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October 04/18

Cover Story:

## Slimming program for medical operating devices

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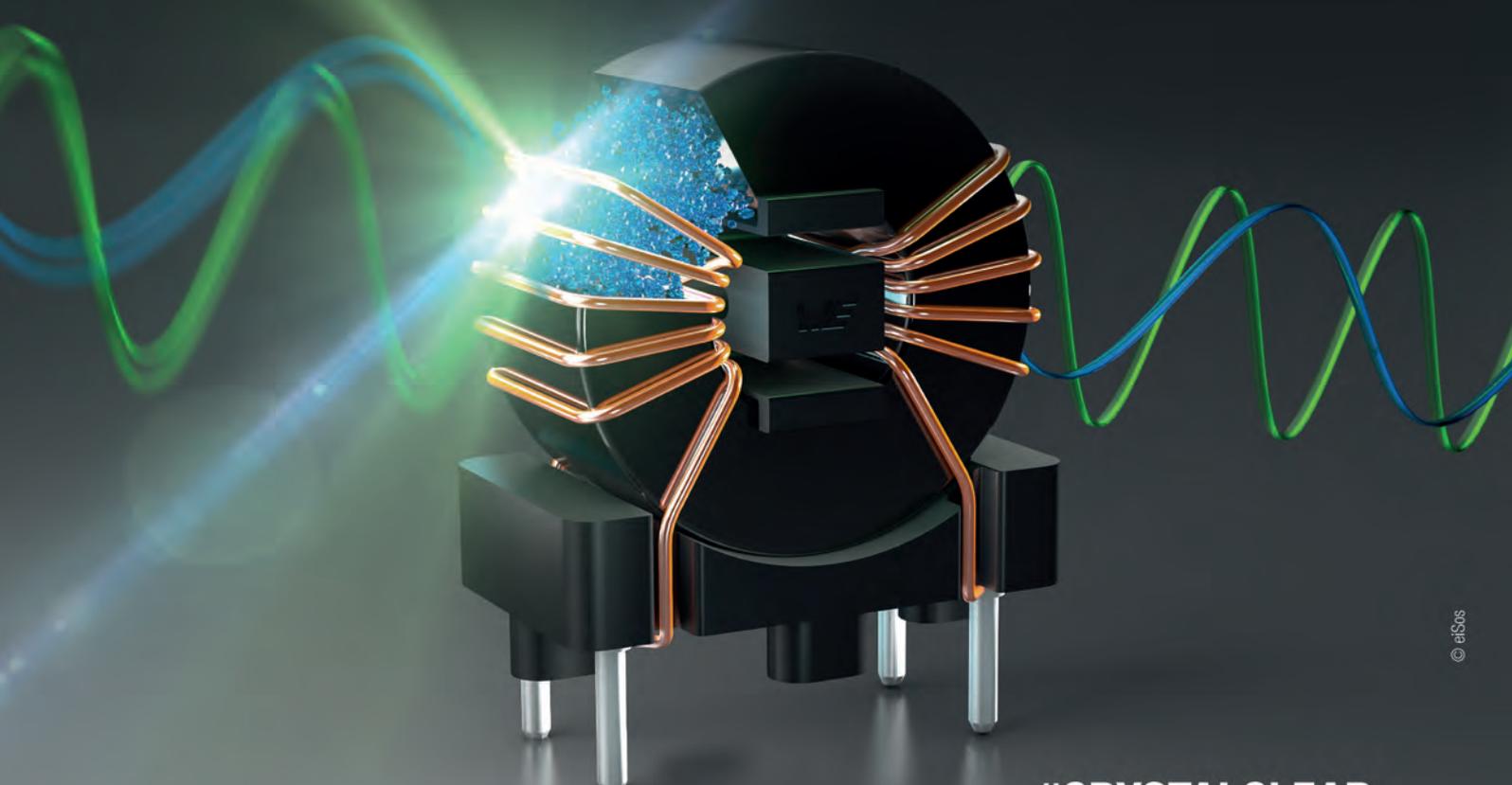
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## Dear Readers,



It's a well known fact that electronics is penetrating any sector of our daily life. An important one is the medical sector because it effects our well being and health. One area in which electronics made a lot of progress in the past years is medical imaging. There is nearly no medical examination in which no imaging technology like ultrasound, ECG, or MRT images is used. But operating devices in the medical sector are not only subject to strict controls and stringent requirements. Professional HMI systems

must be expertly equipped in terms of quality and technology, not just because of legal requirements (see our cover story at page 6). For a few years now, there has also been another aspect, which concerns embedded developers of medical HMI devices: the demands of the customer and end user on the design. Among other criteria, the devices should be fitted with PCAP, Projected Capacitive Touch. Due to the user experience from the end consumer market, the industry customer today knows about feasibility and possibilities and therefore requests operating devices which work just like smartphones, PCs and tablets also for medical applications. And nowadays in the time of the Internet of Things with its various wireless links there are also EMC requirements to consider. This is especially true for mobile medical devices which monitors the health of patients outside of medical practice or hospitals.

But this leads to another requirement: safe and secure data transfer. In our connected world, cybersecurity and protection against tampering are becoming paramount in order to safeguard and actually implement also these medical devices. Whenever the security of devices is concerned, there are two sides and two special sets of requirements to be considered. The makers of the devices want to protect their work from reverse engineering and manipulation, keep their know-how secret, and put new business models or logistical advantages to use. The operators or users, on the other hand, care most about the integrity of the devices and the data stored on them or used with them. In order to reconcile these two sides, the most promising choice is a protection concept that can fulfill both types of requirements. Ideally, the chosen concept comes with a fully scalable and seamless technology and toolkit included. The article starting page 12 introduces such a solution for this problem.

And in November of this year there will be held electronica from 13th to 16th November at the exhibition center in Munich, one of the most important events for the global electronics and embedded industry. Electronica is continuing to grow and, for the first time, will take up 17 halls at the Messe München exhibition grounds. ICC Media will exhibit in Hall B5 Booth 127 and the team will be delighted to discuss the latest trends in embedded and therefore also medical technology.

*Looking forward to meet you there.*

*Yours sincerely*

Wolfgang Patelay  
Editor

# Portwell

## From Board to System



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Operating devices in the medical sector are not only subject to strict controls and requirements. Nowadays design demands are becoming more and more important for developers of medical HMI devices. Design demands in medical are based on the flattest/slimmest HMI units possible.

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Wi-Fi and Bluetooth are the de-facto standards for consumer networking but they do not translate equally well to the IoT. Fortunately there is an already existing viable solution to the IoT networking problem, and we use it every day - the mobile communication network.

**Protection and licensing solution from the sensor to the cloud 12**

Today's software and devices are increasingly connecting with and speaking to each other. But in a connected world, cybersecurity and protection against tampering are becoming paramount in order to safeguard and actually implement new business models.

**New hall layout for electronica 22**



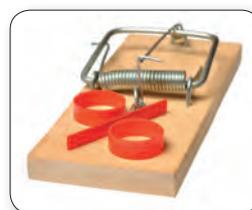
electronica is continuing to grow and, for the first time, will take up 17 halls at the Messe München exhibition grounds. Angela Marten, Exhibition Director for the trade fair, explains the new layout of the exhibition areas.

**Rugged COM Express a standard for harsh environments 24**

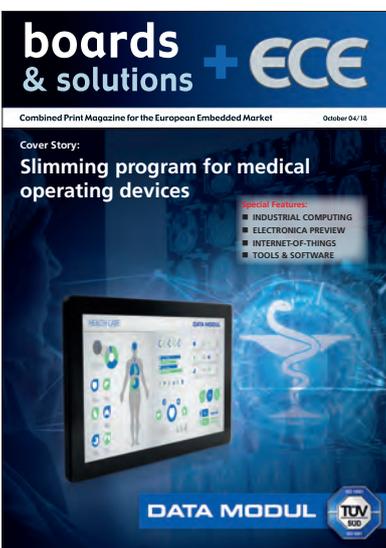


Modular designs based on VITA's Rugged COM Express standard are the first choice for the latest processor technology in the most rugged of applications.

**The two big traps of code coverage 30**



Code coverage is important, and improving coverage is a worthy goal. But simply chasing the percentage is not nearly so valuable as writing stable, maintainable, meaningful tests.



Cover Photo: Data Modul



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# Slimming program for medical operating devices

By Jörn Wittig, Data Modul

*Operating devices in the medical sector are not only subject to strict controls and requirements. Nowadays design demands are becoming more and more important for developers of medical HMI devices. Design demands in medical are based on the flattest/slimmest HMI units possible.*



■ Professional HMI systems must be expertly equipped in terms of quality and technology, not just because of legal requirements. Operating devices in the medical sector are subject to strict controls and requirements. For a few years now, there has also been another aspect, which concerns developers of medical HMI devices: the demands of the customer and end user on the design. Among other criteria, the devices should be fitted with PCAP, Projected Capacitive Touch. Due to the user experience from the end consumer market, the industry customer today knows about feasibility and possibilities and therefore requests operating devices which work just like smartphones, PCs and tablets also for medical applications.

The design demands in medical are based on the flattest/slimmest HMI units possible. What is more, the strict demands applicable to medical applications are also taken into account. A slim device design requires slim components. However, the control is difficult here. A provider such as Data Modul helps their partners in the development and production of HMI systems, whether monitor or panel PC. The company is a certified development and production partner under the number 13485:2016. The distribution range also includes their own product developments. With the eMotion series, Data Modul have developed their own control solution and,

with the eMotion USB type C3.1 single-cable solution in alternate mode, have found a way to design even slimmer monitors. Slim designs are also possible with other boards of the eMotion family, such as the ST5.3. The capacitors and plugs are flatter here, a display port interface and DVI and VGA save overall height.

If a panel PC is installed in the application, Data Modul offer their own SBC form factor especially for slim panel PCs: the eDM-SBC-iMX6-PPC. With dimensions of 130 mm x 80 mm x 13 mm, this format offers more width and allows a larger scope for interfaces. Thanks to flatter plugs, where the mating connector is positioned on the side, no structural height is lost when connecting the interface. Even the connection jack of the RJ45 network plug is positioned lower down to design the wireless card to be as flat as possible. TFT-LC displays are seen in industrial applications. However, you should definitely stay away from slimmer consumer panels. They usually do not conform to the industrial demands with regard to lifespan, temperature range, availability and processes for change management and EOL.

An industry customer places value on high readability and a wide viewing angle. For medical devices, displays with MVA, Multiple Vertical Alignment, and IPS, In-Plane

Switching, are the best choice. Both technologies offer high quality image display, high color accuracy and wide viewing angles as well as contrast. These are mainly wide and ultra-wide format displays. To see the finest structures and gray tones even on devices with larger diagonals of more than 20", Data Modul's self-developed controller board eMotion UHD II is used. As well as UHD, this also offers HDR, which allows a 10-bit color depth. To find out whether a display is suitable for medical use or not, Data Modul places it under a stress test. This happens in the company's own climate chamber. Here, the displays are exposed to low or high temperatures and temperature cycles depending on the project, application and requirements. This simulates how the panel will behave in continuous or long-term operation. Furthermore, conclusions can be drawn on reliability and quality from the occurring aging effects. For this, the test periods range from a few days/weeks up to several years. This depends on the later use.

The first (capacitive) touch screens entered the market at the beginning of the 1990s. Since then, the basic structure of the touch sensors has barely changed. The basic structure is formed by X and Y levels, usually with a conductive rhombic pattern. Both levels are insulated from each other. If a finger or a conductive medium touches a crossing point

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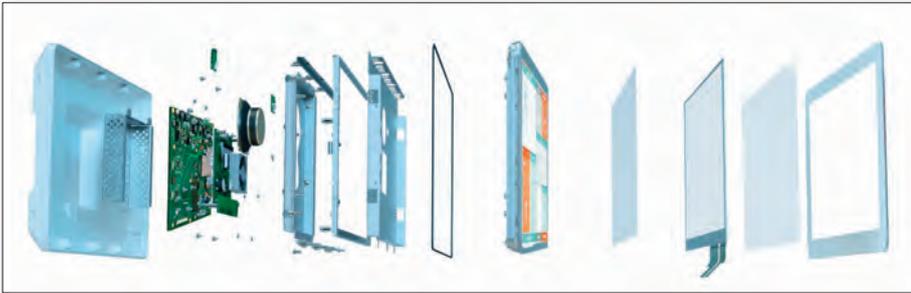


Figure 1. This schematic structure shows the different components of a modern touch display.

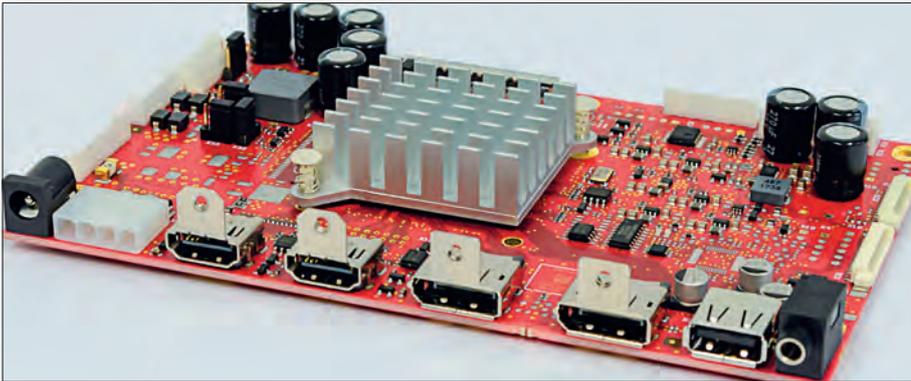


Figure 2. eMotion UHD II: advanced TFT LCD controller board



Figure 3. SBC-iMX6-PPC: slim single board computer with NXP i.MX6 Cortex A9 SoC

of both levels, the capacity is changed and a touch event is recognized. HMI systems can be operated based on this principle, even through a glass panel. A central component is the transparent, conductive material ITO, Indium Tin Oxide. This forms a conductive rhombic pattern. In general, the conducting material is applied on two different sensor substrates: glass or PET film. A major drawback owed to the manufacturing procedure is the conductor path of these kinds of sensors and the resulting external dimensions.

All electrodes are connected via a conductor path which leads to the Flextail at the edge of the sensor. With a line/space gap of 100/100  $\mu\text{m}$ , the distance between two conductor paths and the conductor path itself, the structure is wide. This is particularly evident with diagonals bigger than 12.1", since the resolution of these sensors is significantly higher. The glass/glass sensor is barely used in current applications due to the exterior dimensions and the robust overall structure. ITO film

sensors (film/film) are thinner. With a sensor structure of 0.5 to maximum 0.7 mm, it is possible to use this in mobile devices. ITO films can be processed very well and the most unconventional shapes are possible. In spite of PET film, temperatures from -20 to 60°C or 70°C are possible. With a combination of a laser and etching processes, a line/space gap of 50/50  $\mu\text{m}$  can be reached. Data Modul has further developed the ITO sensors: SITO, Single-side ITO, which can be applied to diagonals of 7 to 21.5". Unlike film/film sensors, both ITO electrodes in direction X and Y are applied only on one side of a glass substrate. The special feature is that on these crosspoints, metal bridges (metal jumpers) are placed to prevent bypasses caused by the single-layer touch structure. This means that a slimmer edge is possible and the sensor designs can be adapted individually. The external dimensions of the sensors here are not larger than those of the TFT display, meaning the sensors fit in almost every existing customer design. The temperature range is also wider for SITO

sensors. PCAP without a glass surface is not possible, the flexible film on its own would not be durable. A thinner, more robust carrier must be applied (glass/film/film). The glass has a purely protective function: it prevents the sensor from bending and the sensitive conductor paths from being destroyed. Carrier glass and cover glass is available in different thicknesses, imprints and/or shapes. With PCAP, the operating surface remains glass and in the medical environment, special anti-bacterial surfaces and glasses are used. Thanks to the anti-bacterial glass and anti-microbial effect of silver ions in the glass, 99 percent of the present bacteria is already dealt with.

Data Modul has taken a special patented nano-free clear glass surface into development. An additional coating becomes unnecessary. The antibacterial effect also remains after cleaning with aggressive products. Other directly antibacterial glass options are lacquered glass, mirror and laminated safety glass, with and without a sound-proofing function. In particular the gap in the device casing must either be narrow or wide to allow it to be cleaned easily. However, a closed device surface is often desired. Data Modul can fill the gap with the gap-filling process or also press-fitting. This requires the engineers involved to be familiar with various materials and the corresponding production procedures.

For design and functionality of the casing design, material, dimensions and production possibilities and feasibility are important. Speakers, cameras, light conductors that are integrated directly into the casing, semi-transparent surfaces and specific surface roughness of the front frame must particularly be taken into account. Data Modul provides their own construction team for the casing concept and integrates the required components in such a way that the casing can be kept as slim as possible.

