

**IVI Foundation  
Meeting Summaries  
May, 2015  
Denver, CO – IVI Foundation**

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## 1. Meeting Attendees

Last Name	First Name	Company
Bellin	Jon	National Instruments
Fertitta	Kirk	Pacific MindWorks
Harvey	John	Keysight
Helsel	Bob	Bode Enterprises LLC
Lopes	Teresa	Teradyne
Mueller	Joe	Keysight
Rohacek	David	National Instruments
Ryland	John	Keithley
Schink	Steve	Keysight
Wang	Ted (Ping Chuan)	National Instruments
Wolle	Jochen	Rohde & Schwarz

### Attendees via conference phone (note: they pay 1/2 mtg. fee)

Adhikari	Pankaj	National Instruments
Lessard	Courtney	National Instruments
Stone	Pete	Keysight
Mondrik	Dan	National Instruments

## 2. IO Working Group Minutes

### **Meeting Info:**

**Date of Meeting:** May 07, 2015

**Location:** Denver

**Chairperson:** Ted Wang

**Minutes Prepared By:** Ted Wang

### **Meeting Attendees:**

<b>Name</b>	<b>Company</b>	<b>Email</b>
Anshul Arora	Tektronix	anshul@tek.com
Bob Helsel	IVI Foundation	bob.helsel@ivifoundation.org
Dan Mondrik (Phone)	National Instruments	dan.mondrik@ni.com
David Rohacek	National Instruments	david.rohacek@ni.com
Jochen Wolle	Rhode & Schwarz	jochen.wolle@rohde-schwarz.com
Joe Mueller	Keysight Technologies	joe_mueller@keysight.com
John Harvey	Keysight Technologies	john_harvey@keysight.com
John Ryland	Keithley	jryland@keithley.com
Jon Bellin	National Instruments	jon.bellin@ni.com
Kirk Fertitta	Pacific Mindworks	kirk@pacificmindworks.com
Pankaj Adhikari (Phone)	National Instruments	pankaj.adhikari@ni.com
Santanu Prahan	Tektronix	santanu.kumar.pradhan@tektronix.com
Ted Wang	National Instruments	ted.wang@ni.com
Teresa Lopes	Teradyne	teresa.lopes@teradyne.com
Vinod Cherian	MathWorks	vinod.Cherian@mathworks.com

### **Agenda**

Thursday Morning (10:30-12:30)

- Review action items

- VPP-4.3 editorial changes
- Shared Components v5.6 release
- Phone meeting schedule

### Old Action Items

<i>Date Added</i>	<i>Description</i>	<i>Assigned To / Updates</i>	<i>Target Date</i>
<b>General</b>			
2014-02-06 (VISA.NET)	Achieved the desired timeout behavior by modifying the MessageBasedReaderWriter class. Review with Kirk.	Pankaj Adhikari Kirk Fertitta DONE	<del>2014-02-27</del> 2015-04-01
2015-02-10 (VISA.NET)	Add new spec issues to IVI VISA.NET TFS defect tracking	Pankaj Adhikari DONE	2015-03-04
2015-02-09	Setup meeting to discuss postponed issues	Ted Wang DONE	2015-02-20
2015-02-09	Verify the VISA SC source that Keysight owns and create a v5.5.0 release in TFS	John Harvey Kirk Fertitta DONE	<del>2015-02-20</del> <del>2015-04-01</del> 2015-04-15
2015-02-09	Post VPP-4.3 editorial changes for review (Email John Harvey the text for viPxiReserveTriggers before posting for review)	Ted Wang	<del>2015-04-01</del> 2015-04-29
2015-03-03	Restore cleanup utility on the SC public page	Kirk Fertitta	2015-05-07
2015-02-11	Rename revision history document on the SC page. Revision History => Release Notes	Kirk Fertitta DONE	<del>2015-03-18</del> 2015-04-01
2015-03-03	Investigate whether the cleanup utility should remove conflict table	Pankaj Adhikari DONE	2015-04-01
2015-03-03	Research possible VISA.NET SC designs for SxS install/upgrade	Pankaj Adhikari DONE	2015-04-01
2015-03-03	Find out if it is okay to make TCPIP_PORT a required attribute	Ted Wang John Harvey DONE	<del>2015-04-01</del> 2015-04-29
2015-04-29	Move copyright year range to VersionConstants.cs and add missing XML documentations to GRM	Pankaj Adhikari DONE	2015-05-07

### VPP-4.3 Editorial Changes

- VPP-4.3 currently has a collection of clarifications. We need guidance from the technical committee to see if this is an editorial change or a minor change.
- Two new noteworthy recommendations:
  1. Vendors should support VI\_ATTR\_TCPIP\_PORT for VXI-11 resources (it is already required for HiSLIP resources). This is added for consistency across all TCPIP resources as well as convenience to customers and .NET API users.

2. Vendors should set retCount to the actual number of bytes transferred for viRead/viWrite and related operations, even if the operation times out. This is added so that when you throw a timeout exception in VISA.NET, you can report useful information to the user.
  - John Harvey investigated the Keysight VISA.NET implementation and find that the Keysight implementation does not set retCount to the actual number of bytes transferred when the operation times out (set to 0).
  - John has not researched enough to tell how easy it would be to change this but he will take an action item to dig deeper.
  - We need to clarify what retCount means in terms of valid bytes in the buffer. Is it the number of bytes read or the **number of bytes that the user can assume to be valid in the buffer**? The rule is to make sure that retCount is the number of bytes that the user can assume to be valid in the buffer. The recommendation can be to make sure that retCount is actually the number of bytes transferred.
- Jon Bellin believes that both recommendations should be rules if this is the desired behavior. If so, this should be a minor change instead of an editorial change
- Ted will poll the VISA vendors on adding these two rules and then ask if vendors are okay with implementing these changes in the next version of VISA that they release after December 31, 2016.
  1. If we got push back, we need to discuss the rationale in a face-to-face meeting.
- We will split the changes into clarifications and recommendations. The clarifications can be done as an editorial change and the rule/recommendation will be added later.

