

# VITA Standards Organization Update

VITA was accredited as a Standards Development Organization (SDO) in June 1993 using the ANSI Canvass Ballot method and holds standards meetings every two months to work on standards issues of interest to its members.

Currently the VITA Standards Organization (VSO) is working on a variety of standards that include extensions to the VME64 specification, P2 buses standards, software standards, and various form factor standards.

If you are working on a technology that fits within the scope of the VSO and feel that the standardization of that technology would be of benefit, please contact John Rynearson, Technical Director for more information about the VITA Standards Organization.

The next two VSO meetings are scheduled for January 1998 in Santa Clara, CA, and March 1998 in Geneva, Switzerland. Surf VITA's web site at <http://www.vita.com/vso/std.html> for agenda, registration, and previous meeting minutes information. Many draft specifications are available in PDF format and may be downloaded free of charge from VITA's web site.

## RECOGNIZED STANDARDS

The following standards have been recognized as American National Standards by successfully completing the ANSI canvass ballot process. Anyone who is materially or directly affected by a standard may participate in a canvass ballot or alternately they may provide comments to VITA via the ANSI public review process. Participants do not need to be members of VITA to ballot VSO sponsored standards during the ANSI ballot process.

**ANSI/VITA 1-1994, VME64**– The VME64 Specification brings a number of new features to the VMEbus, such as 64 bit data transfers for 6U modules, 32 bit data transfers for 3U modules, rescinding DTACK, lock commands, RETRY signal, auto slot identification, auto system controller enable, and configuration ROM (CR) and control/status registers (CSR).

This specification was officially recog-

nized as an American National Standard on April 10, 1995 and is available from the VITA office.

**ANSI/VITA 3-1994, Board-Level Live Insertion for VMEbus**– The Board-Level Live Insertion (BLLI) specification is a recommended practices document for live insertion of VMEbus modules. This document identifies a standardized methodology through which a faulty board can be removed from a system and a replacement board can be inserted while the system continues to operate. The intent of this standard is to provide a methodology that will work with currently existing boards. This specification was officially recognized as an American National Standard on January 12, 1996 and is available from the VITA office.

**ANSI/VITA 4-1995, IP Modules** – Mezzanine modules add functionality to base level circuit boards. On VME, IP Modules can be used to create a custom VMEbus board by selecting the functions needed for a specific application. IP Modules are approximately the size of a business card. Four modules can be placed on a single VMEbus module. This specification was officially recognized as an American National Standard on July 16, 1996 and is available from the VITA office.

**ANSI/VITA 5-1994, RACEway Interlink**– RACEway Interlink is a standard for a parallel-based cross-bar switched interconnect on the P2 connector of the VMEbus. Data rates for a single RACEway interconnect are 160 Mbytes/sec peak and 150 Mbytes/sec sustained. This specification was officially recognized as an American National Standard on July 31, 1995 and is available from the VITA office.

**ANSI/VITA 6-1994, Signal Computing System Architecture (SCSA)**– SCSA stands for Signal Computing System Architecture and is used for processing digitized voice, video, and digital data in telephony applications. This specification

was officially recognized as an American National Standard on July 24, 1995 and is available from the VITA office.

**ANSI/VITA 10-1995, SKYchannel Packet Bus on VME P2**– SKYchannel is a high performance 320 Mbyte/sec packet switched architecture. This specification was officially recognized as an American National Standard on October 31, 1997 and is available from the VITA office.

**ANSI/VITA 12-1996, M-Modules**– M-Modules are small printed circuit boards that can be used to add functionality to a base level motherboard through a standardized interface. This specification was sponsored by the VITA members of MUMM, the Manufacturers and Users of M-Modules and was officially recognized as an American National Standard on May 20, 1997. ANSI/VITA 12 is available from the VITA office.

**ANSI/VITA 13-1995, VMEbus Pin Assignment Standard for IEC 14475 (IEEE Std 1355-1995) Heterogeneous Interconnect (H.I.C.) on VME**– HIC (Heterogeneous InterConnect) is a serial bi-directional, high-speed data transfer interface between processor boards, subsystems, or multiple computer chassis. This specification was officially recognized as an American National Standard on July 16, 1996 and is available from the VITA office.

## DRAFT STANDARDS IN THE ANSI CANVASS PROCESS

The following standards have met the 75/75 criteria within the VSO. That is, they have received 75% approval of 75% of the returned ballots of a formal VSO task group ballot. Standards which meet this criteria move to the ANSI canvass ballot process.

