IVI Foundation

Meeting Summaries

May 19 - 20, 2014

Singapore – IVI Foundation

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## 1. Meeting Attendees

<table>
<thead>
<tr>
<th>Last Name</th>
<th>First Name</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bellin</td>
<td>Jon</td>
<td>National Instruments</td>
</tr>
<tr>
<td>Fertitta</td>
<td>Kirk</td>
<td>Pacific MindWorks</td>
</tr>
<tr>
<td>Harvey</td>
<td>John</td>
<td>Agilent Technologies</td>
</tr>
<tr>
<td>Helsel</td>
<td>Bob</td>
<td>Bode Enterprises LLC</td>
</tr>
<tr>
<td>Mondrik</td>
<td>Dan</td>
<td>National Instruments</td>
</tr>
<tr>
<td>Mueller</td>
<td>Joe</td>
<td>Agilent Technologies</td>
</tr>
<tr>
<td>Rohacek</td>
<td>David</td>
<td>National Instruments</td>
</tr>
<tr>
<td>Schink</td>
<td>Steve</td>
<td>Agilent Technologies</td>
</tr>
<tr>
<td>Wolle</td>
<td>Jochen</td>
<td>Rohde &amp; Schwarz</td>
</tr>
</tbody>
</table>
2. IVI.NET Working Group Meeting

General Meeting Info:
Date of Meeting: February 5, 2014
Location: San Diego, CA
Chairperson: Joe Mueller
Minutes Prepared By: John Harvey

Meeting Attendees:

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Harvey</td>
<td>Agilent Technologies</td>
<td><a href="mailto:john_harvey@agilent.com">john_harvey@agilent.com</a></td>
</tr>
<tr>
<td>Jochen Wolle</td>
<td>Rhode &amp; Schwarz</td>
<td><a href="mailto:jochen.wolle@rohde-schwarz.com">jochen.wolle@rohde-schwarz.com</a></td>
</tr>
<tr>
<td>Ted Wang</td>
<td>National Instruments</td>
<td><a href="mailto:ted.wang@ni.com">ted.wang@ni.com</a></td>
</tr>
<tr>
<td>Teresa Lopes</td>
<td>Teradyne</td>
<td><a href="mailto:teresa.lopes@teradyne.com">teresa.lopes@teradyne.com</a></td>
</tr>
<tr>
<td>Vinod Cherian</td>
<td>MathWorks</td>
<td><a href="mailto:vinod.cherian@mathworks.com">vinod.cherian@mathworks.com</a></td>
</tr>
<tr>
<td>John Ryland</td>
<td>Keithley</td>
<td><a href="mailto:jryland@keithley.com">jryland@keithley.com</a></td>
</tr>
<tr>
<td>David Rohacek</td>
<td>National Instruments</td>
<td><a href="mailto:david.rohacek@ni.com">david.rohacek@ni.com</a></td>
</tr>
<tr>
<td>Jon Bellin</td>
<td>National Instruments</td>
<td><a href="mailto:jon.bellin@ni.com">jon.bellin@ni.com</a></td>
</tr>
<tr>
<td>Alexis Allegra</td>
<td>RADX</td>
<td><a href="mailto:alexisallegra@radxtech.com">alexisallegra@radxtech.com</a></td>
</tr>
<tr>
<td>Kirk Fertitta</td>
<td>PMW</td>
<td><a href="mailto:kirk@pacificmindworks.com">kirk@pacificmindworks.com</a></td>
</tr>
</tbody>
</table>

Agenda:

Wednesday 11:30-12:30 / 1:30-3:30.

- Review action items
- Review Class Approval Table
- Review presentation on fixing PIA issues in VS 2010-2013
- Discuss strategy for testing policy files

Old Action Items:

<table>
<thead>
<tr>
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<th>Target Date</th>
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<tr>
<td>Date</td>
<td>Task Description</td>
<td>Responsible</td>
<td>Due Date</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>---------------</td>
<td>----------</td>
</tr>
<tr>
<td>2012-10-10</td>
<td>Touch bases with Ametek to see if they have an interest in the .NET API for the ACPwr spec.</td>
<td>Kirk</td>
<td>2012-11-01</td>
</tr>
<tr>
<td></td>
<td>Sent an email. Ametek is resource constrained at present and wouldn't be able to assign a person to spearhead the effort.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012-10-10</td>
<td>Review and Approve new shared components w/ Waveform/Spectrum changes</td>
<td>Kirk</td>
<td>2013-12-01</td>
</tr>
<tr>
<td>2013-06-20</td>
<td>Work through the implications of the NI versioning proposal to validate for IVI.NET and VISA.NET.</td>
<td>WG</td>
<td>2013-10</td>
</tr>
<tr>
<td></td>
<td>Done for IVI.NET. In process for VISA.NET.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013-06-20</td>
<td>Schedule WG meetings between now and February as needed, starting October 29.</td>
<td>John</td>
<td>2013-10-18</td>
</tr>
<tr>
<td>2013-10-14</td>
<td>John will review IVI-3.17 and depending on what he finds, will either go ahead and create a change document or refer the work to David.</td>
<td>John Harvey</td>
<td>TBD</td>
</tr>
<tr>
<td>2013-10-14</td>
<td>Kirk will need to change the Shared Components web page to make old versions of the installer available.</td>
<td>Kirk Fertitta</td>
<td>TBD</td>
</tr>
<tr>
<td>2013-10-14</td>
<td>NI will have to modify the current 1.1 installer to add the build number to the directory name, and to not install old versions of files to the GAC (and maybe a few other small details).</td>
<td>David Rohacek</td>
<td>TBD</td>
</tr>
<tr>
<td>2013-10-14</td>
<td>Joe will review IVI-3.18 to verify that all of the text related to the edits made at the last meeting have been changed and are correct.</td>
<td>Joe Mueller</td>
<td>TBD</td>
</tr>
<tr>
<td>2013-10-14</td>
<td>John will create a change document for IVI-3.18.</td>
<td>John Harvey</td>
<td>TBD</td>
</tr>
<tr>
<td>2013-10-14</td>
<td>NI will propose an editorial change - a factual statement that tells driver developers that the older the version of the Shared Components they target, the more it will be consistent with systems whose owners have</td>
<td>Jon Bellin</td>
<td>TBD</td>
</tr>
</tbody>
</table>
not or cannot update their systems to the latest version

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>2013-10-21</td>
<td>John will modify IVI-3.4 so that the content matches the changes made to IVI-3.17, create a change document, and post for review.</td>
<td>John Harvey</td>
<td>2014-02-05</td>
</tr>
</tbody>
</table>

**Action Items Reviews**

All of the specification changes referenced in the above table were posted for review and the review periods passed without comment. The changes to IVI-3.17 will be voted on in the TC on Friday. The other changes were editorial changes.

David noted that he has requested that we add information about the technical changes to the IVI.NET Shared Components to the Revision History posted on the downloads page.

