SUNDANCE - The DSP & FPGA Development Force

eNews

October 2008 - Special Edition

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'SUNDANCE ROADSHOW'

Throughout October to December 2008 you can find Sundance on the road at the following conferences, technical events and trade shows.

| Date	Event	location	Web link
26th - 30th Oct	Embedded Systems Conference	Hynes Convention Center - Boston - Mass, USA	Embedded Systems CONFERENCE BOSTON
4th Nov	NIDays 2008	The IET, Savoy Place, London, UK	NIDays08 CONFERENCE
11th - 14th Nov	Electronica Automotive Conference	New Munich Trade Fair Centre, Germany	electronica
16th - 19th Nov	UK@CERN 2008	CERN (European Organization for Nuclear Research), Switzerland	
19th - 21th Nov	Embedded Technology 2008	Pacifico, Yokohama, Japan	Embedded Technology 2008

If you want to talk to use, arrange a product demonstration or reserve a new product preview, please take advantage of the Sundance team being in your own backyard and contact enquiries@sundance.com

Signal Processing Nirvana

With the move beyond 3G, the increasing ubiquity of wireless and ever increasing demands upon infrastructure such as a broadband cable, designers are crying out for new development environments. Environments that on the one hand can be reassigned to different communications technologies and applications, whilst at the same time providing common platforms that are user configurable by processing fabric, architecture, comms ports, memory and protocol.

In a nutshell that's what Radio Giga delivers, and we use the work nutshell advisedly. Not only does Radio Giga feature multiple Virtex 4 and Virtex 5 Xilinx FPGAs, Dual C Series TI DSP engines, processor cores and 6 Channels of 1GHz e2v ADC; Radio Giga is 1U compliant and delivered to the customer in a 'Tardis' like form factor.
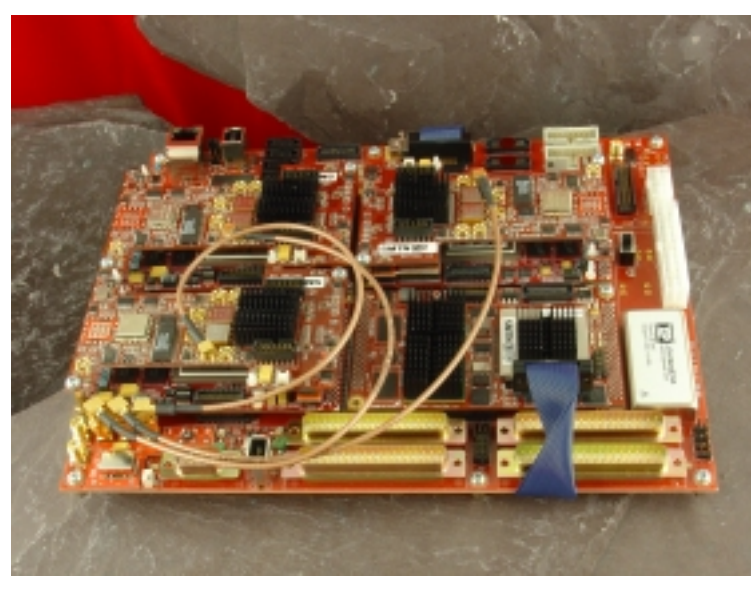
Radio Giga is supported by a comprehensive design environment that encompasses software, hardware and model based design. The hardware design is consistent with our pledge to backwards compatibility and to get you going we've also provided a system demo.

And to end our story with a question, 'What is Radio Giga?...according to design engineers, it is their signal processing Nirvana.

For more information on Radio Giga go to www.sundance.com; view the press release or contact your local Sundance Office.

Extreme DSP + FPGA PXIe Solutions

Our SMT7xx Series covers more than 25 modular PXI Express DSP/ FPGA solutions. Showcased at ESS will be our Dual - ADC PXI Express Hybrid Peripheral Module, the SMT702. It provides 8-lanes of PXI Express and features 2 channels of 3 GHz ADC that can be combined to deliver 6 Gsps, and high density Xilinx Virtex 5 LXT FPGA devices optimized for logic and serial I/O.

The generic product building block for the 7 Series is the SMT700 that introduces extreme FPGA acceleration to the PXI Express standard. The SMT700 features a Xilinx Virtex 5 FPGA with connectors for serial interfaces, Gigabit Ethernet and fibre optic modules...amongst others.