**VITA 1.1-1997, VME64x, (Extensions to VME64)**– During the development of the VME64 specification a number of proposals were discussed. In order to complete the VME64 specification in a timely manner, certain proposals were put into the

category of VME64 extensions to allow more time for investigation and discussion. Wayne Fischer, Force Computers is chair of the VME64 extensions task group. At the September 1997 VSO meeting VITA 1.1 was moved to ANSI canvass ballot. The first step in the ANSI ballot process is the construction of a ballot list. If you are interested in balloting VITA 1.1, contact John Rynearson (techdir@vita.com), Technical Director of VITA.

**VITA 1.3-1997, 9U x 400 mm VMEbus Form Factor**— The purpose of this group is to standardize a 9U form factor for use in VME. A draft document is available from the VITA office. This draft standard has been moved to ANSI canvass ballot. Bob Downing, Fermi, rwd@fnal.gov, is the task group chair of this activity. Contact John Rynearson, Technical Director, VITA (techdir@vita.com) if you wish to ballot this standard.

**VITA 4.1-1996, IP I/O Mapping to VME64x, Draft 0.7a, September 26, 1996**— This draft standard creates a standard I/O pin assignment map between IP Modules (ANSI/VITA 4-1996) and backplane I/O pins as specified in draft standard VITA 1.1-1997, VME64x. A canvass ballot was completed on August 20, 1997. The ballot review committee has reviewed all comments and turned negative comments to positive. The revised standard has undergone a recirculation ballot. All but one negative ballot has been turned affirmative.

**VITA 6.1-1996, SCSA Extensions, Draft 5.1, October 25, 1996**— The purpose of this draft standard is to define the J2/P2 pin assignment and operating modes of additional SCbus bearer channel (time slot) capacity and to define a redundant set of SCbus controls. This document provides several nested levels of capacity with increasing redundancy features, each of which is oriented towards specif-

ic segments of the computer telephony market. The first canvass ballot was completed on March 31, 1997 and a ballot review was held at the May 1997 VSO meeting. The draft standard has been revised and a recirculation ballot was conducted. The draft standard is now ready to be submitted for ANSI approval.

**VITA 14-199x, CXC and ModPacks, Draft 2.5, January 12, 1996**— CXC is based on the 68302 controller bus and ModPacks are used to add functionality to the CXC base module. This document will be used to standardize an existing industry practice originally developed by PEP Modular Computers. An initial task group ballot was completed in April and this standard will be submitted to the ANSI canvass process. Contact John Rynearson, Technical Director, VITA (techdir@vita.com) if you wish to ballot this standard.

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and its layers from the switch and stores the converted data to the SCSI drive. When the billing system calls for data, the commands are received through the IP-Comm 302, or the IP-Ethernet. These devices transfer the commands to the applications software, which responds by retrieving the data from the disk. It is then sent via the IndustryPacks and from there to the connected billing system.

The device drivers and other related software which manage the passage of the data through the hardware and software layers were developed by Highlander Engineering of Lakeland, Florida.

### System Proven Reliability in Rigorous Testing

The conversion box and its components have proven to be very reliable and adaptable. During extensive testing a number of scenarios were constructed. In one situation, a modem was disabled. The system compensated by employing the second line. When the disabled modem was brought back on-line, the system again reacted and began using the modem again.

The modular IndustryPacks are integral to the flexibility of the conversion box, which protects the telecommunications company's investment. Should conditions change, and a larger number of lines are required, all that is required is the replacement of the IP-Comm 302 with an IP-Comm 360 (which implements the Motorola MC68360 communications processor). Costly changes to basic design or the CPU board are avoided. Also, as the IndustryPacks are low cost devices, the equipment investment required to make the change is minimal. Other major changes, such as the introduction of the ISDN protocol can be accomplished by the minor replacement of an IndustryPack. By incorporating a modular, off-the-shelf component strategy, the conversion box protects existing investments in the telecommunication infrastructure, without presenting any obstacles to its enhancement.