All EMC demands are also taken into account. CPU boards, touch controllers and sensors are integrated into metal chassis and, thanks to passive filter switching, are not sensitive to interfering signals. The demands on electromagnetic compatibility of medical devices, particularly on those for intensive-care medicine, are very high. Interior chassis made from aluminum improve the emission and immision behavior. Even the touch controller can be integrated. A backshell can be made of compact plastic injection molding ABS plastic, the sealing of which must often correspond to protection type IP54. The integration of the connection field, position and type of plugs also reduces the structural height. In the company's own EMC chambers, the devices are pre-qualified in accordance with medical standard 60601-1.



Figure 4. Stress test in the Data Modul climate chamber

Before the start of every series production, detailed qualifications and tests ensure that the production quality will pass. This involves several phases which begin with functional designs and prototypes. Prototypes which are produced in near-serial processes as well as first samples in small quantities are built. The desired functions can be demonstrated and the product samples show the slim design.

Furthermore, the panel and touch functionality can be tested. Parts produced in the rapid prototyping process give important information about the function and fit accuracy before series production. The success a device will have on the market finally depends on the end user. With the presentation of samples/prototypes, the synergy of design and function of the modern, slim medical device can be highlighted. ■

## Product News

### ■ Maxim: 5kVRMS reinforced digital isolator enables safe, high-throughput automation systems

To better protect industrial systems from the dangers of high-voltage signals, equipment designers can now turn to the new robust and reliable MAX22445 5kVRMS four-channel reinforced digital isolator from Maxim Integrated Products. Delivering up to 2x greater throughput at 4x lower power consumption versus competing solutions, the MAX22445 provides reliable communication across the isolation barrier to ensure safe operation of compact industrial, medical and other equipment.

[News ID 6458](#)

### ■ Densitron: innovations for broadcast

Densitron continues its strategy of innovation for the broadcast sector by unveiling an industry-leading technology as part of its UReady TFT rackmount display range at this year's IBC. On the UReady display, Densitron has integrated mechanical buttons with PCT touch technology. Having a mechanical button makes it easier for operators to be sure they have activated it. Currently this isn't possible with a traditional touchscreen unless an operator is continuously looking at the screen, as it is difficult to 'feel' the correct area of the display.

[News ID 6454](#)

### ■ Infineon enables open source software stack for TPM 2.0

Infineon Technologies has enabled a new open source software stack. It makes work easier for developers who want to use the Trusted Platform Module (TPM) 2.0 – a standardized hardware-based security solution for securing industrial, automotive and other applications such as network equipment. This is the first open source TPM middleware that complies with the Software Stack (TSS) Enhanced System API (ESAPI) specification of the Trusted Computing Group (TCG), providing significant value to the open source community.

[News ID 6451](#)

### ■ Xilinx FPGAs deployed for AI acceleration

Xilinx announced that SKT has deployed Xilinx FPGAs as their artificial intelligence accelerators in its data center. The Xilinx Kintex UltraScale FPGAs are now running SKT's automatic speech-recognition application to accelerate NUGU, its voice-activated assistant. SKT achieved up to five times higher performance in ASR applications when compared to GPUs, and more importantly, 16 times better performance-per-watt. This is the first commercial adoption of FPGA accelerators in the AI domain for large-scale data centers in South Korea.

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# Scaling the Internet of Things with cellular technology

By Mark Patrick, Mouser Electronics

*Wi-Fi and Bluetooth are the de-facto standards for consumer networking but they do not translate equally well to the IoT. Fortunately there is an already existing viable solution to the IoT networking problem, and we use it every day - the mobile communication network.*



*XBee application example: embedded modem provides a simple way to integrate cellular connectivity into devices (Source: Digi).*

■ The Internet of Things (IoT) has gone, almost overnight, from buzzword to major technology trend. IoT devices are showing up these days in everything from consumer electronics, like wearables and smart home sensors, to industrial automation, healthcare, warehousing/logistics and much more besides. But as the IoT develops and matures it is also experiencing what can only be described as fairly severe growing pains. Many of the technologies and protocols that made sense for a world of centralised desktop, laptop and mobile computing, are not equally valid for the decentralised network of ultra-low power devices that IoT technology is creating.

Wi-Fi and Bluetooth, the de-facto standards for consumer networking, do not translate very well to the IoT. Wi-Fi has decent range, but heavy power consumption. Bluetooth has low power consumption, but poor range. Both solutions do not scale well because they require routers. In fact however there is a viable solution to the IoT networking problem that already exists, and we use it every day - the mobile communication network.

The term IoT encompasses a wide variety of 'things', from smart thermostats and white goods on the consumer side right through to pressure sensors, water meters and smart irrigation systems on the industrial side. But

while the applications and the markets they serve can be extremely varied, IoT devices share a few key characteristics.

Many IoT devices are battery powered. For mobile applications, such as wearables or asset trackers, battery power is the only solution. However, even IoT devices which do not spend time moving around, such as smart water meters, pressure sensors for a pipeline, or a thermostat in an industrial automation process, may also be battery powered for convenience's sake, as there might be no readily available mains power nearby.

IoT devices are often located in unexpected, and often inconvenient places. Whereas most consumer and enterprise electronics sit on our desks, in our homes, or our offices and can rely on easy access to electricity, Wi-Fi and cellular reception, and are not difficult to reach for maintenance purposes, the same is not true for IoT. A smart parking meter might be situated in an underground garage with poor cellular reception and no power source nearby. A pressure sensor may be sited in a remote pipeline in the desert. An asset tracker may be stuffed into the bottom of a shipping container and inaccessible for months at a time. Finally, IoT devices are being deployed in greater numbers than almost any other class of electronic device in history. Rather

than a single computer per person, IoT applications often are most effective when deployed in large volumes. Whether as parking meters, beacons, irrigation sensors, or asset trackers, IoT deployments often number in the dozens, hundreds or even thousands of discrete devices.

These characteristics - battery power, mobile or out-of-the-way installations and large-scale deployments - present a unique and seemingly contradictory set of challenges for IoT connectivity. The communication protocol used needs to be wireless and have good range/penetration, yet also have minimal power consumption to allow for long battery life and infrequent maintenance.

Wi-Fi, the traditional wireless protocol for consumer and enterprise networks, has decent range and penetration, but is intrinsically power hungry, making it unsuitable for battery-driven devices. Bluetooth, while low power, has limited range in real-world environments, impacting on its effectiveness for all but the smallest scale IoT deployments. Another solution is needed and cellular seems to be the best route to go down. In some ways, mobile phones share many characteristics with IoT devices. These battery powered, mobile devices are connected to the Internet, filled with loads of sensors and interface our

physical world with the cloud. So it makes sense that an ideal IoT protocol may have certain cellular attributes.

The most salient benefit of cellular networking is that it presents an incredibly easy to setup and easy to use communications protocol for the end user. As already mentioned, Wi-Fi networks require a router to connect to the Internet and client devices, then need to subsequently be programmed to connect to the Wi-Fi network. Bluetooth networks require similar steps.

Cellular networks, on the other hand, require the end user to simply install a SIM card in their device, which then configures itself and connects to the available network automatically. If the device is moved to a different location, as long as there is a compatible network, it will hand off and automatically. There is no provisioning, no router setup, no passwords to set and very few connectivity issues for end-users to debug. It simply works.

For IoT applications, this kind of easy-to-use networking is game-changing. Instead of having to hire networking specialists to plan out how many routers are needed to support a certain number of devices, configure them and then provision client devices, the plug-and-play nature of cellular networking allows end users to add IoT connectivity without needing a networking department.

Cellular connectivity is also massively scalable. There is no need to buy and configure additional routers as more devices are added to a network. As long as there is network coverage, scaling up just means adding more devices.

For all its inherent benefits, the cellular connectivity we are familiar with in our smartphones is not ideally suited to most IoT applications. As anyone who has bought a power bank for their smartphone knows, LTE connectivity can drain batteries quickly.

To address these concerns, 3GPP, the standards body in charge of maintaining and advancing LTE, has introduced LTE Cat 1 and LTE-M. These new categories of LTE curb power consumption by reducing bandwidth and protocol complexity. In addition, they improve signal penetration and lower module cost, all while preserving many of the easy-to-use characteristics that make cellular connectivity well suited for the IoT market.

**LTE Cat 1:** This is a simplified cellular protocol which decreases peak speeds to 10Mbps for downlinks and 5Mbps for uplinks. Power consumption is thereby kept in check - with products like the XBee LTE Cat 1 module from Digi drawing just 10 $\mu$ A while in deep

sleep, and a few hundred mA while active (depending on the exact operating conditions). The reduced complexity of the protocol also means lower cost radios. LTE Cat 1 provides enough bandwidth to support video or voice data, but at lower power consumption and hardware costs than higher category levels of LTE. Relevant applications include digital signage, ATMs, video surveillance, and vehicle telematics.

**LTE-M:** Also known as LTE Cat M1, this is an even lower bandwidth protocol which goes further to lower power consumption, protocol complexity and cost. Operating at a channel bandwidth of 1.4MHz, peak download and upload rates are 1Mbps for full duplex or 375kbps for half. These lower speeds, reduced protocol complexity and additional power savings modes help LTE-M achieve lower energy consumption than LTE Cat 1 - the SARA-R4 from u-blox, for example, only needing 100mA to deliver LTE communication. This will enable battery life of up to 10 years to be achieved.

Besides enhanced battery life, LTE-M also provides greater coverage, with up to 21dB of gain relative to legacy LTE devices. This means improved range as well as better indoor penetration for applications in buildings, underground, or in other locations where traditional cellular reception becomes weak. Relevant applications for LTE-M include asset trackers, wearables, sensors, utility meters and monitoring systems. Based on the existing LTE protocol, LTE Cat 1 and LTE-M have the benefit of operating in licensed spectrum, as well as being easy to deploy for network providers. LTE Cat 1 and LTE-M networks are already available across most of North America and are increasingly being deployed here in Europe.

As the IoT grows, it needs to have the right infrastructure to allow it to reach its full potential. While traditional wireless protocols like Wi-Fi and Bluetooth are already familiar to us, they do not work as well at the scale that IoT implementations will expect. The latest versions of the LTE standard from the 3GPP group have introduced new categories of this cellular standard to specifically address IoT use cases. By adjusting bandwidth to match IoT requirements, these LTE categories can achieve very low power consumption and strong signal penetration. Battery life in the order of years is possible, plus devices will have the benefit of long range connectivity and the intrinsic mobility of cellular communication. But most importantly, LTE-based IoT connectivity offers incredible ease of setup and scalability. With no need for routers or network configuration, it will mean that IoT devices are considerably more straightforward to deploy. ■



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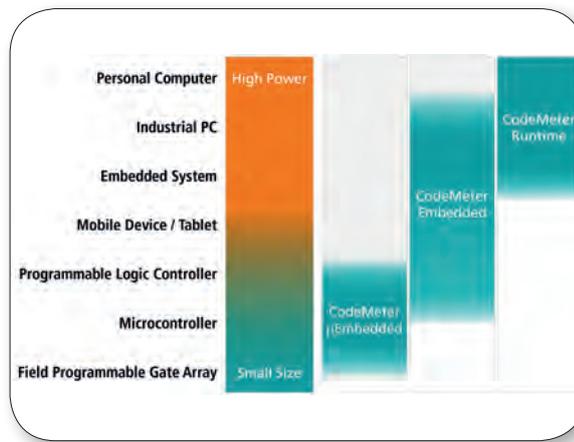


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# Protection and licensing solution from the sensor to the cloud

This article is contributed by Wibu-Systems

*Today's software and devices are increasingly connecting with and speaking to each other. But in a connected world, cybersecurity and protection against tampering are becoming paramount in order to safeguard and actually implement new business models.*



CodeMeter - Scalable protection and licensing

■ Software and firmware used to live in separate worlds, existing in isolation as autonomous entities with fixed and clearly delineated jobs and capabilities. Today's software and devices are increasingly connecting with and speaking to each other. New software and hardware platforms allow functions to be retrofitted or activated at a later time, as smartphones have shown to great effect. This can make development more efficient, reduce the time to market, and enable novel business models, such as pay-per-use concepts. In this new world, cybersecurity and protection against tampering are becoming paramount in order to safeguard and actually implement these new business models with the commercial effectiveness they deserve.

As more and more devices get connected, all sectors of industry stand to benefit from unparalleled efficiency effects. At the same time, the risk of manipulation increases, e.g. by illicit tampering with device configurations. Data incidents and hacker attacks have become a common experience in almost all sectors of industry. Businesses need to shield themselves against this threat with consistent and effective protections that cover every link in the chain, down to the last endpoint. Protecting sensitive data against theft and manipulation is of no less importance. Devices can only be meaningfully protected with solutions

that offer copy, know-how, and integrity safeguards in combination with flexible licensing capabilities. It does not matter whether diagnostics software on PCs or full-blown embedded applications in medical devices are concerned – at the heart, it is all about software and the data generated and used by it. This data can come in many shapes and sizes, from operating parameters to maintenance instructions and from hardware logs to patients' data.

The purposes of protection can also be very varied. The makers of devices want to know that their products are shielded against reverse engineering, tampering with their operating settings, and other forms of sabotage down to the level of the code itself.

In order to protect the know-how invested in software, the executable application needs to be encrypted before it is released into the wild. This can mean the full encryption of the entire application, or selective encryption of individual functions. All users receive the same protected software, but, depending on the licenses and entitlements they acquire when purchasing the product, they will get only the keys to the functions they have paid for. Product managers can define the right types of user rights and licenses, be it single user, network, or time-limited licenses. The Code-

Meter technology made by Wibu-Systems shows how developers can protect and encrypt their work.

The functions of the devices are realized by separately protected functional blocks that are activated by the right licenses and keys – which can be updated at a later point if need be. This simplifies the production process by reducing the number of variants that need to be made, in turn making inventory, ordering, and logistics processes simpler and easier to handle. On top of simply protecting the intellectual property in the device, these new capabilities help bring down the cost of production.

Following Kerckhoffs' principle, the encryption protocols themselves are public knowledge. The only secret piece in the puzzle is the encryption key. These keys need to be kept behind particularly tough safeguards. The optimum protection is offered by hardware key storage with integrated encryption, so-called smart card chips that can withstand even side channel attacks (Differential Power Analysis, DPA).

The keys never need to leave their secure home, and all essential cryptographic operations are conducted on the secure hardware. Alternatively, encrypted license files can be used that



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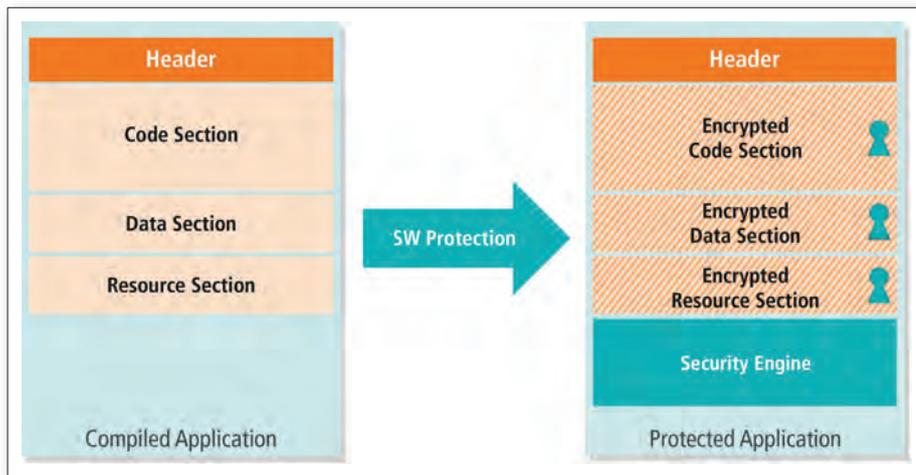


