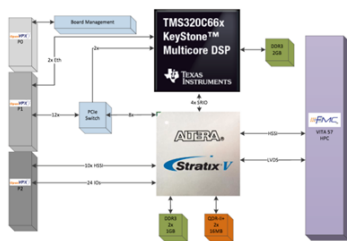# PRESS RELEASE
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VirtuosoNext RTOS unleashes the power of Sundance's OpenVPX DSP board

Together they create a powerful and ultra-high bandwidth processing platform ideally suited for computation and bandwidth-intensive high-reliability and safety-critical applications

Photocaption 1: Block diagram of Sundance's VF360 3U OpenVPX single board computer (SBC).

Photocaption 2: Sundance's VF360 3U OpenVPX single board computer (SBC).

Photocaption 3: Screenshot of stress testing program showing event traces of two tasks on different cores synchronizing in a loop using two semaphores (one on each core).

Chesham, UK – 21st February 2017. Sundance Multiprocessor Technology Ltd., an established supplier and manufacturer of high performance embedded solutions, has collaborated with Altreonic to port its multicore VirtuosoNext™ Designer embedded RTOS to Sundance's VF360 3U OpenVPX single board computer (SBC), that integrates a Texas Instruments C6678 Keystone multicore DSP alongside an Altera Stratix® V FPGA.

VirtuosoNext Designer is Altreonic's fifth generation embedded RTOS. It delivers substantial performance and productivity gains due to its extremely compact kernel size that can even fit in the on-chip caches. It also supports a modelling and code generation environment that makes parallel and concurrent programming easy to achieve. By generating code as a static image, it eliminates many of the runtime errors that can occur with a more traditional dynamic RTOS. Its packet switching architecture also reduces typical pointer errors providing extra robustness. An ARINC-653 interface is on the road map although the native VirtuosoNext support is more aimed at hard real-time behaviour.

Coupled with the on-board multicore DSP, which runs at 1.25GHz and delivers up to 224GFlops from its eight cores with a peak bandwidth of 16Gbytes/sec, VirtuosoNext Designer truly unleashes the power of the VF360 SBC. Together they create a powerful and ultra-high bandwidth processing platform ideally suited for computation and bandwidth intensive high-reliability and safety-critical applications such as mission computers, rail, networking, signals intelligence, electronic warfare, software defined radio and video.

"At Altreonic, we call the VF360's on-board TI multicore DSP a Rack-on-a-Chip (RoC)," said Eric Verhulst, CEO of Altreonic. "But to reach its optimum performance, an efficient real-time operating system architecture is essential. And that's where VirtuosoNext Designer comes in. It has the ability to truly unleash the power of Sundance's VF360 SBC by facilitating parallel programming thereby enabling computation and communication tasks to be implemented concurrently. In addition, our support for the MPU fully isolates the cores from each other for safety and reliability."

The VF360 SBC features a VITA65 OpenVPX compliant backplane interface, which provides plenty of bandwidth for board-to-board communication in the form of three 4-lane PCI Express fat pipes and 10 multi-

gigabit transceivers for more generic protocols like 10Gb Ethernet, Serial Rapid IO (SRIO), Aurora (RocketIO) and SerialLite II to name but a few. It also acts as a VITA 57 FMC carrier to provide a modular solution that accommodates a wide range of I/O requirements.

The Stratix V FPGA connects to the multicore DSP, backplane and FMC site and facilitates the integration of safety-critical and commercial IP cores like MIL-STD-1553, ARINC-429, ARINC-825 (CAN bus), AFDX (Avionics Full-Duplex Switched Ethernet), JESD-204B, high-definition video (SDI) and others. The abundant logic and DSP resources of the FPGA complement that of the multicore DSP to make the VF360 the ultimate processing platform in a 3U form-factor. The VF360 is available in both air-cooled and conduction-cooled versions.

"The combination of VirtuosoNext Designer and the VF360 makes for a very powerful, reliable and flexible embedded SBC from which even more powerful systems can be built by connecting them together in a single OpenVPX rack," concluded Flemming Christensen, Managing Director of Sundance Multiprocessor Technology Ltd.

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About Sundance Multiprocessor Technology

Sundance designs, develops, manufactures, and markets internationally high-performance signal processing and reconfigurable systems for original equipment manufacturers in embedded applications. Leveraging its multiprocessor expertise and experience, Sundance provides OEMs with modular systems as well as data acquisition, I/O, communication and interconnectivity products that are essential to multiprocessor systems where scalability and performance are essential. Sundance, founded in 1989 by the current directors, is a member of the Xilinx Alliance, TI's 3rd Party Design Network, and MathWorks' Connection programs. Sundance is leading member of the PC/104 Consortium, the focal point for the entire PC/104 industry including manufactures and OEMs. For more information about Sundance and its products, visit http://www.sundance.com.

About Altreonic

Altreonic specializes in trustworthy systems and software engineering, using a unified system engineering methodology. The latter is supported by GoedelWorks, an end-to-end systems engineering environment that supports qualification and certification during engineering activities. VirtuosoNext™ Designer is based on a formally developed network-centric RTOS kernel with supporting tools like Visual Designer for modeling and code generation and Event Tracer for a visual analysis of the application behavior. Altreonic has a long history of supporting customers in the aerospace and defense domains. The technology is also internally applied to the development of a light weight electric vehicle platform. For more information about Altreonic, visit http://www.altreonic.com.

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