



Its Successes, and Future Direction

Press Briefing Presented by VITA's VPX Marketing Alliance

November 2, 2010







VPX Standard of Excellence

Its Successes, and Future Direction

16:00	Sign in / Welcome		
16:30	VITA/VPX Update and the next 12 months	Neil Peterson	
16:45	VPX Application successes, positioning profiles	Rodger Hosking Pentek	
17:00	High level survey findings — customer direction of VPX	Jerry Gipper VITA	
17:15	Q&A Panel — focused on VPX/OpenVPX		





Event Sponsors

- **VPX** Amphenol
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- **VPX** Pentek
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- **VPX** Tyco Electronics
- **VPX** Xembedded







VITA/VPX Update and the next 12 months

Neil Peterson Chair of VPX Marketing Alliance





VPX Marketing Alliance

The VPX Marketing Alliance is focused on the advancement of the VPX family of technology. This includes VPX, VPX REDI, OpenVPX and other related activities on the VPX roadmap.

Our objectives for the next 12 months are:

- Build awareness about VPX technology and the VPX ecosystem
 - The leading technology approach for interoperability and performance
 - Clear definition of the benefits
 - Make it easy to understand
- Build awareness of the member companies and their VPX products
 - Drive industry leadership of our members
 - Make our member companies names known





What is VPX Technology?



- A board form-factor standard for next generation critical embedded systems
 - Highly scalable, highly flexible
 - Dense, compact, rugged form factor, 3U and 6U format
 - Abundant backplane I/O
 - Up to 4 ports of 4x switched fabric per slot, ready for PCIe, Serial RapidIO, Ethernet
 - All connectors are rated for signaling rates up to 6.25Gbps
 - Accepts 2 PMC or XMC (Fabric) mezzanines
 - ESD protected connector for ease of maintenance



- Defines cooling schemes
- Introduces 2-level maintenance

OpenVPX

- Architectural Framework for VPX
- Leverages the individual VPX standards to create better interoperability.

More at www.vita.com/vpx







VME Technology Roadmap





Open Standards, Open Markets

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VPX Roadmap





VITA 65

VPX VITA 48

VPX

VITA 46

Connectivity Fiber optics: VITA 66 Analog/RF: VITA 67

Smaller Form Factors



Power supply standard

VITA 62

Compliance channel standard

VITA 68

Interchangeable Connectors VITA 60



Trends with VPX

- VPX is a family of living specifications.
- VPX will change over time as industry requirements dictate:
 - Adopts profiles for certain applications and functionality
 - Profiles may become inactive and will be removed
 - New requirements will dictate that new profiles and capabilities be added
- We are working on many new enhancements. And the specification will continue to mature over the next few years as vendors release products and customers select to use them in their new programs.
- We do expect to see new requirements and VPX will respond
 - Small form factor is a good example.





Involvement and Interest Grow for VPX

- In the 12 months that the VPX Marketing Alliance has been active we have gained 33 member companies who are all developing products.
- On the VPX web site <u>www.vita.com/vpx</u> there are currently 175 listed VPX products and the number continues to grow.
- VITA Industry survey recently completed by the VPX Marketing Alliance.
 - April 23 through July 31, 2010.
 - 234 respondents started the survey.
 - Objectives of the survey"
 - To conduct ongoing research that lets us measure the pulse of the demand for VPX.
 - To discover more about the demand side of market for VPX.
 - The level of awareness of VPX before and after VPX Marketing Alliance activities.
 - The level of technical understanding of VITA technologies.
 - What information potential users may be missing.
 - Who might be potential users of VPX.
 - If the messaging is clear; do people understand or are they confused by our nomenclature?





VPX REDI Reaches ANSI/VITA Ratification

- ANSI/VITA 48.0-2010: Ruggedized Enhanced Design Implementation Mechanical Base Specification
 - Defines a mechanical implementation for plug-in units. Two types of plug-in units are defined: Type 1 and Type 2. Both take advantage of increased slot pitch to provide enhanced thermal performance and increased structural durability. Only Type 1 units support Level 2 maintenance.
- ANSI/VITA 48.1-2010: Mechanical Specification for Microcomputers Using Air Cooling Applied to VPX
 - Defines the mechanical requirements that are needed to insure the mechanical interchangeability of air cooled 3U and 6U plug-in units and define the features required to achieve 2 Level Maintenance compatibly.
- ANSI/VITA 48.2-2010: Mechanical Specification for Microcomputers Using Conduction Cooling Applied to VPX
 - Defines the mechanical requirements that are needed to ensure the mechanical interchangeability of conduction cooled 3U and 6U plug-in units and defines the features required to achieve 2 Level Maintenance compatibility.
- ANSI/VITA 48.5-2010: Mechanical Specification Using Air Flow-through Cooling Applied to VPX
 - Establishes the design requirements for an air-flow-through cooled plug-in unit with a 6U form factor using a compact core heat exchanger located within the central heat sink of the unit.

These specifications provide a mechanical foundation for rugged VPX systems.



