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SPECIAL REPORT

As military robots gain traction, ethical-use guidelines emerge

SALLY COLE, SENIOR EDITOR

Robots can help the military ? on land, at sea, in the sky, and in space ? and the U.S. Department of Defense is slowly establishing some guidelines for their ethical use.

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INDUSTRY SPOTLIGHT

SOSA benefits reach beyond sensor systems

MARK LITTLEFIELD, KONTRON

The Sensor Open Systems Architecture (SOSA) is a standard currently in development by a government/industry consortium (<https://www.opengroup.org/sosa>) that has as its goal making high-performance sensor platforms easier to design, more interoperable, and upgradable at the modular level throughout a platform? life.



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INDUSTRY ANALYSIS

AUSA and the week full of firsts

EMMA HELFRICH, ASSOCIATE EDITOR

This is my first job out of journalism school, sans a bar gig here and there. But as far as pantsuit-wearing, desk-sitting, degree-utilizing jobs go ? Associate Editor for Military Embedded Systems is the first title I?ve ever held. That being said, working for Military Embedded Systems these past four, going on five, months has been a whirlwind of firsts. One of those firsts was attending the annual Association of the United States Army (AUSA) trade show in Washington D.C.

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INDUSTRY SPOTLIGHT

Improving intelligent tactical data link translation to simplify real-time warfighter communications

STEVE HORSBURGH, CURTISS-WRIGHT

Military organizations around the world rely heavily on tactical data links (TDLs) to securely and reliably share mission-critical information among air, ground, and sea platforms. Because different devices use different TDL types for communications, a highly sophisticated TDL



gateway is needed to translate information across the various link types. There's a huge disconnect, however, between historical TDL gateway designs and modern military requirements.

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INDUSTRY SPOTLIGHT

Harnessing open source innovation in the military with rock-solid security

RICH LUCENTE, RED HAT

The U.S. military faces increasing pressure to innovate faster to stay ahead of the evolving threat landscape ? but not so quickly as to compromise the security of mission-critical IT systems.

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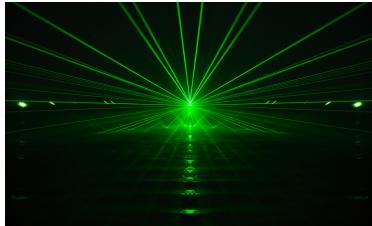


INDUSTRY SPOTLIGHT

Modular Open Systems Approach for weapons systems is a warfighting imperative

JOHN BRATTON, MERCURY SYSTEMS

The recent tri-service memorandum requiring modular open system approaches (MOSAs) to be deployed in all future defense systems is aimed at putting the best technology into the hands of the warfighters faster. Take a look at how designers are meeting tri-service requirements by moving past commercial off-the-shelf (COTS) to MOSA.

**MIL TECH TRENDS****Powering the future of directed-energy weapons**

FRANCK KOLCZAK, TE CONNECTIVITY

Defense designers face many different challenges in developing directed-energy weaponry, which can employ either laser, particle-beam, or high-power microwave (HPM)/radio frequency (RF) technologies. One feature that these three directed-energy weaponry technology categories have in common is the need for high electric power following implementation of high-voltage solutions. Directed-energy weapon designers benefit by understanding the different challenges that high voltages impose on electrical interconnects and how to solve them.

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The New Space Race: an Agile Odyssey

WIND RIVER

Space is back in style. Literally. From new space suits for the first space tourists, to limited-edition NASA bomber jackets, the space market is seeing a renaissance of interest. And with it comes a new infusion of start-ups revolutionizing space tech. John McHale, editorial director for Military Embedded Systems, and industry experts talk about all the different areas that are getting disrupted and what tomorrow's space leaders should address in the latest episodes of The New Space Race, an original podcast series from Wind River.

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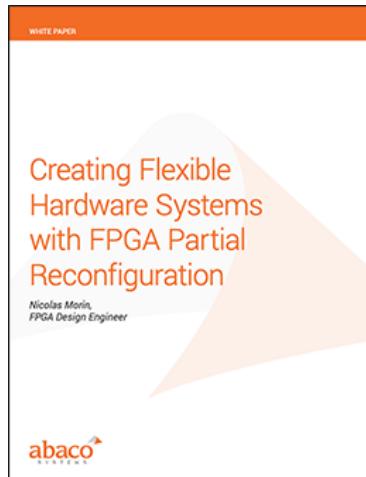
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Creating Flexible Hardware Systems with FPGA Partial Reconfiguration

ABACO SYSTEMS

Partial Reconfiguration (PR) allows FPGAs to dynamically change modules without disrupting other parts of the design. This is a feature that FPGA vendors are building into their newer generations of FPGAs, allowing for increased flexibility and functionality in digital systems. Users can partition the FPGA fabric into reconfigurable regions which are then reprogrammed using partial configuration files.

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4 Approaches to Solve Today's Obsolescence Challenges in Aerospace and Defense

NATIONAL INSTRUMENTS

Unlike conventional consumer products such as cellular phones, which have a lifespan of only a few years, ? products? in aerospace and defense are produced and supported for decades. For example, the Boeing B-52 Stratofortress was first introduced in 1954, and is expected to remain in service until the 2040s after nearly a century on the market.

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Engineering Automated Driving Systems for Safety

CRYSTAL GROUP, INC.



Autonomous vehicles (AVs) including fast-growing fleets of self-driving cars and trucks are poised to revolutionize transportation. The global automotive industry is on the cusp of significant change, enabled by innovative automated driving system (ADS) and autonomous vehicle (AV) technologies in a fast-growing market estimated to reach \$7 trillion by 2050; yet, widespread deployment hinges almost entirely on safety.

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Solving Tomorrow's Obsolescence Management Challenges with System Design

NATIONAL INSTRUMENTS

Test systems built to manufacture and support aerospace and defense platforms generally need to remain in service for the lifetime of that platform, or at least long enough to perform planned sustainment over 20 or 30 years. Yet, most test systems are not built in a way that includes sustainment engineering as part of the initial design.

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Tower in a Teacup: How the Small Form Factor Transition is Reshaping Embedded and Military Computing

ADLINK

The predisposition that ?bigger is better? pervades in many areas, but in computing greater size is almost always a liability. Large configurations demand power and create heat. They consume precious space and potentially crowd out other vital systems. Even in a 60-ton armored tank, size, weight, and power (SWaP) remain at a premium.



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Projected Capacitive (PCAP) Touch Screens in Defense and Aerospace

CURTISS-WRIGHT

There is no question that touch screens are a useful asset for warfighters in the field enabling them to make selections, enter information, and interact with systems without the need for a space-consuming mouse or keyboard. However, finding touch screen technology that can handle the demands of harsh environmental conditions encountered in aerospace and defense applications is challenging.

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