AXIe : AdvancedTCA[®] Extensions for Instrumentation and Test

Overview



Copyright © 2013 AXIe Consortium, Inc.

* AdvancedTCA is a registered trademark of PICMG. AXIe is a registered trademark of the AXIe Consortium.

AXIe: What and Why

• What is it?

 An open system modular instrumentation standard based on AdvancedTCA[®], that delivers high performance instrumentation for aerospace defense, high energy physics, semiconductor test and other industries.

What advantages does it bring?

- "Big brother to PXI." Same PCIe fabric and programming, but with:
- Horizontal configurations for minimal rack space, vertical for large systems
- Larger boards for highest rack and power densities per rack inch
- High speed trigger, timing, and local bus
- Semiconductor test extensions
- ATCA compatibility
- Optional LAN fabric
- Integrates easily with PXI, LXI and IVI





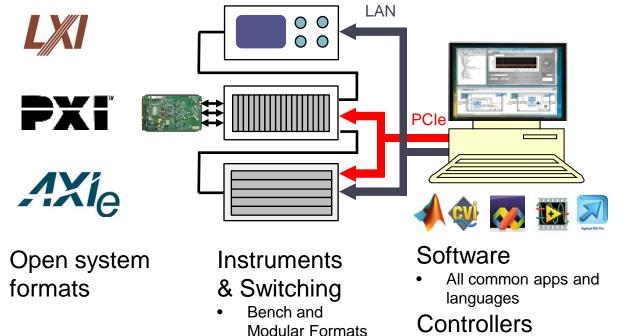
LXI, PXI, and AXIe Rack and Stack System



AXIe + PXI Semiconductor Test System

AXIe compatibility and scalability

PXI (30 Watts) AXIe (200 Watts)



- Embedded or external
- Standard I/O

AXIe brings critical functionality to Mil/Aero systems in a dense and powerful form factor

Image: Construction of modules, with broad functionality in 4U chassis

Software

 Common software drives PXI and AXIe

Controllers

- Embedded or external
- PCIe is common interface
 for PXI and AXIe

Very high performance instrumentation expands performance envelope of modular platforms in 4U chassis



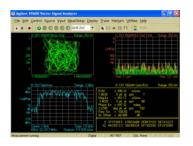


AXIe brings powerful and cost effective new technology to digital verification and test



AXIe delivers leading edge verification tools including:

- PCIe Gen 1,2,3 exerciser and analyzer
- HDMI 1.4 analyzer
- Industry's fastest logic analyzer
- DDR3 analysis





AXIe digitizers and AWGs deliver industry leading performance for mixed-signal test:

- Digitizers range from 1.6Gs/s @12 bits to 40Gs/s @ 8 bits
- AWGs deliver 8Gs/s @ 14 bits to 12Gs/s @ 12 bits
- Powerful and complex
 waveform creation and analysis



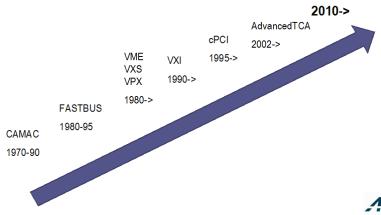
AXIe + PXI Semiconductor Test System offers cost effective alternative to "big iron" testers for small scale manufacturing and design verification



AXIe brings world-class measurements and density to Big Physics



AXIe is the next logical step in modular instrumentation for physics AXle



AXIe digitizers and AWGs deliver industry leading performance:

- Digitizers range from 1.6Gs/s @12 bits to 40Gs/s @ 8 bits
- AWGs deliver 8Gs/s @ 14 bits to 12Gs/s @ 12 bits
- Powerful and complex waveform creation and analysis

AXIe brings unprecedented rack density to high speed digitizers

AXIe is built upon the ATCA standard, enabling a platform for end user customization.