### ***Shared Components v5.6 release***

- Review changes if anyone wants to look at the change set. Formatted I/O timeout exception handling is probably the most interesting one.
- Review VISA.NET Release Checklist
  1. All source code changes are checked into main branch
  2. Bump versions and year in VersionConstants.cs
  3. Create a release branch
- Check with Kirk to make sure that the prerelease version of the .NET shared component is no longer distributed. Kirk verified that he is shipping VISA.NET v5.5 Shared Components.
- Review TFS defects and close out issues
  1. Ted will mark the bugs as resolved after the review period is over

### ***New issues reported in TFS***

- Look at it if we have time. Note that spec defects do not have to be addressed at this time.

## Work Schedule

- Bi-weekly meetings on Wednesday, 8 am Pacific Time, 9 am Mountain Time, 10 am Central Time, starting May 27, 2015.

## Action Items

<i>Date Added</i>	<i>Description</i>	<i>Assigned To / Updates</i>	<i>Target Date</i>
<b>General</b>			
2015-02-09	Post VPP-4.3 editorial changes for review	Ted Wang	<del>2015-04-01</del> <del>2015-04-29</del> 2015-05-08
2015-03-03	Restore cleanup utility on the SC public page	Kirk Fertitta	2015-05-27
2015-05-07	Post Shared Components v5.6 for review	Pankaj Adhikari Kirk Fertitta	2015-05-08
2015-05-07	Ted will email a copy of the VISA Shared Components license file to Bob, Jochen, and Kirk. Kirk will upload the copy to the Shared Components WG page on SharePoint and let Kikusui know where to find it.	Ted Wang Kirk Fertitta	2015-05-15
2015-05-07	Kirk will give Ted full permission for VISA VISA.NET projects in TFS	Kirk Fertitta	2015-05-08
2015-05-07	Create the 5.5.0 release branch for VISA	Ted Wang	2015-05-08
2015-05-07	Integrate VISA.NET changes from dev to main before the official review period begins	Ted Wang	2015-05-08
2015-05-07	Investigate if the retCount recommendation is desirable	John Harvey	2015-05-27
2015-05-07	Poll VISA vendors on their thoughts about making the two rule additions to VPP-4.3	Ted Wang	2015-05-15
2015-05-07	Mark issues and bugs as resolved when the SC review period is over	Ted Wang	2015-05-27

### 3. IVI Marketing Committee

Update: May 6, 2015

### IVI Charter:

The primary purpose of the IVI Foundation is to promote the development and adoption of standards for programming test instruments. In doing so, the Foundation focuses on the needs of people that build and maintain high performance test systems with off-the-shelf instrument drivers. The IVI Foundation builds on existing industry standards to create specifications that simplify interchanging instruments and provide better performance and simplified maintenance.

### **Goals:**

1. Communicate IVI driver basics to demonstrate the savings in cost and time, and improvement in quality to test system developers.
2. Promote IVI Web Forum to address support issues in the use of drivers.

### **Tactics:**

#### 1a. Update IVI Getting Started Guide

- Retrieve updates in text and graphics from member authors and revise master version and short guides.
- **In process:** Copies of guides sent to all authors for edits in MS Word. Responses from NI, Keysight, MathWorks. Decided to delete Measure Foundry because there is no sponsor.
- Plans made for revisions of C++, C# and Visual Basic.NET, VB6.
- Bob will finalize the edits he has received and post. The rest should be completed in the next two months or sooner.
- With the pamphlets complete, Bob will upgrade the master guide, and post on the IVI site.
- 1b. Update GSG videos:
  - Expect to begin this process in June and be done by July.

1c. translation of GSG & pamphlets into Chinese, if cost within IVI Mkt budget. (Jochen to get quote.) Expect to investigate this by end of June when GSG and pamphlets are complete.

#### 2. Videotape IVI Instrument Driver Fundamentals Course

- Divided into 4-5 lessons. Joe is presenter; Bode Ent. (Bob) videotapes and packages.
- PR to advertise
- 2.5 hr. course
- *Note:* Translate the presentations in simplified Chinese in presentations, if we have funds in budget to do this.d

- **Update:** The videos are complete and posted as of May meeting. Bob still needs to edit and post slides for sections as well as the whole course. We have added the NI video demos to the course as well and added NI to the opening paragraph as a contributor to the course.
  - **Posted on website by end of May or sooner.** The actual presentation slides will be posted with the videos with some edits from NI.
3. Commit to IVI participation in LXI Newsletter
- 1 article per issue based on IVI Web Forum Q/A
    - Bode Ent. edits and packages from IVI content authors (from current Moderators). Articles based on web forum content. Moderators decide on content for whole year. ~500 word articles. There is 1 article per moderator per year.
    - 2015 issues of the LXI newsletters: January, April, July, September
  - 1 short article describing connection of LXI and IVI drivers in every issue

