



LXI Technical Committee Overview

David Owen
Technical Committee Chair



It's about YOUR time.

www.lxistandard.org

Technical Committee (TC)

- Responsible for the creation and maintenance of the LXI standard
 - Managed by the TC Chair reporting to the Board of Directors
- More recently involved in activities supporting the LXI standard

How the TC Functions

- Works by:
 - Telephone conference calls when required and e mail correspondence thru Google Groups
 - Creation of Working Groups (WG) to deal with specific work items
 - Each WG with own Google Group and conference call arrangement
- Participation by any LXI member

The LXI Standard

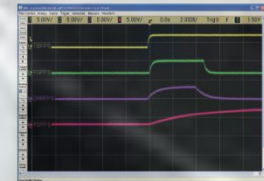
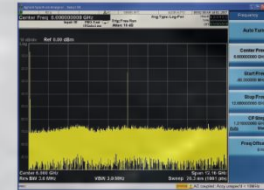
- Set of documents all LXI Conformant products must conform to in order to display the LXI Logo and make conformance claims
 - Requires that vendors demonstrate the interface compliance to the Conformance Committee
 - Supported by the use of a Test Suite
- The standard largely defines how to use other standards to create LXI conformant product
 - Such as Ethernet, IEEE1588, IVI, mDNS

LXI Standard Milestones

- How the standard has evolved
 - September 2005. First release of standard, followed by conformant products in December
 - August 2006. First formal release at Version 1.1 First products compliant
 - November 2007. Version 1.2 adopts IEEE1588-2008, an improved version of the timing standard
 - October 2008. Version 1.3 adds mDNS based discovery and adds more flexibility in optional functions
 - May 2011. Version 1.4. Introduces the concept of LXI Extended Functions and removal of the Class Model to simplify the evolution of the standard
 - Technical functionality otherwise very common to Version 1.3

What is LXI?

- **Power of Ethernet and the Web inside test systems – leverage Telecom Industry**
- **Standard for LAN instruments**
- **What separates a LAN instrument from an LXI instrument?**
 1. Consistent set of LAN communication services
 2. LAN discovery and configuration support
 3. Standard web page
 4. IIVI driver
 5. Interoperability testing
 6. Extensions for triggering and synchronization



LXI Standard Structure

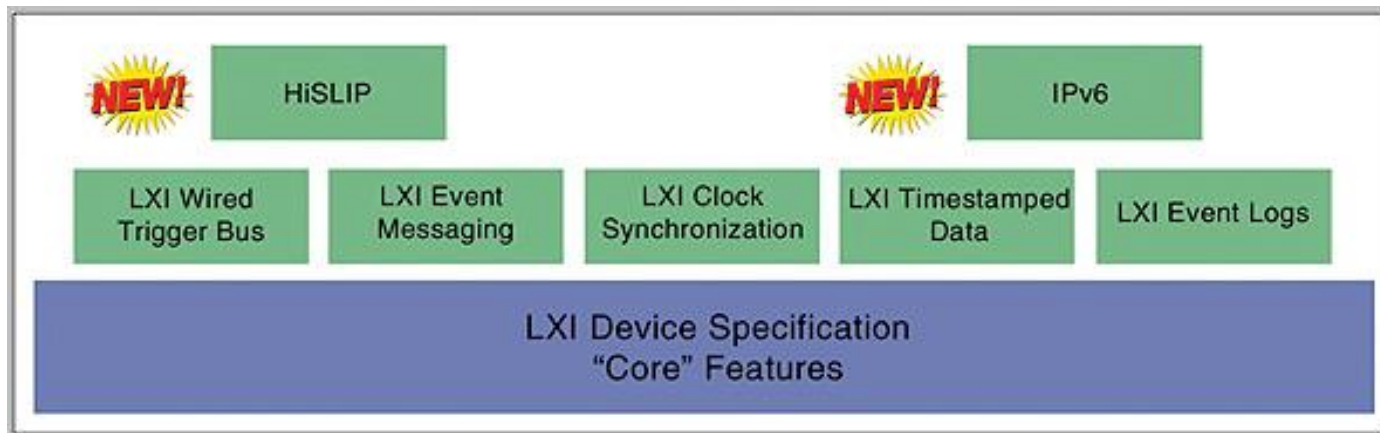
- Copies of the standards can be found at <http://www.lxistandard.org/Specifications/Specifications.aspx>

