are emerging as key concerns for industrial companies, such as power and utilities seeking to protect revenue, as well as network safety and reliability. This collaboration brings new capabilities to the market as the first security solution of its kind optimized for industrial networks, enabling full industrial network security with a simple software installation in managed industrial switches.

*News ID 4306*
AAEON Technology

AAEON Technology, established in 1992, manufactures and markets a wide range of OEM/ODM Industrial PCs all over the world. AAEON’s commitment to the customers is to provide reliable and high quality Fanless Box PCs, Computer on Module (COM Express, XTX, ETX, Q7), Panel PCs, Rugged Tablet Computers, Embedded Computer Boards (5.25”, 3.25”, Epic, PC/104), Industrial Motherboards (Mini-ITX) and related accessories.

www.aaeon.eu

ADACore

AdaCore provides open source tools and expertise for the development of mission-critical, safety-critical, and security-critical software. AdaCore’s flagship products are the GNAT Pro and SPARK Pro development environments and the CodePeer automatic code reviewer and validator. Customers around the world trust GNAT Pro and AdaCore.

www.adacore.com

ACCEED

Acceed is an internationally operating distributor of industrial computers and components and is located in Düsseldorf, Germany. Acceed offers its customers a carefully attuned product portfolio from the fields of Industrial Network Technology, Communication and Signal Processing for the application areas of Automation, Test Management and Quality Assurance as well as Research and Development.

www.acceed.com

ADL Embedded Solutions

ADL Embedded Solutions is a leading provider of customizable, embedded solutions for demanding thermal and rugged environments. ADL’s diverse portfolio of products range from SBCs based on the AMD Geode™ and Intel® Atom® processors up to 4rd generation Intel® Core™ processors built in PC/104 and 3.5” form factors and full custom design, all of which can be delivered as part of a full system, or individual boards.

www.adl-europe.com

Acromag

Acromag is a multi-million dollar international corporation that combines more than 50 years of process monitoring and control experience with a solid background in high-tech computer design. Established in 1957, Acromag built its reputation designing critical measurement instrumentation equipment. Acromag, Inc. was soon recognized internationally as a leading designer of analog and digital control products for the industrial I/O market.

www.acromag.com

ADLINK Technology

ADLINK Technology is enabling the Internet of Things (IoT) with innovative embedded computing solutions for edge devices, intelligent gateways and cloud services. ADLINK’s products are application-ready for industrial automation, communications, medical, defense, transportation, and infotainment industries. Many of our products are Extreme Rugged™, supporting extended temperature ranges, shock and vibration.

www.adlinktech.com
Advanced Micro Peripherals

Advanced Micro Peripherals is a leading manufacturer of embedded video solutions - offering the latest MPEG-4 / H.264 (AVC) codecs and video overlay / annotation technologies on a wide range of embedded board form factors including PC/104, PC/104-Plus, PCI/104-Express, CompactPCI and mini PCI modules.

www.ampltd.com

Apacer

Apacer Technology Inc. was created in 1997 in Taiwan and operates since then as a global leader offering the highest of quality products to satiate the rigorous demands for reliable storage. Apacer Technology provides the most innovative Solid State Drive Solutions (SATA, PATA, Flash Cards & USB SDD) and DRAM Solutions (Desktop, Notebook, Server and Brand Specific) for the industrial and embedded markets.

www.apacer.com

ARBOR Technology

With more than 20 years experience in embedded computing, ARBOR continues to expand its expertise in industrial computing making ARBOR a leading supplier of computing platforms and solutions, which can be applied globally in the healthcare, transportation, industrial automation, warehouse management, and digital signage markets.

www.arbor.com.tw

Artila Electronics

Artila Electronics is an emerging force in the industrial computer field, dedicated to minimizing mass while maximizing utility. Unlike other industrial computer providers in the market who mainly use x86 plus Windows solutions, Artila focuses on ARM-core RISC CPUs with embedded Linux solutions, matched with Artila’s 10 plus years of experience in RS-232 / 422 / 485 industrial communication and TCP/IP networking.

www.artila.com

A.R. BAYER DSP Systeme

A.R. Bayer DSP Systeme GmbH was founded in 2003 by Andreas Bayer, a first hour DSP specialist, with a focus on DSP products and services. The company is a spin-off of Bayer DSP Solutions which began operations in 1995. A.R. Bayer DSP Systeme GmbH is an ISO9001-2008 certified company.

www.dsp-sys.de

ATP Electronics

ATP Electronics is an industrial memory solutions manufacturer of NAND flash and DRAM memory modules founded in the Silicon Valley. As a memory manufacturer with over 20 years experience, ATP focuses on delivering memory solutions covering industries across Networking/Telecom, Enterprise Mobility, Automotive, Military, IPC/Embedded Systems, Healthcare, Gaming and The Internet of Things (IoT).

www.atpinc.com

Avalue Technology

Avalue Technology is a professional industrial computer manufacturing company with complete product lines in embedded computers, single board computers, Systems-on-Modules-ETX (SOM-ETX), industrial motherboards, all-purpose Panel/Tablet PCs, and barebone products, etc. Having expanded, Avalue offers its expertise on PCB / Assembly / BIOS version control and after-sales all type of services.

www.avalue.com.tw

Axiomtek

Founded in 1990, Axiomtek is one of the major design and manufacturing companies in the Industrial Computer & Embedded field. Since our establishment, Axiomtek has successfully gained worldwide recognition for our innovative designs and outstanding customer satisfaction. Our customers come to us when they want a single, reliable, and valuable source for their industrial computer and embedded platforms.

www.axiomtek.com
Cadence Design Systems

Cadence Design Systems is a leading global EDA company. Cadence customers use our software, hardware, and services to overcome a range of technical and economic hurdles. Our technologies help customers create mobile devices with longer battery life. Designers of ICs speed their products to market using our hardware simulators to run software on a ‘virtual’ chip—long before the actual chip exists.

www.cadence.com

Data Modul

DATA MODUL offers perfectly tuned embedded computer systems based on x86 and ARM/Xscale-architectures. From the pre-configured kit up to the custom specific baseboard design, the whole bandwidth of Embedded Solutions is available.

www.data-modul.com

CES - Creative Electronic Systems

CES designs and manufactures rugged embedded computers engineered to meet the most demanding performance needs for optimal Size, Weight and Power (SWaP) considerations. Our Commercial Off-The-Shelf (COTS) products are made to withstand the extremes of temperature, shock and vibration associated with deployment in Aerospace & Defense as well as Rugged Industrial markets.

www.ces-swap.com

E.E.P.D.

