LXI Consortium – 2010
Report to the Test Industry

Von Campbell, LXI Consortium President

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Topics

- LXI Consortium Business Overview
  - New Members: The inside story
  - Continued Growth
  - Four Test Houses
    - New China Test House

- LXI Industry Report

- New Revision 1.3 of the LXI Standard

- New Products and Applications

- Outlook
Members

- New members reflect the global reach for LXI instruments
- Consortium membership is currently at 50 members
- 28 members have entered the market with LXI compliant products
- New members in 2009 and 2010:
  - AAI
  - Acery Technologies Co. Ltd.
  - OOO "NPP "MERA"
  - Good Will Instrument Co., Ltd.
  - Automatic Test & Control Inst.
  - Giga-tronics Incorporated
  - Proft InFocus
  - Chroma ATE Inc.

For updates: http://www.lxistandard.org/company_roster/
Elections/Changes

- New LXI Consortium President 2009 – Von Campbell
  - Oversees Agilent’s involvement in multiple industry consortia, including LXI, IVI, VXI, PXI Systems Alliance, AXIe

- Compliance Technical Working Group elevated to Board Committee Status
  - Responsible for certifying instruments as LXI-compliant
  - Chaired by Jochen Wolle, Head of Research and Development Software - Spectrum and Network Analyzers, Rohde & Schwarz
  - Reinforces the cornerstone principle of tested interoperability of LXI devices
Testing/Certification Facilities: Welcome China

- **New Class C test house in China** (Rigol Technologies Inc.) allows local language compliance: Important for troubleshooting tasks

- The LXI Consortium provides four different test houses for certifying products as LXI-compliant: China, U.S. (via Wheelwright Enterprises and ProftInFocus) and Germany (via Agilent ‘s LXI Test Lab, Boeblingen, Germany)

The world LXI-enabled test and measurement (T&M) equipment market generated $220.0 million in 2007. This represents an 83.3 percent increase in revenues over 2006.
LXI Rev 1.3 Standard: Advanced Features

- Implementation of IEEE 1588-2008

- Adoption of mDNS (Multi-cast Domain Name System) as an additional Discovery Protocol

- Revision 1.3 allows manufacturers to create customized Class C LXI instruments, beyond the standard Class C, tailored to customer needs and based on application requirements
  - Included features will be tested to assure that LXI interoperability will be maintained
LXI Standard: Advanced Features (continued)

**Trigger Bus** – standardized method of connecting LXI devices together in a way that allows them to exchange hardware trigger signals that have low timing uncertainty; particularly valuable for high speed applications such as aerospace

**IEEE 1588 Synchronization** -- Sub-microsecond synchronization of real-time clocks in a networked distributed measurement system
LXI Standard: Advanced Features (continued)

**Time Stamped Data** -- Samples can be correlated among many instruments so that you could, for example, see how a change in a power supply was reflected in a UUT

**Event Logs** -- Ideal for troubleshooting, this feature records actions in an instrument such as trigger received, alarm detected, measurements started, or error occurred

**Event Messaging** – Alarms or messages sent to other LXI devices
New Products

- Today, 1306 products in 162 product categories are certified as LXI-Compliant, a 51% increase from 12 months ago
- The product line today covers every major product category needed to build a high performance test system, with no holes or gap in instrument capability
- The breadth of support for LXI instrumentation even has grown to include software and connectivity tools
Common Applications Seen by LXI Members

- System Integrators
  - Com Dev, with applications such as Payload Test and Transmit Receive Module Test (Mil/Aero) that require integrated systems with tight timing and switching
  - TestForce – RF Power and Switching applications
- Messier-Dowty – multi-channel, high speed data acquisition application of landing gear testing
Common Applications Seen by LXI Members

- Pickering - Continuity/hi-pot test of cables in aircraft
  - Stimulus/Measurement unit in tail – LXI matrix in nose – control via Wi-Fi
- Pickering – LXI High Voltage Matrix in Cell Testing in a Lithium Ion Battery Stack for Electric Vehicles
Common Applications Seen by LXI Members

- VTI Instruments – Rotorcraft Testing; LXI increases data throughput in application that requires 240 channels sensors
- VTI Instruments – Pavement Testing to characterize material properties of runway pavement
Common Applications Seen by LXI Members

- Agilent – Remote Antenna Testing Using Class B Instruments
- Keithley – Satellite Environmental Exposure Simulation – 10 instruments and thousands of channels collect data 24x7
- Accelerator Ring Application – uses Class B Level IEEE 1588 to sync system to GPS time, with each of 10 mainframes synced to within 1 msec and timestamp accuracy to within 0.1msec for each of 5000 channels
Roadmap and Outlook

- Preparing for future technologies
  - IPv6
  - GB Ethernet 10 GB Ethernet LAN
  - New LAN Protocol
    - Hi-SLIP
  - Clearer vision for LXI classes

- Ubiquitous LAN

- Continued desire for system interoperability

- Industry expansion
Conclusion

- Bright future
  - Continued growth and expansion

- Visit our web site at www.lxistandard.org

- Contacts:
  - Executive Director: Bob Helsel email: execdir@lxistandard.org
  - President: Von Campbell email: von_campbell@agilent.com

Thank you!