Figure 1.1 Encrypting the entire application

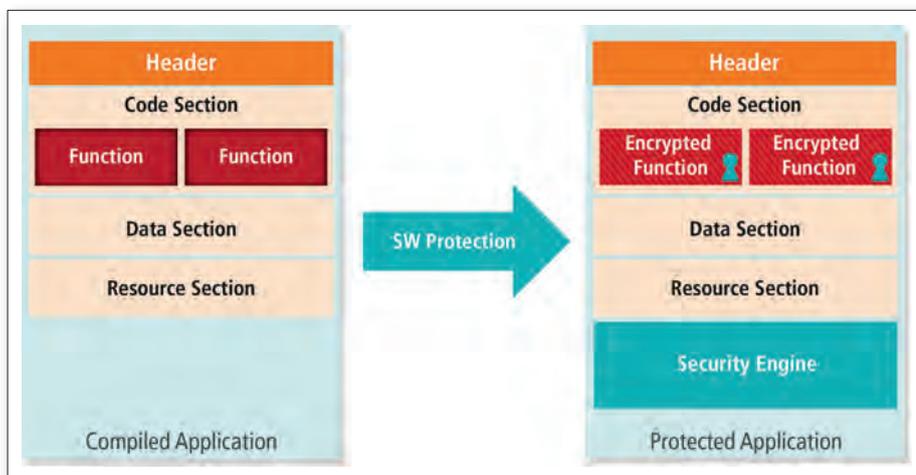


Figure 1.2 Encrypting individual blocks of functions

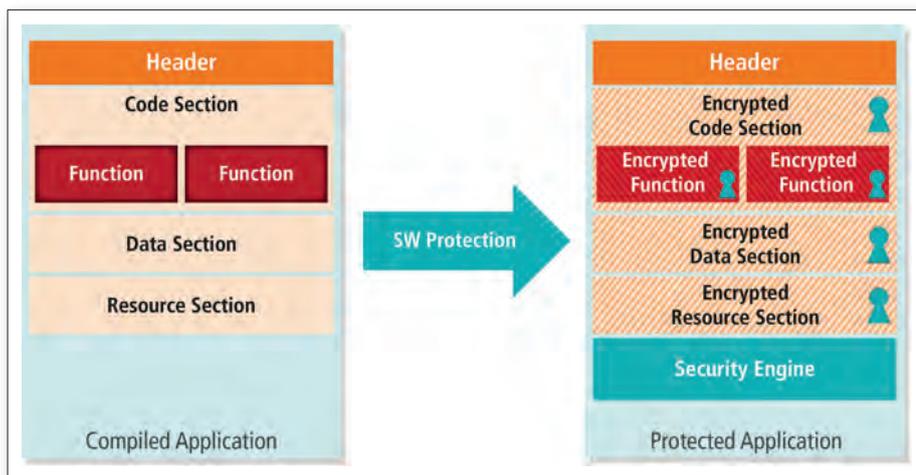


Figure 1.3. Combining 1 and 2

work with a fingerprint of the devices they are used on, such as the serial number, a TPM, or other combinations of uniquely identifiable and non-modifiable hardware properties. An ideal solution is flexible enough to accommodate each platform with a specific custom implementation without compromising on the protection technology, its tools, license

models, and formats. Despite all optimization for specific platforms, the entire solution has to remain consistent, using the same API in all cases and only adjusting the active feature set to match the given application. CodeMeter  $\mu$ Embedded is a CodeMeter variant made in Standard C and designed for portability, with the lower computing power and often very

restricted memory footprint of MCUs in mind. CodeMeter  $\mu$ Embedded is typically packaged with the development platform for each MCU. For instance, developers can find MCUs packaged with the DAVE™ plug-in, the professional development platform for Infineon. This makes it perfectly easy for developers to integrate software protection and licensing capabilities for individual functional blocks. Although CodeMeter  $\mu$ Embedded has been optimized for the special case of MCUs, it includes the same tools and license distribution processes as e.g. CodeMeter Embedded and CodeMeter Runtime. The advantage is that license definitions can be used across CodeMeter variants. The programming interface represents a subset of CodeMeter Embedded, optimized for MCUs, but coming with the identical API and a specially selected feature set that matches the use case.

CodeMeter Embedded is more versatile than CodeMeter  $\mu$ Embedded as another CodeMeter flavor realized in Standard C and designed specifically for the requirements of embedded systems. CodeMeter Embedded is highly modular and portable; it is integrated in a range of modern development platforms of several makers, including the VxWorks Workbench by Wind River and CODESYS by 3S-Smart Software Solutions.

CodeMeter Embedded is also used in QNX and Linux systems on various microprocessor architectures like ARM, x86, ia64, and PPC. With its modular and portable architecture, there are also several other custom ports of the solution for additional operating systems, ranging from FreeRTOS to bare metal implementations. CodeMeter Embedded again comes with the same tools and license distribution systems as the other variants. The same license definitions can be used with all of them without requiring any adjustments. The programming interface is a super-set of CodeMeter  $\mu$ Embedded and a subset of the CodeMeter Runtime API, optimized for embedded devices.

CodeMeter Runtime is the premium product for all off-the-shelf operating systems, including macOS, Windows, and Linux and standard x86 hardware. CodeMeter Runtime is a super-set of CodeMeter  $\mu$ Embedded and CodeMeter Embedded, offers top ease-of-use, and is delivered only in binary format for use with standard hardware and standard operating systems. Embedded devices that can accommodate this with their hardware can use either CodeMeter Embedded or CodeMeter Runtime. Again, the system offers the same tools and license distribution processes, giving device makers a great choice. As a premium product, CodeMeter Runtime comes with the full set of features



### CodeMeter Protection Suite

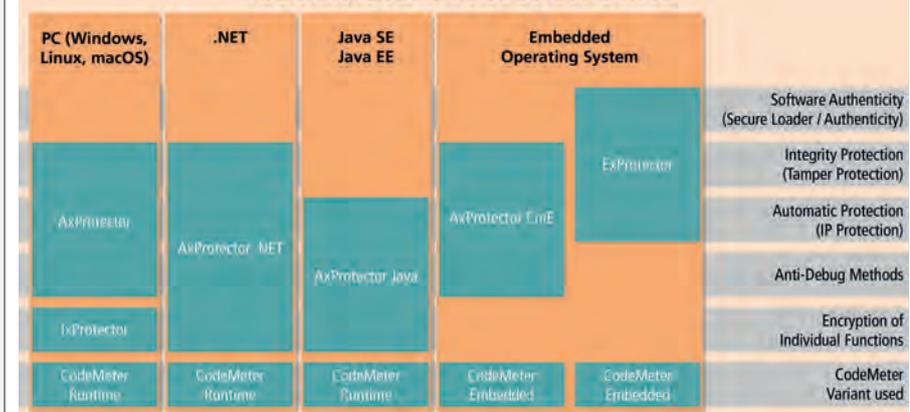


Figure 2. One consistent toolset for all platforms

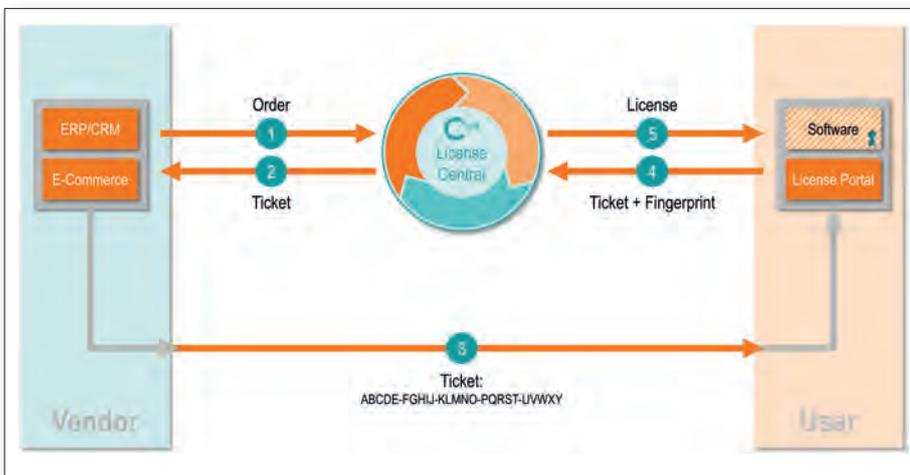


Figure 3. Centralized license management with CodeMeter License Central in the cloud

of all APIs. The license management system CodeMeter License Central makes easy work of the creation, management, and distribution of entitlements and licenses. It supports product management with the definition of products and licenses. Product managers can use the established ERP or CRM systems to create orders; an automated interface then initiates the creation of the right licenses in the license management system. Users can, for instance, activate add-on features in online appstore-like portals; this creates a completely new revenue stream for the device makers. Pay-per-use and subscription models are similarly easy to introduce.

As part of the German national reference project for IT security in Industrie 4.0 (IUNO prototype technology data that employs all of the elements outlined here has been developed. To give this dry-sounding topic a more appealing presence, designed a special cocktail mixer: the cocktail recipes with their exact ingredient lists represent the technology data protected from end-to-end. The system can be transferred to other use cases and is available free of charge at <https://github.com/IUNO-TDM>.

Whenever the security of devices is concerned, there are two sides and two special sets of requirements to be considered. The makers of the devices want to protect their work from reverse engineering and manipulation, keep their know-how secret, and put new business models or logistical advantages to use. The operators or users, on the other hand, care most about the integrity of the devices and the data stored on them or used with them. In order to reconcile these two sides, the most promising choice is a protection concept that can fulfill both types of requirements.

Ideally, the chosen concept comes with a fully scalable and seamless technology and toolkit included. Since the licenses or containers are the same whether they be used with CodeMeter Runtime, CodeMeter Embedded, or CodeMeter µEmbedded, CodeMeter is a neatly uniform solution perfectly designed for integration into existing business processes. In a departure from the frustrating patchwork often required for tailoring other solutions to the given circumstances, CodeMeter is simply ready to go to work. ■

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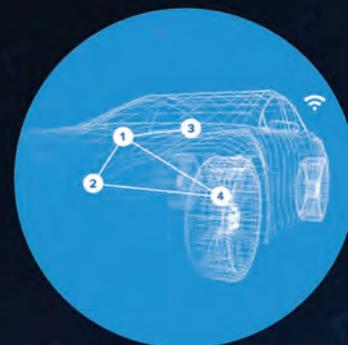
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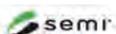
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# New hall layout for electronica



Fairgrounds map of electronica

electronica is continuing to grow and, for the first time, will take up 17 halls at the Messe München exhibition grounds. Angela Marten, Exhibition Director for the trade fair, explains the new layout of the exhibition areas.

## What considerations led to the new hall layout?

When we looked at the hall plan from 2016, we quickly realized that there had only been two entrances—West and East. As a result, the flow of visitors moved from west to east or vice versa. This had a considerable influence on the positioning of the segments, which were arranged according to the direction visitors were walking in. By integrating halls C2 and C3, as well as the newly built halls C5 and C6, we now also have the North, North West and North East entrances, allowing access to the exhibition grounds from all sides. At the same time, a north-south arrangement of the segments in the future will ensure an even spread of visitors across the entire grounds. In this new arrangement of segments, semiconductors, the core of electronica, will move to the center.

## What does that actually look like? In which halls will visitors then find semiconductors and the other segments?

With the new layout, semiconductors will be in halls A4, B4, C4 and the adjacent halls B5, C5 and C3. As a co-located event, SEMICON

Europa will take up part of hall A4. The automotive and embedded systems segments and, directly adjacent to them, displays and sensors will also move closer to the center. Electromechanics, system periphery, relays and casing technology are another segment that takes up more than two halls, which is why we have chosen a north to south arrangement on the grounds for this as well. In 2018, exhibitors from these areas will be in halls A2, B2 and C2 at electronica. Circuit carriers and EMS will move to halls A1 and B1, and passive components to A6 and B6. As a result, the remaining areas will move too.

## What will happen to the numerous forums that were integrated into the halls?

The forums will move as well and remain in the segments they were in before. The electronica automotive forum, for example, will move to hall B4, and the electronica embedded forum to B5.

## The new hall structure will not just affect exhibitors: how will trade visitors find their way around the trade fair?

That is correct. In 2018, electronica will be bigger than ever before: The individual segments are growing and more space is available for the supporting program. In spite of the size of the trade fair, the segments are easy to find thanks to the clear hall layout. To provide additional guidance for visitors, the segments

are color-coded, both on the hall plan and on the grounds, e.g. with appropriately colored carpets. When positioning the segments on the grounds, it was also important to us to not only get visitors to their desired area as quickly as possible, but to also inspire them. We therefore positioned the segments in such a way that neighboring topics are next to each other wherever possible. As a result, electronica offers a unique experience: the entire world of electronics in one place.



Angela Marten: In 2018, electronica will be bigger than ever before

# electronica 2018: connecting everything - smart, safe, and secure

*Smart, reliable, and secure networking at all levels is the focus for this year's edition of the world's leading trade fair and conference for electronics, to be held on November 13–16, 2018, in Munich, Germany.*



■ In addition to 17 halls, 13 forums, and 4 conferences, there will be a wide range of innovations on show at electronica. Exhibitors and visitors will therefore have extensive opportunities for making contacts and networking. Over 3000 companies from more than 50 countries will be present to provide a glimpse of the future with their products and solutions.

## More space and new hall layout

electronica 2018 will be larger than the previous event, with more than 180,000 square meters of space spread across four halls. Visitors to the trade fair will benefit from four additional halls, which means there will now be a new hall layout. Five entrances, color-coding in the halls, expressways, and the visitor shuttle together with indoor navigation via the electronica app will aid navigation.

## Networking, inspiration, and experience

There will be four conferences and 13 forums at the trade fair to facilitate networking and

knowledge exchange. Digital support for further networking between exhibitors and visitors, as well as among visitors, will also be provided in the form of the classic electronica Matchmaking and the new electronica Connect tool. There will also be even more opportunities for networking, inspiration, and experience thanks to the new formats, electronica Experience and North by North East (NxNE).

## electronica Experience and IMPACT

There will also be even more opportunities for networking, inspiration, and experience thanks to the new formats, electronica Experience and IMPACT—Design for a Cause. The new hall C6 will give visitors the opportunity to get to grips with electronics, as well as showcasing career opportunities within the electronics branch. electronica Experience will feature live demos, applications, and presentations, as well as a job market, to facilitate networking between exhibitors, students, and school pupils. IMPACT—Design for a Cause

will also be taking place as part of electronica Experience. The event, which will feature engineering associations Hackster and Element14 among others, will look at the future influence of electronics on communication, the environment and medicine in pitches, presentations, and discussion panels.

## Networking Visionary to Open electronica 2018

In his works “The End of Work,” “The Third Industrial Revolution” and “The Zero Marginal Cost Society,” US social theorist Jeremy Rifkin not only identified current developments in the economy and society at an early stage, he also touched on the global networking of industrial and social processes in the “Supergrid.” Jeremy Rifkin will open electronica with a keynote speech on the evening of Monday, November 12, before opening the new electronica Experience with a talk on Tuesday, November 13. ■



# electronica 2018

# Rugged COM Express - a standard for harsh environments

By Maximilian Kolpak, MEN Mikro Elektronik

*Modular designs based on VITA's Rugged COM Express standard are the first choice for the latest processor technology in the most rugged of applications.*



*Rugged COM Express design based on AMD Ryzen Embedded processor*

■ All embedded electronics designs are subject to hard limiting factors depending on the required computing power and the area of application. One such factor is the maximum permissible dissipation. New CPU series, such as the AMD Ryzen Embedded V1000 series or the 8th generation of Intel Core processors, have a TDP (Thermal Design Power) between 12 and 56 watts. If developers want to exploit their full potential on a COM Express module, they are above a critical TDP limit. Under those circumstances, conventional COM Express designs can only be realized with active cooling concepts. Many developers are therefore under the conception that fanless designs are only possible up to a maximum of 25 watts. But the embedded markets also require rugged systems with fanless operation above this limit. Rugged COM Express has been designed to meet these needs and offers, besides better heat dissipation, numerous advantages for operation in harsh environments. The foundation for this is standardization.

COMs offer many advantages. They combine the ready availability of CPU modules with flexibility of full custom designs. Buying in the complex parts of the circuit technology (CPU, memory, core voltage regulator) significantly lowers development costs (by about 50%). The exchangeability of COMs provides

easy retrofit and scaling options even across different processor architectures and vendors. Safety-critical applications with long product development and lifecycles and high certification requirements benefit from easy upgradability with new standardized modules. When replacing the computer unit of a certified end system, requalification in modular systems is largely limited to the part of the system that is related to the new module.

The leading standard among Computer-on-Modules is COM Express. Specified by the PCI Industrial Computer Manufacturers Group, PICMG for short, it is hard to imagine the embedded world without it – from ultra-compact low-power designs based on single/dual or quad core ARM or Intel Atom CPUs to high-performance computers in basic format based on server CPUs with 16 or more cores. With the large number of manufacturers of COMs, carrier boards and development kits, COM Express has the most comprehensive ecosystem in the Computer-on-Module world. The wide distribution ensures a balanced price/performance ratio for products and services as well as the long-term availability of the standard, as it is supported by many companies. Some applications demand a highly rugged computing system. Since the COM Express specification does not consider harmful influences, such as mechanical shock,

strong vibration, rapid temperature fluctuations, moisture or electromagnetic radiation, it was expanded to include the Rugged COM Express specification (VITA 59). On the basis of VITA 59 it is possible to realize high-performance Rugged COM Express (RCE) modules with completely fanless cooling at a TDP of 55 watts.

Based on the COM Express standard, RCE modules provide everything that COM Express modules offer. The VITA 59 specification extends the printed circuit board (PCB) of the modules with additional side wings for embedding in a standardized aluminum frame (CCA) to establish optimal thermal connection. This precisely specified frame ensures that the hot spots (CPU, memory and voltage transformers) are cooled. In addition, heat is dissipated via the PCB towards the frame. From there, any waste heat can be transported by conduction directly to the surrounding housing to be then dissipated by convection to the environment via cooling fins.