E.E.P.D. is one of the leading companies in embedded computing. Since its foundation in 1988 E.E.P.D. develops and produces customized and standard computing solutions. Our ARM®- and x86-based PC boards serve a wide variety of industrial applications. Our product spectrum ranges from innovative planning and individual design to mass production with worldwide delivery.

www.eepd.de

Concurrent Technologies

Concurrent Technologies designs and manufactures a wide range of modular products for use in critical embedded applications. Our primary focus is to provide long-life, highly reliable CPU boards based on Intel® Core™ i7 processors or low power Intel® Atom™ processors, NVIDIA® Tegra® GPGPU modules, switch fabric boards, XMC/PMC I/O modules, mass storage carriers and development systems.

www.gocct.com

EKF Elektronik

As an independent systems manufacturer, EKF concentrated, from the very beginning, on complete solutions for industrial problems by using the latest in technology, with a focus on high reliability and long-term availability of all products. In 1998, EKF started development and manufacture of CompactPCI® boards and systems. In addition, EKF is currently developing solutions for new standards such as CompactPCI® Serial, incorporating the PCI Express® and other high speed technology.

www.ekf.de

congatec

congatec is a leading supplier of industrial computer modules using the standard form factors Qseven, COM Express, XTX and ETX, as well as single board computers and EDM services. congatec’s products can be used in a variety of industries and applications, such as industrial automation, medical technology, entertainment, transportation, telecommunication, test & measurement and point-of-sale.

www.congatec.com

ELBACOM Germany

Elbacom GmbH is a specialised distributor with its core competences in Microsoft Embedded OS, the industrial embedded market and added value services. Elbacom offers developing of customized Embedded Images, Training and support for Embedded Operating Systems and Server Solutions. All European Countries are served by Elbacom Local Sales-Companies/Organisations and supported from the Elbacom European Logistic Center in Pamhagen-Austria (ISO certified).

www.elbacom.com/germany
Elma

The ELMA group is a global manufacturer of products for housing electronic systems. The company provides everything from components such as modular enclosures, Cabinets and Backplanes up to complete standard or custom System Platforms. ELMA also manufactures precision Rotary Switches. The company offers a fast, flexible response to customer needs and extensive practical knowledge in tailoring solutions to specific applications.

www.elma.de

ERNI Electronics

ERNI develops and manufactures a wide variety of connectors, backplanes and complete systems, soldering assemblies and Cable Assembly. ERNI is a globally active enterprise with branch offices in Europe, North America and Asia.

www.erni.com

Embedded Office

Embedded Office GmbH & Co. KG founded in 2003 is a specialist company for embedded systems that specializes in safety-critical applications. The company, which is certified to DIN EN ISO 9001 standards, develops and supplies high-tech software for embedded systems as either turn-key solutions or individual components, and, if required, supports the integration at the customer’s through to the certification.

www.embedded-office.com

ETAS

ETAS provides innovative solutions for the development of embedded systems for the automotive industry and other sectors of the embedded industry. As a systems provider, ETAS supplies a multifaceted portfolio that covers the range from integrated tools and tool solutions to engineering services, consulting, training, and support.

www.etas.com

EUROS Embedded Systems

EUROS Embedded Systems is a pioneering vendor of real-time operating systems (RTOS), protocol stacks, middleware and development tools for embedded applications. The company’s products are widely used and supported in all segments of the embedded ecosystem, including medical technology, military & aerospace, test & measurement, industrial automation, process control, automotive and traffic engineering.

www.euros-embedded.com

Express Logic

Express Logic is a leader in royalty-free RTOS software. Our ThreadX® RTOS is used in over 2 billion electronic products. Our NetX™ IPv4 and NetX DUO™ IPv4/IPv6 TCP/IP stacks, USBX™ USB Host/Device/OTG protocol stack, FileX® MS-DOS-compatible file system, GUIX™ graphical user interface and the TraceX® graphical event-analysis tool support applications in consumer, medical, industrial, automotive and aerospace.

www.expresslogic.com
Frobas provides solutions and services in the areas of Digital Power Management application development and IC design, verification and prototyping. Its Power Management experience, combined with embedded and app programming skills, digital control algorithms know-how, system prototyping and FW/HW system verification capabilities, makes Frobas an ideal partner for IoT application development.

Hyperstone, a fabless semiconductor and microprocessor design company, was founded in 1990 and is based in Konstanz, Germany. Together with subsidiaries in Taiwan, USA and with other worldwide partners, Hyperstone serves a global customer base. Since July 2003, Hyperstone has been a member of the CML Microsystems Plc group.

GrammaTech is the leading developer of software-assurance tools and advanced cyber-security solutions. Our software analysis experts create technologies that enable developers around the world to make software that is secure and of the highest quality. We analyze both source code and binary code, which we apply to both static analysis and dynamic analysis techniques.

Green Hills Software is the largest independent software vendor for the Internet of Things (IoT) and the largest independent vendor of embedded software solutions spanning from embedded to enterprise. Green Hills is the only company with an operating system certified and deployed to IEC 61508 SIL 3 (industrial), FDA Class III (medical), EN 50128 SWSIL 4 (railway), EAL6+ High Robustness (security), and DO-178B Level A (avionics).

Infineon Technologies AG, Neubiberg, Germany, offers innovative semiconductor and system solutions addressing three central challenges to modern society: energy efficiency, mobility, and security.

HCC has a unique position in the microcontroller market as a company almost exclusively focused on the development of embedded middleware with no dependence on a proprietary operating system. Specializing in middleware for USB, TCP/IP and Flash storage, the company has become a leader in high value, reusable software components.
iSYSTEM

iSYSTEM is a privately held company headquartered in Germany with an R&D and Production center close to Ljubljana, Slovenia. Since its foundation in 1986, iSYSTEM is an independent manufacturer and provider of embedded software debugging, analysis and test tools. iSYSTEM’s Software and Blue Box Technology stand for fast and easy single and multicore processor hardware access via any kind of debug interface.

www.isystem.com

Kontron

Kontron, a global leader in embedded computing technology and trusted advisor in IoT, works closely with its customers, allowing them to focus on their core competencies by offering a complete and integrated portfolio of hardware, software and services designed to help them make the most of their applications.

www.kontron.com

Lauterbach

Lauterbach is the leading manufacturer of complete, modular and upgradeable microprocessor development tools worldwide with experience in the field of embedded designs since 1979. At the headquarters in Höhenkirchen, near Munich, the engineering team develops and produces highly proficient and specialized Development Tools, which are utilized all over the world under the brand TRACE32®.

www.lauterbach.com

LDRA

For more than forty years, LDRA has developed and driven the market for software that automates code analysis and software testing for safety-, mission-, security- and business-critical markets. Boasting a worldwide presence, LDRA is headquartered in the UK with subsidiaries in the United States, India and an extensive distributor network. For more information on the LDRA tool suite, please visit our homepage.

www.ldra.com

LieberLieber Software

LieberLieber Software is specialized in the area of model-based software and system development. We offer individual project consulting, project management and know-how transfer and has years of experience in the development of tailored software solutions. In the past years, we have realized large multitouch solutions, HTML5 applications for smartphones and classic logistics solutions for mobile industry PDAs.

www.lieberlieber.com

Logic Technology

Founded in 1993, headquartered in Panningen, The Netherlands, Logic Technology has become a leader in Europe’s embedded market. The unique combination of high-quality products, support and consultancy services is most appreciated by embedded developers. It’s this All-Inclusive concept that enables developers to focus on their own key tasks and provides them with a sparring partner in every phase of their project.

www.logic.nl

Lynx Software Technologies

Every day, millions of people worldwide are touched by products that rely on Lynx Software Technologies software—from Internet and phone communications, to airline flight-control systems, office automation and medical devices. Lynx Software Technologies software provides the hidden intelligence that empowers, protects and secures our modern world.

www.lynx.com

MathWorks

MathWorks is the leading developer of mathematical computing software. MATLAB®, the language of technical computing, is a programming environment for algorithm development, data analysis, visualization, and numeric computation. Simulink® is a graphical environment for simulation and Model-Based Design of multidomain dynamic and embedded systems.

www.mathworks.com
Since its founding in 1982 – and with more than 250 employees worldwide – MEN Mikro Elektronik has focused on innovation, reliability and flexibility to develop and produce standard and custom computing solutions that employ the highest technology levels. The company provides a robust offering of highly reliable embedded COTS boards and devices widely used in extreme environmental conditions found in industrial and safety-critical applications.