**Assembly Approval Table**

<table>
<thead>
<tr>
<th>Class</th>
<th>Status</th>
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<tr>
<td>ACPwr</td>
<td>No .NET API</td>
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<tr>
<td>Counter</td>
<td>Provisional</td>
</tr>
<tr>
<td>DCPwr</td>
<td>Approved</td>
</tr>
<tr>
<td>Digitizer</td>
<td>Provisional</td>
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<tr>
<td>DMM</td>
<td>Approved</td>
</tr>
<tr>
<td>Downconverter</td>
<td>Provisional</td>
</tr>
<tr>
<td>Fgen</td>
<td>Provisional</td>
</tr>
<tr>
<td>LxiSync</td>
<td>Provisional</td>
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<tr>
<td>PwrMeter</td>
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<tr>
<td>RFSigGen</td>
<td>Provisional</td>
</tr>
<tr>
<td>Scope</td>
<td>Provisional</td>
</tr>
<tr>
<td>SpecAn</td>
<td>Provisional</td>
</tr>
<tr>
<td>Swtch</td>
<td>Approved</td>
</tr>
<tr>
<td>Upconverter</td>
<td>Provisional</td>
</tr>
</tbody>
</table>
**Review Presentation on PIA Issues**

John reviewed the PIA presentation with the group.

Dan Mondrik asked how VS 2010-13 finds 64-bit libraries in the GAC on a 32-bit OS?

Jon asked that John draft a motion for the technical committee for a major change to IVI-3.14. John drafted the following text:

*The IVI.NET WG proposes a major change to IVI-3.14: Primary Interop Assembly Specification to remove the type library PrimaryInteropAssemblyCodeBase registry value from the IVI-COM and VISA-COM type library keys.*

This is a major change because it has the effect of resolving PIA references from GAC’d PIA assemblies, and this means that customers may not see those comments as part of IntelliSense when programming with the PIAs.

The IVI.NET WG will make the necessary changes to IVI-3.14: Primary Interop Assembly Specification, bearing in mind the following:

- When changing the PIA spec, Jon felt that we needed to allow driver vendors to use the currently spec’d registry values or the new ones depending on their business needs.
- The IVI.NET WG will investigate Dan’s question above (how VS 2010-13 finds 64-bit libraries in the GAC on a 32-bit OS?).

**Strategies for Testing Policy Files**

Situations to test:

1. Test that a driver/client built against an earlier version of the shared components will still run against a later version of the shared components.
   a. This would imply that the policy file provided with the shared components assembly would redirect references in the driver/client from the older version of the shared components assembly to the newer one.
   b. Any incompatibilities between the older API and the newer one should result in a test failure.
   c. The entire assembly API syntax need to be tested: interfaces, classes, exceptions, enumerations, etc.

2. Make sure that the user who does not want the redirection can turn it off (with an app or machine policy file) and that will work.
   a. Run installer tests to verify that when we install a newer version of the shared components, the older ones are still intact.

Potential solutions for #1:

- Use Nimbus to generate one or more drivers, and use Nimbus generated unit tests as the test client (since the tests are already fairly complete).
  o We would need to be able to target specific versions of the shared component assembly.
We could generate the driver initially with Nimbus, then extract the source and make minor changes outside of Nimbus moving forward. If a major change was needed, we could move back to Nimbus and regenerate the new driver.

The safe approach would be to have a test driver for Ivi.Driver and then one for each class.

The unit tests could retain the MS Test infrastructure and then be run under MS test moving forward.

Need to take into account runtime redirection and build-time redirection. The runtime scenario is the higher priority.

- Use Nimbus to generate one or more drivers, and hand-write a test client.
  - Have to write a lot of client code by hand, but the result is flatter and more self-contained.
  - Don’t get whatever advantages there are in using a test harness.

Consensus on moving forward:

- We should move forward with the approach of using Nimbus to create a test driver and a set of unit tests that can be used as the client.

- The most important objective is to test that we don’t break runtime compatibility.

- Realize that we may need to add some driver/client code to test additional items like exceptions.

Issues related to actually doing the work...

- Who will do the work? When?

  John suggested that we have enough direction to move forward, but people are not prepared to commit to the effort at this point. However, we have enough direction to allow someone to create a test for Ivi.Driver and/or an instrument class assembly without feeling like they are wasting time. Let’s coordinate this in the IVI.NET WG meeting moving forward.

**Schedule**

We will continue with weekly meetings on Tuesdays, 10am Mountain Time, starting February 18, 2014.
### New Action Items:

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<td>Kirk will need to change the Shared Components web page to make old versions of the installer available.</td>
<td>Kirk Fertitta</td>
<td>TBD</td>
</tr>
<tr>
<td>2014-02-05</td>
<td>Add information about the technical changes to the IVI.NET Shared Components to the Revision History posted on the downloads page.</td>
<td>John Harvey / Kirk Fertitta</td>
<td>2014-02-15</td>
</tr>
<tr>
<td>2014-02-05</td>
<td>The note on the downloads page regarding the IWaveform implementation in the IVI.NET Shared Components is now incorrect and needs to be removed. Add information about the incompatibility between 1.0 and 1.1 to the revision history document.</td>
<td>John Harvey / Kirk Fertitta</td>
<td>2014-02-15</td>
</tr>
<tr>
<td>2014-02-05</td>
<td>Make the necessary specification changes to IVI-3.14 for the PIA change.</td>
<td>John Harvey</td>
<td>2014-02-18</td>
</tr>
<tr>
<td>2014-02-05</td>
<td>Make meeting arrangement for weekly meetings Feb 18 for a month, then bi-weekly after March 18.</td>
<td>John Harvey</td>
<td>2014-02-15</td>
</tr>
</tbody>
</table>
3. VISA.NET Working Group

General Meeting Info:

Date of Meeting: May 20, 2014
Location: Singapore
Chairperson: John Harvey
Minutes Prepared By: John Harvey

Meeting Attendees:

<table>
<thead>
<tr>
<th>Attendee</th>
<th>Organization</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jochen Wolle</td>
<td>Rhode &amp; Schwarz</td>
<td><a href="mailto:jochen.wolle@rohde-schwarz.com">jochen.wolle@rohde-schwarz.com</a></td>
</tr>
<tr>
<td>John Harvey</td>
<td>Agilent Technologies</td>
<td><a href="mailto:john_harvey@agilent.com">john_harvey@agilent.com</a></td>
</tr>
<tr>
<td>Kirk Fertitta</td>
<td>PMW</td>
<td><a href="mailto:kirk@pacificmindworks.com">kirk@pacificmindworks.com</a></td>
</tr>
<tr>
<td>Joe Mueller</td>
<td>Agilent Technologies</td>
<td><a href="mailto:joe.mueller@agilent.com">joe.mueller@agilent.com</a></td>
</tr>
<tr>
<td>Guido Kiener</td>
<td>Rhode &amp; Schwarz</td>
<td><a href="mailto:guided.kiener@rohde-schwarz.com">guided.kiener@rohde-schwarz.com</a></td>
</tr>
<tr>
<td>Bob Helsel</td>
<td>IVI Foundation</td>
<td><a href="mailto:bob.helsel@ivifoundation.org">bob.helsel@ivifoundation.org</a></td>
</tr>
<tr>
<td>Steve Schink</td>
<td>Agilent Technologies</td>
<td><a href="mailto:steve_schink@agilent.com">steve_schink@agilent.com</a></td>
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</tr>
<tr>
<td>Dan Mondrik</td>
<td>National Instruments</td>
<td><a href="mailto:dan.mondrik@ni.com">dan.mondrik@ni.com</a></td>
</tr>
</tbody>
</table>

Agenda:

Tuesday May 20, 9:00-12:30.

