SUNDANCE Reaching for the stars!

eNews

January 2009

- Dillon Engineering
- 3L
- Press Releases
- Previous eNews

'Multiprocessing, Magnetism and The Milky Way '

At Sundance we've always set our sights high in delivering the most cost effective and high performance multiprocessing solutions, and this philosophy was tested to the limit when scientists at the Canadian National Research Council (NRC) asked us to help them on their journey to the Milky Way!

The NRC team at the Dominion Radio Astrophysical Observatory (DRAO) in Penticton had been tasked with investigating the magnetic field (in the interstellar medium) of our Galaxy, and in particular to measure the direction and field strength of the magnetic field of the Milky Way. They soon worked out that standard processing technologies just wouldn't deliver the power and performance they needed and a custom developed system was too expensive in terms of hard cash and time.

The solution the team at NRC eventually decided upon was to combine our off-the-shelf modular multiprocessing technologies with the Diamond multiprocessing design tool from 3L. It was this combination of technologies coupled with their own design efforts that enabled them to create a broad-band spectroscopic data acquisition system that was on budget, on specification and delivered years ahead of schedule.

Already deployed via their 26-m radiotelescope, the developed high sensitivity system has an instantaneous bandwidth of 500 MHz and a spectral resolution of 2048 channels. The phase relation of the two input signals is measured in real-time and using 3L Diamond, the instrument design was completed in only 18 months, "The detailed study of magnetism in the Milky Way is made possible by new developments and technologies in radio astronomy that includes new wide-band antennas, wide-band digital receivers and new data analysis tools," said Maik Wolleben, Covington Fellow at the Canadian National Research Council. "By coupling the 3L Diamond tool-suite with modular hardware from Sundance we quickly developed a cost effective, very high performance multiprocessing solution and are using it years ahead of expectations."

Maik and his team are now transferring the multiprocessing approach to other teams around the world and we wish them every success! If you want to read more about this amazing journey, please go to www.3L.com, the home of multiprocessing design.

'More IP Partnerships for Sundance Customers'

In the last quarter of 2008 you'll remember that we announced new additions to our IP library that increased the availability and choice of pre-optimized logic cores for Sundance customers. (and just in case you can't remember, our IP newcomers include standard compliant JPEG IP from our partner Cadre Codesign and the industry's fastest FFT from Dillon Engineering).

At the same time we promised to increase the availability of IP in 2009 and true to our word, this month sees the availability of verified SATA II IP cores from our IP partner, LogicDesign Solutions. Compliant with the Serial ATA II specification this new IP offering supports signalling rates of 1.5Gbps SATA-Gen1 and scales to 3Gbps SATA-Gen2. The LogicDesign Host and Dual Host Controller cores implement shadow registers and SATA SuperSet registers, supports 8b/10b encoding and decoding and has state machine controlled power management (shared between PHY and Link layer). They feature a 32-bit wide interface between the link layer and transport layer and a 128-word ingress/ egress FIFO between the transport and link layer.

And what's best of all, the above specification is available as a single chip Virtex 5 solution. LogicDesign provides VHDL source code, test benches and validation data, and DO-254 documentation can also be provided. The IP is immediately available on our 7-Series hardware and offers designers a multiprocessing development environment that features PCI-X, PCI-E, GigE, SATA and fibre optic modules for interconnect.

Oh, and one last thing. In the form of a shrink wrapped SATA II compliant 3L Diamond multiprocessing task, LogicDesign is the first IP provider to offer SATA IP that is expressly designed for multiprocessing systems. Its 3L Diamond task is a self-contained block of code that incorporates the Transport layer, the Link layer and the PHY layer on a Xilinx Virtex 5 FPGA. This unique offer enables quick and straight-forward integration of LogicDesign's SATA IP into the multiprocessor system design.

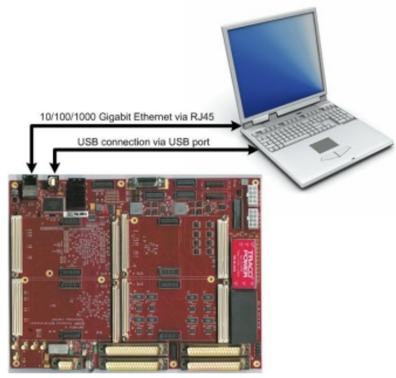
To get more information on how our IP can support your design, please contact your local Sundance Office or email enquiries@sundance.com

'Voice your opinion on Multiprocessor Design?'

As a regular reader of eNews, you'll have seen us bang-on about the 3L Diamond multiprocessor tool-suite and how it simplifies the development of multiprocessor systems to improve productivity and reduce risk and time-to-market. If you want to make a comment on multiprocessor design now's your chance. 3L are running an Online Survey to capture your views and opinions, so please go to http://www.3l.com/contact-us/online-survey and have your say.

'Ethernet support for the SMT148-FX standalone carrier board'

It is possible to reach long distances and achieve gigabit data transfers with the Sundance optical transceiver modules, but have you ever needed to control your real-time system remotely? If the answer to this is yes, then the SMT6058 Ethernet Board Support Package (Ethernet BSP) is the solution to interface the SMT148-FX standalone carrier board to the most popular LAN technology.



The SMT6058 offers a data communication link between computer and embedded hardware systems over the Ethernet by the mean of a Low-weight Internet Protocol (LwIP) TCP/IP stack. The library of software functions provides all the necessary TCP/IP API (Application Programming Interface) to exchange information from the SMT148-FX embedded system to a workstation. The workstation then stores the data on disk and performs offline post processing.

The SMT6058 is the ideal Ethernet TCP/IP solution:

- to develop secured data transmissions with AES encryption for Aerospace & Defense embedded applications on the Radio Giga development platform,
- to test the next generation of high-quality Video over IP communication networks for Digital Video Broadcast standards with the DVIP prototyping solution,
- or to architect networks of high-performance embedded computing (HPEC) systems with the scalable RASS FPGA clusters.

The board support package includes a complete web server application running on the PowerPC™ 405 to demonstrate the SMT6058 TCP/IP API and functionalities.