MicroSys Electronics GmbH located in Sauerlach close to Munich, designs and develops embedded system solutions, for e.g. VMEbus, CompactPCI and other common bus infrastructures. From the beginning in 1975, customized solutions offering longevity are a strong part of MicroSys business as well. Successfully deployed products span from Computer on Modules up to fully integrated systems.

MicroSystems is the expert in turnkey systems and high performance connectivity products for data and (tele-)communication solutions. The product portfolio is dedicated to embedded markets such as medical, energy, communication, defense & aerospace, industrial controls, automation, transportation, test & measurement, and research.

Mouser Electronics caters to design engineers and buyers demanding small to medium quantities of the latest products. Mouser requires no MOQ and fills orders by breaking packs, including one-piece shipping. This is especially attractive to engineers working in the earliest stages of the prototype design cycle. Mouser is dedicated to providing superior service and support to customers worldwide with 20 global customer support centres.

Neousys Technology, established in 2010, designs and manufactures rugged embedded platforms and modules. With the core expertise ranging from embedded computing to data acquisition and processing, our goal is to innovate and integrate feature sets into products for various vertical markets with simple yet elegant architecture.

Phaedrus Systems supports engineers at all stages of embedded development. We specialise in support for safety-critical and high-integrity projects. A portfolio of tools to provide all the elements required to create an integrated tool chain - from initial specification through to life cycle management – has been assembled specifically for this demanding area of engineering.

PLS is among the leading suppliers of debuggers, emulators and trace solutions for microcontrollers and SoC. The leading edge Universal Debug Engine (UDE) offers new dimensions for fast and flexible access to multi-core systems with the support of architectures such as AURIX/TriCore, PowerArchitecture, RH850, ARM, Cortex, XC2000/XE166, SH 2A, XScale and C166/ST10 as well as simulation platforms of different vendors.
PLUG-IN Electronic

The company PLUG-IN Electronic GmbH, based in Alling near Munich, Germany, has been marketing hardware and software for PC-assisted measuring and automation technology since being founded in December 1990. The core business focuses mainly on hardware solutions, with software solutions only being offered on the basis of graphic programming environments.

www.plug-in.de/en/

PragmaDev

PragmaDev is a privately held company based in Paris France that provides a set of modeling and testing tools for the development of real time and embedded software: PragmaDev Studio helps managing complexity inherent to developing state of the art systems. It integrates three different tools based on international standards. The tools target architects/system engineers, developers, and testers.

www.pragmadev.com

PRQA

Are you looking for sharp improvements in the quality of your static analysis code? Congratulations, you have just found the missing part of the puzzle! Become more productive and skilled through PRQA static analysis solutions! We are specialised in static analysis products and services, promoting safe coding standards practices.

www.programmingresearch.com

Renesas Electronics

As a semiconductor manufacturer, we strive to be the first to meet the needs of our customers worldwide with the aim of becoming one of their most trusted partners. To develop a safe, secure, comfortable and eco-friendly society, Renesas offers three layers of solutions to provide optimal services with added value for customers in our three focus domains: Automotive, Industrial/HE and OA/ICT.

www.renesas.eu

Rohde & Schwarz

For more than 80 years, Rohde & Schwarz has stood for quality, precision and innovation in all fields of wireless communications. The company is strategically based on five pillars: test and measurement, broadcasting, secure communications, radiomonitoring and radiolocation.

www.rohde-schwarz.com

Round Solutions

Round Solutions develops hardware and services for Internet of Things and offers component solutions for wireless M2M communication. The company's modules, antennas and design-in services improve the value creation processes for customers of all sizes and industries. Round Solutions creates the necessary technological preconditions for developing new IoT-based business models - such as for applications within Industry 4.0.

www.roundsolutions.biz

RUTRONIK

Rutronik Elektronische Bauelemente GmbH is third largest distributor in Europe and the number eleven worldwide. The broadline distributor offers semiconductors, passive and electromechanical components in addition to boards, storage, displays & wireless products. The company's primary target markets are the automotive, medical, industrial, home appliance, energy and lighting industries.

www.rutronik.com

SE Spezial-Electronic

SE Spezial-Electronic AG, founded in 1970, is an internationally operating distributor of electronic components. With 31 suppliers of active, passive and electromechanical components, SE Spezial-Electronic is one of the leading service distributors in Europe. We offer an extensive selection of logistics services and we support customers in developing and manufacturing products.

www.spezial.com
SECO
SECO is a world-leader in electronic embedded solutions. Spanning its 35+ years of experience, SECO has shown the ability to adapt its know-how to new, challenging customers’ needs, and to provide cutting edge solutions to its partners. On the strength of its know-how and in contrast with recent outsourcing trends, SECO has always set the entire production cycle in-house, from the development stage to mass distribution.

www.seco.com

Solid Sands
Solid Sands is based in Amsterdam, the Netherlands. Our mission is to improve the quality of C and C++ compilers, and their safe and secure use by providing the best possible compiler validation suite. Due to the close relationship with the SuperTest users, their feedback on our updates and suggestions on how to improve, we continuously expand and renew SuperTest.

www.solidsands.nl

SEGGER
SEGGER Microcontroller develops and distributes hardware and software development tools as well as software components for embedded systems. SEGGER’s intention is to cut software development time for embedded applications by offering affordable, high quality, flexible and easy-to-use tools and software components allowing developers to focus on their applications.

www.segger.com

S.I.E System Industrie Electronic
System Industrie Electronic is a leading supplier of Embedded Computing Systems and modular HMI systems. The range of services offered by S.I.E arrays from modular HMI-components to the whole developmental responsibility of an embedded computing system – everything from a single source. Well-known companies in medical, analytical-, bio- & laboratory, industrial and security markets count on S.I.E in high-end-products.

www.sie.at

SYSGO
Since 1991, SYSGO provides operating systems and services for embedded systems. In the late 90’s, SYSGO pioneered the use of Linux in the embedded market with the ELinOS distribution. For safety and security critical devices, SYSGO offers PikeOS, the world’s first SIL 4 certified hypervisor for multi-core processors, which builds the foundation for smart devices in the Internet-of-Things.

www.sysgo.com

Sierra Wireless
Sierra Wireless offer leading end-to-end solutions for the Internet of Things and provide the most comprehensive portfolio 2G, 3G, and 4G embedded modules and gateways, seamlessly integrated with our secure cloud and connectivity services. OEMs and enterprises worldwide trust our innovative solutions to get their connected products and services to market faster.

www.sierrawireless.com

Syslogic
Syslogic supplies industrial computers embedded PCs, single board computers and touch panel computers for demanding industrial use. These are used in areas such as machining and automotive engineering as well as traffic and train technology. Syslogic is one of the few companies in the embedded branch that develops and assembles all of its embedded computers and touch panel computers itself.

www.syslogic.de

Texas Instruments
Texas Instruments (TI) semiconductor innovations help more than 100,000 customers unlock the possibilities of the world as it could be – smarter, safer, greener, healthier and more fun. Our commitment to building a better future is ingrained in everything we do – from the responsible manufacturing of our semiconductors, to caring for our employees, to giving back inside our communities. This is just the beginning of our story.

www.ti.com
TME (Transfer Multisort Elektronik)