Announcing Today





VPX Application successes, positioning profiles

Rodger Hosking Pentek







VPX Applications: UAV CommINT Transceiver

- System receiver scans for spectral activity, acquires signals, performs signal classification, demodulation and decoding
- Received information is encrypted and then delivered over a secure link to a satellite system where it is relayed to an analysis station
- Key Features
 - Low power
 - Small size
 - Ruggedized environment



Module & Function	Slot Profiles	Module Profiles
CPU, Software Radio, FPGA	SLT3-PAY-1F2F2U-25.2.2	MOD3-PAY-1F2F2U-27.2.2-1
Switch	SLT3-SWH-6F6U-25.4.1	MOD3-SWH-6F6U-27.4.1-6





VPX Applications: Airborne Comms Recorder

- Recording of two analog IF channels
- 10 kHz to 40 MHz signal bandwidth
- 1 TB real time storage, RAID 5 disks
- Cockpit computer controls operation through graphical user interface
- Key Features
 - Storage redundancy
 - Vibration tolerant
 - ATR form factor
 - Flight safety certified



Module & Function	Slot Profiles	Module Profiles
CPU, Digital Receivers, RAID controllers, solid state drives	SLT3-PAY-1F2F2U-25.2.2	MOD3-PAY-1F2F2U-27.2.2-4
Data Switch	SLT3-SWH-8F-25.4.2	MOD3-SWH-8F-27.4.2-2
Control Switch	SLT3-SWH-2F24U-25.4.3	MOD3-SWH-2F24U-27.4.3-1







VPX Applications: Vehicle Anti-IED Device

- System scans for cellular phone signals within 1 km radius of vehicle
- Adaptively transmits high power jamming signal at transmission frequency
- Prevents successful reception of the IED destruct command call
- Key Features
 - Ruggedized system
 - Highly automated operation
 - Enclosed chassis with external fin cooling
 - Small size





Module & Function	Slot Profiles	Module Profiles
CPU	SLT3-PAY-2F-14.2.7	MOD3-PAY-2F-16.2.7-1
Software Radio Transceiver	SLT3-PER-1F-14.3.2	MOD3-PER-1F-16.3.2-1







VPX Applications: Maritime Diversity Radio

- System handles signals from four antennas spaced equally fore to aft
- Performs baseband beamforming to improve directional sensitivity and steering
- Boosts signal-to-noise for both receive and transmit signals
- Extends useable communications range
- Key Features
 - Shock and vibration tolerant
 - Sealed conduction-cooled chassis
 - Flexible signal bandwidths
 - Redundancy



Module & Function	Slot Profiles	Module Profiles
CPU, Software Radio Transceivers	SLT6-PAY-4F2T-10.2.2	MOD6-PAY-4F2T-23.2.2-2
Switch	SLT6-SWH-24F-10.4.3	MOD6-SWH-24F-23.4.3-2







VPX Applications: Airborne Radar Countermeasure

Backplane Profile: BKP6-CEN16-11.2.2-n

- System receives active radar signals
- Downconverts signals to baseband
- Modifies range, bearing and cross-sectional characteristics for return signal
- Upconverts return countermeasure signal to IF for transmission
- Deceives or defeats enemy radar tracking systems
- Key Features
 - Extreme computational capability
 - Extreme environmental factors
 - Very low latency
 - Flight safety certified

Switch Payload Payload VPX 2 5 7 10 11 12 13 14 15 16 1 Expansion Expan Plane Expan Expan Expan Plane (DFP) Data Plane Data Data Plane Data Plane (FP) Control Plane Contri Contri Contri Plane Contri Plane Contri Plane Contri Plane Contri Plane (UTP) }UTP Management IPMC ChMC ChMC IPMC IPMC IPMC IPMC IPMC IPMC IPMC IPMC IPMC IPMO IPMC Plane (IPMB) Utility Plane Includes Power

Module & Function	Slot Profiles	Module Profiles	
CPU, DSP, FPGA and Software Radio Transceivers	SLT6-PAY-4F1Q2U2T-10.2.1	MOD6-PAY-4F1Q2U2T-23.2.1-1	
Switch	SLT6-SWH-20U19F-10.4.1	MOD6-SWH-20U19F-23.4.1-1	







High level survey findings — customer direction of VPX

Jerry Gipper VITA Marketing











Q1: Primary Industries





Q2: Job Function







Open Standards, Open Markets







Q7: Awareness of VITA Technology

How aware are you of these VITA Technologies?



Open Standards, Open Markets



Q9: Obstacles to Implementing VPX

Do you see any of the following as being obstacles to implementing VPX?





Q17: Learn More





Q18: Future Efforts of VSO

VITA is committed to continued development of OpenVPX-related standards. In which of the following areas would you like to see further development of standards:





VME Single Board Computers

Segmented by VME Architecture, 2009 & 2012



Source: VDC Research's Embedded Hardware & Systems: 2010 Market Intelligence Service, July 2010









Moderator: Neil Peterson

Bob Sullivan – Curtiss-Wright Controls Electronic Systems Pete Jha – Curtiss-Wright Controls Embedded Computing Michael Munroe – Elma Electronic Shaun McQuaid – Mercury Computer Systems Dennis Smith – Themis Computer

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Its Successes, and Future Direction

Thank You

November 2, 2010





Catch the Wave

The Next Level of **VPX** Standards is Here

OpenVPX[™], the next-generation interoperability standard for system-level defense and aerospace applications, is now available with more than 150 products.

This new systems specification leverages the work of the individual **VPX** standards to reduce customization, testing, cost and risk. It defines an architecture that manages and constrains module and backplane designs, defines pin outs, and sets interoperability compliance while maintaining full compliance with **VPX**. And it is ideal for rugged applications that require smaller packages, as well as high I/O and connectivity densities.

Connect with your preferred vendor to find out more about the benefits and capabilities of **OpenVPX**.

Find out more at www.vita.com/vpx or visit the VITA product directory at www.vita.com.

OpenVPX is a trademark of VITA.

MEMBER COMPANIES

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VITA Open Standards, Open Markets