Why Are NVDIMMs Suddenly Hot?

Non Volatile Dual-Inline Memory Modules (NVDIMMs)
are taking storage by storm
Read on to get the full scope of this rapidly changing space.

Embedded CompactPCI Platforms for Intelligent Railway Systems

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Postage stamp-sized computer board

PICMG open-standards embedded computing
organization sets sights on postage stamp-sized
computer board

The Future of Medical Device Certification

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Daniel Dierickx
CEO & co-Founder
at e2mos
Acting Chief Editor

*Over 3 decades
Chips & Embedded
Systems Market Expertise*

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Why Are NVDIMMs Suddenly Hot?

NVDIMMs are taking storage by storm—but why? Is it their ability to recover quickly? Their friendly form factor? Updated software? Read on to get the full scope of this rapidly changing space.

It seems like nonvolatile dual-inline memory modules (NVDIMMs) have suddenly lurched into the limelight after several years of being relegated to small niches. This article, excerpted from a new report by Objective Analysis, will cover the basics of NVDIMMs, reveal why they have spiked in popularity of late, and show how they will change the face of computer storage.
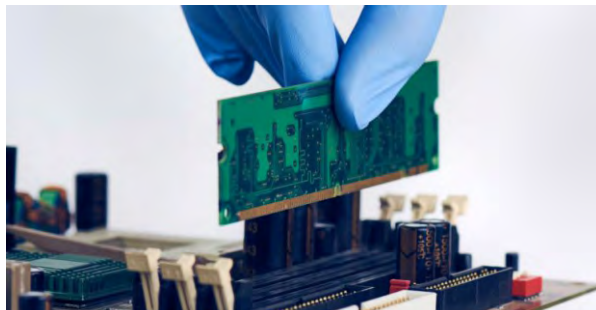
NVDIMMs were sold by SanDisk and IBM a few years ago under the names ULLtraDIMM and eXFlash DIMM, based on a bridge chip designed by Diablo Technology.

Yet another kind of NVDIMM is scheduled to be introduced by Intel in late 2018. Intel's "Optane DIMM" is based on the Intel-Micron 3D XPoint Memory, which is persistent and is said to perform at near-DRAM speeds.

JEDEC-STANDARD DIMM TYPES			
	NVDIMM-N	**NVDIMM-F**	**NVDIMM-P**
Access method	Byte or block	Block	Likely block (depends on media type)
Capacity range	DRAM (tens of GB)	Flash (terabytes)	NVM (terabytes)
Latency	DRAM (tens of ns)	Flash (tens of µs)	NVM (hundreds of ns, TBD)
Other	Requires battery or capacitor	Flash SSD on a DRAM bus	Specification in flux. Will support multiple media types

UNDERSTANDING TODAY'S SUDDEN NVDIMM POPULARITY

The report this article is excerpted from details the markets that have already embraced the use of NVDIMM-Ns. These are applications that are so adversely impacted by power outages that an NVDIMM's fast recovery makes it worth more than twice the price of a standard DRAM DIMM. For the sake of brevity, we won't detail these markets here, but suffice it to say that the bulk of current sales are into slow-growing sectors, with some very exciting prospects in new markets in the near term.

NVDIMM-Ns are also being used to develop applications software for tomorrow's NVDIMM-Ps. Although the software development market doesn't demand very high volume, it's a wonderful way for developers to use currently available technology to develop software that will be ready for Intel's Optane DIMM or other NVDIMM-P products once these technologies become generally available.

But the key reason for today's big interest in NVDIMM-Ns is that NAND-flash chip densities have grown to 16-32 times the density of DRAM chips. Eight or more DRAMs worth of data can be backed up by a single NAND-flash chip. This makes the NVDIMM fit easily within a DIMM's mechanical form factor without obstructing other DIMM slots. No special packaging is needed to accomplish this.

Download the Article

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Onboard Rugged Storage System
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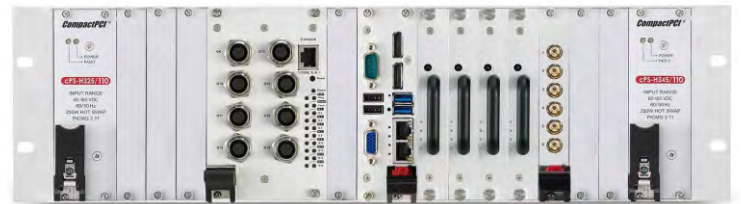
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Automatic Train Operation (ATO) is used to enhance the safety of rail operations by automating station stops and starts of trains. ATO systems can also be linked with Automatic Train Control (ATC) which carry out signaling operations such as routing and train regulation. The ATO and ATC/ATP systems work together to keep trains running according to set timetables within defined tolerances. The combined system adjusts operating parameters such as power-to-coast ratio and station dwell time in order to keep trains in their allotted timetable slots.
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ADLINK is a leading provider of building blocks and intelligent platforms for edge computing. Our Rugged by Design CompactPCI, computer-on-modules, industrial-grade system and panel computer product portfolio has been specifically selected for onboard ATO/DMI and wayside CTC/RBC/TSR railway solutions.

ADLINK's exceptional flexibility in design and manufacturing has been utilized by top rail signaling providers worldwide. MORE: Click HERE

PICMG Overview of IIoT Initiatives

February 15, 2018 by: Doug Sandy, VP Technology [PICMG](#)

At PICMG, we have kicked off a new focus on the requirements for Industrial IoT (IIoT). From there, our efforts can expand out to other IoT market requirements. In IIoT, hardware and software interoperability tends to be more important than household/consumer applications as sensors, actuators, and controllers from multiple vendors must work together seamlessly. But, standardization has not yet materialized.

IIoT, is different than traditional industrial automation in the fact that it combines ubiquitous sensing, advanced analytics, and IT technology. Going beyond traditional automation control functions, IIoT includes sensors and actuators for facility operations, machine health, ambient conditions, quality, and a variety of other functions. Advanced analytics enables the IIoT system to realize higher levels of operational efficiency by extracting meaning from the potential data available from a vast array of deployed sensors. Similar to cloud data centers, where sensors data is used to optimize virtually every aspect of operational efficiency, smart factories and other IIoT applications utilize analytics to improve up-time, optimize asset utilization, and reduce overhead costs. Migration to IT technology enables the IIoT operator(s) to deploy, monitor, and optimize their IIoT application. Standardization around IT practices helps to eliminate islands of proprietary equipment within the installation and provide tighter integration between the control domain and the operations domain. Adoption of IT methodologies enables IIoT companies to leverage the large existing base of IT hardware and software solutions when appropriate. Each of these benefits offers significant potential for capital and operational savings.

Standardization of the upstream interfaces for controller devices and meta-data models for sensors can help solve hardware and software interoperability and ease-of-use issues. Standardized interfaces would allow dissimilar pieces of hardware to communicate with the IIoT command center in a uniform fashion and eliminate isolated islands within the installment. Likewise, an extensible standardized meta-data model for sensors would allow for systematic detection and control of sensors and control points without extensive code re-writes. From a hardware standpoint, the IIoT marketplace would also benefit from greater standardization around communications interfaces, power, and environmental requirements.

Large industrial automation suppliers are not incentivized to embark on open standardization because it loosens the customer's dependence upon their proprietary solutions. Smaller automation suppliers lack the industry clout or size to take on such an ambitious undertaking. This is a task best suited for an industry standards organization, and one which PICMG is well equipped to handle.

COM Express is one logical starting point to build upon because it has the small form factor, processing performance, and flexible I/O configuration to make it a natural fit for small gateways and control functions in small to medium installations, with distributed controllers for larger deployments. In larger installations, CompactPCI Serial or MicroTCA have been adapted for railway control and other rugged applications and may also serve as a flexible gateway/controller. Click on the full [IIoT Overview Discussion](#) for more details.