- Review Agenda & Action Items
- VPP-4.3.x VISA.NET review comments
- VISA.NET Shared Components Installer
- VISA.NET Prototyping Review
- Recap Spec Review Schedule
- Try to wrap VISA.NET Code TODO’s and the Scanf Issue

Old Action Items

<table>
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<tr>
<th>Date Added</th>
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<th>Assigned To / Updates</th>
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<tbody>
<tr>
<td>General</td>
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IVI Foundation Meeting Minutes 9 May 2014
<table>
<thead>
<tr>
<th>Date</th>
<th>Task</th>
<th>Assignee</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-02-06</td>
<td>Go through the code and organize the using statement to eliminate all unused using statements while retaining “using System”;</td>
<td>John Harvey</td>
<td>2014-02-20</td>
</tr>
<tr>
<td>2014-02-06</td>
<td>Finish the Global Resource Manager implementation and check in. Finish minor changes to the conflict manager and update 4.3.5 accordingly.</td>
<td>Pankaj Adhikari</td>
<td>2014-03-06</td>
</tr>
<tr>
<td>2014-02-06</td>
<td>Set up weekly phone meetings between now and the next meeting, starting Feb. 20</td>
<td>John Harvey</td>
<td>2014-02-18</td>
</tr>
<tr>
<td>2014-02-06</td>
<td>Decide whether we are ready for a formal review of the spec or not. If so, John will post the specs on April 4 for a 45 day review.</td>
<td>John Harvey</td>
<td>2014-04-03</td>
</tr>
<tr>
<td>2014-04-17</td>
<td>Check for components that have a 5.3 version.</td>
<td>John</td>
<td>2014-04-18</td>
</tr>
<tr>
<td>2014-04-17</td>
<td>Resend out new drafts of the current set of VISA specs that are changing.</td>
<td>Dan</td>
<td>2014-04-21</td>
</tr>
<tr>
<td>2014-04-24</td>
<td>Review the changes to IVI-3.14 and suggest changes to 4.3.5 that may be needed to support the new behavior.</td>
<td>Dan/Pankaj</td>
<td>2014-05-02</td>
</tr>
<tr>
<td>2014-02-06</td>
<td>WRT the Scanf comment, clarify the rational for ignoring a pending exception on a raw read in the special case of the buffer being exactly empty. C.f. VISA rule 6.2.16.</td>
<td>Dan Mondrik</td>
<td>2014-02-27</td>
</tr>
<tr>
<td>2014-02-06</td>
<td>WRT the Scanf comment, integrate changes suggested by NI to the existing source.</td>
<td>Kirk Fertitta</td>
<td>2014-02-27</td>
</tr>
<tr>
<td>2014-02-06</td>
<td>WRT the Scanf comment, try to achieve the desired timeout behavior by modifying the MessageBasedReaderWriter class.</td>
<td>Kirk Fertitta, Dan Mondrik, Pankaj Adhikari</td>
<td>2014-02-27</td>
</tr>
<tr>
<td>2014-02-06</td>
<td>Review &amp; address TODOs in the formatted I/O code.</td>
<td>Kirk Fertitta</td>
<td>2014-03-13</td>
</tr>
</tbody>
</table>

IVI Foundation Meeting Minutes  10  May 2014
Review & address TODOs in the GRM code.  
Pankaj Adhikari  
2014-05-08

Internal installer implementation available.  
Pankaj Adhikari  
2014-05-08

Modify the IviPiaRegistration.bat file to remove the “/codebase” from the regasm command.  
Pankaj Adhikari  
2014-05-20 - DONE

**VPP-4.3.x VISA.NET review comments.**

John reviewed the changes that have been made to VPP-4.3.6 since the review period began. There were no comments on the reviewed items. All review comments/changes to date have been editorial in nature, and there is nothing that is significant enough to require the kind of rework that would require delaying a vote.

**VISA.NET Shared Components Installer**

NI has completed a version of the VISA.NET installer for internal IVI evaluation. Dan will notify John Harvey, Kirk Fertitta, Archana Akkalkot, and Guido Kiener with information about how to get a copy.

Dan noted that we also need the new VISA Shared Components installer which includes the updated conflict manager (which applies to VISA, VISA COM, and VISA.NET). Dan will hold off on notifying people that new components are available until both installers are ready.

**VISA.NET Prototyping Review**

Agilent will have about 75-80% of testing done by June 20 (earliest e-vote date) and be fully done by end of July.

PMW will have the installer into a Nimbus Alpha by the end of this month and should be ready to give a go/no-go by mid-July.

NI has done a lot of testing on the conflict manager and is confident that it is ready to go. Dan thought they would be ready to give a go/no-go by the end of July also.

**Recap Spec Review Schedule**

The VISA.NET WG thinks that the specs will be ready for an e-vote by June 20, which is when the IPR will be complete.
Kirk asked about the schedule for practical availability of VISA.NET. PMW needs a full VISA.NET implementation in order to support Nimbus 4 development. There may be a transition period for PMW when the PMW implementation is the only one available. We clarified that it will be OK for vendors to make the VISA.NET Shared Components available to their customers after they are officially released.

**VISA.NET Code TODO’s and the Scanf Issue**

We worked through all of the formatted I/O TODO items.

We will start our next set of phone meetings working through the GRM TODOs.

**Meeting Schedule**

The next phone meeting will be June 5, 2014. We will have meetings bi-weekly. John will send out a reminder, and set up the weekly meetings starting on that date. The normal time is 9:00 Mountain time on Thursdays.

**New Action Items**

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<td>General</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2014-05-20</td>
<td>Set up weekly phone meetings between now and the next meeting, starting June 5</td>
<td>John Harvey</td>
<td>2014-05-28</td>
</tr>
<tr>
<td>2014-02-06</td>
<td>WRT the Scanf comment, integrate changes suggested by NI to the existing source.</td>
<td>Kirk Fertitta</td>
<td>2014-02-27</td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td>2014-04-24</td>
<td>Modify the IviPiaRegistration.bat file to remove the “/codebase” from the regasm command.</td>
<td>Pankaj Adhikari</td>
<td>By next release of VISA SC</td>
</tr>
<tr>
<td>2014-05-20</td>
<td>Finish “internal” installer for VISA Shared Components that includes the new conflict manager code.</td>
<td>Pankaj Adhikari</td>
<td>2014-06-05</td>
</tr>
<tr>
<td>2014-05-20</td>
<td>Notify John Harvey, Kirk Fertitta, Archana Akkalkot, and Guido Kiener that the new VISA and VISA.NET Shared Components are available for internal testing.</td>
<td>Dan Mondrik</td>
<td>2014-06-05</td>
</tr>
</tbody>
</table>
4. Shared Components Management Meeting (IVI Meeting May 2014)

Agenda

- IVI Shared Components – PIA fix for 64-bit builds
- Function generator – moving to new version.
  - IVI .NET Shared Components
- IVI AC Power
- Source Control work.
- Plan to migrate shared components source code hosting.
- In reviewing licenses, need to determine if end users need to agree to a WCS license.

**IVI Shared Components – PIA fix for 64-bit builds**

Plan to release IVI Shared components: 2.3.0 - will be released, staged for End of June, commitment to end of July.

- Primary fix is the cdeo base registration. This fixes the ability to compile 64-bit .NET applications with Visual Studio 2010 or greater.
  - Without this fix can not build a 64-bit application against this, unless they browse directly to the PIA and ignore the warning.
  - The cause of the problem is that the registry is mirrored. The portion that points to the interop assembly is mirrored between 32=bit and 64-bit thives, thus it can only point to one. Therefore, when you compile a 64-bit VS app, VS will complain that you are pointing to the wrong bitness version.