These measures lower the assembly's thermal resistance to the housing. Compared to a standard COM Express heat sink, this can reduce temperature rises of electronic components by up to 5°C. The lower thermal load on the components leads to fewer failures and main-

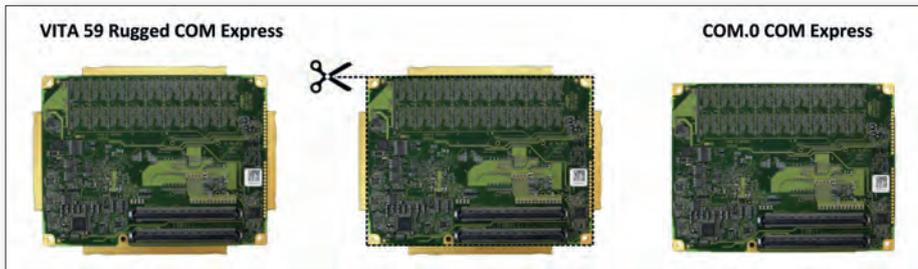


Figure 1. From Rugged COM Express to standard COM Express. If the wings on the four outer edges are omitted, the two standards have the same form factor.

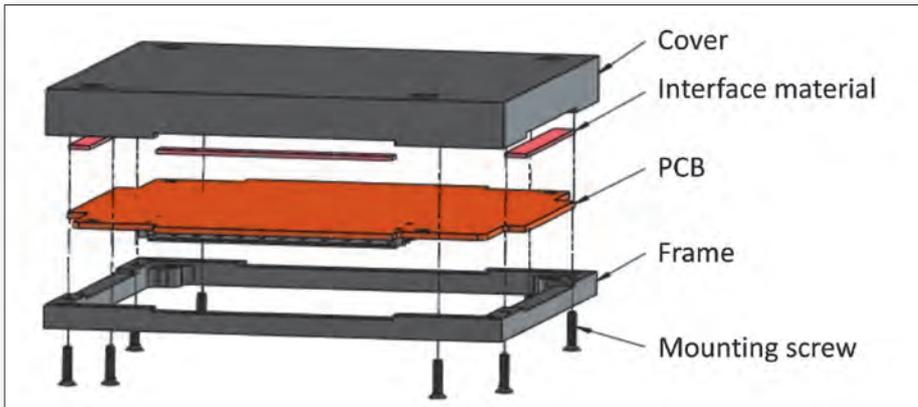


Figure 2. Mechanical design of VITA 59-compliant Rugged COM Express modules

tenance calls, thereby improving the reliability of RCE modules over traditional COM Express designs. Since the entire concept has been standardized by VITA, RCEs are fully manufacturer-independent as well as future-proof, and it is possible to change a module together with its standardized aluminum frame at any time.

RCE modules are more robust in other respects, too. The aluminum housing means they are well shielded and highly immune to electromagnetic radiation. Additionally, the modules come with a protective varnish as standard. This conformal coating offers effective protection against environmental influences such as dust, moisture or even chemicals. The VITA 59 standard has its origins in the railway sector, which means that the cooling concept also fulfills the requirements of EN 50155. Here, one of the biggest challenges is to cope with the sudden high temperature fluctuations or thermal shocks that occur when a train enters a cool tunnel in a hot and humid climate and the cooling air temperature changes abruptly by up to 20°C. With conventional COMs, the thermal stress leads to failures due to cracked solder joints in the medium term. So-called underfilling is therefore applied to bond critical components to the circuit board and increase robustness against sudden temperature changes. In addition, firmly screwing the frame to the carrier board ensures particularly high resistance to mechanical shocks and vibration. Amplitudes of up to 5G for vibration and even up to 50G

for shocks are realistic, making the modules even suitable for use in off-road vehicles.

All these features make Rugged COM Express the ideal standard for ultra-reliable high-performance computers in conjunction with adverse environmental conditions, such as those found in wind farms and electrical distribution stations or in road, commercial and rail vehicle applications. By using RCE modules, the manufacturers of medical devices benefit from high computing power in completely enclosed designs, which are hygienic and easy to disinfect. These requirements are similar to those found in the food and pharmaceutical industries, because if required fanless systems can even be washed down with a high pressure cleaner. ■

## Product News

### ■ EKF: PCI Express non volatile SRAM on a 2280 size M.2 module

EKF presents the M01-NVSRAM, a non volatile static RAM, organized as 1024k x 32bit, for PCI Express direct access (memory-mapped read/write to a linear address space, aka MMIO). Other than a normal SSD, the M01-NVSRAM is not a block device, and does not require a file system or drivers for data storage. The M01-NVSRAM supports memory-mapped I/O in a BYTE, WORD and DWORD mode instead.

[News ID 6471](#)

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**ESM-APLC** → COM Express  
Intel® Celeron® N3350/Pentium® N4200-Processor Type6 COMe Compact Module

- One SODIMM up to 8GB DDR3L 1866 SDRAM, 2-CH LVDS, Display, HDMI, VGA, eDP Option, GbE, 2 SATA III, 8 USB 2.0, 4 USB 3.0, 8-bit GPIO, HD Audio, +9~+19V Wide Range Power Input, Type 6 Rev 2.1 Pin-out, TPM2.0 (Optional), eMMC 5.0 up to 64GB (optional)

**EMX-SKLG** → Thin Mini ITX  
6th/7th Gen Intel® Core™ SoC i7/i5/i3 & Celeron Processor Thin Mini ITX Motherboard

- Two 260-pin DDR4 SODIMM Supports Up to 32GB, 1 VGA, 1 HDMI, 2-CH LVDS, 2 GbE, 4 USB 3.0, 4 USB 2.0, 2 RS-232/422/485, 4 RS-232, 16-bit GPIO, 1 M.2 Key A, 1 Mini-Pcie, 1 x PCIe x4 Gold Finger, Onboard TPM 2.0, DC in +12~24V

**ERX-C236KP** → Micro ATX  
Intel® 6/7th Generation Core™ Processor Micro ATX Motherboard

- Four 288-pin DDR4 2400MHz DIMM up to 64GB, 1 VGA, 2 HDMI 1.4, 5 USB 2.0, 8 USB 3.0, 1 Full size Mini PCIe with SIM card slot 1 PCI-e x16, 1 PCI-e x4, 2 PCI, 2 RS232/422/485, 8 RS232 by 2 x 40pin pin header, RAID 0, 1, 5, 10; TPM 2.0, ATX Power

**EPC-SKLU** → Embedded System  
6th Generation Intel® Core™/Celeron® Processor Fanless Tiny System

- 6th Generation Intel® Core™/Celeron® Processor, One SODIMM Up to 16GB DDR4 2133MHz, Rich I/O, 2 x SATA III, 1 Mini PCIe, 1 M.2, 2 COM, 2 USB 2.0, 4 USB 3.0, 2 HDMI, 2 LAN, TPM 2.0/1.2 (Factory Option)

**SPC-1533** → Touch Panel PC  
15" Fanless Stainless Steel Chassis Touch Panel PC with Full IP-65

- Intel® Apollo Lake SoC with Integrated Chipset, Projective Capacitive Touch screen Full Flat Design, Rich I/O, 2 x USB, 1 x COM (DB9), 1 x LAN, Full System IP65, IPX9K, Optional NFC/WiFi/ Auto Dimming/High Brightness/Wide Temp.

**VNS-10W01** → Venus Tablet  
10.1" Venus Tablet

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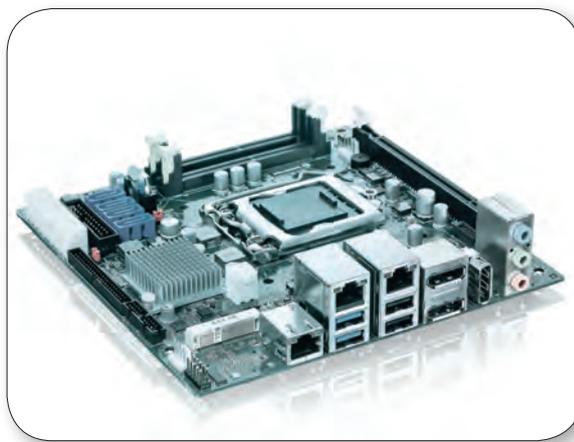
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# Motherboards for safe operation in harsh industrial environments

By Peter Müller, Kontron

*In harsh industrial environments, can high quality motherboards from brand manufacturers do the job as dependably as purpose-designed embedded motherboards? What is really needed for operation in these applications?*



*Embedded motherboard mITX-KBL-S-C236 with a socketed 7th generation Intel Core processor*

■ Standard PC technology based on 32- and 64-bit x86 processors has been used for computing-intensive industrial applications for decades due to its favorable price-performance ratio. The computer boards (“motherboards”) can be installed in so-called industrial PCs or directly in the respective devices. But with the complexity of many industrial applications and high levels of interdependence between devices, it is essential to ensure highest availability and reliability. Even small errors and failures can cause large and expensive damage. Thus, stringent quality standards are a prerequisite. In addition, customers demand an extended lifecycle management with long-term support of ten years or more.

A distinction must be made between a general high-quality standard on the one hand and the special “embedded” challenges that arise from the harsh and varying conditions found in industrial environments. The former can be achieved through sophisticated design and production processes and the use of high quality parts and components.

Even so, a motherboard is not the same as an embedded motherboard. Embedded systems in harsh industrial environments and elsewhere have their own set of rules. They must be suitable for permanent use in criti-

cal environments. Indispensable for use in industrial environments is the ability to operate in extended temperature ranges of up to 60°C, and a high degree of robustness, which means insensitivity to moisture, dust, shock and vibration.

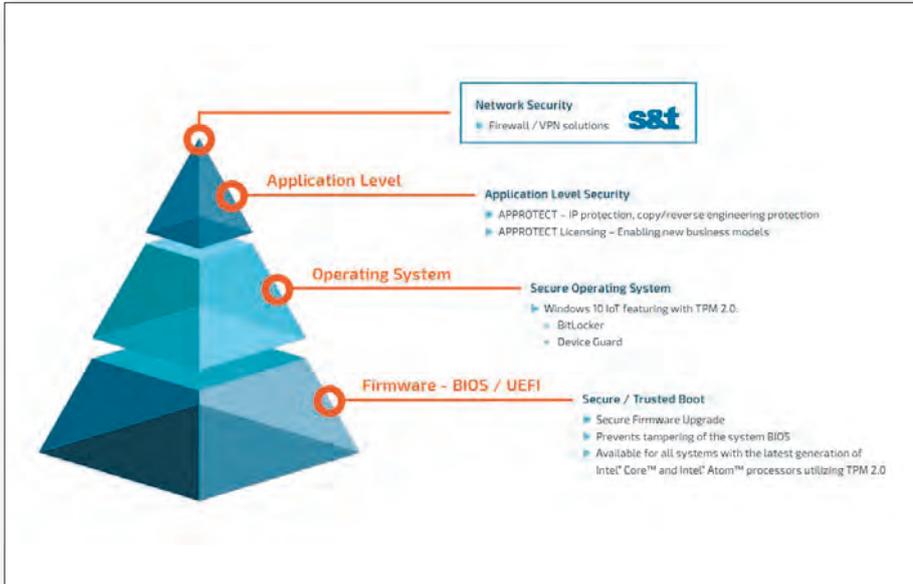
While existing motherboard designs can be “upgraded” relatively easily by additional measures such as varnish and coating or more elaborate housings, the protective measures for insensitivity to shock and vibration would have to have been established at the initial design phase. Finally, the quality of support over the entire operating period must not be taken for granted.

Depending on the specific application, embedded motherboards also require special features such as safe operation within extended temperature ranges, RTC (Real Time Clock), additional serial interfaces/GPIOs, and optional remote maintenance connections. There are often additional security features necessary such as Trusted Platform Module (TPM). And if special interfaces are to be implemented on the motherboard or via a plugin card, then software and integration know-how of the manufacturer is a further requirement. In general, today’s embedded motherboards are widely scalable. On the one hand from Intel Atom processors

to Xeon processors in terms of computing power and energy consumption, and on the other from Mini-ITX to ATX when it comes to size. The actual format is usually determined by the type and number of expansion options required on the board. Derived from the original AT and later the ATX form factor, today the usual formats for embedded motherboards are ATX (305 x 244 mm<sup>2</sup>), Flex-ATX (299 x 191mm<sup>2</sup>) and Mini-ITX (170 x 170 mm).

Common to all are the standardized ATX power connector, and compatibility of the mounting or mounting holes. This also applies to the formerly very popular micro-ATX form factor, which however has nowadays largely been replaced by the smaller Flex-ATX format.

Although trends favor smaller systems and thus clearly tend towards Mini-ITX as “the” standard, the two larger formats still serve a useful purpose, especially when it comes to replacing existing legacy systems: There are still four slots for conventional memory available instead of the mini-ITX motherboards’ two slots. Also, the number of PCIe or even classic, parallel PCI slots is significantly higher with ATX (5 to 6) or Flex-ATX (2 to 3) than with Mini-ITX boards. At best, these provide space for a single, 4-lane+ capable “big” PCIe



Kontron Security Pyramid: 3 levels of security from trusted boot to secure application execution.

slot, if at all. However, the need for such slots - for example, to connect a discrete graphics card - has greatly decreased due to the power of current integrated graphics systems. For most other requirements, space-saving X1 and X4 PCIe connectors are sufficient. They fit the smaller Pico-ITX boards in 2.5 “(100 x 72 mm<sup>2</sup>) format.

Embedded motherboards are a cost-effective and efficient solution for many types of industrial computing applications and can rely on X86 technologies where there are no overly demanding communication interface requirements. For harsh industrial environments, however, even good quality standard motherboard solutions from IT manufacturers are usually unsuitable due to their simpler

design and lack of robustness. Furthermore, the typical business models of the IT industry are a bad fit for the consulting- and support-intensive business of the system integrators and manufacturers found in mechanical engineering. IT manufacturers also often lack the necessary appreciation for the special requirements motherboards face in the harsh environment of industrial production.

A manufacturer with proven experience in the specific needs of the manufacturing industry can greatly reduce project risk. The extensive experience makes products meet market requirements and challenges from the get-go, and improves the consulting and support qualities enormously, providing an invaluable advantage. ■

## Product News

### ■ IBASE: fanless motion control system for smart machine automation

IBASE Technology announce the MAI602-M4D80 motion control system that can be used in various factory production applications such as automated optical inspection, semiconductor wafer handling, packaging and material handling systems. The MAI602-M4D80 is powered by 7th/6th Gen Intel Core i7/i5/i3 desktop processors and has a 4-axis motion control PCIe card that meets the performance and positioning accuracy requirements of high-performance servo/step motors. For use in visual inspection applications, the motion control card has a camera integrated with a position comparison trigger.

[News ID 6488](#)

### ■ Axiomtek: smart display module fits the thinnest integrated displays

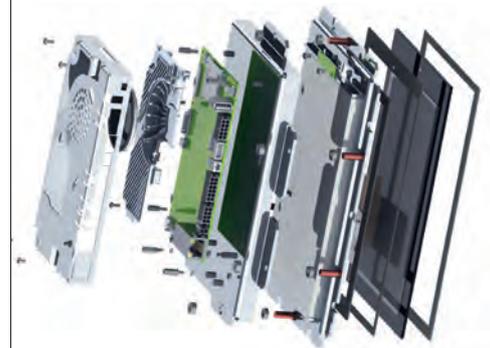
Axiomtek is proud to introduce the SDM300S, a signage computer module following the newest Intel Smart Display Module Small (Intel SDM-S) architecture. The Axiomtek's SDM300S is powered by the onboard Intel Pentium processor N4200 and Celeron processor N3350 with the Intel HD Graphics 505 or 500 chipset. The sleekest all-in-one display module measures only 100 x 60 mm (roughly the size of a credit card), which makes for a thinner display. Whether externally plugged in to a display or built in, the high-performance smart display module is optimized for digital signage, interactive kiosks, point of sale and video walls.

[News ID 6468](#)



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■ **Cincoze launches P1101 Panel PC Series with Intel Atom / Pentium Processor**

Cincoze introduce its latest fanless P1101 panel PC series. The fanless panel PC is powered by Intel Apollo Lake processors including Intel Atom x7-E3950 and Intel Pentium N4200. Compared to the previous generation, Intel Apollo Lake processor increases 1.7 times more computing power and supports faster memory speeds. Integrated with Gen9 Intel HD Graphics 505, the processor can perform 3D rendering, media compositing, and video encoding.

[News ID 6502](#)

■ **AAEON: cost-effective SBC for factory automation and IoT gateway systems**

AAEON releases the PICO-APL4, a compact and cost-effective SBC. The PICO-APL4 features onboard memory and storage along with dual Gigabit Ethernet support, and is ideally suited for factory automation and IoT gateway systems. AAEON's latest PICO form factor board is powered by an Intel Atom, Pentium N4200, or Celeron N3350 processor. By fitting the controller with up to 4GB of onboard DDR3L memory and up to 64GB of onboard eMMC storage, AAEON has not only made the board more resistant to the shocks and vibrations regularly experienced in industrial settings, but it's also cut application development times as customers don't need to test the compatibility of external memory and storage.