PICMG open-standards embedded computing organization sets sights on postage stamp-sized computer board

January 23, 2018 by [MIL & AERO](#)

A new generation of small-form-factor embedded computing may be coming together at the PICMG Open Modular Computing Standards organization in Wakefield, Mass. -- a computer board no larger than a postage stamp for wearable computing, smart factories, and the Internet of Things (IoT).

This project, just in its infancy, sees to develop an industry-backed open-systems standard for a tiny embedded computer with minimal processing and minimal I/O resources for lightweight applications that must operate in extremely tight spaces.

PICMG, formerly known as the PCI Industrial Computer Manufacturers Group, is likely to stand-up a Postage Stamp standards working group sometime this spring, and may have its first draft standard ready for balloting by 2019, says PICMG President Jessica Isquith.

Postage Stamp likely will describe extremely small embedded computing mezzanine cards ranging in size from a postage stamp to a business card for operating close to assets on a factory floor and similar applications. Isquith made her comments this week at the Embedded Tech Trends conference in Austin, Texas.

This potential future standard probably won't be for anything like high-performance embedded computing -- only for extreme size- and weight-sensitive applications operating near antennas and sensors, in robotic arms, in data analytics uses, and the like It may operate together on a carrier card for handling several separate tasks.

It's far too early to speculate on specific characteristics for the Postage Stamp embedded computing form factor. PICMG members have shown interest, and developments later this year will be the first indications of the directions this standard will take.

Anyone in the embedded computing industry interested in influencing and working with the future Postage Stamp standard should contact Isquith by email at jess@picmg.org.

THE FUTURE OF MEDICAL DEVICE CERTIFICATION: GREATER SCRUTINY AND MORE VALIDATION - WHITE PAPER

Andrew Caples, Sr. Product Marketing Manager, Mentor Graphics

INTRODUCTION

It's quickly becoming the norm. Due to the critical nature of the functions performed by today's medical devices, greater scrutiny and the need for certifiable software is on the rise. The enhanced scrutiny from government agencies can introduce unexpected delays with the commercial release of a medical device.

Reports from the FDA indicate 75 percent of medical devices submitted for regulatory approval are rejected the first time with software playing a leading role in the failure. The inability to achieve regulatory approval on the first attempt can have a huge impact on the market share a device will command. Products introduced to market quickly capture early market share while receiving a premium price. Early and successful entrants can lock customers into long-term business arrangements making it more difficult for late arrivals.

With so much at stake, navigating through regulatory approval the first time can be tantamount to a product's success. For software developers, this should come as no surprise. Reports suggest approximately 15 percent of all medical device recalls are related to software – the exact cause can be traced back to the software design in over 90 percent of the cases.

Getting through a regulatory review as quickly as possible requires a clear understanding of what is expected for medical devices. Thus, the emphasis on safety has resulted in more interest in standards such as FDA 510K and IEC 62304 for medical device software. This paper discusses regulatory trends software developers should consider in order to successfully navigate through regulatory approval for medical devices.

THE IMPORTANCE OF THE USER INTERFACE (UI)

With the introduction of powerful processors with enhanced graphics capabilities and graphical processing units (GPUs); medical device UIs will become more feature rich with capabilities that were once reserved for high-end consumer smartphones and tablets. Historically, UIs were designed for aesthetic appeal and ease of- use to drive product adoption. The challenge for medical device software developers is to design a state-of-the-art UI that is appealing while meeting a much higher level of regulatory scrutiny for certification.

UI design must now be considered early in the design cycle. No longer will products with confusing or no intuitive UIs receive approval. Regulatory agencies want to see UIs that are user friendly, as UI complexities can cause confusion and make it difficult for a user to correctly enter data or make corrections. The UI should be designed so there is no chance for ambiguity interpreting whether or not a critical situation exists. Critical conditions should be clearly accentuated and easily interpreted by the user so corrective action can be taken without delay. Any data input or user decision that can be dangerous should be clearly highlighted with the potential peril ostensibly highlighted. If the situation deteriorates, the UI should clearly draw attention to the changing environment. The irony is many UIs that are designed for ease-of-use fail in the field because they are too complex.

The fact is, even though most UIs are well documented and pass user tests before product release, it is only after they are deployed when design flaws appear. For many devices, the failure can be traced to the lack of adequate testing. It is common to test a UI in a clean room without distractions. Real world situations include loud ambient noise, multitasking with directions coming from different sources, electrical cords, and other trip hazards strewn about, and of course, the pressure to respond quickly. In short, users can be forced to operate the equipment in environments that are nothing short of chaotic. It is under these conditions in a simulated environment that a device's UI must be tested.

MIXED CRITICALITY

Medical device software complexity is growing at an alarming rate ...
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---

kontron

Medical Box PC
Clinic-BPC B-101

- ☐ Ethernet Daisy Chaining
- ☐ Built-in medical isolator at AC/DC PSU
- ☐ 3x LAN, medical isolated
- ☐ 2 independent DVI monitor outputs for simultaneous
- ☐ Patient Monitoring and EHR access
- ☐ Silent operation, fanless design

The Clinic-BPC B-101 for clinical processes was developed specifically for applications in the medical environment, in particular for use close to patients. The PC stands out thanks to easy installation and cabling as well as the use of energy-efficient components. The Clinic-BPC B-101 has three LAN ports and flexible DVI and VGA interfaces to enable both existing analogue displays and more modern digital displays to be connected without any problems.

Due to the special usage situation, the computer was designed without a fan, thereby enabling silent operation. The Clinic-BPC B-101 has three medically isolated LAN ports and, optionally, isolated RS232 interfaces, as well as two independent, external monitor outputs (DVI-I and DVI-D) to enable the simultaneous display of the electronic patient file and the monitoring of vital data. The system was designed in conformity with DIN EN 60601-1 for the particular safety of electronic devices in medical environments.

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Optocouplers Ensure Safety and Enable Efficiency in Electric Vehicle Charging Stations

BROADCOM®

White Paper

By Hong Lei Chen,
Product Manager,
Avago Technologies/Broadcom

Abstract

The rapidly growing number of electric vehicles (EVs) on the road requires more charging infrastructures to top off energy so that EVs can get back on road quickly. An EV charging station is an important element in the charging infrastructure, which supplies electric energy to the EV and provides a network connection. The need for fast-charging systems results in several challenges, such as safety and efficiency, to charging station designs. This article describes how to use optocouplers in such designs to meet the aforementioned challenges.

Introduction of the EV Charging Station Market

The worldwide electrification of transportation process continues its fast speed through recent years. The global electric vehicle (EV) stock was about 180,000 by the end of 2012; soon this number grew by 3.7 times and reached at more than 665,000 through end of 2014, per International Energy Agency (IEA) Global EV Outlook reports. The report forecasts the global EV on the road to reach at 20 million by 2020 [1].

The rapid growth of EV fleets drives strong demand for charging infrastructures to extend the travel range of EVs. An EV charging station, also called an EVSE (Electric Vehicle Supply Equipment), is an important element in the charging infrastructure that supplies electric energy to the EVs and provides network connection. EVs in this context refer to plug-in electric vehicles, including all-electric cars or battery electric vehicles (BEVs), electric buses, and plug-in hybrids (PHEVs). Figure 1 shows an EV charging station charging an EV.

IHS Automotive forecasts the global EV charging stations installation base to skyrocket from 1 million units by 2014 to 13.6 million in 2020. The market-research firm estimates there will be 4.3 million units installed in the Americas, 4.1 million units in EMEA (Europe, Middle East and Africa), and 5.3 million in Asia (including Japan) [2]. Governments, for example, those in Germany, China, and the United States, are increasingly making funds available for the development of charging infrastructures. Recent development in China shows that China plans to deploy EV charging stations of 4.5 million units by 2020 [3]. This deployment will support the plan of cumulative production and sales of 5 million units of BEVs and PHEVs by 2020, reports the www.gov.cn, a website run by the central Chinese government [4], [5]. Comparing to 31,000 charging stations built through end of 2014 [5], the target of 4.5 million units implies a whopping compound annual growth rate (CAGR) of 129 percent.