With this new series of products we have increased our ruggedized offering and can better service customer where PXI compliance is critical. If you want more information view the press release, visit www.sundance.com or contact your local Sundance Office.

Sundance Modules go OEM

'You can't keep a good thing to yourself'...or is it that 'you can't get too much of a good thing'? Either way, our investment in years of product development and manufacturing capacity has yielded an array of sub-modules and daughter cards that provide functionality across a broad range of functions and applications. This investment in design and manufacturing has enabled us to be first-to-market with some of the most flexible and cutting edge multiprocessor solutions. For the first time this module 'mine' is now being made available to customers outside of the Sundance family. Customers who are seeking a fast and straight forward route to pre-optimized and pre-verified module based component solutions.

Modules available under the OEM solutions banner range from Dual MIMO RF to Dual WiMax RF, Camera Link to Dual Gigabit Ethernet, and DAQ modules from 125MHz through 1GHz. Across the range there is a choice of form factor, on-board memory configurations and max Bus speeds that reach 1.25Gbps
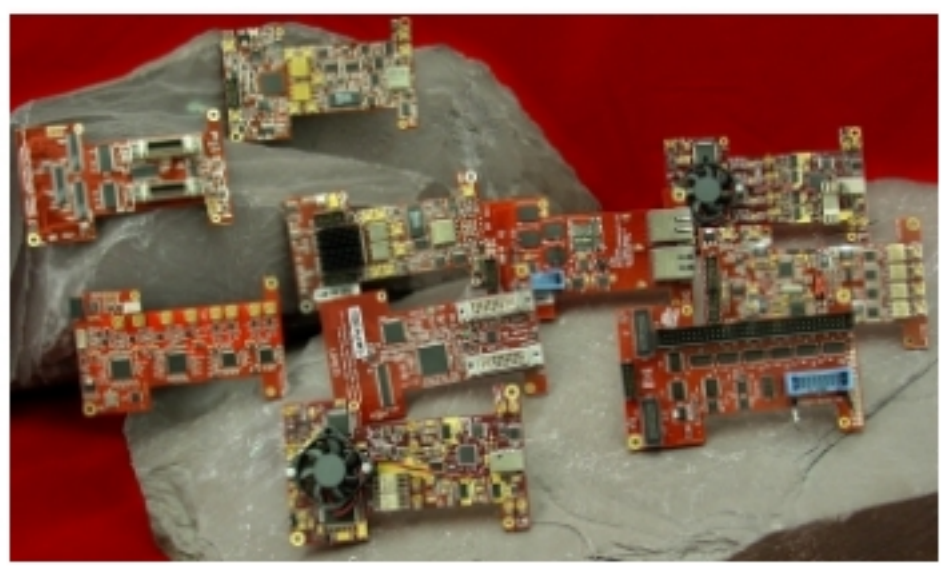
For customers who need to fine tune the modules to their own unique specification, IP based Design Packages are available that include source code, schematics and VHDL. Design Packages are subject to license agreements with Sundance, but are offered on a royalty free basis.

For more information about our component OEM solutions contact your local Sundance Office or enquiries@sundance.com for more information.

Complex algorithms get embedded at Sundance

When the United States Navy's Advanced Technology Engineering Group needed to find a home for their ultra complex, ultra sophisticated electronic warfare algorithms, Sundance stepped up to the plate and provided a unique hybrid DSP-FPGA hardware and a model based design solution to program it.

Housed inside the Sundance DSP8080-AIMM (Altitude Interference Mitigation Module), the Navy's system architecture and algorithms are helping to improve the warfighter's surveillance of the battle space. The DSP8080-AIMM combats communication interferences from unwanted sources and provides pin point accuracy for remote ship, tank and aircraft operators in understanding the source of a signal.

Provided in a compact, lightweight and low cost configuration, the DSP8080-AIMM accommodates beam forming of a high quantity of digital drop receivers (> 100 channels) and can interface to a range of coherent tuners. The system is flexible enough to provide radio direction finding and geo-location by-product, and outperforms its nearest competition in price, performance, size and weight.

Key to making the DSP8080-AIMM a reality for the Navy was the decision to use PARS (Parallel Application from Rapid Simulation) design environment. PARS generated the entire target code including, DSP codes, FPGA codes and all of the inter-processor communication and synchronization codes from a Simulink model. The Navy's algorithms were implemented as either IP cores on FPGAs or optimized DSP code targeting the floating and fixed point DSPs.