  This is a problem with Dev10 and greater.

  For additional details see the February notes 1.10.2

- Have the same issue with the VISA shared components. Will roll for the VISA .NET Shared components. Once the e-vote happens will update them both. Expect it to be 5.4, the current version is 1.6, but this will align the version designation with the spec version.

**IVI FGen 5 support**

Issue: This has been on the todo list for a long time. This is the first IVI instrument class revision with substantial incompatibilities, that is the new IVI Fgen interface does not derive from the previous interface. The purpose of IVI FGen 5 is to introduce various triggering modes. The old IVI Fgen had a trigger source property on the root. The decision was made by the class committee that we need to get rid of the old trigger source property.

The new version has 4-5 new interfaces. So, it has been difficult to determine how to get a new prototype out to verify the changes before releasing the new class.
NOTE: That IVI .NET came out AFTER IVI Fgen 5. There is not an OLD version of the IVI .NET FGen driver.

NOTE: The decision to delay the finalization until a full prototype can be done has been completed has been validated since several errors have been found as part of updating other portions of the spec.

No one has been willing to do a full prototype without full tooling support. Nimbus has not been able to support two versions of the interface at the same time. Not clear how to structure to do this validation. Thus have not moved the situation forward.

One solution would be to treat the new FGen as a different instrument class. Could be:

- one class in two different type libraries.
- Also looked at a new version within one type library.

There is a customer impact, they at least need to reference more than one typelibrary in their application. However, Pacific MindWorks has been reticent to do this any other way.

Need to have a designation for the new class. For instance, we could refer to is as IVI FGEN2, however in the future we could want the addition of the numeral to refer to a minor update. Thus, we could reasonably use the designation “IVIARB” as opposed to IVI FGEN2 or IVIFGENex.

In conclusion:

- Nimbus 4 Alpha will permit prototyping IVI FGen 5. Have received a private alpha version of the library from NI for testing. So NI created a special 2.21.X (where the release version is 2.21.(X-1) ) build that has Shared Components with IVI FGen 5.
  - This version can/will be used for prototyping
  - This will be gated by completing a prototype and deciding to revision the shared components.
- After some discussion, everyone agreed that when the updated FPGen is finally released the shared components revision will increase in the minor field. (not more or less).

**IVI AC Power**

This is the only class specification that does not have a .NET API defined. No one has volunteered to do it. This may be a reasonable action to complete at a consortium meeting. This IS on the IVI .NET working group agenda as well.

**Source Control Work**

Hosting status. Currently:

- Host TFS from “Discount TFS .NET”
- FogBugz for defect tracking.

Now, Microsoft offers hosting. This has more features and appears attractive. We are skeptical that “Discount Hosting” will survive the competition anyway. Would like to transition to MSFT, however do not want to lose the history. Considering just changing to MSFT online hosting right away.
When we do the migration, we will start tracking bugs using the TFS WIT (Work-item-tracking). Tracking defects with source code is convenient. This is all well-integrated with Visual Studio.

We also think it would be advantageous to get better release histories of what we build. For instance, as we start distributing pdb files for debugging and use more flexible branching strategies.

Expectation is that it will be slightly cheaper for the consortium, but the transition is likely to impact our history tracking. Not sure what the costs are, currently pay ~$20/mo for each user on TFS.

Can we add the defect tracking as an independent service? – Yes.

Basic plan from MSFT:
- No basic licensing cost, plus the first 5 users are free.
- $20/mo after the first 5.
- Integration with Visual Studio.
- DO NOT GET Office 365 apps, Hierarchical portfolio backlogs ☺, Discussing with team rooms, sending feedback requests to users and stakeholders, ---- we’re not concerned about.

Need a clear assessment of:
- Where should it be hosted?
- How do we handle defect tracking/reporting?
  Have numerous users that need to be able to report defects. We also have defect history we do not want to lose.
- What are the total costs?

NOTE: Decision on source code control has already been made – we do want to move the source code control. Presumably to MSFT hosting.

Regarding history:
- We could manually move history comments over from the TFS server we are currently using.

Salient questions:
- Are there any decision we need to make as we move to the MSFT hosting?
  o We will license the following, and may need to add others:
    • The same 7 people that are currently licensed.
- What is the process for moving code and its history to new TFS system?
  o If we cannot move history, we will go ahead and move. John will get the history history for each IVI .NET release (not pre-releases) so we can pre-charge with history. VISA .NET does not have any release history so, it would just be placed in the repository. AGREED.
- We can cancel the current host at any time. But we need to verify the cancellation policy.
- ACTION: Kirk will verify this before we commit to going ahead with MSFT hosting.

  - Timeline
    - Kirk and John will move forward, that is:
      - Validate we can get out of the existing host.
      - Begin setting up the new host.
      - Consult with Jonathan Newton for any questions need to be answered by NI.

- What policies do we establish around the use of the repository?
  - IVI.NET would be put there.
  - VISA.NET would be put there.
  - IVI-C Shared components – are currently archived at Pacific MindWorks as zip files (because Kirk is our shared components chair). Would presumably post this to the TFS server. IT does not seem to make sense to require those sip files be expanded or built in-situ.

  **ACTION:** Joe check the Operating Procedures (perhaps elsewhere), what are source code access privileges? This could impact the accessibility of the repository.

  - Suggestion:
    - for legacy stuff, don’t need to change. For future things this will be the preferred mechanism.
    - This is the formal consortium repository.

  **ACTION:** Kirk will collect all the source code for both legacy and non-legacy components to put in the repository. Will make reasonable exceptions for legacy components, any differences will be escalated to BoD. If it is non-buildable that is OK. This will not impose on the underlying build process.

*In reviewing licenses, need to determine if end users need to agree to a WIX license.*

Kirk will check with his colleagues to see if the general expectation is that using a WIX installer requires accepting a license. Need to review at a future meeting.

**Plan to Migrate Shared Components Source Code Hosting**

Discussed an approach for branching, general agreement, Kirk and John will implement.
5. Technical Committee

General Meeting Info:
Date of Meeting: May 20, 2014
Location: Singapore
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 2014 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
  - Vote on VISA 4.3 and 4.3.2 minor changes
- New Business
  - Status of the IVI-COM type library for IIviFgen2
  - Lack of requirement in IVI-3.17 for inclusion of IVI License in IVI Shared Components installers
  - Proposed protocol for register-based access over LAN
- Discuss Upcoming Meetings
- New Action Items

Voting Members In Attendance

<table>
<thead>
<tr>
<th>Present</th>
<th>Organization Name</th>
<th>Name</th>
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<tbody>
<tr>
<td></td>
<td>Aeroflex Corporation</td>
<td>Mark Meldrum / Marv Rosner</td>
</tr>
<tr>
<td>X</td>
<td>Agilent Technologies</td>
<td>Joe Mueller</td>
</tr>
<tr>
<td></td>
<td>Bustec Ltd.</td>
<td>Fred Bloennigen</td>
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<td></td>
<td>EADS North America Test &amp; Services</td>
<td>Dan Masters</td>
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<tr>
<td></td>
<td>Keithley Instruments</td>
<td>John Ryland</td>
</tr>
<tr>
<td>Present</td>
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<tr>
<td>X</td>
<td>MathWorks</td>
<td>Rob Purser / Vinod Cherian</td>
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<tr>
<td>X</td>
<td>National Instruments</td>
<td>Jon Bellin</td>
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<tr>
<td>X</td>
<td>Pacific MindWorks, Inc.</td>
<td>Kirk Fertitta</td>
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<td></td>
<td>Rockwell Collins</td>
<td>Jason Scharas</td>
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<td>X</td>
<td>Rohde &amp; Schwarz</td>
<td>Jochen Wolle</td>
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<td></td>
<td>Tektronix</td>
<td>Archana Akkalkot / Mike Wadzita / Santanu Pradhan</td>
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<tr>
<td></td>
<td>Teradyne, Inc.</td>
<td>Teresa Lopes</td>
</tr>
<tr>
<td></td>
<td>VTI Instruments</td>
<td>Sangram Gaikwad / Tom Sarfi</td>
</tr>
</tbody>
</table>