Charging Station Standards

Along with the vast market opportunities of EV charging infrastructure, there are significant challenges that must be addressed. One of them is the lack of harmonized standards for key elements in a charging system, such as charge cords, protection mechanisms, power ratings, plug types, coupler configurations, and communication. This issue becomes more prominent for the fast-charging systems compared to the slower-charging AC because the fast-charging systems are often installed at public or semi-public areas and are meant to be shared; whereas incompatible systems make sharing difficult.

International Electrotechnical Commission (IEC) has a set of standards for EV charging. For example, IEC 61851-1:2010 EV applies to on-board and off-board equipment for charging EVs at standard AC supply voltages up to 1000 V and at DC voltages up to 1500 V. IEC 61851-23:2014 gives the requirements for DC EV charging stations. And IEC 62196-3:2014 specifies requirements for EV charging couplers [6], [7]. Globally, fast-charging systems currently face competing standards, one being the CHAdeMO protocol adopted by Japanese industry and the other being SAE International's J1772 Combined Charging System (CCS, also known as "Combo" standard) adopted by U.S. and German car manufacturers [1], [8]. They have different power rating specifications, coupler designs, and communication protocol between EVSE and EV. However, there are views stating "no brandards war" as their charging systems feature all-in-one designs for both CHAdeMO and SAE Combo standards. One of the examples is the ABB's Terra 53 Charge Station [9]. Another relatively new competing standard is the Chinese GB/T 20234, which a revised version has been approved [10]. Some designs, such as Tesla's Superchargers, use proprietary charging technology [11].
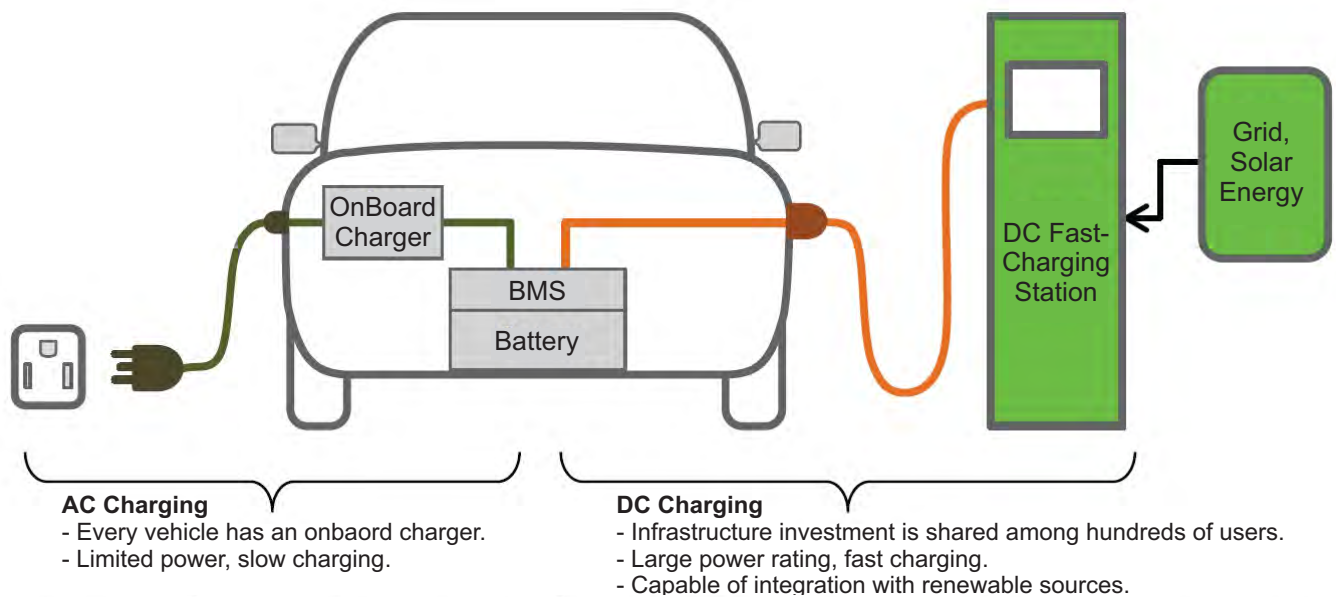
Type of Charging – AC or DC

Putting aside the complication of standards, there are two primary ways to transfer electricity from outside the vehicle to the battery inside – AC or DC. The grid transmits power in AC form, and energy stored in the on-board battery is in DC; therefore, a charger is required to perform the conversion. Depending on whether the charger is installed inside of the vehicle, chargers can be categorized into an on-board charger (OBC) and an off-board charging station. An OBC accepts AC power source from the main supply available at home and workplace and convert to DC to charge the battery. AC charging normally is slow due to limited power rating of the charger because of limitation of allowable weight, space, and cost.

The DC charging method is often used in off-board charging stations. It supplies regulated DC power directly to the batteries inside the vehicle. As the DC charging equipment is installed at fixed locations with little constraint of size, its power rating can be as high as hundreds of kilowatts. For example, SAE J1772 specifies up to 100 kW for DC Level 2 [12]. CHAdeMO considers 50 kW as optimal output power, taking into consideration both factors of the cost of securing the maximum power at the charger location and the time it takes to charge the battery [13, p. "Optimal output power"]. Tesla's Superchargers consist of multiple Model S chargers that work in parallel to deliver up to 120 kW of DC power directly to the battery. This charging rate equates to 170 miles of range in about 30 minutes [11]. The DC fast-charging method shortens charging time from hours to minutes [11], [14]. Figure 2 illustrates the AC and DC charging methods. Table 1 lists the AC and DC charging power ratings and estimated charge time for reference.

AC Charging
- Every vehicle has an onbaord charger.
- Limited power, slow charging.

DC Charging
- Infrastructure investment is shared among hundreds of users.
- Large power rating, fast charging.
- Capable of integration with renewable sources.

Charge Method	Nominal Supply Voltage	Maximum Continuous Current	Output Power	Estimated Charge Time[a]
AC Level 1	120 V AC Supply, 1-phase	12 A	1.4 kW	17 Hrs (OBC, SOC[b] - 20% to full)
		16 A	1.9 kW	
AC Level 2	208-240 V AC Supply, 1-phase	80 A	Up to 19.2 kW	SOC - 20% to full: 7 Hrs (3.3 kW OBC); 3.5 Hrs (7 kW OBC); 1.2 Hrs (20 kW OBC).
DC Level 1	200-500 V DC (EVSE Output)	80 A	Up to 40 kW	1.2 Hrs (SOC - 20% to 100%, 20 kW off-board charger)
DC Level 2	200-500 V DC (EVSE Output)	200 A	Up to 100 kW	20 min (SOC - 20% to 80%, 45 kW off-board charger)

a. For ease of discussion, only BEV (battery electric vehicle) examples are listed.
b. State of charge (SOC) is the equivalent of a fuel gauge for the battery pack in a BEV. An SOC of 0% means the battery pack is completely discharged; and 100% SOC means that it is fully charged.
NOTE
1. Rated power is at nominal configuration operating voltage and coupler rated current.
2. Ideal charge times assume 90% efficient chargers, 150W to 12V loads and no balancing of Traction Battery Pack.
3. BEV (25 kWh usable pack size) charging always starts at 20% SOC, faster than a 1C rate (total capacity charged in one hour) will also stop at 80% SOC instead of 100 percent.

