

## LXI Reference Design is "Code Complete"

We proudly announce that the implementation phase of LXI Reference Design has been finished by the end of 2014. The project had started at the beginning of the year with a collection and consolidation of the requirements. As soon as the requirements had been affirmed by LXI TC, it was our job to design the software

packages. In mid of 2014 we started the implementation. At the Washington Plug Fest in October all LXI members were invited to discuss the Reference Design and to contribute to some design details.

Now, at the end of 2014, we are glad having reached the Code Complete milestone.

### What's going to happen in 2015?

In the mid of January we will ship a preview version of the LXI Reference Design to some LXI members. At the Plug Fest in February we will present the first release version with all functionalities. After the Plug

Fest we will incorporate your feedback arising from the preview version and the Plug Fest, and we are planning to hand over the LXI Reference Design to the LXI Consortium for conformance tests in March.

### [Who is TSEP?](#)

TSEP is a software and hardware development company, which was founded at 1988 and employs more than 20 staff members with different skills.

TSEP develops complete solutions for measurement devices and test systems.

TSEP has the first experiences with LXI were in 2005 while implementing the LXI Standard 1.0 for a measurement company. Over the years, TSEP has implemented the complete standard and is now working on the reference implementation for the LXI Consortium.

### What is the LXI Reference Design?

The LXI Reference Design covers all LXI components which do not require any vendor specific hardware. Therefore LXI Wired Trigger Bus and LXI Clock Synchronization are omitted. LXI Reference Design follows a modular concept. It is based on the LXI Core 2011, featuring Web Server, Network Configuration, mDNS, LAN Status Indicator, logging and persistence. The

modules HiSLIP, LAN Event Messages and IPv6 are optional. Each vendor can choose individually which modules to use.

LXI Reference Design has been implemented in C++ for the Windows, Linux i386 and Linux Arm platforms. It is intended to be easily portable to other systems and especially to low-end systems.

### What's going to be in the LXI Reference Design package?

We will release several components:

- The UML design model, created with Enterprise Architect. It contains all requirements, all classes and several sequence diagrams and state diagrams.
- A design document as pdf export of the model, enhanced with additional documentation.
- The source code plus unit test source code, ready to use with Visual Studio on Windows or Eclipse on Linux.
- HTML documentation of the classes and their methods, created with doxygen.
- A "How-To" document, helping you to get started.

## How is TSEP going to support vendors?

As soon as the preview version has been released, LXI members can begin to integrate the LXI Reference Design into their firmware. We are happy to offer support according to their needs:

- On a consultancy basis we can offer training for vendor developers. This can cover understanding the concepts, configuring the LXI Reference Design, introducing unit tests and giving an overview of the Conformance Test

Suite. After that, vendor developers will be in charge of their respective projects, with TSEP assistance on demand.

- We can offer premium support: Vendors may contact TSEP directly in case support is needed for integrating LXI Reference Design into their firmware.
- Alternatively, we can take over the integration of the LXI Reference Design into vendor firmware.

## How is the LXI Reference Design going to be tested?

During development we have created unit tests, covering the basic functionality of the modules. These unit tests can be used as regression tests and are available to each vendor.

As early as possible we have tested against the LXI Conformance Test Suite in order to detect problems in early stages. Final conformance tests will be performed by the LXI Consortium.

## Finally - some information on key modules!

### Web Server

We have implemented two approaches:

- The minimalist approach, using Civitweb, a small free web server, which is directly embedded into the software with its source code.
- The sophisticated approach, using NginX, a complex web server.

Each vendor may adapt his implementation and use any web server of his choice.

### Network / IPv6

IPv6 can be activated or deactivated at compile time.

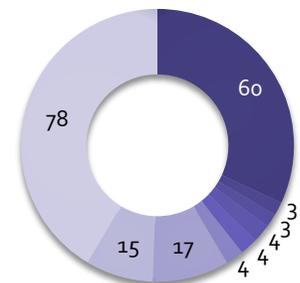
### mDNS

The mDNS module uses Apple's free Bonjour implementation for Windows and Linux and works for both IPv4 and IPv6.

### HiSLIP

HiSLIP is the largest of the modules. It is intended to be integrated closely into the vendor firmware. The interfaces and the interactions between HiSLIP and vendor firmware have been focused on at the Washington Plug Fest. In first tests compatibility has been proofed with existing implementations of Keysight and Rohde&Schwarz.

## C++ Classes per Module



- Core
- EventLogModule
- EventMessagingModule
- FirmwareApplicationInterface
- mDNSModule
- WebServer
- NetworkConfiguration
- SyncTriggerModel
- HiSLIP