**Update: First article in Jan. issue of LXI Newsletter at [http://lxistandard.org/01132015\\_LXI\\_newsletter.html](http://lxistandard.org/01132015_LXI_newsletter.html), which was submitted by NI. Vesna and Courtney were authors. Next IVI article was due for April issue, but since no author was located, Bob wrote an IVI article based on one of Kirk Fertitta's Q/A that had ~900 views. View the article in the LXI Newsletter at [http://lxistandard.org/04242015\\_LXI\\_newsletter.html](http://lxistandard.org/04242015_LXI_newsletter.html).**

4. (Not approved until we get more data) Webinar of Overview of IVI Instrument Driver Fundamentals Course and Q/A
- Deferred until we get IVI course taped and posted.
  - Point to the videotapes of course on our website. Promote those tapes.
  - Run in US, Europe, and Asia (only do in Asia, if we have translations)
    - Publicize through LXI newsletter, Press releases, DOD, and via members' communications.
    - Promote IVI Web Forum as well.
  - We will do videos of course first, and then get feedback first.



- In China you need a translation; also, you need web access in China; therefore, it would be much higher cost in China. We would need support for this.
- Conclusion: We need to get this additional information and see the total cost and effort prior to authorizing this.

#### 5. Two presentations at Autotestcon

- **May Update:** The standards seminar that Bode Enterprises, LLC hosts on Monday afternoon has been accepted and Joe is slated to do the IVI presentation. I will submit a proposal on a joint panel between LXI and IVI by mid-June to the Technical Program chair. The IVI section would be focused on either the IVI Web Forum or the IVI Instrument Driver Course. The MC will review both presentations.
- Preparation in March 2015; Bode Enterprises applies in March and hosts in November in 2015. (Autotestcon is in November this year.)
- Seminar on IVI basics (done by Joe Mueller in Autotest 2014)
- Panel presentation with LXI on test system development with LXI instruments and IVI drivers targeting mil/aero applications.

## 4. Instrument Driver Working Group Meeting

### **General Meeting Info:**

Date of Meeting: May 7, 2015  
Location: Denver  
Chairperson: John Harvey  
Minutes Prepared By: John Harvey

### **Meeting Attendees:**

John Harvey	Keysight Technologies	john_harvey@keysight.com
John Ryland	Keithley	jryland@keithley.com
Kirk Fertitta	PMW	kirk@pacificmindworks.com
Teresa Lopes	Teradyne	teresa.lopes@teradyne.com
Jochen Wolle	Rhode & Schwarz	jochen.wolle@rohde-schwarz.com
Jon Bellin	National Instruments	jon.bellin@ni.com
David Rohacek	National Instruments	david.rohacek@ni.com
Ted Wang	National Instruments	ted.wang@ni.com
Bob Hesel	IVI Foundation	bob.hesel@ivifoundation.org
Joe Mueller	Keysight Technologies	joe_mueller@keysight.com
Steve Schink	Keysight Technologies	steve_schink@keysight.com

### **Agenda:**

- IVI.NET Configuration Server Kickoff (Thursday 12:30-5:30)
  - Review agenda and action items.
    - Review assembly approval table.
  - Fgen editorial change status.
  - SharePoint progress.
  - Configuration Server.
    - Review of performance testing results.
    - Review investigation into using the C config server under the hood in COM to remove memory leaks.
    - Strategy for IVI.NET server.
  - Testing Backwards Compatibility of IVI Interfaces with Policy Files (depending on the time).
  - Ongoing meeting schedule.

### **Action Items**

<b>Date Added</b>	<b>Description</b>	<b>Assigned To / Updates</b>	<b>Target Date</b>
<b>General</b>			
2014-05-19	Share the code that is needed to reproduce issue 80, and share the use case that requires the apartment specification.	John Harvey <i>Pending Config Server refactor.</i>	2014-06-30
2015-02-09	Revise IVI-3.1 to loosen the requirements around help file names and revise IVI-3.2 r.e. returning buffer sizes.	Vesna In Review DONE	2015-03-01
2015-02-09	Add an editorial note to IVI-4.3 sec. 3.3 that indicates that the IVI-COM components do not currently include support for the extensions, but IVI-C and IVI.NET do.	John Harvey 2015-05-06 - Sent out for review	2015-03-01
2015-02-09	Make the build system changes to name the shared component installers with version numbers.	David Rohacek	Next SC release
2015-02-09	Moving forward, post old versions of msi files only on the Shared Components WG page.	Kirk Fertitta DONE	Next SC release
<b>Config Server</b>			
2014-05-19	See if we can reproduce the version/threading issue with the Config Server or the Session Factory or the VISA COM basic formatted I/O.	John Harvey DONE	2014-06-30
2014-12-17	Create a version branch for IviComConfigServer for v.2.3.0 of the IVI Shared Components.	John Harvey, Kirk Fertitta	2015-02-09
2015-02-09	John will also look at what it might take to do an implementation on top of the C config server.	John Harvey DONE	2015-02-26
2015-02-09	John will look at the COM Config Server implementation and see if he can easily find the leaks.	John Harvey DONE	2015-02-26

## **Assembly Approval Table**

Class	Status
ACPwr	No .NET API
Counter	Provisional
DCPwr	Approved
Digitizer	Provisional
DMM	Approved
Downconverter	Provisional
Fgen	Provisional
LxiSync	Re. LXI Sync ref. design
PwrMeter	Provisional
RFSigGen	Approved
Scope	Approved
SpecAn	Approved
Swtch	Approved
Upconverter	Provisional

### ***Fgen editorial change status.***

Sent out for review on May 6. Review period ends May 15.