AC and DC chargers provide different charging speeds, and both are required to fit the EV drivers' different life styles. For example, an EV driver can use an AC charge in the scenarios where ample time is available, such as parking at home or at the workplace. DC fast charge has an obvious and important benefit as it can dramatically reduce charging time so that the EV drivers can continue their journey quickly. Fast charging is a key instrument in the successful roll-out of electric vehicles to reduce or eliminate range anxiety, especially for long-distance driving.

Optocouplers Ensure Safety and Enable Efficiency in Electric Vehicle Charging Stations - White Paper   *... from previous page*

Charging Station Topology and Safety Isolation

Safety isolation need is present in all functions of the EV on-board electronic systems and EV charging stations. On-board systems include the high-voltage battery management system, DC-DC converter, electric motor drive inverter, and on-board charger [16]. For on-board systems, optocouplers, such as the R2Coupler® product family from Avago Technologies, provide the complete range of automotive-grade devices with reinforced reliability and safety insulation capability, suitable for applications, such as gate driving, current/voltage sensing, and digital communication [17, pp. 25–29]. Discussions in this article focus on the isolation solution for off-board charger designs that often find that industrial-grade devices are sufficient.

An EV charging station typically includes functional blocks, such as an AC-to-DC rectifier, a power factor correction (PFC) stage, and DC-to-DC conversion to regulate the voltage level suitable to charge the battery in the vehicle. Figure 3 shows a simplified block diagram of a DC-charging station design. In a high-frequency isolation topology, galvanic isolation is provided in the DC-to-DC converter stage by a high frequency transformer and multiple isolation devices that provide various signal isolation functions while maintaining a safety isolation barrier between the high voltage power section and the low voltage controller section. Within all these stages, power devices such as MOSFETs and IGBTs, are used to perform switching function.
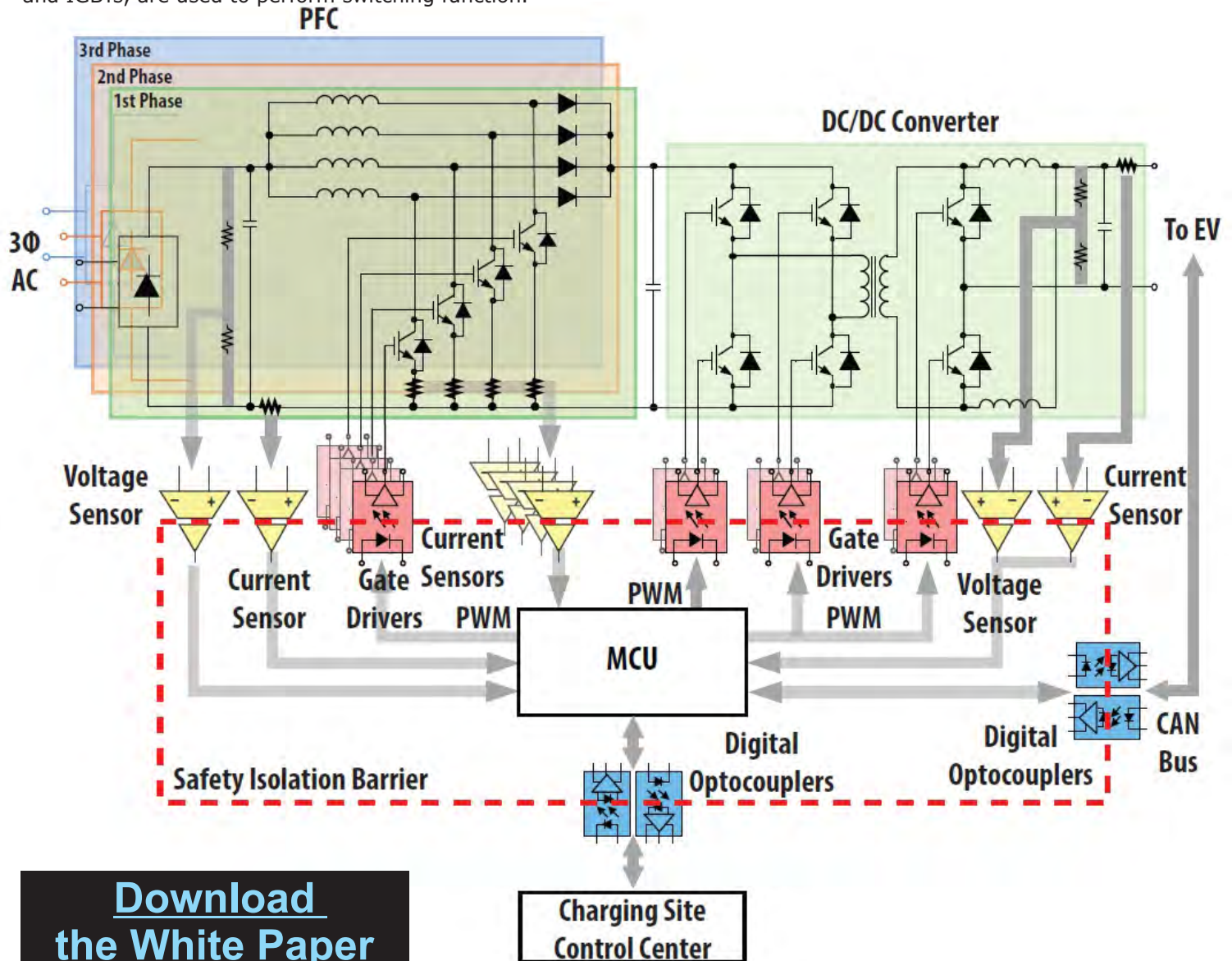
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Broadcom ... about the Optoelectronics Product Range
More than 40 years of History

Do you remember where it is coming from?
Hewlett-Packard Components Div., 1975 – Agilent Technologies, 2000 – Avago Technologies, 2005
Avago Technologies acquires Broadcom Corp. and Broadcom Limited is formed, 2016

ADLINK Launches New Rugged Compact IoT Gateway/Controller

IIoT-ready MXE-210 delivers a secure and robust platform with minimal footprint

Taipei, Taiwan -- 2017/12/01

ADLINK Technology, a global provider of leading edge computing solutions that drive data-to-decision applications across industries, introduces a robust and reliable IIoT-ready combination embedded controller and IoT gateway.

ADLINK's MXE-210 offers a small footprint and is fully operable in harsh environments from -40°C to 85°C, making it an ideal choice for industrial automation, transportation, agriculture/aquaculture, and smart city applications.

Functioning as both a gateway and embedded controller, the MXE-210 bridges the gap between Operations Technology (OT) and Information Technology (IT) data interchanges, with support for third party manufacturers via its wide range of industry standard compliances; **support is included for Modbus, EtherCAT, DDS, MQTT, and CANOpen by Vortex Edge Connect, as well as Wi-Fi, BT, LoRa, 3G, and 4G LTE for data communication and wireless connectivity.** As a controller, the MXE-210 leverages the same protocols to directly communicate with and manage any standard industrial device.

"As Industrial Internet of Things applications continue to expand, manufacturers and other industries require functionality across a range of environments without the need to resource individual manufacturers to meet the conditions of each location." said Ryan Huang, product manager for ADLINK's Embedded Platform & Module Business Unit. "The MXE-210 Series provides **industrial grade EMI/EMS EN 61000-6- 4/2 certified performance in extreme environments and, with EN 50155 EMC compliance, is ideally suited for use with all manner of rolling stock." The MXE-210 gateway's single embedded SIM (e-SIM) automatically switches between regional networks,** enabling a more secure and robust alternative to multiple SIM cards currently to deliver data as rolling stock moves between regions. The pre-installed e-SIM also eliminates time spent swapping out installed SIM cards.

