

Dedicated Systems' News

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High Performance 3U OpenVPX FPGA modules for hybrid EW and Radar platforms

Designed for applications requiring a very high level of computing power in a compact 3U form factor, the IC-FEP-VPX3c board offers the highest bandwidth with the lowest power consumption.

Unmatched signal processing power in a VPX 3U form factor

The IC-FEP-VPX3c uses the most powerful FPGAs of the Virtex-7 ® Xilinx family with up to 80 GTH 13.1 Gb/s Transceivers and 3600 DSP48E1 slices.



A flexible design for reducing costs

Based on the VITA 65 standard, this 3U OpenVPX FPGA carrier can support a number of different IC VITA 57 FMCs enabling designers to target a variety of signal processing applications with the same board.

The IC-FEP-VPX3c and other building blocks of Interface Concept's 3U OpenVPX product ranges running their Signal Processing Reference Design are the ideal platforms for customers who want to streamline development by concentrating their efforts on their most critical tasks.

For more information on IC-FEP-VPX3c, please visit

<http://www.interfaceconcept.com/premium-IC-FEP-VPX3c.html>



AdaCore releases GNAT GPL for Bare Board ARM

AdaCore have released a freely downloadable version of its GNAT GPL Ada cross-development environment for Bare Board ARM Cortex processors. Students, professors and other developers of non-proprietary software can now exploit Ada 2012's reliability, safety and security benefits for ARM applications.

GNAT GPL for Bare Board ARM Cortex processors provides a complete Ada 2012 development environment, including a comprehensive tool-chain and GPS, AdaCore's flagship Integrated Development Environment (IDE). It also includes a fully configurable/customizable run-time library consisting of the "Small Footprint" (SFP) and Ravenscar profiles that are particularly relevant to safety-critical systems. The SFP profile corresponds to a language subset with minimal GNAT run-time routines, and the Ravenscar profile is a subset of the Ada concurrency features with an efficient, predictable, small-footprint implementation. The resulting Ada subset has expressive power well beyond that of other languages used for ARM-based devices.

"There are now billions of ARM processors in embedded systems, which has created a global ecosystem with many developers looking to take advantage of Ada's strengths," said Dr. Pat Rogers, AdaCore Bare Board product manager. "By making an Ada cross-development environment freely available to the academic and hobbyist communities, we are responding to this demand and see great potential for significantly increasing the overall usage of the Ada language. With powerful ARM-based boards currently available for under \$20, this new GNAT GPL release becomes a cost-effective development environment for everyone."

GNAT GPL for Bare Board ARM is available now from libre.adacore.com. The package includes a tutorial and example project showing how to use Ada and GPS for the "STM32F4 Discovery" (Cortex-M4) evaluation kit from STMicroelectronics. Fully featured releases of the GNAT technology are already available for GNU Linux, Mac OS X, and Windows.

WIND RIVER**Wind River Integrates Virtualisation Technology into Next-Generation RTOS for the Internet of Things**

Wind River®, a world leader in delivering software for intelligent connected systems, has introduced a virtualisation profile for the next generation version of its market-leading VxWorks® real-time operating system (RTOS). Based on proven Wind River virtualisation technology, Virtualisation Profile for VxWorks extends the scalability capabilities of the VxWorks 7 Core Platform by integrating a real-time embedded, Type 1 hypervisor into the core of the RTOS.

Through embedded virtualisation, Virtualisation Profile allows VxWorks customers to consolidate multiple workloads on a single processor. It provides robust, safe and secure partitioning across all market segments, from automation control to medical scanners to avionics control systems -- critical in today's era of the Internet of Things (IoT). OS-agnostic, the profile allows combinations of VxWorks, Linux, Windows® and other operating systems to share the memory and cores of a multi-core processor or system-on-chip (SoC).

"VxWorks with integrated virtualisation allows customers to address IoT device challenges, where connectivity, scalability, security, and future-proofing are required," said Dinyar Dastoor, vice president of product management at Wind River. "It delivers the key benefits that will give our customers a competitive edge in consolidation, flexibility, safety, and security, as well as CAPEX and OPEX savings, and significant reduction in development time for end devices. We see a strong need for these capabilities across all market segments, but with an emphasis where connectivity is now requisite, such as in industrial, medical, aerospace and defense."