### ***SharePoint progress.***

John gave a tour of the SharePoint stuff related to the Instrument Driver WGs.

Joe commented that it seemed more intuitive to him to see two categories of working groups - active and inactive, rather than four.

### ***Configuration Server.***

Review of performance testing results.

John created programs to test performance of the various config servers, looking at overall execution time and leakage (via the overall increase in size of the working set divided by the number of iterations). The test programs did the same operations on the same config store. He looked at the data for 500,000 iterations.

Preliminary data on leaks and performance:

- Native C Server
  - 5506.6 Seconds
  - ~ leakage/iteration - 0 bytes
  - ~ working set increase - 128 KB
- Native COM Server in C++
  - 5772.2 Seconds
  - ~ leakage/iteration - 2021 bytes
  - ~ working set increase - 987,000 KB
- Native COM Server via COM interop in .NET
  - 10407.3 Seconds
  - ~ leakage/iteration - 501 bytes
  - ~ working set increase - 244,000 KB
- Native .NET (Keysight proposed implementation)
  - 827.9 Seconds
  - ~ leakage/iteration - 0 bytes
  - ~ working set increase - 52 KB

Observations:

- Can't explain the differences between using the native COM server directly in C++ vs. using it in .NET. None of the observed differences is intuitive.
- In terms of leakage, it looks as though the COM server would benefit by being converted to use the C server under the hood, with similar performance.
- The .NET server has the best performance.

John will check in the test code that he used to get his results.

David noted that the C API does not support everything needed for the COM server to use it under the covers. He will send out a memo explaining the issues. The good news is that the C++ API that is called by the C API does have the needed functionality.

Review investigation into using the C config server under the hood in COM to remove memory leaks.

John has been working on prototyping an IVI-COM implementation built on the NI C++ implementation. He is about 1/3 of the way through this, and is currently prototyping collections. Collection in COM do not map well to the C++ implementation, so this is taking some time.

The plan is to finish the prototype and test it in a similar way to the tests mentioned above.

Testing strategy:

1. Duplicate the performance tests (per the above tests) for this implementation.
  - a. Make sure that the memory leaks are gone or significantly reduced.
2. Leverage existing unit tests.
  - a. Keysight has some test programs that could be leveraged into unit tests.
  - b. Keysight have .NET unit tests that could be leveraged into COM.
  - c. Driver vendor tests.
  - d. Call to web forum to have people test the new implementation.

The group consensus was to move ahead with converting the COM server to use the NI C++ implementation.

### Strategy for IVI.NET server.

John recommends that we move ahead with the native IVI.NET implementation based on several factors:

1. Speed
2. The awkwardness of converting certain .NET paradigms to the NI C++ implementation used in the C config server. Specifically, the .NET collection paradigm does not map easily to the C or C++ implementation.
3. The fact that the native .NET implementation is relatively straightforward - about as simple to implement (or simpler) than basing the .NET implementation on C/C++.

Kirk expressed a concern with having two implementations if we could do with one. John's judgement (see #3 above) was that this would not be a significant difference, and that a native .NET implementation would be more understandable.

The group consensus was to move ahead with the .NET API.

The current implementation targets .NET Framework 4. Should we target 2.0? There are installer implications. Kirk thinks we should migrate all or nothing. John will retarget to 2.0 and see what breaks.

### Specification

Keysight has completed a substantial portion of the IVI-3.5 specification changes. Since the spec specifies the API rather than the implementation, we should be able to use what Keysight has done regardless of the implementation option that we choose.

Rather than go through the changes in detail, John will distribute the modified spec (via SharePoint) and check in the IVI.NET implementation. Interested parties will be invited to review the changes and cross-check them against the implementation, as well as reviewing the implementation, unit tests, and so on.

Tentative schedule:

- Review spec, code, and unit tests by October face-to-face.
- React to any comments, defects, etc. by the end of 2015.
- Position the spec and components to be approved/released by the February meeting or shortly after.

### ***Testing Backwards Compatibility with Policy Files***

The consensus is that the IVI Foundation does not want to maintain and run a battery of tests related to making sure that policy files are behaving correctly. We would need an implementation to test with, and most IVI.NET and VISA.NET assemblies and IVI and VISA PIAs are mostly APIs, so that an implementation would need to be created to test with.

Suggestions:

4. Make a review to check that API changes conform the guidelines in IVI-3.4 for API changes.
  - a. Make changes to the operating committee documentation (sec. 5) to add instructions about reviewing versioning guidelines in IVI-3.4. John and Joe will work together to do this.
5. Notify IVI Members when new versions and policy files are included in a new version of the shared components.
  - a. Identify the assemblies and versions involved.
  - b. Note that clients built against the old versions should be run the new shared components installed.
  - c. Optionally, vendors might want to make sure that existing clients build with the new versions installed.
  - d. Ted will try this out with the next VISA.NET shared components revision.

### ***Backlog:***

- Let's discuss putting pre-release and release versions of the built installers into TFS. Kirk also wants to discuss SharePoint possibilities as part of this discussion.
- Monitor driver prototyping and development so that we can unconditionally release additional IVI.NET instrument class assemblies as needed.
- Version DLLs are the key files used by MSI to identify the version of the shared components installed. The issue is that the file in ProgramFiles on a 64-bit PC is 32-bit - should it be 64-bit? See minutes from 10-27-2014.