[LXI Device Specification 2011, rev. 1.4](#) (Released May 18, 2011)

[LXI Wired Trigger Bus Cable and Terminator Specifications, rev. 2.0](#)
(Released May 18, 2011)

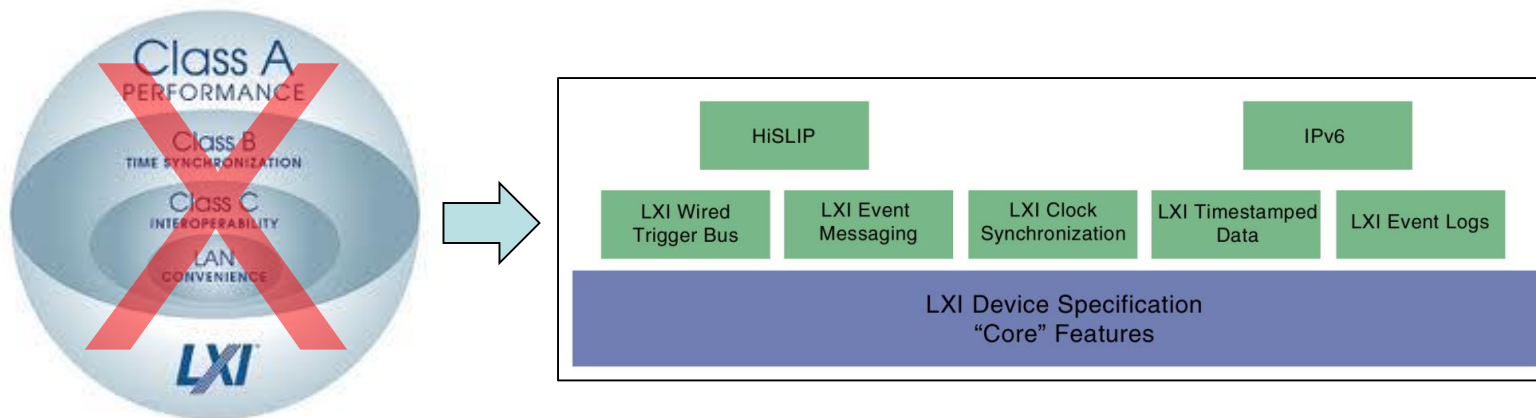
[LXI HiSLIP Extended Function, rev. 1.01](#) (Released Oct. 20, 2011)

[LXI IPv6 Extended Function, rev. 1.0](#) (Released Mar. 14, 2012)



Replacement of LXI Classes

- As of LXI Specification revision 1.4, previous LXI classes have been replaced by optional extended functions
 - Class structure made it very hard to migrate the specification
 - New extended functions provide more flexibility



LXI Classes replaced by LXI Core with Extended Functions

Editorial and Information Documents

- In addition there are other documents to help readers
 - Interpretations and Clarifications
 - Requests for clarification of meanings are considered and recorded in this document
 - Document overview
 - Describes the different documents and how they relate to each other
 - Application form for certification
 - Test procedures

TC Support of the LXI Standard

- As the standardisation activities reduced TC moved changed emphasis to support
 - Discovery Tool
 - IT Working Group documents
 - Reference Design

Discovery Tool

- Created by Pickering Interfaces with member feedback and donated to the LXI Consortium
- Simple tool that allows discovery of LXI Devices over a network with no vendor specific software
 - Discovers through mDNS (recommended) or VXI-11
 - Allows access to the web pages of the LXI Device, including soft panels.
- Tool is a free download here
<http://lxistandard.org/Resources/LXIDiscoveryTool.aspx>

IT Working Group Documents

- Series of documents aimed at making it easier for those less familiar with Ethernet and networks get started
 - LXI Getting Started Guide
 - Building LXI Based Tests Systems
 - Introducing LXI to Your Network Administrator
 - All available here
<http://lxistandard.org/Resources/GuidesForUsingLXI.aspx>
- Guides on performance aspects
- Documents covered in a later presentation

Guides for Using LXI...on the Web



The screenshot shows the LXI website header with the logo and navigation menu. The main content area features the title 'Guides for Using LXI' and a list of guides. The LXI logo is in the top left, and the navigation menu includes 'Home', 'About LXI', 'LXI Consortium', 'Products', 'Specifications', 'Resources', 'Events/Meetings', and 'News'. The page title is 'Guides for Using LXI'.