[News ID 6461](#)

■ **Portwell: extremely flexible industrial monitors in 12 variants**

MiTwel, a member of the Portwell group, announces the launch of a Series of Industrial Monitors, the MD series, a highly flexible and application focused range of industrial grade monitors for the industrial automation and transportation market. The Mitwell MD series is available in 12 variants with six different display sizes, formats and resolutions.

[News ID 6473](#)

■ **Syslogic: EN50155 certified embedded systems for the railway industry**

Syslogic will showcase its portfolio of EN50155 certified railway computers at InnoTrans. The robust railway computers are used in rolling stock applications as well as for tunnel and route monitoring. Common to all railway computers is their durability, robustness and long-lasting availability. Syslogic offers a complete range of industrial computers and HMI systems specifically designed and manufactured for railway applications. Common to all rolling stock computers is the approval to use them at temperatures ranging from -40 to + 85 °C at the component level.

[News ID 6472](#)

■ **ARBOR: digital signage player with ultra-low profile enclosure**

ARBOR present its ELIT-1050 4K digital signage player supporting outstanding visual experiences for commercial environments. Based on Intel Braswell Celeron N3060 CPU, the ELIT-1050 is designed to deliver low power consumption, but with an improved Turbo clock rate of 2.48 GHZ which can be held for longer periods and therefore leading to faster performance compared to its predecessor architecture.

[News ID 6455](#)

■ **Acromag: quad-port GbE XMC modules in RJ45, SFP, and rear I/O versions**

Acromag's new XMC610 Series modules provide four independent gigabit Ethernet interface ports when used on VME, VPX, PCIe or other embedded computing carrier boards. The industry-leading Intel I350 Ethernet Controller interfaces with the PCIe bus via four high-speed serial lanes on the XMC P15 connector. Three models are available. The XMC611 model offers four RJ45 connectors on the front panel for copper cabling while the XMC612 substitutes four SFP connectors to additionally support fiber optic media.

[News ID 6393](#)

■ **Axiomtek: fanless 3.5" embedded board with optional ZIO connector for additional ports**

Axiomtek announce the CAPA313, a fanless 3.5-inch embedded motherboard powered by the Intel Pentium processor N4200 or Intel Celeron processor N3350. This 3.5" embedded board was designed for operational stability in harsh environments with a wide operating temperature range from -20°C to +70°C. It offers a wide range DC input of 12V to 24 for various industrial environments.

[News ID 6417](#)

■ **Vecow: 8th gen Intel Coffee Lake expandable fanless embedded workstation**

Vecow launches ECX-1400/1300 Series workstation-grade Intel Coffee Lake expandable fanless Embedded System. Powered by workstation-grade 6-core 8th generation Intel Xeon/Core i7/i5/i3 processor (Coffee Lake-S) with workstation-grade Intel C246 chipset, advanced Intel UHD Graphics P630/630 supporting DirectX 12 API, onboard VGA, DVI-D and DisplayPort interfaces supporting up to ultra HD 4K resolution, possessing an extensive interfaces like 10GigE (10Gbps), USB 3.1 (up to 10Gbps), PCIe 3.0 (8GT/s), SATA III (6Gbps), USB 3.0 (5Gbps), PoE (1Gbps) LAN and multiple wireless connections delivers seamless real-time high-speed data transfer capabilities.

[News ID 6452](#)

■ **Concurrent expands product capabilities with LynxSecure Separation Kernel Hypervisor**

Concurrent Technologies has partnered with Lynx Software Technologies to provide solutions for applications requiring a secure virtualized environment. The LynxSecure Separation Kernel Hypervisor enables simultaneous operation of general purpose and real-time operating systems whilst meeting the security needs of the US Department of Defense.

[News ID 6416](#)

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■ **Advantech upgrades industrial motherboards with 8th gen Intel Core processors**

Advantech has upgraded a wide range of its platforms, including industrial ATX motherboards, slot single-board computers, modular IPCs, industrial server boards, and transportation platforms have been fitted with 8th generation Intel Core i/Xeon E Family processors.

[News ID 6435](#)

■ **Avalue: thin Mini ITX with 6th Gen Intel Core SoC i7/i5/i3 & Celeron**

Avalue Technology is unveiling EMX-SKLGP, a thin Mini ITX board with 6th Gen Intel Core i3/i5/i7 and Celeron SoC processor, the new range covers a full spectrum of the Intel processor from Core i7 to Celeron, which is “up to 10% faster” and offering graphics that are “up to 34% faster” than the previous generation. EMX-SKLGP not only takes its advantage of the low-power TDPs which are kept within the range from a minimum of 7.5W up to a maximum of 15W, it offers three independent display, except VGA and HDMI, 2 dual-channel LVDS by 2 Chrontel CH7511 in the resolution of 1920\*1080, support customers’ demand in gaming, POS, and kiosk markets.

[News ID 6421](#)

■ **ARBOR upgrades LYNC-712 and LYNC-715 IPPCs with Apollo Lake processor**

ARBOR announces the availability of the Intel Apollo Lake Processor for its fanless Industrial Panel PCs. The LYNC-712 and LYNC-715 have been upgraded to Intel Pentium N4200 Quad-Core CPU which is based on Intel’s 14 nm process technology. The upgraded ultra slim Panel PCs are more suitable for process monitoring and interactive applications.

[News ID 6413](#)

■ **ADLINK: smart gateway selected for Michelin-SoftBank tire control system**

ADLINK announced that its intelligent, industrial gateway has been selected for the Nihon Michelin-Softbank IoT tire control system. The first launch of an IoT tire monitoring system in Japan by a tire maker, the Michelin Tire Pressure Monitoring System (TPMS) Cloud Service provides improved safety and efficiency, as well as cost savings benefits, for industries such as fleet management and construction.

[News ID 6377](#)

■ **EKF: long life, high airflow board mount fan unit**

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pactPCI Serial peripheral card. Suitable for demanding applications, the SRF-FAN can be inserted into the adjacent backplane slot e.g. of a CPU card or GPU board, in order to improve the overall heat dissipation.

[News ID 6405](#)

■ **IBASE: extended temperature SBCs powered by NXP i.MX 6Dual Cortex-A9 processor**

IBASE Technology announce two SBCs, both powered by an NXP i.MX 6Dual Cortex-A9 1.0GHz high performance processor. The IBR115 2.5-inch SBC and the IBR117 3.5-inch SBC are designed for use in applications in the automation, smart building, transportation, and medical markets.

[News ID 6404](#)

■ **Eurotech joins Association of Information Technology for Public Transport**

Eurotech joins the association of Information Technology for Public Transport, ITxPT. ITxPT’s mission is to implement a European working standard for plug-and-play IT systems and components intended for public transport. Eurotech has a long history of being at the forefront of innovative building blocks for integrated solutions for the public transport sector.

[News ID 6395](#)

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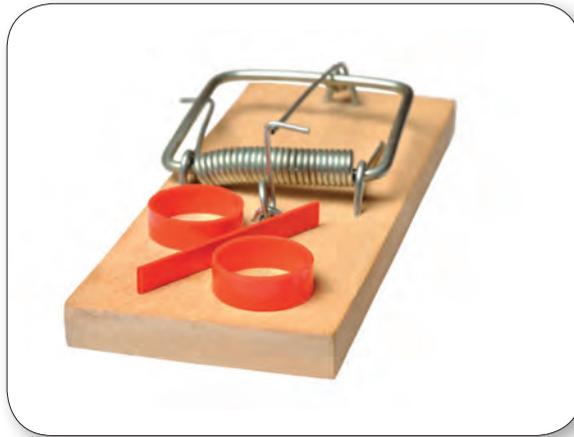
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# The two big traps of code coverage

By Arthur Hicken, Parasoft

*Code coverage is important, and improving coverage is a worthy goal. But simply chasing the percentage is not nearly so valuable as writing stable, maintainable, meaningful tests.*



■ Measurement of code coverage is one of those things that always catches my attention. On the one hand, I often find that organizations do not necessarily know how much code they are covering during testing – which is really surprising! At the other end of the coverage spectrum, there are organizations for whom the number is so important that the quality and efficacy of the tests has become mostly irrelevant. They mindlessly chase the 100% dragon and believe that if they have that number the software is good, or even the best that it can be. This is at least as dangerous as not knowing what you have tested, in fact perhaps more so since it can give you a false sense of security.

Code coverage can be a good and interesting number to assess your software quality, but it is important to remember that it is a means, rather than an end. We do not want coverage for coverage's sake, we want coverage because it is supposed to indicate that we have done a good job testing the software. If the tests themselves are not meaningful, then having more of them certainly does not indicate better software. The important goal is to make sure every piece of code is tested, not just executed. Failing enough time and money to fully test everything, at least make sure that everything important is tested. What this means is that while low coverage means we are probably not testing enough, high coverage by itself does not necessarily correlate to high quality – the picture is more complicated than that.

Obviously, having a happy medium where you have “enough” coverage to be comfortable about releasing the software with a good, stable, maintainable test suite that has “just enough tests” would be perfect. But still, these coverage traps are common.

The first trap is the “we don't know our coverage” trap. This seems unreasonable to me – coverage tools are cheap and plentiful. A friend of mine suggests that organizations know their coverage number is not good, so developers and testers are loath to expose the poor coverage to management. I would hope this is not the usual case.

One real issue that teams encounter when trying to measure coverage is that the system is too complicated. When you build an application out of pieces on top of pieces on top of pieces, just knowing where to put the coverage counters can be a daunting task. I would suggest that if it is actually difficult to measure the coverage in your application, you should think twice about the architecture.

A second way to fall into this trap happens with organizations that may have a lot of testing, but no real coverage number because they have not found a proper way to aggregate the numbers from different test runs. If you are doing manual testing, functional testing, unit testing, and end-to-end testing, you cannot simply add the numbers up. Even if they are each achieving 25% coverage it is unlikely that

it is 100% when combined. In fact, it is more likely to be closer to the 25% than to the 100% when you look into it.

As it turns out, there is in fact a way to measure and add coverage together in a meaningful fashion. At Parasoft, we leverage the vast amount of granular data captured by our reports and analytics tool, Parasoft DTP, which we can use in this context to provide a comprehensive, aggregated view of code coverage. Our application monitors are able to gather coverage data from the application directly while it is being tested and then send that information to Parasoft DTP, which aggregates coverage data across all testing practices, as well as across test teams and test runs. If that sounds like a pretty significant amount of information, you are right! DTP provides an interactive dashboard to help you navigate this data and make decisions about where to focus testing efforts.

If multiple tests have covered the same code, it will not be overcounted, while untested parts of the code are quick and easy to see. This shows you which parts of the application have been well tested and which ones have not. So, no more excuses for not measuring coverage. This leads us to the next trap – the “coverage is everything” perspective. Once teams are able to measure coverage, it is not uncommon for managers to say “let's increase that number.” Eventually the number itself becomes more important than the testing. Therein lies the



Parasoft DTP example dashboard

problem – mindless coverage is the same as mindless music. The coverage needs to reflect real, meaningful use of the code, otherwise it is just noise. And speaking of noise... the cost of coverage goes up as coverage increases. Remember that you not only need to create tests, but you have to maintain them going forward. If you are not planning on reusing and maintaining a test, you should probably not waste time creating it in the first place. As the test suite gets larger, the amount of noise increases in unexpected ways. Twice as many tests may mean two or even three times as much noise. The meaningless tests end up cre-

ating more noise than good tests because they have no real context, but have to be dealt with each time the tests are executed. Talk about technical debt! Useless tests are a real danger.

Now, in certain industries, safety-critical industries for example, the 100% coverage metric is a requirement. But even in that case, it is all too easy to treat any execution of a line of code as a meaningful test, which is simply not true. I have two basic questions I ask to determine if a test is a good test. What does it mean when the test fails? What does it mean when the test passes?

Ideally, when a test fails, we know something about what went wrong, and if the test is really good, it will point us in the right direction to fix it. All too often when a test fails, no one knows why, no one can reproduce it, and the test is ignored. Conversely, when a test passes we should be able to know what was tested – it should mean that a particular feature or piece of functionality is working properly.

If you cannot answer one of those questions, you probably have a problem with your test. If you cannot answer either of them, the test is probably more trouble than it is worth.

The way out of this trap is first to understand that the coverage percentage itself is not the goal. The real goal is to create useful meaningful tests. This of course takes time. In simple code, writing unit tests is simple, but in complex real-world applications it means writing stubs and mocks and using frameworks. This can take quite a bit of time and if you are not doing it all the time, it is easy to forget the nuances of the APIs involved. Even if you are serious about testing, the time it takes to create a really good test can be more than you expect.

At Parasoft we have an answer for this: the Unit Test Assistant inside the Java development testing tool (Parasoft Jtest) takes on the tedious tasks of getting mocks and stubs right. It can also help expand existing tests in a useful way to increase coverage – helping you create good unit tests as well as make recommendations to improve test coverage and test quality as well. ■

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### ■ Express Logic: X-Ware IoT platform supports Microsoft Azure IoT SDK

Express Logic's X-Ware IoT Platform provides another option for Azure IoT customers who seek to quickly and easily develop devices and applications that connect to and are managed by Azure IoT Hub services. X-Ware IoT Platform was created entirely in house and designed from the ground up to be industrial grade. This enables Azure developers using the X-Ware IoT Platform to leverage its size, performance, safety, security, ease of use, and other advanced features to create best-of-class IoT sensors, devices, edge routers, and gateways.

[News ID 6494](#)

### ■ ETAS Connections 2018 – Challenges in the Development of Autonomous Driving Systems

ETAS Connections 2018 will take place on October 22 and 23 in Stuttgart's Wagenhallen. Many esteemed decision-makers and experts will convene at this annual event to discuss topics important to the automotive industry's future. This year's focus lies on the topic "What are the challenges in the development of autonomous driving systems?" The age of autonomous robots is upon us. At home, on farms, in the air, and on the road – smart systems are assisting us everywhere and this is only the beginning. Autonomous driving is drawing closer.

[News ID 6492](#)

### ■ Red Pitaya: STEMLab selected for new dense network of dual-mission HF radars

Red Pitaya announce that its STEMLab test and measurement solution has been selected for high resolution radar/broadband data processing in a new dense network of dual-mission HF radars proposed by the Electrical and Computer Engineering Professor, geospace scientist, and expert in remote sensing hardware/software, Michael Hirsch, Ph.D., from Boston, MA, USA. The proposed PiRadar solution costs 95% less than contemporary radar nodes using the latest COTS SDR technology and simultaneously offers polarization-sensitive ionosphere probing with 1-25 km range resolution and relaying of data over the horizon at 1-20+ kpbs rates.

[News ID 6491](#)

### ■ WITTENSTEIN: SAFERTOS celebrates FreeRTOS 15 Year Anniversary

2018 marks FreeRTOS's 15th anniversary, and 11 years of continued SAFERTOS support. SAFERTOS is the safety critical upgrade for FreeRTOS, and now has more safety critical features than ever. SAFERTOS continues to support FreeRTOS into the future. FreeRTOS is a Real Time Operating System, or RTOS, created by Richard Barry of Real Time Engineers, more recently stewarded by Amazon Web Services (AWS). SAFERTOS is a pre-certified, pre-emptive, safety critical RTOS based on the functional model of the FreeRTOS kernel. SAFERTOS delivers determinism and robustness to embedded systems, whilst using minimum resources. Due to the shared functional model SAFERTOS is simple to use, but it has been completely redesigned by our team of safety experts. WHIS engineers took the FreeRTOS kernel functional model, subjected it to a full HAZOP, identified all areas of weakness with respect to safety within the functional model and API, and generated a set of safety requirements.

[News ID 6442](#)

### ■ Phaedrus: Barr Group releases 2018 update of Embedded C Coding Standard

The Barr Group released an update of the influential Embedded C Coding Standard. Also known as BARR-C:2018, the latest version of the company's stylistic coding rules helps embedded system designers reduce defects in firmware written in C and C++.

[News ID 6438](#)

### ■ IAR Systems brings its developers conference IAR DevCon to Europe

IAR Systems now continues the successful developers conference in several locations across Europe, targeting developers and designers with content on security, IoT, industrial, automotive, medical and general embedded development. IAR DevCon comes in a compact half-day format, lasting from 9:00 to 14:00. The conference begins with a keynote from one of IAR Systems' representatives, giving insights to key industries and the latest market updates.