There are 4 voting members in attendance, which satisfies the requirements for a quorum of 4 Voting Members. (Quorum is 25% of Voting Members. There are currently 13 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 2014 Technical Committee Meeting**

The minutes from the February 2014 Technical Committee Meeting are posted on the IVI Foundation web site.

No issues were brought up with the minutes. The minutes are accepted.
IVI-6.4 Editorial Change

On March 7th, Larry Ostheimer announced IVI-6.4 Editorial Change via the email below.

From:  <larry_ostheimer@agilent.com>
To:    IVI-Foundation-Members-1@ivifoundation.org
Date:  03/07/2014 04:56 PM
Subject: Editorial Review: IVI-6.4 Spec Changes (6-day review)

Greetings:

The IVI File Format Working Group proposes to make three editorial changes in the IVI-6.4: IVI File Format Specification. The primary change is by request of the Technical Committee from the February, 2014 meeting to add a designation and file extension for files that comply with the IVI File Format Specification.

More details about the issues can be found in the change document posted on the IVI-6.4 web site.

The review period for this editorial change is March 7 – 17, 2014.

Please contact me with feedback.

Best regards,

Larry Ostheimer
Agilent Technologies | 707-577-5924

The review period for the IVI-6.4 editorial change has ended without objections. The editorial changes are accepted and have been posted.
IVI-3.1 Editorial Change
On March 20th, 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: 03/20/2014 02:11 PM
Subject: Editorial Review: IVI-3.1 Spec Changes, Nested RepCap Selectors (6-day review)

Greetings:

National Instruments proposes to make an editorial change in the IVI-3.1 spec, Section 4.4.4, to clarify that all repeated capability identifiers within a list of repeated capability identifiers must have the same level of nesting after expansion.

The change document and the updated spec have been posted on the IVI-3.1 web site.

The review period for this editorial change is March 20 - 28, 2014.

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.

VISA Specifications Minor Changes and New Spec
On April 4th, Dan Mondrik announced Minor Changes in VISA specifications via the email below.

From: <dan.mondrik@ni.com>
To: IVI-Foundation-Members-1@ivifoundation.org
Date: 04/04/2014 06:01 PM
Subject: VISA spec drafts for 45-day review

Hello all:
The VISA working group has 4 specifications that are ready for review. The 45-day period (for major changes) concludes during the next IVI meeting in Singapore. Barring major feedback, we will vote in these specs at that time.

Here is a summary of changes to each of the 4 specs.

VPP-4.3:

Added clarifications (rules and observations) to viOpen, viReadAsync, viWriteAsync and viMoveAsync. Added a new error code VI_ERROR_LINE_NRESERVED to facilitate better mapping of PXI-9 trigger error codes.

There have been no changes to this spec since the February meeting.

VPP-4.3.2:

Added a new error code VI_ERROR_LINE_NRESERVED to facilitate better mapping of PXI-9 trigger error codes. Added support for LCC compiler.

The only change since the February meeting is that last part (recognizing LCC). It was requested by Vinod Cherian.

VPP-4.3.5:

Made changes to specify the VISA .NET shared components.

After the conference call yesterday, we copied the installation requirements from VPP-4.3.6 into section 4.3 and clarified the rules a bit regarding 32-bit versus 64-bit operating systems. We then regenerated the diff marks for the entire document by comparing it against the last official version.

VPP-4.3.6:

First version of the VISA .NET specification.

After the conference call yesterday, the shared components installation requirements have been moved from section 18.1 into VPP-4.3.5.
Looking them over, the only issue I see at this time is with regard to each spec version. They vary (5.1, 5.2 and 6.0) but if our goal is to ensure that all related specs releasing at the same time have a consistent version, then we probably need to bump them all up to 6.0. We will take up this topic at the next conference call.

The specifications are in a single zip file attached to this email. Please review these documents and send any feedback to me.

Thanks,

Dan Mondrik
VISA working group chairman

Since there were updates made to the VISA specs in conference call since the original posting on April 4, Dan Mondrik sent out the following email on April 21st:

From: <dan.mondrik@ni.com>
To: IVI-Foundation-Members-1@ivifoundation.org
Date: 04/21/2014 03:48 PM
Subject: VISA spec drafts with mid-review changes

Hello all:

I am sending an updated set of the VISA specifications for review. This includes the following revisions made in conference call since the original posting on April 4. We are still on track for voting these specs in at the May IVI meeting.

1) We had decided some time back that all VISA specs being updated at the same time should have the same version. When I sent the previous post, one of the specs was version 6.0; however, we initiated the work on some of the specs as a minor change, so that version number change would have been inappropriate.

We chose the new number based on the highest version of an existing work product (in this case, a shipping shared component binary GlobMgr.dll is version 5.3). This posting has all the related specs set to version 5.4.
2) While reviewing my action items from the 2013 IVI meetings, I found that we had added functionality in the VISA .NET spec with the intent of adding it to the main VISA spec as well. Added this text to VPP-4.3:

RULE 6.5.6

An INSTR resource implementation of viGpibControlREN() for a TCPIP System SHALL support the modes VI_GPIB_REN_DEASSERT_GTL, VI_GPIB_REN_ASSERT_ADDRESS, VI_GPIB_REN_ASSERT_ADDRESS_LLO, and VI_GPIB_REN_ADDRESS_GTL.

OBSERVATION 6.5.1

For a TCPIP device using VXI-11, the modes VI_GPIB_REN_DEASSERT_GTL and VI_GPIB_REN_ADDRESS_GTL behave identically, putting the device into local mode. Similarly, the modes VI_GPIB_REN_ASSERT_ADDRESS and VI_GPIB_REN_ASSERT_ADDRESS_LLO behave identically, putting the device into remote mode.

OBSERVATION 6.5.2

For a TCPIP device using HiSLIP, all modes defined by viGpibControlREN() are supported. However, this specification does not require support for all modes since some do not make sense for TCPIP devices.

3) We clarified the behavior when mapping timeout values from VISA .NET to VISA C. Added this text to VPP-4.3.6:

OBSERVATION 1.1.1

The VISA.NET defined special value for an infinite timeout is VisaConstants.InfiniteTimeout. The value is -1, which is the same 32-bit value as VI_TMO_INFINITE.

OBSERVATION 1.1.2

Negative timeout values other than -1 may or may not be recognized as unsigned integer values, based on the vendor implementation.
OBSERVATION 1.1.3

Timeout parameters whose type is specified as TimeSpan support a timespan in milliseconds that matches the range of the Int32 timeout values at a minimum, but may support longer timeout values based on the vendor implementation. For these parameters, the VISA.NET special value for an infinite timeout is TimeSpan.MaxValue.