The MXE-210 Series further supports a wide range of comprehensive security measures, providing protection from the inside out with the benefits of TPM 2.0, Intel® Boot Guard, and UEFI Secured Boot. In addition, the MXE-210 comes equipped with an Intel Atom™ x7-E3950/x5-E3930 processor (formally codenamed Apollo Lake-I), one DisplayPort, two USB 2.0, two USB 3.0, two GbE ports, two COM ports(RS232/422/485), two mPCIe slots, one USIM slot, one mSATA, one SATA-III, one Micro SD slot, and support for DIN-rails and wall mounting. Optional extras include audio mic-in, line-out support, eight isolated DI with interrupt and eight isolated DO, and two additional COM ports (RS232/422/485)*.

For more information about our integrated predictive maintenance solution, please visit ADLINK's website HERE.

* Eight isolated DI with interrupt and eight isolated DO, and two additional COM ports (RS232/422/485) will be ready on Q1 2018.

Artesyn and Gamestream to Cut the Cost of New Gaming-as-a-Service by More Than Half with the Latest Intel® Processors

Powered by Intel processors with high performance discrete graphics and memory on a single package

Las Vegas, Nev. [7 January, 2018] — At the Consumer Electronics Show (CES) in Las Vegas today, **Artesyn Embedded Technologies and Gamestream in collaboration with Intel unveiled a new industry-leading cloud gaming solution** that will enable telecom operators and hospitality providers to dramatically lower the cost and eliminate the complexity of rolling out branded gaming-as-a-service offerings to their customers.

Gamestream, a cloud gaming innovator, will offer its white label cloud gaming platform and premium gaming catalog using the MaxCore®high-performance server from Artesyn, a leader in computing platforms for communications networks. The server is powered by the new 8th Gen Intel® Core™ processor, which brings together a high-performing Intel Core H-series processor, second generation High Bandwidth Memory (HBM2) and a custom-to-Intel Radeon RX Vega M graphics processor – all in a single package. This hardware and software combination offers more than double the user density and half the power consumption per server than current server-based solutions. A single 3U MaxCore server, loaded with PCI Express cards featuring the new Intel Core processor, running the Gamestream cloud gaming solution will be able to host up to 60 concurrent gaming sessions.

Artesyn expects to have PCI Express add-in cards featuring the new Intel processor in the second half of 2018.

Gamestream

Gamestream has developed a highly portable thin client for network operator set-top-boxes, cable modems or smart TVs which can be ported at very low cost and simplifies deployment of the OTT cloud gaming solution. With licensed games ready to stream, customers can go live with a solution quickly and easily with minimal upfront capital expenditure.
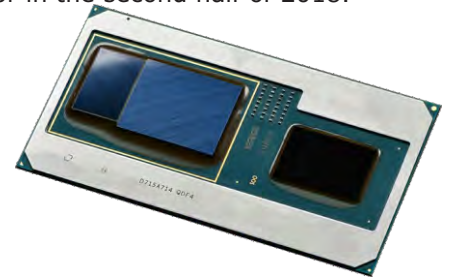
Ivan Lebeau, chairman and CEO of Gamestream, said: "Currently, the distribution of video games still depends on physical and downloadable models. However, the evolution of the music and movie industries leads us to believe that the gaming industry is set to follow the same pattern. The unlimited streaming model in the video game industry is still in its early stages and its development faces several technical challenges, which the combination of the latest Intel processors and Artesyn's MaxCore server helps us to overcome. We can now offer more than double the user density and half the power consumption per server than current solutions, dramatically reducing the cost to our customers and maintaining an excellent gaming experience for their subscribers."

Gamestream has the widest range of negotiated games licenses for streaming in the industry, giving their customers access to the largest potential catalogue of games. Gamestream has partnered with software houses such as Disney, Konami, Codemasters, THQ Nordic and Maximum Games. These partnerships allow Gamestream to distribute hits such Lego Star Wars, Pro-Evolution Soccer 2018, GRID AutoSport and Red Faction. Gamestream customers are free to define their own catalogue of games depending on geographical preferences and targeted audiences.

Artesyn

Artesyn's MaxCore platform uses Artesyn microserver cards and PCI Express add-in cards in an innovative chassis with internal networking to offer versatility and maximum performance density per rack unit for data center and carrier-grade applications. A single 3U MaxCore platform can host up to 15 add-in cards with a total of 30 processors supported by dedicated hard drive bays, and redundant hot-swappable cooling and power supplies.

Barry Dolan, vice president of sales and marketing at Artesyn, said: "Telcos can now offer their subscribers a cloud gaming service under their own brand to monetize the investment in their existing network infrastructure, while the hospitality offering goes beyond hotels to include cruise ships, airplanes and even hospitals. With first deployments already underway, this is an exciting collaboration that could be as disruptive in gaming as streaming has been in other entertainment markets. The low cost of entry makes it easy to test the service with customers and scale out as subscriptions grow.

"For sheer performance density and versatility, nothing beats the MaxCore platform. It is already the highest density platform for voice and video streaming services worldwide, so cloud gaming is a natural and ideal application whether it is virtualized in a data center or as a mobile edge computing (MEC) scenario."

... to next page

Artesyn and Gamestream to Cut the Cost of New Gaming-as-a-Service by More Than Half with the Latest Intel® Processors

Intel

Lynn Comp, general manager of the Visual Cloud Division in Intel's Data Center Group, said: "Remote gaming provides an exciting opportunity for a wide range of cloud and communications service providers to deliver windows PC games to their customers. The combination of Intel® Quick Sync Video for quality and low-latency compression of frames into industry standard AVC/HEVC video, combined with high performance discrete graphics in one solution, offers a compelling user experience with excellent gameplay."

About Gamestream

Gamestream has developed a high quality cloud gaming solution, allowing it to stream in HD (1080p/60fps) a catalog composed of the latest AAA games and a selection of the best independent games. The company's white-label solution is designed to enable hotels, cruise ships and hospitals; and telecom operators, media groups and internet access providers to provide their customers with a latest generation console experience, with no dedicated console or appliance.

About Artesyn Embedded Technologies

Artesyn Embedded Technologies is a global leader in the design and manufacture of highly reliable power conversion and embedded computing solutions for a wide range of industries including communications, computing, consumer electronics, medical, military, aerospace and industrial automation. For more than 40 years, customers have trusted Artesyn to help them accelerate time-to-market and reduce risk with cost-effective advanced network computing and power conversion solutions. Headquartered in Tempe, Arizona, Artesyn has over 16,000 employees worldwide across ten engineering centers of excellence, four wholly-owned world-class manufacturing facilities, and global sales and support offices.

Mercury Systems Launches Latest Intel-based Rugged XMC

Mercury's MFCC-8570 Single Board Computer is ideal for avionics display processors or video server applications.
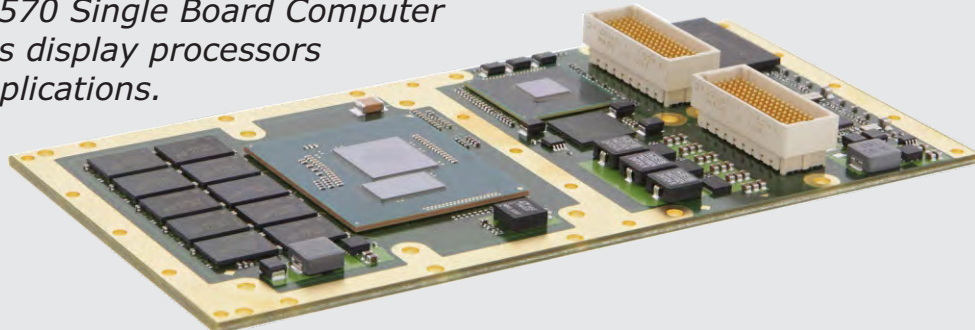
BuiltSAFE™ MFCC-8570 Enables Easy Upgrades for Avionics and Communications

ANDOVER, Mass., Feb. 15, 2018 (GLOBE NEWSWIRE) -- Mercury Systems, Inc. (NASDAQ:MRCY) (www.mrcy.com) announced today the BuiltSAFE™ MFCC-8570 single board computer (SBC) based on the Intel® Core™ i7 Gen5 processor. Delivered as a conduction-cooled switched mezzanine card (XMC), the MFCC-8570 provides an easy upgrade to previous XMC SBCs while preserving the system and sensor I/O built into the host motherboard or I/O carrier.