4U Rack Height:



40 channels of 1.6Gs/s



20 channels of 10Gs/s



Waveform Capture and Generation



AdvancedTCA Shelf (Chassis)

- 2-16 Slot Shelf
 - 2-14 Slots in 19" Rack
- 2 Hub Slots
- 14 Node Slots
- User Zone 3 Backplane
- LAN routed to every slot
- PICMG 3.4: PCIe to every slot
- Large form factor cards
- Flexible power (48V) and air cooled design

Zone 3 Zone 2

Zone 1

AXIe Specification Structure

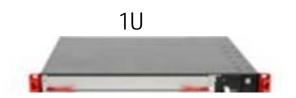
AXIe is a scalable family of specifications allowing a portfolio of applications.

AXIe-3.n Zone 3 Definitions	<u>Semiconductor</u> <u>Test</u> AXIe-3.1 • Zone 3 signals • DUT I/O on RTM • Add'I Trigger/Sync	Other future Apps AXIe-3.n • For future expansion	 AXIe-3.n specifications define Zone 3 capabilities for specific markets Can define specific additional system management and resources May work on top of a standard ATCA topologies or AXIe-1
AXIe-2 Software	 Software Specification Enables AXIe to appear as PXI to a resource manager 		AXIe adds a software specification that makes AXIe appear almost exactly as a PXI system
AXIe-1 Zone 1+2 Topology	 AdvancedTCA plus Triggers and Timing Local Bus 		• AXIe expands allowable ATCA Zone 1 and 2 topologies to include AXIe-1, allowing embedded data transfer and synchronization
ATCA	 AdvancedTCA PICMG3.0, PICMG3.4 LAN + PCIe System Management 		ATCA is the base specification for all AXIe specifications

High scalability of AXIe

14 slot Vertical



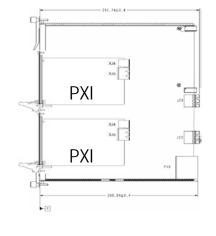




n U Horizontal



Specialty instrument with AXIe module

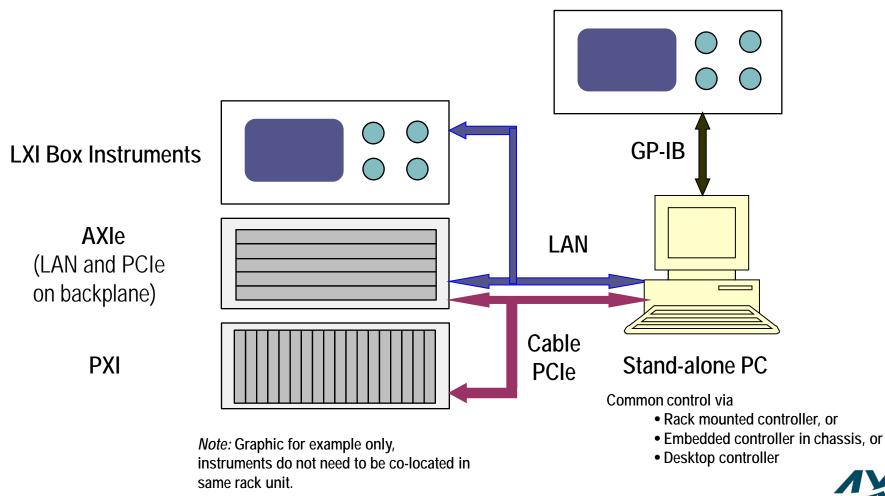


PXI carrier module



AXIe integration with Rack and Stack

GP-IB Instruments





Summary

- Extending AdvancedTCA
 - AXIe is based on AdvancedTCA with extensions for instrumentation and test.
- General Purpose (AXIe-1), Base Software Specification (AXIe-2), & Semiconductor Test (AXIe-3.1)
 - Family of standards
- More Performance, Scalability, Flexibility
 - AXIe delivers higher performance in a flexible, scalable platform.

• PXI, LXI, IVI

- AXIe works well with other standards, such as PXI, LXI and IVI.
- "Big Brother of PXI"
- Specifications may be downloaded from the AXIe Consortium website at <u>www.axiestandard.org</u>