TME (Transfer Multisort Elektronik) is one of the biggest distributors of electronic, electro-mechanical, industrial automatic components and workplace equipment in Europe. TME has more than 550 employees. TME supplies thousands of companies in 128 countries and sends 3200 packages a day. Among 170.000 products in our offer, you will find goods manufactured by the majority of significant electronic components producers.

www.tme.eu

WIBU-SYSTEMS

WIBU-SYSTEMS AG is a technology leader in the global software licensing market. In its mission to deliver unique, most secure and highly flexible technologies to software publishers and industrial manufacturers, Wibu-Systems has developed a comprehensive, award-winning suite of hardware- and software-based solutions incorporating internationally patented processes dedicated to the integrity protection of digital assets and intellectual property.

www.wibu.com

TQ-Group

Based on technologically sophisticated designs, TQ-Group provides highly-integrated, Embedded Systems, such as: Minimodules, Mainboards, Evaluation boards, Ready-to-use industrial systems and Customer specific solutions. Modular designs save time and money. In many industrial sectors, the use of modular devices is key to efficiency.

www.tq-group.com/

Wind River

Wind River, a wholly owned subsidiary of Intel Corporation, is a global leader in delivering software for the Internet of Things. The company has been pioneering computing inside embedded devices since 1981, and its technology is found in more than 2 billion products. Wind River offers a comprehensive portfolio of solutions for addressing the system-level challenges and opportunities of IoT.

www.windriver.com

Trinamic

Based in Hamburg, Germany, TRINAMIC provides integrated Circuits and Modules for Motor and Motion Control to customers all over the world, most of them leaders in their Industry.

www.trinamic.com

WITTENSTEIN high integrity systems

WITTENSTEIN high integrity systems is an RTOS and Middleware company that specialises in safety, producing and supplying Real-time Operating Systems and Software Components to the Medical, Aerospace and Industrial sectors. WITTENSTEIN high integrity systems developed the first pre-certified RTOS to be ROM’ed in a main line microprocessor.

www.highintegritysystems.com

Vecow


www.vecow.com

Xilinx

Xilinx is the world’s leading provider of All Programmable FPGAs, SoCs, MPSoCs and 3D ICs, enabling smarter, connected, and differentiated systems and networks. Driven by the industry-wide shifts towards Cloud Computing, SDN/NFV, Video Everywhere, Embedded Vision, Industrial IoT, and 5G Wireless, Xilinx innovations enable these applications that are both, software defined, yet hardware optimized.

www.xilinx.com
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<th>Development Tools SW</th>
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<th>Embedded Software</th>
<th>Embedded Connectivity</th>
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<th>PLDs, ASICs &amp; EDA</th>
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### Product News

**Rohde & Schwarz launches Scope in Space competition**

Rohde & Schwarz launched a competition to find the most innovative use for its recently announced R&S Scope Rider, the rugged portable oscilloscope with lab performance. Ten shortlisted entrants will each receive a GoPro Hero4 silver camera to make a video of their idea, and the overall winner will receive a R&S Scope Rider. To start the event, Rohde & Schwarz launched a R&S Scope Rider into space. After a flight of two and a half hours at up to 32km in temperatures of -60°C, the instrument was still fully operational.

**News ID 4235**

**EVT: EyeVision for in-line control of bio markers**

The EyeVision is an image processing software, which can be used for various different application, such as e.g. the in-line control of bio markers. The situation at a customer was as follows: a machine applies the bio marker with the help of a capillary (those black spots as seen on the images) onto a glass plate.

**News ID 4275**

**Infineon launches iMotion kit for fast and easy motor drive design**

At PCIM, Infineon Technologies launches its iMotion Modular Application Design Kit (MADK). The compact and flexible evaluation system provides a scalable design platform for 3-phase motor drives in the range from 20 to 300W. It includes controller and power boards – sensor-less or optionally with sensors. Using the kit, a full functioning motor system will be running in less than one hour, enabling fast time to market. Designers only need a few steps to run the motor: plug the cards into their PC, motor and grid, download, install and parameterize the software.

**News ID 4170**

**GrammaTech: CodeSonar 4.1 certified for use in developing safety-critical software**

GrammaTech announced that CodeSonar, the company’s static analysis software, has again been certified for use in the development of safety-critical software. SGS TÜV Saar GmbH deemed CodeSonar 4.1 certifiable according to the ISO 26262, IEC 61508, AND EN 50128 international standards, which define the functional safety of electronics within industrial applications, automotive systems, medical devices, and railway applications.

**News ID 4274**

**Pragma Dev: testing listed once again as main upcoming topic**

PragmaDev’s latest survey on modeling and testing technologies indicates that test, system modeling, and software modeling are the top upcoming topics for development teams. Most popular modeling technologies are in decreasing order UML, Matlab, SysML, and VHDL.

In line with last years results the survey indicates a substantial decrease in UML and Matlab usage. The survey also confirms UML and SysML models are mainly informal, Matlab models are mostly used for simulation, and SDL models are mainly used for code generation.

**News ID 4179**

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**July 2016**
**Product News**

**Rohde & Schwarz validates RF conformance tests for LTE band 14 public safety networks**
Rohde & Schwarz has validated six RF conformance test cases for LTE-capable high-power user equipment (HPUE), allowing the certification of such devices to start. The R&S TS8980 test system is the first and so far only test system that covers these tests for LTE band 14 public safety networks. With this accomplishment, Rohde & Schwarz is paving the way for LTE's expansion into critical communication applications.

News ID 4260

**GrammaTech announces binary analysis support for ARM**
GrammaTech announced expansion of CodeSonar’s static analysis engine to include binary analysis for ARM, the dominant processor of the Internet of Things. CodeSonar is the only commercially-available static analysis tool on the market to provide binary analysis, allowing engineering teams to analyze application software, middleware, and firmware.

News ID 4282

**SEGGER: debug technology for STM32 Nucleo & Discovery MCU boards**
SEGGER has now introduced J-Link firmware for the embedded ST-LINK on STM32 Nucleo, STM32 Discovery and other microcontroller unit evaluation boards from STMicroelectronics. This brings the proven reliability and industry-leading performance of SEGGER's J-Link debug technology to these items of hardware, thereby leading to more efficient development processes.

News ID 4157

**Cadence: Rapid Adoption Kits for ARM Cortex-A73 CPU and ARM Mali-G71 GPU**
Cadence Design Systems announced the availability of a Rapid Adoption Kit (RAK) based on the ARM internal flow used for the design of the ARM Cortex-A73 Central Processing Unit and the ARM Mali-G71 GPU that is geared toward enhancing virtual reality and augmented reality experiences on 2017 flagship mobile devices.

News ID 4226

**Vector Informatik: efficient development of multi-sensor applications**
For the development of algorithms for driver assistance systems and automated driving, the new VADASdeveloper Version 2.0 offers comprehensive support. With Vector’s software tool, ADAS developers have a complete solution at their disposal, ranging from multi-sensor data recording to quick visualization of results. Even algorithm development along with implementation in simulation and testing systems can be realized in this way.

News ID 4232

**Keysight: 10 GS/s, DC coupled, 10-bit PCIe high-speed digitizer**
Keysight Technologies launched the U5310A 10-bit PCIe high-speed digitizer running at 10 GS/s. With its very high-dynamic range and 10-bit resolution across a wide 2.5 GHz bandwidth, the high-speed digitizer allows the capture of fast transients with high fidelity.