4) In the main VISA spec, the attribute VI_ATTR_SUPPRESS_END_EN is defined along with the standard message-based functionality. While it was intentionally omitted from the VISA .NET message-based functionality, that omission was not originally recorded, which led to some confusion during review. Added this text to VPP-4.3.6:

The VISA attribute VI_ATTR_SUPPRESS_END_EN is intentionally not represented in the VISA.NET API as a property because it was intended to support old instruments that are not 488.2 compliant. It may be accessed using the INativeVisaSession interface.

Thanks,
Dan Mondrik
VISA working group chairman

Additional changes have been made based on the received feedback so Pankaj Adhikari sent out the following email on May 15th:

From: <pankaj.adhikari@ni.com>
To: IVI-Foundation-Members-1@ivifoundation.org
Date: 05/15/2014 12:14 PM
Subject: VISA specification drafts with mid-review changes

Hello all,

The following two specifications, currently under a 45-day review period, have been updated to include some more changes based on review feedback. Here is a summary of the changes made to each of these specifications since the draft sent by Dan Mondrik on April 21, 2014.

VPP-4.3:
- Updated a RULE and added two PERMISSIONs to viMapTrigger in section 6.5.9.
- Added two RULEs to viUnmapTrigger in section 6.5.10.
VPP-4.3.5:
- Clarified description in Section 4.
- In sections 4.1 and 4.2, updated two RULEs and added two OBSERVATIONs to clarify the mechanism used by the VISA Shared Components installers to register the Primary Interop Assembly.

Please direct all feedback on these changes to dan.mondrik@ni.com.

Thanks,
Pankaj Adhikari
National Instruments

The review period for these minor changes and new spec has ended with some feedback, which has been addressed. The VPP-4.3 and VPP-4.3.2 specifications are now ready for vote. The vote on the new VPP-4.3.6 specification and the associated VPP-4.3.5 changes are pending the completion of the IPR Declaration review period (June 19, 2014), after which we will conduct an eVote. We decided to postpone the vote on VPP-4.3 and VPP-4.3.2 to coincide with the eVote on VPP-4.3.6 and VPP-4.3.5.

Action item: Vesna to run an eVote on the VPP-4.3, VPP-4.3.2, VPP 4.3.5, and VPP-4.3.6 specifications after the completion of the VPP-4.3.6 IPR Declaration review period.

IVI-3.17 Editorial Change
On April 30th, Vesna Jadric announced IVI-3.17 Editorial Change via the email below.

From: <vesna.jadric@ni.com>
To: IVI-Foundation-Members-1@ivifoundation.org
Date: 04/30/2014 12:14 PM
Subject: Editorial Review: IVI-3.17: Installation Requirements specification (6-day review)

Greetings:

The IVI.NET working group proposes to make an editorial change in the IVI-3.17 spec, Section 4.2.3, to more explicitly permit vendors to point AssemblyFoldersEx registry keys to assemblies in vendor-specific locations and to suggest that vendors may register older versions of assemblies.

The change document and updated specification are now posted on the IVI-3.17 internal web page.

The review period for this minor change is April 30 - May 9, 2014.
Please contact me with any feedback.

Best Regards,

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

The review period for the IVI-3.17 editorial change has ended without objections. The editorial changes are accepted and have been posted.

IVI-3.14 Minor Change

On May 6th, John Harvey announced IVI-3.14 Minor Change via the email below.

From: <john_harvey@agilent.com>
To: IVI-Foundation-Members-1@ivifoundation.org
Date: 05/06/2014 03:03 PM
Subject: Review Period for IVI-3.14 Changes

Greetings,

The IVI.NET WG has reviewed a set of changes to remove the type library PrimaryInteropAssemblyCodeBase registry value from the IVI-COM and VISA-COM shared components type library keys (which means that customers may not see the XML comments as part of IntelliSense when programming with the PIAs) and to require that IVI-COM drivers released after January 1, 2015, not include the type library PrimaryInteropAssemblyCodeBase registry value. The change document and the updated specification are posted to the IVI.NET WG web page, http://ivifoundation.org/membership/committees/DotNET/Default.aspx.

The review period for this change is **May 6 – May 27, 2014.**

Please contact me with any feedback.

Thanks,

John Harvey
Agilent Technologies

The review period for the IVI-3.14 Minor Change will end on May 27, 2014.
We decided that we would conduct an eVote on IVI-3.14 at the same time as the eVote on VPP-4.3, VPP-4.3.2, VPP-4.3.5, and VPP-4.3.6.

**Action item:** Vesna to run an eVote on the IVI-3.14 specification at the same time as the eVote on VPP-4.3, VPP-4.3.2, VPP-4.3.5, and VPP-4.3.6.

