Embedded Processing Application Notes and Reference Systems

Popular application notes and reference systems available from Xilinx.

Xilinx maintains and updates a large database of application notes on numerous topics as well as reference systems to assist you in your next design.

PowerPC 440 System Simulation

http://www.xilinx.com/support/documentation/application_notes/xapp1003.pdf

This reference system demonstrates the functionality of the PowerPC 440 processor block on the Virtex™-5 FXT FPGA. This system includes common peripherals like Ethernet, DDR2, DMA, interrupt controller, and RS232.

Several stand-alone software applications can verify functionality of the peripherals and the PowerPC 440 processor block.

You can learn how to set up the simulation environment for the system, execute the simulation, and add PLB v4.6 peripherals. The Xilinx ML507 Rev A board verifies the system in hardware on the Virtex-5 FXT FX70TFF1136-1FPGA.

PLBv46 PCI Using the ML555 Embedded Development Platform / ML410 Embedded Development Platform / Avnet Spartan-3 FPGA Evaluation Board

http://www.xilinx.com/support/documentation/application_notes/xapp999.pdf

http://www.xilinx.com/support/documentation/application_notes/xapp1001.pdf

http://www.xilinx.com/support/documentation/application_notes/xapp1038.pdf

These application notes describe how to build reference systems for the processor local bus peripheral component interconnect (PLBv46 PCI) core using either a PowerPC 405 or MicroBlaze™ processor-based embedded system.

A set of files containing Xilinx Microprocessor Debugger (XMD) commands are provided for writing to the configuration space headers and to verify that the PLBv46 PCI core is operating correctly. Several software projects illustrate how to configure the PLBv46 PCI core(s), set up interrupts, scan configuration registers, and set up and use DMA operations.

PCI Bus Performance Measurements Using the Vmetro Bus Analyzer

http://www.xilinx.com/support/documentation/application_notes/xapp998.pdf

This application note illustrates how to measure performance using the Vmetro Vanguard PCI bus analyzer. These measurements use a system in which the ML410 evaluation platform, the ML555 evaluation platform, and Vmetro Vanguard-PCI (VG-PCI) boards communicate over the PCI bus. The test method is provided so that similar tests can be done using different PCI bus transactions, different boards, or other Xilinx PCI cores.

Accessing Spartan-3AN In-System Flash Using XPS SPI

http://www.xilinx.com/support/documentation/application_notes/xapp1034.pdf

The application note demonstrates how to access the in-system flash in a Spartan™-3AN FPGA after the FPGA is configured. The software applications use the serial peripheral interface (XPS SPI) core in a MicroBlaze processor-based reference system.

Introduction to Software Debugging on Xilinx PowerPC 405 Embedded Platforms / MicroBlaze Processor Embedded Platforms

http://www.xilinx.com/support/documentation/application_notes/xapp1036.pdf

http://www.xilinx.com/support/documentation/application_notes/xapp1037.pdf

These application notes offer an introduction to software debugging of Xilinx PowerPC 405 or MicroBlaze embedded processor platforms by discussing the use of the Xilinx Microprocessor Debugger (XMD) and the GNU software debugger (GDB) to debug software defects.

Ethernet PHY Register Access with GPIO

http://www.xilinx.com/support/documentation/application_notes/xapp1042.pdf

The XPS Ethernet MAC lite peripheral does not provide any mechanism to access Ethernet PHY registers. These registers are used to configure auto negotiation parameters and to obtain PHY status. This application note provides a PowerPC 405 reference system and a MicroBlaze processor system where the PHY serial management interface signals (MDC, MDIO) are connected to an XPS GPIO peripheral.

Setup of a MicroBlaze Processor Design for Off-Chip Trace

http://www.xilinx.com/support/documentation/application_notes/xapp1029.pdf

This application note describes how to modify an existing MicroBlaze processor design to support the trace features in MicroBlaze processor version 7 and above. It is a detailed tutorial on how to add and configure the trace core in a MicroBlaze processor design. The application note does not target any specific development board, but I/O constraints for some boards are provided to work with Lauterbach and Computex trace tools.

VxWorks 6.x on the ML403 Embedded Development Platform

http://www.xilinx.com/support/documentation/application_notes/xapp947.pdf

This guide shows the steps required to build and configure a ML403 embedded development platform to boot and run the VxWorks RTOS. A VxWorks bootloader is created, programmed into flash, and used to boot the design. The concepts presented here can be scaled to any PowerPC-enabled development platform. This popular application note is now available for EDK / ISE™ software 10.1.