SBS GreenSpring Modular I/O can be found on the Web at:  
www.greenspring.com

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**VITA 19-199x, BusNet**– BusNet enables multiple CPU boards (and/or intelligent controller boards) to communicate across a backplane as if it were an Ethernet network. BusNet permits system configurations consisting of UNIX, real-time or mixed UNIX/real-time computing nodes to exist within one single chassis. A copy of the BusNet draft standard is available from the VITA office. A task group ballot for BusNet was completed on May 23, 1997 and VITA 19 has been moved to the ANSI canvass process. Contact John Rynearson, Technical Director, VITA (techdir@vita.com) if you wish to ballot this standard. A copy of the Busnet specification is available on VITA's web site.

**VITA 23-1997, VMEbus for Physics Applications**– Many particle physics labs use VME as the basis for experiment control. The purpose of this effort is to come up with a set of recommended practices to encourage commonality. This effort is being sponsored by VIPA — the VME International Physics Association. Contact Bob Downing, Fermi, rwd@fnal.gov, or Chris Parkman, CERN, chris\_parkman@cern.ch, for more information regarding this effort. The last task group ballot met the VSO's 75/75 rule and VITA 23 has been moved to the ANSI process. If you would like to participate in the ANSI ballot of this standard, please contact John Rynearson <techdir@vita.com> or Cheryl Cook <cheryl@vita.com> at VITA.

**VITA 25-1997, VISION**– At the July 1996 meeting in Ottawa, Jim Pangburn of Fermi National Accelerator Laboratories presented a proposal for an object based I/O software interface for the VMEbus. To build consensus for this effort Jim asked and was granted study group status. At the September 1996 VSO meeting, task group status was granted when CERN, Lecroy, and Fermi indicated that they would sponsor this effort. A draft specification is available on the VITA web site. The group has completed a successful task group ballot and VITA 25 has been moved to the ANSI canvass process. Contact John Rynearson, VITA,

<techdir@vita.com> or Cheryl Cook, VITA, <cheryl@vita.com> if you want to participate in the ANSI ballot.

### VSO TASK GROUP ACTIVITIES

Standards within the VSO are developed in task groups. The formation of a task group requires at least three companies that are VITA members and the proposed work must fit within the defined scope of VITA's accreditation with ANSI. Non VITA members may serve on task groups with the approval of the chair and the task group. The following draft specifications are being developed by their respective task groups within the VSO.

**VITA 1.2-199x, High Availability VME (H. A. VME), Draft 0.2, Nov. 9, 1995.** – This work is a result of the work started as VMEbus System Level Live Insertion. At the Orlando VSO meeting in March 1995 a special meeting was held to discuss High Availability VMEbus (H.A. VME) requirements. The purpose of this group is to develop a standard based on VME64 and VME64 Extensions that provides Scalable Fault Management and Dynamic Configuration in Live Systems. Issues to be addressed include: fault detection, fault isolation, fault repair, and live insertion. It was realized that not all applications require all the features and that scalability is an important issue. During the November 1996 VSO meeting, Lou Francz, Dialogic, proposed that a separate standard addressing live insertion be developed using much of the work already done for H.A.VME. He argued that this standard could be completed in a short period of time and would address current market needs. The membership agreed and a task group to develop a live insertion specification (see VITA 1.4) for VME64x was formed.

**VITA 1.4-199x, Live Insertion for VME64x**– This effort is an outgrowth of the VITA 1.2, High Availability task group. Lou Francz is task group chair and a draft specification for VITA 1.4 is available from the VITA office. Contact Lou Francz at franczl@dialogic.com for more information on this specification.

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**VITA 1.5-199x, Source Synchronous Transfer Protocol**— At the 1997 Real Time Computer show in Santa Clara, California, Drew Berding of Arizona Digital demonstrated a new VMEbus backplane that allows data to be transferred at rates of 320 Mbytes/second. To take advantage of this new technology, the VSO set up a task group to develop a source synchronous protocol. The task group has completed much of its work and a draft specification is being developed.

**VITA 1.6- 199x, Keying for Conduction Cooled VME**— This task group is developing a method to provide slot specific keying for conduction cooled VMEbus modules. Holly Sherfinski, HARTING, INC. of North America, is task group chair. Contact Holly at <holly.sherfinski@harting.com>.

**VITA 5.1-199x, Extensions to RACEway Interlink**— The purpose of this task group is to extend RACEway Interlink to take advantage of the new 160 pin connector. The task group chair is Tony Lavelly, Mercury Computer. Contact Tony at atl@mc.com.