The Intel Core i7 Gen5 5850EQ processor includes Iris Pro 6200 graphics, making the MFCC-8570 ideal for airborne display processors and video server applications. With turbo boost up to 3.4 GHz for each of four cores, the CPU also enables high-performance airborne and ground-based applications such as flight computers, mission computers, data links, and ground stations for unmanned aerial vehicles (UAVs), helicopters, and a variety of fixed-wing aircraft.

"The MFCC-8570 provides best in class performance per watt," said Greg Tiedemann, Director of Product Management. "This fills out our Intel-based SBC product line providing customers a choice of XMC, 3U OpenVPX™, and 6U OpenVPX depending on their size constraints."

The MFCC-8570 SBC expands the processing product portfolio for the BuiltSAFE ROCK-2 3U OpenVPX avionics subsystem that also includes graphics, video, I/O, storage, and chassis. The MFCC-8570 can be combined with safety-certifiable SBCs in a multi-level safety ROCK-2 subsystem to provide the optimal mix of high DAL-level certification and highest performance on a function-by-function basis.

For more information on Mercury SBC solutions for mission computing and avionics, visit www.mrcy.com/SBC or contact Mercury at +1 (866) 627-6951 or info@mrcy.com.

Top 100 Global Defense Companies (2017)
The Top 10 firms accounted for 54% of revenues.

Source: Defense News -- Posted by douglasburdett

Overall defense revenues for the Top 100 defense companies in the world increased in 2016, ending a five-year slide.

Reversing a five-year slide in revenues may signal that the era of defense austerity may officially be at an end. For the Top 100, revenues came in at $364.8 billion, an increase of 3.6 percent.

Despite the overall revenue increase, the list is top-heavy: the top 25 companies accounted for 74% of total defense revenues, and the top 10 firms accounted for 54% of revenues.

Geographically, 42 of the Top 100 firms are based in the U.S., which accounted for 60% of total defense revenue (up +1%). Europe has 30 companies represented (up from 27).

The Asia-Pacific region has 15 companies (down from 17 last year), while Africa, Canada and South America were represented by a single firm each. Israel is the lone country in the Middle East to appear on the list, with four companies.

China: no detail available (not a surprise) but in 2016, China had a defense budget of $146.6 billion, and the output of its defense industry was estimated to be around $362 billion.

Country	Count
US	42
UK	10
Japan	8
France	6
Russia	6
Israel	4
South Korea	3
Turkey	3
Germany	2
India	2
Italy	2
Norway	2
Austria	1
Brazil	1
Canada	1
Finland	1
Singapore	1
South Africa	1
Spain	1
Sweden	1
Switzerland	1
Ukraine	1
TOP 100	**100**

Rank 2017	Rank 2016	Company	Country	2016 Defense Revenue* (in millions)	2015 Defense Revenue* (in millions)	% Defense Revenue Change	2016 Total Revenue* (in millions)	Revenue From Defense
1	1	Lockheed Martin [1]	U.S.	$43,468.00	$40,596.00	7%	$47,248.00	92%
2	2	Boeing	U.S.	$29,500.00	$30,388.00	-3%	$94,571.00	31%
3	3	BAE Systems [2]	U.K.	$23,621.84	$25,278.08	-7%	$25,867.20	91%
4	4	Raytheon Company [1]	U.S.	$22,384.17	$21,619.71	4%	$24,069.00	93%
5	6	Northrop Grumman [3]	U.S.	$20,200.00	$17,600.00	15%	$24,508.00	82%
6	5	General Dynamics	U.S.	$19,696.00	$19,148.00	3%	$31,353.00	63%
7	7	Airbus	France	$12,321.00	$12,776.10	-4%	$73,903.80	17%
8	9	L3 Technologies	U.S.	$8,879.00	$8,772.00	1%	$10,511.00	84%
9	8	Leonardo [4]	Italy	$8,526.22	$9,318.45	-9%	$13,322.22	64%
10	10	Thales	France	$8,362.00	$7,863.24	6%	$16,837.00	50%
11	11	Almaz-Antey	Russia	$7,412.90	$6,965.77	6%	$7,412.90	100%
12	13	United Technologies	U.S.	$6,888.00	$6,780.00	2%	$57,400.00	12%
13	12	Huntington Ingalls Industries [1]	U.S.	$6,778.21	$6,879.60	-1%	$7,068.00	96%
14	16	United Aircraft Corp. [1]	Russia	$5,636.84	$4,643.76	21%	$7,046.05	80%
15	14	Rolls-Royce	U.K.	$4,741.15	$4,790.28	-1%	$18,675.97	25%

NATO buyers to meet with Airbus over billions in A400M fines

29-Jan-2018 -- By: Daniel Cebul for DefenseNews

WASHINGTON — Airbus will meet with several NATO members on Feb. 5 in London to discuss reductions to fines imposed on the company due to delivery delays and failing to meet contract capability requirements for its A400M Atlas military transport aircraft program, Reuters reports.

If Airbus is unable to convince buyer countries to put a cap on financial penalties, the company fears the $21 billion program will be seriously at risk.

An Airbus A400M arrives in Sevilla after a test flight on May 12, 2015.
(Cristina Quicler/AFP via Getty Images)

Delivering aircraft that fail to meet contracted capability requirements behind schedule have lead buyers like Germany, the program's largest customer, to withhold full payment. Technical problems in manufacturing, specifically with cracking in the engine's gearbox, have put the project years behind schedule. As a result, Germany's share of costs have risen from an expected $10 billion to nearly $12 billion.

Commenting on the program's financial issues last February, Airbus CEO Tom Enders said the company committed an "original sin" by signing a contract that was "too short on budget and timeline." Enders said the company made another "incredible blunder" in assuming liability for the engines.

Airbus paid $2.6 billion to cover financial penalties and slow deliveries in 2016, adding to the nearly $6.2 billion the company has paid in penalties since accepting the A400M contract in 2010.

Officials from Belgium, France, Germany Luxemburg, Spain, Turkey and the United Kingdom, as well as Europe's procurement agency OCCAR, will meet with Airbus in attempt to hash out an agreement capping financial penalties. Airbus received a $4.3 billion bailout from the seven countries in 2010.

LAST MINUTE:
Airbus estimates that its proposed reduction in A380 and A400M production rates will affect up to 3,700 personnel across its four home nations.

Energy efficient and powerful: Kontron introduces two Qseven Computer-on-Modules (COM)

COM Qseven-Q7AL with Intel Atom®, Pentium® or Celeron® processors - Qseven-Q7AMX7 with NXP Cortex® A7 processor

Qseven
ARM & X86

Augsburg, 22.02.2018 – Kontron, a leading global provider of IoT/Embedded Computing Technology (ECT), announces for the first time two new modules in the Qseven form factor at embedded world 2018. Depending on the requirements, the Qseven-Q7AL module is available with Intel Atom®, Pentium® or Celeron® processors, the Qseven-Q7AMX7 module uses the Cortex® A7 processor. Both modules support the Qseven 2.1 specifications and are designed for use in industrial environments and at extreme temperatures.