News ID 4234

**Rogue Wave enhances support for CentOS**
Rogue Wave Software announce their increased commitment to supporting the CentOS open source software package. Since the August 2013 acquisition of OpenLogic, Rogue Wave has supported CentOS, along with other top OSS enterprise packages. The new commitment to CentOS means support opportunities will now come with hotfixes and patches, which will directly benefit the entire CentOS community.

News ID 4252

**Cadence expands collaboration with ARM to accelerate custom SoC and IoT system designs**
Cadence Design Systems announced the industry’s first complete hosted end-to-end solution to enable designers to accelerate their custom SoC and Internet of Things design process using ARM Cortex-M processors. This offering accelerates mixed-signal SoC design for IoT, incorporating the ARM IoT Subsystem for Cortex-M processors and Cadence's interface IP and unified mixed-signal implementation solution, now optimized specifically for Cortex-M cores.

News ID 4246

**COMSOL News 2016 explains how simulation specialists bring multiphysics to everyone**
COMSOL has published the latest edition of COMSOL News, the company’s annual multiphysics journal reporting on its customers’ innovative applications. The 2016 edition focuses on simulation specialists bringing multiphysics to everyone so companies can easily develop, clearly communicate and readily distribute designs across teams and client bases.

News ID 4217

**SEGGER: fail-safe solution for next generation embedded systems**
SEGGER is enabling engineers to add higher degrees of security to their designs with its latest product offering, embOS-MPU is a new variant of the company’s zero interrupt latency real-time operating system (RTOS) that is optimized for minimal memory utilization. It uses the memory protection unit (MPU) or memory management unit (MMU) capabilities of the microcontroller to protect a system from the potential harm posed by errant threads.

News ID 4165

**Green Hills: multivisor virtualization solutions for Renesas’ 3rd gen R-Car H3 SoC**
Green Hills Software has announced the immediate availability of its safe and secure INTEGRITY RTOS and INTEGRITY Multivisor virtualization solutions for Renesas’ R-Car H3 SoC, the first member of the third-generation R-Car automotive computing platform. Green Hills Software delivered the embedded industry’s first 64-bit secure virtualization solution last year, a platform that was partially developed with the specific capabilities of the R-Car H3 in mind.

News ID 4126

**Silicon Labs: USB Type-C reference design gives developers a running start**
Silicon Labs has introduced a comprehensive reference design that reduces the cost and complexity of developing cables and cable adapters based on the USB Type-C specification. Silicon Labs' new USB Type-C reference design features cost-effective, ultra-low-power EFM8 microcontrollers, USB Power Delivery protocol stacks certified by the USB-IF, and USB Billboard Device source code.

News ID 4229

**Renesas: reference design supports traffic in 100-Gb class**
Renesas Electronics announced a packet header search reference design for 100 Gb communications devices such as routers, switches, and servers. The reference design is comprised of the LLDRAM-III (RMHE41A364AGBG) power-efficient, low-latency memory (LLDRAM), proprietary exact-match search IP, and LLDRAM-III controller IP on an FPGA device, and development support tools.

News ID 4334

**Vector Informatik: model-based wiring harness development with PREEvision**
The wiring harness is considered to be one of the most expensive and difficult individual parts of the electrical/electronic architecture. Vector's development tool PREEvision allows its physical attributes to be completely modelled. It describes the complexity of current cabling systems with diagrams, takes details into account and makes the entire structure easily understandable.

News ID 4320

**Keysight: BenchVue 3.5 update advances interaction with instruments and entire bench**
Keysight Technologies launched the latest release of its BenchVue software; an intuitive, easy-to-use platform for the PC. BenchVue ed.
provides multiple-instrument measurement applications, data capture and solution applications, without the need for instrument programming. BenchVue 3.5 further enhances test automation for basic sequences.

**SEGGER: emUSB-device add-on enables internet connectivity and virtual networking**
SEGGER introduces the new add-on CDC-ECM for its emUSB-Device stack to provide Ethernet connections via USB. Fully compliant with the CDC-ECM class, the new emUSB-Device CDC-ECM is a comprehensive out-of-the-box solution for connecting with Mac and Linux platforms (complementing SEGGER’s existing emUSB-Device RNDIS solution for Windows hosts).

**XiSys: hybrid server combines local graphics engine with Web visualization**
IoT and Industry 4.0 require new approaches to operate machines. In addition to local human machine interfaces at the machine, web-based services to manage and survey functions remotely are a key ingredient to move forward in industrial automation applications. Fast reliable and secure communication infrastructures, established browser technology and smart devices are the foundation for location independent man machine interaction.

**Microchip: evaluation kits for Low-Power Wide-Area Networks**
Microchip announces availability of the industry’s first complete LoRa technology evaluation kits. The new kits provide customers with all the components required to create a Low-Power Wide-Area Network (LPWAN) for North America in the 915 MHz band (DV164140-2), or for Europe in the 868 MHz band (DV164140-1).

**Lynx: certifiable software platform for airborne wind energy generation system**
Lynx Software Technologies has been selected as the software platform for Ampyx Power. Ampyx Power is developing an Airborne Wind Energy system with a PowerPlane, a tethered aircraft that converts wind into economical green electricity.

**ST extends free tools for STM32 microcontrollers across main PC operating systems**
STMicroelectronics has made its free development tools for STM32 microcontrollers available to Mac computer users, who can now easily create embedded designs without leaving their favorite operating environment. The STM32 development tools for the OS X operating system support the complete embedded design flow and comprise the STM32CubeMX graphical configuration tool and System Workbench for STM32 including the drivers that enable direct use of ST debuggers and programming probes. The tools are easy to install and use, as OS X users have come to expect from their equipment.

**Mouser stocking Kinetics KL8x MCU family plus development tools**
Mouser Electronics is now stocking the KL8x family of Kinetics L Series microcontrollers from NXP. These ultra-low-power microcontrollers combine the exceptional energy efficiency and ease-of-use of the ARM Cortex-M0+ core with the performance, peripheral sets, enablement, and scalability of the Kinetics 32-bit microcontroller portfolio.

**Digi-Key expand ARM partnership for full global distribution**
Global electronic components distributor Digi-Key Electronics have expanded their distribution engagement with ARM to include all of Asia. In addition to expanding the reach of the partnership, ARM’s new Keil MDK Version 5.20 is now available through Digi-Key.

**Infineon: easy entry into digital power control with XMC microcontrollers**
Infineon Technologies and Würth Elektronik eiSos present an easy and affordable entry into digital power control applications. The Digital Power Explorer Kit was developed for analog power supply designers and embedded software programmers to help them better understand and implement the capabilities of digital power control based on standard microcontrollers.

**Renesas simplifies industrial drives and robotics systems development**
Renesas Electronics announces the availability of a new evaluation development kit for its RX62G microcontroller series which includes the latest features of the RX62G Family. The kit is designed for driving industrial drives, robotics, and motion control applications. The kit includes a complete development platform and evaluation software for easy-to-use hardware examples and a broad range of software tools for stand-alone and multi-host system development.
ity of a new reference solution focused on high-performance, real-time motion control applications equipped with the Renesas RZ/T1 microprocessor. The RZ/T1 motion control solution kit delivers a complete hardware/software solution to help simplify embedded development for industrial servo drives and controllers, industrial robotic systems, factory equipment, and other machine tools that require high speed, responsiveness, and excellent real-time performance.

