The OpenVME Project
OpenVME

Introducing the Open VMEbus Project

An Open Community VMEbus IP development program consisting of three linked initiatives:

- OVCI - Modular Synthesizable Core HDL for VMEbus functions
- OVDI - Software Source Code for Unified Driver Development
- OVTI - A Unified Test and Development Platform
OVCI – Open VME Core Initiative

Define *initial* VHDL building blocks for *contemporary* VMEbus functions. Expand functions over time.

- **Slave transfer: VME-to-WishBone**
  - A16/A24/A32, D08/D16/D32 Cycles
  - 2eSST (parameterized)
- **Master transfer: WishBone-to-VME**
  - A16/A24/A32, D08/D16/D32 Cycles
  - 2eSST (parameterized)
- **System Controller**
- **Interrupter**
- **Interrupt Handler**
- **License Under OpenCores.org (GPL-Based Model)**
**OVDI – Open VME Driver Initiative**

Define, develop, and test low-level, OS-independent driver source code for VMEbus OVCI functions.

- Leverage Open Source GNU Development Tools
- Layer on Open Source Operating Systems
  - Linux™ General Purpose OS
  - eCOS™ Hard Real Time OS
  - Others (?)
- Test Across Multiple Architectures
  - PowerPC
  - MIPS
  - x86
  - Others (?)
- Licensed Under GNU GPL
OVTI – Open VME Test Initiative

A capable and flexible hardware/software IP development platform for test, verification, & deployment

- VME Standards-Based Development Platform (VDP)
  - ANSI/VITA 1.1: VME64x Compliant, 160-pin P1,P2
  - VITA 1.5: 2eSST Capable Logic
  - ANSI/VITA 32: Dual PMC/PrPMC Sites
  - VITA 35: PMC-P4 I/O Mapping to P0 & P2

- Design Files Available Free from OpenVME.org
  - Schematic in OrCad™ Format
  - Bill-of-Materials in Excel™ Spreadsheet
  - Printed Circuit Design Files in Mentor PowerPCB™ Format
  - Fabrication Files in Gerber Format
  - Technical Documentation in Microsoft® Word™
  - Mechanicals in AutoCAD® Format

- Assembled/Tested Product Available from OpenVME.org
- Full Rights Granted to Modify, Reproduce, or Manufacture
VDP Development Platform Features

- **6Ux4HP VME Form Factor**
- **Plug-In VME Controller Module Site (FPGA Independent)**
  - Altera EP1C20F400CS Cyclone™ FPGA Based Module
    - High Density & Low Cost
    - Quartus® II Web Edition Available *Free*
    - JTAG & Serial EEPROM Re-programmable
  - QuickLogic QL5064 QuickPCI™ FPGA Based Module
    - 64-bit/66MHz PCI Built-In w/Programmable Fabric
    - QuickWorks™ Development Suite Available *Free*
  - Other FPGA Modules Possible and Desired
- **On Board Electrically Compliant VMEbus PHY**
  - TI SN74VMEH22501 Transceiver ICs
  - System Controller Capable
- **On-Board Agilent-Compatible Probe Connectors**
  - Access to ALL VMEbus Signals
  - Access to Local PCI Signals
  - Access to User-Defined Signals
VDP Development Platform

VDP – Block Diagram

PrPMC/PMC Mezzanine Site 2 (ANSI/VITA 32)

PrPMC/PMC Mezzanine Site 1 (ANSI/VITA 32)

PCI Clock & Arbiter

JN23
JN24
JN21
JN22
JN13
JN14
JN11
JN12

32, 64/33-100MHz PCI/PCIX

160 Pin VME P2

95 Pin VME P0

160 Pin VME P1

VMEbus PHY

VMEbus Controller FPGA Mezzanine Module

Hi-Speed Connector “B”

Front Panel I/F

Clock & Reset

Hi-Speed Connector “V”

OpenVME
Get Involved!

Companies, groups, and individuals may freely contribute to the OpenVME Project at several levels.

- Corporate Sponsor (Logo/Link on OpenVME.org)
  - Donate Resources
  - Donate Labor
  - Donate Funds
  - Sponsor Development
- Individual Sponsor (Recognition on OpenVME.org)
  - Definition
  - Project Management
  - Documentation
- Individual Contributor (In-Project Recognition)
  - Develop and Contribute
  - Review, Test, Verify
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