Recognized as the industry-leading RTOS, VxWorks has been re-architected with a highly modular approach leading to the separation of the VxWorks core operating system from packages such as the file system or networking stack. As a result, individual applications can now be updated at any time without requiring a rework or retest of the entire system, increasing scalability and the ability to quickly adjust to market changes.

Full article available at <http://www.windriver.com/news/press/pr.html?ID=13081>

**Rugged FPGA boards based on Altera Arria 10 for SIGINT and Communications**

BittWare Inc. is introducing the A10 embedded computing family based on the Altera Arria 10 field-programmable gate arrays (FPGAs) and systems on chip (SoCs).

BittWare's A10 board family capitalizes on Arria 10 FPGAs's capabilities in challenging applications such as signals intelligence (SIGINT), network processing and security, compute and storage, instrumentation, test and measurement, broadcast, medical imaging, and wireless infrastructure.



The A10 board family has flexible memory configurations, sophisticated clocking and timing options, QSFP28 cages that support 100 Gigabits per second (including 100 Gigabit Ethernet) optical transceivers, FPGA Mezzanine Card (FMC), and support for the network-enabled Altera SDK for OpenCL.

Built on 20-nanometer process technology, Arria 10 FPGAs and SoCs offer higher densities, higher performance, and a more power-efficient FPGA fabric than previous generations; they also integrate a richer set of embedded peripherals, high-speed transceivers to 28 Gigabits per second, hard memory controllers, and protocol controllers.

In addition, Arria 10 FPGAs and SoCs integrate hardened floating-point (IEEE 754-compliant) DSP blocks that deliver floating-point performance of to 1.5 teraflops. Arria 10 SoCs also integrate a dual-core ARM Cortex-A9 MPCore hard processor system (HPS).

BittWare's A10 family consists of 11 board variants, all supported by BittWare's Board Management Controller (BMC), built-in USB Blaster, BittWorks II software suite, and FPGA Development Kit (FDK). Find out more at: <http://www.bittware.com/media-center/press-releases/bittware-announces-board-family-based-on-alteras-arria-10-fpgas-and-socs>



4DSP Introduces a Compact Platform for UAVs with Embedded Processing and Flexible IO



4DSP's new CES720 (Compact Embedded System) is a stand-alone, small form factor embedded system designed to provide a complete and generic processing platform for data acquisition, signal processing, and communication. The system is housed in an enclosure measuring five inches per side and weighing less than 1 Kg. It features a low-power x86 CPU tightly coupled to a high-performance Xilinx Kintex-7 and FPGA Mezzanine Card (FMC – VITA 57.1). The Kintex-7 410T FPGA provides a flexible and powerful processing backbone for interfacing to the FMC site, CPU, and external DDR3 SDRAM, with plenty of room left over for high-performance Digital Signal Processing.

“The CES720 is ideal for development and prototyping purposes, and it can serve as a customisable stand-alone lab instrument or as a deployed embedded solution for UAV applications where weight and size are critical,” said 4DSP Systems Engineer Justin Braun. “FMCs can be chosen from 4DSP's extensive and versatile portfolio of modules or from a third-party vendor to customise the functionality of the system for a given application.”



4DSP's BSP (Board Support Package) and StellarIP are available for the CES720. These tools allow designers to jump into development with modular reference designs that exercise the system's capabilities and provide the high-level interfaces and driver support. For more information, visit http://www.4dsp.com/press_releases/CES720.html

Features:

System IO:

- HDMI
- USB
- eSATA
- Gigabit Ethernet
- FMC HPC site
- JTAG
- PCIe communication between processor and FPGA

Processor - System controller:

- AMD G-Series Dual Core 1.0GHz Processor T40E
- 2GB DDR3 SDRAM
- 64GB SSD
- Windows and Linux support

Power:

- DC 16V – 30V

FPGA:

- Kintex-7 410T FFG676
- 1GB DDR3 SDRAM

Dimensions and Weight:

- 132 x 75 x 125 mm (WxHxD)
- 0.86 Kg



European Space Agency (ESA) Builds Advanced Telerobotics Development Platform on RTI Connex DDS

Real-Time Innovations (RTI), the real-time Industrial Internet of Things communications platform company, and the European Space Agency have announced that ESA has developed a telerobotics development platform built on RTI's Connex DDS product. The platform is called Space Portable Application Network (SPAN) designed to meet the stringent flexibility and re-usability requirements needed for robust telerobotics. The platform will allow the ESA Telerobotics & Haptics Laboratory to develop and test complex robotics systems.