News ID 4259

- **TME becomes distributor partner for Adesto**
  Transfer Multisort Elektronik has become a distribution partner for ADESTO – a company from the United States. ADESTO Company, established in 2007, is a leading manufacturer of non-volatile Flash memories with serial interface, made in CBDRAM technology (Conductive Bridging RAM). Memories manufactured by ADESTO are characterised by low power consumption and very fast write speed. Due to this fact they have various applications, e.g. they can be used in industrial electronics, consumer electronics, devices connected to the Internet of Things as well as in wearable devices and all kinds of battery-powered devices.

News ID 4335

- **ams acquires CCMOSS to become leader in gas and infrared sensing**
  ams has signed an agreement to acquire 100% of the shares in Cambridge CMOS Sensors (CCMOSS), the technology leader in micro hotplate structures for gas sensing and infrared applications, in an all-cash transaction. CCMOSS’ micro hotplates are MEMS structures that are used in gas sensors for volume applications in the automotive, industrial, medical, and consumer markets.

News ID 4273

- **Wibu-Systems: new CodeMeter ASIC for PCBs**
  Wibu-Systems introduces the new CodeMeter ASIC, the most compact form factor of its CodeMeter product lineup, at this year’s Hannover Messe. Manufacturers can solder and embed this component directly onto their PCBs, and deliver software protection, licensing, and security features all at once. This ASIC is particularly recommended for small devices or embedded boards; medical and measuring devices are among the top areas of application that can benefit immediately from the space saved in their board designs.

News ID 4288

- **Yamaichi: host and plug connector system transmits 56Gbps per channel**
  Yamaichi Electronics has developed a new CFP2 56Gbps host and plug connector system. It is mainly used for Analogic Coherent Optics Modules or CFP2 modules requiring high-speed performance. This connector system is able to support applications using 25Gbps x 10 channels or 50Gbps x 4 channels etc.

News ID 4266

- **ADI: sigma-delta A/D converters improve signal quality monitoring**
  Analog Devices introduced a series of 24-bit simultaneous sampling sigma-delta A/D converters for wide-bandwidth, high-density instrumentation, energy and healthcare equipment. The new AD7768 series includes a power scalable modulator and digital filter on each channel to enable the synchronized, precise measurement of both ac and dc signals in instrumentation applications, including modular data acquisition, audio test, and asset condition monitoring.

News ID 4251

- **Silicon Labs: flexible clocking solution for 100G/400G transceivers applications**
  Silicon Labs has introduced a family of jitter-attenuating clocks that simplifies 100G/400G coherent optical line card and module design by providing a high-frequency, flexible clocking solution that significantly reduces system-level cost and complexity. Silicon Labs’ new Si534xKH coherent optical clocks replace discrete timing solutions that rely on expensive, large-footprint voltage-controlled SAW oscillators to provide low-jitter reference timing for data converters.

News ID 4153

- **Panduit introduces new Universal Network Zone System**
  Panduit expands the Network Zone System offering with the launch of its new Universal Network Zone System, providing rapid and reliable deployment of Industrial Ethernet networks between the enterprise and plant floor with maximum design flexibility. Engi-neered with Panduit best practices and meeting UL 508A, Type 4/12 or 4X, IP66 and CE, the Universal Network Zone System offers improved network safety and reliability.

News ID 4296

- **Xilinx broadens Zynq UltraScale+ MPSoC family with streamlined dual-core devices**
  Xilinx has added streamlined dual-core members to the Zynq UltraScale+ MPSoC family of devices. The new dual-core “CG” family members expand the Zynq MPSoC portfolio scalability, to include dual application and real-time processor combinations. These dual-core devices add processing scalability at a lower cost entry point to the current Zynq UltraScale+ family, which offers quad ARM Cortex-A53s, dual Cortex-R5s, a graphics processing unit, and a video codec unit.

News ID 4269

- **u-blox: UDR receiver in smallest form-factor**
  u-blox announces availability of its miniature Untethered Dead Reckoning receiver EVA-M8E. Measuring merely 7 x 7 mm, the EVA-M8E is the perfect positioning component for small-sized vehicle trackers. It provides untethered dead-reckoning performance without any electrical connection to the vehicle, using low cost inertial sensors.

News ID 4307

- **Xilinx: SmartConnect in newest Vivado Design Suite solves system interconnect bottlenecks**
  Xilinx announced the 2016.1 release of the Vivado Design Suite HLS Editions, with extensions to the SmartConnect technology, delivering unprecedented levels of performance for the UltraScale and UltraScale+ device portfolios. In the 2016.1 release, Vivado Design Suite includes extensions to the SmartConnect technology, solving the system interconnect bottlenecks on high density, multi-million system logic cell designs.

News ID 4140

- **DDC acquires Maxwell Microelectronics**
  Data Device Corporation has expanded its space market capabilities and product offering with the acquisition of the Microelectronics group from Maxwell Technologies. Maxwell is a leading developer and manufacturer of innovative, cost-effective, space-qualified microelectronics solutions for satellites and spacecrafts.

News ID 4158

- **ADI: optical sensor improves reliability of gesture recognition applications**
  Analog Devices announced an optical sensor for gesture recognition, which improves sensing accuracy and reliability over existing solutions by measuring a subject’s position, proximity, and gestures from a single sensor.

More information about each news is available on www.Embedded-Control-Europe.com/magazine
You just have to type in the “News ID”. —
Maxim: digital isolators provide robust galvanic isolation
Designers can save space and achieve more flexible designs with the MAX14933 and MAX14937 two-channel, bi-directional digital isolators from Maxim Integrated Products. They transfer digital signals between circuits in both directions and provide complete galvanic isolation between two power domains, all while using fewer components to save board space.
News ID 4214

Maxim: MIMO linearizer paves the way for greener network deployments
Designers can now achieve lower power, cost, and size of the RF frontend with the SC2200 dual-channel RF power amplifier linearizer from Maxim Integrated Products. The linearizer enables power amplifiers to consume up to 70% less power compared to operation in back-off. In addition, it reduces the bill of materials cost by up to 50%, and is up to 8x smaller than other digital pre-distortion solutions on the market.
News ID 4198

Power Integrations: gate driver ICs combine reinforced isolation with up to 8 A of current drive
Power Integrations announced a family of galvanically isolated single-channel gate driver ICs ranging in output current from 2.5 A to 8 A – the industry’s highest output current without an external booster. SCALE-iDriver ICs, optimized for driving both IGBTs and MOSFETs, are the first products to bring Power Integrations’ pioneering FluxLink magnetically inductive bi-directional communications technology to 1200 V driver applications. FluxLink technology eliminates the need for unreliable opto-electronics and the associated compensation circuitry, thereby enhancing operational stability while reducing system complexity.
News ID 4181

Innodisk: new generation M.2 LAN card provides dual Gigabit Ethernet
Innodisk launches a new generation M.2 LAN card. M.2 (known as the NGFF - Next Generation Form Factor) is a new generation of specifications for embedded extensions designed to support PCIe and USB 3.0 interface. High-speed bandwidth comes as a standard specification of mini-STX and NUC. It may be used on type 2280, 2260 and other various modules.
News ID 4196

Innodisk: DDR4 Mini DIMM series DRAM aimed at communications applications
Innodisk introduces a brand new DDR4 Mini DIMM DRAM that is fully compliant with ATCA. Featuring a 228 pin (a mere 0.72” in height) and a capacity of up to 16GB, it is simply the best choice for small, high-speed, large-capacity storage devices. Innodisk uses original ICs in DDR4 Mini DIMM and has upgraded the transfer speed up to 2400MHz. Its ECC modules are designed to detect and correct single-bit errors that may occur during data storage and transmission.
News ID 4174