[News ID 6493](#)

### ■ Vector: make switch to service-oriented E/E architectures with PREvision 9.0

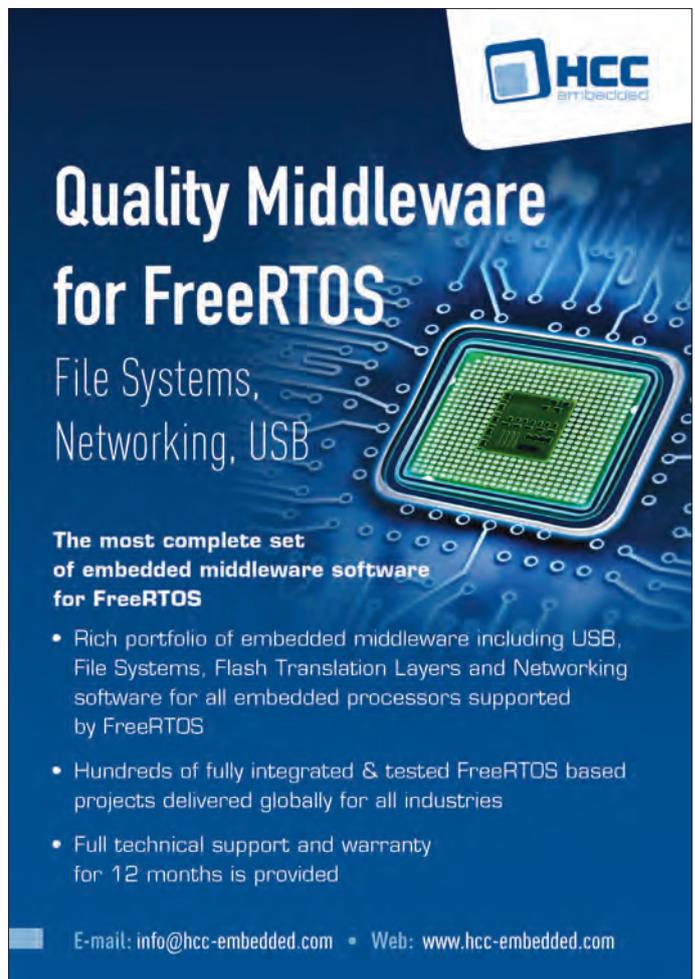
Vector is introducing PREvision 9.0 – the next release of the software tool for developing distributed systems in the automotive industry and related areas. The model-based development environment is fully equipped for AUTOSAR Adaptive and offers extended SysML and UML functions to model service-oriented architectures.

[News ID 6489](#)

### ■ Rohde & Schwarz: Scope Rider provides assistance in development of electric superbike

Rohde & Schwarz has helped the University of Nottingham develop their electric Superbike which took second place in the SES TT Zero race at the Isle of Man TT this summer. The University of Nottingham achieved its highest ever placing at the event, splitting the two factory Mugen bikes, an historic feat never before achieved by a university team. Rohde & Schwarz provided their handheld oscilloscope the R&S Scope Rider to the University of Nottingham team to develop their 2018 electric bike

[News ID 6487](#)



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■ **HCC Embedded supports ChibiOS-based designs**

HCC Embedded has extended the range of platforms supported within its Advanced Embedded Framework to include the ChibiOS RTOS. Now, embedded developers can easily add HCC Embedded's quality communications, security, and flash file system software to a variety of complex ChibiOS-based designs to reduce time to market and improve product reliability.

[News ID 6462](#)

■ **Lauterbach: TRACE32 provides JTAG debug support for Wind River VxWorks 653**

Lauterbach announce full JTAG debug support for VxWorks 653 Multi-core Edition, an ARINC 653-conformant platform from Wind River, including the latest release of VxWorks 653 Multi-core Edition, supporting Arm, Intel, and Power Architecture multi-core processors. As a Gold Partner of Wind River, Lauterbach has committed itself to support Wind River's operating systems as soon as they become generally available. To this end, working in close cooperation with Wind River, Lauterbach extended its product TRACE32 to include a comprehensive debug environment tailored to VxWorks 653 systems.

[News ID 6460](#)

■ **Parasoft and DATPROF unite software test automation, service virtualization**

Parasoft announced a new partnership with DATPROF, who specialize in test data subsetting and masking. Today's agile organizations face challenges with access to their complex environments and management of meaningful test data. Combining Parasoft and DATPROF gives users full control of their test environments, test data, and test automation strategy, for ultimate flexibility.

[News ID 6463](#)

■ **Renesas supports development of systems with multirate control**

Renesas announced an update to its "Embedded Target for RH850Multicore" model-based development environment for multicore microcontrollers for automotive control applications. The update supports development of systems with multirate control (multiple control periods), which is now common in systems such as engine and body control systems. This model-based development environment has become practical even in software development scenarios for multicore MCUs, and can reduce the increasingly complex software development burdens especially in control system development of self-driving cars.

[News ID 6340](#)

■ **PLS: UDE enables real multicore debugging for NXP S32V234 automotive processor**

With support of NXP's S32V234 automotive multicore SoCs by the Universal Debug Engine (UDE), PLS Programmierbare Logik & Systeme now provides also optimized testing and debugging tools for 64-bit processor platforms for the first time. The high-end controller, which is based on the ARMv8-A architecture, is equipped with four powerful Cortex- A53 cores, a Cortex-M4 boot core and additional accelerator units.

[News ID 6341](#)

■ **ST updates free embedded software for enhanced LoRaWAN experience**

With updates that implement the recently approved LoRaWAN 1.0.3 specifications from the LoRa-Alliance, STMicroelectronics is making its I-CUBE-LRWAN Expansion Package for the STM32 family of microcontrollers up-to-date and more secure, expanding the possibilities for IoT applications that operate on Low-Power Wide Area Networks (LPWAN).

[News ID 6429](#)

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# Safety first?

## Security is just as important

By Markus Jastroch, Sysgo

*In many applications in the railways, aircraft or automotive industry the interaction between safety and security is of particular importance, since there are many dependencies between them and they can therefore no longer be considered separately.*

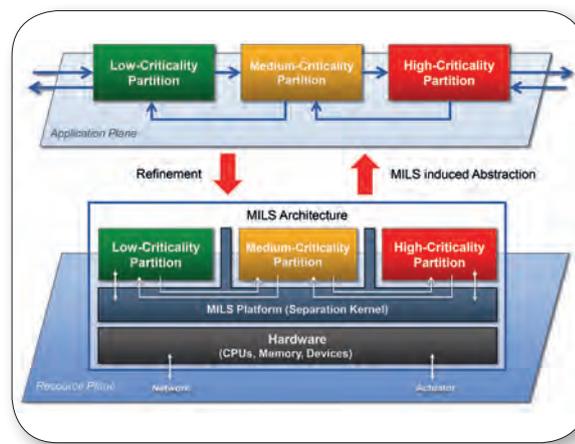


Figure 1. The MILS concept enables trusted and untrusted components to co-exist on a single platform.

■ Whether in railways, aircraft or the automotive industry, electronic control systems and their developers face complex challenges today. On the one hand, due to increasing networking, problems of functional safety and IT security are emerging. On the other hand, standard products are increasingly being used and individual control elements have to perform multiple tasks in order to save weight, costs and energy. Especially in such environments, the interaction between safety and security is of particular importance, since there are many dependencies between them and they can therefore no longer be considered separately.

Functional safety is about the unintentional failure of components or code, while (IT) security is about protection against intentional and mostly malicious attacks. In short, safety protects the environment from the system, while in security it is the other way round - it protects the system from the environment. Functional safety has long been one of the most important aspects of transport technology, and a large number of standards have been established to which technical systems must be certified, as follows.

IEC 61508 is an industry-independent basic standard for the functional safety of electrical, electronic and programmable systems with a safety reference. It distinguishes between four

criticality levels, SIL-4 to SIL-1 (Safety Integrity Level).

DO-178B is the definitive standard for software development in aerospace. The standard knows five criticality levels DAL A to E (A=catastrophic to E=no effect).

EN 50128 is a European standard for software development in connection with railway applications with five criticality levels (SIL-4 to SIL-0). EN 50129 for signaling technology in rail traffic is related to this standard.

ISO 26262 defines the functional safety requirements for vehicles on the road. Based on the safety integrity levels of EN 61508, it defines four ASIL levels D-A, where D stands for the most critical systems.

Security deals with the prevention of errors that can lead to unauthorized access to or manipulation of data or systems. The main aim here is to avoid weak points by means of IT security measures or to make their exploitation by attacks impossible. There are also international security standards for security-critical systems, only a few of which are industry-specific.

ISO 15408, better known as CC or Common Criteria (for information technology security evaluation), is the most important standard

for testing and evaluating the security properties of IT products worldwide. It introduces seven Evaluation Assurance Levels (EAL 1-7) for trustworthiness.

EUROCAE ED 202 provides developers and certification bodies with guidance for aeronautical systems that are influenced by human interaction and can affect the safety characteristics of an aircraft.

The SAE (formerly Society of Automotive Engineers) is working on a series of standards on various aspects of IT systems in automobiles and is introducing the term ACsIL (Automotive Cybersecurity Integrity Level) based on the Safety Integrity Levels in Draft J3061 published in 2016.

ISO is currently working on ISO 21434 (Road Vehicles - Cybersecurity Engineering).

Safety errors are typically random errors that are regarded as “friendly” errors in a safe environment. Added to this are random and systematic errors such as electromagnetic radiation, hardware errors, specification and design errors or software errors. All safety-relevant functions (e.g. real-time behavior) must be taken into account here. The exposure time, i.e. the period during which the system is exposed to the fault, may or may not

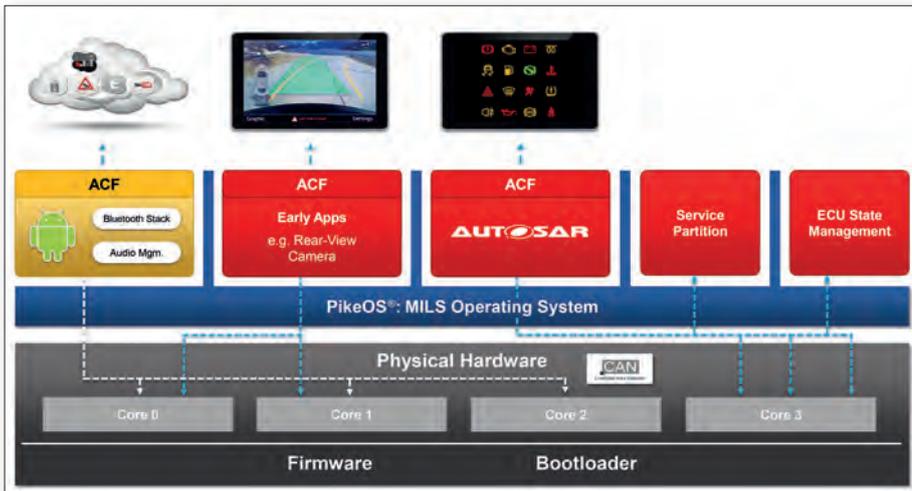


Figure 2. PikeOS can be used for implementations of the MILS concept - in this case in the automotive industry.

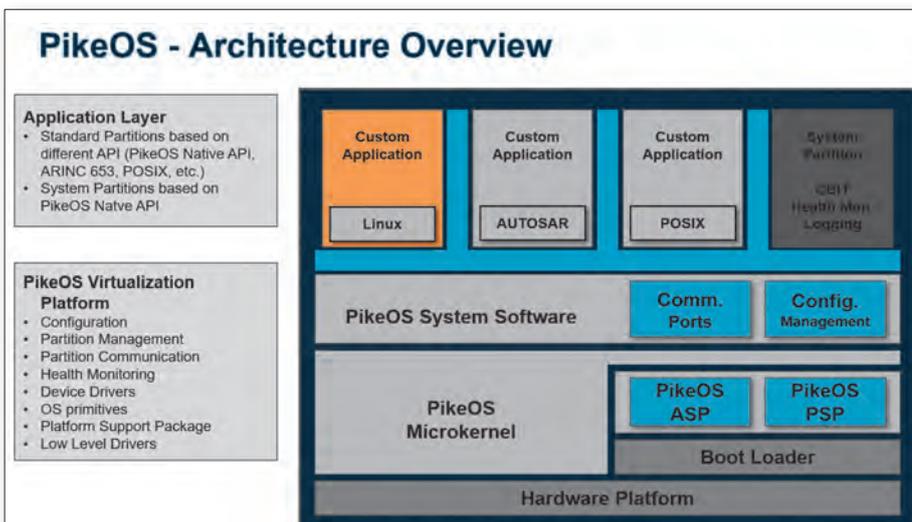


Figure 3. PikeOS is a virtualization platform based on a separation kernel.

affect the occurrence of a failure. Security, on the other hand, is typically about intentional errors caused by internal or external attacks. In addition to such attacks, however, systematic errors such as design errors, software errors, weak passwords or cryptographic keys as well as unexpected hidden channels must also be taken into account. The exposure time typically influences the success and consequences of an attack.

Although or precisely because the Common Criteria Standards are completely technology and industry agnostic, they provide a good basis for the development of critical embedded systems in conjunction with mostly industry-specific safety standards. In particular, it is possible to assign individual systems an EAL level (Evaluation Assurance Level) between 1 and 7 (from the least demanding to the most demanding in terms of design, testing and verification). However, one should be aware that CC-certified products do not guarantee the absence of vulnerabilities, but only

that the test and verification objectives have been achieved and a state-of-the-art vulnerability analysis has been carried out.

While the application of good software practices, mainly with regard to verification and validation, has long been established for safety-relevant topics due to strict certification requirements, there is often still some catching up to do with security. In return, the security industry reacts very quickly to changes. Techniques must also be developed in the area of functional safety in order to shorten the time for changes to certified systems.

Today's modular systems offer improved connectivity, resource sharing between applications of different levels of criticality on the same computer, and promote the use of standard or COTS (Commercial Off-the-Shelf) products in security-related systems. These developments bring benefits such as reduced development and maintenance costs or savings in weight and energy consumption, but

from the security point of view they also mean an increase in the attack surface for malicious programs. In addition, the use of COTS hardware and software gives potential malicious attackers more information about possible vulnerabilities, some of which is publicly accessible. This affects both communication between spatially separated applications and communication between applications in different partitions on the same ECU.

The main problem when using COTS and consolidating different applications on one hardware is the strict separation of the individual applications from each other, so that problems with one application cannot affect others. This requires strict partitioning of the available resources so that the applications can actually run completely independently of each other. Partitioning and separation are also the cornerstones of the Multiple Independent Layers of Security (MILS) concept, which describes a multi-layered security architecture for the coexistence of trusted and untrusted components based on verifiable separation mechanisms and controlled information flows (figure 1)

The MILS approach requires a (real-time) operating system that is able to strictly separate applications or processes and their resources - both spatially and temporally. Such a system is also called a separation kernel - an example of this is PikeOS from the German manufacturer Sysgo (figure 2). A separation kernel architecture makes it easier for the system integrator to create a clearly structured design in which safety applications coexist with less safe applications in the same system without making compromises between safety and security. For example, Linux guests which are responsible for external communication via complex network services can cooperate with applications at a higher security level. These applications with a higher level of security and the associated devices remain strictly separated from the outside world by partitioning. Since PikeOS supports not only spatial but also time partitioning, it also enables the implementation of complex time-controlled applications.

A robust partitioning approach is advantageous for both security and safety applications and is more or less explicitly required in virtually all of the above standards. Robust time partitioning also enables real-time and non-real-time applications to coexist on a single hardware, for example. In addition, this separation creates independent security domains for applications of different criticality and thus also facilitates certification considerably, since applications in different security domains can be certified independently of each other. ■

### ■ Lauterbach: TRACE32 extends the reach of Time Partition Testing

Lauterbach announce an integration of TRACE32 with Piketec's Time Partition Testing tool. The integration is supported with TPT 12 and introduces a new node for Piketec's FUSION platform which allows users to connect TPT with TRACE32 for Processor in the Loop (PIL) testing. Such testing provides an invaluable tool for companies wishing to verify their software to any kind of safety standard and the integration with TRACE32 provides TPT with access to a wide range of supported microprocessors.

[News ID 6426](#)

### ■ MicroSys: RTOS Microware OS-9 supports Open Source OPC UA – TSN project

The Ethernet standard is the basis of today's and future communication in the industrial environment, from the sensor on the machine, to control systems and server environments. That will lead to disproportionate growth of the number of network nodes. A means to make the communication between all network participants manageable, the OPC UA (Open Platform Communications Unified Architecture) protocol could be used.

[News ID 6391](#)

### ■ MACOM: single-chip solution for 100G bidirectional optical connectivity

MACOM Technology Solutions announced the industry's first integrated, single-chip transmit and receive solution for short reach 100G optical transceivers, active optical cables and onboard optical engines. The seamless integration of four-channel Transmit and Receive Clock Data Recovery, four Transimpedance Amplifiers and four Vertical-Cavity Surface-Emitting Laser drivers within the new MALD-37845 will afford customers unrivaled ease of use and reduced costs.