Existing robotics development platforms do not meet the real-time communication requirements of these telerobotic applications nor do they consistently succeed in real-time deployments. ESA's telerobotics development platform Space Portable Application Network (SPAN) seamlessly delivers a robust, scalable and high performance system while saving costs, bringing the researcher closer to the needs of the system which results in more informed research.

RTI Connex DDS is currently being used for real-time communication to the International Space Station (ISS) and is proven in this DIIL (Disconnected Intermittent and Lossy) communication link — future telerobotics applications will take this real-time feedback and control to a more advanced and complex level as they connect humans and robots across space in real-time. ESA and the Telerobotics & Haptics Research Lab are spearheading this project at the European Space Research and Technology Centre (ESTEC).

Read more at <https://www.rti.com/company/news/esa-telerobotics.html>

WIND RIVER**Wind River Technology Powers Airbus Group's Innovative Unmanned Aerial Vehicle ATLANTE**

Wind River®, world leader in delivering software for intelligent connected systems, has announced that Airbus Defence and Space, an Airbus Group company, relies on Wind River VxWorks® 653 Platform for its long endurance tactical unmanned aerial vehicle (UAV) "ATLANTE." -

"We sought to create an UAV with fully automated take-off and landing capabilities, and the capacity to provide its operators with real-time information by performing surveillance and target acquisition over a large area," said Fernando Mijares, ATLANTE Chief Engineer at Airbus Defence and Space. "We chose Wind River VxWorks 653 knowing it would perfectly serve these hard real time and mission critical constraints given its proven track record of successful implementations in the UAV space."

Part of the Wind River product portfolio for trusted systems, VxWorks 653 is a commercial off-the-shelf (COTS) platform for delivering safety-critical, integrated modular avionics (IMA) applications. It is compliant with ARINC 653, which implements ARINC 653 partitioning of applications. Specifically, VxWorks 653 powers the mission computer, ground communications and control station critical computers in the ATLANTE. In addition, it provides resource management and a partitioning environment that allows multiple independent applications of different criticality levels to run on a single target platform.

For more than three decades, Wind River has been a trusted advisor in the development of safety and mission-critical products. The company's reliable and secure software has served as a key technology for countless autonomous systems around the globe, including the Mars Science Laboratory rover Curiosity, Northrop Grumman X-47B, unmanned aircraft, CIRA's FTB-1 reusable unmanned spacecraft, AgustaWestland's Project Zero technology incubator, and the nEUROn Unmanned Combat Air Vehicle demonstrator, among others. See more at: <http://www.windriver.com/news/press/pr.html?ID=13141>



4DSP Raises the Bar for Optical Ethernet Performance in the FMC Form Factor with Dual 40Gb Module

4DSP have introduced the new [FMC410](#) FPGA Mezzanine Card which offers ten independent optical transmit and receive links with maximum data rates of either 6.25Gbps or 10Gbps. This COTS card features separate transmitter and receiver modules and provides high port density. The FMC410 can be used as a dual 10Gb or dual 40Gb Ethernet port, and it provides high-speed optical input and output for telecommunications, data networking, data storage, and ultra-high-definition video applications. It also offers front panel I/O access and can be used in a conduction-cooled environment.

Features:

- Ten independent transmit channels
- Ten independent receive channels
- High channel capacity: 6.25Gbps or 10Gbps per direction (TX/RX)
- High port density
- Separate transmitter and receiver modules
- 13.5 mm stacking height
- Low power consumption

**Applications:**

- Dual 10Gb or 40Gb Ethernet
- Telecommunications systems
- Data networking
- Enterprise data storage
- High-performance computer/FPGA interconnects
- InfiniBand 10X DDR SX interconnects
- Telecom and datacom switch and router backplane connections
- Dense 4Gbps Fibre Channel compatible architectures

The FMC410 is electrically and mechanically compliant to the FMC standard (ANSI/VITA 57.1) except for its height. This daughter card is 3.4 mm higher than the maximum component height of 9.5 mm specified by the FMC standard. The FMC410 is therefore equipped with a connector that provides a stacking height of 13.5 mm instead of the standard 10 mm. The card can still be used without issues on many FPGA carrier cards and FPGA development platforms.