

New Virtex Card Provides FPGA-based Real-Time Processing

A new card designed to help you quickly implement a complete Virtex-based system for applications such as DSP or image processing.

by Allan Cantle, Managing and Technical Director, Nallatech Ltd., a.cantle@nallatech.com

Nallatech Ltd. has released the first PCI card, called "Ballynuey," that uses Virtex FPGAs for developing data processing systems. We provide a family of cards with different densities, ranging from the currently available XCV300 up to the XCV800 device. Using this card, you can quickly and easily:

- Evaluate the Virtex family.
- Implement full custom designs utilizing the four expansion 'DIME' module sites.
- Get immediate and simple access to the PCI bus without hindering the functions that are implemented in the Virtex FPGA.

Operation

The card uses a Xilinx Spartan device, pre-programmed to interface between the software on the PC system and the user applications running on the Virtex device. The combination of the software library (running on Windows 95/98 and Windows NT) and the Spartan firmware handles the following operations:

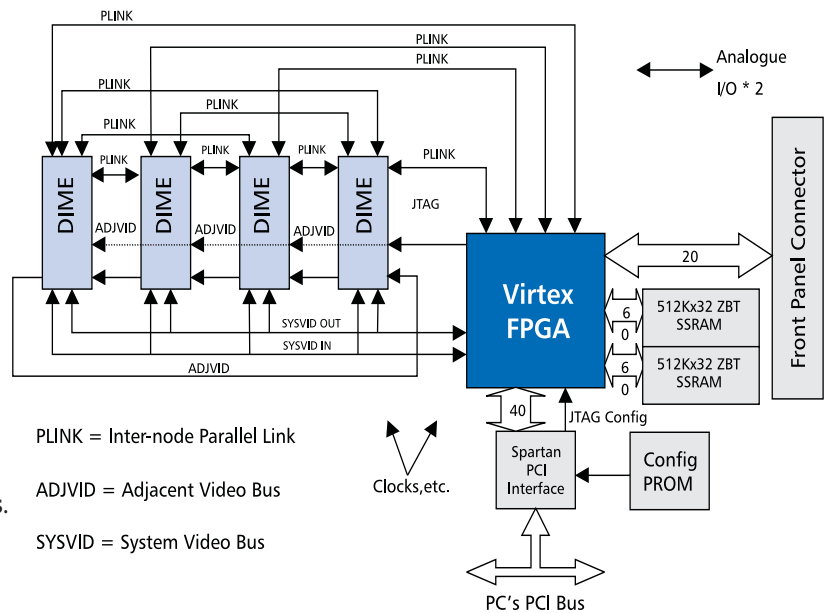
- PCI Interfacing through the Xilinx PCI LogiCORE.
- PCI Master DMA Engine capable of burst transfers.
- Two separate FIFO interfaces between the PCI master DMA engine and the Virtex device.
- Mailbox registers.
- Interrupt handling.
- Virtex reconfiguration from software.

This enables you to quickly produce Virtex-based solutions for PCI systems. Additional facilities are also offered by the card to support complete systems, including:


- Digital I/O: 20 bidirectional.
- Analog I/O: two connectors on backplate for analog signal routing.

- Four DIME modules sites. (DSP and Image processing Modules for Enhanced FPGAs: a new board level standard for FPGA-based processing systems, enabling system customization through the use of standard modules.)
- Three independent clock sources.
- 12 status LEDs.

A functional diagram of the card detailing the data flow is shown below. It shows the basic topology used in this DIME module implementation aimed at image processing applications.



Conclusion

The Ballynuey card gives you an ideal platform for evaluating the Virtex FPGA family, providing a range of system level facilities, including PCI interfacing and four DIME module expansion sites. Standard DIME modules are available covering video capture and display, high-speed communications, and data capture. This enables you to construct full-custom FPGA-based DSP systems using standard products while reducing costs, reducing risk, and reducing time to market. 

For additional information on Ballynuey, or the DIME standard, see: www.nallatech.com.