Xilinx collaborates with technology leaders on Cache Coherent Interconnect for Accelerators
Advanced Micro Devices, Huawei, IBM, Mellanox, Qualcomm Technologies and Xilinx have joined forces to bring a high-performance open acceleration framework to data centers. The companies are collaborating on the specification for the new Cache Coherent Interconnect for Accelerators (CCIX).
News ID 4295

RUTRONIK: new CFast card range from Swissbit
Rutronik presents Swissbit’s extension to the existing F-60/F-600 CFast 2.0 card portfolio, named F-50 series. This new F-50 series delivers up to 500/330MB/s read/write performance for cost sensitive applications. The new F-50 products complement the high performance, high endurance durable F-60 devices by offering a DRAM-less product for cost sensitive applications with use cases that don’t require the extreme IOPS rate and endurance life delivered by F-60 cards.
News ID 4326

Sierra Wireless enables vehicle network for first responders, field services and transit
Sierra Wireless announced availability of the AirLink MP70, an LTE-Advanced (LTE-A) vehicle router for todays mission critical applications in public safety, transit and field services. Today’s mobile workforce needs to connect more technology in and around their vehicles to enhance safety and responsiveness.
News ID 4197

Langer: interference suppression on direct-current motor controlled by PWM
Langer EMV-Technik has released a practical EMC tip on using the line impedance stabilisation network / RF current transformer and CS-ESA software. Emission measurements is taking place with the NNB 21 line impedance stabilisation network or HWF 21 RF current transformer and the ChipScan-ESA software for spectrum analyzers from Langer.
News ID 4139

Microchip: Bluetooth low energy solutions with embedded scripting capability
Microchip announces two next-generation Bluetooth Low Energy solutions with an easy-to-use ASCII-style command interface that makes the devices easy to configure and eliminates any complicated code compiling. The RN4870 and RN4871 support the latest Bluetooth 4.2 specification and have a Bluetooth stack on board with a scripting engine to enable standalone operation and eliminate microcontroller use for
simple applications. These next-generation Bluetooth devices enable fast time to market and improve the total manufacturing cost. The RN4870 and RN4871 devices deliver up to 2.5 times data throughput improvement over previous generation products based on the Bluetooth 4.0 standard.

News ID 4298

**MEN: legacy and high-speed on a single board**
The interface board G229 supports up to three USB 3.0 ports, one RS232 and one RS422/485 interface and a m.2 interface. This way, it can be used to complete the number of legacy interfaces as well as for connection of state-of-the-art high-speed interconnects within a system. For data storage or as a boot medium, the G229 enables a fast boot of the system’s CPU via the m.2 slot, which supports NVMe and PCIe connection.

News ID 4321

**COMMELL: mini-ITX, Pico-ITX and 3.5**
COMMELL has launched three new embedded boards, LV-67P (mini-ITX), LP-176 (Pico-ITX) and LE-37F (3.5-inch Miniboard) with Braswell processor, a multicore SoC based on a new microarchitecture manufactured on Intel’s tri-gate 14nm process. The LV-67P, LP-176 and LE-37F are equipped with Intel Pentium Quad-core N3710 or Atom Quad-core X5-E8000 (which TDP just 6W or 5W). These motherboard support DDR3L memory up to 8GB. These platforms are based on Intel HD Graphics up to 4K resolution that provides high-end media and graphics capabilities with up to three independent displays to support LVDS, HDMI and one DP port or VGA.

News ID 4318

**ARBOR: 8-inch RISC-based Android IoT-800 Panel PC with ARM Cortex A9**
ARBOR Technology has launched the IoT-800 to complement its growing product lineup of slim, small form-factor Panel PCs. Coming just months after the introduction of ARBOR’s IoT-500 5-inch Panel PC, the larger IoT-800 provides customers additional versatility and flexibility to meet the needs of a wide range of industrial applications.

News ID 4314

**Artila: C programmable I/O controller module**
Artila Electronics release RIO-2015PG, the new FreeRTOS programmable remote I/O module. RIO-2015PG is powered by a 32-bit Atmel SAM4E16E 120MHz ARM Cortex M4 processor which is equipped with 256KB SRAM, 3MB Flash and FreeRTOS real time operating system. The industrial I/O of RIO-2015PG features one 10/100 MHz Ethernet port, one RS-232, one isolated RS-485, four isolated analog input channels, two isolated analog output channels, four isolated digital input and two channels of relay and one 1-wire interface for temperature or humidity sensors.

News ID 4331

**AAEON expands extended temperature product lineup**
AAEON is adding extended temperature support to a wider array of embedded boards across all form factors and platforms. AAEON’s Extended Temperature support, also known as WITAs, is divided into two categories that are determined by temperature range: WITAs -1 for temperatures between -20 to 70°C and WITAs 2 for -40 to 85°C. With the implementation of WITAs, products are made to withstand harsher and more extreme environments.

News ID 4171

**Acceed: new Matrix-700 Box PC series with Linux 3.18.x**
The new Matrix-700 from Artila is now also available in Europe from the independent distributor acceed. The compact industry controller is available in two versions: with integrated WLAN including an aerial and without WLAN. In any case, the drivers are pre-installed and trouble-free retrofitting with a simple WLAN USB stick is always possible. The new Matrix-700 is supplied with cortex-A5 CPU and the current Linux architecture (kernel 3.18.x).

News ID 4213

**ARBOR: compact fanless controller with maximum flexibility of inputs and outputs**
ARBOR introduces new series of embedded fanless controller with Intel Bay-Trail SoC platform for various applications from digital signage to industrial automation. ARES-1230 has been designed as an ultra-compact Boc PC, in order to be easily integrated in a tiny space environment. Measuring only 180 X 130 mm and weighing less than 1 kg, the ARES-1230 fits virtually anywhere and can even serve as part of numerous HMI solutions. Based on the quad-core Intel N2930 processor and supporting up to 8 GB DDR3L SO-DIMM memory, it also has a flexible I/O module design.

News ID 4281

**ARBOR: ultra-thin RISC-based Panel PC with 5-inch LCD display**
ARBOR has announced the IOT-500 as a new addition to its ultra-slim series of industrial Panel PC products. The compact, lightweight 5” IOT-500 is a RISC-based Panel PC that offers low power without compromising performance and features. Based on a highly energy-efficient dual-core ARM Cortex-A7 processor and the Android 5.1 “Lollipop” operating system, the IOT-500 supports flexible I/O connectivity and multiple communications, making it a smart way for users to interact with the Internet of Things.

News ID 4164

**EKF: CompactPCI Serial carrier board for up to two mezzanine I/O adapter modules**
On the process control level, the IoT speaks to interact with the Internet of Things. With the SFI-STUDIO, EKF offers a solution to this problem. The CompactPCI Serial carrier board accommodates up to two mezzanine I/O adapter modules based on the PCI Express Mini Card form fac-
tor, suitable for industrial Ethernet and fieldbus applications. Up to four front panel I/O connectors are available for direct attachment of a variety of machines and systems.