**VITA 11-199x, Autobahn**— Autobahn technology promises high speed bused and point to point data links with data rates of 200 Mbytes/sec. Current Autobahn chips have demonstrated data rates of 50 and 100 Mbyte/sec. The Autobahn draft specification is available from the VITA office. Contact Hermann Strass, Technology Consulting, +49 89 601 34 99, fax: +49 89 601 23 29, email: TechCon.HStrass@t-online.de for more information about this effort.

**VITA 17-199x, FPDP**— FPDP stands for Front Panel Data Port and is a proposed standard being put forth by Interactive Circuits and Systems, Ltd. with support provided by SKY Computers, Ixthos, and CSPI. Task group status was granted at the January 1995 VSO meeting. FPDP is an existing industry practice specification developed to provide high speed data transfer using front panel data ports. Data transfer rates of 80 Mbytes/sec are possible

using the FPDP interface and 160 Mbytes/sec are possible using the FPDP2 interface. The draft was recently updated and a successful task group ballot was held. FPDP will be moved to the ANSI canvass ballot process shortly. Contact Jonathan Jones, ICS, (613) 749-9241 if you are interested in FPDP.

**VITA 18-199x, VMEbus on SEM-E**— SEM-E has been a popular form factor used in the military for a number of years. It is based on conduction cooled technology, a small form factor, and a blade & fork style connector that provides high reliability in high shock and vibration environments. A draft of this document is available from the VITA office. Currently optimal pin assignments are under investigation. Contact Bob McKee, MITRE, rmckee@mitre.org, if you are interested in this effort.

**VITA 20-199x, Conduction Cooled PCI Mezzanine Card**— The purpose of this effort is to develop a standard for a conduction cooled PMC card based on IEEE 1386 and IEEE 1386.1 for conduction cooled VMEbus boards. This group was granted task group status at the January 1996 VSO meeting. A draft of VITA 20 is available from VITA's web site. Contact Doug Patterson, DY4, dpatterson@dy4.com for more information about this effort.

**VITA 22-199x, Cells Bus on VME**— Cells Bus is an ATM multiplexing and switching technology that could be used on the PO/JO connector to provide ATM access across the VMEbus backplane. TranSwitch is supporting the development of this draft standard. A copy of VITA 22 is available from the VITA office.

**VITA 26-199x, Myrinet**— At the January 1997 meeting in Santa Clara, a new activity called Myrinet was proposed to the VSO. Myrinet is a high-speed (gigabit-per-second) packet communication and packet-routing technology that is used both as a system-area-network (SAN) and a local-area-network (LAN). Three VITA members, CSPI, AMP, and Myricom have agreed to support the standardization of Myrinet. Task group status has been granted and those interested in Myrinet should contact Jim Waggett, CSPI,

<jwaggett@cspi.com> or Danny Cohen, Myricom, <cohen@myri.com>

**VITA 27-199x, P2CI**— At the July 1997 VSO meeting in Vancouver, BC, a new activity called P2CI was introduced by Robert Negre, CETIA. The purpose of this effort is the mapping of the PCI bus onto the P2 VMEbus user defined pins. Task group status was granted in August and the group is developing its initial draft. Contact Serge Tissot, CETIA, <st@cetia.fr>, for more information about this effort.

**VITA 28, VPCI**— At the July 1997 meeting in Vancouver, BC, Rick O'Connor, Tundra, discussed the feasibility of creating a virtual PCI bus across the VMEbus backplane. This concept would allow a VME module with a PCI local bus to communicate directly with another VME module with a PCI local bus using standard PCI based bridge software. Contact Jonathan Morris, Tundra, jonm@tundra.com, if you are interested in this effort.

**VITA 29, PC•MIP**— PC•MIP is a mezzanine concept being promoted by MEN Mikro Elektronik and SBS Greenspring Modular I/O. MEN, SBS Greenspring Modular I/O, and Motorola Computer Group have agreed to sponsor a VITA Task Group to work towards international standardization. Contact the VITA office for more information on the PC•MIP standardization effort.

## VSO STUDY GROUPS

**TEMPE**— Jim Botte, NORTEL, introduced a concept called TEMPE, Telecommunications and Enterprise Multimedia Platform and Environment. TEMPE is an amalgamation of standard technology, extensions to that technology, and proprietary technology licensed from multiple companies integrated, and presented as a new open standard. Contact Jim Botte, NORTEL, jbotte@nortel.ca

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