[News ID 6499](#)

### ■ Red Pitaya: STEMLab at the heart of radar warning and information disaster management system

Red Pitaya announced that a consortium including a members from a major European research organisation, two German universities and industry, is using STEMLab to perform waveform synthesis, IF signal sampling & signal processing on a new radar warning and information system for applications in disaster management (RAWIS) that is currently being developed.

[News ID 6386](#)

### ■ Logic Technology: FlashFX Tera 4.2 extends MLC NAND flash support for automotive and IIOT

Datalight has released the latest version of its FlashFX Tera product with enhancements for NOR device long-term reliability features as well as refinements to validation tests for multi-level cell NAND flash and enhanced support for i.MX family of processors from NXP. Ensuring long-term reliability for flash media requires careful attention to the physical degradation that occurs over time which leads to bit errors and device failure. While FlashFX Tera has managed data retention and error handling challenges for NAND flash media since its inception, but NOR flash has heretofore not required such sophistication.

[News ID 6382](#)

### ■ IAR updates development tools for Renesas RX MCUs

IAR Systems presents version 4.10 of the development toolchain IAR Embedded Workbench for Renesas RX. The new version includes several capabilities which enable developers to further ensure code quality and make debugging more efficient for embedded applications based on Renesas RX microcontrollers.

[News ID 6372](#)

### ■ Cadence: library characterization tool employs machine learning and cloud optimizations

Cadence Design Systems announced the Cadence Liberate Trio Characterization Suite, a unified library characterization tool that runs both statistical and nominal characterization in parallel and provides complete validation of standard cell libraries. Employing advanced machine learning techniques, this tool uses smart interpolation to help determine the critical corners that need to be characterized. By making characterization processes thoroughly distributed and massively parallel, it has been fully optimized for running on cloud-based servers.

[News ID 6362](#)

### ■ Infineon and Alibaba Cloud sign MoU on Internet of Things

Infineon Technologies and Alibaba Cloud have signed a memorandum of understanding for the joint promotion of IoT applications within the fields of smart life and smart industry. Infineon and Alibaba will thus facilitate the digital upgrade of Chinese enterprises and cities.

[News ID 6432](#)

### ■ Solid Sands and AbsInt combine tools strengths

Solid Sands, supplier of SuperTest test and validation suite for C and C++ compilers and libraries, and AbsInt, the specialist for program analysis tools for safety-critical software, announce their collaboration to develop and integrate the SuperTest qualification suite into the CompCert C qualification support kit. The SuperTest qualification suite is derived from the established SuperTest compiler test and validation suite.

[News ID 6353](#)

### ■ LDRA: verification and certification environment for 2nd generation IMA

LDRA and Lynx Software Technologies extended their partnership to integrate the LDRA tool suite with the LynxSecure Safety Bundle announced this week. The LDRA tool suite is already available for use with the LynxOS family of operating systems, including LynxOS-178, for the development and verification of high and mixed criticality embedded applications. As the market shifts towards the 2nd generation of Integrated Modular Avionics (IMA), LDRA is prepared to support avionic system integrators with their test, verification, and certification requirements.

[News ID 6350](#)

### ■ Swissbit: USB 3.1 sticks for industrial use and secure

Swissbit announce the introduction of a new product range of USB 3.1 flash drives. The new USB sticks fulfill the tough requirements of flash memory for industrial use. The series is based on a highly sophisticated USB 3.1 flash controller and comprises the product range U-500k with a highly reliable SLC-NAND and U-50k with MLC-NAND. Furthermore, a version with MLC-NAND in pSLC configuration is offered under the name U-56k.

[News ID 6337](#)

### ■ Express Logic: X-Ware IoT platform provides support for Xilinx Zynq UltraScale+ MPSoCs

Express Logic provides turnkey support for the Xilinx Zynq UltraScale+ MPSoCs, both Application Processing Unit (Quad/Dual Cortex-A53) and Realtime Processing Unit (Dual Cortex-R5) MPSoCs. This complements Express Logic's longtime support of Xilinx FPGAs and SoCs, such as the Xilinx Zynq-7000 and the MicroBlaze Processor softcore.

[News ID 6415](#)

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■ **Parasoft announce SOAtest Smart API Test Generator**

Parasoft release the Parasoft SOAtest Smart API Test Generator. This innovative technology uses artificial intelligence to convert manual UI tests into automated API tests, lowering the technical skills required to adopt API testing. By leaning on smart technology to perform the heavy lifting, it's easier for organizations build and scale a comprehensive API testing strategy, which until now has posed significant challenge to software teams. To learn more about the Parasoft SOAtest Smart API Test Generator, visit: [www.parasoft.com/smart](http://www.parasoft.com/smart)

[News ID 6323](#)

■ **ADI: ±0.5% accurate supervisors target very low voltage components**

Analog Devices announces the Power by Linear LTC2962-LTC2964 family of exceptionally accurate 4-channel voltage supervisors for increased system voltage margin and enhanced reliability. ASIC, FPGA, DSP, MCU and MPU architectures that operate from supplies as low as 1V cannot utilize traditional 1%-2% accurate voltage supervisors without shedding valuable system voltage margin and shrinking the remaining load operating voltage range. The LTC2962 family possesses a best-in-class ±0.5% reset threshold accuracy, which relaxes power supply demands, increases system tolerance to transients, and enabling a lower nominal supply to dramatically reduce power consumption.

[News ID 6504](#)

■ **ROHM: advanced power and energy management technologies at electronica 2018**

ROHM Semiconductor will again be exhibiting at the upcoming electronica 2018. The company will present new solutions for power and energy management in the automotive and industrial sectors as well as its commitment to Formula E. Highlights include demonstrations from updates of new power devices such as 1700V SiC module and other SiC devices, Power Management ICs and sensor technologies for the automotive and industrial market. In addition, ROHM will highlight local support capabilities by presenting Power-Lab Test benches and sensing solutions by Finland Software Design Center.

[News ID 6470](#)

■ **Apacer reveals 3D NAND SV170-µSSD for industries**

Apacer launches the latest industrial 3D NAND micro SSD, SV170-µSSD, in respond to the explosive worldwide growth in data traffic for industries. Apacer's SV170-µSSD is a breakthrough which integrates both controller and flash memory on one single chip to minimize the size for a better compliance in network equipment, industrial automation monitoring, national defense and smart vehicle devices.

[News ID 6469](#)

■ **Bürklin Elektronik collaborates with Rochester**

Bürklin Elektronik has concluded a cooperation agreement with Rochester Electronics. As a result of this agreement, Bürklin Elektronik is now able to offer an additional 200,000 products from over 70 semiconductor manufacturers in its portfolio. These include both end-of-life and regularly available products for applications in the fields of industrial automation, transportation, military, medical, energy, civil aviation, the automotive industry and telecommunications. Bürklin Elektronik is now expanding its range to over 850,000 articles and has access to over 70,000 different designs.

[News ID 6467](#)

■ **Mouser adds Micron's memory solutions to its portfolio**

Mouser Electronics has signed a global distribution agreement with Micron Technology, a world leader in innovative memory solutions that transform how the world uses information. With the agreement, Mouser adds a key memory technology manufacturer to its portfolio, serving its customers worldwide with Micron's solutions. Micron products target a broad array of applications in the computing, networking, data, server, mobile, embedded, consumer, automotive, and industrial markets.

[News ID 6448](#)

■ **Densitron: MIPI DSI displays features Parasoft releases comprehensive CERT C solution to the market**

Parasoft announces a new release of Parasoft C/C++test focusing on helping customers with the security of their C code, by bringing the most extensive Software Engineering Institute (SEI) CERT C solution to the mar-

ket, with full static analysis coverage of the CERT C Security Coding Standard rules and dedicated compliance reporting. The new release also includes support for the AUTOSAR C++14 coding standard, a new approach to stubs configurations, enhanced unit testing reporting for compliance with safety standards, and support for over 20 new compilers and IDEs.

[News ID 6457](#)

■ **outstanding readability and projected capacitive touch**

Densitron has launched a set of new MIPI Display Serial Interface displays for a wide variety of applications, ranging from security, broadcasting, telecom and process control systems to smart meters. The move reflects the growing demands for the same premium quality, high-resolution graphical display technology used for personal mobile devices to be tailored for use in industrial applications.

[News ID 6431](#)

■ **Bridgetek helps bring 3.5" HMI display shield venture to life**

Bridgetek's Embedded Video Engine (EVE) technology continues to gain traction within the global open source community, as well as with larger OEMs. The highly integrated graphics controller devices - which are able to take care of the display, touch and audio aspects of modern HMIs - are featuring in a growing number of products being developed by small start-ups. The latest of these is the Sunflower Shield, which is currently being crowdfunded via Kickstarter.

[News ID 6423](#)

■ **Rohde & Schwarz: RTP family combines innovative signal integrity with high acquisition rate**

Rohde & Schwarz introduces the new high-performance R&S RTP family, expanding its oscilloscope portfolio in keeping with its motto "Oscilloscope Innovation. Measurement Confidence." The R&S RTP high-performance oscilloscope family combines signal integrity with a high acquisition rate. In standard acquisition mode, it can measure a million waveforms per second, making it more than a thousand times faster than other oscilloscopes in its class. This helps users to find sporadic errors much faster.

[News ID 6328](#)



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■ **ADI: self-calibrating energy metering IC simplifies embedded electricity measurement**

Analog Devices introduced an energy metering IC with autocalibration for single-phase energy measurement applications. The new ADE9153A uses mSure technology to automatically calibrate the measurement system, significantly reducing calibration time, labor and equipment costs. As the only energy measurement IC with autocalibration, the ADE9153A enables designers of intelligent lighting, datacenter, EV charging, and industrial applications to add with ease billing-grade accurate energy measurement to their products.

[News ID 6420](#)

■ **Arrow: IC solution reduces IO-Link development time and costs**

Arrow Electronics has announced a new family of IC devices that enable companies to quickly add IO-Link Master functionality to their products without the addition of royalties or licence fees. Arrow joined the IO-Link Consortium in April. The first device launched is a fully integrated STM32 microcontroller with an IO-Link Master software stack, IOLM4P-STM32L, which can control up to four IO-Link Devices via various IO-Link transceivers.

[News ID 6380](#)

■ **Microchip: 8-bit tinyAVR MCUs enable increased functionality in sensor nodes**

Microchip Technology announces the expansion of its tinyAVR MCU series with two new devices which offer advanced analogue features and the largest memory variants in the family. Designed for reliable operation in harsh environments, the ATtiny3217 and ATtiny3216 offer built-in safety functions to help designers to create robust and safe systems.

[News ID 6368](#)

■ **ST: new STM32 value line MCUs boost real-time IoT-device innovation**

The latest additions to the STM32 family, the STM32F7x0 and H7x0 Value Line microcontrollers from STMicroelectronics, give extra flexibility to create affordable performance-oriented systems including real-time IoT devices, without compromising features or cyber protection. These new lines trim embedded Flash to the essential, still allowing secure boot, sensitive code and real-time routines to run safely on-chip, leveraging access times over 25 times faster than for external Flash (for cache miss).

[News ID 6394](#)

■ **Sensirion: CO2 and RH/T sensor module now available globally**

CMOSens Technology for IR detection enables highly accurate carbon dioxide measurement at a competitive price. Along with the NDIR measurement technology for CO2 detection, a best-in-class Sensirion humidity and temperature sensor is also integrated on the same sensor module. Ambient humidity and temperature can be output by Sensirion's algorithm expertise through modeling and compensation of external heat sources without the requirement for any additional components.

[News ID 6387](#)

■ **Bulgin: new range of rugged capacitive touch switches**

Bulgin has launched its new range of rugged capacitive touch switches ideal for repetitive operation. The sealed IP68 rated switches are activated by the touch of a finger and can be used across a wide range of applications from heavy industrial to consumer appliances. As the switches feature no moving parts, they require no operating force to activate, offering both ease of use and a long-life expectancy of up to 50 million operation cycles.

[News ID 6418](#)

■ **Sensirion temperature sensor STS3x used by modum's monitoring system**

modum has developed a compact data logger for temperature-controlled shipments that features Sensirion's STS3x high-accuracy, calibrated digital temperature sensor. As part of the monitoring solution for enabling EU GDP (Good Distribution Practice) compliance, it is capable of tracking environmental conditions for a variety of temperature-sensitive goods including pharmaceutical products.

[News ID 6449](#)

■ **Mouser: ADLINK Express-BD7 COM with built-in cloud functionality**

Mouser Electronics is now stocking Express-BD7 Computer-on-Modules (COMs) from ADLINK Technology. ADLINK's Express-BD7 COMs help engineers build space-constrained systems in industrial automation and data communication — such as virtualization, edge computing or other numerical applications — that require high-density CPU cores balanced by reasonable power consumption.

[News ID 6379](#)

■ **Würth introduces another MagI<sup>3</sup>C power module**

Würth Elektronik expands its product family of MagI<sup>3</sup>C power modules with the compact MagI<sup>3</sup>C VDRM (Variable Step Down Regulator Module) in a LGA-16EP package. The module has an input voltage range of 4 to 18 V for converting voltages from the 5 V, 9 V or 12 V bus. The very compact component (9 x 9 x 3 mm) offers scalability of currents (1A/2A/3A) and high efficiency up to 93 percent. As a fully integrated DC/DC voltage converter, MagI<sup>3</sup>C VDRM contains the power stage, the regulator, the inductor, as well as input and output capacitors. Only two resistors are necessary in the external circuit to define the output voltage.

[News ID 6338](#)



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■ **ADI: 44 GHz SPDT silicon switches in LGA package**

Analog Devices releases 44 GHz single-pole, double-throw (SPDT) switches, the ADRF5024 and ADRF5025 in advanced Silicon-on-Insulator technology. The two new switches are broadband, with the ADRF5024 yielding flat frequency response from 100 MHz to 44 GHz, while the ADRF5025 from 9 kHz to 44 GHz, with repeatable characteristics better than 1.7 dB insertion loss and 35 dB channel to channel isolation. Both parts support 27 dBm power handling for both through and hot-switching conditions.

[News ID 6335](#)

■ **Trinamic launches multi axis stepper motor servo module**

TRINAMIC extends its portfolio of TMCM embedded motor control modules. Following the success of the TMCM-351 triple axis board, the TMCM-3351 is designed to be as easy to use as its sibling, but with additional closed-loop stepper motor servo functionality. The new board drives three 2-phase bipolar stepper motors up to 2.8A. Utilizing Trinamic's highest performance stepper motor driver IC for external MOSFETs TMC5160 and the dedicated closed-loop motion controller

TMC4361, the TMCM-3351 is a cost- and energy-efficient stepper motor servo controller for stepper motors with A/B/N quadrature encoders.

[News ID 6324](#)

■ **congatec: first SMARC 2.0 module with NXP i.MX8 processor**

congatec announces the conga-SMX8, the company's first SMARC 2.0 Computer-on-Module based on the 64-bit NXP i.MX8 multi-core ARM processor family. The ARM Cortex-A53/A72 based conga-SMX8 represents the new flagship module for ultra-low-power embedded computer designs, offering the recent best-in-class ARM processor with excellent performance, flexible graphics and numerous embedded features for all kind of IIoT applications.

[News ID 6428](#)

■ **Mouser signs global distribution agreement with Samtec**

Mouser Electronics announced a global distribution agreement with Samtec. Through the agreement, Mouser now stocks the full line of Samtec products, including high-speed board-to-board, connectors, cables, and optics. Much more than just another connec-

tor company, Samtec puts people first with a commitment to exceptional service, quality products, and convenient design tools.

[News ID 6501](#)

■ **Microsemi: Switchtec PCIe switches provide 16 GT/s PCIe connectivity**

Microsemi announced sampling availability of its Switchtec Gen 4 PCIe switches, enabling customers to build next-generation high performance, low latency interconnect solutions in high growth markets including machine learning, data center servers and storage equipment. The new generation of PCIe switches offer high density and reliability as well as low power.

[News ID 6433](#)

■ **Infineon: resonant controller IC with PFC for power supply and lighting drivers**

Infineon Technologies introduces the second generation ICL5102 resonant controller IC designed specifically for power supply and lighting drivers. Main target applications are LED drivers for professional and industrial lighting, and street lighting. The controller IC can also be used for offline AC-DC power supplies and LCD TVs.

[News ID 6388](#)

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### ■ Avnet Silica extends its wireless technology portfolio with Digi International

Avnet Silica has been appointed as a franchised distributor for the EMEA region for products from Digi International. The new relationship between Avnet Silica and Digi International is part of the recently announced global agreement whereby Avnet was appointed as one of Digi International's global distribution partners. Avnet Silica has therefore become a major channel in the EMEA region to service the fast-growing market for Digi International's wireless products and technologies.

[News ID 6373](#)

### ■ MEN: compact embedded Box PC with Intel Apollo Lake I

With the BC51M box PC, MEN expands its innovative, modular family concept. The fanless and maintenance-free device is used in graphics and memory intensive applications in trains, buses or commercial vehicles and, thanks to its numerous communication interfaces, is highly variable. The BC51M is based on the Intel Atom E3900 series - optionally with two or four cores, up to 1.6 GHz. The scalability within this series gives the user the necessary flexibility.