The DSP8080 utilizes multiple high-performance DSPs from Texas Instruments, including the TMS320C6416, a fixed-point processor running at 1 GHz, and the TMS320C6713, a floating-point DSP. The system also utilizes several Virtex 4 SX55 Xilinx FPGAs with the processing elements mounted onto a range of integrated Sundance platforms including the SMT374, SMT364, SMT318-SX and SMT361Q.

Commenting on the work completed with the Navy and on the DSP8080, Jacob Alamat, marketing manager for high performance processors at Texas Instruments said, "...we're proud to be part of this unique solution for the Navy.' So are we!

It's all about performance...

Well at Sundance we're not sure it is. In recent years there has been increasing interest in the role of FPGAs in the supercomputing mix. Yes they are a viable solution, but it's not just about performance. The SuperComputing computation mix is more complex. Power, performance (peak and sustained), communications latency, form factor, footprint, scalability, cooling BOM, energy efficiency, I/O, memory, clock rate, cost and ease-of-design, are some of the variables that are taxing the minds of high performance computing (HPC) designers.

It's with this in mind that we decided to design and build a solution that ticks these boxes for our HPC colleagues. RASS, our high reliability Reconfigurable, Accelerating, Scalable SuperComputing solution incorporates a lot of the know-how and features we have learned from over 2 decades of multiprocessor design.
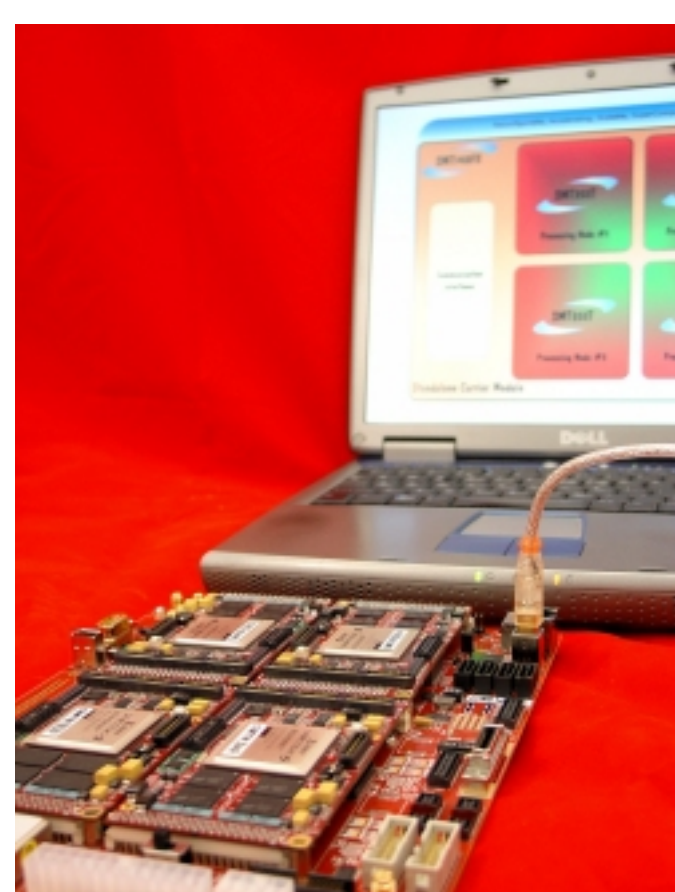
At the heart of RASS are banks of tightly coupled Xilinx Virtex 5 FPGAs. Sitting on a carrier, the multiple FPGAs can be connected via a Rocket Serial Link (RSL) I/O interface and the architecture is adaptable to different applications and computation demands.

RASS integrates with industry standard processors and computing infrastructure. It features a modular, interchangeable array of high performance FPGAs and GPUs to deliver high performance, low latency and flexibility across single precision and double precision computation applications.

And to mitigate the learning curve and risk of reliance upon proprietary tools and languages, RASS is supported by industry standard design tools and languages. Design support from the The MathWorks , Xilinx, 3L, Impulse, HDL and C/C++ providers offers a readily available development environment. The maturity of this ecosystem enables immediate access to libraries of intellectual property including Navier-Stokes, Black-Scholes, LINPACK, Monte Carlo and Amber.

If you want to know more about RASS and see how it is 'mixing' it up in the HPC community click here or contact enquiries@sundance.com