**IVI-4.3 Editorial Change**

On May 12th, Vesna Jadric announced IVI-4.3 Editorial Change via the email below.

```
From: <vesna.jadric@ni.com>
To: IVI-Foundation-Members-1@ivifoundation.org
Date: 05/12/2014 08:07 PM
Subject: Editorial Review: IVI-4.3: IviFgen Class specification (6-day review)

Greetings:

Kirk Fertitta and John Harvey propose to make an editorial change in the IVI-4.3 spec, Section 33.5 to update the name of IVIFGEN_ATTR_MAX_SEQUENCE_DEPTH to IVIFGEN_ATTR_SEQUENCE_DEPTH_MAX and change the sparse marker index COM type from LONG to __int64 in sections 27.3.1, 27.3.3, and 27.3.4.

The change document and updated specification are now posted on the IviFgen internal web page.

The review period for this editorial change is **May 12 - 20, 2014**.

Please contact me with any feedback.

Best Regards,

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

The review period for the IVI-4.3 editorial change has ended without objections. The editorial changes will be posted soon.

**Action item:** Vesna to verify that the IVI-4.3 editorial change has been posted.
**Review Action Items from February 2014 Meeting**

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<thead>
<tr>
<th>Owner</th>
<th>Action Item</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vesna Jadric</td>
<td>Record all resolutions in the lifecycle document.</td>
<td>[02/07/2014] Complete.</td>
</tr>
<tr>
<td>John Harvey</td>
<td>John to post the IVI-3.4 changes from February 5.</td>
<td>[02/11/2014] Complete.</td>
</tr>
<tr>
<td>John Harvey</td>
<td>John Harvey to propose the change to IVI-3.14 to implement the resolution 2014-02-07#4 (remove the type library PrimaryInteropAssemblyCodeBase registry value from the IVI-COM and VISA-COM shared components type library keys) and send it for review.</td>
<td>[05/01/2014] In Review</td>
</tr>
<tr>
<td>Vesna Jadric</td>
<td>Run an eVote as soon as the review period for the IVI-3.14 changes above completes.</td>
<td>[05/20/2014] Action item updated to be targeted for same time as eVote on VISA specs.</td>
</tr>
<tr>
<td>David Rohacek</td>
<td>David and Dan to implement and send for review the updated IVI Shared Components and VISA Shared Components installers to implement resolution 2014-02-07#4, so they can be posted as soon as possible after the eVote.</td>
<td>[05/20/2014] Pending eVote on the acceptance of the changes.</td>
</tr>
<tr>
<td>Vesna Jadric</td>
<td>Vesna to contact Larry Ostheimer regarding the request from the Technical Committee for IVI-6.4 changes.</td>
<td>[02/10/2014] Complete.</td>
</tr>
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</table>

**Review Spec Status Document**

The group reviewed and edited the Spec Status Document.

![IVI_Spec_Lifecycle_Status.xlsx](IVI_Spec_Lifecycle_Status.xlsx)

**Working Group Topics**

Vote on VISA 4.3 and 4.3.2 Minor Changes

The following VISA specifications have been updated:

VPP-4.3:
Added clarifications (rules and observations) to viOpen, viReadAsync, viWriteAsync and viMoveAsync. Added a new error code VI_ERROR_LINE_NRESERVED to facilitate better mapping of PXI-9 trigger error codes.

VPP-4.3.2:

Added a new error code VI_ERROR_LINE_NRESERVED to facilitate better mapping of PXI-9 trigger error codes. Added support for LCC compiler.

The review period for these changes has ended on May 20, 2014. Some feedback has been received and already addressed.

Since we are already planning to have an eVote, this vote has been deferred until the eVote on VPP-4.3.6 and VPP-4.3.5.

New Business

Status of the IVI-COM Type Library for IVI-Fgen 5.0

During the IVI.NET session at this meeting, it was decided that we would modify the IVI-COM type library for Fgen to include a separate, non-derived interface for IIviFgen2.

The next step is for Agilent to prototype an IVI-Fgen 5.0-compliant driver. The timeline for this is currently undefined.

Lack of Requirement in IVI-3.17 for Inclusion of IVI License in IVI Shared Components Installers

Although the IVI Shared Components installer and the IVI.NET Shared Components installer already include the IVI License, the IVI-3.17: Installer Requirements specification does not specify inclusion of the IVI License as a requirement. National Instruments proposes that IVI-3.17, Section 6 be updated to add a requirement for inclusion of the IVI License in the IVI Shared Components installers, similar to the VPP 4.3.5: VISA Shared Components specification requirement:
RULE 4.1.17
The VISA Shared Components installer SHALL require the user to accept the IVI Foundation license.

Resolution (2014-05-20:#1): Kirk Fertitta moves that the IVI Foundation approve the editorial change to the IVI-3.17 specification to add a requirement that the user must accept the IVI Foundation License for the IVI Shared Components and IVI.NET Shared Components installers to proceed; otherwise the installers will not install the software.

Seconded by Joe Mueller.

The vote was 3-0-0. The resolution is approved.

Action item: Vesna to update the Record of Motions tab of the lifecycle document.
Action item: Vesna to run the Editorial Change in IVI-3.17

Proposed protocol for register-based access over LAN

Steve Schink suggested the IVI Foundation discuss use cases and potential standard protocols to address heterogeneous modular instruments over LAN.

We allocated 2 hours for the I/O Working Group to discuss this at the next face-to-face meeting.

Discuss Upcoming Meetings

The next meeting will be October 15-16, 2014 (Wednesday-Thursday) in Baltimore/Washington. There will be only one track.

Action item for Bob Helsel: Make sure the invitation for the October meeting makes it clear that the business meetings will extend through 5:30 p.m. on Thursday. We request that members avoid making plans that take them away from the meeting before 5:30 p.m.

<table>
<thead>
<tr>
<th>Working Group</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared Components Management</td>
<td>3 hr</td>
</tr>
<tr>
<td>Web Forum</td>
<td>1 hr</td>
</tr>
</tbody>
</table>
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
  - 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.

February 2015 meeting:

Possibilities: Phoenix, San Jose, Orlando, Los Angeles, Atlanta, Long Beach, Orange County

Note: Avoid Chinese New Year (starting February 18th)

May 2015 meeting:

Possibilities: Denver, San Jose, Las Vegas, Charlotte, Salt Lake City

October 2015 meeting:

Possibilities: Chicago, Boston, Long Beach, Atlanta

Summary of Action Items Created at the May 2014 Technical Committee Meeting

<table>
<thead>
<tr>
<th>Owner</th>
<th>Action Item</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vesna Jadric</td>
<td>Record all resolutions in the lifecycle document.</td>
<td></td>
</tr>
<tr>
<td>Owner</td>
<td>Action Item</td>
<td>Status</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Vesna Jadric</td>
<td>Vesna to run an eVote on the VPP-4.3, VPP-4.3.2, VPP 4.3.5, and VPP-4.3.6 specifications after the completion of the VPP-4.3.6 IPR Declaration review period.</td>
<td></td>
</tr>
<tr>
<td>David Rohacek,</td>
<td>David and Dan to implement and send for review the updated IVI Shared Components and VISA Shared Components installers to implement resolution 2014-02-07#4, so they can be posted as soon as possible after the eVote.</td>
<td>[05/20/2014] Pending eVote on the acceptance of the changes.</td>
</tr>
<tr>
<td>Dan Mondrik</td>
<td>Vesna to run an eVote on the IVI-3.14 specification at the same time as the eVote on VPP-4.3, VPP-4.3.2, VPP 4.3.5, and VPP-4.3.6.</td>
<td></td>
</tr>
<tr>
<td>Vesna Jadric</td>
<td>Vesna to verify that the IVI-4.3 editorial change has been posted.</td>
<td></td>
</tr>
<tr>
<td>Vesna Jadric</td>
<td>Vesna to run the Editorial Change in IVI-3.17 to add a requirement that the user must accept the IVI Foundation License for the IVI Shared Components and IVI.NET Shared Components installers to proceed; otherwise the installers will not install the software.</td>
<td></td>
</tr>
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<td>Bob Helsel</td>
<td>Make sure the invitation for the October meeting makes it clear that the business meetings will extend through 5:30 p.m. on Thursday. We request that members avoid making plans that take them away from the meeting before 5:30 p.m.</td>
<td></td>
</tr>
</tbody>
</table>

**Adjourn**

Meeting Adjourned.
6. IVI Marketing May 19, 2014

Discussion May 19, 2014
General discussion regarding how to handle the marketing work:

- Not doing parallel tracks is probably appropriate.
- Seems like there may be some increase in our ability to contribute to marketing efforts.
- Generally would like to get the meetings to one track, need to make sure we can get everything done completed in the 2-3 days that we have.
- Should be able to assign specific action items regarding the marketing work to individuals.
- Generally we do not want to eliminate the marketing committee.
- Generally two categories of tasks:
  - Those that the general membership could work on.