- Combining 32-bit and 64-bit shared component installers. David will follow up with NI installer gurus and we will revisit at the October face-to-face meeting.

## Schedule

We will continue with bi-weekly meetings on Thursdays, 9am Mountain Time, starting May 21, 2015.

## New Action Items:

<i>Date Added</i>	<i>Description</i>	<i>Assigned To / Updates</i>	<i>Target Date</i>
<b>General</b>			
2014-05-19	Share the code that is needed to reproduce issue 80, and share the use case that requires the apartment specification.	John Harvey <i>Pending Config Server refactor.</i>	2014-06-30
2015-02-09	Add an editorial note to IVI-4.3 sec. 3.3 that indicates that the IVI-COM components do not currently include support for the extensions, but IVI-C and IVI.NET do.	John Harvey 2015-05-06 - Sent out for review	2015-03-01
2015-02-09	Make the build system changes to name the shared component installers with version numbers.	David Rohacek	Next SC release
2015-02-09	Moving forward, post old versions of msi files only on the Shared Components WG page.	Kirk Fertitta	Next SC release
<b>Config Server</b>			
2015-05-07	Finish the COM on C++ prototype.	John Harvey	2015-08
2015-05-07	Leverage existing COM server tests and leverage .NET tests.	John Harvey	2015-08
2015-05-07	Duplicate the performance tests for the new COM implementation.	John Harvey	2015-08
2015-10	Make sure that the NEW COM implementation eliminates the memory leaks.	John Harvey	2015-08
2015-05-07	Notify vendors to run vendor specific tests as needed.	IVI Members	2015-10
2015-05-07	Request people to test new implementation on the web forum.	General Users	2015-10
2015-05-07	Retarget IVI.NET implementation to target 2.0.	John Harvey	2015-06



2015-05-07	Check in IVI.NET code including unit tests and post the spec.	John Harvey	2015-06
2015-05-07	Review IVI.NET code and spec.	IVI Members	2015-06 thru 2015-10
2015-05-07	Respond to all feedback	John Harvey	2016-02
2015-05-07	Approve spec and release .NET server in IVI.NET Shared Components.	IVI Members	2016-02
2015-06	Add instructions for class WGs r.e. API changes to operating procedures.	John Harvey/Joe Mueller	2015-06
2015-06	Include instructions r.e. policy file testing for the next VISA.NET shared components review.	Ted Wang.	2015-06

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## 6. Technical Committee

### *General Meeting Info:*

**Date of Meeting:** May 08, 2015  
**Location:** Denver, CO  
**Chairperson:** Jon Bellin  
**Minutes Prepared By:** David Rohacek

### *Topics To Be Discussed:*

- Review Agenda
- Review Voting Members In Attendance
- Patent Call
- Approve minutes from the February 2015 Technical Committee Meeting
- Review outcome of recent eVotes, IPR Declarations, Editorial Changes, and Reviews
- Review Action Items from Previous Meeting
- Review Spec Status Document
- Working Group Topics
  - Update on Windows 10
  - Update on IVI.NET Configuration Server
  - Main Membership page reorganization
  - Discuss whether we should re-institute VPP-8
  - Introduction document naming changes (John Harvey)
- New Business
- Discuss Upcoming Meetings
- New Action Items

### *Voting Members In Attendance*

Present	Organization Name	Name
	Aeroflex Corporation	Mark Meldrum / Marv Rosner
X	Keysight Technologies	Joe Mueller
	Bustec Ltd.	Fred Bloennigen
	Astronics	Dan Masters
X	Keithley Instruments	John Ryland

Present	Organization Name	Name
	MathWorks	Rob Purser / Vinod Cherian
X	National Instruments	Jon Bellin
X	Pacific MindWorks, Inc.	Kirk Fertitta
X	Rohde & Schwarz	Jochen Wolle
	Tektronix	Santanu Pradhan
X	Teradyne, Inc.	Teresa Lopes
	VTI Instruments	Sangram Gaikwad / Tom Sarfi

There are 6 voting members in attendance, which satisfies the requirements for a quorum of 3 Voting Members. (Quorum is 25% of Voting Members. There are currently 12 Voting Members.)

**Patent Call**

Please be aware that this meeting is being held under the Intellectual Property Rights policy adopted by IVI Foundation. If you do not have a copy of this policy, please see me during this meeting. You may also view and download a copy of that policy at the Organization>>Legal Documents section of the Consortium website.

At this time, I would ask that anyone in attendance inform me if they are personally aware of any claims under any patent applications or issued patents that would be likely to be infringed by an implementation of the specification or other work product that is the subject of this meeting. You need not be the inventor of such patent or patent application in order to inform us of its existence, nor will you be held responsible for expressing a belief that turns out to be inaccurate.

.....

**Approve minutes from the February 2015 Technical Committee Meeting**

The minutes from the February 2015 Technical Committee Meeting are posted on the IVI Foundation web site.

No issues were brought up with the minutes. The minutes are accepted.

**Review outcome of recent IPR Declarations, eVotes, and Reviews**

IVI-3.1 Editorial Change

On February 25<sup>th</sup>, Vesna Jadric announced IVI-3.1 Editorial Change via the email below.