LXI
LAN eXtensions for Instrumentation

Login Site Map Contact Us

Home About LXI LXI Consortium Products Specifications Resources Events/Meetings News

Guides for Using LXI

Guides for Using LXI
Resource Archive
LXI Newsletter Archive

These guides were written to aid the test system designer in building an LXI test system quickly and easily. They share best practices in key areas of interest connecting LXI Devices to LAN.

- [LXI Getting Started Guide](#)
(Released Aug. 3, 2013)
- [Building LXI-Based Test Systems](#)
(Released Aug. 3, 2013)
- [Introducing LXI to Your Network Administrator](#)
(Released Aug. 3, 2013)
- [Maximizing Performance of LXI-Based Test System](#)
(Released May 10, 2014)

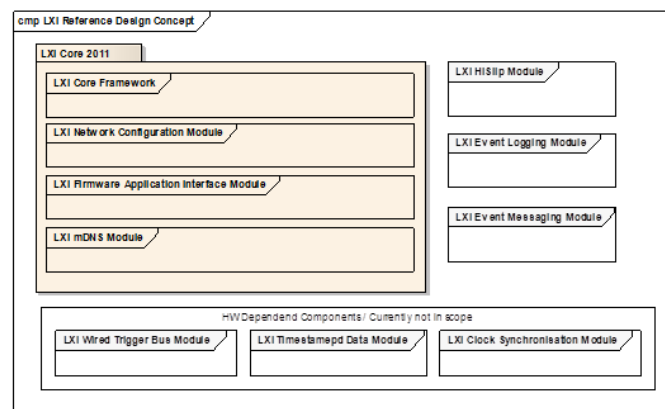
Additional reference aids for the documents above:

- [LXI Networking Basics](#)
(Released Aug. 3, 2013)
- [Glossary of Networking Terms](#)
(Released Aug. 3, 2013)

<http://lxistandard.org/Resources/GuidesForUsingLXI.aspx>

LXI Reference Design

- Standards create an entry requirement
 - For some that entry barrier can be a deterrent to providing a conformant interface and claim LXI
 - Particularly true for smaller vendors will more limited resources on low end platforms
- LXI Consortium thru the TC is creating an LXI Reference Design



Benefits of a Reference Design?

- It is a significant financial investment by the Consortium
 - It is funding the work thru TSEP and voluntary member support
 - A description of the design is covered in a later presentation
 - So why a Reference Design?
 - LXI vendor benefits
 - LXI user benefits
 - LXI Consortium benefits
 - University Benefits

LXI Vendor Benefits

- Lowers barriers to product migration to later versions of the standard
- Lowering long term design and development costs
- More harmonized interfaces across different hardware platforms
 - Different product types have different controller platforms to reflect market requirements (cost and performance)
- Eases the investment to add new extended functions
- Easier to make LXI system level interfaces
 - LXI controller managing systems with multiple control mechanisms within them

LXI User Benefits

- Encourage more vendors to adopt LXI for Ethernet controlled instrumentation
- Increase vendor competition
 - Lower barriers and more level playing field
- Encourage vendors to adopt more Extended Functions
 - IEEE1588, Event Messaging, HiSLIP

LXI Consortium Benefits

- Increase number of LXI vendors by lowering entry barriers
- Raise first time pass rates in conformance testing
 - In the long term perhaps opening the path to self certification
- Provide a framework for extensions and improvements to the standard
 - New extended functions
 - Maintain the Reference Design to reflect evolution of the standard

University Members

- More opportunities to use Reference Design in Universities
 - Creation of LXI interfaces as project work
 - Increase familiarity with Ethernet control systems

What of the future?

- The standard is stable
 - The TC will continue to follow technology changes
 - Ethernet, IEEE1588
 - Will continue to maintain backward compatibility
 - An essential requirement for T&M for products with long life cycles
- On completion of Reference Design we have opportunities to add Extended Functions
 - To the standard
 - To the Reference Design
- Investigate hybrid systems
- The TC will continue to improve support for the standard

More Information on LXI

- **Visit web site**
<http://www.lxistandard.org/>
More Information on LXI
- **Contact Bob Helsel, Executive Director or any other board member**
<http://www.lxistandard.org/ContactUs.aspx>

Thank You!