

Functional Test Development Accelerated With an LXI Open Test Platform

by [Roland Blaschke](#)
[LXinstruments GmbH](#)

Functional test systems are not “off-the-shelf.” Engineers need a lot of experience and face a time-consuming job, when a functional test system is to be developed, deployed and customized to the very bitter end. Is this really true?

Functional test systems aren't off-the-shelf. Due to customer-specific needs in addition to DUT-specific needs you have only two choices — commission a fully customized solution or define a huge and typically oversized standard system. For engineers the development and deployment of a functional test system is very time consuming. But this is over now.

Now with the LXI-based open test platform from LXinstruments there is a third and new option. You can use the LXI open test platform as the standardized core of your functional test system and build your own unique capabilities around it. Ethernet is a common standard for instrument control and the foundation of the LXI (LAN eXtensions for Instrumentation) standard. LXI systems are low cost, easy to implement and – with ever-increasing LAN data rates – approach or exceed the throughput of traditional backplane architectures.

The increasing portfolio of test instruments that support LXI makes the standard a viable option for implementing your functional test strategy. Instruments and instrument families that do not support LXI are getting rare, but they are necessary in some functional test systems. The open test platform concept has been invented to build on the strengths of LXI instrumentation and customize the system using other types of instrumentation, such as GPIB, USB, RS-232, PXI or VXI.

At the heart of the LXinstruments OTP (open test platform) there is a multifunction switch/measure unit, such as the Agilent 34980A, Keithley 27xx or VTI EX1200. This provides all of the switching to route source/measure signals to and from the device-under test (DUT). All of these instruments are configured with a standard 6½ digit DMM for basic measurements. Manufacturers provide a wide range of additional source and measurement options to meet your exact functional test needs. The detailed scope of options differs between the mentioned manufacturers of course.

The system can incorporate further standard instruments including: oscilloscopes, arbitrary waveform generators, digitizers, RF and communications devices. The LXI-based open test platform is provided in a racked configuration to accommodate the additional 19” instrumentation and includes a DUT fixture.

The primary communications within the OTP utilize LXI. LXI instrumentation is used whenever possible with the core instruments controlled over LAN. For the added needs the system also supports the GPIB, USB and RS-232 interfaces or even a defined PXI or VXI cage. All of the instrument interfaces are controlled through a common software environment with a graphical user interface to simplify set-up, programming and data management. After having served a great number of customers with a wide range of specifications, LXinstruments tends to use long-lasting fixturing components from companies that also offer a military grade, such as Virginia Panel or MAC Panel or the German-based ODU.

Over the last 4 years LXinstruments has developed a robust software platform to extend the capabilities of the known standard sequencers. With the TestSystem Common Operator Environment (TSCOE) the customer is given an easy to use environment for all needs of different user groups in a production plant. DUT data as well as system and program information are linked together with result data. Additionally the analysis tool Magpie offers a

wide variety of possible analysis. As a matter of fact, the name of this tool is misleading. This magpie does not steal anything, but assists in using the data you need.

By using the Open Test Platform concept from LXinstruments using off-the-shelf LXI instruments as a test system kernel and adding the non-LXI specials as “customization salt,” you can accelerate the development and deployment of your functional test systems. The LXinstruments software concept supports a fast finalization of virtually any test task you might have.