[News ID 6406](#)

### ■ Kontron: COBALT 901|400 series helps speed compute and graphically-intensive defense designs

Kontron introduced its COBALT 901|400 Series that features higher CPU and graphics performance. This addition to Kontron's rugged small form factor COBALT family is a flexible building block platform that offers a broad range of power and feature scalability and includes new advanced features that help boost defense design innovation.

[News ID 6412](#)

### ■ congatec and Landshut University IoT Innovation Lab cooperate

congatec announces its cooperation with the IoT Innovation Lab at the University of Applied Sciences (HAW) Landshut, which is supported by the Bavarian Center for Digitalization (Zentrum Digitalisierung, Bayern, ZD.B) and the State Ministry for Science and Art (StMWK). The purpose of the cooperation is to prepare students for the practical development and use of IoT technologies while also promoting the development of vendor-independent standards.

[News ID 6490](#)

### ■ Eurotech: Everyware Cloud v. 5.1 with expanded integration and device management capabilities

Eurotech announces the availability of the 5.1 version of Everyware Cloud, its IoT Integration Platform. Everyware Cloud, one of the building blocks of Everyware IoT, Euro-

tech's open, integrated and managed IoT end-to-end solution, provides all the services required for the management of IoT gateways and de-vices in the field, including configuration management, application life-cycle management and remote access. It also connects the data collected by field-deployed devices to enterprise applications and analytics leveraging reliable and open protocols.

[News ID 6374](#)

### ■ Mouser: cellular flexible antennas for LTE and 4G

Mouser Electronics is now stocking a variety of cellular flexible antennas from Molex. The wide-band antenna series future-proofs wireless application developments to support evolving LTE and 4G cellular technologies. Molex cellular flexible antennas feature a balanced transmission design that minimizes ground-plane effects and significantly reduces costs and engineering resources needed for additional circuitry, frequency tuning, and electronic component integration.

[News ID 6478](#)

### ■ MicroSys: smart control on ARM based industrial system-on-modules

The current lineup of highly integrated system-on-modules with NXP Layerscape and Power Architecture CPUs by MicroSys, feature a custom supervision and power controller. For this purpose, a NXP Kinetis K02 device was integrated. It combines an ARM Cortex-M controller with 128KB Flash memory. Previously, such controllers were commonly found in datacenter and cloud computing hardware – mainly in the x86 world.

[News ID 6334](#)

### ■ AAEON: industrial embedded boards supported by AAEON community

With the AAEON Shop, AAEON Europe is giving professionals the chance to purchase industrial embedded hardware online and get it quickly! The Shop gives the opportunity to buy a selected range of products in smaller quantities, while related product documentation is ready for immediate customer download.

[News ID 6326](#)

### ■ Concurrent reloads VME product line based on latest generation processors

Concurrent Technologies announces two new VME boards for long life-cycle deployments that are expected to remain in the market beyond 2030. VP B7x/msd is based on an 8th generation Intel Xeon processor for applications that need high compute or virtualization capability. VP F6x/msd is optimized to maximize I/O capability and is suitable for those applications that need to boot legacy operating systems.

[News ID 6321](#)

### ■ Microchip: 32-bit MCUs feature robust, chip-level security and Arm TrustZone technology

Microchip announces the new SAM L10 and SAM L11 families of 32-bit microcontrollers (MCUs) which address the growing need for security in IoT endpoints by protecting against the increasing risk of exposing intellectual property and sensitive information. The new MCU families are based on the Arm Cortex-M23 core, with the SAM L11 featuring Arm TrustZone for Armv8-M, a programmable environment that provides hardware isolation between certified libraries, IP and application code.

[News ID 6359](#)

### ■ ROHM: CMOS op-amp delivers leading-class low noise

ROHM announces the availability of a CMOS op-amp optimized for applications requiring high-accuracy sensing, such as accelerometers used in sonar systems, and optical sensors that handle ultra-small signals. Op-amps are configured at the rear stage to amplify the analog sensor output, but because sensor signals are so weak it is necessary to implement noise countermeasures to ensure high-accuracy transmission. In response, ROHM developed a high noise tolerant op-amp for the automotive market utilizing a vertically integrated production system that leverages original analog design technologies and processes.

[News ID 6375](#)

### ■ ST: create ultra-compact chargers for wearables and IoT devices

The STMicroelectronics plug-and-play wireless battery-charger development kit lets users quickly build ultra-compact chargers up to 2.5W with a space-saving 20mm-diameter coil, for charging small IoT devices and wearables such as smart watches, sports gear, or healthcare equipment. Built around the STWBC-WA wireless charging-transmitter controller, the kit comprises a charging base unit containing a transmitter board with the 20mm coil already connected and ready to use.

[News ID 6445](#)

### ■ TI: high-voltage amplifiers enable accuracy in error-sensitive industrial applications

Texas Instruments introduced three new amplifiers with a unique combination of high speed and high precision, allowing designers to create more accurate circuits for error-sensitive applications. The new devices support more precise measurement and faster processing of a wide variety of input signals in test and measurement, medical, and data-acquisition systems. To learn more about TI's new amplifiers, with maximum supply voltages ranging from 27 to 36 V.

[News ID 6351](#)

**■ Infineon and JD join efforts to build smart IoT ecosystem**

Infineon Technologies and JD group have signed a strategic partnership agreement aimed at creating an efficient and secured smart IoT ecosystem accelerating towards the vision of smart life. The two companies will combine Infineon's leading technology expertise in the semiconductor solution field and the local market insight and network of JD, China's largest online retailer.

[News ID 6444](#)

**■ Qorvo certified for Zigbee Green Power v1.1 multi-sensor and generic switch extension**

Qorvo has been awarded certification for the multi-sensor and generic switch features of Zigbee Green Power v1.1. These new features greatly expand the types of smart home sensors that can be powered by energy harvesting, eliminating the need for batteries or enabling ultra-long battery life.

[News ID 6440](#)

**■ Conrad: new range of data loggers and sensors from Vernier International**

Conrad Business Supplies introduces a new range of sensing, measuring and datalogging products from Vernier International. The products are specifically intended for use in the classroom to allow students to explore and learn scientific concepts, especially in the areas of physics, chemistry and biology. All of the products have been developed in cooperation with teaching professionals to ensure their suitability for the learning environment.

[News ID 6436](#)

**■ Maxim: MAX32558 DeepCover IC delivers strong security in a small footprint**

Manufacturers of security-sensitive industrial, consumer, computing and internet of things (IoT) devices now have a fast, efficient way to build in secure cryptographic operations, integrate key storage and enable active tamper detection with the MAX32558. As the newest member of the DeepCover family of secure microcontrollers from Maxim Integrated Products, the MAX32558 offers these robust security features while enabling designers to save up to 50 percent of PCB space versus the closest competitor.

[News ID 6430](#)

**■ ADI: sigma-delta A/D converter for AC and DC signals**

Analog Devices introduced the AD7768-1, a low power, high-performance, 24-bit single channel sigma-delta ( $\Sigma\Delta$ ) A/D for precision conversion of both AC and DC signals. AD7768-1 enables power efficient instrumentation solutions for condition monitoring in predictive maintenance (vibration and power

quality), audio test, acoustic, structural health and modular automated electrical test equipment. Healthcare applications such as clinical EEG/EMG/ECG are also enabled.

[News ID 6425](#)

**■ Kontron: compact KBox B-201 with numerous mounting options and interfaces**

Kontron announces the KBox B-201, a high performance, compact design computer, as a new member of the Kontron Embedded Box PC family. State-of-the-art 7th Gen Intel Core processors together with an Intel Q170 Express Chipset allow for extremely high performance at a low noise level (34 dB(A) max.). To this end, the KBox B-201 comes equipped with an extremely quiet fan, making it suitable for use in noise sensitive environments. Versatile mounting options and a high number of interfaces offer high flexibility.

[News ID 6343](#)

**■ Microsemi: new release of Libero S oC PolarFire design suite available for download**

Microsemi announced a new release of the Libero SoC PolarFire Design Suite, introducing lower static power devices to the PolarFire FPGA family and delivering even greater productivity. Available now, the Libero SoC PolarFire Design Suite v2.2 gives designers access to "L" series PolarFire devices which deliver 30 percent lower static power over standard PolarFire FPGAs, making them ideal for low power portable defense and professional grade consumer systems.

[News ID 6409](#)

**■ Portwell: Type 7 COM Express evaluation carrier board speeds up time-to-market**

Portwell announces the launch of PCOM-C700, Type 7 COM Express carrier board in its COM Express portfolio. With the board size of 304.8 x 243.8mm, the PICMG COM Express 3.0 compliant board incorporates the Type 7 pin mapping into the new generation Carrier board in ATX format. The PCOM-C700 features 4x 10GbE, NC-SI interface, up to 32 PCIe lanes, console redirect, BMC, SATA interfaces and TPM socket.

[News ID 6497](#)

**■ Maxim: radiation-tolerant secure authenticator designed to withstand harsh environments**

Medical device designers can protect surgical tool data from memory-disruptive, high-energy gamma radiation used in sterilization, while simultaneously providing tool security with capabilities such as secure tool use management and counterfeit prevention, with the DS28E83 DeepCover secure authenticator from Maxim Integrated Products.

[News ID 6390](#)



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■ **Maxim: PMICs drive optimized power for automotive ADAS functions**

With a series of power-management ICs from Maxim Integrated Products, designers can optimize power for automotive advanced driver-assistance systems functions to achieve high performance, small size, efficiency, and electrical protection. ADAS functions, many of which are now mandatory or will be soon, increase vehicle safety and enhance the driving experience.

[News ID 6399](#)

■ **ADI: biological and chemical sensing interface IC**

Analog Devices announces a new sensor interface IC that enables the next generation of intelligent electrochemical sensors. As the only solution available to incorporate potentiostat and Electrochemical Impedance Spectroscopy (EIS) functionality on a single chip, the ADuCM355 precision analog microcontroller with bio-sensor and chemical sensor interface is an ideal solution for applications such as industrial gas sensing, instrumentation, vital signs monitoring and disease management.

[News ID 6371](#)

■ **TRINAMIC: rapid positioning with smart stepper motor drives**

TRINAMIC Motion Control announces the extension of the PANdrive product line by the PD42-3-1241 and the module TMCM-1241. The drive is equipped with a high current NEMA17 motor for fast, dynamic positioning. The product features Trinamic's second generation StealthChop, the silent stepper motor drive technology for quiet stepper motors, as well as SpreadCycle for smooth motion control. CoolStep, the sensorless load-dependent current control, ensures energy-efficient operation of the motor while the magnetic SensO-step encoder provides step-loss detection for safety – even in standstill.

[News ID 6398](#)

■ **Mouser stocking iMOTION IMC100 motor control ICs for variable speed drives**

Mouser Electronics is now stocking the IMC100 series, a new family of iMOTION motor control ICs from Infineon Technologies. These ready-to-use solutions for high-efficiency, variable-speed drives integrate both the required hardware and control algorithm for a permanent magnet synchronous motor.

[News ID 6376](#)

■ **Maxim works with Qualcomm on infotainment applications for smart, connected cars**

Maxim Integrated Products announced that select products from its portfolio work with solutions by Qualcomm Technologies to help carmakers and tier-1 suppliers integrate Maxim's Automotive Safety Integrity Level solu-

tions using the Qualcomm Snapdragon 820 Automotive Platform for infotainment applications. Maxim's high-performance solutions are designed to provide the necessary building blocks for next-generation vehicles.

[News ID 6385](#)

■ **DDC: 48VDC/238A, 16-channel solid-state power controller**

Data Device Corporation introduces its 16-channel, 48VDC, 238A Solid-State Power Controller programmability, system health diagnostic and prognostic data, and high-power density in a compact and ruggedized military-grade form factor. DDC's 48VDC SSPC Power Distribution Unit (RP-2016371X) distributes and controls power to up to 16 independent 48 Vdc loads, with 8, 10, and 25 Amp maximum capacities, and provides significant Size, Weight, Power and Cost savings.

[News ID 6383](#)

■ **Socionext enhance sound quality in wide range of applications**

Socionext announced a lineup of acoustics solutions now available under the "ForteArt family of software IPs. ForteArt enhances the sound-related user experience, with applications including consumer products, public signage and automotive infotainment systems. The software IPs can be implemented with other vendors' hardware, as well as with Socionext's SoC products.

[News ID 6481](#)

■ **Fujitsu announces FRAM with capacity of 8 Mbit**

Fujitsu introduces a new FRAM product with a storage density of 8 Mbit. The MB85R8M2T is particularly suitable for use in industrial automation and financial logging systems, where a high data throughput is required, and the integrity of the data is essential. The new product is equipped with a SRAM compatible parallel interface, offering a much more efficient alternative to battery backup SRAM. Based on the unique features of FRAM as a non-volatile memory, such as fast overwrite at 150 ns and read/write endurance of 1013, MB85R8M2T can replace a SRAM and remove the backup battery at the same time.

[News ID 6366](#)

■ **Infineon: angle sensor combines highest functional safety grading with easy-to-use concept**

Functional safety applications in cars often require substantial system design efforts. With XENSIV TLE5014, Infineon Technologies is now launching a new magnetic angle sensor family that is both ready for these demanding applications and at the same time easy to use. At the Sensor+Test 2018, Infineon will demonstrate how easily the new products can be integrated into a safety-critical electric

power steering system.

[News ID 6360](#)

■ **Infineon: System Basis Chips to allow high speed communication with up to 5 Mbit/s**

Infineon Technologies is launching two new System Basis Chip (SBC) families: Lite and Mid-Range+. They are the first SBCs on the market supporting the ISO CAN FD protocol for communication at 5 Mbit/s for a large variety of automotive applications. An SBC is the central supply of power and communication for microcontrollers within electronic control units (ECU) in cars.

[News ID 6485](#)

■ **Maxim: EMI-compliant Himalaya solutions for industrial and general-purpose applications**

Speed time to market and significantly reduce design cycles with EMI-compliant, Himalaya step-down switching converters and power modules from Maxim Integrated Products. These solutions, which comply with CISPR 22 and EN 55022, are ideal for general-purpose applications, including industrial, building automation, factory automation, communications, and consumer electronics.

[News ID 6354](#)

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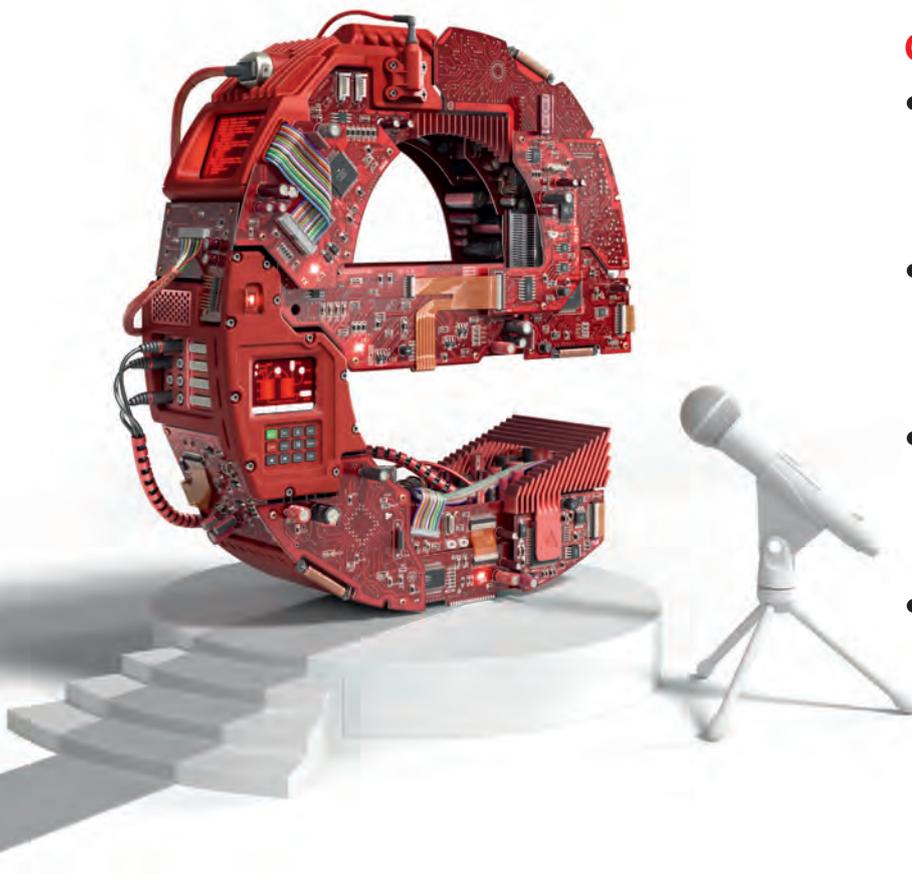
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