New Kontron VM6103 delivers an unmatched combination of computing performance and very low power dissipation for transportation, defense & industry technology insertion

New VM6103 extends Kontron's 6U VME portfolio of commercial-off-the-shelf (COTS) single board computers (SBCs) with NXP Layerscape multi-core 64-bit ARM with Neon SIMD product family.

VME
64-bit ARM
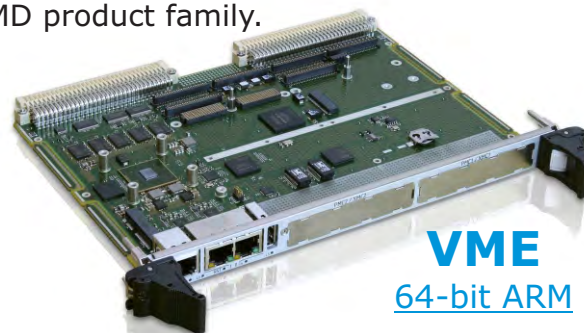
Augsburg, Germany, February 13, 2018 – In line with its strategy of ensuring customers to upgrade their existing applications with the latest technology, Kontron, a leading global provider of IoT and Embedded Computing Technology (ECT), today announced the VM6103, a new 6U VME SBC with NXP Layerscape scalable multi-core 64-bit ARM™ processor. The low power dissipation blade computer features more than 4600DMIPS while drawing less than 10W.

AIRBUS 2018 - Photo by A. DOUMENJOU / master films

Airbus Annual Press Conference: 15-Feb-2018
Full-Year 2017 results: Airbus overachieved on all key performance indicators

- Strong underlying business performance
- Revenues €67bn; EBIT Adjusted €4.3bn; EBIT (reported) €3.4bn; EPS (reported) €3.71
- Proposed 2017 dividend €1.50 per share, up 11 percent from 2016
- Solid commercial environment: book-to-bill of 1.5, record backlog supporting ramp-up
- Free cash flow before M&A and customer financing € 2.9 billion
- A400M charge € 1.3 billion in 2017; clear roadmap mitigating future risk
- Airbus expects around a 20 percent increase in EBIT Adjusted in 2018

Full report CLICK HERE

Ministerial Communiqué on the A400M Programme
From: Ministry of Defence UK, Defence Equipment and Support, and Guto Bebb MP
Published 7 February 2018 - SOURCE CLICK HERE

This communiqué summarises the meeting of the A400M Partner Nations (UK, France, Germany, Belgium, Spain, Luxembourg and Turkey) chaired by Minister of State for Defence Procurement Guto Bebb on 5 February 2018.

Ministers from the A400M Partner Nations had a productive meeting with industry representatives. The discussions focused on the progress and the next steps on the A400M programme which is already delivering much welcomed initial operational capability to several of the Partner Nations Air Forces. All Nations and Airbus have signed a high level Declaration of Intent to re-baseline the A400M programme reflecting the latest status of the production and capability delivery plans.

Emirates firms up order for up to 36 additional A380s
Published by Airbus 11 February 2018 - SOURCE CLICK HERE

Emirates and Airbus firmed up an earlier Memorandum of Understanding (MoU) and signed a contract for 20 additional A380s with a further 16 options to be confirmed at a later date. The total agreement for 36 aircraft is valued at US$16 billion based on the latest list prices. Deliveries are to start as early as 2020.

The agreement was signed at the World Government Summit by HH Sheikh Ahmed bin Saeed Al Maktoum, Chairman and Chief Executive, Emirates Airline and Group; and Mikail Houari, Airbus President for Africa and Middle East. Also present were HH Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the United Arab Emirates, ruler of the Emirate of Dubai; and Edouard Philippe, Prime Minister of France.

Editor Note
Airbus is a large user of COTS/Embedded Computing Systems, with one of their partner I had the pleasure to handle and win designs for communication systems inside of the A380 and the A400M - Daniel Dierickx see e2mos

U.S. Defense & Aerospace News

Pentagon unveils $686 billion military budget for 2019

U.S. President Donald Trump's second budget plan calls for the purchase of 10 new naval ships in FY19. (Staff)

Mon. 12-Feb-2018 – Reported by: [Joe Gould & Tara Copp, DefenseNews](#)

WASHINGTON — U.S. President Donald Trump's fiscal 2019 budget is requesting $686.1 billion in military funding, with a focus on great power competition with Russia and China, the Pentagon announced Monday. The request includes $617 billion in base budget funding and $69 billion in cap-exempt wartime funds, part of the administration's expected $716 billion national security request (which includes Department of Energy nuclear programs).

Defense Secretary Jim Mattis told reporters Sunday the new two-year budget agreement would allow the military to be reshaped "[back to a position of primacy](#)."

Darpa Selects Orbital ATK for Hypersonic Engine Research

Program Seeks to Integrate Technologies into a New Aircraft Propulsion System

Dulles, Virginia 23 January 2018 – Orbital ATK (NYSE: OA), a global leader in aerospace and defense technologies, has entered into a contract with the Defense Advanced Research Projects Agency (DARPA) to study potential integration of turbine and hypersonic engine technologies into a new aircraft propulsion system under DARPA's Advanced Full Range Engine (AFRE) program.

The AFRE program seeks to develop a new aircraft propulsion system that could operate over the full range of speeds from conventional runway low-speed takeoff through hypersonic flight and then back to a conventional landing. Systems that operate at hypersonic speeds potentially extend range and shorten response times, offering enhanced effectiveness compared to current military systems. The program will explore the concept of a combined cycle engine technology whereby during the flight, a turbine engine would operate up to supersonic speeds and a dual-mode ramjet would transition to hypersonic speed. [MORE](#)

Northrop Grumman Gets EU OK to Acquire Orbital ATK

Defense giant Northrop Grumman's $9.2 billion merger with Orbital ATK has been approved by the European Commission

By Nick Zazulia | February 13, 2018 - The European Commission has approved Northrop Grumman's acquisition of aerospace and defense manufacturer Orbital ATK.

Virginia-based Northrop Grumman first proposed the $9.2 billion transaction last September. U.S. Federal Trade Commission approval, which is expected in the first half of 2018, is the deal's last major hurdle. Orbital ATK would be added to Northrop Grumman as a new, fourth business sector. [MORE](#)

General Atomics Aeronautical Systems, Inc. (GA-ASI) Announces Best in Industry Partnerships for MQ-25

THE PARTNERS: Boeing Autonomous Systems • Pratt & Whitney • UTC Aerospace Systems • L3 Technologies • BAE Systems • Rockwell Collins • GKN Aerospace's Fokker BU • General Atomics Electromagnetic Systems • General Atomics Systems Integration.

SAN DIEGO – 13 February 2018 – General Atomics Aeronautical Systems, Inc. (GA-ASI) is proud to announce its MQ-25 Stingray offering to the U.S. Navy in collaboration with a range of highly regarded industry partners that represent the best in American aerospace.

GA-ASI has designed a purpose-built MQ-25A Stingray, optimized for the tanking mission and providing exceptional fuel give that will more than double the range of the Carrier Air Wing. Our offering exceeds all of the Navy's requirements, including carrier suitability.

"As the world's premier quick reaction unmanned aircraft system manufacturer, we are committed to delivering the most effective, affordable, sustainable, and adaptable carrier-based aerial refueling system at the lowest technical and schedule risk," said David. R. Alexander, president, GA-ASI. "This collaboration of the best in aerospace industry will provide the U.S. Navy with a fleet ready unmanned tanker with exceptional growth, well within the Navy's preferred timeline." [MORE](#)

New PICMG Standard cPCI Serial Space is ratified

Source: MEN
https://www.men.de/news-media/press-releases/new-picmg-standard-cpci-serial-space-is-ratified/

The newest PICMG standard cPCI Serial Space, CPCI-S.1 R1.0 (Sep. 2017), was now officially ratified. The extension of the CompactPCI Serial standard was initiated by a large-scale project over 900 satellites of an Internet supplier and has now successfully been finished by the members of the PICMG working group.