From: <vesna.jadric@ni.com>
-----------------------------

To: IVI-Foundation-Members-1@ivifoundation.org  
Date: 02/25/2015 01:45 PM  
Subject: Editorial Review: IVI-3.1: IVI Driver Architecture Specification (6-day review)

Greetings:

NI was tasked with updating the IVI-3.1 spec, Sections 5.15.10, 5.16.14, and 5.17.12 to make the requirement for the help filename format less strict.

The change document and updated specification are now posted on the [Instrument Drivers WG web page](#).

The review period for this editorial change is **February 25 - March 6, 2015**.

Please contact me with any feedback.

Best Regards,

Vesna Jadric  
Instrument Drivers/IVI | National Instruments | 512-683-5360

The review period for the IVI-3.1 editorial change has ended without objections. The editorial changes are accepted and have been posted.

### IVI-3.2 Editorial Change

On February 25<sup>th</sup>, Vesna Jadric announced IVI-3.2 Editorial Change via the email below.

From: <vesna.jadric@ni.com>  
To: IVI-Foundation-Members-1@ivifoundation.org  
Date: 02/25/2015 01:45 PM  
Subject: Editorial Review: IVI-3.2: Inherent Capabilities Specification (6-day review)

Greetings:

NI was tasked with updating the IVI-3.2 spec, Section 3.1.2.1 to clarify the behavior of the GetAttributeViString function when the buffer size is set to zero.

The change document and updated specification are now posted on the [Instrument Drivers WG web page](#).

The review period for this editorial change is **February 25 - March 6, 2015**.

Please contact me with any feedback.

Best Regards,

Vesna Jadric  
Instrument Drivers/IVI | National Instruments | 512-683-5360

During the review period, we have received some minor feedback and therefore reinitiated the review process via the email below:

From: <vesna.jadric@ni.com>

To: IVI-Foundation-Members-1@ivifoundation.org  
 Date: 02/27/2015 09:02 AM  
 Subject: Editorial Review: IVI-3.2: Inherent Capabilities Specification (6-day review)

Greetings:

During the review period, a couple of typos were noticed and corrected, and some alternate wording was suggested and implemented. We are reinitiating the review process.

The updated change document and specification are posted on the [Instrument Drivers WG web page](#).

The review period for this editorial change is **February 27 - March 9, 2015**.

Please contact me with any feedback.

Best Regards,

Vesna Jadric  
 Instrument Drivers/IVI | National Instruments | 512-683-5360

The review period for the IVI-3.2 editorial change has ended without additional objections. The editorial changes are accepted and have been posted.

***Review Action Items from February 2015 Meeting***

Owner	Action Item	Status
Vesna Jadric	Record all resolutions in the lifecycle document.	[February 13, 2015] Complete.
Vesna Jadric	Include an agenda item for Windows 10 in the May 2015 TC meeting agenda.	[February 27, 2015] Complete.
Vesna Jadric	Include an agenda item for Main Membership Page Reorganization in the May 2015 TC meeting agenda.	[February 27, 2015] Complete.
John Harvey	Propose text documenting IVI-COM memory leak for review by Jon Bellin, Vesna Jadric, and Kirk Fertitta.	[February 27, 2015] Complete.
Vesna Jadric	Implement the changes to the IVI Revision History documents (IVI SCs and IVI.NET SCs): rename the documents and add new section(s)	[April 14, 2015] Complete.
Ted Wang	Implement the changes to the VISA Revision History documents (VISA SCs and VISA.NET SCs): rename the documents and add new section(s)	[April 14, 2015] Complete.
Kirk Fertitta	Implement the changes to the Shared Components download page: update the description to indicate that it covers current and previous revisions and includes Known Issues.	[April 20, 2015] Complete.

## **Review Spec Status Document**

The group reviewed and edited the Spec Status Document.



IVI\_Spec\_Lifecycle\_S  
tatus.xlsx

## **Working Group Topics**

### **Update on Windows 10**

NI has tested the IVI Shared Components installation and the IVI-C Shared Components functionality on Windows 10.

Jon Bellin volunteers NI to test the installation of the IVI.NET Shared Components and the functionality of the IVI.NET Shared Components that NI driver .NET APIs use on Windows 10, including the session factory.

Joe Mueller volunteers Keysight to test the IVI-COM Shared Components functionality on Windows 10, including the session factory.

All testing should be done on both 32-bit and 64-bit Windows 10. 32-bit shared components need to be tested on both 32-bit and 64-bit Windows 10.

Jon Bellin volunteers NI to propose updates to specifications to indicate Windows 10 is supported.

Testing will be completed by the end of June 2015. If a tester finds a problem, they should send an email to the list server describing the problem. Vesna Jadric and Jon Bellin will then arrange a conference call to discuss the issue.

Specification changes will be proposed by the end of July 2015.

**Action Item: Vesna to create individual action items based on the above.**

### **Update on IVI.NET Configuration Server**

The Instrument Drivers Working Group agreed that Keysight will implement a native .NET Configuration Server, independent of the IVI-C or IVI-COM Configuration Server.

The Instrument Drivers Working Group agreed that Keysight will re-implement the IVI-COM Configuration Server as a wrapper on top of the C++ API that underlies the IVI-C Configuration Server. When this re-implementation is complete, the Instrument Drivers Working Group will

notify vendors to test their drivers before the re-implemented IVI-COM Configuration Server is released.

## Main Membership Page Reorganization

This topic was discussed in detail in the Shared Components Working Group Meeting.