News ID 4211

SECO and Aaronn Electronic: distribution agreement for Qseven modular products

In the context of its continuous global expansion, SECO increases its territory coverage with a new distribution agreement with Aaronn Electronic GmbH for the Qseven module based product portfolio geared towards the German Market. For more than 20 years, Aaronn transformed from a pure distributor to a successful system integrator for Industrial PCs, working closely with partners to create individual solutions in a professional and reliable manner. Aaronn’s ability to support the entire lifecycle of a project, from requirement analyses to product selection, prototype development and mass production, will bring a concrete added value to this strategic distribution collaboration.

News ID 4271

Neousys: Nuvo-2510VTC is E-Mark certified for in-vehicle usage

Neousys Technology announces Nuvo-2510VTC is E-Mark certified for in-vehicle usage. Nuvo-2510VTC is an in-vehicle fanless computer with Intel Atom E3845 quad-core processor. Equipped with 2 IEEE 802.3at Gigabit Ethernet ports, Nuvo-2510VTC is capable of directly driving 25W GigE and PoE IP cameras with a single standard CAT-5e.

News ID 4209

NI: PXI Express DMM for more accurate, smarter test systems

NI announced the NI PXIe-4081 7½-digit high-performance DMM and 1.8 MS/s isolated digitizer. The NI PXIe-4081 is the first PXI Express DMM available. It offers engineers the flexibility, resolution and isolation needed to tackle challenging applications that require smarter test systems in industries ranging from consumer electronics to aerospace and defense.

News ID 4218

Advantech: in-vehicle & ruggedized NVR certified by Milestone Systems program

Advantech announced it has ARK-V&S series (In-Vehicle & Ruggedized NVR) certified for Milestone XProtect IP video management software, ensuring that customers can get surveillance solutions up and running quickly with hardware and software that has been pre-tested and verified to work with Milestone VMS. Advantech ARK-V&S certified by Milestone Systems allows businesses to implement systems more efficiently.

News ID 4135

N.A.T.: SDR head for 5G massive MIMO base station systems

N.A.T. announced the NAMC-SDR, a flexible software-defined radio platform that will simplify and accelerate the development, prototyping and testing of new wireless radio access network technologies. Designed for 5G massive multiple input, multiple output (MIMO and M-MIMO) base station transceiver systems and proprietary or standard implementations of UMTS, LTE / LTE-Advanced systems, the NAMC-SDR can also be used in a variety of applications ranging from cognitive radios to resilient security networks.

News ID 4249

DCC: high-speed, rugged fibre channel XMC network access controller

Data Device Corporation introduces the next generation of rugged, improved throughput/latency performance FibreACCESS Fibre Channel XMC Network Access Controllers, offering 1Gb/s or 2Gb/s operation via an x4 PCI Express Initiator/Target host interface. The new FC-755XX boards, available with either 150 ohm differential or 75 coax (for MIL-STD-1760E) copper, or fiber optic physical layers, are based on DDC’s leading Fibre Channel technology, designed to meet the multi-decade life cycle demands of aerospace and defense programs.

News ID 4205

ADLINK: Broadwell-EP based AdvancedTCA blade and network appliance

ADLINK announced two new solutions based on the Intel Xeon Processor E5-2600 Product Family (codename Broadwell-EP). These latest ADLINK offerings are based on 14nm technology-based, server-class Intel processors that bring intelligence to the edge for IoT applications, and include an AdvancedTCA processor blade and network appliance from our Modular Industrial Cloud Architecture offering.

News ID 4150

AAEON to upgrade AIOT product family with Wind River Intelligent Device Platform

AAEON will be infusing its main IoT product line with Intel IoT Gateway Technology including the Wind River Intelligent Device Platform 3.1. Solutions based on Intel IoT Gateway Technology will be pre-integrated and pre-validated with Wind River Intelligent Device Platform XT 3.1 operating system, enhanced security with McAfee Embedded Control security technologies and granted cloud connectivity through the Wind River Helix Device Cloud agent.

News ID 4147
Acromag: next generation PCIe-based AcroPack I/O modules

Acromag’s new innovative PCIe-based AcroPack Series of general purpose I/O modules for embedded computing applications are an extended version of the mPCIe specification and feature a 100-pin connector to handle the I/O. The modules plug into connectors on AcroPack carriers to add analog or digital input and output or communication in any combination for embedded applications running on Linux, Windows, or VxWorks operating systems. Acromag’s AcroPack PCIe carrier holds up to two mini-PCIe or AcroPack™ mezzanine modules.

News ID 4194

Axiomtek: palm-sized Pico-ITX motherboard with big performance

Axiomtek announces the official launch of PICO300, an extreme-compact fanless pico-ITX motherboard built with the Intel Pentium N3710 or Celeron N3060 processor. One SO-DIMM socket is provided to support up to 8GB of DDR3L-1600 memory. The PICO300 is supported in dual display configurations along with one 18/24-bit single/dual-channel LVDS and a choice of VGA or HDMI.

News ID 4237

CES: SWaP optimized video applications with Intel’s 5th gen Core i7 processor

Taking into account the CPU microarchitecture optimization and the higher 2.7 GHz clocking frequency, Broadwell offers up to 25% performance increase compare to Haswell. Existing applications migrating to Broadwell will observe a noticeable reduction of power consumption thanks to the use of a 14nm process.

News ID 4161

Axiomtek: 12.1-inch EN50155 railway touch panel computer

Axiomtek introduces the GOT712-837, its brand-new EN50155 certified 12.1” fanless touch panel computer for railway applications. The railway panel PC is designed to support the low power quad-core Intel Atom processor E3845 1.91 GHz, and is equipped with a 12.1-inch XGA TFT LCD display with high brightness LED backlight (800 nits) and auto-dimming control, which allows a train operator to easily read any operational status messages, even under direct sunlight.

News ID 4187

Portwell: expanding COM Express portfolio for versatility, efficiency, longevity

Portwell announce the release of the PCOM-B639VG, a Type 6 COM Express Basic module based on the 6th generation Intel Core processor and Mobile Intel QM170 chipset (2.6W). The COM Express module includes Intel Turbo Boost Technology for faster processing, Intel vPro Technology for superior remote capabilities and Intel Hyperthreading Technology for multithreading. Supporting three symmetric independent displays, the PCOM-B639VG is designed with the 6th Generation Intel Core Processor, built on 14nm process technology utilizing multi-stream technology, resulting in up to double the performance of the integrated GPU and improved energy efficiency.

News ID 4152

Lanner: industrial grade appliance with advanced LAN bypass for ICS cyber security

Industrial Control Systems (ICS) play a crucial role for a nation’s critical infrastructures. Since ICS facilities are usually deployed in remote, unmanned and harsh environments, Lanner introduces its new industrial grade appliance – LEC-6032, with capability to operate under wide temperature ranges, advanced LAN bypass (Gen.3) for failover recovery and rich connectivity to communicate with Programmable Logic Controllers and Human-Machine Interface.

News ID 4156

MICROMAX: M-Max V75 series highly rugged PC/104 chassis as standalone products

MicroMax announced that two versions of the M-Max V75 ultra-compact machined aluminum chassis, which are compatible with the VITA 75 standard, are now available as standalone products. Used in current MicroMax products, these chassis have proven capability, and due to customer demand are now being made available separately to help system designers.

News ID 4241

VersaLogic launches small powerful embedded computer

VersaLogic has announced Osprey—an extremely small, rugged, embedded computer. This next generation of the VersaLogic Embedded Processing Unit format combines processor, memory, video, and system I/O into an extremely compact full function embedded computer. The computer has a footprint just slightly larger than a credit card!
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