CompactPCI Serial reaches out into Space

The goal of the new technical PICMG sub-committee "CompactPCI Serial Space" (cPCI Serial Space) was to extend the current CompactPCI Serial specification by a sub-standard covering the specific requirements for space applications.

The two main changes in the extension of the CompactPCI Serial specification are the definition of a dual star architecture for increased availability, and allowing the integration of different communication protocols common in space applications for both – the dual-star and the full-mesh network (which was formerly restricted to Ethernet only). The result is a parallel and flexible usage of the full-mesh Ethernet network via the backplane, as well as the dual-star architecture via PCI-Express or any other protocol like SpaceWire, TTEthernet, EtherSpace etc…, of both the CPU card and all peripheral cards.

Manfred Schmitz, CTO and founder of MEN Mikro Elektronik, who was already significantly involved in the development of the CompactPCI Serial standard, was acting as a close technical adviser to the group. "CompactPCI Serial Space is the consequent path to implement high-tech solutions for a highly sophisticated market while re-using and evolving proven industrial technology, reaching significant cost reductions in parallel compared to existing solutions", he states.

Jess Isquith, President of PICMG, adds: "CompactPCI Serial Space guarantees the interoperability of different boards from different suppliers, and helps re-use solutions from mission to mission. Its open integration of different protocols makes it also suitable for many more applications – not just in space."

GE Power Announces Global Headcount Reduction of 12,000 Jobs As Part of Plan to Take Out $1 Billion in Structural Costs

Aligns with company's effort to reduce overall structural cost by $3.5 billion in 2017 and 2018

December 07, 2017 06:32 AM Eastern Standard Time
Source: https://www.businesswire.com/news/home/20171207005517/en/GE-Power-Announces-Global-Headcount-Reduction-12000

BOSTON--(BUSINESS WIRE)--GE Power (NYSE: GE) today announced that it plans to reduce its global headcount by approximately 12,000 positions, affecting both professional and production employees.

The headcount reductions, combined with actions taken previously in 2017, will position GE Power to reach its announced target of $1 billion in structural cost reductions in 2018. This announcement aligns with GE's effort to reduce overall structural costs by $3.5 billion in 2017 and 2018. These actions will strengthen GE Power's global competitiveness and drive increased value for customers and shareholders.

The plans announced today are driven by challenges in the power market worldwide. Traditional power markets including gas and coal have softened. Volumes are down significantly in products and services driven by overcapacity, lower utilization, fewer outages, an increase in steam plant retirements, and overall growth in renewables.

GE Power is right-sizing the business for these realities and is focused on improving operational excellence and reducing its footprint and structure, which will help drive significant improvements in cash flows and margins.

"This decision was painful but necessary for GE Power to respond to the disruption in the power market, which is driving significantly lower volumes in products and services," said Russell Stokes, president and CEO, GE Power. "Power will remain a work in progress in 2018. We expect market challenges to continue, but this plan will position us for 2019 and beyond.

"At its core GE Power is a strong business," Stokes continued. "We generate more than 30 percent of the world's electricity and have equipped 90 percent of transmission utilities worldwide. Our backlog is $99 billion and we have a substantial global installed base. This plan will make us simpler and stronger so we can drive more value for our customers and investors."

Where required, the process of informing and/or consulting with employee representatives regarding these proposals has begun or will begin shortly.

About GE

GE (NYSE:GE) is the world's Digital Industrial Company, transforming industry with software-defined machines and solutions that are connected, responsive and predictive. GE is organized around a global exchange of knowledge, the "GE Store," through which each business shares and accesses the same technology, markets, structure and intellect. Each invention further fuels innovation and application across our industrial sectors. With people, services, technology and scale, GE delivers better outcomes for customers by speaking the language of industry. www.ge.com

GE's Investor Relations website at www.ge.com/investor and our corporate blog at www.gereports.com and @GE_Reports on Twitter, as well as GE's Facebook page and Twitter accounts, contain a significant amount of information about GE, including financial and other information for investors. GE encourages investors to visit these websites from time to time, as information is updated and new information is posted.

Contacts

GE Investors:
Matt Cribbins, 617-443-3400
Matthewg.Cribbins@ge.com

Embedded Computing Boards Overview

Direct Link Click on the Pictures

ADLINK
TECHNOLOGY INC.

Qseven

Intel-based: several CPU 's
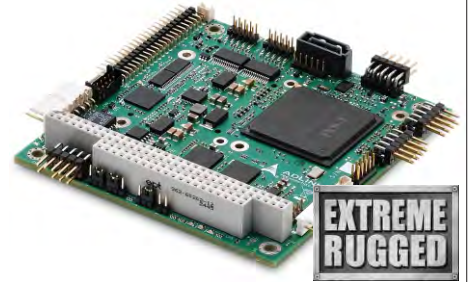Standard Size (70 mm x 70 mm)

SMARC
Smart **M**obility **ARC**hitecture

Intel-based: several CPU 's
Short Size (82 mm x 50 mm)
Full Size (82 mm x 80 mm)

PC/104
PCI/104 Express

EXTREME RUGGED

Intel-based: several CPU 's
PCI/104-Express (V3.0)
Size (117.4 mm x 96 mm)

COM Express

Type 6
Basic Size (125 x 95 mm)
Compact (95 x 95 mm)
Type 7 - Intel Xeon-based
Basic Size (125 x 95 mm)
Type 10
Mini Size (84 x 55 mm)
Type 2
Basic Size (125 x 95 mm)
Compact (95 x 95 mm)

Intel-based: several CPU 's


3U-6U VPX
Conduction & Air-cooled

3U-6U CompacPCI, Plus & Serial

Conduction & Air-cooled

### AdvancedTCA - ATCA -AMC - MicroTCA

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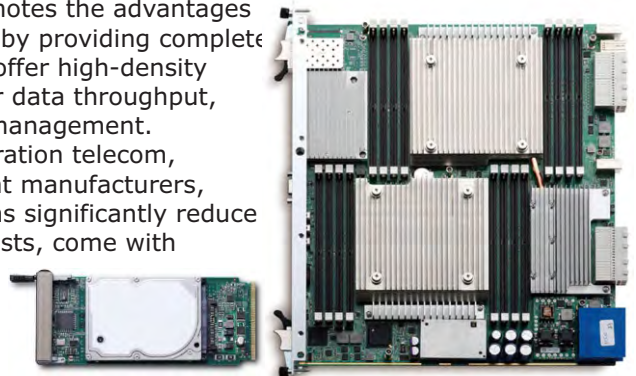
Ind. Motherboards Mini-ITX

PCIe
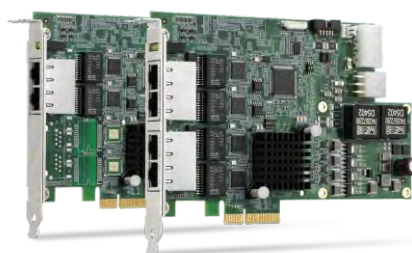
Frame Grabbers
Video Capture Cards

PXI - PXIe

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GLOBAL REFERENCES include: IBM, Intel, Microsoft, Cisco/Tail-f Systems, Telco Systems, Artesyn, Motorola, TI DSP, Xilinx, Adlink, Kontron, Radisys, Enea Software, Green Hills Software, Wintegra, Arrow, Avnet, ... and more

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and Product/Market Expertise
OPTION: we join the Customer Meeting

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Take a Tiger for a while

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How to find More New Customers
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Targets: what do you want
Our recommendations
How to get there

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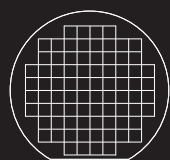
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