The migration is almost complete. Kirk Fertitta commits to complete migration by June 1 2015. Kirk Fertitta will ensure that ftp access is disabled, to prevent people from uploading to the website instead of to SharePoint. Kirk will try to complete this task by June 1 2015. Read access to the web site will remain for a year, to allow us to easily revert back to using the web site if something goes wrong with SharePoint. If this proves to be too difficult will instead take the ftp site down and archive the files in SharePoint.

A mass email will not be sent to invite members to SharePoint. Instead, the main membership page will be updated to indicate that content has been moved to SharePoint and to contact Bob Helsel to request SharePoint access.

## Should We Re-Institute VPP-8?

The VPP-8 specification was obsoleted and removed from the IVI Specifications web page in 2008. Tom Sarfi has received multiple requests from VXIbus members, so the IVI Foundation should decide whether to re-institute the VPP-8 specification.

**From:** Randy Garman [<mailto:rgarman@VPC.com>]  
**Sent:** Tuesday, February 25, 2014 2:12 PM  
**To:** Bob Helsel  
**Cc:** Jerry Hopp  
**Subject:** RE: [Members-vxibus] Articles or new products for the VXIbus Newsletter- March issue

Bob,

Good afternoon. I just wanted to see if you could provide some insight as to why VPP-8 was obsoleted and removed from the specification page. We are starting to see issues with mounting our Receivers to some of the newer VXI chassis due to the fact that there is no longer any control over the mechanical design of the chassis flanges. In the last month, we have had requests from two of our customers to provide what we consider a non-standard solution to attach to a VXI chassis. VPP-8 provided this design control and guaranteed interoperability between manufacturers. I would guess that this part of the spec was of small importance to many of the members, but to Virginia Panel Corporation, it eliminated the need to provide a custom solution each time a new chassis was developed, providing us with a defined mounting scheme to insure proper alignment between the VPC Interface and the VXI Instrumentation. Is there something that replaced VPP-8 that I am not aware of?

Thanks,

Randy Garman  
Virginia Panel Corporation

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**From:** Jerry Hopp [<mailto:JHopp@VPC.com>]  
**Sent:** Wednesday, February 26, 2014 3:00 PM  
**To:** Tom Sarfi  
**Subject:** FW: [Members-vxibus] Articles or new products for the VXIbus Newsletter- March issue

Tom;

The obsolescence of the VPP-8 is a “critical” change to VPC’s VXI, funnel adapter (plug & play) approach. WE have already run into two application that we had to fabricate “custom” Vertical Hinged Mounting Frames to mate up with the VXI chassis loaded with funnels. Unfortunately, this is discovered after the fact and the plates had to be remade, absorbing the dimensional changes.

How can this requirement be placed back into effect?

Thanks;

Jerry Hopp  
Business Development Manager  
Virginia Panel Corporation  
PH (407) 260-8630  
Cell (303) 601-7148

National Instruments was not able to find any statement of rationale as to why VPP-8 was obsoleted. Jon Bellin believes it was a mistake.

Resolution (2015-05-08:#1): Joe Mueller moves that the IVI Foundation correct the administrative error that resulting in obsoleting VPP-8, re-post it to the website without any updates, and declare it not to be obsolete. In the event that this impacts the compliance status of any existing products introduced while the spec was obsolete, vendors should contact the IVI consortium and appropriate exceptions will be made.

Seconded by Teresa Lopes.

The vote was 5-0-0. The resolution is approved.



Action item: Bob Hesel to re-post VPP-8, remove the statement of obsolescence, and email Tom Sarfi, Jerry Hopp, and Randy Garman. Include the full text of the resolution in the email.

## Introduction Document Naming Changes

Keysight proposes a slight modification to the IVI-2014 requirements:

“The current spec requires a driver introduction file called “ \_\_\_Introduction to <Prefix>\_\_\_.<ext>”. We would like to be able to track revisions of this file in the file name – it will help us understand quickly what users are looking at, and might help users understand what they are looking at as well. To accomplish this, we would like to add a permission to the spec to optionally add document revision information after the <Prefix> in the file name - “ \_\_\_Introduction to <Prefix> <Revision>\_\_\_.<ext>”. This would not invalidate any existing files, and developers creating the files would be free to use the old or the new format moving forward.

The model we have in mind would result in filenames that would look something like this, “ \_\_\_Introduction to KtDmm v1.0.0.0-A\_\_\_.txt”.”

Currently in IVI-3.1:

### 5.21 Driver Introduction Documentation

Driver introduction documentation shall be a separate file named \_\_\_Introduction to <prefix>\_\_\_.<xxx> and shall be installed with the driver in the driver directory. Driver introduction documentation may consist mostly of links to other documentation and may contain additional information beyond what is specified in this section.

Resolution (2015-05-08:#2): Joe Mueller moves that IVI-3.1, section 5.21 be modified to allow for a revision substring after the prefix substring in the driver introduction document file name. Seconded by Kirk Fertitta.

The vote was 5-0-0. The resolution is approved.

Action item: Vesna Jadric to submit an editorial change to implement this motion.

## ***New Business***

None

### **Discuss Upcoming Meetings**

The next meeting will be October 19-20, 2015 (Monday – Tuesday) in Chicago. The meeting on Tuesday will end at 3:30.