  - Those things that were specifically marketing oriented (things that the marketing people have proposed). These were frequently difficult to get to completion. Good marketing ideas that never happened.

General Conclusion:

- We want to continue to have a explicit time scheduled at the meetings to plan marketing and promotional activities,
- We think that the technical team responsible for the standards that attend the meeting is the right group of people to do these activities at this time. Generally, we think we need to move to a single track for the meetings anyway, this would fit with that.
- We will handle this as an extension of the BoD, Bob H. will coordinate and pull together the agenda for the meetings. This will be in a different time-slot than the BoD.

Current Priorities:

- Video’s
- Communicate the existence of the Web Forum. Keep the web forum “live”.
- Bob will draft a marketing plan for the consortium. We need to give this some consideration before the next face-face meeting.

Should plan on a phone meeting to review a plan in the next months or so.

Bob will pull together a meeting. Will invite:

- BoD
- Identified marketing committee from 2014 February BoD meeting
- CC to the IviListservice
Notes from February 2014:

**Previous Meeting Discussions:**
- Discuss changes made to IVI Education Material – status of updates
- IVI Education Material – Content has been sent out for review. NI is sending a representative to help incorporate CVI and LabVIEW examples. We need to make a decision how what we want to do with the material from here – webcast on demand, video, etc.
  - The Marketing group is in agreement that documenting the content via Camtasia (or similar recording tool). The content should be broken into small chunks (logical).
  - Target the end of the year for publishing the content.
  - Marketing should plan an execution strategy for promoting the content once it is published.
  - We will use the IVI Educational slot during this IVI session (if no students show up) to make a plan for the timeline or the content. Shawn (from NI) will be coming to help with the CVI and LabVIEW content.
- Autotestcon was a “success” this year – there was good attendance for the IVI session, however, the overall conference attendance continues to decline. The overall feeling among the IVI marketing group was that we should not attend in 2014 and evaluate if the conference turns around.
- Support forum – Work on the support forum has stalled due to liability issues. We should keep a heartbeat on this item.

**New Business**
- IVI Education material – Joe will coordinate with Bob and get the content recorded. Deliver outline of how the work will be broken down, what information will be covered and how long each will be. This outline will reviewed by the marketing group before recording.
  - 2 recording on the overview
  - 1 recording on technical content – repeated capabilities
| We need to figure out what we want to do with the login information for IVI Foundation |
| Go live for web forum is on April 21. Adri will work with Kirk to plan a press release announcing the go live and plan for how to link on the IVI website |
| IVI and LXI day in Singapore—IVI education material will be presented during this event. Vendor booths will be allowed. Bob will be sending out specifics on the reference design. |
| LXI is creating generic content to allow members to link to/from their documentation. Should IVI do something similar to develop content that would supplement vendor documentation. |
7. IVI BoD Meeting May 20, 2014

Called to order at: 4:13 (Singapore)

**Directors in attendance**

<table>
<thead>
<tr>
<th>Present</th>
<th>Director</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Joe Mueller</td>
<td>Agilent Technologies</td>
</tr>
<tr>
<td>X</td>
<td>Jon Bellin</td>
<td>National Instruments</td>
</tr>
<tr>
<td>X</td>
<td>Jochen Wolle</td>
<td>Rohde &amp; Schwarz</td>
</tr>
<tr>
<td></td>
<td>John Ryland</td>
<td>Keithley</td>
</tr>
<tr>
<td></td>
<td>Vinod Cherian</td>
<td>MathWorks</td>
</tr>
<tr>
<td>X</td>
<td>Kirk Fertitta</td>
<td>Pacific MindWorks</td>
</tr>
<tr>
<td></td>
<td>Teresa Lopes</td>
<td>Teradyne</td>
</tr>
</tbody>
</table>

Quorum is a majority of directors. 4/7 satisfies the requirement.

**Agenda Review**

IVI BOD MEETING MAY 20, 2014

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. FINANCIAL REPORT
8. MARKETING COMMITTEE
9. IVI PAID FOR CONFERENCE PHONE
10. WEB FORUM UPDATE
11. FINANCES AND PLAN TO ATTRACT MEMBERS/MEETING PLANS
   11.1 CONSIDERATION OF EXPENSES FOR TFS/DEFECT TRACKING
12. OPPORTUNITY TO COLLABORATE WITH LXI ON REFERENCE DESIGN

*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.

*Resolutions passed by electronic means since last meeting*

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

*Inputs Regarding Minutes of Previous Meeting*

None expressed

*Action Items from Previous Meeting*

<table>
<thead>
<tr>
<th>ITEM</th>
<th>OWNER</th>
<th>UPDATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joe to pull together discussion of LXI reference design and how/if IVI should work with it</td>
<td>Mueller</td>
<td>Not done</td>
</tr>
</tbody>
</table>
**Recommendations from Technical Committee**

None at this time.

**IVI Paid for conference phone**

Note our resolution passed Feb 2013 that phone attendees will be charged 50% of meeting fee or $100, whichever is more. Action?

**Marketing Committee**

<table>
<thead>
<tr>
<th>Sub Committees of BoD</th>
<th>Nominated for 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing Committee</td>
<td>Adri Kruger (Chair)</td>
</tr>
<tr>
<td></td>
<td>Eric Wetjen/Vinod Cherian</td>
</tr>
<tr>
<td></td>
<td>Jochen Wolle</td>
</tr>
<tr>
<td></td>
<td>Kirk Fertitta</td>
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<tr>
<td></td>
<td>Deb Homan/Steve Schink</td>
</tr>
<tr>
<td></td>
<td>Bob Helsel</td>
</tr>
</tbody>
</table>

Adri is no longer available to chair this work.

We will no longer conduct business as a marketing committee. Bob will lead marketing meetings at our face-face meetings. In addition, Bob will propose a marketing plan to the membership in the next month. Additional details are in the marketing meeting notes from this afternoon.
Financial Report
Bob presented.

IVI P&L 2013.xls

IVI P&L thru 5-15-2014.xls

Membership List IVI 4-14-14.xls

Finances and plan to attract members/meeting plans
We made this a standing agenda item at the February 2014 meeting.

General discussion that we could reasonably require driver vendors to have to pay to post a driver – or more appropriately, require that they have to be members to register a driver.

No action at this time.

Web Forum Update
At February meeting we authorized $8600 for 2014 Web Forum expenses. This was based on estimates of:
• up to $2K on web forum styling (after financial report) including a graphic for a link members can use on their web pages.
• Annual fee for answer hub (~$3000/yr)
• Annual fee for Bob’s time to administer (based on actuals, not to exceed $3600 based on $75/hr)

Update 2014-05-20:

- Web form styling was slightly under this estimate.
- Answer hub was slightly over.
- Bob is now estimating administration at 1 hour/mo @$75/hour.

**Consideration of expenses for TFS/Defect Tracking**

Kirk verified that there is no cancellation fee for existing TFS host (or FogBugz).

Actions and expenditures have been recorded in the Shared Components subcommittee. Since they are all LESS than the budgetted, no further actions were taken by the BoD.

**Opportunity to Collaborate with LXI on reference design**

From February meeting:

<table>
<thead>
<tr>
<th>LXI consortium concluded that to attract members and ensure the longevity of the standard it would be beneficial to develop a reference design and make it available to members. It will be a SW implementation of most of the LXI core and extended functions (for Linux and Win 7). This will include some sort of a simplistic simulated instrument.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LXI will use this to promote the standard and also decrease the cost of implementation for existing and new members.</td>
</tr>
</tbody>
</table>

Next steps: we will put together a conference call with:

- Vesna Jadric
- Kirk Fertitta
- Steve Schink
- Joe Mueller
- Vinod Cherian
What’s new with the LXI reference design:

- Contract has been signed.
- TSEP will be doing the work.
- Design by August, plan first implementation March 2015, will be based on a Windows 8 host computer and also will provide an ARM implementation (two reference design platforms). Will be free for LXI members. Plan to have a support contract in place for TSEP.
- Plan to provide a simple SCPI parser with a HiSLIP implementation. LXI will drop VXI-11 as an LXI requirement.
- Earliest need for a prototype driver would be later this summer. Plan to have it fully spec’d by August 1.
- Jochen Wolle and David Owen are the chairs of this committee. Steve will mention that this has been discussed by IVI consortium.

Next step will be to invite the above IVI members to the LXI consortium meeting where this is discussed sometime in the next month or so.

Meeting adjourned 17:00 (Singapore)