Instrument Drivers	4 hrs (Mon 1 <sup>st</sup> )
I/O	2 hrs (Mon 2 <sup>nd</sup> )
Shared Components Management	2 hrs (Mon 3 <sup>rd</sup> )
DoD Meeting Result	1 hr (Tues 1 <sup>st</sup> )
Web Forum	1 hr (Tues 2 <sup>nd</sup> )
Marketing	1 hr (Tues 3 <sup>rd</sup> )
Technical Committee Meeting and BoD	3 hrs (Tues 4 <sup>th</sup> )

Criteria for IVI meeting locations:

For US meetings:

- Major airport hub that allows most members a non-stop flight
  - Expensive: San Diego, Austin, San Francisco (Bay Area)
  - Moderate: Las Vegas, San Jose, Denver, Dallas, Orlando, Chicago, St Louis, Los Angeles, Atlanta, Boston, Long Beach, Orange County, Charlotte, Salt Lake City, Phoenix
- Hotel journey is 20 minutes on Google maps.
- Sleeping room price should not exceed \$169.
- Meeting fees should not exceed \$400.
- Internet bundled into the cost.

### **2016 plans:**

#### **February 24-25 or 25-26 or 24-26**

Decision: San Diego

#### **May**

Likely Decision: Munich

Date options: 1<sup>st</sup> preference: May 9-10, 2<sup>nd</sup> preference: June 6-7

#### **October 5-7**

Possibilities: Boston

### **Summary of Action Items Created at the May 2015 Technical Committee Meeting**

Owner	Action Item	Status
Vesna Jadric	Record all resolutions in the lifecycle document.	
Vesna Jadric	NI to test the installation of the IVI.NET Shared Components and the functionality of the IVI.NET Shared Components that NI driver .NET APIs use on Windows 10, including the session factory. Due date: June 30, 2015.	
Joe Mueller	Keysight to test the IVI-COM Shared Components functionality on Windows 10, including the session factory. Due date: June 30, 2015.	
Vesna Jadric	NI to propose updates to specifications to indicate Windows 10 is supported. Due date: July 31, 2015.	
Bob Helsel	Bob to re-post VPP-8, remove the statement of obsolescence, and email Tom Sarfi, Jerry Hopp, and Randy Garman. Include the full text of the resolution in the email.	
Vesna Jadric	Vesna to run an editorial change: IVI-3.1, section 5.21 to be modified to allow for a revision substring after the prefix substring in the driver introduction document file name.	

**Adjourn**

Meeting Adjourned.

## 7. IVI BoD Meeting May 8, 2015

Called to order at: 10:00 AM

### 1. *Directors in attendance*

Present	Director	Company
X	Joe Mueller	Keysight Technologies
X	Jon Bellin	National Instruments
X	Jochen Wolle	Rohde & Schwarz
X	John Ryland	Keithley
X	Kirk Fertitta	Pacific MindWorks
X	Teresa Lopes	Teradyne
	Santanu Pradham	Tektronix

Quorum is a majority of directors. 6/7 satisfies the requirement.

### 2. *Agenda Review*

[IVI BoD Meeting May 8, 2015](#)

[1. Directors in attendance](#)

[2. Agenda Review](#)

[3. Reminder of the IP Policy, Anti-trust, and Duty of Trust of Directors](#)

[4. Resolutions passed by electronic means since last meeting](#)

[5. Inputs Regarding Minutes of Previous Meeting](#)

[5.1 Action Items from Previous Meeting](#)

[6. Recommendations from Technical Committee](#)

[7. Membership Report](#)

[8. Financial Report](#)

[9. IVI Paid for conference phone](#)

[10. SharePoint services and transition of consortium information](#)

### 3. *Reminder of the IP Policy, Anti-trust, and Duty of Trust of Directors*

The IVI Foundation has an IP policy that could require that some of your corporations' IP be licensed to the IVI Foundation and its members at no cost. Every participant in the IVI meetings should be familiar with the obligations that participation in the standard incurs on your company.

Every member of the consortium is encouraged to familiarize themselves with legal requirements regarding anti-trust violations. Members need to be cautious and refrain from discussing markets and pricing.

Directors have a duty to the IVI Foundation. They are legally and ethically obligated to do the “right thing” for the IVI Foundation since they serve as a principal of that organization, if this conflicts with other responsibilities such as their duty to their employer, they need to take appropriate actions to resolve the conflict of interest.

**4. Resolutions passed by electronic means since last meeting**

No motions were passed by the Board of Directors since the last face-face meeting:

**5. Inputs Regarding Minutes of Previous Meeting**

None expressed

**5.1 Action Items from Previous Meeting**

NONE

Item	Owner	update
During the Shared Components meeting Kirk agreed to update operating procedures to reflect requirement that future shared components should include source code to be available to consortium in some form.	Kirk	Weren't checked in will do for October.

**6. Recommendations from Technical Committee**

None at this meeting.

**7. Financial Report**

Bob presented (will be incorporated in minutes later).



IVI P&L thru 4-23-2015\_final.xlsx

Noted that we need to discuss consortium income and fee structure in October. We're fine for normal operations, need to consider impact of 2016 marketing and web forum.

<ACTION Bob> -- Ensure we cancel FogCreek.

**8. IVI Paid for conference phone**

Per our discussion at Feb 2013, this is the quarterly reminder that: Our resolution passed Feb 2013 that phone attendees will be charged 50% of meeting fee or \$100, whichever is more.

Furthermore we decided this week that attendees for less than 5 hours of meetings that do not receive a meal, will be charged the same.

Actions for this meeting:

Attendees:

Bob Helsel will arrange for bills to be sent to: Bob will charge phone attendees for this meeting appropriately.

Kirk moves we adjourn, Teresa

### ***New Business***

None noted.

Adjourned 10:33 AM